we produce materials essential to human progress

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Highlights

Zero
fatalities

$47bn
direct economic contribution

$1bn
over five years
for climate-related projects

26%
women in senior leadership,
up 3.5% year on year with
an aim to improve

$15.9bn
net cash generated from
operating activities
(2019: $14.9bn)

$9.4bn
Free cash flow
(2019: $9.2bn)

$9.8bn
net earnings
(2019: $8.0bn)

$12.4bn
Underlying earnings
(2019: $10.4bn)

$23.9bn
Underlying EBITDA
(2019: $21.2bn)

$44.6bn
consolidated sales revenues
(2019: $43.2bn)

27%
Return on capital employed (ROCE)
(2019: 24%)

2020 at a Glance

Our business comprises a portfolio of world-class assets that generate strong cash flows through the cycle.

Group highlights

$15.9bn
Net cash from operating activities
(2019: $14.9bn)

110.1%
Total shareholder return (TSR)
(2019: 49.6%)

557 cents
Total dividend per share (DPS)
(2019: 443 cents)

Product groups

Fe

Iron Ore

Iron ore is the primary raw material used to make steel. Steel is strong, long-lasting and cost-efficient – making it perfect for everything from washing machines to cars, bridges and skyscrapers.

In the Pilbara region of Western Australia, we produce five iron ore products including the Pilbara Blend™, the world's most recognised brand of iron ore.

Our Dampier Salt operations in Western Australia are the world's largest exporter of seaborne salt, produced from evaporating seawater.

This quality product suite is well positioned to benefit from continued demand across China, Japan and other markets.

Gross product sales
$27.5bn
(2019: $24.1bn)

Underlying EBITDA
$18.8bn
(2019: $16.1bn)

Production (100% basis)
333.4mt iron ore
(2019: 326.7mt)

CO_2e emissions (100% basis)
3.5mt
(2019: 3.2mt)

All-injury frequency rate
0.53
(2019: 0.66)

Al

Aluminium

Aluminium is one of the world's fastest-growing major metals. Lightweight and recyclable, it is found in everything from jet engines to electric vehicles to smartphones. Our vertically integrated aluminium portfolio spans high-quality bauxite mines to alumina refineries to smelters which, in Canada, are powered entirely by clean, renewable energy with an average position in the first decile of the cost curve.

Gross product sales
$9.3bn
(2019: $10.3bn)

Underlying EBITDA
$2.2bn
(2019: $2.3bn)

Production (our share)
56.1mt bauxite
(2019: 55.1mt)

3,180kt aluminium
(2019: 3,171kt)

CO_2e emissions (our share)
21.8mt
(2019: 21.7mt)

All-injury frequency rate
0.36
(2019: 0.46)

0.37
All-injury frequency rate (AIFR)
(2019: 0.42)

4
New Scope 3 goals

3.2%
Reduction in CO_2e, equivalent emissions against 2018 baseline

Cu

Copper & Diamonds

Copper is essential to the transition to a low-carbon future as it plays a key role in electrification and power generation, including in renewable energy and electric vehicles. Our operations span the globe, from Mongolia to Chile to the US, and occupy various stages of the mining lifecycle. Our white and coloured diamonds are some of the world's most sought-after gems.

Gross product sales
$5.4bn
(2019: $5.8bn)

Underlying EBITDA
$2.2bn
(2019: $2.1bn)

Production (our share)
528kt mined copper
(2019: 577kt)

CO_2e emissions (our share)
2.7mt
(2019: 2.8 mt)

All-injury frequency rate
0.30
(2019: 0.29)

Ti B Fe

Energy & Minerals

Our Energy and Minerals product group provides materials essential to a wide variety of industries, ranging from agriculture to renewable energy and electric vehicles. We produce high-grade low impurity iron ore pellets and concentrate, titanium dioxide and borates from our operations in Africa, Canada and the US. We contribute to Rio Tinto's sustainable growth by unlocking value from our high-grade orebodies and developing new materials. By giving a second life to mining waste with by-products, we are expanding our frontiers for the increasing demand for critical minerals. We apply innovative technology and processes to deliver products that will contribute to a decarbonising and sustainable modern world.

Gross product sales
$5.0bn
(2019: $5.2bn)

Underlying EBITDA
$1.6bn
(2019: $1.8bn)

Production (our share)
1,120kt titanium dioxide slag
(2019: 1,206kt)

10.4mt iron ore pellets and concentrates
(2019: 10.5mt)

CO_2e emissions (our share)
3.6 mt
(2019: 3.8 mt)

All-injury frequency rate
0.41
(2019: 0.43)

Strategic Report

An employee at Boyne Smelters Limited in Queensland, Australia. Aluminium, found in a wide range of essential products, including hospital equipment, is made from bauxite.

Safety
is our first value

Zero
fatalities

As COVID-19 threatened lives and livelihoods, the entire company mobilised to safeguard our employees, contractors and communities, and to keep our operations running. Our success in 2020 was due, in no small part, to this remarkable effort by our entire workforce.

Our strong performance in many areas during 2020 was overshadowed by the destruction of two ancient rock shelters in the Juukan Gorge. I reiterate our unreserved apology to the Puutu Kunti Kurrama and Pinikura (PKKP) people for the destruction of the rock shelters. We are committed to learning the lessons from Juukan Gorge to ensure that the destruction of a site of such exceptional cultural significance never happens again.

Simon Thompson
Chairman

Chairman's Statement

Today, shareholders are increasingly focused not only on the financial return that they can earn on their investment, but also on how that return is made. In order to build and maintain trust in Rio Tinto, we must seek to achieve environmental and social goals alongside generating profit for our shareholders. Our purpose as a company is to produce materials essential to human progress and we are committed to fulfilling this role in a sustainable and inclusive way.

In 2020, our safety performance and our response to the COVID-19 global pandemic were a demonstration of this company at its best. However, the destruction of the rock shelters at Juukan Gorge, in Western Australia, was a breach of both our values and the trust placed in us by the Puutu Kunti Kurrama and Pinikura (PKKP) people and other Traditional Owners of the land on which we operate. In the months and years to come, we are determined to learn the lessons from Juukan Gorge, to rebuild the trust that has been lost, and to re-establish our leadership in environmental and social performance.

Our response to the pandemic

2020 was a difficult and challenging year for everyone, but I am proud of Rio Tinto's response to the global pandemic. As COVID-19 threatened lives and livelihoods around the world, the entire company mobilised to safeguard our employees, contractors and local communities, and to keep our operations running safely and smoothly.

At our Pilbara iron ore operations, for example, within a matter of days, thousands of employees adapted to new rosters and changed fly-in, fly-out travel schedules. We secured additional charter flights and redesigned procedures at our camps to maintain social distancing and we instituted rapid health screening at airports across Western Australia. Around the world, we also took measures to reduce the risk of transmission from our employees to the remote and vulnerable communities near our operations. The success of Rio Tinto in 2020 was due, in no small part, to this remarkable effort by our entire workforce.

Safety

Despite all these changes, and the uncertainty created by the pandemic, we achieved a second consecutive year with zero fatalities. This remarkable achievement is a testament to the hard work and dedication of thousands of employees and contractors, every day, on every shift. But we need to do even better in our overall safety performance and will not be satisfied until we have eliminated all work-related injuries.

Chairman's Statement
continued

Total dividends declared to shareholders

$9bn

Our direct economic contribution in 2020

$47bn

$1bn

over five years on climate-related projects

Financial performance and economic contribution

As a result of the efforts of our 45,000[1] employees in 35 countries to keep our operations running safely, the Group performed strongly in 2020. The strength and resilience of our business enabled us to protect thousands of jobs across our supply chain, and continue to pay taxes and royalties to governments and dividends to pension funds, when many other companies were forced to cut back.

We recorded underlying earnings of $12.4 billion (2019: $10.4 billion) and free cash flow of $9.4 billion (2019: $9.2 billion) in 2020. Our balance sheet remains exceptionally strong, with net debt at year-end of $0.7 billion. These robust results reflect strong demand in our major markets, especially China, with iron ore prices, in particular, supported by supply disruptions across the industry.

As many of our host governments spent record sums to support their people and economies during the pandemic, our direct economic contribution, including payments to employees, suppliers, governments and shareholders, amounted to $47 billion. In 2020, the Rio Tinto Group paid more than $8 billion in taxes and royalties globally, including Australia where we are one of the largest taxpayers, contributing more than $6.5 billion in taxes and royalties.

In recognition of this strong financial performance, the Board is recommending a final dividend of 309 US cents per share (2019: 231 US cents per share) and a special dividend of 93 US cents per share, taking total dividends declared this year to $9 billion.

The destruction of the Juukan Gorge rock shelters

These achievements were overshadowed by the destruction of two ancient rock shelters in the Juukan Gorge, at the Brockman 4 iron ore mine in Western Australia, in May 2020, which should not have happened.

I would like to reiterate our unreserved apology to the Puutu Kunti Kurrama and Pinikura (PKKP) people for the destruction of the rock shelters.

The loss of the Juukan Gorge rock shelters has also impacted many others, in Australia and beyond, and within our company it has left many of our employees, including our Indigenous Australian colleagues, feeling deeply shocked and ashamed.

Following publication of the Board Review of the events leading up to the destruction of the rock shelters, and consultations with shareholders in Australia, Europe and North America, our Chief Executive, the Chief Executive of Iron Ore and the Group Executive, Corporate Relations, have left the company by mutual agreement.

The Board and senior leadership team have taken decisive action to implement the recommendations set out in the Board Review and the Interim Report of the Parliamentary Inquiry. These include measures to ensure that the destruction of a site of such exceptional cultural significance never happens again; to re-confirm that we have recently consulted with Traditional Owners for potential impacts; and to begin the modernisation process of our agreements with the Traditional Owners in Western Australia to increase transparency and redress the imbalance of power that existed in our older agreements.

We are also reinvigorating our cultural awareness training, have stepped up our investment in career development for Indigenous Australians and taken numerous other measures to ensure that Indigenous Australians have a stronger voice, not only in our host communities, but also within Rio Tinto. In parallel with these internal changes, we have continued to engage with the Government of Western Australia in relation to reforming the Aboriginal Heritage Act of 1972.

1. This is the average employee headcount during 2020, including contractors.

In November 2020, my fellow director Megan Clark (Chair of our Sustainability Committee) and I visited the Juukan Gorge with the PKKP people. It was my first opportunity to apologise in person to the PKKP people for the destruction of the rock shelters, and to see and feel their sadness and pain first-hand. Megan and I subsequently attended a joint meeting of the PKKP and Rio Tinto Boards in Perth, where we discussed the steps that we must take to rebuild trust and to strengthen our partnership, as well as progress with the remedy process.

Separately, Megan and I also met elders from nine of the ten Traditional Owners of the lands where we operate in Western Australia. The Traditional Owners expressed their sadness and anger at the destruction of the Juukan Gorge rock shelters, but they also expressed their hopes for a more equal and respectful relationship with Rio Tinto in the future.

Traditional Owners recognise the social and economic benefits that mining brings to their communities, but they demand a relationship with our company that respects local customs and traditions and recognises their obligation to preserve their unique culture for future generations. It is our responsibility to make sure this happens both now and into the future, and I know that this determination is shared throughout our organisation.

The appointment of Jakob Stausholm as Chief Executive

I am delighted to welcome Jakob Stausholm as our new Chief Executive with effect from 1 January 2021. Since joining Rio Tinto as an executive director and Chief Financial Officer in 2018, Jakob has played a key role in strategy development and performance management, allocating capital with discipline and helping to deliver record shareholder returns. Jakob's blend of strategic and commercial expertise, and his collaborative leadership style, strong values and commitment to sustainable development, make him the ideal choice for our next Chief Executive.

A further advantage is that, as an internal candidate, he will be able to apply his existing knowledge and understanding of the Group to some of the key investment and growth decisions arising in the shorter term.

Other Board changes

During 2020, we also welcomed three new non-executive directors – Hinda Gharbi, Jennifer Nason and Ngaire Woods – and the Board has already benefited from their insights and expertise in natural resources, finance, technology, governance, public policy, diversity and inclusion. At the end of the year, we bid farewell to David Constable, who steps down to assume the role of Chief Executive Officer at Fluor Corporation. A search for his replacement is underway as we seek to strengthen representation on the Board from our key countries of operation.

Engagement with stakeholders

Despite the limitations imposed by the pandemic, the Board engaged extensively with stakeholders throughout 2020, including meetings with shareholders, Traditional Owners, Indigenous leaders, civil society and governments. During the year, I held one-on-one meetings with over 70 key shareholders. Together with the Board Committee chairs, we also arranged two governance-focused engagements in the UK and Australia hosted by the Investor Forum and the Australian Council of Superannuation Investors. Our annual supplier and customer survey showed improved perceptions of our performance, as well as a number of areas requiring further attention. We also held a 'virtual roundtable' with civil society organisations, where the discussions focused on our response to Juukan Gorge, climate change and continuing concerns about industry lobbying.

The strength and resilience of our business enabled us to protect thousands of jobs across our supply chain, and continue to pay taxes and royalties to governments and dividends to pension funds, when many other companies were forced to cut back.

In the aftermath of Juukan Gorge, I held a virtual town hall with senior managers worldwide and a real town hall with employees in Perth. Board members also held a series of meetings with smaller groups of leaders around the world, and made a 'virtual site visit' to Oyu Tolgoi, during which we were able to speak to our employees and partners in Mongolia.

In these meetings, our employees spoke openly and honestly about their pride in the company's response to COVID-19 and their deep sense of shock at the destruction of the Juukan Gorge rock shelters. A key topic for discussion was how we can make the work culture at Rio Tinto more diverse and inclusive, to ensure that everyone feels empowered to speak up if something does not feel right. This will be a strong area of focus for the Board and leadership team in 2021.

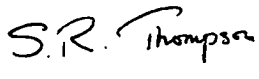
Restoring our reputation as a purpose-led business

As Jakob takes over as Chief Executive, he takes charge of a company with outstanding people, world class assets, an exceptionally strong financial position, a clear climate change strategy and a robust safety culture. But he also inherits a company that urgently needs to restore trust with host communities and in our management of cultural heritage.

Our purpose is to produce materials essential to human progress. We are committed to doing so efficiently, effectively and sustainably, creating value for all stakeholders while safeguarding the environment and respecting our host countries and communities.

Thank you

Let me end by thanking the leadership team and the many thousands of Rio Tinto employees, contractors and partners who delivered once again for our company and its shareholders during one of the most difficult and challenging years in recent memory.



Simon Thompson
Chairman

22 February 2021

Juukan Gorge

A breach of our values

We apologise unreservedly to the Puutu Kunti Kurrama and Pinikura (PKKP) people, and to people across Australia and beyond, for the destruction of Juukan Gorge.

In allowing the destruction of Juukan Gorge to occur, we fell far short of our values as a company and breached the trust placed in us by the Traditional Owners of the lands on which we operate. It is our collective responsibility to ensure that the destruction of a site of such exceptional cultural significance never happens again, to earn back the trust that has been lost and to re-establish our leadership in communities and social performance.

A nearly two-decade-long timeline

Our relationship with the PKKP people extends over more than 17 years, with initial agreements covering our operations on PKKP land at Brockman 4 signed in 2006 and 2011. The decision to destroy the rock shelters was taken nearly eight years ago but, because mining is such a long-cycle industry, that decision was not actually implemented until 2020.

Internal and external reviews of the events leading to the blasting of the rock shelters at Juukan Gorge have highlighted deficiencies in how our partnership with the PKKP people was managed, a lack of integration of our heritage management with our front-line operational teams, and a work culture that was too focused on business performance and not enough on building and maintaining relationships with Traditional Owners.

The archaeological and ethnographic reports received in 2013/14 should have triggered an internal review of the implications of this material new information for the mine development plans. Such a review did not take place. Following completion of the archaeological surveys and other mitigation measures agreed with the PKKP people in 2014, the site was reclassified as 'cleared' for mining and removed from relevant risk registers. As a consequence, knowledge and awareness of the location and significance of the site was progressively lost. Further opportunities to revise the mine plan were missed in 2018, when the final archaeological report was received, and again during 2019/20.

Remedy process

We are engaging with the PKKP people to determine an appropriate remedy process for the destruction of the rock shelters. This includes providing funding to support their submission to the Joint Standing Committee on Northern Australia (the Parliamentary Inquiry) and their effective participation in discussions about how we rebuild and strengthen our partnership and provide a remedy that respects the wishes of these Traditional Owners.

A moratorium has been agreed on mining in the Juukan Gorge area and work is underway on a remediation plan. In partnership with the PKKP people, we are focusing on understanding how, through the remediation of the Gorge, we can re-establish a sense of place that recognises the exceptional cultural significance and connection of the Juukan Gorge area to past, current, and future PKKP people as well as their aspirations for future use and interaction with the place.

Remediation of the Gorge will be a challenging project. While the Juukan 2 rock shelter is likely to be irreparably damaged, Juukan 1 appears to be largely intact. Both shelters will be restored to the fullest extent possible and, if it is safe, access will be re-established. Other parts of the Gorge, including the Snake pool, which were not impacted by the blast, will remain protected and its connection to the Juukan 1 and 2 rock shelters will be re-established.

Artefacts and other materials salvaged from the rock shelters during archaeological excavations have already been moved to a purpose-built conservation facility. Discussions are in progress with the PKKP people on the provision of an appropriate, permanent 'keeping place'.

For a more detailed summary of our response to the recommendations issued by the Parliamentary Inquiry, please visit riotinto.com. Please refer to pages 114-115 to learn more about the Board review of the events that led to Juukan Gorge.

Ensuring this never happens again

We have taken decisive action to strengthen our processes and approach to cultural heritage.

Governance

- **Integrated Heritage Management Process (IHMP):** The most urgent task was to ensure that we do not have other sites of exceptional cultural significance within our existing mine plans. We are currently completing the first phase of a new IHMP, which is being rolled out at our Pilbara iron ore business. The lessons from the IHMP will subsequently be implemented across our business globally while taking into account local circumstances. In the Pilbara, the IHMP involves a systematic review of all the heritage sites that we manage starting with those that may be impacted by our activities over the next two years. So far, we have reviewed over 1,000 sites and ranked each one by: (i) cultural significance (which is informed through consultation with the Traditional Owners of the land on which we operate); (ii) our re-confirmation that we have recently consulted with Traditional Owners for potential impacts; and (iii) the materiality of the impact. Where there is any doubt, we have reclassified the relevant sites from 'cleared' for mining back to 'protected' as a precautionary measure, pending further consultation with the Traditional Owners.
- **Empowering operational management:** We have increased the responsibility of our product groups for Communities and Social Performance (CSP), partnerships and engagement. This means that line managers within the product groups directly own the relationships with host communities, including Indigenous peoples. All community and heritage management professionals at our operations now report to product group line management.
- **Improved governance and Board oversight:** Any direct impacts to sites categorised as being of 'high' or 'very high' significance under the new Integrated Heritage Management Process must also be approved by the heritage sub-committee of the Executive Committee

or the Board, as appropriate. The Sustainability Committee of the Board will oversee the implementation of the recommendations arising from the Board Review and the Parliamentary Inquiry and will ensure that lessons learned are applied, as appropriate to our operations worldwide. The Audit Committee of the Board will ensure that relevant lessons from Juukan Gorge are also applied to all other risk management processes, particularly those, like Juukan Gorge, where there is a significant lag between decision and implementation. Please refer to the risk management and internal control section on page 115 of this report for more information.

- **Strengthened assurance:** Second line assurance will be provided by a new stand-alone CSP Area of Expertise (AoE), reporting to Mark Davies, our Group Executive, Safety, Technical and Projects, a member of our Executive Committee, based in Brisbane. The CSP AoE will ensure conformance with Group policies, standards and procedures, including the new Integrated Heritage Management Process, and will share best practice worldwide. The new CSP AoE sits alongside the existing health, safety, environment (HSE) function. This will help to ensure that communities and heritage risk processes are aligned with our existing robust health, safety and environmental systems. The AoE will also oversee internal assessments and reviews, including deep dives and operational reviews in conjunction with experts from our Group Risk function. The framework includes a rigorous annual self-assessment and certification of impacts and risks. Internal Audit will provide a third line of defence.
- **Modernisation of agreements with Traditional Owners:** We have written to Traditional Owners advising them that we will not enforce any clauses that restrict Traditional Owners from raising concerns about cultural heritage matters or that restrict them from applying for statutory protection of any cultural heritage sites. We have also offered to modernise agreements in the Pilbara where Traditional Owners have indicated that the current agreements have not met the aspirations of partnership we mutually sought at the outset. We will seek to agree an appropriate mechanism in our revised agreements so that there is a clear pathway for resolution of any differences of view that may emerge. We will also continue to work with Traditional Owners to increase the economic benefits that flow to their communities from employment, skills, training and business development.
- **Increasing transparency:** Subject to the consent of Traditional Owners in Australia, we intend to make our new agreements public. We intend to engage with the Traditional Owners on how independent input can be sought to support this modernisation process.
- **Indigenous Advisory Group:** We are consulting with Traditional Owners to create an Indigenous Advisory Group (IAG), intended to bring Indigenous voices into the senior leadership and oversight of the business in Australia. An IAG would provide direct input on our Indigenous strategy in Australia and coaching, mentoring and advice to senior leadership and, where possible, to the Board.

Work culture and relationships

Making sure that we have the right work culture and relationships will require sustained effort over many years. We are not underestimating the time it will take to build a more inclusive work culture that better recognises and celebrates Indigenous partnership in our business.

- **Increasing awareness and understanding of community and heritage issues:** Operational leadership will receive training and coaching to ensure that they understand their new responsibilities and have access to the subject matter experts and information they need to support good decision-making. They will be encouraged to invest time in building relationships with Traditional Owners to ensure that they are aware of any concerns, before they escalate into major issues. To support them, we are reinvigorating our cultural awareness training, with all frontline staff, including the Board, undertaking both e-learning and face to face training with Indigenous Australians.
- **Fostering Australian Indigenous leadership:** In order to increase the diversity of our leadership team, we have appointed a Chief Advisor, Indigenous Affairs, reporting directly to our Chief Executive Australia, and committed a US$50 million investment to advance employment opportunities and accelerate the career development of Indigenous Australians in our business. The Chief Advisor, Indigenous Affairs will also assist and coach operational management in the renegotiation of our agreements with Traditional Owners.
- **Building a more inclusive work culture:** It is clear that we need to create a more inclusive, more diverse work culture, where people feel empowered to challenge decisions – a priority of the management team and our new Chief Executive.

External engagement

In parallel with these internal changes, we continue to contribute to the reform of the Aboriginal Heritage Act 1972 (WA), making clear our support for a right of appeal by Traditional Owners in relation to approvals to impact cultural heritage sites on their Country. We are also engaging with the Chamber of Minerals and Energy in Western Australia, the Minerals Council of Australia and the ICMM, sharing the lessons that we have learned from Juukan Gorge.

Everything I know about this company – the talent and commitment of our employees, the quality of our assets and our contribution to society – excites me and makes me optimistic about the future. We have the strength and capabilities, built over our 148-year history, to restore our leadership in cultural heritage and communities and social performance, and we will emerge a better company for the lessons we have learned in 2020.

Jakob Stausholm
Chief Executive

Chief Executive's Statement

2020 was, in many ways, an extraordinary year – for our company, and the world at large – and one in which we saw the best of Rio Tinto, as well as areas in which we must, and will, improve.

To that end, after the events at Juukan Gorge, we have been working to restore trust with the Puutu Kunti Kurrama and Pinikura (PKKP) people. Important progress has been made following a meeting between the PKKP and Rio Tinto boards, as articulated in the December joint statement at riotinto.com/juukangorge. We are also developing additional measures to strengthen our partnerships with Traditional Owners in Australia, including a commitment to modernise and improve agreements in the Pilbara, home to our iron ore business. More broadly, we are determined to improve our approach to communities and stakeholders globally, in part by embedding a more inclusive approach that strengthens our overall thinking, decision making and performance.

It was an honour to have been selected by our Board of Directors to lead Rio Tinto as its Chief Executive. Everything I know about this company – the talent and commitment of our employees, the quality of our assets and our contribution to society – excites me and makes me optimistic about the future. We have the strength and capabilities, built over our 148-year history, to restore our leadership in cultural heritage and communities and social performance, and we will emerge a better company for the lessons we have learned in 2020.

Chief Executive's Statement
continued

A strong safety culture

I believe a company's culture is the foundation from which its performance is built; our strong safety culture allowed us to deliver a second year with zero fatalities. While we cannot stop improving, this is an important milestone – one never achieved until 2019. I would like to personally thank the many thousands of employees, contractors and partners whose dedication and commitment made it possible. But there is more to do. While our all-injury frequency rate (AIFR) of 0.37, is considered industry-leading, we had too many serious safety incidents. Our focus in 2021 will therefore be on further maturing our safety system, which will lead to overall improvements in our safety performance and, at the same time, improve our operations.

I am exceptionally proud of the way we responded, as one, to the global COVID-19 pandemic: our goal was to keep our employees, contractors and communities safe and healthy while keeping our operations running and continuing to deliver the products our customers need. At our Pilbara iron ore business, for example, in a matter of days, we redesigned rosters and changed our fly-in, fly-out (FIFO) travel schedules for thousands of employees. We secured additional charter flights, ensuring compliance with social distancing guidelines by spacing workers appropriately on planes, and in airports. With the implementation of rapid screening at airports in Western Australia for our FIFO workforce, we were one of the first companies globally to implement large scale rapid screening.

Many of our employees made significant sacrifices this year – often being away from families and loved ones for extended periods of time – to allow our company to continue to perform during the pandemic. In Mongolia, for example, some of our employees took what they thought would be a domestic, overnight trip but, due to in-country pandemic travel restrictions, were instead required to spend 21 days in quarantine and 14 days in self-isolation. The pandemic has required incredible resilience, and our employees have delivered.

I also want to thank our host governments, which actively supported us and allowed our operations to keep running – and in doing so, allowed their citizens and economies to benefit.

Juukan Gorge: a breach of our values

One of the reasons I was excited to join Rio Tinto, two years ago, was our ambition on sustainability, our values, our history – and our purpose: to produce materials essential to human progress. We know we must fulfil this purpose in way that is in line with our values.

In Australia, in 1995, our company was the first mining company to embrace Native Title – the recognition of Indigenous people's traditional land and water rights and interests. Our destruction of the 46,000-year-old rockshelters at Juukan Gorge, in Western Australia, was a breach of that leadership and our values. Alongside our Board, management team and employees, I extend my deep apologies to the Puutu Kunti Kurrama and Pinikura (PKKP) people. We are determined to listen, learn and change, and to ensure that cultural heritage sites of exceptional significance, like the Juukan Gorge rock shelters, are never again destroyed. We must earn the right to become a trusted partner once more for Traditional Owners, host communities, governments and other stakeholders. Please refer to pages 10-11 to learn more about the actions we are taking.

On a more personal note, the events at Juukan Gorge have taken their toll on many of us. Many of our employees are disappointed and feel let down. I am also sorry for this. We are working hard to heal and rebuild our relationships, credibility and reputation, and I know this will take time and effort. I believe we all have a role to play and, together, we will learn.

One thing we must do more is put ourselves in others' shoes – to better understand their views, improve the way we do things, and make this a better, more caring company, and one in tune with the world we serve. This culture must be actively practised and promoted by our leaders. It needs to be felt by our employees. And it needs to be closely and regularly monitored by our Executive Committee and Board. This is one of my top priorities.

A strong financial performance

We are proud that, despite exceptionally challenging circumstances, we delivered a resilient operating performance this year that enabled strong financial results: underlying earnings of $12.4 billion, underlying EBITDA of $23.9 billion and free cash flow of $9.4 billion. We recognise these strong results are driven by the current pricing environment across a number of our commodities, particularly iron ore; nevertheless, our ability to keep operations running amidst a global pandemic was also a critical factor.

Net debt further reduced to $0.7 billion (2019: $3.7 billion), underpinning an already strong balance sheet providing both resilience and optionality. As a result, the Board has recommended a final ordinary dividend of 309 US cents per share and a special dividend of 93 US cents per share, resulting in total shareholder returns declared this year of $9 billion.

Sustainability in sharp focus

We are working hard to strengthen our cultural heritage processes, including placing accountability for our relationships with Traditional Owners with our operational leaders. We are also investing $50 million to increase and nurture Indigenous leadership across our operations in Australia.

We made progress across other parts of our business as well. In December, for example, the Iron Ore Company of Canada signed a Reconciliation and Collaboration Agreement with the Innu communities of Uashat mak Mani-utenam and Matimekush-Lac John, re-confirming the long-term partnership between the company and the two communities over the coming decades.

We consider climate change the key challenge of our generation, and have pledged to address our own emissions, and those of our value chain. Last year, we set Scope 1 and 2 emissions targets: to reduce our absolute emissions by 15% by 2030 and emissions intensity by 30% (from 2018 levels). These targets are supported by our commitment to spend approximately $1 billion on climate-related projects from 2020-24.

This year, we set new Scope 3 emissions reduction goals, focused mostly on our contribution to the development and deployment of low-carbon technologies, as well as new goals and targets related to emissions from shipping our products: we will work with customers on steel decarbonisation pathways and invest in technologies that could deliver at least a 30% reduction in steelmaking carbon intensity from 2030. We will work with our partners to develop breakthrough technologies with the potential to deliver carbon neutral steelmaking pathways by 2050. We will continue to work to scale up breakthrough technology enabling the production of zero-carbon aluminium. And we will develop programmes to meet our new ambition to reach, by 2050, net zero emissions from the shipping of our products.

Underlying earnings

$12.4bn

Free cash flow

$9.4bn

Zero

fatalities in 2020

Accordingly, this year we committed to invest $10 million in our partnership with China Baowu Steel Group and Tsinghua University, also in China, to help address the steel industry's carbon footprint. This investment will fund the joint establishment of a Low Carbon Raw Materials Preparation R&D Centre, which will initially prioritise developing lower carbon ore preparation processes.

We also signed a memorandum of understanding with Nippon Steel Corporation, in Japan, to jointly explore a breadth of technologies to decarbonise the entire steel value chain from iron ore mining to steelmaking. Please refer to our climate change report, available on our website, to learn more about our approach to climate change and our progress against targets.

With respect to our products, our copper joined our aluminium this year in being third-party-certified as responsible: metal from both the Kennecott and Oyu Tolgoi mines has been awarded the prestigious Copper Mark certification.

As detailed in the sustainability section of this report, we are also working to strengthen other aspects of our work – from biodiversity to human rights, communities to water. This too, is a personal priority of mine; we plan to report on our progress regularly and transparently.

A look forward

In early 2021, I announced our new Executive Committee, which will help deliver strong safety and operational performance and make our company more resilient, an even stronger performer and employer and a trusted partner for host communities, governments and other stakeholders. This newly-formed Executive Committee is referenced on pages 118-119 of this report. I'd like to take this opportunity to congratulate the team on their new roles. I would also like to sincerely thank Vera Kirikova, who will leave Rio Tinto in early 2021, for her significant contributions to our company over many years.

As we look to the months and years ahead, we know we have a lot of hard work ahead of us. Still, we can look forward to the future of a company that is today as essential to human progress as at any time in its history. Our operations are safe, efficient and well-run. Our customers are reliably served with high-quality products. Our balance sheet is strong, and our employees have proven they can succeed even in difficult conditions. All of these things make Rio Tinto well-placed to continue to generate superior returns for our shareholders, invest in sustaining, innovating and growing our business and continue to pay taxes and royalties to host communities and governments – all while creating jobs and partnering with local businesses.

But none of this will be possible without the dedication and hard work of our many thousands of employees and contractors. To them, to host governments and communities, our customers and our many partners, all of whom make our success possible, I say – thank you.

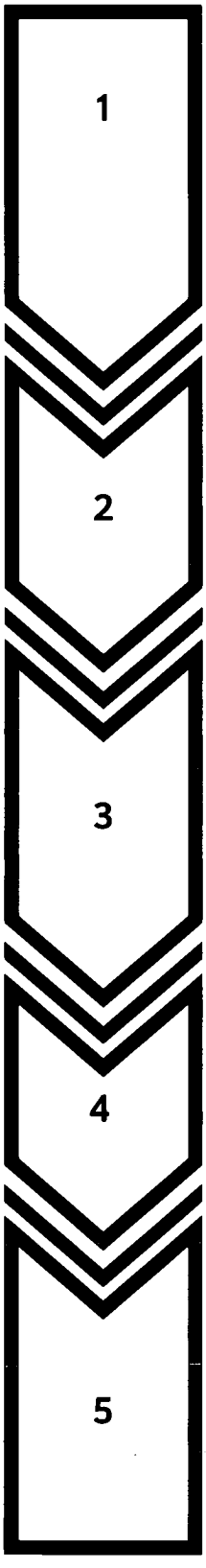


Jakob Stausholm
Chief Executive

22 February 2021

Our Business Model

Our ability to create value is underpinned by the quality of our assets, the capability of our people, our operational and sustainability performance, innovative partnerships and disciplined capital allocation.



Explore and evaluate

We use some of the most advanced exploration technologies in the world to find potential new sources of minerals and metals. We consider new commodities and products with an understanding of customers' and communities' needs. We are also mindful of our potential future social and environmental impact as well as the diversity and balance of our portfolio.

Develop and innovate

We assess each potential operation with a focus on risk, potential returns, and long-term value and sustainability. Once we have approved an investment, we design and build each operation, informed by input from those stakeholders most affected. We aim to develop every potential site to achieve optimal, long-term productivity while minimising risks.

We work in partnership with a growing network of stakeholders – governments, communities, customers and suppliers – who help expand our thinking, understanding, capabilities and, ultimately, our ability to deliver mutual benefit.

Mine and process

A safe site is a productive site, and advanced technologies are playing a more important role in how we achieve both. We share best practices across our assets to create safe, environmentally responsible working practices and a high-performing culture that targets production at lower costs. At the same time, our operations aim to benefit local economies by contributing jobs, taxes and royalties, contracts with local businesses, and social and community investment. We also support the economic diversification of regions where we are based, in alignment with national and local government plans, ensuring host communities can thrive long after our operations close. Our ambition is for our operations to reach net zero carbon emissions by 2050.

By understanding and respecting our business partners, employees, communities and the environment, we can create sustainable value for all our stakeholders.

Market and deliver

Our minerals and metals are essential to the transition to a low-carbon future and are used in a vast array of everyday products – from cars to coffee pods to smartphones. Our commercial team ensures that we align our products with market and customer needs. And our network of rail, ports and ships means that we can control end-to-end logistics to deliver our products safely, efficiently and reliably.

Repurpose and renew

We aim to design and run our assets to create a positive legacy once our mining activity concludes. We engage stakeholders of our sites nearing closure – including Indigenous peoples, government, employees and host communities – and actively involve them in planning.

Applying this approach could entail rehabilitating the land for a nature reserve, for example, or repurposing it for light industrial use. Each of our sites has rehabilitation plans that we review every year. We see this long-term approach – planning and operating with the future in mind – as integral to running a safe, responsible and profitable business.

Disciplined capital allocation

Our business is underpinned by a disciplined approach to capital allocation; we strive to use every dollar prudently. Today, our balance sheet is a key strength, providing a resilient platform for strong and consistent shareholder returns, as well as enabling us to invest throughout the commodity cycle.

Our Values

Our values reflect our commitment to the safety and wellbeing of our employees, the integrity of our business and supply chain, and respect for the environment and host communities.

Safety

Caring for human life and wellbeing above everything else

We make the safety and wellbeing of our employees, contractors and communities our number one priority. Always. Safely looking after the environment is an essential part of our care for future generations.

Teamwork

Collaborating for success

We work together with colleagues, partners and communities globally to deliver the products our customers need. We learn from each other to improve our performance and achieve success.

Respect

Fostering inclusion and embracing diversity

We recognise and respect diverse cultures, communities and points of view. We treat each other with fairness and dignity to make the most of everyone's contributions.

Integrity

Having the courage and commitment to do the right thing

We do the right thing, even when this is challenging. We take ownership of what we do and say. And we are honest and clear with each other, and with everyone we work with. This helps us to build trust.

Excellence

Being the best we can be for superior performance

We challenge ourselves and others to create lasting value and achieve high performance. We adopt a pioneering mindset and aim to do better every day.

Our Culture

We define culture as the system of beliefs and values that guides our behaviours across our diverse organisation. Our culture helped us achieve zero fatalities for two years running, and it underpins our ability to innovate and deliver high-quality products to our customers – reliably – even through a global pandemic.

But we know that aspects of our culture have let us, and our many stakeholders, down – and these aspects must be improved. The Board Review of the destruction of the rock shelters at Juukan Gorge, published in August, made clear that parts of our business lack connectedness in organisational structures, decision-making, openness and depth of engagement with Traditional Owners. They also have rigid processes and systems, constrained resourcing of key areas and difficulty escalating unresolved issues. None of these is aligned with the values we espouse or the standards we set for ourselves.

We are therefore making changes to our structure, to the way we interact with each other, the way we run certain processes, make decisions and allocate funds and time, and to elevate our approach to social performance, including respect for cultural heritage, to the same level as health, safety and environment. The choices we are making in these areas seek to both reflect and embed the values we uphold.

We will continue to work across the organisation to ensure our values are reflected in the behaviours we demonstrate – every shift, every day. We are also making an investment in developing our leaders' cultural awareness, through training programmes and diversity in leadership, and their ability to engage respectfully and effectively with Traditional Owners and other First Nations groups. And, as this company begins its next chapter, our management team is committed to re-setting and evolving the culture of our nearly-150-year-old company.

Our Stakeholders

Our business touches the lives and livelihoods of many people around the world. We recognise our responsibility to listen to – and hear – their views and take account of their interests.

Employees

This year, our employees faced unique challenges, from working through the COVID-19 pandemic to the sober reflection required by the global movements for social justice and in the aftermath of Juukan Gorge.

To understand employees' views on how to make our business better, we held virtual focus groups with almost 1,000 people from our sites and offices. Sessions were set aside specifically for Indigenous employees, employees of Asian heritage, Black employees, female employees and LGBTI+ employees. We heard our employees' appreciation of our response to COVID-19, their disappointment with the company on Juukan Gorge – and their views on many other topics, ranging from work culture, inclusion and diversity, the desired qualities of the new Chief Executive and the importance of sustainability. These sessions were supported by a series of engagements held in November by the Chairman and some of the non-executive directors.

In our most recent employee survey, conducted in November, we saw that, despite a year that tested employees in many ways, we maintained a high level of engagement overall. For the second time in a row, our employee net promoter score (eNPS) is in positive territory and currently sits at +5, one point higher than last year and the highest since we began our survey in 2016. And our employee satisfaction (eSAT) and recommend scores are also at their highest, each moving up a point to 73 and 72, respectively.

It is clear we have work to do. Our current priorities include improving overall safety performance and health, particularly during COVID-19 restrictions; transforming our culture to make it more inclusive and welcoming of diverse and/or dissenting perspectives, including women and Indigenous voices; continuing to offer competitive pay and benefits and ensuring a reasonable work-life balance, including a focus on strengthening mental health.

Communities

Communities are the places where we operate, where we live, and work, and call home – from the Pilbara, Western Australia, to KwaZulu-Natal, South Africa, to Saguenay–Lac-Saint-Jean, Quebec, Canada. But more than that, communities are made up of people – employees, Indigenous peoples, suppliers and neighbours – with whom we strive to build long-term, positive partnerships. Our strength is built upon their strength.

We recognise that, in parts of our business, we have work to do to meet our own standards on open, transparent engagement. We continue to strive to engage consistently and honestly with communities on a number of issues: from jobs and local procurement to the impact of our operations on the local environment.

This year, we established a communities and social performance (CSP) Area of Expertise (AoE), which will deliver a more rigorous assurance framework across our operations and elevate communities risk processes to align with our health and safety systems. We also changed the way we structure our global CSP teams, so that product group and operational leaders directly own relationships with their host communities, including Indigenous peoples. We have taken decisive action to strengthen our processes and approach to cultural heritage. We are currently completing the first phase of a new Integrated Heritage Management Process (IHMP), which is being rolled out at our Pilbara iron ore business. The lessons from the IHMP will subsequently be implemented across our business globally while taking into account local circumstances.

Civil society

Civil society organisations, whether local or global, play an important role in our society and in the governance of the world's natural resources. We believe that preventing and addressing the world's many complex, multifaceted environmental, social and governance challenges, such as climate change, human rights violations and bribery and corruption, can only be achieved through genuine dialogue and engagement with civil society and other stakeholders.

As a result, we regularly engage civil society organisations and, although we acknowledge instances in which our opinions may differ, we genuinely respect their views and the role they play in communities and in our business. Since 2018, we have held annual civil society roundtables to listen, learn and understand how we can improve. In 2020, we partnered with many organisations to help our communities affected by the COVID-19 pandemic and discussed matters of cultural heritage with many civil society organisations.

Governments

Governments – federal, state and provincial, and local – are also critical stakeholders for our business. We regularly engage officials at all three levels on matters from how we explore, mine and process ore, to conditions of land tenure, and health, safety and environmental requirements, as well as how we operate as a company in relation to securities, taxation, intellectual property, competition and foreign investment, provisions to protect data privacy, conditions of trade and export and infrastructure access.

A key item of discussion is the economic contribution our business makes to governments around the world: a decade ago, we were the first company in our industry to disclose our payments to governments in detail, and we have been reporting on our taxes and royalties paid, and our economic contribution, in increasing detail ever since.

Over the past ten years we have paid more than $71 billion in taxes and royalties globally; more than 75%, or $54 billion, was paid in Australia. In 2020, the Rio Tinto Group paid more than $8 billion in taxes and royalties globally. In Australia, where we are one of the largest taxpayers, we contributed more than $6.5 billion in taxes and royalties.

This is important because our businesses and the funds we provide to governments and communities support the basic infrastructure of society – bridges and roads, schools and hospitals – as well as other local development priorities, like job creation and skills training. This is one, very important way we fulfil our purpose: to produce materials essential to human progress. Being transparent about where these payments go helps our stakeholders better understand how these funds may be used to deliver economic and social benefit through our business.

At the global level, we also engage international state-based organisations from the World Bank and the International Finance Corporation to the United Nations to the Organisation for Economic Co-operation and Development (OECD), as well as key multi-stakeholder initiatives in which governments participate, such as the Extractive Industries Transparency Initiative (EITI) and the Voluntary Principles on Security and Human Rights. These bodies also help define the industry operating environment and contribute to joint problem-solving.

Investors

Our investors include pension funds, global fund managers, bondholders, employees and tens of thousands of individuals around the world. They have trusted us with their investment and, in return, they expect a financial return. But they are increasingly focused on how that return is made. They want to invest in companies that behave responsibly across environmental, social and governance (ESG) measures.

We engaged with current and potential investors through virtual forums for the majority of 2020, providing an opportunity for meetings with executive directors, the Chairman and non-executive directors. Additionally, our two annual general meetings (AGMs) in the UK and Australia provide an opportunity for all investors to question and engage with the Board. The Board also commissioned an independent perception study in April, seeking the views of institutional investors representing around 40% of the active Rio Tinto register in the US, the UK and Australia.

Given the growing importance of issues such as climate change, governance, social performance and environment, we present and engage regularly on these topics. In April, we held a sustainability seminar focused on our approach to climate and water management. Members of the executive team and subject matter experts provided an update on progress with our climate change strategy and our water management focus areas, including targets for both topics.

The Chairman and other non-executive directors engaged extensively with investors following the events at Juukan Gorge. Following the Board Review of Cultural Heritage Management, and extensive consultation with our global investor base, the Board announced changes to the Executive Committee in September. The company has moved with pace to take a number of actions to strengthen cultural heritage governance and controls, including an enhanced level of governance over the impact on sites of heritage significance.

The Chairman of the Remuneration Committee also consulted with investors in 2020 on proposed changes to the Remuneration Policy, due for renewal at the 2021 AGMs.

Two governance-focused engagements were also held by the Chairman and our Board Committee Chairs in December, facilitated by the Investor Forum (in the UK) and the Australian Council of Superannuation Investors (ACSI).

We intend to hold further environmental, social and governance forums in 2021 in response to growing investor interest in the company's progress in a number of areas including climate change, heritage and communities, closure and environment.

Customers & Suppliers

We could not produce materials essential to human progress without our suppliers, who help us at every stage of our business. Our customers turn them into the products upon which the modern world is built. We recognise that building trust with these critical stakeholders, and keeping it, requires us to deliver on our promises consistently, and to act with transparency, respect and integrity.

We use deep insights generated from everything we buy, sell and move around the world to ensure the needs of our customers are central to our operational decision making. Through the volatility of 2020, we engaged customers and suppliers to safely maintain our operations and the uninterrupted flow of materials and products through the value chain. The disruption of COVID-19 also gave us the opportunity to accelerate and expand our use of digital solutions – such as offering customers the opportunity to buy our products through a mobile app and conducting end-to-end digital transactions using blockchain technology.

We also continue to engage with our iron ore customers, such as Baowu Steel in China and Nippon Steel Corporation in Japan, to tackle emissions across the steel value chain – and to work with others, like AB InBev, to help make their supply chains more sustainable through the use of our low-carbon, Canadian aluminium. In 2020, our Kennecott and Oyu Tolgoi operations were the first and second producers globally to be awarded the 'Copper Mark', the industry's new independently assessed responsible production programme.

Suppliers are also an important way we have a positive impact on communities: in 2020, we spent $15.5 billion with suppliers globally, including A$8.2 billion in Western Australia, and A$293 million with Indigenous suppliers across Australia. In Mongolia, between 2010 and the fourth quarter of 2020, Oyu Tolgoi spent $3.54 billion on national procurement[a].

This year, we introduced new payment terms in Australia to ensure smaller suppliers are paid quickly. As a result of the new policy, approximately 90% of our suppliers in Australia are paid within 20 days.

(a) Oyu Tolgoi's (OT) national procurement figure represents spend with suppliers registered in Mongolia and more than 50% owned by Mongolian citizens. It relates to the OT operations only, and does not include the underground project.

There is more detailed information on our stakeholder engagement in the Sustainability section on pages 62-91 and we set out how the Board takes account of stakeholder interests (our 'section 172(1) Statement') in the Governance section on pages 122-123.

We meet with the Climate Action 100+ (CA100+) group regularly at the Board, Executive Committee and climate team levels, and we value their co-ordination of investor engagement.

We welcome the opportunity to join investors in the development and implementation of net zero transition action plans. As a supporter of the Task Force on Climate-related Financial Disclosures (TCFD) recommendations, we will work towards disclosures consistent with the evolving CA100+ benchmark and intend to put our annual TCFD-aligned reporting to an advisory vote at our 2022 annual general meetings.

Strategic Context

A new era of complexity

We recognise our success is predicated upon our ability to build and strengthen our resilience, and form partnerships that enable us to quickly adapt to future realities and opportunities.

Society

A world where climate change and the environment, as well as inclusive growth and sustainability, are critical.

Geopolitics

A world of growing political fragmentation, nationalism and weak global collaboration.

Technology

A world where automation, data and artificial intelligence drive improved performance.

In a world of increasing complexity, we continue to view the strategic context in which we operate through the lens of plausible scenarios, structured by the interplay of three global forces: geopolitics, society and technology. While it is still too early to delineate many mid- to long-term implications of COVID-19, it is fair to say that within each of these forces, the pandemic has the potential to amplify or decelerate trends already evident before the crisis.

Geopolitics

We have witnessed an evolution in the global geopolitical context over the past few years, marked by an erosion of global trust in elites and institutions, a backlash in some quarters against globalisation and a marked shift in the relationship between the United States and China. The growing sense of a fragmenting world order has been exacerbated by the unco-ordinated response to the COVID-19 global pandemic.

Tensions between the United States and China have become more structurally ingrained, reaching beyond trade into broader issues such as technological leadership and access to data. The pandemic has also accentuated concerns about security of the global supply chain, including for critical minerals, and self-sufficiency. Still, the economies of the United States and China remain closely intertwined and, despite growing talks of decoupling, this new era of competition will be shaped as much by how and where both countries agree to co-operate.

Other countries, including many in which we operate such as Australia, face the conundrum of how to position their economic and foreign policies towards the United States and China, knowing that how they do so will have implications for global growth and trade, both of which are critical to the outlook of the mining sector.

For Rio Tinto, balancing the relationships we have with our host country governments, as well as other stakeholders, alongside those we have with China as a key customer and supplier, market, technology partner and shareholder, is one of our top strategic priorities.

Society

The initial economic shock from the global pandemic has been sharper than the 2008 global financial crisis (GFC). And, as with the GFC, its impact has been uneven, particularly in countries that lack social safety nets and in low-income service sectors in which social distancing and remote working are difficult.

Social movements, such as Black Lives Matter, are not a product of the pandemic, but the global context and the shared, digitally-connected lockdown experience have facilitated linking local issues to a global narrative. Societal expectation for social equality, fairness and sustainability is today an increasingly powerful force.

The aftermath of the GFC saw a rising wave of populist sentiment. As the world turns to the rebuilding of the global economy after the pandemic, governments are facing growing calls for a new social contract.

In China, growth has been central to social stability, and, with the country now past its phase of rapid economic development, a broader focus may be needed, as indicated by President Xi Jinping's recent commitment to carbon neutrality by 2060. However, with budget deficits in several countries already approaching World War II levels, it will be difficult to close the gap between societal expectations and governments' ability to deliver.

Taken together, this dynamic promises to only increase pressures on businesses and the financial sector to step up their sustainability credentials. This is certainly true for our sector. The integration of sustainability, including cultural heritage, local economic contribution and climate change, into our strategy is another of our key strategic priorities.

Technology

Digital connectivity has been a defining feature of how the world adapted to life during a global pandemic. Investment and adoption rates in digital communication tools have leapt forward, upending traditional ways of working. This will likely have long-lasting effects on the future of work, cities and transport.

It remains to be seen whether the rapid digitalisation of work will boost medium-term global economic productivity and growth. But there is no doubt that increased online focus, across sectors, is helping to accelerate and concentrate wealth towards owners and operators of global digital platforms, adding another strand to concerns about economic inequality.

In addition, the development and cost reduction of low-carbon technologies is an ongoing trend that may further benefit from pandemic stimulus packages targeted at 'building back better' and advancing a green recovery. This in turn promises to accelerate the global energy transition – and therefore, potentially, future climate outcomes.

In the mining sector, technology has an important role to play in addressing productivity, growth and sustainability challenges. This is another core element to our strategy; our approach is to look for the best solutions through partnerships with our suppliers, technology providers and others across our value chains.

Our Strategy

Our strategy is to create superior, sustainable value for shareholders, in partnership with our stakeholders, by meeting customers' needs, maximising cash from world-class assets and allocating capital with discipline.

P Portfolio

Low-cost, long-life assets that deliver attractive returns

Our portfolio of low-cost, long-life assets delivers attractive returns through the cycle. After a significant portfolio reshaping, we are invested in commodities with strong, long-term fundamentals and material growth opportunities.

In 2018, with the sale of the last of our coal businesses, we became the first major diversified global mining company to divest all of our coal assets; this was part of our $12 billion portfolio reshaping, which also included the decision to divest our stake in the Grasberg copper mine, in Indonesia, and the Dunkerque aluminium smelter, in France.

In 2020, we continued to evolve and strengthen our portfolio, in part by progressing important growth options, including those in Mongolia (the Oyu Tolgoi underground project), Australia (Winu, Gudai-Darri), Serbia (Jadar), Guinea (Simandou iron ore) and the United States (Resolution Copper). In 2021, we will also begin producing scandium oxide at a new plant in Quebec, Canada. Please refer to pages 40 to 41 for more on these growth projects, and pages 54 to 57 for more on our scandium oxide plant.

We have also announced a new electricity agreement that makes the Tiwai Point aluminium smelter, operated by New Zealand Aluminium Smelter (NZAS), economically viable and competitive over the next four years. The smelter will continue operating until 31 December 2024, providing certainty to employees, the local community and customers while providing more time for all stakeholders to plan for the future.

Work to progress ELYSIS™ – our joint venture with Alcoa that aims to eliminate direct greenhouse gases from the aluminium smelting process, launched with the support of the governments of Canada and Quebec – also continued this year with the completion of its Research & Development Centre in the Saguenay, Quebec.

20%

of the global scandium oxide market to be met by our new plant in Quebec, Canada

P People

Building capability to drive performance

Attracting, developing and retaining the best people is crucial to our success. We continue to strengthen our technical and commercial capabilities through our Centres of Excellence, and are committed to building an inclusive and diverse workforce across our global business.

We have said that our company must become more representative of the communities in which we operate and the world we serve. Ultimately, we aspire to an environment where all aspects and dimensions of diversity are represented. In Australia, we have committed $50 million to increasing Indigenous leadership. In 2021, we will also focus on improving the representation of women.

Women currently comprise approximately 20% of our workforce; we have increased the number of women in our senior leadership roles, from 19% to 26% in five years, an increase of 35%. But we are not where we want to be on any measure. And we know when we make an effort, women respond – a recent recruitment drive in Western Australia resulted in more than 2,000 applications from women for 100 jobs. And so, in 2021, we aim to do better.

Ultimately, we want to achieve a gender balance across our business of at least 40% women. But we recognise that will take time, and so for the first time, in 2021 we will have a target to increase female representation at Rio Tinto by 2% – or nearly 900 more women at all levels. Our commitment to increase the number of women in senior leadership roles by 2% every year also remains.

$50 million

to attract, retain and grow Indigenous professionals and leaders

P Performance

Safety, operational and commercial excellence drive superior margins and returns

Safety is our number one priority. We aim to generate value from mine to market and also to prioritise value over volume in our investment decisions. We work to maximise value in other ways – for example, by developing new markets for our materials, including as part of the transition to a low-carbon economy. We focus on operational excellence to improve efficiency.

This year was marked by strong performance. Our strong safety culture allowed us to deliver a second year with zero fatalities, with an all-injury frequency rate (AIFR) of 0.37, marking a year-on-year improvement. However, we recognise there is more to do.

Thanks to the significant sacrifices of many of our employees and the actions of host governments, we responded well to the global COVID-19 pandemic, acting to keep our employees, contractors and communities safe and healthy while keeping our operations running, continuing to deliver the products our customers need.

Despite challenging circumstances, we delivered a resilient financial performance in 2020, with underlying earnings of $12.4 billion, underlying EBITDA of $23.9 billion and free cash flow of $9.4 billion. Net debt further reduced to $0.7 billion (2019: $3.7 billion), underpinning an already strong balance sheet providing both resilience and optionality.

0.37

all-injury frequency rate

P Partners

Working with others for future success

Partnerships and collaboration are essential to the long-term success of our business. We work closely with technology partners, local suppliers, governments, community groups, industry leaders and civil society organisations at all stages of the mining lifecycle, from exploration to rehabilitation and closure. We believe this gives us a competitive edge and also allows us to work more thoughtfully and responsibly, and to deliver real benefits to all our stakeholders.

This year, we added the word 'partnership' to our strategy statement, in recognition of the critical role our partners play in our performance across a variety of metrics. As part of our climate change strategy, for example, we signed a series of agreements (see page 79) with partners in China and Japan to address emissions across the steel value chain, in which our iron ore plays an important role.

In Canada, we signed a historic agreement between the Iron Ore Company of Canada and the communities of Uashat mak Mani-utenam and Matimekush-Lac John, in Newfoundland and Labrador and Quebec, two of our First Nations communities and partners. Through this partnership, nearly two years in the making, we will support local education and jobs, and preserve the environment, unique customs and cultural practices of both communities. The agreement is called Ussiniun, or 'renewal', in the Innu language, and it marks both a new beginning and a shared commitment to a strong future.

Our partnerships were also affected by our destruction of the rock shelters at Juukan Gorge (see pages 114 to 115). Our work to earn back the trust we have lost, with the PKKP people, other Traditional Owners, Indigenous leaders and many other partners, in Australia and elsewhere, is one of our most important priorities this year.

$14.5 million

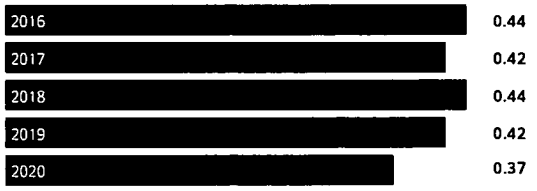
committed to advance Scope 3 climate change partnerships

Key Performance Indicators

We use a range of financial and non-financial metrics, reported periodically, to measure Group performance against the four key areas of our strategy (portfolio, people, performance and partners).

All-injury frequency rate (AIFR)

per 200,000 hours worked



Relevance to strategy & executive remuneration

P P P

Safety is our number one priority, it is the first of our core values and essential to everything we do. We are committed to maintaining zero fatalities, preventing catastrophic events and reducing injuries. We are a learning organisation enabling a safe, responsible and productive business that protects and cares for human life and wellbeing. In 2019, we introduced the safety maturity model and safety coaching framework. These programmes focus on building strong safety culture and leadership capability through the line. In 2020, we continued to implement these programmes. Our facilities also developed improvement plans and improved their safety maturity despite the pandemic-related challenges faced during 2020. This is supported by fewer injuries and serious incidents in 2020 compared to previous years.

We are focused and committed to strengthening our partnerships with industry and associated committees (eg ICMM), contracting partners and local communities with the priority of learning and sharing to protect everyone's health, safety and wellbeing.

Link to executive remuneration

Included as a performance metric in the safety component of the short-term incentive plan.

We marked a second year in a row of zero fatalities, aligning with our top safety objective. As we recognise this milestone, we are not forgetting the colleagues we have lost in the past. Sadly, a permanent disabling injury occurred at our Richards Bay Minerals Smelter in October, when one of our employees lost their hand while undertaking operational activities. We also had a permanent disabling injury at the Diavik Diamond Mine, in Canada. We are doing everything we can to support our colleagues and their families and endeavouring to learn and improve from these tragic incidents. Our all-injury frequency rate has improved to 0.37 from 0.42 in 2019, continuing the performance trend delivered over the past ten years, reducing from 0.69 in 2010. In 2020, our management of catastrophic event prevention continued to mature through embedding of improved standards, assurance and governance processes. The strong safety performance of 2020, accomplished while facing and adapting to the challenges of the COVID-19 pandemic, is testament to the organisation's relentless focus on safety.

Forward plan

We will:

- Continue to implement our critical risk management programme and safety maturity model
- Strengthen our safety leadership and coaching programmes
- Work more closely with contractors and joint venture partners to improve our safety record
- Continue to implement our major hazard standards, including process safety, water and tailings, with strong assurance processes
- Innovate to reduce exposure to safety and health risks

Associated risks focus (see page 95):

- Operational
- ESG

Definition

The number of injuries per 200,000 hours worked by employees and contractors at operations that we manage. AIFR includes medical treatment cases, restricted workday and lost day injuries.

Link to strategy

P Portfolio P People P Performance P Partners

Total shareholder return (TSR)[1]

measured over the preceding five years (using annual average share price)



TSR performance over the five-year period was driven principally by movements in commodity prices and changes in the global macro environment. Rio Tinto significantly outperformed the EMIX Global Mining Index over the five-year period, and slightly outperformed the MSCI World Index.

Associated risks focus (see page 95):

- Economic
- Strategic
- ESG

Relevance to strategy & executive remuneration

P P

Our strategy aims to maximise shareholder returns through the commodity cycle, and TSR is a direct measure of that.

Link to executive remuneration

Reflected in long-term incentive plans, measured equally against the EMIX Global Mining Index and the MSCI World Index (see pages 146-147).

Forward plan

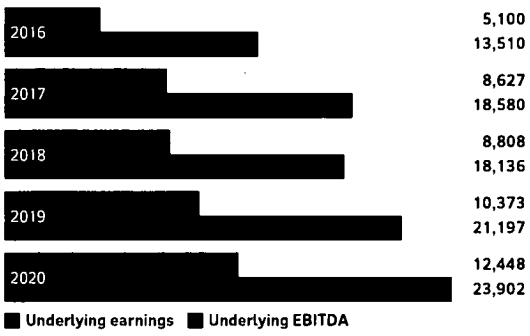
We will continue to focus on generating the free cash flow from our operations. This allows us to return cash to shareholders (short-term returns) while investing in the business (long-term returns).

Definition

Combination of share price appreciation (using annual average share price) and dividends paid and reinvested to show the total return to the shareholder over the preceding five years.

Underlying earnings and underlying EBITDA

$ millions



Underlying earnings of $12.4 billion were $2.1 billion higher than in 2019. Underlying EBITDA of $23.9 billion was $2.7 billion higher than 2019. The 13% increase in underlying EBITDA resulted from higher iron ore and copper prices and lower energy costs, partly offset by lower prices for aluminium, movements in sales volumes and changes in product mix across the portfolio and higher operating cash costs.

Associated risks focus (see page 95):

- Economic
- Operational
- ESG

Relevance to strategy & executive remuneration

P P

These financial KPIs measure how well we are managing costs, increasing productivity and generating the most revenue from each of our assets.

Link to executive remuneration

Underlying earnings is reflected in the short-term incentive plan; in the longer term, both measures influence TSR, which is the primary measure for long-term incentive plans (see pages 146-147).

Forward plan

We will continue to drive superior margins and returns through a focus on operational and commercial excellence and our value over volume approach.

Definition

Underlying earnings represent net earnings attributable to the owners of Rio Tinto, adjusted to exclude items which do not reflect the underlying performance of the Group's operations. These items are explained in note 2 of the financial statements.

Underlying EBITDA represents profit before tax, net finance items, depreciation and amortisation. It excludes the EBITDA impact of the items mentioned above.

1. The TSR calculation for each period is based on the change in the calendar year average share prices for Rio Tinto plc and Rio Tinto Limited over the preceding five years. This is consistent with the methodology used for calculating the vesting outcomes for Performance Share Awards (PSA). The data presented in this chart accounts for the dual corporate structure of Rio Tinto.

Key Performance Indicators
continued

Return on capital employed (ROCE)
%



ROCE increased increased 3% to 27% in 2020, reflecting the increase in underlying earnings driven by higher iron ore prices, partially offset by an increase in capital employed due to capital expenditure and exchange rate movements.

Associated risks focus (see page 95):

- Strategic
- Economic
- ESG

Relevance to strategy & executive remuneration

P P

Our portfolio of low-cost, long-life assets delivers attractive returns throughout the cycle and has been reshaped significantly in recent years. ROCE measures how efficiently we generate profits from investment in our portfolio of assets.

Link to executive remuneration
Underlying earnings, as a component of ROCE, is included in the short-term incentive plan. In the longer term, ROCE also influences TSR, which is included in long-term incentive plans.

Forward plan

We will continue to focus on maximising returns from our assets over the short, medium and long term. We will also maintain our disciplined and rigorous approach and invest capital only in projects that we believe will deliver returns that are well above our cost of capital.

Definition
Underlying earnings before interest divided by average capital employed (operating assets before net debt).

Net cash generated from operating activities
$ millions



Net cash generated from operating activities of $15.9 billion was 6% higher than 2019. This was primarily due to higher iron ore prices, partially offset by higher taxes paid and an increase in working capital.

Associated risks focus (see page 95):

- Economic
- Operational
- ESG

Relevance to strategy & executive remuneration

P P

This KPI measures our ability to convert underlying earnings into cash.

Link to executive remuneration
Included in the short-term incentive plan; in the longer term, the measure influences TSR, which is included in long-term incentive plans (see pages 146-147).

Forward plan

We will focus on effectively converting earnings into cash, underpinned by operational and commercial excellence, including our careful management of working capital.

Definition
Cash generated by our operations after tax and interest, including dividends received from equity accounted units and dividends paid to non-controlling interests in subsidiaries.

Free cash flow
$ millions



Free cash flow increased by $0.2 billion to $9.4 billion in 2020, primarily due to the increase in net cash generated from operating activities. This was partially offset by an increase in capital expenditure.

Associated risks focus (see page 95):

- Economic
- Operational
- ESG
- Strategic

Relevance to strategy & executive remuneration

P P

This KPI measures the net cash returned by the business after the expenditure of sustaining and growth capital. This cash can be used for shareholder returns, reducing debt and other investment.

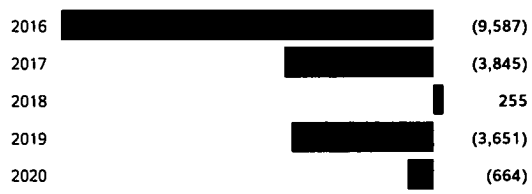
Link to executive remuneration
Included in the short-term incentive plan; in the longer term, the measure influences TSR, which is included in long-term incentive plans (see pages 146-147).

Forward plan

We will focus on effectively converting earnings into cash, underpinned by operational and commercial excellence, including our careful management of working capital.

Definition
Net cash generated from operating activities minus purchases of property, plant and equipment and payments of lease principal, plus sales of property, plant and equipment.

Net cash/(net debt)
$ millions



Net debt decreased by $3 billion to $0.7 billion. This reflects $9.4 billion of free cash flow in 2020, partially offset by $6.3 billion of cash returns to shareholders through dividends and share buy-backs.

Associated risks focus (see page 95):

- Strategic
- Economic
- Operational
- ESG

Relevance to strategy & executive remuneration

P P

This measures how we are managing our balance sheet and capital structure. A strong balance sheet is essential for giving us flexibility to take advantage of opportunities as they arise, and for returning cash to shareholders.

Link to executive remuneration
Net debt is, in part, an outcome of free cash flow, which itself is reflected in the short-term incentive plan. In the longer term, net debt influences TSR, which is reflected in long-term incentive plans (see pages 146-147).

Forward plan

We will focus on effectively converting earnings into cash, underpinned by operational and commercial excellence, including our careful management of working capital.

Definition
Net borrowings after adjusting for cash and cash equivalents, other liquid investments and derivatives related to net debt (see note 23 of the financial statements).

Key Performance Indicators
continued

Scope 1 and 2 greenhouse gas emissions
(equity Mt CO_2e)



Prior to 2018 we reported our greenhouse gas emissions on a 100% managed basis.

* The 2018 figure is the baseline for our 2030 emissions target and has been adjusted to exclude emissions from assets divested in that year. Actual emissions in 2018 were 34.0Mt CO_2e.

Relevance to strategy & executive remuneration

P P

Climate risks and opportunities have formed part of our strategic thinking and investment decisions for over two decades. We now have a portfolio that is well positioned for the transition to a low-carbon economy and most of our assets already sit in the low end of their respective commodity carbon intensity curves.

Link to executive remuneration
Since 2018, our Chief Executive's performance objectives have been reflected in the short-term incentive plan (STIP), which includes delivery of the Group's strategy on climate change. These are cascaded down into the annual objectives of relevant members of the Executive Committee and other members of senior leadership.

This year, the Remuneration Committee approved revisions to how we include climate change in the STIP. See pages 172-173 of the Remuneration Report for further detail.

Since 2018, we have reduced Scope 1 and 2 emissions by 1.1Mt CO_2e, or 3%, which is on track with our 2030 target for absolute emissions. However, in 2020 our emissions remained at the same level as in 2019 at 31.5Mt CO_2e. We expect progress on emissions to accelerate in the target period as we start to deliver our decarbonisation plans.

Forward plan

Our ambition is to reach net zero emissions by 2050 across our operations. Our 2030 greenhouse gas targets are to reduce our emissions intensity by 30% and our absolute emissions by 15%, compared with our 2018 equity baseline. These targets are consistent with a 45% reduction in absolute emissions relative to 2010 levels and the Intergovernmental Panel on Climate Change (IPCC) pathways to 1.5°C.

Our targets are supported by our commitment to spend approximately $1 billion on emissions reduction initiatives, research and development and activities to enhance the climate resilience of our business over the first five years of the ten-year target period.

Associated risks focus (see page 95):

- Strategic
- ESG

Definition
Equity emissions: equity share of Scope 1 & 2 emissions from managed and non-managed operations expressed in million metric tonnes of carbon dioxide equivalent.

Gender diversity
Gender balance in senior leadership



Relevance to strategy & executive remuneration

P

Inclusion and diversity is an imperative for the long-term sustainable success of our business. Having a diverse workforce where people are valued for who they are and what they contribute is key to our sustained performance and growth. This KPI measures the number of women in the senior leadership cohort.

Link to executive remuneration
Included in the short-term incentive plan (see page 173).

In 2020, we increased our female representation in senior leadership by 3.5% to 26.1%, surpassing our 2% year-on-year target. After a number of years of limited progress, this result represents significant focus on both attraction and retention of senior women in our organisation.

Forward plan

In 2021, we will focus on improving the representation of women, who comprise half the world's population but only about 20% of our workforce. We do this because we aim to have our company reflect the perspectives of the communities in which we operate; we undertake this effort alongside others, including efforts to strengthen Indigenous leadership across our business in Australia.

Associated risks focus (see page 95):

- Strategic
- ESG

Definition
We define senior leadership as general managers, chief advisers and managing directors, including people not available for work due to extended leave.

Chief Financial Officer's statement

Our world-class assets, combined with our very strong balance sheet, supports our ability to provide superior cash returns to shareholders.

Underlying EBITDA

$23.9bn

13% increase

Net cash generated from operating activities

$15.9bn

6% increase

Net debt

$0.7bn

Down $3.0bn in 2020

Agile operating performance drives strong financials

In 2020, we have been agile and adapted our way of working to deliver another resilient operating performance while navigating the new and ongoing challenges of COVID-19. Against this backdrop, we generated underlying EBITDA of $23.9 billion equivalent to an underlying EBITDA margin of 51%.

This 13% increase on 2019 underlying EBITDA was principally driven by higher prices, which added around $3.4 billion in aggregate. Whilst our iron ore business benefited from robust demand and resilient prices, other commodities experienced significant volatility throughout the year. In aluminium, the impact of COVID-19 reduced prices sharply in the first half of 2020, as demand shrunk, in particular from the automotive sector, but we saw these recover later in the year, on the back of strong demand from China and tight scrap markets. Copper initially followed the same path as aluminium, in line with the world economy, but has since recovered strongly. This was partly due to supply disruption and was amplified by investor positioning.

Lower sales volumes and changes in product mix reduced underlying EBITDA by $0.5 billion. This was mainly driven by lower gold volumes following a reduction in grades at Oyu Tolgoi and at Kennecott, lower titanium dioxide feedstock volumes and lower sales of value-added products in our aluminium business in line with market demand.

Chief Financial Officer's statement
continued

While we continue to adapt to an unpredictable external environment, one thing that does not change is our capital allocation framework.

Despite the disruptions to operations and markets caused by COVID-19, our operational performance was strong and we delivered production broadly in line with guidance.

Our focus on cost control and productivity improvements continued throughout the year. The pandemic-induced economic slowdown led to significantly lower energy costs, increasing underlying EBITDA by $0.5 billion, mainly from lower diesel prices for our trucks, trains and ships and reduced coal prices for two of our Pacific Aluminium smelters. We also benefited from continued respite on cost inflation for certain raw materials for our aluminium business, in particular caustic soda, pitch, petroleum coke and alloys. However, this was outweighed by other cost pressures, notably the fixed cost inefficiencies in our Copper business: at Kennecott, due to the extended smelter maintenance, and at Oyu Tolgoi in line with a temporary reduction in gold grades. Overall, our higher unit cash costs, excluding energy and general inflation, reduced underlying EBITDA by $0.4 billion compared with 2019. In addition, we incurred $0.3 billion of costs associated with tackling COVID-19 across our operations.

No change to our disciplined capital allocation framework

While we continue to adapt to an unpredictable external environment, one thing that does not change is our capital allocation framework. We will continue to invest in safely managing our assets and improving their performance. This means that sufficient spending on sustaining capital is always the priority. The next priority is allocating capital to our shareholders - through our ordinary dividend. Then we carefully consider; allocating to growth opportunities, balance sheet strength, and further shareholder returns.

Our investment decisions are carried out with incredible rigour. I believe that this is the best assurance for our shareholders – that we will only invest in opportunities that create value – even more so during turbulent times. Growth for us is all about value generation and returns for our shareholders. It is not about volume. It is about building sustainable cash flow.

In 2020, we increased our capital expenditure by 13% to $6.2 billion, as we continue to invest through the cycle. This was comprised of $3.2 billion of development capital, of which $2.1 billion was replacement capital, and $3.0 billion was sustaining capital. Our most significant growth project remains the Oyu Tolgoi copper/gold underground mine in Mongolia where we invested around $1 billion in 2020, on a 100% basis as we fully consolidate Oyu Tolgoi. Much of this year's increase relates to our Pilbara replacement iron ore mines as we ramped up the pace of construction at Gudai-Darri (formerly Koodaideri), at the Robe River Joint Venture mines and at Tom Price. We expect first tonnes from these mines in 2021 and 2022.

Our strong balance sheet provides resilience

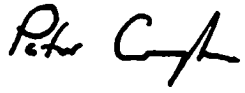
We ended 2020 with net debt of just $0.7 billion, a decrease of $3.0 billion during the year due to the strength of our free cash flow, net of the $6.3 billion of returns we paid to shareholders in 2020.

Our world-class assets, combined with our very strong balance sheet, support our ability to provide superior cash returns to shareholders. They also enable us to manage the business through cycles – which means we can act counter-cyclically – and provide us with optionality. Our strong balance sheet is particularly valuable in the current volatile environment.

Our payout ratio has now averaged 73% over the past five years

We implemented our returns policy in 2016, committing to total cash returns to shareholders, over the longer term, of 40-60% of underlying earnings, on average through the cycle. Since its inception, we have consistently paid out well above this range in every year.

We have built on our returns track record over five years – this year, we are returning 72% of underlying earnings to shareholders. This is comprised of the full year ordinary dividend of 464 US cents per share and special dividend of 93 US cents per share, which brings the total dividend to 557 US cents, or $9.0 billion.



Peter Cunningham
Interim Chief Financial Officer

22 February 2021

Financial Review

Non-GAAP measures

In addition to IFRS measures, management uses non-GAAP measures internally to assess performance. Full reconciliations are provided on pages 329-333. These measures are highlighted with the symbol: •

At year end	2020	2019	Change
Net cash generated from operating activities (US$ millions)	**15,875**	14,912	6%
Capital expenditure[1] (US$ millions)	**6,189**	5,488	13%
Free cash flow[2] (US$ millions)•	**9,407**	9,158	3%
Consolidated sales revenue (US$ millions)	**44,611**	43,165	3%
Underlying EBITDA[2] (US$ millions)•	**23,902**	21,197	13%
Net earnings (US$ millions)	**9,769**	8,010	22%
Underlying earnings per share[2] (EPS) (US cents)•	**769.6**	636.3	21%
Ordinary dividend per share (US cents)	**464.0**	382.0	21%
Total dividend per share (US cents)	**557.0**	443.0	26%
Net debt[2] (US$ millions)•	**(664)**	(3,651)	
Return on capital employed (ROCE)[2]•	**27%**	24%	

Our financial results are prepared in accordance with International Financial Reporting Standards (IFRS). Footnotes are set out on page 33.

- $15.9 billion net cash generated from operating activities was 6% higher than 2019 primarily driven by higher iron ore prices and stability in operating performance. These flowed through to 3% higher free cash flow[2] of $9.4 billion, which was net of a $0.7 billion increase in capital expenditure[1] to $6.2 billion.
- $23.9 billion underlying EBITDA[2] was 13% above 2019, with an underlying EBITDA margin[2] of 51%.
- $12.4 billion underlying earnings[2] (underlying EPS[2] of US 769.6 cents) were 20% above 2019 with a 29.5% effective tax rate on underlying earnings[3] – in line with 2019. Taking exclusions into account, net earnings of $9.8 billion were 22% higher than 2019, mainly reflecting $1.1 billion[3] of impairments, most of which were taken in the first half of 2020 (five aluminium smelters and the Diavik diamond mine) and $1.3 billion of exchange losses. This compared with $1.7 billion[3] of impairments in 2019 (primarily the Oyu Tolgoi underground copper/gold project and the Yarwun alumina refinery).
- Strong balance sheet with net debt[2] of $0.7 billion, a decrease of $3.0 billion, reflected the strength of our free cash flow, partly offset by $6.3 billion of cash returns to shareholders in 2020.
- $9.0 billion full-year dividend, equivalent to 557 US cents per share and 72% of underlying earnings, includes $5.0 billion record final ordinary dividend (309 US cents per share) and $1.5 billion special dividend (93 US cents per share) declared today.

72% payout builds on our five-year track record; $9.0 billion of dividends declared for 2020

Ordinary dividend	US$ billion	US cents per share
Interim ordinary dividend paid in September 2020	**2.5**	155
Final ordinary dividend to be paid in April 2021	**5.0**	309
Full-year ordinary dividend represents 60% payout	**7.5**	464
Additional returns		
Special dividend to be paid in April 2021	**1.5**	93
Combined total is 72% of 2020 underlying earnings	**9.0**	557

Financial Review
continued

Strong cash flow from operations enhances free cash flow

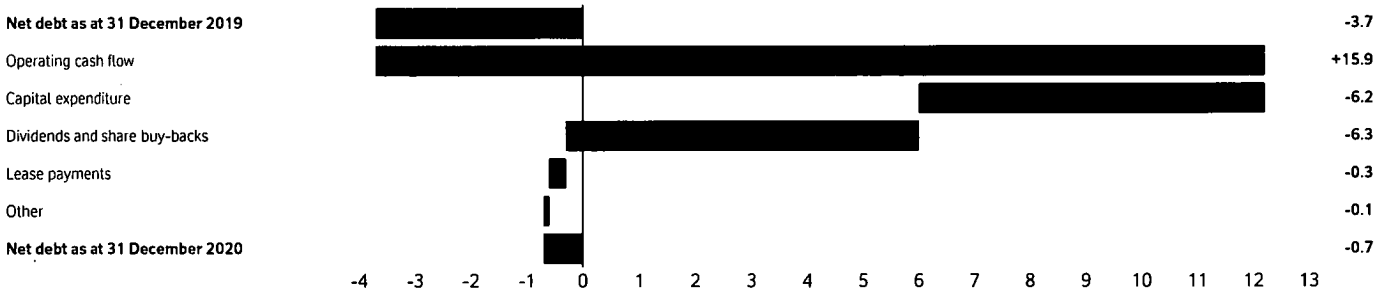
	2020 US$m	2019 US$m
Net cash generated from operating activities	**15,875**	14,912
Capital expenditure[1]	**(6,189)**	(5,488)
Sales of property, plant and equipment	**45**	49
Lease principal payments	**(324)**	(315)
Free cash flow[2]	**9,407**	9,158
Disposals[4]	**10**	(80)
Dividends paid to equity shareholders	**(6,132)**	(10,334)
Share buy-backs	**(208)**	(1,552)
Non-cash impact from implementation of IFRS 16 "Leases" from 1 January 2019	**–**	(1,248)
Other	**(90)**	150
Decrease/(increase) in net debt[2]	**2,987**	(3,906)

Footnotes are set out on page 33.

- $15.9 billion in net cash generated from operating activities, 6% higher than 2019, was driven primarily by higher underlying EBITDA from higher iron ore prices, net of an increase in tax paid in line with profits, a modest rise in working capital (primarily higher prices in receivables), increased dividends paid to joint venture partners and lower dividends received from equity accounted units.
- $6.2 billion capital expenditure[1] comprised of $3.2 billion of development capital, of which $2.1 billion is replacement capital, and $3.0 billion of sustaining capital. In 2020, we funded our capital expenditure from operating activities. We expect to continue funding our capital programme from internal sources, except for the Oyu Tolgoi underground development, which is project-financed.
- $6.1 billion of dividends paid in 2020 comprised the 2019 final paid in April 2020 ($3.6 billion) and the 2020 interim paid in September ($2.5 billion).
- $0.2 billion of share buy-backs with 3.6 million Rio Tinto plc shares repurchased.
- As a result of the above, net debt[2] decreased by $3.0 billion in 2020, ending the year at $0.7 billion.

Net debt movements

($ billion)



Growth projects and development options gather momentum

- We maintained our exploration and evaluation spend at $625 million in 2020, as we progressed our greenfield programmes and advanced our evaluation projects, in particular Resolution Copper in Arizona, US, Jadar lithium-borates in Serbia and Winu copper-gold in Western Australia.
- At Winu, we declared a maiden Inferred Mineral Resource of 503 Mt at 0.45% copper equivalent and announced the discovery of a new zone of gold dominant mineralisation approximately two kilometres east of Winu.[5] We are now targeting first production in 2024, subject to regulatory approvals, Traditional Owner and other consents, and COVID-19 restrictions.
- At Jadar, we progressed to the feasibility study stage, following Board approval of almost $200 million of funding, and declared a maiden Ore Reserve. The studies are expected to be complete by the end of 2021. If the investment is approved, construction would take approximately four years. The project could produce ~55 thousand tonnes of battery-grade lithium carbonate, 160 thousand tonnes of boric acid (B_2O_3 units) and 255 thousand tonnes of sodium sulphate per year.[6]
- At Resolution Copper, the independently prepared Final Environmental Impact Statement was published by the US Forest Service. We have now entered the next phase of public comment in the ongoing permitting process. We are committed to ongoing stakeholder engagement in our effort to seek consent to progress the project consistent with the International Council on Mining and Metals (ICMM) Statement on Indigenous Peoples and Mining.
- At the Simandou iron ore project (Blocks 3 and 4) in Guinea, we expect to complete the first phase of the technical optimisation work on the infrastructure components in the first half of 2021. Activity at the mine area has commenced and an update of the Social and Environmental Impact Assessment is underway.
- The $2.6 billion Gudai-Darri (formerly known as Koodaideri) replacement iron ore mine in Western Australia is progressing, with production ramp-up on track for early 2022. This first phase of Gudai-Darri will have a 43 Mt annual capacity, underpinning production of the Pilbara Blend™.
- First ore from the other iron ore sustaining production projects – the $0.8 billion (our share) Robe River Joint Venture (West Angelas C&D and Mesa B, C and H at Robe Valley) and the $0.8 billion Western Turner Syncline phase 2 mine – is on track for 2021.
- At the Oyu Tolgoi underground copper/gold project in Mongolia, we confirmed development capital of $6.75 billion[7] following completion of the definitive estimate, with sustainable production for Panel 0 expected to commence in October 2022. We are in active discussions with the government of Mongolia to address and close all outstanding issues and increase the project's benefits to all stakeholders.
- The $0.9 billion first phase of the south wall pushback at the Kennecott copper mine in the US, which will extend mine life to 2026, remains on track with gradually higher copper grades accessed from 2021. Stripping for the $1.5 billion second phase is also on track and is expected to extend operations for a further six years.
- The Zulti South project at Richards Bay Minerals (RBM) in South Africa, which will sustain current capacity and extend mine life, remains on full suspension, pending normalisation of operations.

Underlying EBITDA and underlying earnings by product group

	Underlying EBITDA			Underlying earnings		
Year ended 31 December	2020 US$m	2019 US$m	Change %	2020 US$m	2019 US$m	Change %
Iron Ore	**18,837**	16,098	17%	**11,398**	9,638	18%
Aluminium	**2,152**	2,285	(6)%	**471**	599	(21)%
Copper & Diamonds	**2,172**	2,073	5%	**763**	554	38%
Energy & Minerals	**1,646**	1,762	(7)%	**577**	611	(6)%
Reportable segment total	**24,807**	22,218	12%	**13,209**	11,402	16%
Other operations	**–**	(77)	(100)%	**(54)**	(89)	(39)%
Inter-segment transactions	**(94)**	(9)	944%	**(32)**	(3)	967%
Product group total	**24,713**	22,132	12%	**13,123**	11,310	16%
Central pension costs, share-based payments and insurance	**72**	59	22%	**81**	60	35%
Restructuring, project and one-off costs	**(133)**	(183)	(27)%	**(108)**	(94)	15%
Other central costs	**(500)**	(496)	1%	**(418)**	(550)	(24)%
Central exploration and evaluation	**(250)**	(315)	(21)%	**(216)**	(231)	(6)%
Net interest				**(14)**	(122)	(89)%
Total	**23,902**	21,197	13%	**12,448**	10,373	20%

Underlying EBITDA and underlying earnings are non-GAAP alternative performance measures ("APMs") used by management to assess the performance of the business, and provide additional information which investors may find useful. APMs are reconciled to directly comparable IFRS financial measures on pages 329-333.

1. Capital expenditure is presented gross, before taking into account any cash received from disposals of property, plant and equipment (PP&E).
2. This financial performance indicator is a non-GAAP alternative performance measure ("APM"). It is used internally by management to assess the performance of the business and is therefore considered relevant to readers of this document. It is presented here to give more clarity around the underlying business performance of the Group's operations. APMs are reconciled to directly comparable IFRS financial measures on pages 329-333.
3. Refer to page 229 for pre-tax analysis of impairment charge.
4. Net disposal proceeds in 2019 included a cash outflow representing Rössing Uranium's cash balance at the date of sale.
5. Refer to the release to the Australian Securities Exchange (ASX) on 28 July 2020 "Rio Tinto reveals maiden Resource at Winu and new discovery". The Competent Person responsible for the information in that release that relates to Mineral Resources and Exploration Results is Dr Julian Verbeek. Rio Tinto confirms that it is not aware of any new information or data that materially affects the information included in the market announcement, that all material assumptions and technical parameters underpinning the estimates in the market announcement continue to apply and have not materially changed, and that the form and context in which the Competent Person's findings are presented have not been materially modified.
6. These production targets were previously reported in a release to the ASX dated 10 December 2020, "Rio Tinto declares maiden Ore Reserve at Jadar". All material assumptions underpinning the production targets continue to apply and have not materially changed.
7. This estimate is at a "better than feasibility study" level of accuracy.

Financial Review
continued

Commentary on financial results

To provide additional insight into the performance of our business, we report underlying EBITDA and underlying earnings. The principal factors explaining the movements in underlying EBITDA are set out in this table.

	US$m
2019 underlying EBITDA	**21,197**
Prices	**3,407**
Exchange rates	**(103)**
Volumes and mix	**(452)**
General inflation	**(251)**
Energy	**461**
Operating cash unit costs	**(450)**
One-off items	**153**
Non-cash costs/other	**(60)**
2020 underlying EBITDA	**23,902**

Significant momentum from higher iron ore prices

Commodity price movements in 2020 increased underlying EBITDA by $3,407 million compared with 2019. This was primarily driven by the strength in pricing for iron ore (+$3,262 million) and copper (+$405 million) and was partly offset by lower prices for aluminium, alumina and bauxite (-$314 million). We have included a table of prices and exchange rates on page 381.

The 2020 monthly average Platts index for 62% iron fines adjusted to an FOB basis was 19% higher on average compared with 2019, driven by continued supply disruptions in the seaborne market and strong demand following record Chinese steel output.

The average London Metal Exchange (LME) price for copper was 3% higher, while the LME aluminium price was 5% lower, compared with 2019. The gold price rose 27%.

The midwest premium for aluminium in the US averaged $313 per tonne, 2% lower than in 2019.

Exchange rates impacted by stronger A$ at year-end

Compared with 2019, on average, the US dollar was broadly flat against the Australian and Canadian dollars but strengthened by 12% against the South African rand. Currency movements, which lowered underlying EBITDA by $103 million relative to 2019, mainly related to exchange rate losses on receivables following the significant strengthening of the Australian dollar at 2020 year-end.

Volumes and product mix

Underlying EBITDA was $452 million lower than 2019 from movements in sales volumes and changes in product mix across the portfolio. Although iron ore shipments from the Pilbara rose by 1%, the year-on-year gains are mostly included in Other, reflecting recovery from the fire at Cape Lambert A port in 2019. Other key variances included lower gold volumes following a reduction in grades at Oyu Tolgoi and Kennecott, lower titanium dioxide feedstock volumes and lower sales of value added products in our aluminium business in line with market demand.

Energy prices substantially lower

Average movements in energy prices compared with 2019 improved underlying EBITDA by $461 million, mainly due to lower diesel prices and reduced coal prices for two of our Pacific Aluminium smelters.

Higher costs driven by lower volumes

The impact of higher cash operating costs, which we reflect on a unit cost basis, reduced underlying EBITDA by $450 million compared with 2019. There was continued respite on cost inflation for certain raw materials for Aluminium, in particular caustic soda, pitch, petroleum coke and alloys. However, this was outweighed by other cost pressures, notably fixed cost inefficiencies at Kennecott, due to the lower grades and the extended smelter maintenance, and higher unit cash costs at Oyu Tolgoi in line with lower output.

Maintained our exploration spend

Our exploration and evaluation spend was largely unchanged at $625 million. This went to our greenfield programmes and highest value projects, particularly on evaluating the Resolution Copper project in Arizona, advancing our Winu copper/gold deposit in Australia and progressing our Jadar lithium-borate project in Serbia. In addition, $82 million for iron ore feasibility studies in the Pilbara was recognised as capital expenditure.

One-off items

One-off items aggregated to be $153 million less than in 2019. 2020 one-offs primarily reflected earlier than planned pot-lining replacement at the Kitimat aluminium smelter ($51 million) and an increased impact from curtailment of operations at RBM ($23 million). These were offset by the non-recurrence of 2019 events, including the $199 million charge at Escondida to reflect cancellation of existing coal powered energy contracts following a switch to renewables and $68 million for challenges faced at our ISAL and Kitimat aluminium smelters.

Non-cash costs/other

Movements in non-cash costs and other items, which lowered underlying EBITDA by $60 million compared with 2019, mainly reflected additional costs ($333 million) incurred from COVID-19 across the Group such as screening, equipment hire, roster changes, temporary relocation and hygiene. This was offset by recovery from the fire at the Cape Lambert A port in the Pilbara in 2019 ($184 million) and lower provisions in respect of legacy operations ($23 million).

Net earnings, underlying earnings and underlying EBITDA

In order to provide additional insight into the performance of its business, Rio Tinto reports underlying EBITDA and underlying earnings. The differences between underlying earnings, underlying EBITDA, and net earnings are set out in this table.

Net earnings

$9.8bn

22% increase

Net earnings

	US$m
2019 net earnings	**8,010**
Total changes in underlying EBITDA	**2,705**
Decrease in depreciation and amortisation (pre-tax) in underlying earnings	**275**
Decrease in interest and finance items (pre-tax) in underlying earnings	**143**
Increase in tax on underlying earnings	**(839)**
Increase in underlying earnings attributable to outside interests	**(209)**
Total changes in underlying earnings	**2,075**
Changes in exclusions from underlying earnings:	
Movement in net impairment charges	**543**
Movement in losses on consolidation and disposal of interests in businesses	**291**
Movement in exchange differences and gains/losses on debt	**(1,064)**
Movements in other exclusions	**(86)**
2020 net earnings	**9,769**

Depreciation and amortisation, net interest, tax and non-controlling interests

The depreciation and amortisation charge was $275 million lower than 2019, mainly due to a lower asset base following impairments in 2019 and in the first half of 2020, together with accelerated depreciation in 2019 following the pot failures at Kitimat.

Lower interest and finance items (pre-tax) were reflective of a lower level of net debt on average during the year, in part due to repayment of $526 million of Euro Bonds, which matured in May 2020. It also reflected more of our debt being at floating interest rates.

The 2020 effective corporate income tax rate on underlying earnings, excluding equity accounted units, was 29.5%, in line with 2019. The effective tax rate on underlying earnings in Australia was 32% in 2020 compared with 31% in 2019. We anticipate an effective tax rate on underlying earnings of approximately 30% in 2021.

Items excluded from underlying earnings

Net impairment charges decreased by $543 million compared with 2019. We recognised $1,115 million of impairment charges in 2020, comprised of $472 million related to three of our Pacific Aluminium smelters (NZAS, Bell Bay and Boyne), $131 million related to the ISAL smelter in Iceland, $220 million for the Sohar smelter in Oman and $292 million related to our interest in the Diavik diamond mine.

In 2019, we recognised impairment charges of $1,658 million, after tax and non-controlling interests, primarily related to the Oyu Tolgoi copper/gold underground project and the Yarwun alumina refinery. There is a detailed explanation of the impairment process on pages 229-231.

The $291 million movement in losses on consolidation and disposals of interests in businesses primarily relates to the disposal of our stake in Rössing Uranium in 2019.

In 2020, we recognised non-cash exchange and derivative losses of $1,264 million. This was mainly on US dollar debt in non-US dollar functional currency Group companies, intragroup balances, and on the revaluation of certain derivatives which do not qualify for hedge accounting. These losses compared with a 2019 loss of $200 million, giving rise to a negative year-on-year movement of $1,064 million. The exchange losses are largely offset by currency translation gains recognised in equity. The quantum of US dollar debt is largely unaffected and we will repay it from US dollar sales receipts.

In 2020, we excluded net additional closure costs of $300 million from underlying earnings principally relating to a non-operating site (Gove), a fully impaired site (Argyle) and the net earnings impact in respect of increases to closure provisions following a reduction to the closure discount rate. These are included in Movements in other exclusions. Further analysis can be found on page 226.

Profit

Net earnings and underlying earnings refer to amounts attributable to the owners of Rio Tinto. The net profit attributable to the owners of Rio Tinto in 2020 was $9.8 billion (2019: $8.0 billion). We recorded a profit after tax in 2020 of $10.4 billion (2019: $7.0 billion) of which a profit of $0.6 billion (2019 loss: $1.0 billion) was attributable to non-controlling interests.

Financial Review
continued

Net earnings and underlying earnings

The differences between underlying earnings and net earnings are set out in this table (all numbers are after tax and exclude non-controlling interests).

	2020 US$m	2019 US$m
Underlying earnings	**12,448**	10,373
Items excluded from underlying earnings		
Impairment charges	**(1,115)**	(1,658)
Net losses on consolidation and disposal of interests in businesses	**–**	(291)
Foreign exchange and derivative losses on net debt and intragroup balances and derivatives not qualifying for hedge accounting	**(1,264)**	(200)
Net losses from movements to closure estimates (non-operating and fully impaired sites)	**(300)**	–
Other exclusions	**–**	(214)
Net earnings	**9,769**	8,010

On page 226 there is a detailed reconciliation from underlying earnings to net earnings, including pre-tax amounts and additional explanatory notes. The differences between Profit after tax and underlying EBITDA are set out in the table on page 329.

Balance sheet

Our net debt of $0.7 billion decreased by $3.0 billion in 2020, reflecting dividend payments of $6.1 billion and $0.2 billion of share buy-backs, more than offset by our strong free cash flow.

Our net gearing ratio (net debt to total capital) declined to 1% at 31 December 2020 (31 December 2019: 7%).

Our total financing liabilities at 31 December 2020 (see page 242) were US$13.8 billion (31 December 2019: $14.3 billion) and the weighted average maturity was around nine years. At 31 December 2020, approximately 86% of these liabilities were at floating interest rates (94% excluding leases). The maximum amount within non-current borrowings maturing in any one calendar year was $1.8 billion, which matures in 2025.

We had $12.9 billion in cash and cash equivalents plus other short-term cash investments at 31 December 2020 (31 December 2019: $10.6 billion) and we have $7.5 billion of fully committed Revolving Credit Facilities, which remained undrawn throughout the period, and mature in November 2023.

Provision for closure costs

This year we have enhanced our disclosure on Provisions for close-down and restoration costs and environmental clean-up obligations, which at 31 December 2020, were $13.3 billion (31 December 2019: $11.1 billion). The principal movements during the year were currency appreciation ($0.7 billion), reduction in discount rate ($1.0 billion), changes to existing and new provisions ($0.6 billion) and drawdowns in the provision through spend ($0.4 billion). Of the $13.3 billion in provisions, $10.7 billion relates to operating sites and $2.6 billion is for legacy sites. Remaining lives of operations and infrastructure range from one to over 50 years with an average for all sites, weighted by present closure obligation, of around 17 years (2019: 18 years).

The provisions are based on risk-adjusted cash flows. In September 2020, we completed a review of the discount rate used to reflect the obligations at present value and updated it to a real-rate of 1.5% (previously 2.0%), applied prospectively from that date.

In 2021, we expect to utilise around $0.6 billion of the provisions as we advance our closure activities at Argyle, Energy Resources of Australia, Gove alumina refinery and legacy sites.

We have disclosed further information, including the composition of the provision by cost category and by geography, on pages 244-245.

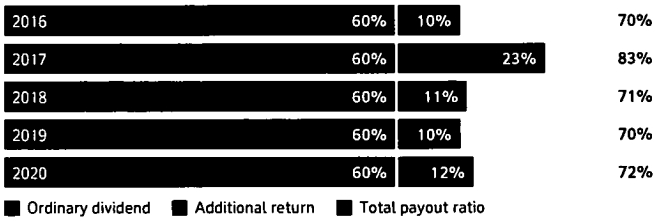
Our shareholder returns policy

The Board is committed to maintaining an appropriate balance between cash returns to shareholders and investment in the business, with the intention of maximising long-term shareholder value.

At the end of each financial period, the Board determines an appropriate total level of ordinary dividend per share. This takes into account the results for the financial year, the outlook for our major commodities, the Board's view of the long-term growth prospects of the business and the company's objective of maintaining a strong balance sheet. The intention is that the balance between the interim and final dividend be weighted to the final dividend.

The Board expects total cash returns to shareholders over the longer term to be in a range of 40-60% of underlying earnings in aggregate through the cycle. Acknowledging the cyclical nature of the industry, it is the Board's intention to supplement the ordinary dividend with additional returns to shareholders in periods of strong earnings and cash generation.

Our payout ratio has averaged 73% over the past five years



Total cash returns declared: building on our five-year track record with a 72% payout for 2020

	2020 US$ billion	2019 US$ billion
Ordinary dividend		
Interim	**2.5**	2.5
Final	**5.0**	3.7
Full-year ordinary dividend	**7.5**	6.2
Additional returns		
Special dividend announced in August 2019, paid in September 2019	**n/a**	1.0
Special dividend announced in February 2021, to be paid in April 2021	**1.5**	n/a
Total cash returns to shareholders declared for each year	**9.0**	7.2
Combined total as % of underlying earnings	**72%**	70%

Total cash returns paid: 2019 includes 2018 special dividend from divestment proceeds

	2020 US$ billion	2019 US$ billion
Previous year's final ordinary dividend paid in April of each year	**3.6**	2.9
Special dividend announced in February 2019, paid in April 2019	**n/a**	3.9
Interim ordinary dividend paid in September of each year	**2.5**	2.5
Special dividend announced in August 2019, paid in September 2019	**n/a**	1.0
Share buy-back programme, completed in February 2020	**0.2**	1.6
Total cash returns paid to shareholders	**6.3**	11.9

Financial Review
continued

We determine dividends in US dollars. We declare and pay Rio Tinto plc dividends in pounds sterling and Rio Tinto Limited dividends in Australian dollars. The 2020 final dividend has been converted at exchange rates applicable on 16 February 2021 (the latest practicable date before the dividend was declared). American Depositary Receipt (ADR) holders receive dividends at the declared rate in US dollars.

Ordinary dividend per share declared	2020 dividends	2019 dividends
Rio Tinto Group		
Interim (US cents)	**155.00**	151.00
Final (US cents)	**309.00**	231.00
Full-year (US cents)	**464.00**	382.00
Rio Tinto plc		
Interim (UK pence)	**119.74**	123.32
Final (UK pence)	**221.86**	177.47
Full-year (UK pence)	**341.60**	300.79
Rio Tinto Limited		
Interim (Australian cents)	**216.47**	219.08
Final (Australian cents)	**397.48**	349.74
Full-year (Australian cents)	**613.95**	568.82

Special dividend per share declared	2020 dividends	2019 dividends
Rio Tinto Group		
Declared with 2019 interim results (US cents)	**n/a**	61.00
Declared with 2020 full year results (US cents)	**93.00**	n/a
Rio Tinto plc		
Declared with 2019 interim results (UK pence)	**n/a**	49.82
Declared with 2020 full year results (UK pence)	**66.77**	n/a
Rio Tinto Limited		
Declared with 2019 interim results (Australian cents)	**n/a**	88.50
Declared with 2020 full year results (Australian cents)	**119.63**	n/a

The 2020 final dividend and the special dividend to be paid to our Rio Tinto Limited shareholders will be fully franked. The Board expects Rio Tinto Limited to be in a position to pay fully franked dividends for the foreseeable future.

On 15 April 2021, we will pay the 2020 final dividend and the special dividend to holders of ordinary shares and holders of ADRs on the register at the close of business on 5 March 2021 (record date). The ex-dividend date is 4 March 2021.

Rio Tinto plc shareholders may choose to receive their dividend in Australian dollars, and Rio Tinto Limited shareholders may choose to receive theirs in pounds sterling. Currency conversions will be based on the pound sterling and Australian dollar exchange rates five business days before the dividend payment date. Rio Tinto plc and Rio Tinto Limited shareholders must register their currency elections by 23 March 2021.

We will operate our Dividend Reinvestment Plans for the 2020 final dividend – see our website (riotinto.com) for details. Rio Tinto plc and Rio Tinto Limited shareholders' election notice for the Dividend Reinvestment Plans must be received by 23 March 2021. Purchases under the Dividend Reinvestment Plan are made on or as soon as practicable after the dividend payment date and at prevailing market prices. There is no discount available.

In line with market practice, we will be introducing a dividend fee on cash dividends paid on the ADR. The fee revenue will cover costs associated with the management of the ADR programme. The fee of $0.005 per ADR, per cash dividend, will be introduced with the 2021 interim dividend which is payable on 23 September 2021. The fee will be deducted by the depositary.

Portfolio Management

Projects (Rio Tinto 100% owned unless otherwise stated)	Total approved capital cost (100% unless otherwise stated)	Status/Milestones
Ongoing and approved		
Iron Ore		
Investment in the Robe River Joint Venture (West Angelas C and D and Mesa B, C and H at Robe Valley) in the Pilbara region of Western Australia to sustain production capacity.	$0.8bn (RT share)	Approved in October 2018, the investments will enable us to sustain production of our Pilbara Blend™ and Robe Valley products. All approvals have been received. Construction activities are progressing to plan with first ore expected in 2021.
Investment in Gudai-Darri (formerly Koodaideri), a new production hub in the Pilbara region of Western Australia, to sustain existing production in our iron ore system.	$2.6bn	Approved in November 2018, the investment incorporates a processing plant and infrastructure including a 166-kilometre rail line connecting the mine to our existing network. Key construction activities are on schedule and we expect production to ramp up in 2022. Once complete, the mine will have an initial annual capacity of 43 million tonnes.
Investment in the Greater Tom Price operations (Western Turner Syncline phase 2) to sustain production capacity.	$0.8bn	Approved in November 2019, the investment will facilitate mining of existing and new deposits. It includes construction of a new crusher and a 13-kilometre conveyor. First ore from the crusher is expected in 2021.
Aluminium		
Investment in a second tunnel at the 1000MW Kemano hydropower facility at Kitimat, British Columbia, Canada, which will ensure the long-term reliability of the power supply to the Kitimat smelter.	$0.6bn	The project was approved in 2017, with $155 million of additional capital approved in 2020. It was impacted by the departure of the main contractor in the first half of 2020. Tunnel excavation works restarted in September. However, due to the escalation of COVID-19 in the province, tunnel excavation works have been interrupted. We expect to restart late in the first quarter of 2021.
Copper & Diamonds		
Investment in the south wall pushback, to extend mine life at Kennecott, Utah, US, from 2019 to 2026.	$0.9bn	Funding for the continuation of open pit mining via the push back of the south wall: the project largely consists of simple mine stripping activities.
Phase two of the south wall pushback to extend mine life at Kennecott by a further six years.	$1.5bn	Approved in December 2019, the investment will further extend strip waste rock mining and support additional infrastructure development. This will allow mining to continue into a new area of the orebody between 2026 and 2032.
Development of the Oyu Tolgoi underground copper/gold mine in Mongolia (Rio Tinto 34%), which is expected to produce 480,000 tonnes[1] of copper per year on average from 2028 to 2036 (open pit and underground), compared with 149,600 tonnes in 2020 (open pit).	$6.75bn[2]	The project was originally approved in May 2016 for $5.3bn, with an additional $1.45 billion approval by the Rio Tinto Board in December 2020, following completion of the definitive estimate. Sustainable production for Panel 0 is expected to be achieved by October 2022.[2]
Energy & Minerals		
Development of the Zulti South project at Richards Bay Minerals (RBM) in South Africa (Rio Tinto 74%), to sustain current capacity and extend mine life.	$0.5bn	Approved in April 2019, the investment will underpin RBM's supply of zircon and ilmenite over the life of the mine. Construction remains on full suspension, pending normalisation of operations.

1. This target (stated as recovered metal) for the Oyu Tolgoi underground and open pit mines was previously reported in a release to the market on 16 December 2020 (market release). All material assumptions underpinning the production target continue to apply and have not materially changed.
2. These estimates include the known impacts of COVID-19. The definitive estimate assumes restrictions in 2021 that are no more stringent than those experienced in September 2020. Mongolia implemented further restrictions at the end of 2020 in response to a re-emergence of COVID-19. Should COVID-19 constraints be maintained at December 2020 levels, escalate further in 2021 leading to tougher restrictions, or continue beyond 2021, additional costs and schedule impacts will arise.

Material acquisitions and divestments

Asset	Consideration $m	Status
Divested in 2019		
Rössing Uranium	6.5[b]	Sold to China National Uranium Corporation Limited
Divested in 2018		
Hail Creek	1,550[a][c]	Sold to Glencore
Kestrel	2,250[a]	Sold to a consortium consisting of EMR Capital and PT Adaro Energy TbK
Aluminium Dunkerque	500[a]	Sold to Liberty House
Grasberg	3,500[a][d]	Sold to PT Indonesia Asahan Aluminium (Persero) (Inalum)

(a) Before working capital and completion adjustments.
(b) Gross cash sales proceeds, excluding cash held by Rössing included within the transaction and transaction costs. Excludes the contingent payment of up to US$100 million linked to uranium spot prices and Rössing's net income during the next seven calendar years.
(c) Excluding proceeds related to sale of Valeria coal development project of $150 million (before working capital adjustments).
(d) Including a payment received of $107 million in respect of our share of Grasberg's copper and gold revenues, net of our capital contribution for the year.

There were no disposals in 2020. Over the last three years, we have made no material acquisitions.

Further information on acquisitions and divestments is included in note 36 to the financial statements on page 268.

Business Development

In 2020, we continued to progress important growth opportunities and projects, to bring to market materials critical to the transition to a low-carbon economy: copper, lithium and iron ore, among others.

The Oyu Tolgoi mine in Mongolia, set to be the world's fourth largest copper mine.

Oyu Tolgoi underground project: Mongolia, Copper

In 2020, we progressed the underground project despite restrictions from COVID-19 controls and ongoing international travel restrictions. In December 2020, we confirmed the definitive estimate of cost and schedule for Panel 0 with sustainable production expected to commence in October 2022 and development capital of $6.75 billion[1], in line with the ranges first announced in July 2019. These estimates include the known impacts of COVID-19[2]. Oyu Tolgoi is expected to produce 480,000 tonnes[3] of copper per year on average, from 2028-36, from the open pit and underground.

We consider that additional milestones need to be met in order to ensure that the project can commence caving operations in 2021: outstanding government approvals – including registering the updated Resources and Reserves submitted in February 2020 and accepting the updated feasibility study completed in July 2020 in accordance with the 2009 Investment Agreement and Mongolian regulation; funding as agreed with Turquoise Hill Resources (TRQ) in a Memorandum of Understanding in September 2020; and achieving the power milestones agreed with the Government of Mongolia in June 2020. We continue to work closely with our partners, the government of Mongolia and TRQ, in the coming months to finalise these milestones, as outlined in our 16 December announcement.

On 22 December, Oyu Tolgoi received a tax assessment for approximately $228 million from the Mongolian Tax Authority, relating to an audit of taxes paid between 2016 and 2018. This assessment is in addition to $752 million of taxes and royalties paid in the same period. Oyu Tolgoi's application to include these matters in the pending international arbitration related to 2013 to 2015 has been accepted.

On 4 January 2021, the government of Mongolia advised Rio Tinto that they were dissatisfied with the results of the definitive estimate and the funding implications for the sharing of economic benefits between the shareholders of Oyu Tolgoi. We are engaging with the government of Mongolia in relation to the definitive estimate.

We are in active discussions with the government of Mongolia to address and close all outstanding issues and increase the project's benefits to all stakeholders.

1. This estimate is at a 'better than feasibility study' level of accuracy.
2. The definitive estimate assumes restrictions in 2021 that are no more stringent than those experienced in September 2020. Mongolia implemented further restrictions at the end of 2020 in response to a re-emergence of COVID-19. Should COVID-19 constraints be maintained at December 2020 levels, escalate further in 2021 leading to tougher restrictions, or continue beyond 2021, additional costs and schedule impacts will arise.
3. This production target (stated as recovered metal) for the Oyu Tolgoi underground and open pit mines was previously reported in a release to the market on 16 December 2020 (market release). All material assumptions underpinning the production target continue to apply and have not materially changed.

Resolution Copper Project: Arizona, Copper

At our Resolution Copper project, in Arizona, US, we recognise the historical connection that each of the 11 consulting Native American Tribes has with the land. We acknowledge the significance of these connections, which have endured over centuries. We strive to build constructive relationships with each Tribe based on mutual respect, meaningful engagement, trust, mutual understanding and mutual benefit. We will continue to listen to the perspectives and concerns of each Tribe throughout the life of the project.

Over the last two decades, archaeological reports, ethnographic and ethnohistoric studies and tribal perspective reports have been produced in partnership with Tribes and the US Forest Service to identify places, areas, artefacts and natural features of importance. We have also produced more than 150 cultural baseline reports, incorporating all elements of the landscape and conducted with tribal members trained under the Tribal Monitoring Program. The Tribal Monitoring Program is a first-of-its-kind program for the US Forest Service, employing more than 30 members from seven consulting Tribes working alongside archeologists.

In January 2021, the US Forest Service published the Final Environmental Impact Statement (FEIS) for Resolution Copper. The publication reflects a delay from the July 2020 target date, set by the Obama Administration, and comes after more than seven years of public and 11 years of tribal consultation. Resolution Copper has not applied or taken advantage of programmes to expedite or 'fast-track' the permitting process.

There are multiple moments in the formulation of a project and during its operation in which innovation and adjustments are possible. Opportunities to reduce impacts, where possible, will be an objective of future studies. We are committed to ongoing stakeholder engagement in our effort to seek consent to progress the project, consistent with the International Council on Mining and Metals (ICMM) Statement on Indigenous Peoples and Mining.

Gudai-Darri: Western Australia, Iron Ore

At Gudai-Darri (formerly Koodaideri), set to be our most technologically advanced mine, construction is progressing on track with the expected production ramp-up in early 2022.

This year, we announced the opening of a new airport, which is expected to handle more than 600 workers a day at peak operating times. The airport will help strengthen site safety by minimising mine employees' exposure to driving and vehicle transport while also reducing the hours they are required to travel from an alternate airport, reducing fatigue. The airport will also provide a safer landing option for the Royal Flying Doctor Service, our longstanding partner.

We built Western Australia's largest steel beam bridge to carry Great Northern Highway traffic over Gudai-Darri's train line. Rail formation works are on target and track-laying also began in the fourth quarter of 2020.

We completed the studies for the 34MW solar plant at Gudai-Darri and commence construction in 2021. This will consist of about 100,000 solar panels made up of photovoltaic cells to convert sunlight into electricity. On average, the solar plant is expected to supply all of Gudai-Darri's electricity demand during peak solar power generation times and approximately 65% of the mine's average electricity demand. With a new lithium-ion battery energy storage system, the solar plant could reduce our annual carbon dioxide emissions by an estimated 90,000 tonnes compared to conventional gas-powered generation. This is the equivalent of taking about 28,000 cars off the road.

Importantly, growth at Gudai-Darri progresses with the community in mind: to date, the project has awarded local businesses – including Pilbara, Pilbara Aboriginal and Western Australia-based businesses – contracts valued at more than A$1.1 billion, supporting approximately 2,000 jobs in the construction phase.

Simandou: Guinea, Iron Ore

Simandou contains one of the world's largest and richest high-grade iron ore deposits, demand for which is increasing as steelmakers look to reduce carbon emissions.

Simandou broadens our global portfolio of iron ore products and complements the long-term attractiveness of our Pilbara Blend™. We remain committed to Simandou and to delivering its benefits to our partners as well as to local communities and the people of Guinea.

In 2020, work continued on the technical optimisation of the Simandou project with the support of China-based institutions and business partners, as well as preparatory work and activities related to the project's Social and Environmental Impact Assessment. Engagement continued with the government of Guinea about potential mechanisms for collaboration on infrastructure development.

Winu: Western Australia, Copper

At our Winu project in Western Australia, we are actively engaging with Traditional Owners through on-Country heritage surveys, monitoring and agreement making, which is expected to continue into 2021, with first ore expected in 2024, subject to regulatory approvals, Traditional Owner and other consents and COVID-19 restrictions.

Drilling results at Ngapakarra, about two kilometres east of Winu, provide further encouragement about the potential to develop multiple orebodies in the district. We have explored only a small percentage of our tenements in the Paterson region of Western Australia so far, which includes both our 100% owned tenements and joint ventures.

Jadar: Serbia, Lithium

This year, we approved an additional investment of almost $200 million to continue to progress the lithium-borate Jadar project. The investment will fund the feasibility study and associated engineering, as well as permitting and land acquisition by the end of 2021, in line with the initial project schedule.

The Jadar deposit contains high-grade mineralisation of boron and lithium (Jadarite) and has the potential to produce both battery-grade lithium carbonate and boric acid. The deposit is located on the doorstep of the European Union, one of the fastest growing electric vehicle markets in the world. Jadarite was discovered in 2004 by Rio Tinto geologists near the city of Loznica, Serbia.

For further information on litigation and investigations related to Simandou and other matters, please refer to the "Contingent Liabilities" note on page 261 for further information.

The world – from bridges and skyscrapers to cars and planes – is built on steel, and steel is made from iron ore.

Iron Ore

Overview

In the Pilbara region of Western Australia, we operate an integrated portfolio of iron ore assets: a network of 16 iron ore mines, four port terminals, a 1,700-kilometre rail network and related infrastructure. We are one of the world's leading producers of iron ore.

Our Iron Ore product group includes Dampier Salt, also in Western Australia – the world's largest exporter of seaborne salt. Our fully integrated portfolio of quality assets, highly valued product suite and committed people and partners are key pillars of our value over volume strategy. Together, these allow us to export our products, including our flagship Pilbara Blend™, to our customers safely, reliably and efficiently.

We completed the studies for the 34MW solar plant at Gudai-Darri and commence construction in 2021. This will consist of about 100,000 solar panels made up of photovoltaic cells to convert sunlight into electricity. On average, the solar plant is expected to supply all of Gudai-Darri's electricity demand during peak solar power generation times and approximately 65% of the mine's average electricity demand. With a new lithium-ion battery energy storage system, the solar plant is estimated to reduce our annual carbon dioxide emissions by about 90,000 tonnes compared to conventional gas-powered generation.

This is the equivalent of taking about 28,000 cars off the road. Importantly, growth at Gudai-Darri progresses with the community in mind: to date, the project has awarded local businesses – including Pilbara, Pilbara Aboriginal and Western Australia-based businesses – contracts valued at more than A$2.3 billion, supporting approximately 2,000 jobs in the construction phase.

We deeply regret the events at Juukan Gorge, near our Brockman mine in Western Australia, and have unreservedly apologised to the Puutu Kunti Kurrama and Pinikura (PKKP) people. The destruction of the rock shelters should not have happened, and we are absolutely committed to listening, learning and changing. Please refer to pages 10-11 to learn more about what we are doing to rebuild trust with our Indigenous partners and Traditional Owners.

Snapshot of the year

0.53
AIFR
(2019: 0.66)

$27.5bn
gross product sales
(2019: $24.1bn)

74%
Pilbara underlying FOB EBITDA margin
(2019: 72%)

$13.2bn
net cash generated from operating activities
(2019: $11.4bn)

Pilbara Iron Ore in figures

16
integrated mines in Western Australia

5
mainstream iron ore products

4
port terminals

3
solar salt operations

12%
of our residential workforce is Pilbara Aboriginal People*

13,600
employees (includes temporary employees and 100% of joint venture operations)

1,700km
automated rail network, including AutoHaul™

330.6
million tonnes of iron ore shipped

* Includes all Indigenous employees who live in the Pilbara and any other Indigenous employees, regardless of where they live, who are members of Traditional Owner groups that have opted in to Rio Tinto's Regional Framework Deed.

Iron Ore
continued

2020 year end results	2020	2019	Change
Pilbara production (million tonnes - 100%)	**333.4**	326.7	2%
Pilbara shipments (million tonnes - 100%)	**330.6**	327.4	1%
Salt production (million tonnes - Rio Tinto share)[1]	**4.9**	5.4	(10)%
Gross product sales (US$ millions)	**27,508**	24,075	14%
Average realised price (US$ per dry metric tonne)	**98.9**	85.9	15%
Underlying EBITDA (US$ millions)	**18,837**	16,098	17%
Pilbara underlying FOB EBITDA margin[2]	**74%**	72%	
Underlying earnings (US$ millions)	**11,398**	9,638	18%
Net cash generated from operating activities (US$ millions)	**13,218**	11,420	16%
Capital expenditure (US$ millions)[3]	**(2,941)**	(1,741)	69%
Free cash flow (US$ millions)	**10,233**	9,601	7%
Return on capital employed[4]	**74%**	67%	

1. Dampier Salt is reported within Iron Ore, reflecting management responsibility. Iron Ore Company of Canada and the Simandou iron ore project in Guinea continue to be reported within Energy & Minerals.
2. The Pilbara underlying free on board (FOB) EBITDA margin is defined as Pilbara underlying EBITDA divided by Pilbara revenues, excluding freight revenue.
3. Capital expenditure is the net cash outflow on purchases less sales of property, plant and equipment, capitalised evaluation costs and purchases less sales of other intangible assets.
4. Return on capital employed (ROCE) is defined as underlying earnings excluding net interest divided by average capital employed (operating assets).

Safety

In 2020, our Iron Ore operations continued to improve our safety culture as evidenced by the strong performance. We marked more than two years without a fatality and achieved a step change in safety performance with the injury rate and severity rate decreasing by 20% and 13%, respectively. The number of potentially fatal incidents continued to decline – approximately 29% lower, year on year.

We continue to remove or reduce our material risk exposure to eliminate fatalities at our operations. We have detailed improvement plans built against our safety maturity model. These focus on being a learning organisation, our leadership and engagement approach, risk management and our work planning. The delivery of these plans will support a sustained improvement towards our goal of zero harm.

During 2020, we responded to COVID-19 with a clear, nimble strategy, using our hierarchy of controls to manage the risks associated with the virus and keep people safe.

We took extensive measures to reduce virus transmission pathways, including travel restrictions, self-isolation, quarantine and physical distancing. We changed our rosters to minimise movement across operations and implemented additional cleaning and sanitisation. Rapid screening clinics were introduced at Perth and regional airports and our regional towns to reduce the risk of transmission.

Together, our employees and contractors, partners and host communities demonstrated commitment, resilience, innovation and collaboration in helping us to keep our operations strong and safe. Despite the pandemic we improved our overall safety performance.

In 2020, we also conducted a safety culture diagnostic to further mature our safety culture, with a focus on mindsets and behaviours through a leadership lens. Insights from the diagnostic and other assessments, combined with lessons from incidents, will continue to drive a targeted, problem-solving-based approach to ensure the health, safety, and wellbeing of our employees.

Financial performance

Our strong operational performance in the Pilbara in 2020 enabled us to take advantage of the rising price environment for our high-quality products. This price strength was driven by buoyant demand from China and constraints in global seaborne supply. We increased our iron ore shipments by 1% and production by 2% compared with 2019, whilst implementing strict measures to manage COVID-19.

Underlying EBITDA of $18.8 billion was 17% higher than 2019, primarily reflective of higher prices, partially offset by rising unit costs. The monthly average Platts index for 62% iron fines adjusted to an FOB basis was 19% higher than 2019. Higher realised prices increased underlying EBITDA by $3.2 billion, while a stronger Australian dollar reduced underlying EBITDA by $0.3 billion.

2020 Pilbara unit cash costs, which were $15.4 per tonne (2019: $14.4 per tonne), include $0.6 per tonne of COVID-19 costs, which relate to the controls we have put in place to keep our people safe such as additional cleaning and flights, screening and roster changes. We experienced a higher monthly volatility in the iron ore price and an appreciation in the Australian dollar at year end. This triggered exchange and related effects, including losses on receivables, which added a net $0.4 per tonne to unit cash costs in 2020. A significant majority of our Pilbara operating costs (excluding freight and royalties) are denominated in Australian dollars. We also experienced a higher mining work effort from longer haul distances, below water table mining and increased maintenance activity which we offset through productivity gains from increased automation and lower fuel prices. Overall, underlying unit cash costs were stable year on year, excluding the impact of foreign exchange and COVID-19 costs.

We have continued investing in productivity and automation and are now seeing an improved effectiveness of our integrated system: around 60% of our truck fleet in the Pilbara is now fully autonomous. We have a pathway that will see around two thirds of the fleet being automated by the end of 2021.

Our Pilbara operations delivered an underlying FOB EBITDA margin of 74%, compared with 72% in 2019.

We price the majority of our iron ore sales (77%) by reference to the average index price for the month of shipment. In 2020, we priced approximately 13% of sales by reference to the prior quarter's average index lagged by one month with the remainder sold either on current quarter average, current month average or on the spot market. We made approximately 70% of sales including freight and 30% on an FOB basis.

We achieved an average iron ore price of $91.0 per wet metric tonne on an FOB basis (2019: $79.0 per wet metric tonne) across our product suite. This equates to $98.9 per dry metric tonne, assuming 8% moisture (2019: $85.9 per dry metric tonne), which compares with the monthly average Platts index for 62% iron fines converted to an FOB basis of $101.3 per dry metric tonne (2019: $84.9 per dry metric tonne). The slightly lower realised price compared to the Platts index was due to lower market premiums for lump and the effect of the sales priced by reference to the prior quarter's average index lagged by one month in a rising price environment throughout 2020.

Gross product sales for our Pilbara operations included freight revenue of $1.5 billion (2019: $1.7 billion).

Net cash generated from operating activities of $13.2 billion was 16% higher than 2019, in line with the increase in underlying EBITDA.

The $10.2 billion of free cash flow was 7% higher than 2019, reflecting a 69% increase in capital spend, mainly related to the ramp-up of construction activity at the new Gudai-Darri hub.

Review of operations

We achieved a strong operating performance across the network in 2020, managing the challenges of weather disruptions and the implementation of strict measures to manage COVID-19. Our Pilbara operations produced 333.4 million tonnes (our share 275.5 million tonnes), 2% higher than 2019, underpinned by record total material moved for the year, 7% higher than the previous record set in 2019, highlighting the improvements to mine and asset health.

2020 shipments of 330.6 million tonnes (our share 273.1 million tonnes), which were 1% higher than 2019, were impacted by Cyclone Damien in the first quarter and by COVID-19, which also resulted in the deferral of maintenance at the port to the third quarter. We continue to ramp up our port sales in China, with 5.5 million tonnes of sales in 2020. Our portside operation handles product from our operations in the Pilbara and in Canada, as well as third-party product, and provides blending and screening capabilities.

Following the events at Juukan Gorge, we continue to reassess all activities which have the potential to impact heritage sites. We will continue to review mine plans to ensure the protection of sites of exceptional cultural value and have increased monitoring of operating activities that have the potential to impact heritage sites. We have also integrated heritage management into our mining operations – our Iron Ore business now has primary responsibility for our Communities and Social Performance partnerships and engagement.

Pilbara shipments

(million tonnes – 100% basis)



New projects and growth options

We are progressing our $2.6 billion Gudai-Darri iron ore mine, with key construction activities on schedule. This new production hub will be our most technologically advanced, incorporating a processing plant and infrastructure including an airport, camp and a 166-kilometre rail line connecting the mine to our existing network. We continue to anticipate production to ramp up in early 2022. Once fully commissioned, the initial mine development will have an annual capacity of 43 million tonnes. This will increase the lump to fines ratio in our Pilbara Blend shipments to 38%.

We have multiple project scopes under study for Gudai-Darri Phase 2, following Board approval for a $44 million pre-feasibility study. Ultimately, the capacity of the hub could be up to 70 million tonnes per year, depending on market conditions.

We are also investing $1.55 billion with our joint venture partners, Mitsui and Nippon Steel, (our 53% share is $820 million) at the Robe Valley and West Angelas operations. We have received all required approvals, and procurement and construction activities are progressing well. We anticipate first ore from these projects in 2021.

Our $749 million investment in the Western Turner Syncline phase 2 mine, part of Greater Tom Price operations, will facilitate mining of new deposits and includes construction of a new crusher and a 13-kilometre conveyor. First ore is expected in 2021.

Greenhouse gas emissions

In 2020, Iron Ore's absolute greenhouse gas emissions were 3Mt CO_2-e (on an equity basis), an increase of 0.3Mt CO_2-e compared to the 2018 emissions baseline, driven by an increase in diesel emissions due to increased haul distances and material movement.

In the short to medium term, abatement opportunities relate to the deployment of renewable power projects. A range of renewable energy studies are underway to support a transition from using natural gas to power our operations, while longer-term works natural transitioning the mobile mining fleet from diesel to alternative energies. The transition from traditional fuels in mining will require technical and economic developments in renewable energy, alternative fuels and energy transfer systems.

Construction of the company's first 34 MW solar PV plant at the Gudai-Darri mine is anticipated to be completed by the end of 2021. In addition, we expect to commission a 12MW/h battery energy storage system to strengthen the security and reliability of our Pilbara power network. The solar plant and battery systems are estimated to reduce carbon dioxide emissions by approximately 90,000 tonnes per year.

Rio Tinto also committed $10 million over the next two years with the world's largest steel producer, China Baowu Steel Group, to support low-carbon steelmaking projects and research. This investment is the next step in advancing our partnership with China Baowu and Tsinghua University, announced in 2019, and will fund the establishment of a Low Carbon Raw Materials Preparation R&D Centre, which will initially prioritise the development of lower carbon ore preparation processes. Rio Tinto also strengthened our partnership with Tsinghua University, committing a further $4.5 million over the next five years to support research projects at the Tsinghua-Rio Tinto Joint Research Centre for Resources, Energy and Sustainable Development. We also signed a Memorandum of Understanding with Nippon Steel Corporation, Japan's largest steel producer, to jointly explore, develop and demonstrate technologies to transition to a low-carbon emissions steel value chain.

Beverage cans are just one place you can find our infinitely recyclable, low-carbon Canadian aluminium.

Aluminium

Overview

We are a global leader in aluminium, with a large-scale, vertically-integrated business: bauxite mines and alumina refineries as well as smelters producing aluminium certified as responsible. Managing the process from start to finish allows us to deliver high-quality products to our customers, reliably and efficiently: from high-grade bauxite for the global seaborne trade to sustainably sourced aluminium for beverage packaging to new, lighter alloys for the automotive industry.

Our Canadian operations average in the first decile of the industry cost-curve and produce primary metal using clean, renewable hydropower. In 2018, we became the first company to offer aluminium certified as responsible by the Aluminium Stewardship Initiative (ASI), meaning it meets the highest environmental, social and governance standards.

In 2020, we announced a global partnership with AB InBev, the world's largest beer brewer. Initially focused on North America, the partnership will see us provide low-carbon aluminium for AB InBev's beer cans.

We also announced an investment in a new remelt furnace at our Laterrière casting centre, and a partnership with Shawinigan Aluminium Inc., both in Canada, to offer our US and Canadian customers high-quality alloys made with recycled scrap, starting in 2021.

ELYSIS – our partnership with Alcoa, supported by Apple and the governments of Canada and Quebec – completed its Research & Development Centre in the Saguenay, in Quebec, Canada, where it will continue to develop smelting technology free of direct carbon emissions.

In 2021, we launched StaRT™, the first sustainability label for aluminium, which will be delivered to customers using blockchain technology. This 'nutrition label' for aluminium will provide key information about where and how the aluminium was produced, covering ten criteria: carbon footprint, water management, renewable energy, recycled content, waste management, safety performance, contribution to communities, supplier due diligence, governance systems and diversity. The blockchain technology will enable traceability, helping customers and consumers make informed choices about the products they buy.

Snapshot of the year

0.36
AIFR
(2019: 0.46)

$9.3bn
gross product sales
(2019: $10.3bn)

26%
underlying EBITDA margin from integrated operations
(2019: 26%)

$1.9bn
net cash generated from operating activities
(2019: $2.2bn)

Aluminium in figures

4
bauxite mines in Australia, Brazil and Guinea

4
alumina refineries in Australia, Brazil and Canada

14
aluminium smelters in Canada, Australia, New Zealand, Iceland and Oman

14,000
employees

3
research and development centres in Canada, France and Australia

22
sites certified responsible by the Aluminium Stewardship Initiative (ASI)

7
hydropower plants supplying 100% of the electricity we use in Canada

Aluminium
continued

2020 year end results	2020	2019	Change
Bauxite production (000 tonnes - Rio Tinto share)	**56,131**	55,105	2%
Alumina production (000 tonnes - Rio Tinto share)	**8,039**	7,744	4%
Aluminium production (000 tonnes - Rio Tinto share)	**3,180**	3,171	–%
Gross product sales (US$ millions)	**9,314**	10,340	(10)%
Average realised aluminium price (US$ per tonne)	**1,946**	2,132	(9)%
Underlying EBITDA (US$ millions)	**2,152**	2,285	(6)%
Underlying EBITDA margin (integrated operations)	**26%**	26%	
Underlying earnings (US$ millions)[1]	**471**	599	(21)%
Net cash generated from operating activities (US$ millions)	**1,930**	2,183	(12)%
Capital expenditure - excluding EAUs (US$ millions)[2]	**(1,009)**	(1,316)	(23)%
Free cash flow (US$ millions)	**892**	821	9%
Return on capital employed[3]	**3%**	4%	

1. Underlying earnings includes a $0.2 billion charge in 2020 for the partial de-recognition of deferred tax assets in Australia.
2. Capital expenditure is the net cash outflow on purchases less sales of property, plant and equipment, capitalised evaluation costs and purchases less sales of other intangible assets. It excludes equity accounted units (EAUs).
3. Return on capital employed (ROCE) is defined as underlying earnings excluding net interest divided by average capital employed (operating assets).

Safety

2020 marked the sixth consecutive fatality-free year for our Aluminium product group, and we finished the year with an AIFR of 0.36, a significant improvement compared to 2019 (0.46).

We continued improving the safety maturity of our sites with a strong emphasis on leadership coaching and critical risk management. In 2020, we completed over 257,000 verifications on critical controls including more than 40,000 verifications specific to COVID-19. We also progressed a programme to reduce vehicle-pedestrian risks, including the implementation of a pedestrian proximity detection system in our smelters.

We further enhanced our management of major hazards by improving the way we report and learn from process safety incidents. We also strengthened governance of critical controls across process safety, tailings and water dams.

We are progressing our five-year plan to reduce health risk exposures by improving monitoring and implementing engineering controls, such as ventilation.

During the year, we increased our focus on mental health and raised awareness of our employee assistance programme to better support our employees and their families during COVID-19, and supported local communities in their implementation of COVID-19 safety measures.

Financial performance

Our aluminium business was resilient in 2020, despite significantly lower sales prices and reduced demand for value-added product (VAP), driven by market conditions from the impact of COVID-19. Markets were particularly challenging for aluminium metal where global demand for primary aluminium declined by approximately 3% and global supply was largely unchanged. However, our focus on operational stability, resilience through COVID-19 and cash flow generation, enabled us to deliver solid underlying EBITDA and strong cash flows.

Underlying EBITDA of $2.2 billion declined by just $0.1 billion, 6% lower than 2019, despite the weaker pricing environment, which impacted underlying EBITDA by $0.3 billion. We were able to offset most of the pricing impact through operational improvements and productivity gains, along with lower prices for our inputs, which totalled $0.3 billion. These included raw material efficiencies, reduced energy costs and lower input prices, primarily for caustic soda and petroleum coke. This enabled us to maintain our industry-leading underlying EBITDA margin at 26%, in line with 2019.

We achieved an average realised aluminium price of $1,946 per tonne, 9% lower than 2019 ($2,132 per tonne). This comprised the LME price, a market premium and a product (VAP) premium. The cash LME price averaged $1,702 per tonne, 5% lower than 2019, even after a sharp recovery in the second half of 2020. In our key US market, the midwest premium dropped 2% to $313 per tonne on average in 2020. VAP represented 43% of the primary metal we sold, in line with market demand (2019: 51%), and generated product premiums averaging $213 per tonne of VAP sold (2019: $234 per tonne). Market demand for VAP rebounded in the fourth quarter of 2020, returning to normal levels.

Although we are broadly balanced in alumina, approximately 2.2 million tonnes of our legacy alumina sales contracts are exposed to a fixed linkage to the LME price. These contracts date back to 2005 or earlier, and the majority expire between 2023 and 2030. In 2020, the opportunity loss was $0.1 billion, compared with $0.2 billion in 2019.

Despite the significantly weaker market environment, we generated $1.9 billion in net cash from operating activities with free cash flow increasing by 9% to $0.9 billion. This was underpinned by productivity improvements, lower costs, reductions in working capital in the year and lower capital expenditure.

Review of operations

Bauxite production of 56.1 million tonnes was 2% higher than 2019 supported by the ramp-up of the expansion at the CBG mine in Guinea, and steady performance at the Pacific mines, including additional volumes from the start-up of the Amrun mine in 2019.

We shipped 39.4 million tonnes of bauxite to third parties, 1% lower than in 2019. Shipments were prioritised throughout the year to align with customer needs, with a higher proportion of internal shipments to our Pacific refineries.

In 2020, gross product sales for bauxite declined 8% to $2.3 billion – this includes freight revenue of $423 million (2019: $464 million).

Alumina production of 8.0 million tonnes was 4% higher than 2019, as a result of strong production at both our Pacific refineries.

Aluminium production of 3.2 million tonnes was in line with 2019, with lower volumes from the curtailment of Line 4 at the Tiwai Point smelter in New Zealand and from the Kitimat smelter pot relining campaign, offset by the ramp-up of the Becancour smelter in Quebec following its restart after a lockout at the end of 2019.

In January 2021, we reached agreement on a new electricity supply with Meridian Energy that allows New Zealand Aluminium Smelter (NZAS) to continue operating the Tiwai Point smelter until December 2024. This extension of operations provides certainty to employees, the local community and customers while providing more time for all stakeholders to plan for the future.

On 15 February 2021, we reached agreement on an amended power contract with the energy supplier, Landsvirkjun, that will allow the ISAL aluminium smelter in Iceland to continue operating with an improved competitive position. We have withdrawn our complaint filed with the Icelandic Competition Authority.

New projects and growth options

At the Kemano project in Kitimat, British Columbia, we are constructing a second tunnel to de-risk our 100% owned hydropower facility. The project was originally approved in 2017, with $155 million of additional capital approved in 2020, bringing the total to $630 million. It was impacted by the departure of the main contractor in the first half of 2020. Tunnel excavation works restarted in September. However, due to the escalation of COVID-19 in the province, tunnel excavation works have been interrupted. We expect to restart late in the first quarter of 2021.

ELYSIS, our joint venture with Alcoa, supported by Apple and the governments of Canada and Quebec, is developing a breakthrough technology that eliminates all direct greenhouse gases from the traditional aluminium smelting process. In December 2020, we announced that construction of the ELYSIS Industrial Research and Development (R&D) Centre at our Complexe Jonquière in the Saguenay, Quebec was complete. This new centre will produce metal at a similar scale to smaller, industrial-sized smelting cells that are in operation by some producers today. Commissioning of the Industrial R&D Centre is underway.

Greenhouse gas emissions

In 2020, our Aluminium product group's absolute greenhouse gas emissions (21.8 $MtCO_2e$) were 1.3% lower than the 2018 equity baseline (22.1 $MtCO_2e$). Contributions to this improvement included smelting process changes and the increased use of hydroelectric boilers in refining. These improvements were delivered while increasing bauxite production by 12%, maintaining alumina production and reducing production slightly across the smelting portfolio compared to the 2018 baseline.

The 2020 emissions intensity of our managed Atlantic Operations smelters, powered by hydroelectricity, was 2.13 tCO_2eq per tonne of aluminium – less than one-fifth of the industry average – while our Vaudreuil alumina refinery has the lowest carbon footprint in the world today.

Third-party bauxite shipments

(million tonnes – Rio Tinto share)



Aluminium production

(thousand tonnes – Rio Tinto share)



Copper helps renewable technology generate electrical power.

Copper & Diamonds

Overview

Our copper and diamond businesses share a rich expertise in underground mining processes and technology. Combined with our strong people focus, this allows us to relentlessly prioritise safety and continue to be a profitable, future-ready, sustainability-driven product group.

Copper

Global demand for copper is set to grow, driven by urbanisation, industrialisation and increasing use of renewable energy. Alongside copper, we also produce gold, silver, molybdenum and other materials such as rhenium, supplying customers in China, Japan and the US.

Our Resolution Copper project in Arizona, US, is one of the world's largest undeveloped copper deposits with the potential to supply up to one quarter of American copper demand annually.

Through consultation, collaboration and coordination with regulatory agencies, communities and the region's Native American Tribes, we have made significant changes to the project design: we created the Emory Oak Restoration & Conservation Program, a partnership led by the Western Apache with the US Forest Service (USFS), Northern Arizona University, and Resolution Copper to reinvigorate Emory Oak trees across Arizona. We will also protect Apache Leap, a site sacred to Apache Tribes, through the Apache Leap Special Management Area.

Resolution Copper also has benefits for the wider community: today, we directly employ roughly 600 employees and contractors, more than half of whom live less than 40 miles away. At full production, it will support approximately 3,700 direct and indirect jobs. Following completion of a land exchange, agreements with the federal government and others will increase the amount of land under public ownership and management across Arizona, including areas of high cultural significance as well as areas important to regional biodiversity and recreation.

Diamonds

In November 2020, after 37 years, our Argyle diamond mine ceased production. We are committed to closing the mine responsibly, continuing to manage our Diavik operation and remaining active in diamond exploration with Canada as our target geography.

Snapshot of the year

0.30
AIFR
(2019: 0.29)

$5.4bn
gross product sales
(2019: $5.8bn)

47%
underlying EBITDA margin (product group operations)
(2019: 41%)

$1.1bn
net cash generated from operating activities
(2019: $1.5bn)

Copper & Diamonds in figures

3
copper operations in the US, Mongolia and Chile

3
copper growth projects in the US, Australia and Mongolia

2
diamond operations in Canada and Australia

7,800
employees

1st
mining company to be certified by the Responsible Jewellery Council

2
operations awarded the Copper Mark, verifying copper from Kennecott and Oyu Tolgoi is responsibly produced

6,200,000[1]
pounds of copper scrap recycled at our Kennecott copper mine in the US

1. The furnace challenges at Kennecott increased capacity downstream in the smelter to re-process scrap into anodes and then cathode, and we took advantage of this by purchasing and reprocessing 6.2mn lbs of recycled metal within the year.

Copper & Diamonds
continued

2020 year end results	2020	2019	Change
Mined copper production (000 tonnes - Rio Tinto share)	**527.9**	577.4	(9)%
Refined copper production (000 tonnes - Rio Tinto share)	**155.0**	259.6	(40)%
Diamonds production (000 carats - Rio Tinto share)	**14,676**	17,030	(14)%
Gross product sales (US$ millions)	**5,428**	5,815	(7)%
Average realised copper price (US cents per pound)	**283**	275	3%
Underlying EBITDA (US$ millions)	**2,172**	2,073	5%
Underlying EBITDA margin (product group operations)	**47%**	41%	
Underlying earnings (US$ millions)	**763**	554	38%
Net cash generated from operating activities (US$ millions)[1]	**1,064**	1,505	(29)%
Capital expenditure - excluding EAUs[2] (US$ millions)	**(1,686)**	(1,772)	(5)%
Free cash flow (US$ millions)	**(637)**	(284)	(124)%
Return on capital employed[3]	**6%**	5%	

1. Net cash generated from operating activities excludes the operating cash flows of equity accounted units (EAUs) but includes dividends from EAUs (Escondida).
2. Capital expenditure is the net cash outflow on purchases less sales of property, plant and equipment, capitalised evaluation costs and purchases less sales of other intangible assets. It excludes EAUs.
3. Return on capital employed (ROCE) is defined as underlying earnings excluding net interest divided by average capital employed (operating assets).

Safety

This year, our Copper & Diamonds operations achieved a 39% year-on-year reduction in the number of potentially fatal incidents. However, we did have a permanent disabling injury at the Diavik Diamond Mine, in Canada. We recorded an all-injury frequency rate of 0.30, which is a leading safety performance.

This year, we also continued our focus on supporting the health and wellbeing of our employees, driving stronger risk and incident management, and sustaining improvements in safety. We recorded and shared nearly 300 improvement initiatives between our assets.

Our overall approach to the COVID-19 pandemic has been centred on protecting our employees and contractors from the virus, supporting mental wellbeing, and working together with local communities. The response measures implemented at each of our operations were based on risks specific to the asset and its employees, ensuring alignment with guidance from the relevant authorities at local and national levels.

Our Diavik Diamond Mine was the first operation within Rio Tinto to set up an on-site COVID-19 testing facility. Our Kennecott operation is conducting an average of 8,000 tests per month. Both contribute to the approximately 40,000 tests completed across our Copper & Diamonds operations in 2020. In addition to ensuring preparedness to various COVID-19 scenarios, we have taken a wide range of preventative measures, including rapid screening for employees and contractors, improved hygiene processes at sites and in offices, and adjusted roster arrangements, which has mitigated risks for our employees, contractors and communities.

Financial performance

In 2020, we increased underlying EBITDA despite lower revenues amidst a challenging year. It was a year of transition for our operational mine plans at Kennecott and Oyu Tolgoi, with a temporary reduction in copper and gold grades. Weak market conditions in the first half, COVID-19 restrictions and a 5.7 magnitude earthquake in Utah in March, were the principal external challenges. In addition, we incurred a delay in restarting the Kennecott smelter, following a planned shutdown.

A strong recovery in the copper price and fully operational Kennecott smelter by October, coupled with strong actions to address the headwinds, namely tight cost control and acceleration of access to higher gold grades at Oyu Tolgoi, led to a 5% increase in underlying EBITDA to $2.2 billion, with margins rising to 47%.

Price movements for all products benefited underlying EBITDA by $0.5 billion for the full year. Our average realised copper price increased by 3% to 283 US cents per pound. Other prices were mixed, with gold rising 27% to $1,770 per ounce while our realised diamond prices declined by 21% on a weighted average basis. An unplanned flash converting furnace rebuild at Kennecott following the earthquake and delays in restarting the smelter following planned major maintenance after the shutdown also impacted underlying EBITDA through reduced volumes, leading to fixed cost inefficiencies. This was partially offset by 82% higher molybdenum concentrate volumes at Kennecott, where we also realised some exports of copper concentrate into a strengthening market.

Our copper unit costs, at 111 cents per pound in 2020, were 20% higher than in 2019, due to lower copper grades at Kennecott and Escondida and delays in restarting the Kennecott smelter, driving lower volumes. This was partly offset by cost reduction programmes and higher by-product credits, with higher prices for gold and higher molybdenum volumes, due to improved grades, albeit at lower prices.

We continued to advance our future copper evaluation projects, in particular at Resolution Copper in Arizona and at Winu in Western Australia.

We generated $1.1 billion in cash from our operating activities, a 29% decline on 2019, primarily driven by anticipated lower copper and gold grades, combined with the operational challenges at Kennecott. We also received $0.1 billion lower dividends from our 30% equity holding in Escondida. Free cash flow was an outflow of $0.6 billion reflecting the lower operating cash flow and a sustained level of capital investment ($1.7 billion), mainly relating to the ongoing development of the Oyu Tolgoi underground project, where we have a 34% effective interest but fully consolidate on the basis of management control.

Review of operations

Mined copper, at 527.9 thousand tonnes, was 9% lower than 2019, primarily due to lower grades at Kennecott, as a result of planned pit sequencing, and lower grades and lower material moved at Escondida.

Kennecott

Mined copper production at Kennecott was 25% lower than 2019, due to a 28% reduction in grade and the optimisation of molybdenum ore during the extended shutdown of the smelter, which, in combination with higher molybdenum grades, led to an 82% increase in the production of molybdenum concentrate. Development in the pit progressed despite COVID-19 disruptions. We expect grades to gradually increase from 2021, as mining transitions from the east to the south wall.

Refined copper production was 54% lower than 2019 due to the rebuild of the flash converting furnace, required following the earthquake, and delays in restarting the smelter following planned major maintenance in mid-2020. The smelter was safely restarted and became fully operational in October.

Escondida

Escondida's mined copper production was 1% lower than 2019, mainly due to 15% lower material stacked onto the leaching pads. This was a result of preventive measures in response to COVID-19, which were mostly offset by 5% higher concentrator throughput in 2020. Refined copper was also impacted by lower material stacked onto the leach pads.

Oyu Tolgoi

Mined copper production from the open pit at Oyu Tolgoi was 2% higher than 2019, reflecting the anticipated move to higher grade areas, primarily due to accelerated mine development and production phasing. Access to higher copper and gold grades is expected to continue in 2021. We maintained shipments across the Chinese border despite COVID-19 measures in Mongolia and continue to work closely with the authorities to manage the risk of supply chain disruptions.

Diamonds

Diamond production was 14% lower than 2019, attributable to lower carats recovered at Diavik, where a 10% reduction in grade was partially offset by an increase in tonnes processed, and the closure of Argyle, as planned, on 3 November. We expect to take five years to decommission the Argyle mine and rehabilitate the area, followed by a further period of monitoring.

New projects and growth options – Oyu Tolgoi underground project

In 2020, we progressed the underground project despite restrictions from COVID-19 controls and ongoing international travel restrictions. The project has deployed mitigations that include extended on-site rosters, securing commitments from critical vendors to remain on site for extended periods and layered screening of personnel.

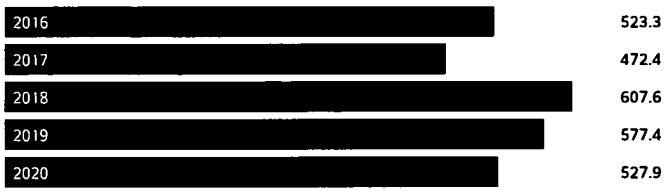
Overall underground lateral development has now reached 53,000 equivalent metres (eqm), with development for first drawbell substantially complete.

The project has now exceeded one million tonnes of material moved through shaft 2 since commissioning and the scheduled annual maintenance of the shaft was successfully completed in October 2020 using remote technology.

On 16 December, we confirmed the definitive estimate of cost and schedule for Panel 0 with sustainable production expected to commence in October 2022 and development capital of $6.75 billion[1], in line with the ranges first announced in July 2019. These estimates include the known impacts of COVID-19.[2] Oyu Tolgoi is expected to produce 480,000 tonnes[3] of copper per year on average, from 2028 to 2036, from the open pit and underground. The underground Ore Reserve has an average copper grade of 1.52%, which is more than three times higher than the open pit Ore Reserve, and contains 0.31 grammes of gold per tonne.[4]

Mined copper production

(000 tonnes – Rio Tinto share)



Other new projects and growth options

The $0.9 billion investment in phase one of the south wall pushback project at Kennecott, which will extend mine life to 2026, remains on track. We expect to gradually access higher grades made available from this project from 2021. The $1.5 billion investment in phase two (stripping and additional infrastructure development), which is also on track, will allow mining to move into a new area of the ore body for a further six years. Both phases will continue to generate attractive returns for Kennecott.

At our Resolution Copper project in Arizona, the shaft 9 remediation and sinking project was completed in November, four months ahead of schedule and within budget. On 15 January 2021, we entered the next phase of public comment in the ongoing permitting process, led by the US Forest Service, with the release of its independently prepared Final Environmental Impact Statement (EIS).

At the 100% owned Winu copper-gold project in the Paterson Province of Western Australia, we disclosed the maiden Inferred Mineral Resource in July and revealed the discovery of a new zone of gold-dominant mineralisation approximately two kilometres east of the Winu deposit. The Inferred Mineral Resource, reported at a 0.2% copper equivalent cut-off, is 503 million tonnes at 0.45% copper equivalent (CuEq). This includes a higher grade component of 188 million tonnes at 0.68% CuEq at a cut-off grade of 0.45% CuEq.[5] Drilling and fieldwork activities continue, with 90 kilometres of drilling completed in 2020. We are actively engaging with the Traditional Owners through on-country heritage surveys, monitoring and agreement making, which is expected to continue into 2021, with first ore now expected in 2024, subject to regulatory approvals, Traditional Owner and other consents and COVID-19 restrictions.

Greenhouse gas emissions

In 2020, our Copper & Diamonds product group's greenhouse gas emissions were 2.7Mt CO_2e (on an equity basis), a reduction of 0.9Mt CO_2e compared to our 2018 emissions baseline.

After discontinuing the use of a coal-fired power plant at Kennecott in 2019, all of the electricity purchased by Kennecott and our Resolution Copper project in 2020 was covered by the renewable energy certificates supplied by Rocky Mountain Power. These certificates offset the carbon emissions from all of the Scope 2 purchased electricity emissions in 2020 for both assets. The renewable energy certificate programme is Green-e Energy certified, and meets the environmental and consumer protection standards set by the Center for Resource Solutions.

Our diamond operations have reduced diesel usage through wind power at the Diavik Diamond Mine in northern Canada and hydropower at the Argyle mine in Western Australia. As part of our product group sustainability strategy, we continue to advance abatement options and technology to work towards ongoing emissions reductions.

1. This estimate is at a "better than feasibility study" level of accuracy.
2. The definitive estimate assumes restrictions in 2021 that are no more stringent than those experienced in September 2020. Mongolia implemented further restrictions at the end of 2020 in response to a re-emergence of COVID-19. Should COVID-19 constraints be maintained at December 2020 levels, escalate further in 2021 leading to tougher restrictions, or continue beyond 2021, additional costs and schedule impacts will arise.
3. This production target (stated as recovered metal) for the Oyu Tolgoi underground and open pit mines was previously reported in a release to the market on 16 December 2020 (market release). All material assumptions underpinning the production target continue to apply and have not materially changed.
4. This Ore Reserve estimate was set out in the Market release dated 16 December 2020. The Competent Persons responsible for the information in the Market release that relates to Ore Reserves were Mr Ferrin Prince and Mr Mark Bixley who are a Member and Fellow respectively of The Australasian Institute of Mining and Metallurgy. Rio Tinto confirms that it is not aware of any new information or data that materially affects the information included in the Market release, that all material assumptions and technical parameters underpinning the estimates in the Market release continue to apply and have not materially changed, and that the form and context in which the Competent Persons' findings are presented have not been materially modified.
5. Refer to the release to the ASX on 28 July 2020 "Rio Tinto reveals maiden Resource at Winu and new discovery". The Competent Person responsible for the information in that release that relates to Mineral Resources and Exploration Results is Dr Julian Verbeek. Rio Tinto confirms that it is not aware of any new information or data that materially affects the information included in the market announcement, that all material assumptions and technical parameters underpinning the estimates in the market announcement continue to apply and have not materially changed, and that the form and context in which the Competent Person's findings are presented have not been materially modified.

Borates, produced by our E&M product group, are used in space travel.

Energy & Minerals

Overview

Our Energy & Minerals portfolio includes a suite of global businesses – producing high-grade iron ore concentrate and pellets; titanium dioxide, rutile and zircon; borates and lithium; and uranium – that are each leaders in their respective industries, operating with innovation at their core and delivering to stakeholders and our shareholders.

High-grade iron ore

At the Iron Ore Company of Canada (IOC), we produce premium iron ore pellets and high-grade concentrate with low levels of impurities, enabling our customers to operate more productively, reduce emissions and produce higher-quality steel for the modern world. Located in north east Canada, IOC is a fully integrated business with mine, processing, railway, and port facilities able to optimise and deliver value. In 2020, we introduced autonomous electric drills, controlled remotely by operators at IOC's Integrated Operations Centre, after a successful initial pilot in 2019. These are some of the first of their kind to be used autonomously in North America.

Our Simandou iron ore joint-venture project in Guinea is one of the world's largest untapped and richest high-grade iron ore deposits, and complements our existing world-class iron ore portfolio. With an increasing focus on emissions and decarbonisation across the global steel industry, demand for high-grade ores is expected to continue to grow – and Simandou can be a key pillar for Rio Tinto's role in this transition. Work continues on the technical optimisation of the project, with preparatory activity for an update of the project's Environmental and Social Impact Assessment underway. We continue to engage with the government of Guinea about potential mechanisms for collaboration on infrastructure development.

TiO_2 & critical minerals

Our iron and titanium business is a major global producer of high-grade titanium dioxide with operations in Canada, Madagascar and South Africa. The nature of the orebodies allows us to produce by-products such as scandium and monazite. Monazite is a combination of rare earth elements such as neodymium used in powerful permanent magnets found in electric vehicle motors and wind turbine generators.

We have developed an innovative process to extract high-purity scandium oxide from waste generated by titanium dioxide production in Quebec, Canada. Scandium oxide is used to improve the performance of solid oxide fuel cells, a new clean energy technology used as a power source for data centres and hospitals. It is also used to produce high-performance aluminium-scandium master alloys for the aerospace, defence and 3-D printing industries.

Borates & lithium

Our borates business – U.S. Borax – supplies approximately 30% of the global demand for borates, used in everything from agriculture to fibreglass insulation and sanitation and is a input into personal care products, laundry detergents and industrial cleaning agents. At our Boron operations in California, US, we have built a demonstration plant to extract lithium as a by-product. This plant has the capacity to produce 10 tonnes per year of battery grade lithium-carbonate, used in rechargeable batteries for electric vehicles and consumer electronics.

In Serbia, we continue to progress Jadar, a unique, world-class lithium-borate deposit, with the project moving to the feasibility study stage in 2020. The project has the potential to supply the electric vehicle value chain for decades. An investment decision is due at the end of 2021.

Uranium

We also own interests in a uranium business – Energy Resources of Australia (ERA, 86.3%) – and a uranium project in Canada. ERA's processing operations ceased on 8 January 2021. A structured programme of progressive rehabilitation will be completed by 2026.

Snapshot of the year

0.41
AIFR
(2019: 0.43)

$5.0bn
gross product sales
(2019: $5.2bn)

35%
underlying EBITDA margin (product group operations)
(2019: 37%)

$1.1bn
net cash generated from operating activities
(2019: $1.4bn)

Energy & Minerals in figures

6
mining sites

7
processing plants

Operations in
6 countries

3 products
products from mining by-products

8,000 employees

Energy & Minerals
continued

2020 year end results	2020	2019	Change
Iron ore pellets and concentrates production[1] (million tonnes - Rio Tinto share)	**10.4**	10.5	(1)%
Titanium dioxide slag production (000 tonnes - Rio Tinto share)	**1,120**	1,206	(7)%
Borates production (000 tonnes - Rio Tinto share)	**480**	520	(8)%
Uranium production (000 lbs - Rio Tinto share)[2]	**2,870**	2,640	9%
Gross product sales (US$ millions)	**5,014**	5,150	(3)%
Underlying EBITDA (US$ millions)	**1,646**	1,762	(7)%
Underlying EBITDA margin (product group operations)	**35%**	37%	
Underlying earnings (US$ millions)	**577**	611	(6)%
Net cash generated from operating activities (US$ millions)	**1,053**	1,387	(24)%
Capital expenditure (US$ millions)[3]	**(428)**	(551)	(22)%
Free cash flow (US$ millions)	**604**	817	(26)%
Return on capital employed[4]	**12%**	15%	

1. Iron Ore Company of Canada and the Simandou iron ore project in Guinea continue to be reported within Energy & Minerals.
2. To allow production numbers to be compared on a like-for-like basis, we have excluded production from asset divestments completed in 2019 from our share of prior year production data. The financial data above includes the results of divested assets up to the date of sale. In February 2020, our interest in Energy Resources of Australia (ERA) increased from 68.4% to 86.3% as a result of new ERA shares issued to Rio Tinto under the Entitlement Offer and Underwriting Agreement to raise funds for the rehabilitation of the Ranger Project Area. Production is reported including this change from 1 March 2020.
3. Capital expenditure is the net cash outflow on purchases less sales of property, plant and equipment, capitalised evaluation costs and purchases less sales of other intangible assets.
4. Return on capital employed (ROCE) is defined as underlying earnings excluding net interest divided by average capital employed (operating assets).

Safety

Our E&M operations recorded progress across key safety metrics this year. The all-injury frequency rate decreased to 0.41 (down from 0.43 in 2019), the result of continued safety coaching and emphasis on leadership on the ground.

We were pleased to record, in 2020, another year with zero fatalities. However, in October 2020, one of our Richards Bay Minerals employees, in South Africa, sustained a permanent disabling injury. The employee's rehabilitation is progressing well and we will continue to support him and his family. As we always do in such instances, we have shared the analysis and lessons learned across the Group to help prevent such incidents in the future.

Our ongoing commitment to reduce significant process safety incidents resulted in five process safety incidents in 2020, down from eight in 2019.

Our QMM operations in Madagascar delivered one of the best safety performances across the Group, with no recordable injuries and an all-injury frequency rate of 0.00. Three other E&M sites, Jadar, Simandou and Suzhou, also ended the year with no recordable injuries.

In 2021, we will continue to implement the safety maturity model across our sites with a focus on leadership coaching and impactful leadership interactions. Our programmes to eliminate fatalities and decrease risks related to major hazards remain at the core of our 2021 strategy.

COVID-19 response

With operations across Australia, Asia, Europe, Africa and North America we saw a significant spread of COVID-19 related impacts over the course of the year.

We have put in place a range of COVID-19 specific measures across the business to align with directives from governments and health authorities in our jurisdictions. As a result, we have secured the confidence of our local governments allowing us to continue to operate as essential businesses. We mobilised significant resources across our business to keep our employees safe and provide critical support to our communities – ranging from food and water security to PPE and equipment provisioning for health facilities.

In Canada, we made alternative housing available for victims of domestic violence and we donated hand sanitiser produced at site. We donated funds to offer food assistance and distanced learning support to families in the communities near our Boron operations in California, US. In Guinea and South Africa, we partnered with local sewing businesses to manufacture cloth masks. In Madagascar, we transformed one of our building into a fully equipped medical treatment centre to assist local health authorities.

Financial performance

The business was flexible and resilient from an operational perspective, while fully complying with significant government-imposed COVID-19 restrictions, notably in Canada, the US and South Africa. At Iron Ore Company of Canada (IOC), we took advantage of stronger market conditions in Asia in the first half of the year and switched our product mix, prioritising concentrate over pellets, and then returned to higher pellet production as European demand recovered.

Underlying EBITDA of $1.6 billion was 7% lower than 2019 with IOC shipping 8% higher volumes and benefiting from stronger pricing, while Minerals (titanium dioxide feedstocks and borates) were impacted by COVID-19 restrictions and weaker market conditions.

We progressed our evaluation studies with funding approved for the Jadar lithium-borate feasibility study and activity starting at the mine area of the Simandou iron ore project.

We generated net cash of $1.1 billion from our operating activities, a 24% decline on 2019, driven by the same trends as underlying EBITDA and the timing of tax payments from higher profits at IOC in 2019, with the final payments made in 2020. Free cash flow of $0.6 billion reflected tight control of capital expenditure, down 22% on 2019.

Review of operations

Uranium

Our share of uranium production was 9% higher than 2019, primarily due to the change in our shareholding (from 68.4% to 86.3%) following completion of ERA's entitlement offer in February 2020. ERA's Ranger operation continued to process existing stockpiles uninterrupted in 2020, with production ceasing on 8 January 2021.

Iron Ore Company of Canada (IOC)

Production of pellets and concentrate at IOC was 1% lower than 2019 due to unplanned maintenance at the processing facilities in the third and fourth quarters.

Minerals

Titanium dioxide slag production of 1.1 million tonnes was 7% lower than 2019 due to COVID-19 restrictions in Quebec and South Africa, lower market demand and operational disruptions at Richards Bay Minerals (RBM). With the COVID-19 resurgence in Quebec and South Africa, we continue to operate our assets with extensive measures in place to ensure the safety of our employees and communities.

Borates production was 8% lower than 2019 due to a period of lower demand related to COVID-19 uncertainty resulting in an adjustment to refinery operating rates. The extension of a planned shutdown impacted fourth quarter production.

New projects and growth options

The $463 million Zulti South construction project at RBM remains on full suspension. We will assess a restart after normalisation of operations.

At the 100%-owned Jadar lithium-borate project in western Serbia, we progressed to the feasibility study stage, following Board approval of almost $200 million, with the studies expected to be complete by the end of 2021. If the investment is approved, construction would take approximately four years. In December, we disclosed a maiden Ore Reserve and updated Mineral Resource. The Ore Reserve is 16.6 million tonnes at 1.81% Li_2O and 13.4% B_2O_3.[1] Jadar would be capable of producing approximately 55 thousand tonnes of battery-grade lithium carbonate, as well as 160 thousand tonnes of boric acid (B_2O_3 units) and 255 thousand tonnes of sodium sulphate as by-products per annum.[2] Due to the different reporting system used in Serbia, Jadar also submitted its "Elaborate of Resources and Reserves" to the Serbian Mining Ministry in the fourth quarter of 2020. This document was approved, and the respective Certificate was received on 6 January 2021. The adoption of "Elaborate of Resources and Reserves" allowed the project to then immediately submit the application for exploitation field licence which provides tenure for the deposit. In accordance with Serbian regulations, this permit is expected within the coming months.

At the Simandou iron ore project[3] in Guinea, we expect to complete the first phase of the technical optimisation work on the infrastructure components in the first half of 2021. Activity in the mine area is starting including roadworks. We are making progress with implementation of the project's Social and Environmental Impact Assessment.

Greenhouse gas emissions

In 2020, Energy & Minerals' absolute greenhouse emissions were 3.6Mt CO_2e, a reduction of 0.1Mt CO_2e from 2018 levels. The decrease in emissions was driven by reductions in production and energy consumption mainly due to the response to COVID-19.

Iron ore pellets and concentrate production
(million tonnes – Rio Tinto share)



Titanium dioxide slag production
(thousand tonnes – Rio Tinto share)



1. This Ore Reserve estimate was set out in a release to the ASX dated 10 December 2020 "Rio Tinto declares maiden Ore Reserve at Jadar" (ASX release). The Competent Person responsible for the information in the ASX release that relates to Ore Reserves is Mr Allan Earl who is a Fellow of the Australasian Institute of Mining and Metallurgy (FAusIMM). Mr Earl's assessment is supported from a metallurgical perspective by Mr Gary Davis who is a Member of the Australasian Institute of Mining and Metallurgy (MAusIMM). Rio Tinto confirms that it is not aware of any new information or data that materially affects the information included in the ASX release, that all material assumptions and technical parameters underpinning the estimates in the ASX release continue to apply and have not materially changed, and that the form and context in which the Competent Persons' findings are presented have not been materially modified.
2. These production targets were previously reported in the ASX release on 10 December 2020. All material assumptions underpinning the production targets continue to apply and have not materially changed.
3. Operating under the Simfer joint venture where the government of Guinea holds 15% and Simfer Jersey holds 85%. Simfer Jersey is owned by Chalco Iron Ore Holdings (CIOH) (47%) and Rio Tinto (53%). CIOH is owned by Chinalco (75%), Baosteel Resources (20%), China Civil Engineering Construction Corporation (CCECC) (2.5%) and China Harbour Engineering Company (CHEC) (2.5%). This structure has been in place since 2017.

Innovation

The innovation we brought to market this year included everything from creating products from waste to site teams manufacturing hand sanitiser and building COVID-19-resistant, hands-free door openers. While some of these initiatives were small, they are nevertheless a clear demonstration of the ingenuity and pioneering spirit for which our company is known.

An employee operating a drone in the loadout area at our Iron Ore Company

Working safer and smarter

Technology played an essential role in helping us keep our operations running, smoothly and safely, during the COVID-19 pandemic. For example, we partnered with a data analytics specialist and used artificial intelligence (AI) to help us anticipate emerging COVID-19 risks across geographies so we could adjust resources and controls – such as office access – in higher-risk regions.

Our iron ore business in the Pilbara, Western Australia, introduced antibody testing to supplement screening tests at domestic airports for our fly-in, fly-out workforce, enabling our business to continue operating while minimising the risk of COVID-19 transmission.

We increased our use of drones and mine pit cameras and introduced video headsets, so we could continue to conduct visual inspections of tailings facilities and equipment while complying with travel restrictions and physical distancing requirements. At the Oyu Tolgoi underground project, we used Vuzix smart glasses – based on augmented reality – letting technical experts from all over the world work with local teams.

We also continued to innovate as part of our broader health and safety programme: for example, our Weipa bauxite team in Queensland, Australia, designed a custom-made mechanical arm to open and close tailings valves, reducing the risk of injuries.

Product innovation

This year we launched three new products by either extracting valuable metals from waste – or by creating a new product from the waste itself. All three reduced the amount of waste sent to landfills, created useful products and helped customers meet their sustainability goals.

At our Boron operations in California, US, we engineered a way to extract lithium – a critical mineral used in clean technologies – from waste rock. In December, we commissioned a demonstration plant capable of producing 10 metric tonnes per year of battery grade lithium-carbonate, allowing us to assess the technical, economic and commercial feasibility of progressing to a production scale plant.

In our Aluminium business, approximately 85% of the 400,000 tonnes of waste (excluding bauxite residue) created by our Saguenay – Lac-Saint-Jean operations is used to make new products. In 2020, we partnered with leading sustainable construction materials company Lafarge Canada to launch Alextra, a new product made from treated spent pot lining used to produce cement. Lafarge Canada will make around one million tonnes a year of cement using Alextra.

And we continue to improve our anhydrite fertiliser product, made from aluminium process waste, via funding research by Université Laval and Université du Québec à Chicoutimi, with the governments of Canada and Quebec, providing data that helps farmers optimise anhydrite application. We also partnered with Quebec's Resolute Forest Products to explore the use of anhydrite with by-products from their paper mills – which, when combined, could become an even more efficient 'super fertiliser'.

Also in 2020, we continued to digitise our commercial activities to enhance our customer experience including:

- Completing the first end-to-end blockchain transaction in Renminbi with the China Baowu Steel Group;
- Launching the 'Rio Portside' WeChat app enabling customers to buy iron ore on their phones – a first for the industry;
- Introducing a 'Track-and-Trace' tool, enabling Aluminium customers to track their cargo in real time.

Smart partnerships

In 2020 our ELYSIS partnership completed the construction of the Research & Development Centre to scale up breakthrough technology that eliminates all direct greenhouse gases from the aluminium smelting process.

Our partnership to develop Australia's first nationally recognised vocational qualification in automation with South Metropolitan TAFE and the Western Australian government was globally recognised, winning a Gold Award in the "Partnership with Industry" category at the World Federation of Colleges and Polytechnics 2020 Awards of Excellence.

In 2020, we also formed new partnerships – and extended existing ones – to explore ways to reduce emissions across the steel value chain. This included:

- **Committing $10 million** to advance our climate partnership, announced in 2019, with China Baowu Steel Group and Tsinghua University. This will fund the joint establishment of a Low Carbon Raw Materials Preparation Research and Development Centre
- **Committing $4.5 million** to support research projects at the Tsinghua-Rio Tinto Joint Research Centre for Resources, Energy and Sustainable Development over the next five years
- **Signing a Memorandum of Understanding** with Nippon Steel Corporation to jointly explore, develop and demonstrate technologies to transition to a low-carbon emission steel value chain.

This year marked our third year as the industry partner of the Foundation for Australia-Japan Studies, a not-for-profit organisation that encourages collaboration between academic institutions, government and industry in Australia and Japan. Since 2018, we have funded ten research projects ranging from low-carbon desalination technology to robotics.

And through our Pioneer Portal, which crowd-sources innovation from outside the company, we received more than 370 submissions from entrepreneurs, start-ups and businesses, helping us source new ideas to address business challenges. These range from designing robots to minimising risks associated with cleaning large storage tanks to finding ways to reuse rail sleepers.

Driving efficiency

We continued to use machine learning and predictive analytics to increase productivity at our operations as well as support our exploration efforts globally.

At Gudai-Darri (Koodaideri) we are shaping new ways of working – some never seen in our business or industry. Set to be one of the world's most automated mines, Gudai-Darri's autonomous fleet will include the world's first autonomous water carts, to be launched in 2021. Delivered through a partnership with equipment manufacturer Caterpillar, the water carts will join our autonomous heavy mobile equipment fleet including haul trucks and autonomous drills.

We also piloted two autonomous electric drills at the Iron Ore Company of Canada (IOC). Among the first of their kind, the trial showed the system delivered increased safety and productivity benefits compared with standard rigs. By allowing a single operator to monitor multiple drills from IOC's Integrated Operations Centre in Labrador City, drilling can continue safely in conditions unfit for teams on the ground, such as blizzards, freezing temperatures and electrical storms.

2020 marked one year since we established our Operations Centre in Brisbane, which now provides an end-to-end view of our Weipa and Gove bauxite mines. Among other benefits, the Centre has helped us better plan bauxite grades for our local refineries, optimise shipping schedules from the mines and deliver savings through lower processing costs.

Predicta, our data science and advanced analytics service, combines specialist engineering knowledge with data science tools and processes to help prevent critical asset failure. Predicta enables consistent equipment performance, minimises down time and reduces maintenance costs. For example, at our Pilbara iron ore operations in Western Australia, Predicta helped our ore crushers reduce lost production time by 94%. We have deployed Predicta at 19 operating sites, and we plan to expand it to more in the future.

At our Pilbara iron ore operations, we implemented a predictive model to inform ore blending strategies and help minimise blockages and unscheduled downtime at our processing plants. A pilot deployed at our Hope Downs 1 mine in 2019 confirmed the model helped reduce downtime in the plant by 40%. We have rolled out models at a further five Pilbara mines, and we continue to improve the accuracy of those deployed.

Commercial

Our Commercial group encompasses our global sales and marketing, procurement, and marine and logistics operations. By harnessing the skills, knowledge and insights we acquire from everything we buy, sell and move around the world, we focus on deepening customer and market insights, improving connections and accelerating decisions between our markets and assets and partnering with customers and suppliers to generate additional value.

Our fleet of 230 contracted and owned ships transport millions of tonnes of product across multiple continents.

In 2020, while trade flows were disrupted due to COVID-19 restrictions, we continued to fulfil our customer and supplier orders and ensured our operations had the materials they needed to continue operating safely.

This year, we continued to expand our commercial activities into new areas to meet customer needs and maximise the value of our physical flows. In Iron Ore, for example, we grew our portside sales presence in China to nine ports, adding more than 80 new customers to our business. In Aluminium, we established bonded warehouses for alumina in Qingdao, Lianyungang, and Bayuquan in China to enable just-in-time deliveries, greater flexibility through inventory management, and access to new customers. In addition, by providing strong 'virtual' technical and customer support, we were able to successfully deliver bauxite to a new customer facing COVID-19-related supply disruptions.

We also used the challenges presented by COVID-19 – such as the inability to exchange physical documentation – as a catalyst for us to expand digital interfaces with customers and suppliers. For example, we completed the industry's first end-to-end blockchain transaction in Renminbi, with the China Baowu Steel Group. We will continue to pilot and adopt new digital tools to improve our customers' and suppliers' experience.

This year, we also progressed a range of partnerships and programmes aligned with our product stewardship strategy and our customers' growing demand for responsibly produced materials. Key achievements included:

- Our Kennecott and Oyu Tolgoi operations were the first in the world to be awarded the Copper Mark – the industry's independent assurance programme – verifying our copper is responsibly produced.
- We announced a partnership with AB InBev, the world's largest brewer, to produce beverage cans made from low-carbon aluminium that meets industry-leading sustainability standards.
- We are working with Shawinigan Aluminium Inc to provide our aluminium customers in Canada and the US with high-quality alloys made with recycled content from 2021.
- We began trialling the production of small quantities of high-performance aluminium-scandium master alloys, using scandium oxide recovered from waste created from the titanium dioxide production process.

Safety

In 2020, we continued to prioritise the safety, health and wellbeing of our employees, contractors and stakeholders, with an increased focus on mental wellbeing.

COVID-19 added an additional layer to the diverse range of risks we face across our global sales and marketing, procurement and marine and logistics activities. For example, to manage the risks to seafarers from restrictions on crew changeovers, we continue to work with the industry, our shipowner partners and regulators to facilitate crew changes and protect crew welfare.

In addition, our primary focus has been on maintaining critical risk management fatality prevention programmes across areas of greatest exposure – primarily marine and logistics, and procurement – while implementing mental and physical wellbeing initiatives to help employees balance work and personal priorities. In 2020, we had zero fatalities and a 0.11 all-injury frequency rate. In 2021, we intend to continue to make mental health and wellbeing a central part of our employee initiatives.

Market insight and outlook

The global economy suffered the largest recession in decades with COVID-19 restrictions impacting markets, resulting in global GDP falling by 3.9% in 2020. As we begin 2021, there is evidence of a new investment cycle amid accommodative monetary policy and extensive deployment of fiscal policy around the world. However, ongoing efforts to contain COVID-19 remain a headwind, and geopolitical tensions present risks to the outlook.

China was the only major economy to record positive GDP growth this year, logging growth of 2.3%. The growth was commodity intensive, following the government's rapid response and stimulus that accelerated infrastructure projects and encouraged construction. While continued positive momentum is expected in 2021, China's recovery is transitioning to a more broad-based upswing in consumption and private sector investment. In the longer term, the trend of income growth in emerging markets, including those in ASEAN countries and India, will continue to drive global commodity demand. In China, strong commodity demand will be increasingly driven by the government's urban agglomeration and decarbonisation targets, as well as a drive for self-sufficiency, which will continue to grow the manufacturing sector.

Iron ore

The COVID-19 pandemic had a disparate impact on iron ore demand in 2020: solid growth in China's imports more than offset the contractions in other regions. Scrap collection and availability were significantly disrupted by the pandemic, further supporting iron ore demand at a time when weather events constrained supply from the major producing regions. As a result, the monthly average Platts index for 62% iron fines converted to an FOB basis rose 19% in 2020. With the exception of products sold at ports in China, all of our Pilbara products are priced with reference to the 62% index.

Global steel production contracted by 1.2% year-on-year in 2020, as China lifted its steel production output to a record 1.05 billion tonnes, which compensated for the 9% contraction in the rest of the world. Pandemic-related capacity and production cuts in Europe, Japan and the US brought steel output down by 12-17% compared with 2019. India, the world's second largest steel producer, recorded a 11% year-on-year contraction in 2020. Combined crude steel production in the world, ex-China, recovered to 2019 levels for the first time in October 2020 and grew year-on-year during Q4 2020.

Weather events in Brazil and Australia during the first half of 2020 curtailed seaborne iron ore supply, but the cumulative shipments of the major producers increased by 2 % (~25Mt) over the year. Meanwhile, China's domestic iron ore supply expanded by ~20Mt year-on-year to ~290Mt and helped meet record demand in 2020, as elevated iron ore prices incentivised some previously idled small-scale mines to restart operations during the second half of the year. Reflecting the demand disparity between domestic and export markets, China's net finished steel exports also contracted by 36% year-on-year to 33Mt in 2020.

Due to robust demand and global supply constraints, the market for iron ore concentrate and pellets was strong throughout the year. This is expected to continue into 2021 as more steel producers requiring high-grade, low impurity pellets increase production and global supply constraints persist.

Aluminium

Aluminium primary demand declined by ~3.0% in 2020, following a fall of ~1.0% in 2019. COVID-19 severely impacted consumption this year, but with notable regional differences in recovery rates: gradual in the developed world with China experiencing a strong V-shaped recovery. Demand in the transport sector has been especially weak in 2020, but it has been robust in the packaging sector. We expect overall demand to rebound in 2021, but ongoing COVID-19 restrictions and political risks remain.

The alumina market remained in moderate surplus, and low prices have resulted in a high level of idled capacity in inland China.

China continues to drive demand in the global seaborne bauxite market as result of stricter environmental measures and the depletion of domestic bauxite. Chinese bauxite imports rose by ~11% to 112Mt in 2020 on the back of increased imports from Guinea, Australia and Indonesia.

Copper & Diamonds

Copper prices fell to a low of 209c/lb in March 2020 as COVID-19 severely impacted demand. The price rebound was led by recovering Chinese demand and supply tightness due to reduced scrap availability and mined supply disruptions. Chinese inventories subsequently reached their lowest level in over eight years and LME stocks fell to their lowest in 15 years. Prices reached a seven-year high of 361c/lb in December 2020, more than 70% higher than the low earlier in the year, as net-long investor positions (on COMEX and LME) reached the equivalent of 2Mt. However, the rate of recovery in growth is slowing in many economies and the rise of renewed lockdowns threatens the recovery.

Policy direction in the medium term indicates a strong copper-intensive outlook with the continued rise of electric vehicles, potential green stimulus packages around the world and China's push for carbon neutrality by 2060.

In diamonds, a heavy decline in spending on jewellery impacted underlying demand, while lockdowns in India's manufacturing centres restricted the volume of rough diamonds purchased from miners.

Energy & Minerals

Underlying demand for titanium dioxide pigment fell sharply in the second quarter of 2020 leading to a deterioration of feedstock demand by the middle of the year. Leading indicators suggest a recovery in 2021. Structural factors remain favourable for high-grade TiO2 feedstock and zircon supply.

Medium- to long-term demand for borates is tied to increases in wealth and living standards but is prone to short-term shocks, as witnessed in 2020. A decline in demand impacted all regions globally and coincided with a reduction of supply volumes. A moderate recovery is expected in 2021.

Sustainability

Sustainability came into sharp focus in 2020 in a variety of ways.

When COVID-19 became a global pandemic, we undertook special measures to protect the safety and wellbeing of employees, contractors and communities, and were able to keep people safe and healthy while keeping our operations running. This was also important to our shareholders: as restrictions on movement were implemented, host communities and governments relied on the wages, taxes and royalties we paid in 2020 (over $12 billion across more than 27 countries). Despite the radical changes required, especially at our operations, we are proud to have delivered a second straight year with zero fatalities.

However, 2020 was overshadowed by the destruction of two rock shelters in the Juukan Gorge. It should not have happened, and it represented a breach of our values. The steps we have taken – to ensure that the destruction of a site of such exceptional cultural significance never happens again – are summarised on pages 10-11. We are determined to learn the lessons from Juukan Gorge, rebuild trust in our company and to catalyse broader changes as we seek to re-establish our leadership in communities and social performance.

We know we must work hard to regain the trust of our stakeholders, and today, more than ever, we acknowledge our responsibility to continue to work in a way that delivers real, lasting benefits to our host communities and countries. We know we must care for our employees, respect and safeguard the environment when we explore, build and operate and repurpose or rehabilitate the land when our operations come to an end. We must also contribute to local and national economies by paying competitive wages, treating our suppliers fairly, investing in our local communities and paying our share of taxes.

An employee and Traditional Owner at our Weipa bauxite mine, Queensland, Australia.

Our sustainability framework is predicated on earning the trust of our employees, partners and society

Running a safe, responsible and profitable business

This is the foundation of our approach.

Collaborating to enable long-term benefits where we operate

We collaborate with others to build respectful relationships and enable long-term benefits where we operate – working with governments at all levels and community partners to help make a difference in people's lives.

Producing materials essential for human progress while contributing to some of the greatest challenges facing society

We aim to contribute to a more sustainable future – through reducing our own global carbon footprint, addressing the UN Sustainable Development Goals, forming smart, technology – and value-chain – focused partnerships and producing materials essential to a low-carbon economy.

Our approach to the United Nations' Sustainable Development Goals

Each of our three pillars contributes to the United Nations' 17 Sustainable Development Goals



This year, we re-examined our approach to the UN Sustainable Development Goals (SDGs) – in conjunction with our purpose, business and sustainability strategies and risks – to better understand how we can work alongside governments, civil society and others to pursue meaningful impact on development. We decided to focus on the two goals – SDG 12 (responsible consumption and production) and SDG 8 (decent work and economic growth) – that we feel are most relevant to operating our business responsibly.

SDG 12 relates to how we – as a custodian of natural and mineral resources – mine, process and produce materials and contribute to ethical global supply chains, including trusted lifecycle assessments. This SDG builds on our existing health, safety, environment and community performance standards and our membership of responsible production and product stewardship programmes, including the Aluminium Stewardship Initiative, Copper Mark, the International Council on Mining and Metal's Performance Expectations, the Responsible Jewellery Council and the Mining Association of Canada's Towards Sustainable Mining.

SDG 8 speaks directly to our values and priorities, including our commitments to creating a safe and inclusive working environment, as well as promoting education and training partnerships that support social and economic development, including by helping to develop skills for the future. We are committed to supporting underrepresented groups; in particular, we seek to ensure Traditional Owners and Indigenous peoples have a stronger voice in the decisions that affect their lands.

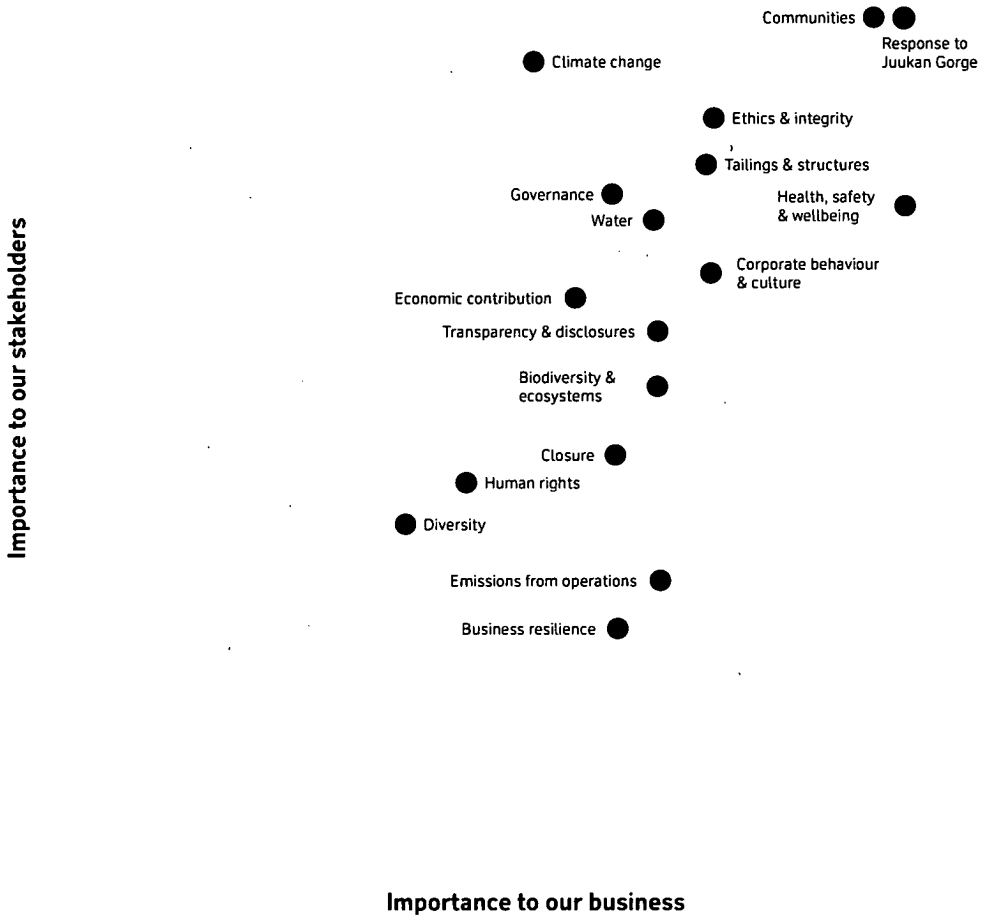
In our business, efforts to further these two 'lead' goals are naturally supplemented by efforts to further several other 'supporting' goals. These are also strongly aligned with our sustainable development and business drivers – climate action, water, gender diversity, health and wellbeing, reduced inequalities, innovation and quality education, and environment.

SDG 17 (partnerships for goals) reflects our approach to sustainability and is fundamental to the way we run our business. We work purposefully with technology partners, local suppliers, governments, community groups, industry leaders and NGOs at all stages of the mining lifecycle to deliver real benefits to all our stakeholders.

Reporting What Matters

This year, we incorporated the majority of our sustainability reporting into our Annual Report and have added content tools, such as a full 'Sustainability Fact Book', which has current and historical data on topics including health, safety, environment, climate, communities, human rights, responsible sourcing and transparency. We are supplementing these disclosures with additional information on our website.

As a member of the International Council on Mining and Metals (ICMM), we commit to reporting on our sustainability performance against Global Reporting Initiative (GRI) standards (Core option). Based on extensive internal and external stakeholder feedback on our sustainability performance, especially with regard to communities, we adjusted our sustainability materiality assessment. We conducted a comprehensive assessment in 2019 through structured meetings, surveys and interviews with a broad range of stakeholders around the world. These included investors, customers, communities, civil society organisations, governments and Rio Tinto experts and leaders.



* According to GRI's guidance, relevant topics that potentially merit inclusion in sustainability reporting are "those that can reasonably be considered important for reflecting the organization's economic, environmental, and social impacts, or influencing the decisions of stakeholders." Impact "refers to the effect an organization has on the economy, the environment, and/or society (positive or negative)." View a full glossary of terms at riotinto.com.

2020 performance against targets

Targets	Performance
To reach zero fatalities, and to eliminate workplace injuries and catastrophic events	Zero fatalities at managed operations All-injury frequency rate (AIFR) at 0.37 (target: 0.37), reduced by almost 12% from 2019 (0.42) 1.31 million critical risk management verifications
All businesses will identify at least one critical health hazard material to their business and will demonstrate a year-on-year reduction of exposure to that hazard.	Despite a focus on responding to COVID-19, the 12 assets identified by the business demonstrated an 18% reduction in overall exposure to their identified critical health risks. Overall, this has reduced the level of exposure for 723 employees and contractors.
To reduce the rate of new occupational illnesses each year	27% decrease in the rate of new occupational illnesses since 2019
To reduce our absolute Scope 1 and 2 emissions by 15% and our emissions intensity by 30% by 2030 (relative to our 2018 equity baseline)[1]	2020 Scope 1 and 2 emissions were 31.5Mt CO_2e – a reduction of 1.1Mt CO_2e (3%) relative to our 2018 baseline. Our emissions intensity has remained approximately level since 2018.
To disclose for all managed operations by 2023, their permitted surface water allocation volumes, annual allocation usage and the estimated surface water allocation catchment runoff from average annual rainfall To achieve local water stewardship targets for selected sites by 2023	Despite the significant challenges faced at the assets and Group level last year, the water stewardship targets have progressed well, and with consistent attention we will deliver these as planned by 2023. For further details on our water performance see pages 81-84.
To demonstrate local economic benefits from employment and procurement of goods and services by reporting yearly against a locally defined target To capture and manage community complaints effectively and reduce repeat and significant complaints each year	100% (21 out of 21 asset groupings#) have met or are 'on track'[(a)] to achieve their 2021 significant complaints target* 95% (20 out of 21 asset groupings#) have met or are 'on track'[(a)] to achieve their 2021 repeat complaints target* 71% (15 out of 21 asset groupings#) have met or are 'on track'[(b)] to achieve their 2021 local employment target* 81% (17 out of 21 asset groupings#) have met or are 'on track'[(b)] to achieve their 2021 local procurement target*
To improve diversity in our business by: – Increasing women in senior leadership by 2% each year – Aiming for 50% women in our graduate intake, with 30% from places where we are developing new businesses	23% of our Executive Committee were women, down 2% from 2019 26.1% of senior leadership[2] were women, up 3.5% from 2019 19% of our workforce were women, up 0.6% from 2019 60% of our graduate intake were women, up 6.1% from 2019 33.3% of Board roles were held by women, up 22.2% from 2019 26% of our graduate intake was from places where we are developing new businesses[3], up 7% from 2019
Improving our employee engagement and satisfaction	One-point increase in our employee net promoter score (eNPS[4]) from 2019 One-point increase in employee satisfaction score (eSAT[5]) from 2019 One-point increase in our recommend score from 2019

1. In 2020, the Rio Tinto Board approved new climate targets to replace the 24% reduction in total greenhouse gas emissions intensity between 2008-20 (managed basis). In 2020, we achieved a 27.4% decrease in greenhouse gas emissions intensity since 2008 (managed basis).
2. We define senior leadership as general managers, Group advisers and chief advisers as well as employees in leadership roles who report directly to Executive Committee members.
3. Identifying with a nationality is not mandatory. More than 48% of our graduates have not formally reported a nationality.
4. eNPS is a measure of "how likely an employee is to recommend Rio Tinto to a friend or colleague". It is calculated by subtracting the proportion rating 0-6 from the proportion rating 9 and 10 (on a 0-10 scale).
5. eSat is a measure of "how happy an employee is to work at Rio Tinto". It is calculated by averaging the responses on the 1-7 scale and expressing this out of 100.

\# Refer to the Sustainability Fact Book on riotinto.com for details on the asset groupings.

* Due to COVID-19-related disruptions, the global target requirements have been extended to 2021 and further input has been requested on this extension. The 2020 actual performance will be considered as an interim report with the final year of the target period concluding in 2021.

(a) 'On track' means within one complaint of 2021 target and not on track is greater than one complaint off the 2021 target. A complaint is a communication indicating a community member has suffered some form of offence or detrimental impact from our business. It is significant if the actual consequence is major or catastrophic or the potential consequence is high. It is a repeat complaint if someone else complains about the same underlying issue, or the same person complains again.

(b) 'On track' means 80% or greater progress towards 2021 targets.

Sustainability
continued

Health, safety and wellbeing

Safety is our first value. It is how we start every shift and every meeting. We believe that all injuries can be prevented. We continue to make the safety of our colleagues and communities our first priority.

In 2020, for the second year running, we achieved zero fatalities. Over the past ten years, both the severity of injuries and our all-injury frequency rate (AIFR) have fallen significantly, from 0.69 in 2010 to 0.37 in 2020. Compared to 2019, our AIFR has improved by almost 12%.

While we are pleased by this performance, there is no question we can and must do better. This year, two employees suffered permanent disabling injuries: an employee lost his hand at Richards Bay Minerals, our titanium dioxide operation in South Africa, and a contractor was permanently injured at the Diavik Diamond Mine in Canada. We are supporting both colleagues and their families, and are committed to learn from and prevent these tragic incidents from recurring.

Our aluminium business is progressing its five-year plan to reduce health risk exposures by improving monitoring and implementing engineering controls, such as ventilation. We expanded the use of technology to support our fatigue management programmes and eliminate fatigue-related incidents. We also expanded our global health team to ensure we have the right support for occupational health and industrial hygiene matters.

We have also embarked on a systematic programme of minimising – with the goal of ultimately eliminating – diesel particulates from our underground mines. We are doing so by measuring diesel exhaust emissions and installing and upgrading diesel particulate filters on our existing diesel equipment fleets. We are in the process of investigating the transition to either battery electric or higher-tiered, cleaner engines where mobile battery electric equipment is not yet available.

Wellbeing has also been a key focus throughout 2020, particularly with the onset of the global COVID-19 pandemic. Lives were upended, with families separated due to border closures and extensive quarantines, parents needed to balance working from home with raising their children, and all of us were required to adjust. In response, we introduced more flexible work schedules, virtual care packs and ensured greater access to health and medical resources.

We have worked hard over many years on mental health and our strong foundation enabled us to respond quickly to the crisis. Importantly, our People Survey results showed employees felt supported during this challenging time.

Safety and health performance[1] 2016-20

	2020	2019	2018	2017	2016
Fatalities at managed operations	**0**	0	3	1	1
All-injury frequency rate (per 200,000 hours worked)	**0.37**	0.42	0.44	0.42	0.44
Number of lost time injuries	**189**	228[2]	226[2]	199	206
Lost time injury frequency rate (per 200,000 hours worked)	**0.22**	0.27	0.27	0.25	0.26
Safety maturity model (SMM) score	**5.4**	4.5	-	-	-
New cases of occupational illness (per 10,000 employees)	**15.7**	21.5[2]	29.6	24.6	47.3
Number of employees[3]	**47,500**	46,000	47,500	47,000	51,000

1. Data relating to fatalities, all-injury frequency rate and lost time injury frequency rate includes all employee and contractor exposure hours and incidents at managed operations. New cases of occupational illness are reported for employees only.
2. Numbers adjusted from previous years to ensure comparability over time.
3. Includes our share of joint ventures and associates (rounded) and excludes contractors.

Contributing causes for newly reported illness cases (2020)

	2020
Noise-induced hearing loss	21(32%)
Musculoskeletal disorders	30(46%)
Mental stress	1(2%)
Others	13(20%)

COVID-19

In 2020, COVID-19 emerged as a global pandemic. We quickly assessed the challenges for our company, communities, contractors and employees and instituted controls to keep people safe and healthy from the virus and allow our operations to run safely and smoothly.

The protocols we put in place include those in line with government guidance, directives and best practice advice from leading medical experts and international health organisations. Our measures included: travel restrictions, social distancing, increased personal hygiene, and greater support for employees in areas such as mental health, managing fatigue and adjusting to working from home as well.

Every mine, operation and office adopted a set of screening measures, such as health questionnaires and temperature screening. In addition, for most locations, we were able to implement virus screening. This work has been closely co-ordinated with local governments. For example, our Pilbara iron ore business introduced antibody screening to supplement our rapid screening measures at domestic airports in Western Australia for our fly-in, fly-out (FIFO) workforce.

We also partnered with a data analytics specialist and used artificial intelligence (AI) to help us anticipate emerging local COVID-19 geographic risks so we could adjust resources and controls in those regions. For example, this tool helped us identify the best time to strengthen or relax control measures, such as when employees could safely return to offices in different jurisdictions.

We continue to ensure affected employees have the medical support they need when they, or their families, are affected by the virus. We know it is a challenging time for many people and we are closely tracking the wellbeing and fatigue of our employees and offering support as needed. In addition to our employee assistance programme (EAP), for employees and their families, this support includes the following:

- Adapting our leave and pay benefits, such as offering our vulnerable employees special leave
- Providing flexible work arrangements
- Developing 'virtual care packs' with key information on resources available
- Providing telemedicine resources in several locations

An example of operating safely during COVID-19: Iron Ore, Pilbara, Western Australia

Our Iron Ore business in Western Australia employs 13,600 people. The majority of our operations are based in the Pilbara region, more than 1,000 kilometres from Perth, and include a significant fly-in, fly-out (FIFO) workforce.

Minimising the risk of COVID-19 transmission among our FIFO employees and contractors was essential to continue operating safely, and in compliance with government directives.

From March to August, we implemented longer rosters (two-week-on, two-week-off) for thousands of people to reduce the risk of spreading the virus by reducing the frequency of travel in and out of the Pilbara. To service these changes, we secured additional charter flights, ensuring compliance with physical distancing guidelines by spacing people appropriately on planes and in airports. To comply with travel restrictions, we also relocated more than 700 employees with specialist skills to Perth so they could continue in their roles.

We introduced a five-layer screening process – conducted by trained medical staff – at the Perth, Busselton, Geraldton and Albany airports for FIFO employees and contractors returning to work. This included:

- A health questionnaire prior to travelling to screen for potential exposure to COVID-19, consistent with government restrictions on intra-state travel
- A face-to-face assessment with a nurse on arrival at the airport
- Temperature checks via an electronic thermometer
- Antibody testing, via a small blood sample, to check for virus-related antibodies. If antibodies were detected, the employee was tested for COVID-19 via a nasopharyngeal swab (Perth airport) or referred to an approved COVID-19 testing clinic (regional airports). They were also required to self-isolate as a precaution
- An access band allowing employees who were cleared by the screening process to board their flight

We also changed the way we worked on the ground. For example, we implemented stronger controls on access to our sites and used technology – such as drones and mine pit cameras – to conduct monitoring activities, reducing the need to visit site. Our health and safety teams put a range of safeguards in place: rooms were measured and marked out to indicate maximum capacity, crosses marked on floors to indicate physical distancing guidelines, and we increased the frequency of cleaning high-touch areas.

We also supported medically vulnerable employees, ensuring appropriate medical assessments were undertaken. We also made necessary work arrangements to protect their health.

To support our FIFO teams – many of whom were spending more time away from their families – we provided an on-call service so they could return home for health or family emergencies.

In addition, we offered a hotline providing employees with health assessments by medical advisers on fitness for work, including fatigue management. We also provided mental health support through our employee assistance programme.

Sustainability
continued

Health and wellbeing

Domestic violence programme

We want our employees to feel safe at work and at home. We are proud of our industry-leading programme to help support victims of domestic violence. In 2020, we extended this programme to more than 98% of our employees globally, with plans to extend it across the entire Group. Through the programme, we provide special leave, emergency accommodation, financial support, and training to equip leaders and employees to step in and help – safely and effectively. We also provided additional support to community partners during the pandemic. As part of an effort to make our communities across Canada safer, we donated C$360,000 to 12 women's shelters and local organisations providing a variety of support for women and families impacted by domestic violence.

Mental health and wellbeing

Mental health continues to emerge as a pressing issue, not only for Rio Tinto but for the world at large – a situation exacerbated by COVID-19. For more than 20 years, we have provided peer support programmes, with specially trained employees playing a pivotal role in supporting their colleagues at local level. Over the past five years, we have extended mental health training for leaders and employees, including to raise awareness about psychosocial hazards so that they can recognise a problem before it develops – and help.

In 2020, largely but not exclusively in response to the pandemic, we further strengthened our focus on mental health. We introduced a mental health framework that consolidates various policies, procedures and programmes, making it easier for colleagues to provide support and easier for employees to access it. We offer different kinds of support, including our employee assistance programme (EAP), which includes counselling by professional psychologists, telemedicine in some regions, peer support programmes and online educational tools.

Occupational health

In 2020, we recorded fewer occupational health illnesses, and conducted more than 65,000 health control verifications, a 12.6% increase over 2019. And, starting in early April, we conducted 193,000 COVID-19 control verifications to assess the efficacy of our health controls, such as physical distancing and hygiene controls. COVID-19 protocols designed to protect health workers placed restrictions on the ability to conduct employee medical exams. We are looking at ways to address this, though in much of the world, at the time of this writing, restrictions are back in place.

Strengthening safety systems

Eliminating fatalities requires a strong safety culture coupled with systems designed to mitigate risk and continually improve the safety of our work. Our safety maturity model (SMM), introduced in 2019, provides a roadmap for leaders to advance the foundations of safety without being overly prescriptive. These foundations include leadership and engagement, learning and improvement, risk management and work planning and execution. Annually, we assess assets' progress against each of these elements.

In 2020, our assessment of SMM gave us valuable insights into the effectiveness of safety leadership, key processes and controls. The average score across our operational sites improved, with the most significant improvement around site leadership and coaching.

We continue to focus on strengthening our safety culture, in part by training our employees on best practices. In 2020, for example, we embedded master coaches in each product group to build safety leadership capabilities. This included conducting effective pre-start meetings and providing engaging feedback in the field. By creating a virtual programme, we ensured this coaching could continue despite COVID-19 restrictions.

Critical Risk Management (CRM) – a tool our operations use to verify that fatality prevention controls are in place before starting each task – continues to be fundamental to our business. Since introducing CRM in 2015, our safety, fatality and potentially fatal incident (PFI) performance has markedly improved. We also expanded CRM to include COVID-19 critical controls, ranging from physical distancing measures to travel arrangements. We also completed more than 1.3 million CRM verifications, not including the 193,000 associated with COVID-19 critical controls. To help us gauge the quality of verification checks, we track the number of comments or evidence submitted with non-compliant verifications. Analysis indicates more than 84% of the non-compliant verifications completed by leaders had comments and supporting evidence. We are now looking at ways to improve the quality of verifications completed by frontline teams most exposed to critical risks.

Finally, we continue to report, investigate and learn from PFIs. In 2020, we introduced the PFI rapid sharing and learning system, which ensures lessons from PFIs are shared directly with all leaders – approximately 3,500. Detailed learnings are also shared when each PFI investigation is complete. In addition, the executive leader for each business unit conducts a 'deep dive' on the incident to ensure the underlying causes are well understood and the right follow-up measures are identified and tracked – to completion – to prevent a future occurrence.

Safety standards

We do everything we can to prevent catastrophic events, including those involving tailings and water storage facilities, chemicals, underground mining and process safety. We identify major hazard risks (low-probability, high-consequence events) and manage them by verifying controls, conducting external reviews and requiring compliance with standards and procedures – such as our tailings and water storage facilities' management standard (for more information, please see the Tailings section).

Our standards (available on our website) and procedures provide a consistent approach to managing major hazards across our managed operations. We audit managed operations against our standards and require our businesses to meet their health and safety performance requirements and targets. In addition, we conducted major hazard reviews with each product group.

We advanced our work around process safety with the introduction of 'technology guardians'. These are senior technical professionals, based either onsite or near our operations, responsible for assuring we have strong risk-based controls to manage process changes and maintain asset and process control integrity. We have completed competency assessments for our technical support and are implementing detailed training and coaching to address any gaps identified.

In 2020, we completed a comprehensive risk review for underground hazards; in 2021 we will review and update our underground safety standard and associated guidelines. This work is also guiding us as we advance underground technology and improve the technical capability of our operational leaders.

Also in 2020, we advanced our functional safety standard across the Group, governing the safety controls for technology we use to minimise risks such as obstacle detection and collision avoidance systems in autonomous trucks. The standard includes product assurance by suppliers, periodic testing and ongoing maintenance of these systems.

Tailings

We use our standard for the management of tailings and water storage facilities at 108 tailings storage facilities (TSFs) at our assets globally. There are a further 50 TSFs at non-managed sites. In total, there are 65 active TSFs, 40 are inactive and 53 are closed. Our full tailings disclosure is available on our website.

Our facilities are regulated, permitted and have been managed for many years to comply with local laws, regulations, permits, licences and other requirements. We have classified tailings management as a risk in the Group risk register since 2010 and have had a Group safety standard in place for tailings and water storage facilities since 2015. Our assurance processes verify that our managed facilities around the world operate in accordance with this standard.

All of our operational TSFs have emergency response plans – tested through training exercises – and follow strict business resilience and communications protocols. There have been no external wall failures at our TSFs for more than 20 years.

This year, we updated our Group safety standard for all tailings and larger water storage facilities. In addition, we reviewed our relevant standards against the requirements of the new global industry standard on tailings management (GISTM), released in August 2020, including how we classify consequences and how and when we implement independent reviews. Our relevant standards are well aligned with the GISTM.

The GISTM is the result of the Global Tailings Review, a collaboration between the International Council on Mining and Metals (ICMM), of which we are members, the United Nations Environment Programme and the Principles for Responsible Investment. The Review established an international standard for tailings management aimed at preventing catastrophic failure and enhancing the safety of mine tailings facilities around the world. We believe the GISTM will ensure more consistency and rigour in the way the mining industry manages tailings.

We continued to play an active role in the ICMM tailings working group this year, which focused on the development of the GISTM conformance protocol as well as a tailings guidance document designed to help support industry-wide adoption. We have participated in the tailings working group since 2016, helping inform the ICMM position statement – including the six elements of TSF governance, which are reflected in our own standard.

In 2020, we completed the technical risk review programme at each of our managed and non-managed TSFs. The review programme, which began in 2019, found that while our TSFs are generally well managed and there are no immediate dam safety threats, we have opportunities to improve. Accordingly, we have implemented improvement plans for water storage facilities and TSFs and are working towards completing outstanding actions. While global COVID-19 pandemic restrictions delayed a few items, we plan to complete all outstanding actions as quickly as possible, while adhering to restrictions in each jurisdiction.

This year we also:

- **Ensured all operations with TSFs and 'high-consequence' water dams have appointed a Nominated Manager and Qualified Site Representative. Nominated Managers are accountable for their site's conformance to our management of the tailings and water storage facilities standard; Qualified Site Representatives are accountable for the day-to-day operations and monitoring of tailings facilities**
- **Established a new role – the Responsible Dam Engineer – to provide technical support to the Nominated Manager to manage tailings and water storage facility risks**
- **Actively engaged with industry forums such as the Canadian Dam Association and the Minerals Council of Australia tailings working groups**
- **Committed A$2 million over five years to the Future Tails partnership, a collaboration between Rio Tinto, BHP and the University of Western Australia, which includes training programmes to build talent and capability; publications that summarise state-of-the-art tailings analysis, design, operation and management; and research collaborations with industry to drive further innovation**

Sustainability
continued

Communities

To us, communities aren't just places. They are the people on whom our operations can have an impact, and with whom we strive to build long-term partnerships: Indigenous peoples, landowners, suppliers, neighbours and our colleagues.

This year, at Juukan Gorge, we did not fulfil our own values; we did not measure up to our own standards. The destruction of the rock shelters should not have happened, and we are absolutely committed to listening, learning and changing. For more about Juukan Gorge, please refer to pages 10-11.

Strengthening communities and social performance

To help transform our relationship with host communities around the world, including Traditional Owners in Australia, we have taken a number of actions:

We established a Communities and Social Performance (CSP) Area of Expertise (AoE), which will deliver a more rigorous assurance framework across our operations and elevate communities risk processes to align with our robust health and safety systems. The CSP AoE reports to our Group Executive, Safety, Technical and Projects, who is a member of our Executive Committee. While we already conduct social risk analyses at our sites – informed by day-to-day engagement with, and feedback from, communities as well as social and economic impact assessments – the CSP AoE will further strengthen this process.

We also changed the way we structure our CSP teams globally so that product group and operational leaders have direct responsibility for managing relationships with their host communities, including Indigenous peoples.

We are currently rolling out the first phase of a new integrated heritage management process (IHMP), at our Pilbara iron ore operations and will subsequently implement the lessons across our business globally, taking into account local circumstances.

In the Pilbara, the IHMP involves a systematic review of all the heritage sites that we manage, starting with those that may be impacted by our activities over the next two years. So far, we have reviewed over 1,000 sites and ranked each one by: (i) cultural significance (which is informed through consultation with the Traditional Owners of the land on which we operate); (ii) our re-confirmation that we have recently consulted with Traditional Owners for potential impacts; and (iii) the materiality of the impact. Where there is any doubt, we have reclassified the relevant sites from 'cleared' for mining back to 'protected' as a precautionary measure, pending further consultation with the Traditional Owners.

We also progressed our partnerships with First Nations in Canada. In British Columbia, we signed a Relationship Agreement, called the 'New Day Agreement' with the Cheslatta Carrier Nation. The Agreement formalises commitments relating to training (including collaboration on the Cheslatta Nation remote industry training centre), land, employment and business opportunities and environmental stewardship of the Nechako Reservoir. In Quebec, the Iron Ore Company of Canada signed a Reconciliation and Collaboration Agreement with the Uashat mak Mani-utenam and Matimekush-Lac John communities. We are also progressing a further four agreements with other First Nations communities in Quebec, Saskatchewan and British Columbia.

We conduct Social Impact Assessments (SIAs) – aligned with international standards, including the ICMM Mining Principles, International Finance Corporation Performance Standards and UN Guiding Principles on Business and Human Rights – to help guide new projects as well as inform closure planning. This year, following the events at Juukan Gorge, we reviewed our social risk analyses across our managed assets to ensure we had a thorough understanding of our potential impacts at each, and that suitable mitigation measures were in place.

At our Jadar project in Serbia, we are currently undertaking an SIA as part of the feasibility study to complement the Environmental Impact Assessment and ensure that impacts are appropriately identified and managed. We anticipate this study will be completed by the end of 2021, and will be informed by detailed community consultation and participatory methods for identifying impacts and mitigation.

In 2021, we will also review our CSP standard – which governs how we identify and manage social, economic, environmental, cultural and human rights impacts from exploration to closure – and ensure that all operational leaders understand our commitments.

An update on Resolution Copper, Arizona, US

At our Resolution Copper project in Arizona, in the US, we recognise the historical connection Native American Tribes have with the land involved at or near the proposed mine. We acknowledge these connections have endured over centuries.

One lesson reinforced by the events at Juukan Gorge is that meaningful, transparent engagement with all community members across the entire lifecycle of an asset is critical to shared success. Resolution Copper continues to be committed to ongoing engagement with Native American Tribes and is working to seek consent before any decision on development of the project, consistent with the International Council on Mining and Metals (ICMM) Statement on Indigenous Peoples and Mining.

The permitting process at Resolution Copper started in 2013, under the Obama Administration. Since that time, the US Forest Service (USFS) has led a rigorous review of the project, including public consultations and extensive engagement with a broad range of stakeholders. This dialogue has led to changes in the project design and the implementation of other measures to address concerns of the local community and Native American Tribes.

Supporting our communities

- **Donating A$1.25 million over five years to the Royal Flying Doctor Service in Australia (Queensland section) to improve emergency and remotely delivered health care services across the state**
- **Donating 25,000 masks and other equipment worth approximately C$100,000 to the local health authority and social services in Saguenay – Lac-Saint-Jean, in Quebec, Canada**

We also reduced the area identified for an exchange of public and private lands – necessary for the project to proceed – to protect areas of cultural significance, and are required to set aside more than 324 hectares to permanently protect the culturally significant Apache Leap area. We created the Emory Oak Restoration & Conservation Program, which recognises this species' importance to the Western Apache.

We expect to invest in a range of important initiatives during the mine's life, including cultural heritage, education, youth programme support, economic development, environmental mitigation, and recreation.

On 15 January 2021, after more than seven years of public and 11 years of tribal consultation, the USFS published its Final Environmental Impact Statement (FEIS) for Resolution Copper. Decisions on whether to invest fully in developing the project remain subject to further permitting processes and a feasibility study conducted over the next several years.

An update on the Panguna mine, Bougainville, Papua New Guinea (PNG)

The civil war in Bougainville led to the complete withdrawal of Bougainville Copper Limited (BCL), a subsidiary of Rio Tinto, in 1990, from the Panguna mine site it operated. Since that time, no Rio Tinto personnel have visited the site. In June 2016, we transferred our full interest in BCL for no consideration to the PNG government and the Autonomous Bougainville Government (ABG), providing them with equal shares in BCL.

In September 2020, the Human Rights Law Centre (HRLC) filed a complaint on behalf of 156 Bougainville residents with the Australian National Contact Point (AusNCP) against Rio Tinto regarding the Panguna site. The complaint alleges we are accountable for significant breaches of the OECD Guidelines for Multinational Enterprises (the OECD Guidelines) relating to past and ongoing environmental and human rights impacts arising from the Panguna mine.

In response, we have entered into discussions with the HRLC and representatives of the communities that have filed the complaint using the confidential conciliation processes of the AusNCP to support dialogue towards a sustainable solution. These discussions are ongoing including how to scope and safely conduct an independent environmental and human rights impact assessment as well as how to involve other relevant stakeholders.

An update on CBG, Guinea

The Compagnie des Bauxites de Guinée SA (CBG) is a bauxite operation in Guinea owned by Halco Mining Inc (51%) and the Guinean government (49%). Halco is a consortium comprised of Rio Tinto (45%), Alcoa (45%) and Dadco Investments (10%). We participate on the boards of Halco and CBG, with representation on various shareholder oversight committees.

Through our Board and committee roles, we have been proactively monitoring CBG's approach to community issues and its response to the complaint filed through the International Finance Corporation's grievance mechanism. We have increased our support to CBG by providing additional expert help in the form of a Guinea-based Africa specialist and a senior manager with extensive experience on resettlement and human rights, and are encouraging CBG to work towards a constructive outcome aligned with international standards. More detail on this can be found on our website www.riotinto.com.

Supporting communities through the pandemic

During the COVID-19 global pandemic, we took active measures to reduce the risk of transmission from our employees and contractors to local communities. For example, at our Weipa bauxite operations in far north Queensland, Australia, we worked closely with the local disaster management group, including the town authority and medical department, to develop and implement specific plans in response to the federal government declaring biosecurity health zones. At the Diavik Diamond Mine in the Northwest Territories, Canada, where many of our employees come from vulnerable, remote communities, we introduced a range of measures to minimise the risk of transmission, including mandatory testing, calls with medical professionals prior to travel, enhanced hygiene and physical distancing measures, roster and flight changes, and the mandatory use of masks.

We have strict protocols in place guiding the way we engage with communities. This includes building two community-related verification steps into our critical risk management system, requiring our teams to assess potential COVID-19 risks to the community and develop a plan to manage them. If, for whatever reason, physical interaction with any community may pose risks, we have asked our employees and partners to turn to non-physical ways to interact, or to cancel or postpone the engagement. Our employees and contractors cannot visit vulnerable communities – those in which underlying health challenges are prevalent, or those in remote areas where health care infrastructure is not strong – without the approval of appropriate community and Rio Tinto leadership.

During the pandemic, we engaged with our Australian suppliers – many of whom are small businesses – and offered support, financial or otherwise, to those experiencing hardship.

We also committed $25 million to help communities during the pandemic. For example, to help support small businesses in financial stress in the Saguenay – Lac-Saint-Jean region of Quebec, Canada, we partnered with five municipal governments, the First Nation of Mashteuiatsh and financial services group Desjardins to create a regional stimulus fund, which provided financial support for health and safety, productivity and efficiency measures to make businesses more sustainable. The fund, which complemented existing local government initiatives, provided C$750,000 to more than 100 businesses.

- **In the Anosy region of Madagascar, upgrading a building and turning it into a dedicated treatment centre that can receive up to 108 patients, and treat 60 people – including up to 32 needing intensive care**
- **Providing alternative housing support to a local shelter in Labrador, Canada, for women and children needing a secure refuge**
- **Donating more than R6 million to provide critical support for local communities near Richards Bay Minerals, our operation in KwaZulu-Natal, South Africa, including food and water supplies, as well as PPE and essential equipment for frontline health workers and clinics**
- **Donating €20,000 to the Red Cross in Belgrade, Serbia, and €20,000 to the Red Cross in Loznica, Serbia, for essential food and hygiene items for the cities' most vulnerable citizens**
- **Working with United Food and other partners to distribute more than 100,000 cans of drinking water and donate more than 280,000 meals to the communities near the Resolution Copper project in Arizona, US**

Sustainability
continued

Economic contributions (US$ million) (2020)

	2020	2019	2018	2017	2016
Gross product sales	**47,018**	45,367	42,835	41,867	35,336
Net cash generated from operating activities[a]	**15,875**	14,912	11,821	13,884	8,465
Underlying earnings	**12,448**	10,373	8,808	8,627	5,100
Underlying earnings per share (US cents)	**769.6**	636.3	512.3	482.84	283.8
Profit/(loss) after tax for the year	**10,400**	6,972	13,925	8,851	4,776
Net cash/(debt)	**(664)**	(3,651)	255	(3,845)	(9,587)
Capital expenditure[b]	**(6,189)**	(5,488)	(5,430)	(4,482)	(3,012)
Employment costs	**(4,770)**	(4,522)	(4,728)	(4,765)	(4,881)
Payables to governments[c]	**(8,224)**	(7,175)	(7,217)	(6,637)	(4,025)
Value add[d] [e]	**31,472**	27,841	30,504	27,734	20,065
Payments to suppliers[e]	**(15,547)**	(17,245)	(17,231)**	(16,471)**	(15,812)**
Amounts paid by Rio Tinto	**n/a[f]**	(7,635)	(6,575)	(5,138)	(3,984)
Amounts paid by Rio Tinto on behalf of its employees	**n/a[f]**	(1,284)	(1,342)	(1,402)	(1,416)
Community contributions (2016-2018 data includes payments to landowners)	*	*	(192)	(176)	(168)

* Note: In 2019, we adopted new definitions and data collection processes for reporting discretionary community investments, non-discretionary development contributions, management costs and payments to landowners to align with GRI Reporting Standards. As a result of these changes, 2019 data is not comparable with previous years. For 2020, we have adopted the same definitions as for 2019. The 2020 data is comparable to 2019, but not to previous years.

** Numbers restated from those originally published to ensure comparability over time.

(a) Data includes dividends from equity accounted units, and is after payments of interest, taxes and dividends to non-controlling interests in subsidiaries.

(b) Capital expenditure is presented gross before taking into account any disposals of property, plant and equipment.

(c) Payables to governments includes corporate taxes, government royalties and employer payroll taxes.

(d) Value add is the sum of labour, payables to governments and returns on capital invested in operations.

(e) These figures include the Group's share of joint ventures and associates.

(f) Our Taxes Paid report will be published later this year on riotinto.com.

	2020	2019
Community investment (discretionary)[a]	**(47)**	(36.4)
Development contributions (non-discretionary)[b]	**(12.8)**	(12)*
Payment to landowners (non-discretionary)[c]	**(165.9)**	(147)**

* Note: In 2019, $13 million was reported for development contributions. This has been revised down to $12 million due to an error noted in reporting.

** Numbers restated from those originally published.

(a) Community investments are voluntary financial commitments, including in-kind donations of assets and employee time, made by Rio Tinto to third parties to address identified community needs or social risks.

(b) Development contributions are defined as non-discretionary financial commitments, including in-kind donations of assets and employee time, made by Rio Tinto to a third party to deliver social, economic and/or environmental benefits for a community, which Rio Tinto is mandated to make under a legally binding agreement, by a regulatory authority or otherwise by law.

(c) Payment to landowners are non-discretionary compensation payments made by Rio Tinto to third parties under land access, mine development, native title, impact benefit and other legally binding compensation agreements.

Economic and social development

In 2020, our direct economic contribution was $47 billion, including the total value of operating costs, employee wages and benefits, payments to providers of capital, payments to government, development contributions, payments to landowners and community investments. Also in 2020, our total discretionary global community investments were $47 million, covering primarily health, education, environmental protection, housing, agricultural and business development sectors.

The economic and social development of communities continues to be a priority: we strive to employ local people, buy local products and engage local services, and we have targets reflecting this at each of our operations.

In Mongolia, for example, between 2010 and the fourth quarter of 2020, Oyu Tolgoi (OT), our copper and gold mine, spent $3.54 billion on national procurement#. OT maintains a dedicated national procurement policy focused on promoting and developing a safe and sustainable local supply chain, which includes the 'Made in Mongolia' strategy. Since 2017, OT has signed 30 contracts with Mongolia-based businesses for goods and services including personal protective items such as FFP2 masks and winter safety gloves, hygiene products such as hand sanitiser and wipes, and specialised professional services.

OT is also partnering with German international development agency GIZ and the Umnugovi Aimag to run a capacity building programme for businesses on topics such as health and safety, business integrity and management, financial literacy and lean manufacturing. Since 2018, OT has hosted 266 training sessions with more than 3,500 participants from more than 450 small and medium size businesses – 58% of whom were women. Following the training, 72% of the trainees recorded that their businesses expanded, including ten Umnugovi businesses that have become OT suppliers and/or subcontractors.

Work of the future

This year, we progressed partnerships that help develop students' skills for the future. For example, in Australia, as part of our four-year A$10 million investment in the education technology sector, we supported the Future Minds Accelerator programme in partnership with leading start-up accelerator BlueChilli and Amazon Web Services. The Future Minds programme engaged 100,000 Australian children, focusing on skills such as critical thinking, problem solving and automation. In addition, the programme provided training and professional development opportunities for 2,700 teachers and engaged more than 1,000 schools, helping drive interest in digital skills among students. The programme also helped the participating start-ups grow their businesses, creating 32 new jobs.

In Western Australia, 28 high school students participated in the Certificate II in Autonomous Workplace Operations programme, the first nationally recognised automation qualification in Australia, which we launched in partnership with South Metropolitan TAFE (a technical and further education institution). The course, which launched in 2019, is designed to provide participants with the knowledge and skills needed to succeed in the resources industry of the future.

Oyu Tolgoi's (OT) national procurement figure represents spend with suppliers registered in Mongolia and more than 50% owned by Mongolian citizens. It relates to the OT operations only, and does not include the underground project.

People

2020 has been a challenging year for all of our stakeholders, including our employees, as COVID-19 significantly altered our ways of working. Still, our employees told us they were proud to work for a business considered essential during a global pandemic.

The destruction of the rock shelters at Juukan Gorge shocked and deeply disappointed many of our employees. We recognise we must do better – and that doing better must begin with creating an environment in which everyone feels comfortable speaking up.

In August-September 2020, we conducted virtual employee focus groups across our business, in which almost 1,000 employees participated – 72% were site-based and 28% were from our corporate offices. These focus groups, which included employees from a variety of backgrounds and perspectives – diverse by gender, ethnicity, location, age and length of service, and with a particular focus on underrepresented groups – revealed that employees view Rio Tinto as an industry leader and appreciate the genuine care they feel from their colleagues. However, employee pride has been eroded, particularly in Australia, due to our destruction of the Juukan Gorge rock shelters. And while our employees appreciate our response to COVID-19, life for many is becoming more difficult as the pandemic wears on.

Our employees also said we need a stronger message on sustainability, which is a focus of our new Chief Executive. This includes what sustainability means to us as a business; on matters of inclusion and diversity, they told us we need to take more meaningful action. Partly as a result, we are expanding our diversity targets to include our entire workforce – targeting a 2% increase in female representation – and investing $50 million to increase Indigenous leadership across our business in Australia.

Some of these themes were also mirrored in our annual People Survey employee engagement results, which included more than 64,000 written comments from more than 26,000 employees (a 57% response rate). We were pleased to see a one point increase in our employee net promoter score (eNPS) over the past year. Our employee satisfaction score also increased by one point. This is the sixth consecutive increase, so while we must do better, we also know there are many strengths of which we can be proud and on which we should continue to build.

Our employees continue to share in the success of our business: one way is through myShare, our all-employee global share purchase plan. The number of employees that buy Rio Tinto shares through myShare is today at its highest level, having increased 13% this year; more than 22,000 employees actively contribute every month, with 13,000 contributing the maximum permitted. We have participants in 30+ countries, with 94% in Australia, Canada, the US, Mongolia and South Africa. On average, employees purchase shares worth $14 million each year, and participants hold more than $600 million of shares within their myShare plans (comprising shares bought with their own contributions plus matching shares and shares bought through dividends).

We continued to invest in skills development throughout 2020. We launched LinkedIn Learning – an online learning tool, providing access to more than 16,000 courses on a wide range of topics and skills. To date, more than 11,000 employees have accessed training on the platform, consuming more than 22,000 hours of content. We are also investing in our critical capabilities: this year, 29 people were formally recognised as technical RioExperts, bringing the total number to 77. Of these, 23% are women. Our flagship commercial fundamentals programme continued to be deployed virtually. Leadership development also transitioned to virtual, prioritising the development of our leaders to become effective coaches and encourage teams to contribute their full potential. Our average learning hours per employee increased from 25.6 in 2019 to 27.7 in 2020.

Pay equity

We seek to provide competitive pay, delivered through fair and non-discriminatory pay practices and processes. We are committed to ensuring that employees with similar skills, knowledge, qualifications, experience and performance are paid equally for the same or comparable work. In 2020, we continued to evolve our remuneration to eradicate bias and otherwise enhance the transparency and robustness of our decision making.

Our pay equity statistics (ie 'equal pay gap' and 'gender pay gap') are integral to our monitoring of employee pay; they guide pay decisions and investment during our annual remuneration review. The statistics are affected by gender representation across our organisation (we employ more men than women). We remain focused on improving female representation at all levels.

Our equal pay gap measures the extent to which women and men employed by our company in the same location and performing work of equal value receive the same pay. In 2020, the equal pay gap decreased marginally, compared to 2019, and remains less than 2%. The equal pay gap is the primary lens we use when assessing progress against our ambition to eradicate bias.

Gender pay is a measure of the difference between average earnings of women and men across the Group (excluding incentive pay), regardless of role, expressed as a percentage of men's earnings. In 2020, our gender pay gap was just over 1% in favour of women (in 2019, it was less than 1% in favour of men). While part of this positive shift is attributable to decisions made to reduce the gap, which is reflected in the slightly higher increase in average earnings for women this year, it is also a reflection of employee movements (attrition, recruitment and promotion) and the fact that more women are in higher-paying roles in our operational workforce.

A key area of focus in 2021 will be equity statistics as we look to extract added insight. We want to expand the suite of statistics we use and find indicators that provide insights, on both a lead and lag basis, to help close any remaining gaps – and prevent new ones.

Sustainability
continued

Diversity

We aspire to an environment in which the aspects and dimensions of diversity reflect the communities in which we operate.

We employ people on the basis of job requirements and do not discriminate on any grounds. We do not employ forced, bonded or child labour. We employ people with disabilities and make considerable efforts to offer suitable alternative employment and retraining to employees who become disabled and can no longer perform their regular duties.

Our graduate programme continues to help us bring new perspectives into the organisation. This year, we increased our proportion of female graduates – by 6% – to 60%. In Australia, 8% of our graduate intake and 9% of our vacation student programme were Indigenous. We continued to offer scholarships, hire vacation students and graduates throughout the pandemic, leveraging virtual campus recruitment and development.

The overall percentage of female employees increased marginally – by 0.6% – to 19%. Our focus on women in leadership increased the proportion of women in senior management roles – by 3.5% – to 26.1%. We continue to focus on the representation of women across all levels and in all disciplines. For example, at our Pilbara iron ore operations, in Western Australia, this year we launched our 'Pathways to Mining' recruitment campaign, which aimed to recruit 100 women – including those without mining experience – for site-based operational roles and traineeships. The response to the campaign exceeded our expectations, attracting over 2,500 applications, which are currently being assessed for roles ranging from trade assistant to plant, laboratory, and drill and blast operator.

As noted earlier in this report, in 2021, we will expand our gender diversity targets beyond women in leadership to women at all levels. The dual challenge of increasing diversity and evolving our work environment to welcome diverse voices and perspectives will require significant and sustained effort across the organisation. To that end, we have also committed $50 million over five years to advance Indigenous leadership in our business across Australia. And, as part of our ongoing commitment to our signatory Traditional Owner groups, we will continue to work on broader employment pathways, including entry level opportunities, career readiness programmes, school-to-work pathways, apprenticeships and other local employment programmes and activities. Our goal is to achieve a target of 8% Indigenous participation across our business in Australia.

The overall percentage of female employees increased by 0.6% to

19%

(7,713 women; 32,962 men)

Women in professional roles increased by 0.7% to

26.5%

(3,489 women; 9,659 men)

Executive Committee – 2021

23%

(3 women; 10 men)

33.3% of Board roles held by women (4 women; 8 men) increased from 11.1% in 2019

26.1% of senior leadership roles held by women (132 women; 373 men).

We define senior leadership as general managers, Group advisers and chief advisers as well as employees in leadership roles who report directly to Executive Committee members

$50 million to attract, retain and support the development of Indigenous employees across Australia

We are:

- Changing our hiring practices by focusing on an Indigenous candidate's potential, not their mining experience.
- Introducing a cultural onboarding programme to ensure leaders have the skills they need to support Indigenous employees.
- Pairing Indigenous employees with senior leaders and providing career coaching for employees while also developing leaders' cultural competence.
- Supporting employees' growth and development by identifying skill gaps and working with each employee to create a career plan, including further education.
- Growing cultural competency through cultural awareness training, and where possible, cultural immersion opportunities on Country or through working directly with Indigenous businesses and organisations.

A note on 2021 reporting

For 2021 reporting, the definition used to calculate diversity will be changed to include people not available for work due to extended leave for reasons such as parental leave and contractors (those engaged on temporary contracts to provide services under the direction of Rio Tinto leaders). This will mean our 2021 targets will be re-set to a slightly higher baseline.

Employee hiring and turnover rates[a][b][c] (2020)

	Gender[d]		Age group				Region				
	Female	Male	Under 30	30-39	40-49	Over 50	Africa	Americas	Asia	Australia/ New Zealand	Europe
Employee hiring rate[e]	29.5%	70.5%	40.7%	30.7%	18%	10.6%	1.8%	33.3%	5.8%	54.9%	4.2%
Employee turnover rate[f]	7.2%	6.9%	8.5%	5.8%	5%	9.7%	5%	6.1%	3.9%	8.3%	8.9%

(a) Includes our total workforce based on managed operations (excludes the Group's share of non-managed operations and joint ventures) as of 31 December 2020.
(b) Excludes non-executive directors and contractors.
(c) Rates have been calculated over average monthly headcount in the year per category.
(d) Less than 1% of the workforce gender is undeclared.
(e) Hiring rate includes total employee hires per category over total hires for the year.
(f) Turnover rate excludes temporary workers and the reduction of employees due to business divestment. Turnover rate includes total terminations per category over average monthly headcount in the year per category.

Employees by employment type[a][b][c] (2020)

	Women	Men
Senior leaders	132	373
Managers	882	2,123
Supervisory and professional	3,489	9,659
Operations and general support	3,058	20,677
Graduates	152	130
Total	**7,713**	**32,962**

(a) Includes our total workforce based on managed operations (excludes the Group's share of non-managed operations and joint ventures) as of 31 December 2020.
(b) Excludes non-executive directors, Executive Committee, contractors and people not available for work. From 2021, the definition used to calculate diversity will be changed to include people not available for work and contractors (those engaged on temporary contracts to provide services under the direction of Rio Tinto leaders).
(c) Less than 1% of the workforce gender is undeclared.

Workforce data by region[a][b]

Region	Average Employee Headcount[c]	Headcount Distribution %	Absenteeism[d]	Average Contractor Headcount[e]	Headcount Distribution %
Africa	2,429	6.0%	2.8%	78	1.7%
Americas	14,128	34.8%	1.1%	483	10.4%
Asia	4,070	10.0%	1.7%	405	8.8%
Australia/New Zealand	19,002	46.8%	3.1%	3,618	78.4%
Europe	955	2.4%	0.1%	34	0.7%
Total	**40,583**	**100.0%**	**2.4%**	**4,618**	**100.0%**

(a) Includes our total workforce based on managed operations (excludes the Group's share of non-managed operations and joint ventures) as of 31 December 2020.
(b) Rates have been calculated over average monthly headcount in the year.
(c) Employee headcount excludes our share of joint ventures and associates, non-executive directors, contractors and people not available for work.
(d) Absenteeism includes unplanned leave (sick leave, disability, parental and other unpaid leave) for populations on global, centralised HR systems. Excludes non-executive directors and contractors.
(e) Contractors include those engaged on temporary contracts to provide services under the direction of Rio Tinto leaders.

Sustainability
continued

Human rights

Respecting human rights is central to our values, and to the way we work – wherever we work. We believe respect for human rights starts with everyday actions. It is a responsibility we take seriously – from governance of our human rights-related policies, which are overseen by the Sustainability Committee of the Board of Directors, to processes like pre-screening suppliers and providing human rights training to key employees.

This year, in the wake of Juukan Gorge, many stakeholders raised concerns about the implementation of our human rights commitments. The destruction of the rock shelters was a breach of our values, standards and procedures. The steps taken to address these matters are set out on pages 114-115.

In 2020, we strengthened controls to ensure that we continue to prevent our involvement in adverse human rights impacts and, importantly, that we also provide remediation when we have caused or contributed to human rights harm. Provisions in this regard include assurance and auditing of sites to ensure compliance with the human rights section of our Communities and Social Performance Standard, and Group-function-specific human rights training. They also require that each of our sites has a complaints, disputes and grievance mechanism in place, in line with the UN Guiding Principles on Business and Human Rights' (UNGPs) effectiveness criteria for non-judicial grievance mechanisms.

We recognise the need to continually evolve our human rights performance and approach, and in 2021 we will focus, as part of a scheduled review of our human rights policy, on further embedding the policy and awareness of our salient human rights risks.

We also recognise the importance of addressing human rights risks in our business relationships, from our suppliers and customers to joint venture partners. We therefore look for ways to help our business partners respect human rights in line with international standards. At our non-managed operations, this may include best practice sharing around complaints handling, discussing human rights issues at joint management meetings and making our experts available to build capacity of operational employees.

We pre-screen potential business partners on human rights and require suppliers (including subcontractors) to adhere to our Supplier Code of Conduct, which necessitates respect for human rights. From 2019, our standard contractual terms have also required suppliers (including subcontractors) to take reasonable steps to prevent and address modern slavery in their supply chains, and granted us the right to audit our suppliers for compliance against these requirements. We also regularly report on modern slavery and other supply chain human rights themes.

We have identified our salient human rights issues as operational security, labour rights, environmental impacts, the rights of Indigenous peoples, including cultural heritage, land access and resettlement and in-migration. Our salient human rights issues are those on which we could have the most severe impact on people through our operations or business relationships.

Adherence to international standards

Consistent with the UN Declaration on the Rights of Indigenous Peoples, we are committed to respecting all internationally recognised human rights, including acknowledging and respecting Indigenous peoples' connections to lands and waters. We voluntarily uphold a range of other international standards and guidelines, including the Voluntary Principles on Security and Human Rights (VPSHR), the OECD Guidelines for Multinational Enterprises and the UN Global Compact. Our human rights performance is also assessed through various external initiatives, including the Aluminium Stewardship Initiative, Copper Mark and the ICMM. We reiterate our commitment to respect internationally recognised human rights aligned with the Universal Declaration on Human Rights and to implement core international standards, including the UNGPs.

Key actions and achievements during 2020

- Progressing a remedy process with the PKKP people
- Engaging with human rights-related complaints in different fora, including the Australian National Contact Point for the OECD Guidelines on Multinational Enterprises regarding the Panguna mine in Bougainville
- Providing support to our partner, the Compagnie des Bauxites de Guinée SA, in its participation in discussions with the International Finance Corporation's Office of the Compliance Advisor and community complainants regarding the Sangaredi mine in Guinea
- IOC signed a Reconciliation and Collaboration Agreement with the Uashat mak Mani-utenam and Matimekush-Lac John communities and is currently negotiating an agreement with the Naskapi Nation of Kawawachikamach
- Engaging openly with investors, civil society and community members in relation to a range of human rights issues to get feedback and improve our approach, including by convening roundtables in Australia and the UK with civil society organisations
- Publishing our third annual report on implementation of the VPSHR and our fourth modern slavery statement
- Commencing and progressing a labour rights supply chains risk assessment with a third-party provider to help us better target our labour rights risk management work in our supply chain, including in relation to modern slavery
- Raising awareness of modern slavery and other human rights issues among our global procurement team
- Progressing a new internal assurance process on human rights and on Communities and Social Performance with a focus on cultural heritage, grievance mechanisms and third-party due diligence
- Conducting VPSHR risk assessments, human rights training for security personnel and capacity building with business partners. This included delivering in-person training at our QIT Madagascar Minerals operation in March 2020, and sharing our VPSHR programme with a joint venture partner in South America
- Ranking third overall, and second within our sector, in the 2020 Corporate Human Rights Benchmark (CHRB). We note that the CHRB has appended a statement to our 2019 and 2020 results on recent events concerning Juukan Gorge

Climate change

In a world dealing with the COVID-19 pandemic, societal expectations on climate action remain high. Addressing them will, today more than ever, require businesses, governments and society to work together.

We divested the last of our coal businesses in 2018 and no longer extract fossil fuels. Our ambition is to reach net zero emissions across our operations by 2050. This year, with a strong focus on execution, we have also articulated a more explicit link between executive remuneration and our climate change targets: to reduce our absolute emissions by 15% by 2030 and emissions intensity by 30% (relative to our 2018 equity baseline). These targets were informed by a comprehensive analysis of abatement opportunities across the Group and supported by our commitment to spend approximately $1 billion on emissions reduction initiatives over a five-year period, starting in 2020.

In 2020, we started the transition to renewable energy in the Pilbara, in Western Australia, with the approval of the $98 million, 34MW solar plant at Gudai-Darri and 45MW battery system at Tom Price. Today, 75% of electricity used at our managed operations is from renewable sources. Of the $1 billion we committed to climate-related projects over five years, in 2020, we approved spend of more than $140 million.

Since 2018, we have reduced Scope 1 and 2 emissions by 1.1Mt CO_2e, or 3%, which is on track with our 2030 target for absolute emissions. However, in 2020, our emissions remained at the same level as in 2019 at 31.5Mt CO_2e. We expect progress on emissions to accelerate later in our 2030 target period as we develop and implement our mitigation projects, studies and research and development.

Our approach

Our climate change strategy is aligned with the goals of the Paris Agreement; climate change considerations are integrated with our strategic and operational decision making and our approach is supported by strong governance and continual strengthening of processes and capabilities. Our third climate change report is available on our website and details progress against the four pillars of our approach:

1. Produce materials essential for a low-carbon future
2. Reduce the carbon footprint of our operations
3. Partner to reduce the carbon footprint across our value chains
4. Enhance our resilience to physical climate risks

Climate risks and opportunities have been part of our strategic thinking, including on capital allocation, for more than two decades. We test our portfolio against a range of integrated strategic scenarios, each capturing alternative climate change narratives. Our most recent analysis, conducted in 2020, indicates the diversity of our portfolio strengthens our resilience, including in a scenario aligned with the goals of the Paris Agreement.

Most of our assets already sit at the low end of their respective commodity carbon intensity curves and our 2030 targets are aligned with a 45% reduction in absolute emissions from 2010 levels, which is consistent with 1.5°C pathways described by the Intergovernmental Panel on Climate Change.

Over the past year, we have further developed our asset-by-asset decarbonisation roadmaps and started work on mitigation projects, with a particular focus on renewables, process heat and ways to replace diesel fuel in our mobile fleets and rail networks. These roadmaps and actions are owned by our product groups and fully integrated into our annual business planning process, with support and co-ordination from our Energy and Climate Change Centre of Excellence. In 2020, we progressed partnerships essential to executing our abatement projects and we continued to develop technology solutions to meet our mid- to long-term ambitions.

Partnerships and Scope 3 goals and targets

In late 2020, China, Japan and South Korea joined the European Union to set carbon neutrality ambitions within a 2050-60 timeframe. Together, these countries account for more than 70% of our sales and around 90% of our value chain emissions (Scope 3) from our key products, including iron ore and aluminium. We have updated our approach to calculating Scope 3 emissions which are estimated to be 519 Mt CO_2e in 2020.

We continue to explore collective solutions to reduce emissions across our value chain. This year, we defined a series of measurable Scope 3 emissions reduction goals to guide our partnership approach.

With about 80% of our Scope 3 emissions coming from customers' hard-to-abate processes, our Scope 3 goals are focused mostly on our contribution to the development and deployment of low-carbon technologies. These include targets related to emissions from shipping our products. Our Scope 3 goals are to:

- Work with customers on steel decarbonisation pathways and invest in technologies that could deliver reductions in steelmaking carbon intensity of at least 30% from 2030.
- Work in partnership to develop breakthrough technologies with the potential to deliver carbon neutral steelmaking pathways by 2050.
- Continue to scale up the ELYSIS™ breakthrough technology enabling the production of zero-carbon aluminium.
- Meet our ambition to reach net zero emissions from shipping our products by 2050.

In many important applications, there are no low-carbon alternatives to steel, aluminium and copper. Furthermore, these materials will enable the low-carbon transition. The challenge is to produce them sustainably – not only with lower emissions, but also in a way that respects communities.

Disclosures consistent with the TCFD recommendations

In 2018, we welcomed the recommendations from the Task Force on Climate-related Financial Disclosures (TCFD) in our first climate change report and have aligned our climate change disclosures to be more transparent. Climate-related disclosures on governance, strategy, risk management and metrics and targets are also integrated into this Annual Report in the following sections: strategic context, key performance indicators, risk management, principal risks and uncertainties, governance, Sustainability Committee report and remuneration.

Our climate change report provides a more thorough and consolidated review of our climate change strategy, our approach to evaluating and managing climate-related risks and progress towards our targets. Our 2020 Sustainability Fact Book includes a full list of the TCFD recommendations alongside references to our disclosure against them.
We see ongoing development of good practice on climate-related disclosures in our sector and beyond, in part as a result of an iterative process of feedback from stakeholders. We anticipate, therefore, continuing to progress along the TCFD 'implementation path' and further enhancing our climate reporting in years to come.

Sustainability
continued

Greenhouse gas emissions

Scope 1&2 emissions – equity basis

Total equity greenhouse gas emissions – million tonnes carbon dioxide equivalent (Mt CO_2e)	2020	2019	2018[a]
Total Emissions	**31.5**	31.5*	32.6
Scope 1 Emissions	**22.8**	23.1	23.8
Scope 2 Emissions	**8.7**	8.3	8.8

2020 equity greenhouse gas emissions by product group (Mt CO_2e)	Scope 1 emissions (Mt CO_2e)	Scope 2 emissions (Mt CO_2e)	Total emissions (Mt CO_2e)
Aluminium	**15.8**	**6.0**	**21.8**
Aluminium (Pacific)	4.6	5.4	10.1
Aluminium (Atlantic)	5.2	0.1	5.3
Bauxite & Alumina	6.0	0.5	6.4
Energy & Minerals	**2.4**	**1.2**	**3.6**
Iron Ore	**3.0**	**0**	**3.0**
Copper & Diamonds	**1.2**	**1.5**	**2.7**
Other (includes shipping and corporate functions)	**0.5**	**0**	**0.5**
Rio Tinto total	**22.8**	**8.7**	**31.5**

2020 equity greenhouse gas emissions by location (Mt CO_2e)	Scope 1 emissions (Mt CO_2e)	Scope 2 emissions (Mt CO_2e)	Total emissions (Mt CO_2e)
Australia	**12.8**	**5.9**	**18.6**
Canada	**6.0**	**0**	**6.0**
South Africa	**0.3**	**1.2**	**1.6**
US	**1.1**	**0**	**1.1**
Other: rest of Africa	**0.2**	**0**	**0.2**
Other: Europe	**0.4**	**0**	**0.4**
Other: Asia, New Zealand, Central America, South America	**2.1**	**1.6**	**3.7**
Rio Tinto total	**22.8**	**8.7**	**31.5**

Scope 1&2 emissions intensity – equity basis (tCO_2e / t Cu-eq)

	2020	2019	2018
Greenhouse gas emissions intensity	**6.4**	6.4	6.5

Scope 3 emissions – equity basis

	2020
Scope 3 emissions (Mt CO_2e)	**519.4**

Note: Scope 1 greenhouse gas emissions are direct greenhouse gas emissions from our operations (e.g. from fuel consumption and anodes). Scope 2 greenhouse gas emissions are from the electricity, heat or steam brought in from third parties (indirect emissions). Scope 3 emissions are indirect emissions or greenhouse gases generated as a result of activities undertaken across our value chain, either upstream or downstream of our operations.

(a) The 2018 figure is the baseline for our 2030 emissions target and has been adjusted to exclude emissions from assets divested in that year. Actual emissions in 2018 were 34.0Mt CO_2e.

Please see our Scope 1, 2 & 3 Emissions Methodology report on our website for further detail on our approach to calculating our emissions.

Scope 1&2 emissions & energy – 100% managed basis

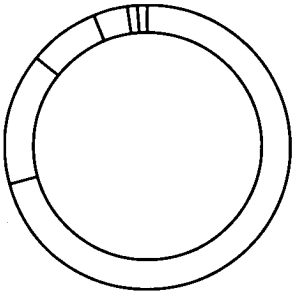
	2020	2019	2018	2017	2016	2010
Total managed greenhouse gas emissions (Mt CO_2e)	**26.2**	26.4	28.5*	30.6	32.0	43.0
Total managed energy (PJ)	**402**	406*	425	440	458	

Note: Total managed GHG emissions equal the sum of Scope 1 emissions and Scope 2 emissions minus the Scope 1 emissions resulting from the supply of electricity and steam to third parties.

* Numbers restated from those originally published to ensure comparability over time.

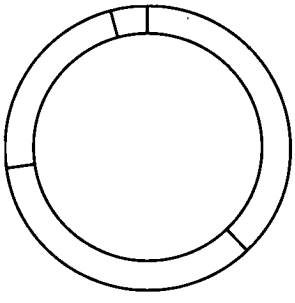
In 2008, we set our first climate change target, to reduce the GHG emissions intensity of our managed operations. This was updated in 2015 and called for a 24% reduction in intensity by 2020 and we achieved that target. In 2020 our emissions intensity was 72.6 (index, 2008 = 100).

2020 sources of electricity used (managed operations)



- Hydro 71%
- Coal 15%
- Natural gas 8%
- Other renewable 4%
- Diesel 1%
- Others 1%

2020 sources of emissions (managed operations)



- Fuel 38%
- Net purchases electricity and steam 35%
- Anodes and reductants 23%
- Process gases and other 4%

Water

Water is a key part of our operational environmental footprint and a critical, shared resource for wildlife, the environment and people and their economic prosperity. From the Gobi Desert in Mongolia to the Arctic environment of our Diavik Diamond Mine in Canada, we use water to access and process ore, manage dust and promote rehabilitation. At some sites, most notably at our aluminium operations, we also use water to produce hydropower.

We take a catchment-level approach to water management at each site, meaning that we manage our impacts, risks and potential solutions not only within our operations but with the understanding that we share water with host and downstream communities and ecosystems. We consider the catchment landscape and local communities' needs. We also consider the impact of dewatering on nearby communities and the environment now and over the long term, including beyond the life of our operations.

We aim to avoid permanent impacts to water resources like lakes, streams and groundwater aquifers, and carefully manage the quality and quantity of the water we use and return to the environment. We also strive to balance our operational needs with those of local communities, First Nations and Traditional Owners, and local ecosystems. And we consider the impact of climate change, which is already affecting rainfall and water security at many of our sites. This requires a proactive, collaborative approach with a broad range of local stakeholders, including domestic water users and other industries.

We aim to use water as efficiently as possible in the design and operation of our sites, and our risk assessment process is fundamental to this. We consider water risk against the following four themes:

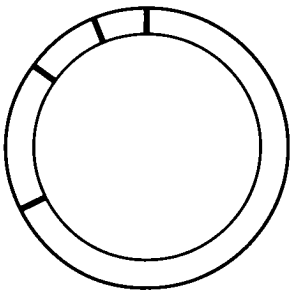
1. Water resource – is there sufficient water for operational and broader catchment needs?
2. Quantity/quality – does site water inventory or its management cause operational constraints or environmental impacts?
3. Dewatering – do dewatering or depressurisation activities impact the mine plan or regional aquifers?
4. Long-term obligations – do our activities generate long-term or ongoing obligations?

We use this framework to identify, assess, manage and communicate water risk – both internally and to the communities where we operate.

We provide our Group water risk profile below. This provides an indication of the distribution of water risk across our portfolio. While we have sites that sit in the 'very high' and 'high' categories for each of the risks – and appropriately rigorous standards, processes and capabilities to effectively manage them – the majority of our portfolio sits in the 'low' to 'moderate' range. We apply the same approach across our entire portfolio.

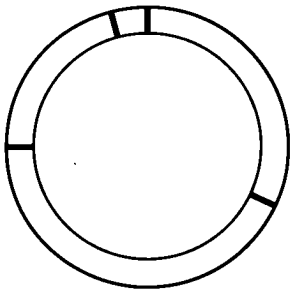
Group water risk profile (% of managed operations)[(a)]

Water resources



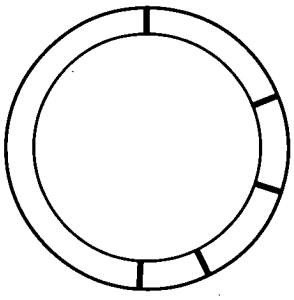
- Low 68%
- Moderate 17%
- High 9%
- Very high 6%
- Not applicable 0%

Quantity and quality



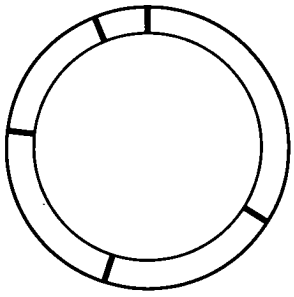
- Low 32%
- Moderate 43%
- High 21%
- Very high 4%
- Not applicable 0%

Dewatering



- Low 19%
- Moderate 11%
- High 13%
- Very high 8%
- Not applicable 49%

Long-term obligations



- Low 34%
- Moderate 21%
- High 22%
- Very high 17%
- Not applicable 6%

(a) QAL is a non-managed operation, but is part of our water stewardship target programme.

Sustainability
continued

As ICMM members, we report against the ICMM water stewardship statement:

To apply strong and transparent water governance

To manage water at operations effectively

To collaborate to achieve responsible and sustainable water use

We are among the most transparent in the industry regarding our water stewardship. There are a range of water risks, not just water scarcity, so we have set targets – tailored to the specific challenges at each site – and publicly report on progress against each one. This year, we are also providing further detail on our website through asset-level disclosures, which show key water risks at each site.

Our 2019-23 water targets

Last year, we set new water targets that allow us to be more transparent about our water usage, risk profile, management and challenges. These targets, and the data required to measure progress against them, will help us become better water stewards today and for future generations – whether in water-scarce regions or where water is plentiful. They will also help us improve our performance over the next five years.

Our water targets consist of one Group target and six site-based targets; the site targets were chosen based on their water risk profile, our ICMM commitments, and local community and environmental interdependencies.

This year, we continued to progress against our Group target and remain on track to meet it by 2023. We have collected water allocation volume data for all our assets in Australia and will complete this for our remaining operations during 2021. We will also focus on estimating surface water catchment rainfall runoff volumes for our managed operations.

Water – performance data 2016–2020 (in GL)

Withdrawals (by source)	2020	2019	2018	2017	2016
Surface water	**315**	326	272	348	346
Groundwater	**312**	296	321	304	293
Marine	**71**	70	48	109	79
Municipal	**34**	24	31	30	36
Third party	**29**	38	36	34	34
Entrained in ore	**398**	471	485	369	467
Total	**1,159**	1,225	1,193	1,193	1,255

Withdrawals (by quality)	2020	2019	2018	2017	2016
Type 1	**457**	–	–	–	–
Type 2	**240**	–	–	–	–
Type 3	**462**	–	–	–	–
Fresh	**–**	562	539	584	573
Other	**–**	664	654	609	682
Total	**1,159**	1,225	1,193	1,193	1,255

Discharges (by destination)	2020	2019	2018	2017	2016
Surface water	**327**	330	314	275	247
Groundwater and seepage	**129**	115	127	160	148
Marine	**146**	93	63	133	99
Third party	**34**	35	30	26	37
Total	**636**	573	533	594	531

Discharges (by quality)	2020	2019	2018	2017	2016
Type 1	**290**	–	–	–	–
Type 2	**127**	–	–	–	–
Type 3	**218**	–	–	–	–
Fresh	**–**	376	362	351	331
Other	**–**	197	171	243	199
Total	**636**	573	533	594	531

Consumption	2020	2019	2018	2017	2016
Evaporation & other losses	**438**	575	650	523	640
Entrained in product and process waste	**86**	83	85	85	85
Total	**524**	657	734	609	725

Recycled/reused	2020	2019	2018	2017	2016
Total	**335**	331	296	304	282

Water quality type categories correlate with reporting requirements for the International Council of Mining & Metals (ICMM), Minerals Council of Australia (MCA) and the Global Reporting Initiative (GRI). For water definitions, including water type, please refer to the glossary on the 'Sustainability reporting' page on our website.
Note: The sum of the categories may be slightly different to the total, due to rounding.

Progress against our targets

Group target	Water risk theme	Status	Commentary
Rio Tinto Group (Tier 1) By 2023, we will disclose – for all managed operations – permitted surface water allocation volumes, annual allocation usage and the associated surface water allocation catchment rainfall runoff volume estimate.	Water resource	Achievable, plan in place	Progress remains on track despite some delay due to COVID-19. Additional resources allocated for 2021.

Site-based target	Water risk theme	Status	Commentary
Pilbara operations, Iron Ore (Tier 1) Our Iron Ore product group will complete six managed aquifer recharge investigations by 2023.	Dewatering (aquifer reinjection)	Achievable, plan in place	Successful completion of two of the proposed six managed aquifer recharge investigations.
Oyu Tolgoi, Copper & Diamonds (Tier 1) Oyu Tolgoi will maintain average annual water use efficiency at 550 L/tonne of ore to concentrator from 2019-23.	Water resource (intensity and efficiency)	Achieved for 2020	Average annual water use efficiency maintained below 550 L/tonne for 2019-20 period.
Kennecott Utah Copper (KUC), Copper & Diamonds (Tier 1) Kennecott will reduce average annual imported water per ton of ore milled by 5% over the 2014-18 baseline of 393 gal/ton (1,487L/ton) at the Copperton Concentrator by 2023.	Water resource (import reduction)	In progress, options being investigated	KUC remains committed to achieving its 2023 target through the ongoing improvement and effectiveness of imported water reduction measures.
Ranger Mine*, Energy Resources of Australia Limited (ERA), Energy & Minerals (Tier 1) ERA will achieve the planned total process water inventory treatment volume by 2023, as assumed in the Ranger water model.	Quantity/quality (inventory reduction)	Achievable, plan in place	ERA remains committed to achieving its 2023 target through the ongoing improvement and effectiveness of the process water treatment options.
QIT Madagascar Minerals (QMM), Energy & Minerals (Tier 2) QMM will develop and implement an improved integrated site water management approach by 2023.	Quantity/quality (discharge quality)	Achievable, plan in place	Water management improvement areas identified and implementation studies have commenced.
Queensland Alumina Limited (QAL), Aluminium (non-managed joint venture) (Tier 2) QAL will complete the following four water-related improvement projects from the QAL 5-year Environment Strategy by 2023: – Project L1 – integrity of bunds and drains – Project W3 – caustic pipe and wasteline 4 integrity – Project W6 – residue disposal area surface/ground water impacts – Project W7 – residue disposal area release to receiving environment	Quality/quantity (discharge quality) JV performance improvement	Achievable, plan in place	Despite COVID-19 delays, progress for nominated water-related improvement projects is aligned with current project schedules.

Tier 1 water targets form part of the Rio Tinto external limited assurance programme.

Tier 2 water targets do not form part of the Rio Tinto external limited assurance programme.

* Ranger Mine is owned and operated by ERA. Rio Tinto is an 86.3% shareholder in ERA.

Sustainability
continued

More detailed information about our progress against our site-based water targets is available in the water section of our website.

Water withdrawals 2020 – by product group, region and source (in GL)

Product group	Region	Total	Surface water	Groundwater	Marine	Municipal	Third party	Entrained in ore
Aluminium								
Atlantic operations	Canada	**23**	19	1	0	2	1	0
	Europe	**10**	0	10	0	0	0	0
Pacific operations	Australia	**103**	18	21	53	10	0	1
	New Zealand	**1**	1	0	0	0	0	0
Total		**137**	**38**	**31**	**53**	**13**	**1**	**1**
Copper & Diamonds								
Copper	Asia	**15**	0	15	0	0	0	0
	US	**39**	11	28	0	0	0	0
Diamonds	Australia	**10**	8	2	0	0	0	0
	Canada	**3**	1	1	0	0	0	0
Total		**67**	**20**	**46**	**0**	**0**	**0**	**1**
Energy & Minerals								
Borates and lithium	Europe	**1**	1	0	0	0	0	0
	US	**4**	0	2	0	3	0	0
Iron and titanium	Africa	**23**	11	4	0	8	0	0
	Canada	**50**	47	2	0	0	0	0
	China	**0**	0	0	0	0	0	0
Iron ore	Canada	**204**	180	21	0	2	0	1
Uranium	Australia	**10**	10	1	0	0	0	0
Total		**291**	**249**	**29**	**0**	**13**	**0**	**1**
Iron Ore								
Iron ore	Australia	**288**	0	205	0	8	28	47
Salt	Australia	**361**	8	2	3	0	0	348
Total		**649**	8	207	3	8	28	395
Other								
Commercial	Not applicable	**15**	0	0	15	0	0	0
Exploration	Australia	**0.07**	0.00	0.07	0.00	0.00	0.00	0.00
	Other	**0.05**	0.01	0.03	0.00	0.00	0.00	0.00
Total		**15.12**	**0.01**	**0.10**	**15**	**0.01**	**0.00**	**0.00**

Note: The sum of the categories may be slightly different to the total, due to rounding.

Operational environment overview (2016-2020)

	2020	2019	2018	2017	2016
Significant environmental incidents	**0**	0	0	0	1
Fines and prosecutions – environment (US$'000)	**27.4**	19.0	284.7	89.5	57.6
Land footprint – disturbed (square kilometres)	**3,629**	3,626*	3,595	3,616	3,696
Land footprint – rehabilitated (square kilometres)	**491**	490	485	497	541
Mineral waste disposed or stored (million tonnes)	**969**	905*	886	1,188	1,726
Non-mineral waste disposed or stored (million tonnes)	**0.46**	0.28	0.27	0.33	0.53
SO_x emissions (thousand tonnes)	**74.1**	79.0	84.2	86.9	88.0
NO_x emissions (thousand tonnes)	**85.6**	64.3	62.0	65.8	69.1
Fluoride emissions (thousand tonnes)	**2.24**	2.34	2.61	2.49	2.50
Particulate (PM^{10}) emissions (thousand tonnes)	**55.4**	55.4*	62.8	67.2	91.7

* Numbers restated from those originally published to ensure comparability over time.

Note: The increase of NO_x emissions from 2019 to 2020 is due to a change in the calculation method from emissions factors to direct measurement using stack sampling data.

In 2020, we paid environmental fines totalling $27,387 resulting from storm water and tailings environmental releases at our Kennecott operations, in Utah, US, the death of a goitered gazelle in Mongolia and a spill of cell wash at NZAS in New Zealand.

In September 2018, QAL (a joint venture) experienced an alkali release that left the boundaries of the refinery. In December 2020, QAL was found guilty by Gladstone Magistrates Court of unlawfully causing serious environmental harm and contravening a condition of the Environmental Authority issued by the Queensland Government's Department of Environment and Science. Further details – including the steps QAL has taken to improve its environmental performance – are available on our website.

Please refer to the Sustainability Fact Book on our website for more detail.

Biodiversity

We are acutely aware of the interconnected challenges of climate change and biodiversity loss, and the significant risks these have for the environment, wildlife and humanity as a whole. We recognise our operations inherently pose a risk to biodiversity, as well as to the communities that rely on the environment – directly and indirectly – for their lives and livelihoods. Our aim is to avoid such harm when possible and mitigate it when we cannot avoid it.

Protecting biodiversity, therefore, is an important part of our commitment to communities and our employees, as well as to the environment. We are committed to minimising our risks and impacts to biodiversity through the application of the mitigation hierarchy, with the ambition of achieving no net loss to biodiversity at our assets. 'No net loss' means striking a balance between negative impacts on biodiversity and positive outcomes through mitigation.

To that end, we have been engaging with several external programmes to develop both our roadmap for disclosure and target-setting approach for biodiversity and land. For example, in 2020, we joined the Informal Working Group on the Task Force on Nature-related Financial Disclosures, which will help steer business towards positive outcomes for nature.

This year, to further sharpen our biodiversity management processes, we assessed all of our managed operations using an approach developed in 2019 by experts from the UN Environment Programme World Conservation Monitoring Centre (UNEP-WCMC). Using this methodology – combined with global biodiversity datasets of threatened species and conservation and protected areas – we prioritised our operations based on their biodiversity sensitivity. Twenty-eight managed operations were identified as being within a five kilometre radius of a Protected Area; we confirmed 12 high-priority sites.

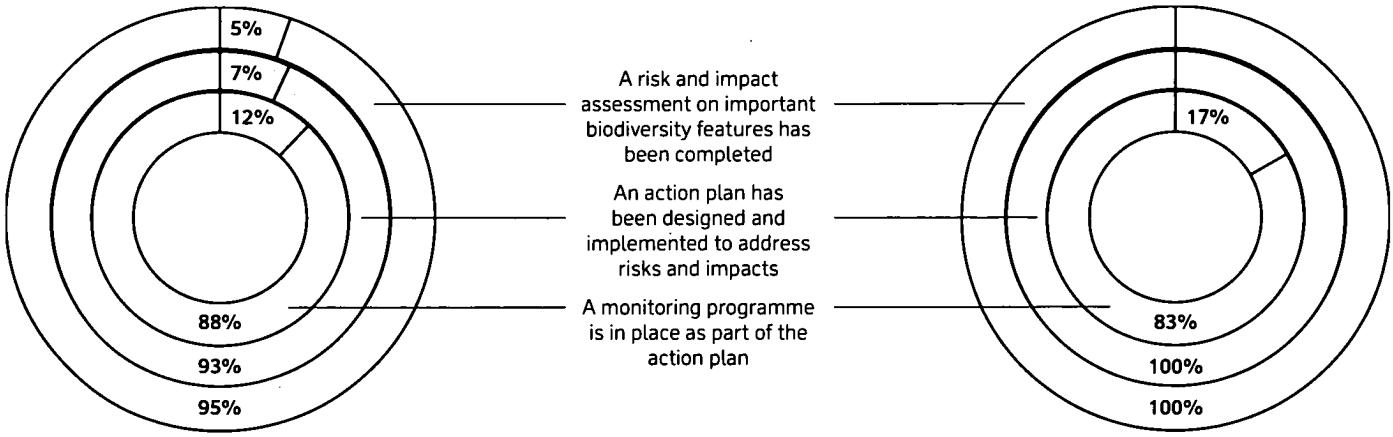
Also in 2020, we assessed the implementation of our biodiversity protection and natural resources management standard across all of our operations. The review indicated that the completion of risk assessments for biodiversity features, development of action plans and monitoring programmes across our operations is tracking well (see figure one). In 2021, we will focus on ensuring all priority sites have their monitoring programme independently reviewed – another key requirement of the standard.

Assurance processes such as these allow us to identify good practices for replication across the business, while also ensuring assets receive the right support and expertise to match their level of risk.

Figure one summarises the implementation of key components of the biodiversity protection and natural resources management standard for all managed sites with a focus on the high-priority sites.

Our biodiversity standard implementation status across all Rio Tinto sites

Our biodiversity standard implementation status across Rio Tinto high-priority biodiversity sites



Sustainability
continued

Closure

We recognise our impact and responsibility do not end when our operations cease, so we consider closure in the way we design, build and run every site.

We seek to create a consensus with stakeholders on a shared vision for the land, balancing environmental and community considerations with long-term capital implications associated with water treatment, repurposing and/or remediating land. Our goal is to leave a positive legacy, delivering value for the Group and our stakeholders.

We have 92 active legacy assets around the world. At the end of 2020, closure provisions on our balance sheet totalled $13.3 billion (compared with $11.1 billion in 2019). This year, we have provided more detail on our financial liabilities related to closure – please see page 244.

Over the next five years, we will transition a number of assets into closure and to their next use. Our Argyle diamond mine, in Western Australia, ceased production in 2020 after nearly 40 years of operation. Following closure, the land will be returned to the Traditional Owners as the custodians of Country, for activities such as cattle grazing, tourism, cultural use and possibly small-scale agriculture and native food production. We target 14% of our closure budget to be spent with Traditional Owners and local providers.

We are also supporting our Argyle employees' transition to new career opportunities, either within Rio Tinto or externally, based on their personal goals and preferences. We began a structured career coaching programme in 2017 to ensure people were well prepared for the mine's closure, which included providing formal training – of their choice – to all employees. To date, we have found new roles for 90% of Argyle employees who wanted to be redeployed within our company.

The Ranger uranium mine, operated by ERA, in the Northern Territory, Australia, ceased production in early 2021. Progressive closure of the mine is continuing; Pit 1 has been filled and is currently being revegetated and Pit 3 is being filled. ERA is tracking towards 2026 for the completion of closure work.

While mining continues at our Gove bauxite operations, also in the Northern Territory, we have begun progressive closure activities, including the decommissioning and demolition of the refinery. We are also planning for the next stage of closure by doing things like upgrading the water treatment plant. We expect our mining operations at Gove to cease in 2030.

Strengthening our approach

Our work supporting operating assets has also expanded and between 2018-20 we completed 14 asset closure strategies, covering 35% of our assets. These create a progressive vision for future land use after our operations cease and help ensure closure is considered throughout the asset lifecycle. All of our operating assets have tactical closure plans in place, aligned with our closure framework. We regularly review and update these plans to ensure they reflect stakeholder expectations and seek to improve our closure practices as we learn from them. At operations with joint ownership structures, we work in partnership with other asset owners to embed closure into asset design, planning and operations.

We continue to engage stakeholders of our sites nearing closure – including Indigenous peoples, government, employees and host communities – via engagements and partnerships, which in turn helps them plan their future. For example, collaboration with the local community and regulators at Mount Rosser, Jamaica, led to successful revegetation of this former bauxite mine, a legacy site, which now supports local employment and is also home to an increasing number of wildlife.

Our approach to supporting regional economic development includes a strong focus on economic diversification. We endeavour to foster wider economic activities alongside national and local governments and community development plans. This reflects our commitment to sustainability as well as our aim to have communities thrive long after our operations cease.

Accordingly, we look for commercial opportunities to repurpose assets to reduce the social and economic impact of closure. At a number of our former assets, we are exploring options to repurpose the site for renewable energy, such as our pilot photovoltaic cell facility at Marignac, France, a former ferro alloy plant. At times, we partner with universities and other companies to find opportunities to repurpose and reprocess waste and improve water and waste treatment. For example, in the Saguenay – Lac-Saint-Jean region of Quebec, Canada, we worked with local blueberry growers to create a safe and effective fertiliser made from waste created by our aluminium operations.

For more information on closure provisions and financial statements, refer to page 244 of this report.

Ethics and compliance

Our code of conduct, *The Way We Work*, lays out clear expectations on how we should conduct our business, and ourselves, no matter where we work or where we are from. Integrity is one of the five core values defined in *The Way We Work*: the courage and commitment to do what is right, not what is easy.

Business integrity

The Way We Work makes it clear that we do not offer, pay or accept bribes, no matter where we operate, no matter what the situation, and no matter who is involved. This position is further supported by our business integrity standard and procedure, which require employees, core contractors and associated persons acting for, or on behalf, of the company to not commit, authorise or be involved in bribery, corruption, fraud or other economic crimes. We also provide clear rules regarding third-party benefits, managing conflicts of interest, facilitation payment, sponsorships, donations and community support, mergers, acquisitions and joint ventures, and engaging third parties. We continue to co-operate fully with relevant authorities in connection with their investigations in relation to contractual payments of $10.5 million made to a consultant who provided advisory services in 2011 on the Simandou project in Guinea. Please refer to the Contingent Liabilities on page 261 for further information.

Our business integrity compliance programme, which is managed independently of our business's operations, is designed to manage our compliance risks and regulatory requirements in the jurisdictions where we conduct our business.

In 2020, we established a new risk and monitoring forum to monitor the management of Group-level business integrity risks and ensure our key internal compliance controls are effective.

We also engaged external experts and finalised maturity assessments of our data privacy and business integrity compliance programmes. We rated well overall, but there are always opportunities to improve; we are implementing actions as needed.

In 2020, we expanded our business integrity standard and procedure to strengthen controls in areas such as terrorist financing and anti-money laundering, as well as reducing declaration thresholds for giving and receiving benefits and making sponsorships and donations. We also enhanced controls to manage third-party business integrity risks by improving our due diligence and monitoring processes, adding more controls for high-risk, third-party engagements and payments and providing training for third parties, where needed.

Employees are required to complete annual online compliance training, tailored to suit the risks employees are most likely to encounter in their roles. This year, we also provided additional risk-based training to 4,410 employees and contractors in 23 countries, and launched enhanced business integrity training online, covering integrity-driven decision making, anti-bribery and corruption, anti-money laundering and fraud for higher risk roles. In 2020, we also developed our ethics ambassadors programme to extend the sharing and reach of integrity insights and champion an integrity-driven culture across the business.

Finally, in response to COVID-19, we conducted a Group-level risk assessment and implemented monitoring and due diligence activities, such as supporting compliance reviews of community preparedness and recovery donation proposals.

Whistleblower programme

A key change this year was to establish the Business Conduct Office, a dedicated team responsible for the management of the whistleblower programme.

In 2020, we reviewed 748 incidents reported through whistleblower programme channels, 42% of which were substantiated. There were 113 (15%) business integrity cases reported, of which 34 cases (30%) were substantiated.

Whistleblower programme

	Cases		Types of whistleblower programme cases						
	Number of cases	Cases substantiated	Personnel	Business integrity	Information security	Health and safety	Communities	Finance	Other
Whistleblower programme	748	42%	55%	15%	13%	9%	3%	1%	4%

Training

4,410 employees and contractors in 23 countries had face-to-face training in recognising and managing business integrity dilemmas.

Value chain

	2020
Due diligence checks on third parties, ('Know Your Customer' & 'Know Your Supplier')	4,055
Due diligence checks on third parties – baseline screening only	20,371
Centrally monitored third parties*	30,120

* Once third parties are screened, they then form part of ongoing monitoring.

We have applied the reporting principles of GRI 101: Foundation 2016 Standard in this report.

Sustainability
continued

Transparency

We believe transparency both encourages accountability – ours as well as others' – and allows us to have fact-based conversations about the issues at hand.

In 2010, we pioneered transparency in tax payments within the mining industry, and in 2018, became a signatory to the B Team Responsible Tax Principles. We continue to report in increasing detail on taxes and royalties paid and economic contribution. We are a founding member of the Extractive Industry Transparency Initiative (EITI) and have actively supported EITI's principles and global transparency and accountability standard since 2003.

In 2020, for the first time, we released comprehensive financial and tax disclosures for 2018 for each country where we operate, through our 2018 Country by Country Report. In 2021, we will make additional disclosures, thereby fully implementing the requirements of the tax and payments to governments standard of the Global Sustainability Standards Board of the Global Reporting Initiative.

We also disclosed additional mineral development contracts with governments, where they are not subject to confidentiality restrictions, thus meeting the commitments we made in our Transparency Statement, available on our website. We continue to encourage governments to allow such disclosures. We also continued to disclose information about the beneficial owners of our joint ventures in line with EITI standards and expectations.

Political integrity

As a company, we do not favour any political party, group or individual, or involve ourselves in party political matters. We do not contribute to political parties or candidates.

Our business integrity standard and procedure includes strict guidelines for dealing with current and former government officials and politicians, including that they cannot be appointed to company positions or engaged as consultants, in certain circumstances, without approval of executive leadership and the Chief Ethics & Compliance Officer.

We engage in public policy on issues that affect or could affect our business, including by contributing relevant information and sharing experiences that help create viable outcomes. For example, we provided submissions to the Government of Western Australia and engaged in the broader public consultation process to facilitate the repeal and replacement of the Aboriginal Heritage Act 1972 with a modernised act reflective of current practice and expectations.

We join industry associations where membership provides value to our business, investors and other stakeholders. We publish on our website the principles that guide our participation, the way we engage, as well as a list of the top five memberships by fees paid. We also track and disclose how we engage on climate policy issues, disclosing when positions and advocacy are significantly different to those we set out in our industry association documentation.

Our approach to sustainability

The Sustainability Committee oversees strategies designed to manage social and environmental risks, including management processes and standards. The Committee reviews the effectiveness of management policies and procedures relating to safety, health, employment practices, relationships with neighbouring communities, environment, human rights, land access, political involvement and sustainable development. For more about our Sustainability Committee, including the terms of reference, see the Governance section of this report.

We complete a sustainability materiality assessment every year to ensure we are publicly reporting on topics that matter most to our stakeholders and to our business. In simple terms, a sustainability materiality assessment records the threshold at which an issue or topic becomes important enough to be reported on externally. This considers the impact and level of perceived importance to stakeholders. This differs from financial materiality, which may use financial metrics or other quantitative analyses to determine what would be considered a significant, or material, impact. Not all sustainability-related topics have the same risk profile, which the assessment reflects.

Last year, we altered the approach to our sustainability materiality assessment. We used various sources of direct input from external engagement to strengthen our understanding of what is important to stakeholders. This revised approach combined the views of our external stakeholders with those of our internal subject matter experts (SMEs) through a quantitative and qualitative assessment.

This year, we engaged an independent external assurance organisation, KPMG, to provide the directors of Rio Tinto with assurance on selected sustainability subject matters. In 2019 and years prior, PricewaterhouseCoopers LLP provided this independent external assurance. KPMG's assurance statement satisfies the requirements of subject matters 1 to 4 of the ICMM assurance procedure. See page 133 in the Governance report for more information about our external auditors and internal assurance.

Non-financial information statement

This section (pages 62-91) provides information as required by regulation in relation to:

- Environmental matters
- Our employees
- Social matters
- Human rights
- Corruption and bribery

Other related information can be found as follows:

- Our business model – page 16
- Principal risks and how they are managed – pages 92-108
- Non-financial key performance indicators – pages 24-28

Notes on data

The data summarised in this sustainability section relates to calendar years. Unless stated otherwise, parameters are reported for all managed operations without adjustment for equity interests. Where possible, we include data for operations acquired before 1 October of the reporting period. Divested operations are included in data collection processes up until the transfer of management control.

We report against GRI standards and the requirements of other select reporting frameworks, and reflect the ten principles of the ICMM and the mandatory requirements in the ICMM position statements within our policies, standards and procedures. For more information please visit riotinto.com.

Sustainability
continued

Voluntary commitments, accreditations and memberships

We take part in a number of global, national and regional organisations and initiatives that inform our sustainability approach and standards, which in turn allows us to better manage our risks. External organisations and initiatives assess and recognise our performance, and we participate in industry accreditation programmes for some of our products.

These organisations and initiatives include the following:

Aluminium Stewardship Initiative (ASI)
The ASI aims to create sustainability and transparency throughout the aluminium industry. It has developed the world's first global Responsible Aluminium Standard, used to assess environmental, social and governance practices across the aluminium supply chain for responsible sourcing. We were the first company in the world to receive certification under the ASI.

Business for Social Responsibility (BSR)
BSR is a global non-profit organisation that works with its network of more than 250 member companies and other partners to build a just and sustainable world. As a member, we share information on sustainable practices.

Extractive Industries Transparency Initiative (EITI)
We are a founding member of the EITI and have played an active role in this global standard since 2003. The EITI promotes open and accountable management of natural resources to make sure our activities benefit the many, not the few. We are transparent about the taxes and royalties we pay – publishing an annual Taxes Paid Report since 2010.

Global Reporting Initiative (GRI)
GRI is an international independent organisation with an international framework and standards for sustainability reporting. Our Group-level sustainability reporting is informed by the GRI Sustainability Reporting Standards (Core option) and the GRI Mining and Metals Sector Supplement.

International Council on Mining & Metals (ICMM)
As a member, we commit to implementing and reporting on ICMM's 10 Principles for Sustainable Development. These cover corporate governance, environmental stewardship and community engagement. Our Chief Executive is a member of the ICMM Council, and we participate actively in various working groups.

Kimberley Process (KP)
We participate in the Kimberley Process through our involvement with the World Diamond Council (WDC). The KP focuses on preventing conflict diamonds from entering the global supply chain.

London Bullion Market Association (LBMA)
The LBMA has renewed Rio Tinto Kennecott's responsible gold certificate, which guarantees that the precious metal produced from Kennecott's refinery can be sold and traded globally. The certificate is one of the requirements for a gold refinery to be placed on the LBMA's Good Delivery List, universally acknowledged as the international standard for quality and responsible production. Many precious metal exchanges will accept gold bars only from refineries that appear on the list.

OECD Guidelines for Multinational Enterprises

The OECD Guidelines for Multinational Enterprises are recommendations by governments to multinational enterprises operating in or from adhering countries. They include non-binding principles and standards for responsible business conduct in a global context consistent with applicable laws and internationally recognised standards. These guidelines are a multilaterally agreed and comprehensive code of responsible business conduct that governments have committed to promoting.

Proteus Partnership

The Proteus Partnership was formed in 2003 as a collaborative effort between leading extractive companies and the United Nations Environment Programme World Conservation Monitoring Centre (UNEP-WCMC) to improve accessibility to biodiversity data for better decision making and support the further development of global biodiversity resources. As a Proteus Partner, we have access to the UNEP-WCMC online biodiversity assessment tool, which allows us to scan for potential sensitive areas in places where we are seeking tenure before major investments are made.

Responsible Jewellery Council (RJC)

The RJC is an international non-profit organisation that promotes transparent and responsible ethical, human rights, social and environmental practices throughout the jewellery industry – from mine to retail. We are a founding member and were the first mining company to be certified in 2012. We were re-certified in 2015 against the RJC Code of Practice Standard. RJC certification covers operations or activities of our businesses that produce diamonds, gold or gold in concentrates that contribute to the jewellery supply chain. This includes our diamond mines – Diavik in Canada and Argyle in Western Australia – and our Kennecott copper mine in Utah for gold.

The B Team Responsible Tax Principles

We are a signatory to The B Team Responsible Tax Principles, developed by a group of cross-sector, cross-regional companies to define what leadership in responsible tax looks like. The disclosures in our Taxes Paid Report, available on our website, demonstrate our approach to the B Team's seven 'Responsible Tax Principles'.

The Copper Mark™

Developed by the International Copper Association – with input from a broad range of stakeholders including customers, NGOs and producers – The Copper Mark™ is a comprehensive, credible assurance framework to demonstrate the copper industry's responsible production practices and industry contribution to the United Nations Sustainable Development Goals. Our Kennecott mine, in Utah, in the United States, and Oyu Tolgoi, in Mongolia, were the first producers to be awarded the Copper Mark – verifying our copper as responsibly produced.

Towards Sustainable Mining (TSM)

We participate in the TSM programme through our membership of the Mining Association of Canada (MAC). TSM is a sustainability certification that applies to members of MAC operating in Canada.

United Nations Universal Declaration of Human Rights (UDHR)

The UDHR is a milestone document in the history of human rights, which sets out, for the first time, fundamental human rights to be respected. We respect and support all internationally recognised human rights consistent with the UDHR.

United Nations Global Compact (UNGC)

The UNGC is a voluntary initiative based on CEO commitments to implement universal sustainability principles and to take steps to support UN goals. As members, we incorporate the Ten Principles of the UN Global Compact into strategies, policies and procedures.

United Nations Guiding Principles on Business and Human Rights (UNGPs)

The UNGPs are a global reference point for preventing and addressing the risk of adverse impacts on human rights linked to business. We seek to operate in a manner consistent with the UNGPs.

United Nations' Sustainable Development Goals (SDGs)

The SDGs are a set of 17 goals and 169 targets endorsed by the UN in 2015. These present a broad sustainability agenda focused on the need to end poverty, fight inequality and injustice and respond to climate change by 2030. Please see page 65 for more on our approach to the SDGs.

Voluntary Principles on Security and Human Rights (VPSHR)

The VPSHR guides extractives companies on how to maintain the safety and security of their operations in line with respect for human rights. Participants, including governments, companies and non-governmental organisations, agree to proactively implement or support the implementation of the VPSHR. We published our VPSHR report for the first time in 2018 (previously only provided to other participants) and have committed to doing this each year.

Risk Management

Taking and managing risk responsibly is essential to running our business safely, effectively and in a way that creates value for our customers and shareholders, employees and partners.

Effectively managing our risks ensures we meet our strategic objectives, mitigate threats and create opportunities in alignment with our values – Safety, Teamwork, Respect, Integrity and Excellence.

Our approach

Effective risk management is necessary to manage both threats and opportunities to our strategy and operations. Our risk management process helps us identify, evaluate, plan, communicate, and manage material risks that have the potential to impact our business objectives. While risk management is a key accountability and performance criteria for our leaders, all employees have a responsibility for identifying and managing risks. Our Board and Executive Risk Management Committee provide oversight of our principal risks and associated management responses described on pages 95-105. The Audit Committee monitors the effectiveness of risk management and internal controls. Our risk management system is made up of six core elements (see page 93) – one of which is our risk management framework, which sets out clear roles and responsibilities, standards and procedures. We also have three lines of defence to verify that risks are being effectively managed in line with our policy, standards and procedures, including across core business processes such as finance, health and safety, social performance, environment and major hazards. You can view our risk management standard at www.riotinto.com.

The overall effectiveness of the risk management framework requires clear expectations and consistency of application of the framework, across different product groups and businesses, countries of operation and functional areas of expertise.

This clearly did not happen in the case of the events leading to the destruction of the rock shelters at Juukan Gorge in May 2020. Following the events at Juukan Gorge, we have made changes to cultural heritage risk management within that framework. These changes strengthen the first and second lines of defence, establishing a Communities and Social Performance Area of Expertise to deliver a more rigorous assurance framework with regard to the way we manage host communities and cultural heritage risks across our operations globally. The tragedy of Juukan Gorge highlights the critical dependency on risks being identified and then monitored on an ongoing basis by operational management (within the first line of defence). From there, if circumstances change, the risk needs to be escalated quickly and appropriately to senior leaders and the relevant functional experts within the second line. The second and third lines also need to be sufficiently well connected to identify the true nature of the underlying risk and how this may then be symptomatic or thematic for other assets or jurisdictions within the Group.

Of course, all of this system of risk management and internal control is predicated upon a culture that recognises and prioritises cultural heritage specifically, and more generally supports the timely and effective communication and escalation of risk. Fundamentally, risk frameworks are only ever as good as the information that flows through them, and the experience and judgment of individuals in key positions. This is particularly important in a group that is of our size, scale and complexity.

The Board, Audit Committee and our business and functional management teams are all determined to play a part in making these improvements to the overall culture and systems of risk management and internal control to ensure that the lessons learned from Juukan Gorge are applied to other risk areas, particularly other environmental and social risks.

Every part of our risk management framework is there to challenge and evaluate the status of our risk profile in the pursuit of our business objectives. The way we challenge the status is by having three lines of defence that support leaders in critically reviewing and validating their own operating assumptions.

Three lines of defence	Responsibilities	Accountability of
1st – All operational leaders	Identification, management, verification and monitoring of risks and controls	Management
2nd – Centre of Excellence and Areas of Expertise	Oversees risks, control effectiveness, advice on capability and ensures objective assurance against Group's policies, standards and procedures	Management
3rd – Group Internal Audit	Provides independent verification that risks and internal controls are being managed effectively	Board and Board committees

Risk assurance
- Assurance for management that risks and critical controls are being managed effectively.

Capability and culture
- Risk capability built through coaching and training for leaders and teams across our business
- Risk culture of active management of risks is embedded into how we run our business
- Risk culture fosters collective ability to identify and understand, openly discuss and respond to current and future risks.

Systems, technology and data analytics
- Leverage systems and data analytics to support risk analysis, management and oversight.



Risk management framework
- Group's roles and responsibilities, standards, procedures and guiding principles for effective, consistent and integrated risk management.

Risk analysis and management
- Risks are measured, monitored and managed, which requires that critical controls performance is also being measured, monitored and managed
- Risks and their control information are current, transparent and connected
- Leader-led analysis and management.

Reporting oversight and insights
- Management's oversight is supported by proactive reporting and effective escalation
- Decision-making is supported by connected and insightful risk analysis.

Emerging risks

As a company, we are inherently exposed to long-term risks because of our long-life operations and growth pipeline. We track leading indicators of emerging risks and their likely impact on our long-term prospects. We proactively analyse the impact of these risks on our business model through plausible scenarios of the interplay between geopolitics, societal expectations and technology advancement.

The COVID-19 pandemic has brought additional uncertainty globally and the recovery pathway remains unclear. Our agility and resilience has enabled us to continue to operate, deliver products to our customers and contribute to economies and communities. Since early 2020, we have activated business resilience teams across our global operations, introduced strict health measures to protect our employees and communities, and adapted our systems to support a significant number of employees working from home. We continue to closely monitor the potential short-to-long-term impacts on our business. This includes impacts on our employees, supply chain, market demand and trade, as well as the resilience of global financial markets to support an economy recovery.

Emerging risks by nature are highly uncertain, with scope for rapid or non-linear evolution. The main categories of emerging risks that we monitor continuously, and that could potentially have an impact (positive or negative) on the Group are described below:

Trade tensions: Trade is an essential part of our business, and the mining sector in general, as the majority of our products cross national borders. Throughout the year, we have seen the dynamics of geopolitics causing volatile market conditions including the introduction of tariffs on various goods between China and the US, tariffs on Canadian aluminium imports to the US, a targeted reduction on imports from Australia by China and tightening of foreign investment laws in Australia and Canada. Although we have not been significantly affected by these dynamics to date, we monitor these trends closely, and in particular the evolution of the relationship between Australia and China.

Increasing societal and investor expectations: In 2020, we continued to see increasing expectations and focus on social equality, fairness and sustainability – and how companies address these issues. Financial institutions are also placing greater emphasis on environmental, social and governance (ESG) considerations when making investment decisions. The increasing focus on ESG has the potential to shape the future of the mining industry, supply cost structures, demand for global commodities and capital markets. While this presents us with opportunities for portfolio and product differentiation, it has the potential to impact how we operate.

Host communities and cultural heritage: We are committed to strengthening our relationships with host communities, including Traditional Owners and First Nations and improving the way we manage cultural heritage. We have taken a number of actions to address the lessons learned from Juukan Gorge, including establishing a standalone Communities and Social Performance (CSP) Area of Expertise, which will deliver more rigorous assurance across our operations and elevate communities risk processes. We have also set up an Integrated Heritage Management Plan with strict approval protocols at both the product group and Group levels. We include more detail about the actions we are taking in response to Juukan Gorge on 114-115.

Resource depletion: The continual replenishment of economically viable resources is essential for our future growth. Our past divestments, planned closures and uncertainty over resource assumptions – without reciprocal resource replenishment through exploration or acquisitions – could impact our growth options. Additionally, our ability to access resources could potentially be impacted as regulations evolve.

Transition to a low-carbon future: Climate change constitutes an important part of our sustainability approach. Climate change risks have formed part of our strategic thinking and investment decisions for over two decades. The transition to a low-carbon future presents both challenges and opportunities for our portfolio over the short to long term. Key areas of uncertainty include future climate change regulation and policies, the development of low-carbon technology solutions and the pace of transition across our value chains, in particular the decarbonisation pathways across the steel sector.

We are targeting a 15% reduction in absolute emissions from 2018 levels by 2030, with an ambition to reach net zero emissions by 2050 across our operations. Overall, our growth between now and 2030 will be carbon neutral. We continue to enhance our monitoring and management of greenhouse gas emissions, water and land use, and rehabilitation.

We are also actively engaging in partnerships to explore ways to improve environmental performance across our value chains, such as with China Baowu Steel Group, Tsinghua University and Nippon Steel Corporation in the steel sector, and the ELYSIS™ joint venture in the aluminium sector. We are also active participants in the International Council on Mining and Metals and the Climate-Smart Mining initiative. Please refer to our climate change report, available on our website, for further details.

Risk Management
continued

Structural change across commodity markets: The increasing focus on ESG investors and the developments of current geopolitical tensions, coupled with the transition to a low-carbon future, have the potential to structurally change the supply and demand of global commodities. Demand for our commodities could shift to 'greener' alternatives, with a higher dependence on recycling, ie secondary supply. Alternatively, an increased focus on ensuring supply security could see large volumes of supply enter the market, potentially impacting future margins.

Technology advancement: Technological advances bring both opportunities and threats for our business. Digital connectivity has enabled us to conduct essential activities, including assurance work, at remote sites where travel has been restricted due to COVID-19. Technology will also be a key enabler to reaching our net zero emissions ambition, through initiatives such as decarbonising the electricity network at our Pilbara iron ore operations in Western Australia and the ELYSIS™ carbon-free aluminium smelting process. However, cyber attacks are becoming more prevalent and we have had to invest significantly in technology to enhance our cyber security.

Longer-term viability statement

As discussed above, we closely monitor and assess the impact of key emerging risks on our long-term prospects and, where possible, proactively build response plans into our investment decisions.

Our long-term planning reflects our business model of running our business in ways that are safer, smarter and more sustainable. To ensure we remain resilient in the long term, our business model is continuously stress tested against the key uncertainties within the emerging risks, with recommended actions to mitigate potential downside. These are presented to the Board on an annual basis as part of the Group strategy discussions. We then develop our strategy and make capital investment decisions based on this assessment. We also regularly assess our financial investment capacity to ensure our capital commitments can be funded in line with our disciplined approach to capital allocation.

Our business planning processes include preparing a one-year detailed financial plan and a longer-term life-of-asset outlook. This planning process includes modelling a series of macroeconomic scenarios and using a range of assumptions that consider both internal and external factors. As part of our robust risk management framework, we closely track, monitor and mitigate principal risks to our business plan and model.

The key assumptions underpinning our long-term plan include:

- long-term economic growth and commodity demand in major markets, such as China;
- continued access to and economic viability of resources and reserves to support organic and inorganic growth programmes;
- pathways to reduce carbon footprint;
- no significant industry-wide disruptive technology or productivity enhancement that unlock very low cost supply; and
- no operational risks materially impacting the long-term plan.

Our business plan and macroeconomic forecast has its greatest level of certainty in the underlying assumptions in its first three years. However, our longer-term viability assessment examines the first five years (2021-25) of the business plan. This not only enables a detailed analysis of potential impact of risks materialising in quick succession in the first three years but also enables us to further stress test the business plan for risk materialising towards the end of the time period, although with lesser certainty. This allows directors to assess our capacity to exercise financial levers available in both the three-year and five-year time frame to maintain the Group's viability.

The principal risks and uncertainties included in our longer-term viability assessment are as follows:

- Economic risk: A global financial crisis triggered as the COVID-19 pandemic persists and global tensions intensify that lead to positive but low growth in China and an economic downturn in the rest of the world. Large negative pricing shocks are assumed in 2021, followed by persistent slow growth rates.
- Operational risk: A 'one-off' catastrophic event resulting from a major operational failure, such as a tailings and water storage facility failure, extreme weather event, underground or geotechnical event resulting in multiple fatalities, cessation of operations and significant financial impacts.

We quantify the expected financial impact of each risk based on internal macroeconomic and business analysis, as well as internal and external benchmarking on similar risks. We apply a probabilistic approach to quantify risks and impacts where relevant. Although the likelihood of more than one principal risk materialising in close succession is unlikely, the stress test assumes these risks could materialise individually and in multiple combinations to create severe but plausible scenarios that could threaten the Group's viability.

Applying these scenarios, the first five years of the Group's business plan is stress tested to assess the impact on the Group's longer-term viability, including whether additional financing facilities will be required. In addition to liquidity and solvency, the assessment also considers other financial performance metrics such as cash flow, debt capacity and credit rating, as well as dividend payments. These metrics are subject to robust stress tests and reverse stress tests.

Taken in isolation, each risk does not threaten the viability of our business model. The main impact from each risk is a significant decrease in our free cash flow and subsequent reduction in the dividend. We have levers in place to maintain adequate levels of liquidity, including reducing discretionary capital expenditure and accessing lines of credit.

The most 'severe' scenario, albeit unlikely, considers the financial impact of both economic and operational risks materialising in a single year at the start of the assessment period, followed by a second operational risk occurring towards the end of the five-year time period. This scenario would create both an immediate and prolonged severe impact, followed by a second impact on the Group's financial performance towards the end of the period of assessment with an estimated negative free cash flow of $11 billion. The Group has a suite of management actions available to preserve resilience, including accessing lines of credit, reducing capital expenditure and raising debt while maintaining the shareholder return policy. Our financial flexibility could potentially be limited during the peak of the crisis. The viability of the Group under all the severe but plausible scenarios tested remained sound.

Although we have made significant efforts to predict global recovery pathways from the COVID-19 pandemic, there still remains large uncertainty on how the situation will develop and how far reaching the impact will be. We have assumed a 'severe' recovery pathway to mitigate some of this uncertainty and give a greater level of confidence to the directors in assessing our long-term viability.

Therefore, taking into account the Group's current position and the robust assessment of our principal risks, the directors have assessed the prospects of the Group over the next five years (until 31 December 2025) and have a reasonable expectation that we will be able to continue to operate and meet our liabilities as they fall due over that period.

Principal Risks and Uncertainties

The principal risks and uncertainties outlined in this section reflect the risks that could materially affect (negatively or positively) our performance, future prospects or reputation.

We examine our principal risks and uncertainties to our business objectives within the strategic context of our geopolitical, societal and technological landscape. A principal risk is one or a combination of risks that can manifest externally or internally, be of any nature, and escalate from any area of the business. As such, we set expectations that all our leaders and team members understand their risks, assess them in line with Group policies and procedures, and respond. Where risks are material to the Group, they are escalated to the Executive Risk Management Committee and, as appropriate, to the Board or its committees. This requires a strong risk culture that we continue to develop and foster.

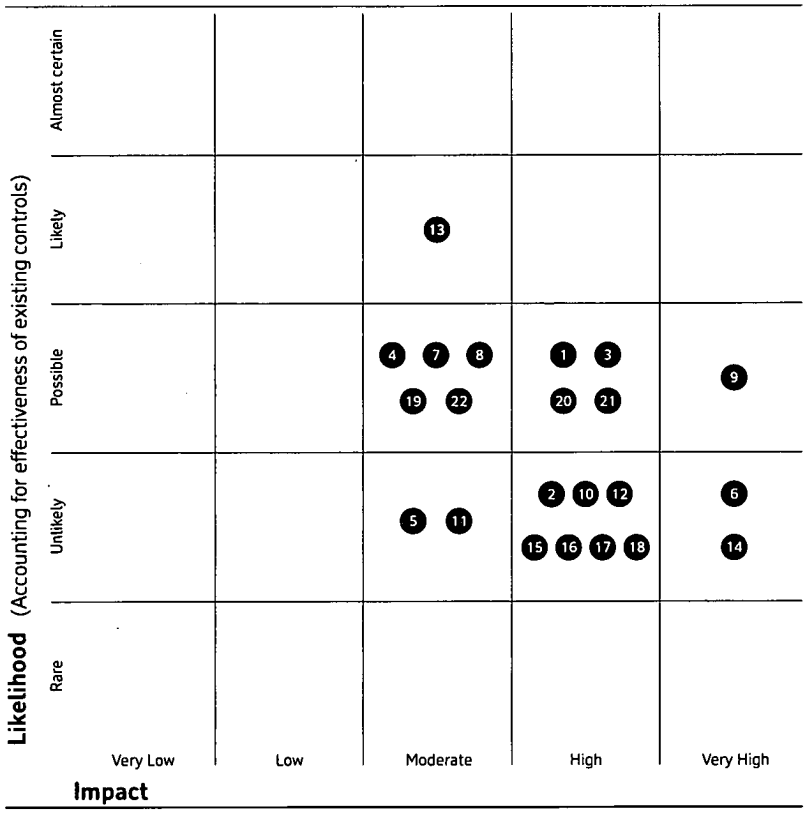
The principal risks, uncertainties and trends outlined in this report should be considered as forward-looking statements and are made subject to the cautionary statement on page 384. We regularly assess the potential impact and likelihood of our principal risks to support the prioritisation of our efforts and resources. The assessment of these principal risks and the effectiveness of our associated controls reflect management's current expectations, forecasts and assumptions and, by definition, involve subjective judgments and are subject to changes in our internal and external environments. While we deploy preventative and mitigative controls to reduce the likelihood and consequence of risks, and manage potential impacts, the following describes the inherent risks to our business. There remain certain threats, such as natural disasters and pandemics, where there is limited capacity in the international insurance markets to transfer such risks. We closely monitor these threats and develop business resilience plans. We also seek to bring a commensurate level of rigour and discipline to our managed and non-managed joint ventures as we do to our wholly-owned assets, through engagement and influence, in line with applicable laws.

In 2020, the ongoing management and monitoring of these risks, controls and response plans has continued to be the responsibility of the Group's Executive Risk Management Committee (RMC) and, where required, a dedicated management committee chaired by an Executive member to oversee a specific principal risk. This year, we are providing greater transparency to our shareholders in disclosing not only the mitigations for principal risks but also where in our business (resources, assets or relationships) the risk exists. Additionally, we identify the interconnectivity of our Strategic[1], Economic[2] and Operational[3] principal risks within our investors' Environment[4], Social[5] and Governance[6] (ESG) approach.

Current assessment of principal risks

As of February 2021

Principal risks		Focus
1	Living our corporate values	Strategic; ESG
2	Geopolitics impacting trade and/or investment	Strategic
3	Transition to a low-carbon future	Strategic; ESG
4	Execution of acquisitions and divestments	Strategic
5	New ore resources	Strategic; ESG
6	Strategic partnerships	Strategic; ESG
7	Relationships with communities	Strategic; ESG
8	Attract and retain requisite skilled people	Strategic; ESG
9	Commodity economics	Economic
10	Access to capital through economic cycles	Economic
11	Resources to reserves	Economic
12	Capital project delivery	Economic
13	Change in tax regulations	Economic
14	Safety incident or major hazard event	Operational; ESG
15	Cyber breach	Operational
16	Physical impacts from climate change	Operational; ESG
17	Water scarcity and management	Operational; ESG
18	Natural disaster exposure	Operational; ESG
19	Closure, reclamation and rehabilitation	Operational; ESG
20	Civil unrest	Operational; ESG
21	COVID-19	Operational; ESG
22	Breach of our policies, standards and procedures, laws or regulations	Operational; ESG



1. **Strategic** – risks arising from uncertainties that may impact our ability to achieve our strategic objectives.
2. **Economic** – risks that directly impact financial performance and realisation of future economic benefits.
3. **Operational** – risks arising from our business that have the potential to impact people, environment, community and operational performance including our supply chain. HSE risks are specific operational risks.
4. **Environment** – risks arising from our business that have the potential to impact on air, land, water, ecosystems and human health.
5. **Social** – risks arising from our business that have the potential to impact on society, including health and safety.
6. **Governance** – risks arising from our workplace culture, business conduct and governance.

Principal Risks and Uncertainties
continued

1. Living our corporate values

Strategic | ESG | P P P P

Living our values (Safety, Teamwork, Respect, Integrity and Excellence) goes to the heart of our Group's performance, future prospects and reputation. Sharing and demonstrating our values through our behaviours together unlocks opportunities for high performance in all that we do.

Management response
Our code of conduct, *The Way We Work*, provides clear guidance on how we should conduct our business, no matter where we work or where we are from. The following programmes have been deployed to support our leaders and teams in living our values:

- Leader and employee training in our values and behaviours.
- Business integrity training tailored to their role responsibilities and risk exposures.

Opportunities
Our reputation and ability to build respectful and trusting partnerships is dependent on our business conduct consistent with our corporate values.

Threats
COVID-19 travel restrictions have reduced the ability to have face-to-face cultural and leadership development programmes. Hence, we are finding new ways to engage, induct and develop our people through use of virtual and online programmes.

Trend



Potential impact
- Group reputation
- Licence to operate
- Future financial and operational performance

2. Geopolitics impacting trade and/or investment

Strategic | P P P

International geopolitics may impact our ability to operate effectively and/or invest.

Management response
We aim to mitigate the impact of geopolitics by:

- Continually testing the resilience and optionality from our diverse portfolio of commodities, markets and jurisdictions.
- Ongoing monitoring of the political environments where we operate as well as our key markets and engagement with government and customers in those areas.

Opportunities
Operations spanning diverse commodities and jurisdictions provide resilience against country-specific tariffs.

Threats
Increased trade tensions may undermine rules-based trading system and lead to trade actions (increased tariffs and retaliation), potentially impacting key markets for our products.

Trend



Potential impact
- Future financial performance
- Liquidity
- Group reputation

Link to strategy P Portfolio P People P Performance P Partners

3. Transition to a low-carbon future

Strategic
ESG

P P P P

Climate change is a systemic challenge and will require co-ordinated actions between nations, industries and society. Our risk is that we do not adapt competitively to the requirements of a low-carbon future, including expectations of Scope 3 commitments in the products we produce and the way we operate our business, resulting in reputation damage with key stakeholders eroding investor confidence, market value and business resilience.

Management response

Climate change has formed part of our strategic thinking and investment decisions for over two decades. We continue to be part of the solution by:

- Setting targets to reduce our emissions (on an absolute and intensity basis) over the short, medium and long term.
- Investing approximately $1 billion over five years in emissions reduction projects.
- Engaging with key stakeholders on climate change issues, including investors, industry associations and governments.
- Partnering to reduce the carbon footprint across our value chain. This includes the development of new partnerships for technologies and responsible sourcing to explore pathways with our customers and suppliers to improve the environmental performance of our product value chains.
- Investing in projects and research and development initiatives that will increase the supply of the materials essential to a low-carbon future.
- Considering climate change in our strategic and operational decision-making, including the use of an internal carbon price.

Opportunities

Each of the commodities we produce has a role to play in the transition to a low-carbon future – aluminium in electric vehicles, copper in wind turbines, iron ore for critical infrastructure and minerals for rechargeable batteries, such as lithium.

Threats

Current and emerging climate regulations have the potential to result in increased costs, change supply and demand dynamics for our products and create compliance risks, all of which could impact our financial performance and reputation.

Trend



Potential impact

- Business model value
- Future financial and operational performance
- Group reputation
- Partner to operate

4. Execution of acquisitions and divestments

Strategic

P P P

Acquisitions' (or divestments') actual realised value may vary materially from original business case.

Management response

We practise a disciplined approach to acquisitions and divestments that includes:

- Detailed, objective due diligence on all material divestments and acquisitions.
- Rigorous third-party due diligence and assurance.
- Involving business unit leaders early in the process to manage post-acquisition integration into the Group.
- Conducting post-investment reviews on divestments and acquisitions to identify key learnings and embed them in future initiatives.

Opportunities

Proceeds realised from divested assets are greater than planned, allowing more capital to be returned to shareholders or redeployed into higher-returning or more productive uses. We successfully acquire and integrate businesses on acceptable terms that provide sustainable future cash flow and/or future growth options.

Threats

Value is not realised from divestment or acquisition through changing or incorrect assumptions, unanticipated liabilities or integration costs.

Trend



Potential impact

- Valuation
- Future financial performance
- Solvency
- Liquidity
- Group reputation

Principal Risks and Uncertainties
continued

5. New ore resources

Strategic | ESG | P P

The success of exploration programmes and/or acquisitions may be insufficient to offset depletion.

Management response
We have grouped the reporting lines of our Exploration, Mergers and Acquisitions and Group Strategy teams under one Executive Committee member to better leverage our collective knowledge of opportunities. This enhances our ability to:

- Continually review opportunities in the exploration and acquisitions portfolios and prioritise accordingly.
- Leverage and develop new technologies for exploration and evaluation of reserves/resources.
- Create and maintain third-party partnerships to grow our portfolio.

Opportunities
Exploration and/or acquisitions have the potential to increase resources in commodities currently within our portfolio or diversify into new commodities. We focus our activity on our highest-value projects, particularly on evaluating the Resolution Copper project in Arizona, US, and advancing our Winu copper/gold deposit in Australia. When determining targets, we consider our customers' and society's needs for new products and design our strategy to maximise opportunities.

Threats
Recent assessment indicates a net decrease in our resources and reserves across all commodities. New large, long-life deposits are increasingly scarce and those that are known require advances in processing technology and/or significant capital investment in infrastructure.

Trend



Potential impact
- Valuation
- Future financial and operational performance
- Group reputation

6. Strategic partnerships

Strategic | ESG | P P P P

Strategic partnerships play a material role in delivering our growth, production, cash or market positioning, and these may not always develop as planned. Strategic partnerships include our Traditional Owners, customers, joint ventures partners (managed and non-managed), governments and our suppliers.

Management response
We approach investments and partnerships with a view to long-term development of relationships rather than short-term transactional advantage. To support that we:

- Actively participate within the governance structures of joint ventures to promote, where possible, alignment with the Group's policies and strategic priorities.
- Modernise our agreements with Traditional Owners, which includes modifying clauses to ensure respect, transparency and mutual benefit.
- Engage in partnerships to explore ways to improve environmental performance across our value chains, such as with China Baowu Steel Group and Tsinghua University and the ELYSIS.

In addition, our code of conduct, *The Way We Work*, provides clear guidance on how we should conduct our business, no matter where we work or where we are from.

Opportunities
Strategic partnerships offer opportunities to create mutual benefits for all parties involved by leveraging the differing strengths of the participants. This may be realised through increased community participation in employment and procurement opportunities, access to resources, increased shareholder returns, or reduced political, portfolio and operational risks. Where we partner in operations, we seek to bring a commensurate level of rigour and discipline to our managed and non-managed joint ventures as we do to our wholly-owned assets, through engagement and influence and in line with applicable laws.

Threats
Disruption to our partnerships may limit the expected benefits received by participants and lead to interruptions to our operations, development projects and exploration activities. For non-managed operations, the decisions of the controlling partners may cause adverse impacts to the value of our interest in the operation, or to our reputation, and may expose us to unexpected liabilities.

Trend



Potential impact
- Group reputation
- Future financial and operational performance
- Valuation

7. Relationships with communities

Strategic ESG | P P P

We may not be viewed as a trusted partner by society and governments, affecting our ability to operate and grow through collaborative and mutually beneficial partnerships.

Management response

We aim to make a positive contribution to the communities in which we operate through:

- Establishing a Community and Social Performance (CSP) Area of Expertise to deliver a more rigorous assurance framework across our operations and elevate CSP risk processes.
- Ensuring respect for communities' human rights, aligning our commitments with international standards.
- Modernising our agreements, which includes modifying clauses to ensure respect, transparency and mutual benefit.
- Implementing an integrated cultural heritage management system with strict approval protocols at both the product group and Group levels.
- Developing mutually beneficial partnerships with local communities and establishing appropriate social performance targets.
- Instigating community investment programmes.
- Implementing local procurement policies and targets.
- Setting local content commitments for major capital projects.

Opportunities

Strong relationships with the communities in which we operate have the potential to provide stable operating environments. Respectful and positive engagement with communities, governments and other stakeholders can support access to new resources, create stable and predictable investment and operating environments, and shape mutually beneficial policies and legal/regulatory frameworks.

Threats

Access to land and resources may be impacted if we are not considered a trusted partner in certain regions. Other potential actions can include litigation, expropriation, export or foreign investment restrictions, increased government regulation and delays in approvals, which may threaten the investment proposition, title, or carrying value of assets.

Trend



Potential impact

- Group reputation
- Future financial and operational performance

8. Attract and retain requisite skilled people

Strategic ESG | P P

Our ability to maintain our competitive position is dependent on attracting, developing and retaining services of a wide range of internal and external skilled and experienced personnel and contracting partners.

Management response

Attracting, developing and retaining the best people is crucial to our success. We aim to achieve this by:

- Investment in leadership and team member skills to develop an environment of inclusion to attract and leverage our diversity.
- Talent management and planning.
- Engagement strategy that is able to respond to changing external and internal expectations of people.
- Maintain a safe working environment.
- Maintain competitive remuneration and benefits.
- Provide learning and career development opportunities for our people to build skills for today and our future.

Opportunities

Enhance productivity and business resilience through building operational and commercial excellence. Higher local employment can increase our business resilience and community trust.

Threats

Business interruption or underperformance may arise from a lack of capability in people, standards, processes or systems to prevent, mitigate or recover from an interruption which results in a material loss to the Group.

Trend



Potential impact

- Future financial and operational performance
- Communities and social performance
- Group reputation

Principal Risks and Uncertainties
continued

9. Commodity economics

Economic | P P

Commodity prices, driven by demand for and supply of our products, vary and may not be as expected over time. China is the largest market for our products and its growth pathway could affect demand for our products.

Management response

We operate in global markets and accept the value impact of exchange rate movements and market-driven prices on our commodities. Our approach includes:

- Maintaining low-cost production, allowing profitable supply throughout the commodity price cycle. We deliver this through productivity initiatives that seek to create value and/or reduce waste and procurement and supply chain management practices that respond to changes in input costs.
- Maintaining a diverse portfolio of commodities across a number of geographies.
- Maintaining a global portfolio of customers and contracts.
- Leveraging market-facing sales, marketing and trading resources in the Group.
- Monitoring multiple leading indicators and undertaking detailed industry analysis to inform our forecasting assumptions and using scenarios to test the resilience of our portfolio and exploring opportunities.

Opportunities

A rise in commodity prices or favourable exchange rate movements generates more cash flow from our operations, enabling us to pursue growth options or capital expansions, pay down debt and/or increase returns to shareholders. New opportunities for 'green' supply.

Threats

Falling commodity prices or adverse exchange rate movements reduce cash flow, limiting profitability and shareholder returns. These may trigger impairments and/or impact our credit ratings. Extended subdued prices may reflect a longer-term fall in demand for our products, and the reduced earnings and cash flow streams resulting from this may limit investment and/or growth opportunities. Unfavourable changes in the cost of production can arise, such as increased fuel prices.

Trend



Potential impact

- Future financial performance
- Solvency
- Liquidity

10. Access to capital through economic cycles

Economic | P P

External events and financial discipline may impact our ability to access capital and support our strategy.

Management response

We aim to manage the liquidity and financing structure of the Group using forecasts and sensitivity analysis tools to actively monitor, determine and enable access to the appropriate level, sources and types of financing required. This process is strengthened by:

- Ensuring compliance with our Treasury policy and standard, which outlines the fundamental principles that govern our financial risk management practices.
- Committing to prudent financial policies and financial discipline, including credit and liquidity metrics commensurate with a strong investment grade rating.
- Maintaining the liquidity and financing structure of the Group through regular forecast, sensitivity and stress testing tools to actively monitor, determine and enable access to the appropriate level, sources and types of funding required.
- Subjecting funds invested to credit limits, dynamic risk scoring, and maturity profile based on Board-approved frameworks to ensure appropriate liquidity and risk diversification.
- A disciplined capital allocation process supported by Evaluation and Investment Committee.
- Board approval of the financial strategy, long-term planning and cash flow forecasting.
- Applying a shareholder returns policy that allows shareholder returns to adjust with the cycle.

Opportunities

Favourable market conditions and strong financial discipline could increase our liquidity and/or balance sheet strength, allowing us to pursue investment or growth opportunities, pay down debt and/or enhance returns to shareholders.

Threats

Our ability to raise sufficient funds for capital investments during a major economic downturn.

Trend



Potential impact

- Future financial performance
- Solvency
- Liquidity
- Group reputation

11. Resources to reserves

Economic | P P

Our estimates of ore resources and reserves may vary. The volume of material reported in Resource and Reserve is based on the geological, commercial and technical information available at the date of the report and is, by its nature, incomplete. As new information comes to light, the economic viability of some Ore Reserves and mine plans may be reassessed with material impacts (positive or negative).

Management response

We invest in developing our orebody knowledge to inform our company's organic growth pathways and projections of financial performance. This includes:

- Compliance with the Group's Resources and Reserves standard.
- Establishment of the Orebody Knowledge (OBK) Centre of Excellence.
- Development of operational KPIs to ensure inputs to Mineral Resource and Ore Reserve calculations remain valid. This includes spatial plan conformance and grade and tonnage reconciliation.
- Compliance with processes for optimal asset development and Resource and Reserve maintenance.

Opportunities

Through operational efficiencies, deployment of new technologies or increased orebody knowledge we can improve the discovery of new Resources, convert a greater proportion of Resource to Reserve, and extract them in a more economical way.

Threats

Inadequate knowledge of our Resources and Reserves increases production costs and ore loss within our production systems. Failure to capture the benefits of new technologies may reduce our volume of available Reserves.

Trend



Potential impact

- Future financial performance
- Valuation

12. Capital project delivery

Economic | P P

Large capital investments require multi-year execution plans and are complex. Our ability to deliver projects to baseline plan – principally in terms of safety, cost and schedule – may vary due to changes in technical requirements (eg geotechnical), law and regulation, government or community expectations, or through commercial or economic assumptions proving inaccurate through the execution phase.

Management response

We develop large-scale capital projects through a specialised division. Our methodology includes:

- Implementation of the project management control framework and assurance activities to ensure compliance.
- Stakeholder engagement is managed by the product group that will have ownership of the project through to operation.
- Following a rigorous project approval and stage-gating process, including monitoring and status evaluation, as articulated in the project evaluation standard and guidance.
- Maintaining a strong focus on contractor management.
- Undertaking strategic workforce planning to ensure the critical roles are appropriately managed.

Opportunities

An ability to develop projects safely, on time and within budget enhances our cash flow, licence to operate and investor confidence. Effectively implementing optimisation programmes reduces cost and accelerates development schedules, resulting in higher returns earlier.

Threats

A delay or overrun in a project schedule and/or a significant safety or process safety incident could negatively impact our profitability, cash flow, ability to repay project-specific debt, asset carrying values, growth aspirations and relationships with key stakeholders. A failure to secure the required approvals (regulatory and from partners) may cause delays in project delivery with a corresponding increase in costs. In 2020, COVID-19 has affected the delivery of major projects due to restrictions on travel and supply chains, though some mitigation activities have reduced these impacts.

Trend



Potential impact

- Future financial and operational performance
- Health, safety, environment and security (HSE&S)
- Solvency
- Liquidity
- Group reputation

Principal Risks and Uncertainties
continued

13. Change in tax regulations

Economic | P P

The international tax policy landscape is becoming increasingly contentious with discussion related to digital taxes raising threats of trade wars and providing the impetus to implement significant changes to the global tax framework.

Management response

Our approach to tax policies and governance seeks to keep pace with increasing community standards, increasing tax authority and government expectations, and civil society initiatives promoting responsible tax and transparency. We aim to achieve this by:

- Engaging constructively in local and international tax reform dialogue to contribute to the development of sustainable and effective tax systems.
- Maintaining our commitment to the B Team Responsible Tax Principles, which are intended to provide a leadership standard driving best practice in tax governance, reporting and interactions with tax authorities. These principles are embedded in our tax policy.
- Verifying our compliance to our tax policy through our Internal Audit, which sets the following expectations:
  - Full compliance with statutory obligations accompanied by full disclosure in our Annual Taxes Paid report.
  - High standards of tax risk management.
  - Transparent and constructive working relationships with tax administrators.
  - Proactive management of taxes pursuant to a robust tax governance framework.

Opportunities

We actively promote transparent and responsible tax practices and will further increase our transparency to adopt, in full, the new Global Reporting Initiative (GRI) tax transparency standard. This presents an opportunity to demonstrate our commitment to meeting regulatory and social obligations consistent with increasing community standards.

Threats

Tax revenues play an important role in assisting governments to provide essential services and provide an opportunity for companies to contribute to the communities in which they operate. Tax policy settings are a relevant factor in investment decisions, particularly for industries that require significant upfront investment. Changes to the global tax framework must provide appropriate outcomes in the allocation of taxing rights between countries and provide certainty for companies seeking to invest. The potential for policy design that does not consider the features relevant to capital intensive industries or the adoption of unilateral approaches risks uncertainty, complexity and double taxation, which may adversely impact future investment decisions.

Trend



Potential impact

- Financial
- Valuations
- Stakeholder relations

14. Safety incident or major hazard event

Operational
ESG

P P P P

Our operations and projects are inherently hazardous, with the potential to cause illness or injury, damage to the environment, and disruption to communities. Major hazards include process safety, underground mining, surface mining and tailings and water storage.

Management response

Nothing is more important than the safety and wellbeing of our employees, contractors and communities. We believe all incidents are preventable, so we concentrate on identifying, understanding, managing and, where possible, removing the hazard or removing people from the hazardous area. Key initiatives include:

- Development of Centres of Excellence for key technical capability in major hazard and asset management.
- Implementation of slope geotechnical, tailings management, underground mining and process safety technical and safety standards and procedures.
- Business resilience planning and execution exercises for 'severe but plausible' scenarios.
- Oversight by the Sustainability Committee, supported by the Group's Executive Risk Management Committee, as well as second and third line defence activities. The second line of defence is provided by our central support functions and technical Centre of Excellence (CoE) teams to verify compliance with Group policies, standards and procedures.
- Regular review and audit of HSE&S processes, training and controls to promote and improve effectiveness at managed and (where practicable) non-managed operations.
- Monitoring monthly HSE&S performance at the Group level and sharing learnings from HSE&S incident investigations.
- Building safety targets into personal performance metrics to incentivise safe behaviour and effective risk management (see Remuneration Report).
- Focus on fatality elimination through our critical risk management programme, which verifies safety risk controls are in place before work starts.

Opportunities

Meeting and exceeding our commitments in safety and hazard management.

Threats

Failure to manage our health, safety, environment or community risks could result in a catastrophic event or other long-term damage that could harm our financial performance and licence to operate.

Trend



Potential impact

- Multiple fatalities
- Operations disruption
- Communities and social performance
- Group reputation
- Financial loss

Principal Risks and Uncertainties
continued

15. Cyber breach

Operational | P P P

Cyber risk may disrupt our operations, affect how our employees work and/or breach data privacy and other sensitive information related to customers, contractors and suppliers. Cyber breaches can arrive from malicious external or internal attacks, but also inadvertently through human error.

Management response

We continue to invest in our information systems and technology (IS&T) infrastructure and teams not only to advance our automation projects but also to safeguard our assets. Measures include:

- Cyber controls including detection, identification, protection and recovery.
- Group standard and procedure with improved monitoring and compliance.
- Improved IS&T asset management with executive level sponsorship and oversight from our Cyber Security Steering Committee.
- New technology solutions implemented to improve cyber threat detection and response for critical assets.
- Third-party risk management through contractual inclusions and proactive compliance assessments.
- Business resilience plans for cyber breaches across all critical assets.

Threats

The growing volume and sophistication of cyber threats is increasing the likelihood of compromise, offset by significant improvements in the effectiveness of control measures.

Trend



Potential impact

- Operational disruption and/or breach of operational integrity
- Breach of data privacy or commercially sensitive data
- Group reputation
- Financial loss

16. Physical impacts from climate change

Operational ESG | P P P

Our operating sites may be vulnerable to the physical impacts of climate change including extreme weather events, rising sea levels or extreme temperature impacts on operating environments.

Management response

We conduct climate change physical risk assessments to identify vulnerabilities across our portfolio including over the life of our assets in the way we design, operate and close them. Additionally we have:

- Introduced a new Energy and Climate Change Centre of Excellence that uses scenarios to assess medium- and long-term risks.
- Implemented a series of controls to manage the threat of extreme weather, including structural integrity programmes across all critical assets, emergency response plans and flood management plans. These controls keep our people safe and help our operations return to normal capacity as quickly as possible.
- Implemented a Critical Risk Assessment programme, including natural catastrophe modelling, to support our insurance programme.

Opportunities

By understanding specific exposures across our portfolio, we can build in measures as part of our capital programmes to reduce losses in the event of a natural disaster.

Threats

Climate change has the potential to significantly reduce rainfall in areas where we operate, which may lead to water shortages. Conversely, an extension of the tropical cyclone season in the Pilbara, Western Australia, would impact our iron ore operations. A significant warming trend, particularly influencing maximum temperatures, would also impact the way we operate.

Trend



Potential impact

- Multiple fatalities
- Operational disruptions
- Financial loss

17. Water scarcity and management

Operational
ESG

P P P P

Water is a key part of our operational environmental footprint and a critical, shared resource for people, the environment and economic prosperity. In some regions where we work, water scarcity is an inherent risk, like the Gobi Desert in Mongolia. In others, rainfall can vary greatly from year to year, such as Weipa in Queensland, Australia. Many of our sites are also experiencing changes in rainfall and water availability due to climate change.

Management response

We aim to balance our operational water needs with those of local communities, Traditional Owners and ecosystems. We manage our water risks against four themes: water resource, quantity and quality, dewatering and long-term obligations. This framework allows us to identify, assess, manage and communicate water risk, controls and actions both internally and to the communities where we operate. Risk management measures include:

- Site water management plans and controls including monitoring data collection and interpretation.
- Improved methodology for calculating our water risk exposure; recalculation is underway.
- Identification global controls for the four water management risk areas: water resource, quantity and quality, dewatering, long-term water obligations.
- Actively supporting and reporting our practices against the commitments outlined in the International Council on Mining and Metal's position statement on water stewardship: to apply strong and transparent water governance, manage water at operations effectively, and to collaborate to achieve responsible and sustainable water use.

Opportunities

We improve the way we design and run our operations to avoid permanent impacts to water resources and carefully manage the quality and quantity of the water we use and return to the environment.

Threats

Our water management causes unacceptable operational, environmental or community impacts. Sources of this risk exposure are diverse across geographies and commodities, with both financial and non-financial implications without proactive management in new asset developments, operations and closures.

Trend



Potential impact

- Financial
- Valuations
- Production and growth constraints
- Group reputation
- Ecosystem impacts
- Stakeholder relationships

18. Natural disaster exposure

Operational
ESG

P P P P

A natural disaster occurs with significant operational interruption or damage to our assets and/or communities.

Management response

We aim to prepare for and mitigate the impact of a natural disaster event by:

- Enhancing our communication plans and co-ordination with local, regional and state agencies.
- Increasing our understanding of our exposure at each asset through programmes such as our critical risk, asset integrity assurance, and climate change physical impact assessment programmes.
- Improving our business resilience plans and emergency response plans, training and annual exercises to prepare for a natural disaster event.

Opportunities

Improving the resilience of our operations to minimise impact to our communities, customers and supply chain.

Threats

This primarily includes major impacts to our Pilbara iron ore operations due to Category 5 cyclone storm surges hitting coastal operations and nearby communities, causing significant operational interruption or damage to mines, rail, port and/or other infrastructure. Non-financial impacts may include multiple fatalities or severe permanent impairment to multiple people. Other natural disasters that can affect our operations, depending on their location, include bush fire, drought, earthquakes and tsunami. In 2020, our Kennecott copper operation in Utah, US, was impacted by an earthquake.

Trend



Potential impact

- Operational disruptions
- Fatalities
- Financial impacts

Principal Risks and Uncertainties
continued

19. Closure, reclamation and rehabilitation

Operational
ESG | P P P

Planning for the future of our sites after they cease operating is a core business function governed by our Closure Steering Committee. Estimated costs and liabilities are provided for, and updated annually, over the life of each operation. However, estimates may vary due to a number of factors that create either opportunities or challenges.

Management response

We have established a Closure Division to ensure we manage the future of our site after operations cease in a sustainable and cost-efficient manner. We aim to achieve this through:

- Compliance with Group policies and standards, which provide guidance concerning risk management, communities and social performance. This is overseen by our Sustainability Committee and Closure Steering Committee.
- Collaboration with key stakeholders and participation in strategic partnerships and/or governance structures to create opportunities and mitigate threats.
- Developing long-term relationships with a range of international and national stakeholders.
- Monitoring jurisdictional risks, including sovereign risks, and taking appropriate action.

Opportunities

We are actively assessing opportunities to find solutions to repurpose and reuse sites for future economic or social benefit through working collaboratively with our stakeholders. For all new asset developments, we incorporate closure into their design, and find ways to optimise decommissioning, remediation and any long-term management obligations. For existing operations, where possible, we progressively rehabilitate land throughout the life of the operations.

Threats

Plans and provisions for closure, reclamation and rehabilitation may vary over time due to changes in stakeholders' expectations, legislation, standards, technical understanding and techniques. In addition, the expected timing of expenditure could change significantly due to changes in the business environment and orebody knowledge, which might vary the life of an operation.

Trend



Potential impact

- Valuation
- Future financial and operational performance
- Group reputation

20. Civil unrest

Operational
ESG

Civil unrest may expose our employees and/or operations to significant threats or impact our key markets and customers, potentially resulting in compromised employee safety, and damage to or loss of assets.

Management response

The safety of our employees is our priority. Avoiding damage or loss of our assets is important to sustaining our business. We manage this through:

- Implementation of a new country entry procedure to increase risk awareness.
- Business resilience planning for operations and communities at risk.
- Communication plans and co-ordination with local, regional and state agencies.

Opportunities

Strong relationships with the communities in which we operate have the potential to provide stable operating environments.

Threats

Where there is potential for civil unrest, our access or operational continuity may be disrupted. Our African and South American operations and exploration sites have the most exposure to this risk.

Trend



Potential impact

- Group reputation
- Future financial and operational performance
- Health, safety and security

21. COVID-19

Operational
ESG

The potential for transmission across our teams, communities and supply chains continues to be a threat that requires proactive management to guard against business impacts.

Management response

The safety and our ability to operate with minimal disruption is vital to our success. Our business resilience teams across the Group have helped mitigate the impact of the pandemic through:

- Trigger, action and response plans.
- COVID-19 screening and testing protocols.
- Segregation measures to prevent transmission among vulnerable people and communities.
- Hygiene practices, PPE and industrial cleaning practices.
- Physical distancing.
- Health and wellbeing support.
- Contact tracing.

Opportunities

The introduction of stringent health measures to protect our employees, partners and host communities resulting in an improved reputation among communities and key partners.

Threats

COVID-19 transmission has the potential to compromise the health of employees, partners, communities and, in particular, vulnerable populations (eg elderly, First Nations, immuno-compromised people). A large-scale outbreak could lead to the complete shutdown of operations, affecting the flow of products to customers.

Trend



Potential impact

- Health, safety and security
- Future financial and operational performance
- Group reputation

Principal Risks and Uncertainties
continued

22. Breach of our policies, standards and procedures, laws or regulations

Operational
ESG

P P P P

This risk may greatly impact our reputation, licence to operate, and potentially exposes us financially. It is important that we foster a culture aligned with our values, provide education and guidance to employees, and implement proactive compliance monitoring.

Management response

- Our dedicated legal and compliance teams work closely with our businesses and help them to identify, understand and comply with current and emerging laws and regulations.
- We continue to train and create awareness on regulatory obligations for employees working in high-risk roles and third parties.
- We maintain ongoing assurance of compliance to our policies, standards and procedures and conduct an internal audit review of our third-party risk management framework.
- We have reorganised our structure to create a centralised Litigation Team and Centres of Excellence in the areas of Anti-Bribery and Corruption, Anti-Trust, and Export Controls & Sanctions.
- Aligned with living our corporate values, leaders and employees receive training in our values and behaviours.

Opportunities

Good corporate citizens are acknowledged to operate to a high ethical standard, attracting talent and securing access to resources and investment opportunities.

Threats

Investigations by regulatory authorities and litigation (regardless of the ultimate finding) may have a serious impact on our reputation. Fines may be imposed for breaching laws and/or regulations or for other inappropriate business conduct, as well as resulting in a loss in share price value and/or assets or loss of business. Other consequences could include the criminal prosecution of individuals and/or Group companies, imprisonment, and reputational damage to the Group.

Trend



Potential impact

- Group reputation
- Licence to operate
- Future financial and operational performance

Five-year Review

Selected financial data

The selected consolidated financial information below has been derived from the historical audited consolidated financial statements of the Rio Tinto Group. The selected consolidated financial data should be read in conjunction with, and qualified in their entirety by reference to, the 2020 financial statements and notes thereto. The financial statements as included on pages 200-300 have been prepared in accordance with IFRS as defined in note 1.

Rio Tinto Group

Income statement data

For the years ending 31 December Amounts in accordance with IFRS	2020 US$m	2019 US$m	2018 US$m	2017 US$m	2016 US$m
Consolidated sales revenue	**44,611**	**43,165**	40,522	40,030	33,781
Group operating profit[a]	**16,829**	**11,466**	17,687	14,135	6,795
Profit for the year	**10,400**	**6,972**	13,925	8,851	4,776
Basic earnings for the year per share (US cents)	**604.0**	**491.4**	793.2	490.4	256.9
Diluted earnings for the year per share (US cents)	**599.8**	**487.8**	787.6	486.9	255.3
Dividends per share					
Dividends declared during the year					
US cents					
– interim	**155.0**	**151.0**	127.0	110.0	45.0
– interim special	**–**	**61.0**			
– final	**309.0**	**231.0**	180.0	180.0	125.0
– special	**93.0**		243.0		
UK pence					
– interim	**119.74**	**123.32**	96.82	83.13	33.80
– interim special	**–**	**49.82**			
– final	**221.86**	**177.47**	135.96	129.43	100.56
– special	**66.77**		183.55		
Australian cents					
– interim	**216.47**	**219.08**			
– interim special	**–**	**88.50**	170.84	137.7	59.13
– final	**397.48**	**349.74**	250.89	228.5	163.62
– special	**119.63**		338.70		
Dividends paid during the year (US cents)					
– ordinary	**386**	**635.0**	307.0	235	152.5
Weighted average number of shares basic (millions)	**1,617.4**	**1,630.1**	1,719.3	1,786.7	1,797.3
Weighted average number of shares diluted (millions)	**1,628.6**	**1,642.1**	1,731.7	1,799.5	1,808.6
Balance sheet data					
Total assets	**97,390**	**87,802**	90,949	95,726	89,263
Share capital/premium	**8,302**	**7,968**	8,000	8,666	8,443
Total equity/Net assets	**51,903**	**45,242**	49,823	51,115	45,730
Equity attributable to owners of Rio Tinto	**47,054**	**40,532**	43,686	44,711	39,290

(a) Group operating profit or loss includes the effects of charges and reversals resulting from impairments (other than impairments of equity accounted units) and profit and loss on disposals of interests in businesses. Group operating profit or loss amounts shown above excludes equity accounted operations, finance items, tax and discontinued operations.

Directors' approval statement

This Strategic Report is delivered in accordance with a resolution of the Board, and has been signed on behalf of the Board by:

S.R. Thompson

Simon Thompson
Chairman

22 February 2021

Directors' Report

An employee and local Indigenous participant at our Gove Bauxite Mine in the Northern Territory, Australia. Aluminium, found in a wide range of essential products, including electronics, is made from bauxite.

Investing to increase Indigenous leadership

$50m

to attract, retain and grow Indigenous professionals and leaders

Directors' Report

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Chairman's Introduction

2020 was an extraordinary and challenging year for this company and many of its stakeholders.

The Board's response to the destruction of the rock shelters at Juukan Gorge is described in detail on pages 114-115. The Board Review of those events, the implementation of its recommendations and extensive engagement with stakeholders have been a significant focus of our activity this year. This will continue in 2021 as we work with the new executive leadership team to rebuild the trust that has been lost and apply the lessons of Juukan Gorge.

In my letter on pages 7 to 9 of this Annual Report, I spoke of my pride in the way Rio Tinto responded to the global COVID-19 pandemic, safeguarding our employees, contractors and local communities while keeping our operations running safely and smoothly.

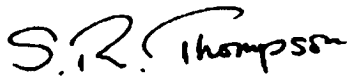
The Board has also had to respond, as COVID-19 related travel restrictions prevented physical Board meetings. I am grateful to my fellow directors not only for their adaptability in ensuring that we still managed to complete our scheduled programme of work – including a "virtual" site visit to Oyu Tolgoi – but also for their time and commitment in responding to the pandemic and Juukan Gorge. These activities are described in detail on the following pages.

We have seen significant changes to our Board in 2020. We welcomed three new non-executive directors – Hinda Gharbi, Jennifer Nason and Ngaire Woods – and have already benefited from their insights and expertise in natural resources, finance, technology, governance, and public policy, and in fostering diversity and inclusion.

At the end of the year, Jakob Stausholm replaced J-S Jacques as Chief Executive, and David Constable stepped down to assume the role of CEO at Fluor Corporation.

In making appointments to the Board, our goal is to bring a range of expertise and diverse perspectives. Following the changes to the Board this year, we are fully compliant with both the Hampton Alexander and the Parker review guidelines on board composition.

The following pages set out the activities of the Board over the year, and how we have evolved our governance arrangements as we continue to learn and develop as an organisation.



Simon Thompson
Chairman

22 February 2021

Juukan Gorge: the Board Perspective

The destruction of two ancient rock shelters in the Juukan Gorge represented a breach of our partners' trust and a failure to uphold our values as a company.

A review of the events leading up to the destruction of the rock shelters published by the Rio Tinto Board of Directors in August 2020 identified a series of systemic failures of our communities and heritage management processes at Brockman 4 over an extended period of time. To read the full review please visit www.riotinto.com/news/inquiry-into-juukan-gorge.

Both the Board Review and the Inquiry of the Joint Standing Committee on Northern Australia (the Parliamentary Inquiry) make it clear that the events at Juukan Gorge represented a breach of our partners' trust and a failure to uphold our values as a company.

The Board is determined to learn the lessons to ensure that the destruction of a site of exceptional cultural significance never happens again.

The oversight role of our Sustainability Committee

The Sustainability Committee supports the Board in ensuring Rio Tinto delivers a strong business performance on a sustainable basis that builds trust with our people, our partners and stakeholders and with wider society.

Internal and external reviews of the events leading to the blasting of the rock shelters at Juukan Gorge have identified various deficiencies including how our partnership with the PKKP people was managed, a lack of integration of our heritage management with our front-line operational teams, and a work culture that was too focused on business performance and not enough on building and maintaining relationships with Traditional Owners.

The archaeological and ethnographic reports received in 2013-14 should have triggered an internal review of the implications of this material new information for the mine development plans. Such a review did not take place. Following completion of the archaeological surveys and other mitigation measures agreed with the PKKP people in 2014, the site was reclassified as 'cleared' for mining and removed from relevant risk registers. As a consequence, knowledge and awareness of the location and significance of the site was progressively lost. Further opportunities to revise the mine plan were missed in 2018, when the final archaeological report was received, and again during 2019-20.

The Sustainability Committee has been charged with overseeing the implementation of the recommendations set out in the Board Review and Parliamentary Inquiry, and with ensuring that these lessons are applied to our operations across Australia and the globe. The Committee has already commenced the oversight of this implementation process and, at each of its six meetings in 2021, will receive updates on progress, as well as maintaining an ongoing overview of our global Communities and Social Performance (CSP) risks.

Implementation of the recommendations will also form part of the new ESG component of the short term incentive plan for the Executive Committee and other relevant managers. For more detail, please refer to page 173 of our Remuneration Report.

Our new Integrated Heritage Management Process

One of the most important recommendations for the Sustainability Committee to oversee will be the full integration of heritage management into our mining operations such that our product groups have primary responsibility for our CSP partnerships and engagement. In visits on Country in late 2020, Board members heard how Traditional Owners want to engage directly with the person who is in control of the mine site, the drills and the dozers. It is clear that our mines' general managers also want this direct line of communication with Traditional Owners to ensure there is no room for error.

Another critical component is the new Integrated Heritage Management Process (IHMP).

Phase 1 of the IHMP is well underway and comprises an assessment of all heritage sites, assessing each on the basis of cultural significance, which is informed through consultation with Traditional Owners. Over 1,000 sites have been reviewed to date and all sites of high cultural significance have been allocated protective buffer zones.

Under the IHMP, any approvals to disturb sites that are low to moderate significance are made at the Rio Tinto Iron Ore Chief Executive level with decisions regarding sites of high or very high significance being made at the Chief Executive level. Where there is any doubt, we have reclassified the relevant sites from 'cleared' for mining back to 'protected' as a precautionary measure, pending further consultation with Traditional Owners. An increased level of consultation is also occurring, on an ongoing basis, to ensure a shared understanding of heritage sites and the proposed mine plans.

Phase 2 of the IHMP will fully integrate heritage considerations into mine planning and development studies. Our aim is to ensure that Traditional Owners are actively involved in the management of the cultural heritage aspects of mine design. This will inform the conduct of resource development, studies and the approvals process.

Further information on the steps that we are taking in response to the recommendations of the Board Review and the Parliamentary Inquiry can be found on pages 10-11 and at riotinto.com. These include details of our commitment, in consultation with Traditional Owners, towards the modernisation of our agreements, the formation of an Indigenous Advisory Group and the status of the remedy process with the PKKP people, including a moratorium on mining in the Juukan Gorge area and a remediation plan for the rock shelters.

Risk management and internal control

The overall effectiveness of any risk management framework requires clear expectations and consistency of application of the framework across different product groups and businesses, countries of operation and functional areas of expertise. Unfortunately, this did not happen in the case of Juukan Gorge.

To support the product groups, a new CSP Area of Expertise has been formed to own the relevant standards and procedures, and to ensure that best practices are consistent globally. This team will also provide the second line of assurance on CSP and ensure we have the right people with the right skills in the right locations. Our Internal Audit team will provide the third line of assurance, reporting directly to the Sustainability Committee.

These changes to cultural heritage risk management are designed to deliver more rigorous assurance of the way we manage our communities and cultural heritage risks across our operations globally. The Audit Committee will monitor the effectiveness of these changes to our overall risk management and internal control framework.

Culture

Risk frameworks are only ever as good as the information that flows through them, and the experience and judgment of individual managers in key positions. This is particularly important in a group that is the size, scale and complexity of Rio Tinto.

Effective management of community, heritage and other social risks is therefore dependent upon a work culture that creates the same awareness and accords the same priority to these issues as it does to operational, production or safety risks.

One of the key findings from Juukan Gorge is that we need to provide additional training to our front-line operational managers on the increasingly complex social and environmental risks they are required to manage.

Ensuring that we have the right work culture and relationships to support good decision-making will require sustained effort over many years. We have launched initiatives to increase awareness and training on community and heritage issues and the amount of time that general managers invest in our relationships.

Over the past few months, the Board has held a series of virtual town halls and engagements with staff around the world to seek their views on what we need to do to create a more inclusive, more diverse work culture, where people feel empowered to challenge decisions. In particular, we need to ensure that Indigenous Australians have a stronger voice, not just in our host communities but also within the company. Alongside these steps to build a more inclusive work culture, it is clear that we need to break down silos within the company to ensure that community and heritage issues are fully integrated into business planning decisions (in exactly the same way as safety or production).

The appointment of Jakob Stausholm as our new Chief Executive represents an important milestone as we continue the process of rebuilding trust. One of the reasons the Board chose Jakob is because he will provide clear leadership of our efforts to re-establish Rio Tinto's reputation as an industry leader in environmental and social performance.

In April 2020, we appointed Hinda Gharbi and Jennifer Nason to the Board, and Professor Ngaire Woods joined us in September. All three new directors bring relevant experience of championing inclusion, diversity, cultural change and governance. We currently have a search underway for a fourth new NED, to replace David Constable. One of our selection criteria will be their ability to support this change programme.

Consequence management

During the two weeks following the publication of the Board Review in August 2020, we engaged with over 70 of our shareholders, Traditional Owners, Indigenous leaders, the governments of Australia and Western Australia, and other stakeholders. At the end of that two-week period of intense engagement, the Board unanimously agreed that J-S Jacques, Chris Salisbury and Simone Niven should leave the company by mutual agreement as it was clear that a number of influential shareholders and other important stakeholders (mainly, but not exclusively, in Australia) had lost confidence in their ability to lead the necessary change.

We acknowledge that some commentators believed that the Board should have acted sooner. There was, however, a very wide range of opinion on the appropriate sanctions and we believe that it was right, on a decision of this magnitude, to establish the facts and engage with as many stakeholders as possible before removing three of our most senior executives, including the Chief Executive, from the business.

In making the eligible leaver determination for the three executives, the Board fully recognised the gravity of the destruction at Juukan Gorge but was mindful that they did not deliberately cause the events to happen, they did not do anything unlawful, nor did they engage in fraudulent or dishonest behaviour or wilfully neglect their duties.

In making the final determination on their separation terms, it was necessary to balance the findings of the Board Review, the financial penalties that had been applied and the loss of employment for the three individuals, on the one hand, against the considerable achievements of those executives over many years. In this context, the loss of employment was considered the greater sanction.

The full details of the separation terms for each executive are set out in the Remuneration Report on pages 169 and 174.

The non-executive directors donated the equivalent of 10% of their 2020 non-executive director fees to the Clontarf Foundation, which supports education, training and employment for Indigenous Australians. Jakob Stausholm, the Chief Executive and executive director, has made a donation of an equivalent amount.

Board of Directors

Rio Tinto plc and Rio Tinto Limited have a common Board of Directors. The directors are collectively responsible for the stewardship and long-term sustainable success of the Group.

Simon Thompson R N S
Chairman, MA, PhD. Age 61. Appointed April 2014; Chairman from March 2018

Skills and experience: Simon has significant global experience in mining and metals, finance, and corporate governance. Among a wide range of board appointments, Simon was an executive director of Anglo American plc, where he held the roles of Chairman and Chief Executive Officer of the Base Metals Division. He also served as chairman of Tarmac, and chairman of the Exploration Division. Earlier in his career he held various investment banking positions at S. G. Warburg and N M Rothschild.

Simon chairs 3i plc and has chaired Tullow Oil plc. His experience as a non-executive director includes serving on the boards of AngloGold Ashanti Limited and Newmont Mining Corporation. Simon is also a Commissioner at the Energy Transitions Commission.

Current external appointments:
Chairman of 3i Group plc since 2015.

Jakob Stausholm
Chief Executive, Ms Economics. Age 52. Appointed Chief Executive from January 2021; Chief Financial Officer in September 2018

Skills and experience: As Chief Executive, Jakob brings strategic and commercial expertise and a strong focus on sustainability. He is committed to rebuilding trust with communities, Traditional Owners and stakeholders globally. As Chief Financial Officer, Jakob focused on maximising cash flow and allocating capital with discipline. He balanced investment in sustaining and high-value growth, to maintain a strong balance sheet and deliver superior shareholder returns in the short, medium and long term. Jakob has over 20 years' experience in senior finance roles in Europe, Latin America and Asia, including in capital-intensive, long-cycle businesses, as well as in innovative technology and supply chain optimisation. Jakob spent six years with the Maersk Group, where his roles included group Chief Financial Officer and executive director of the Group's integrated transport and logistics business. He was previously with Royal Dutch Shell plc, holding a range of finance positions, including chief internal auditor.

Current external appointments: None.

Megan Clark AC R N S
Independent non-executive director, BSc, PhD. Age 62. Appointed November 2014

Skills and experience: Megan combines experience in the mining and metals industry with leadership in science, research and technology, and brings valuable insights on sustainable development and innovation to the Board. She was Head of the Australian Space Agency from 2018 to 2020 and Chief Executive of the Commonwealth Scientific and Industrial Research Organisation (CSIRO) from 2009 to 2014. Following mining and exploration roles with Western Mining Corporation, Megan was a director at N M Rothschild and Sons (Australia), and a Vice President Technology at BHP. Megan received the Australian Academy of Science Medal in 2019.

Current external appointments:
Non-executive director of CSL Limited since 2016, Chair of the Advisory Board of the Australian Space Agency since January 2021.

Hinda Gharbi A N S
Independent non-executive director, BSc, MSc. Age 50. Appointed March 2020

Skills and experience: Hinda is Executive Vice President of Services & Equipment at Schlumberger Limited and has some 25 years' experience at Schlumberger, working in various field engineering, functional and line management positions, including health and safety, human resources, technology development and operations across France, Malaysia, Nigeria, Thailand, the United Kingdom and the United States.

Current external appointments: None

Simon Henry A N S
Independent non-executive director, MA, FCMA. Age 59. Appointed April 2017

Skills and experience: Simon has significant experience in global finance, corporate governance, mergers and acquisitions, international relations, and strategy. He draws on over 30 years' experience at Royal Dutch Shell plc, where his roles included Chief Financial Officer from 2009 to 2017.

Current external appointments:
Independent director of PetroChina Company Limited since June 2017. Member of the UK Defence Board. Nominated as Senior Independent Director of Harbour Energy plc from Spring 2021. Member of the Advisory Board of the Centre for European Reform and the Advisory Panel of CIMA.

Sam Laidlaw R N S
Independent non-executive director, MA, MBA. Age 65. Appointed February 2017, Senior Independent Director in May 2019

Skills and experience: Sam has more than 30 years' experience of long-cycle, capital-intensive industries in which safety, the low-carbon transition and stakeholder management are critical. Previous roles include: president and chief operating officer, Amerada Hess Corporation; CEO, Enterprise Oil plc; executive vice president, Chevron Corporation; CEO, Centrica plc; and membership of the UK Prime Minister's Business Advisory Group.

Current external appointments:
Chairman of Neptune Energy Group Holdings Ltd. Chairman, National Centre of Universities & Business. Board member, Oxford Saïd Business School. Advisory Board member, The Smith School of Enterprise and Environment.

Former directors

David Constable stepped down from the Board on 31 December 2020.

Jean-Sébastien Jacques stepped down from the Board on 1 January 2021.

Past external appointments over the last three years
For details of each director's past appointments, see the Directors' Report on page 187.

Michael L'Estrange AO N S
Independent non-executive director, BA (Sydney), MA (Oxon). Age 68. Appointed September 2014

Skills and experience: Michael's distinguished public service career gives him practical experience of the geopolitical and societal trends which affect Rio Tinto. Michael served in senior roles for the Australian government, including head of the Cabinet Policy Unit and secretary of the Department of Foreign Affairs and Trade. He was High Commissioner to the United Kingdom. Michael chairs our Australia Forum, which meets twice a year.

Current external appointments:
Director and deputy chancellor of the University of Notre Dame, Australia. Non-executive director of Qantas Airways Limited since April 2016.

Simon McKeon AO A R N
Independent non-executive director, BCom, LLB, FAICD. Age 65. Appointed January 2019, Senior Independent Director, Rio Tinto Limited in September 2020

Skills and experience: Simon brings insights into sectors including financial services, the law, government and charities. He practised as a solicitor before serving at Macquarie Group for 30 years, including as executive chairman of its business in Victoria, Australia. Simon served as chairman of AMP Limited, MYOB Limited and the Commonwealth Scientific and Industrial Research Organisation, (CSIRO). He was the first president of the Australian Takeovers Panel.

Current external appointments:
Chancellor of Monash University. Chairman of the Australian Industry Energy Transitions Initiative Steering Group. Non-executive director of National Australia Bank Limited since February 2020.

Steve Allen
Group Company Secretary, BA (Modern Languages and European Studies), Solicitor (England and Wales). Age 49. Appointed January 2017

Skills and experience: Steve is Company Secretary of Rio Tinto plc and Joint Company Secretary of Rio Tinto Limited. Before joining Rio Tinto, Steve was Deputy General Counsel at BG Group plc. He served as Company Secretary of BG Group from 2011 to 2016 having previously been Chief Counsel, Corporate, from 2008 to 2011. Before joining BG Group in 2005, Steve was a corporate lawyer for Herbert Smith LLP in London.

Current external appointments:
Vice-Chair of the Association of General Counsel and Company Secretaries working in FTSE-100 companies and a member of the Corporate Governance Council.

Jennifer Nason R N S
Independent non-executive director, BA, BCom (Hons) (Melbourne). Age 60. Appointed March 2020

Skills and experience: Jennifer has over 30 years' experience in corporate finance and capital markets. For the past 17 years, she has led the Technology, Media and Telecommunications global client practice at JP Morgan, based in the USA. During her time at JP Morgan, she has also worked in the metals and mining sector team in Australia.

Current external appointments:
Board member of the American Australian Association.

Ngaire Woods CBE R N S
Independent non-executive director, BA/LLB (Auckland), D.Phil (Oxford). Age 58. Appointed September 2020

Skills and experience: Ngaire is the founding Dean of the Blavatnik School of Government, Professor of Global Economic Governance and the Founder of the Global Economic Governance Programme at Oxford University. As a recognised expert in public policy, international development and governance, she has served as an adviser to the African Development Bank, the Asian Infrastructure Investment Bank, the Center for Global Development, the International Monetary Fund and the European Union.

Current external appointments:
Board member of the Mo Ibrahim Foundation, the Van Leer Foundation and the Schwarzman Education Foundation.

Tim Paine
Joint Company Secretary, Rio Tinto Limited BEc, LLB, FGIA, FCIS. Age 57. Appointed January 2013

Skills and experience: Tim joined Rio Tinto in 2012 and became Joint Company Secretary of Rio Tinto Limited in January 2013. He has over 25 years' experience in corporate counsel and company secretary roles, including as General Counsel and Company Secretary at Mayne Group, Symbion Health and Skilled Group. Tim also spent 12 years at ANZ Bank, including as Acting General Counsel and Company Secretary.

Current external appointments:
Company secretary for the Foundation for Australia-Japan Studies. Member of the Governance Institute of Australia's Legislation Review Committee.

Board committee membership key

Committee chairman
A Audit Committee
R Remuneration Committee
N Nominations Committee
S Sustainability Committee

Executive Committee

Day-to-day management of the business is delegated by the Board to the Chief Executive and, through him, to other members of the Executive Committee and to certain management committees.

Jakob Stausholm
Chief Executive

Biography can be found on page 116.

Peter Cunningham
Interim Chief Financial Officer

Peter was appointed Interim Chief Financial Officer in January 2021. He has been with the business for 27 years and held senior leadership roles, including Group Controller; Head of Health, Safety, Environment and Communities; Head of Energy and Climate Strategy; and Head of Investor Relations.

As Group Controller, he was responsible for Group financial reporting, including external reporting, and led the business evaluation team, providing independent assessments of projects and commercial transactions to support the Group's capital allocation efforts. Peter was also responsible for Group planning with oversight of the analysis of Group financial and operating performance and preparation of Group forecasts and plans.

Bold Baatar
Chief Executive, Rio Tinto Copper

Prior to being appointed Chief Executive, Rio Tinto Copper, Bold was Chief Executive, Energy & Minerals, a position he had held since 2016. Since joining our Copper business in 2013, he has held a number of leadership positions across operations, marine, iron ore sales and marketing.

Bold brings to the role deep experience across geographies, commodities and markets. Alongside a passionate commitment to ESG issues, he brings a strong commercial and business development focus with particular interest in developing markets and partnerships with host countries and communities.

Alf Barrios
Chief Commercial Officer

Prior to his appointment as Chief Commercial Officer, Alf joined the Group as Chief Executive Rio Tinto Aluminium in 2014. In this role he optimised the portfolio, created a strong safety and performance culture, and grew the business. He established strong relationships with Indigenous communities and delivered industry-leading customer partnerships and ESG initiatives.

Alf brings to the Executive Committee nearly 30 years' global experience in the natural resources sector across operations, trading, marketing and business development. He will work with the Commercial team to enhance value delivery across the company.

Mark Davies
Group Executive, Safety, Technical and Projects

Mark was appointed to his current role in July 2020. Mark joined in 1995 as a senior mechanical engineer and has worked in operational and functional leadership roles, including in our Iron and Titanium business unit, Group Risk, and Global Procurement.

Mark is responsible for continuing to deliver on our number one priority – the health, safety and wellbeing of our employees, contractors and communities – and on our long-standing commitment to the environments where we live and work. Mark also oversees our Communities & Social Performance area of expertise, our major capital projects team and our technical centres of excellence, which partner with our assets and with external stakeholders to embed best practice and help deliver sustainable outcomes.

Sinead Kaufman
Chief Executive, Rio Tinto Minerals

Since she joined Rio Tinto in 1997 as a geologist, Sinead has held senior leadership and operational roles across Aluminium, Copper & Diamonds, Energy & Minerals, and Iron Ore. Most recently, she was Managing Director, Operations, at Copper & Diamonds.

Sinead brings to her current role strong operational expertise and asset leadership combined with a track record and commitment to sustainability: under her tenure as Managing Director, Copper & Diamonds, our Kennecott copper operation in Utah, US, became the first in the world to be awarded the Copper Mark, the industry's independently assessed responsible production programme. Sinead also oversaw the reduction of Kennecott's carbon footprint by more than 60%, achieved by closing the coal-fired power station and using renewable energy carbon offsets.

Barbara Levi
Chief Legal Officer & External Affairs

Barbara joined in January 2020. She has over 20 years' experience in senior legal roles across Europe and in the US in private practice and in-house and is an attorney admitted in the US (Supreme Court of the US and New York) and in Italy (Milan).

Barbara brings to the role extensive experience across corporate, commercial and compliance matters. Alongside leading our global legal and external affairs teams, Barbara oversees a range of governance functions, including Company Secretariat, Ethics & Compliance and the Technical Evaluation Group.

James Martin
Chief People Officer

James has been a partner at Egon Zehnder for 15 years and will join our Executive Committee on 6 April 2021. He has led a range of global practices and specialises in coaching, talent management and leadership development. Prior roles included senior equity research roles at Credit Suisse First Boston and ABN AMRO. He began his career as a pilot in the UK's Royal Air Force.

Kellie Parker
Chief Executive, Australia

Prior to being appointed Chief Executive, Australia, Kellie was Managing Director, Pacific Operations, Aluminium. She joined in 2001 and has held a number of safety, operational and leadership roles across both the Iron Ore and Aluminium businesses.

In her new role, Kellie will represent our Australian interests with all stakeholders and bring her operational experience and community values to listen, respond and set the direction for the business. She has a people-centric approach, with a strong commercial background and is an advocate for Indigenous Australians.

Arnaud Soirat
Chief Operating Officer

Arnaud joined as President and Chief Executive, Rio Tinto Primary Metal in 2010 and, most recently, was Chief Executive, Copper & Diamonds from 2016. Prior to this, he had 20 years' experience in commercial and operations roles in the metals and mining industry, including at Alcoa and Pechiney in Australia and Europe.

As Chief Operating Officer, Arnaud will use his extensive operational and leadership experience to drive company-wide improvements in our production system. From his previous roles, Arnaud brings significant experience in the oversight of growth projects, a strong sustainability legacy, safety and operational excellence, improving business profitability and competitiveness, and deploying lean manufacturing to help achieve strong underlying results.

Peter Toth
Group Executive, Strategy and Development

Peter was appointed in 2020 having previously been Head of Corporate Development, responsible for corporate strategy and business development. Before joining in 2014, he gained over 25 years' experience working in the resources industry around the world, including senior commercial roles with BHP and chief executive of ASX-listed OM Holdings Ltd.

In his role, Peter leads our corporate strategy (including climate and sustainability strategy) development. He is also responsible for our portfolio transformation efforts – including exploration and closure, business development and M&A – as well as our Energy & Climate Centre of Excellence, working in close partnership with the product group and commercial teams.

Simon Trott
Chief Executive, Rio Tinto Iron Ore

Prior to his appointment as Chief Executive, Rio Tinto Iron Ore, Simon was Chief Commercial Officer from 2018, responsible for our global sales and marketing, procurement, marine and logistics. Since joining in 2000, he has held a variety of operating, commercial and business development roles across a number of commodities.

Simon knows Western Australia well and has a deep understanding of the iron ore market and our customers globally. He is committed to leading Iron Ore safely to its next phase, with a strong focus on rebuilding trust with our communities and Traditional Owners.

Ivan Vella
Chief Executive, Rio Tinto Aluminium

Prior to being appointed Chief Executive, Rio Tinto, Aluminium, Ivan was Interim Chief Executive, Iron Ore. During his 17 years with the business, Ivan has held senior leadership positions in our Copper and Iron Ore product groups.

Ivan brings to our Aluminium business strong operational experience and critical understanding of end-to-end value chain processes. Ivan led the Iron Ore COVID-19 response, which kept our people and communities safe and business strong. He is also passionate about next-generation technologies and innovations and, under his leadership, we successfully delivered one of Iron Ore's largest automation initiatives – AutoHaul™.

Former Executive Committee members who served during the year

Chris Salisbury

Chris stepped down as Chief Executive, Iron Ore on 11 September 2020.

Stephen McIntosh

Stephen retired from his role as Group executive, Growth & Innovation and Health, Safety & Environment (HSE) on 30 September 2020.

Simone Niven

Simone stepped down as Group executive, Corporate Relations on 31 December 2020.

Jean-Sébastien Jacques

J-S stepped down as Chief Executive on 1 January 2021.

Vera Kirikova

Vera will step down as Chief People Officer on 5 April 2021.

Governance Framework

Good governance is, fundamentally, about considering the right things, at the right time, with the right people and insights. We have tried to structure the way the Board works to support that objective, to strengthen our strategic focus, and to improve both the challenge and the support that the Board provides to the executive team. Here is a summary of the framework:

Board of Directors

Rio Tinto has a clear purpose: As pioneers in metals and mining, we produce materials essential to human progress. By doing so efficiently, effectively and sustainably, we aim to create long-term value for all stakeholders. The Board is collectively responsible for pursuing this purpose and approves the strategy, budget and plans proposed by the Chief Executive to achieve this objective.

Board Charter

See the Board Charter for more information on the role of the Board and the delegation to management.

Available at riotinto.com

Audit Committee

Helps the Board to monitor decisions and processes designed to ensure the integrity of financial reporting, the independence and effectiveness of the external auditors, and sound systems of internal control and risk management.

See page 131

Nominations Committee

Helps the Board ensure its composition and that of its committees are regularly reviewed and refreshed in order that they are effective and able to operate with the right mixture of skills, experience and backgrounds to identify and respond to current and future opportunities and challenges.

See page 128

Remuneration Committee

Helps the Board ensure that remuneration policy and practices reward employees and executives fairly and responsibly, with a clear link to corporate and individual performance.

See page 140

Sustainability Committee

Helps the Board oversee the Group's integrated approach to sustainability and strategies designed to manage health and safety and social and environmental risks, including management processes and standards.

See page 136

Chairman's Committee

Supports the functioning of the Board and will consider urgent matters between Board meetings.

Chief Executive

Has delegated responsibility for the executive management of Rio Tinto, consistent with the Group's purpose and strategy, and subject to matters reserved for the Board, as set out in the Schedule of Matters Reserved for the Board (available at riotinto.com), and in accordance with the Group's delegation of authority framework.

The Executive Committee is responsible for the delivery of strategy, annual plans and commercial objectives. It manages the financial and operational performance of the Group.

The following management committees support the Chief Executive in the performance of his duties:

Investment Committee

Reviews proposals on investments, acquisitions and disposals. Approves capital decisions within delegated authority limits, and otherwise recommends matters for approval to the Board, where appropriate.

Risk Management Committee

Oversees the management and mitigation of the principal risks that could materially impact the Group's business objectives and exceed its risk tolerances.

Ore Reserves Steering Committee

Responsible for standards and control procedures in the ore reserves estimation and disclosure process. Ensures that these are effective in meeting internal objectives and regulatory requirements.

Closure Steering Committee

Oversees the process and controls designed to manage the material risks related to rehabilitation, closure and legacy operations.

Disclosure Committee

Reviews and approves the release of all significant public disclosures on behalf of the Group. Oversees the Group's compliance with its disclosure obligations in accordance with all relevant legal and regulatory requirements, including processes to ensure such disclosures are accurate and timely.

Matters Discussed in 2020

The Board had seven scheduled meetings in 2020 and six additional meetings were held to discuss matters outside of the Board's regular agenda items. During 2020, we have had to adapt to the challenges associated with COVID-19. As a consequence, all meetings have been held virtually and we have increased the number of Board and committee meetings. Set out below are some of the matters which the Board has considered during 2020.

At every Board meeting, the Chief Executive and Chief Financial Officer report on the safety, operating and business performance of the Group against our Key Performance Indicators, as well as how certain material stakeholder issues are being managed.

The Board also received detailed reports from management relating to progress on major growth projects and updates on operations. Examples in 2020 included:

Growth projects

- In April, the Board received an update on the Simandou project. The management team presented a revised strategy and requested approval for funding to cover phase 1 of the work programme.
- In May, management presented a proposal to change the scope of the Oyu Tolgoi Hugo North Lift 1 underground mine design of Panel 0.
- The Board received a teach-in regarding the undercut criteria relating to the Oyu Tolgoi underground project. The session provided an overview of the undercut criteria, highlighting the risks and dependencies to undercut initiation, and covering the governance arrangements in place to track progress and to underpin informed decision-making.
- In October, the Board received a teach-in relating to battery materials/ lithium that analysed demand and supply drivers and options for the lithium project, as well as a deep dive on the Jadar project.
- The Board also considered and approved a request for almost $200 million to complete the Jadar feasibility study.

Operational

- The Board considered changes in Australia's energy policies and the potential impacts to the Australian smelters.
- In July, the Board received, considered and approved a request for funding to execute the closure of the Argyle diamond mine, which was no longer economically viable. A presentation was given covering plans for demolition, disposal of infrastructure, earthworks and civil works for waste rock dump reshaping, tailings dam embankment protection and stability, water management and revegetation. The Board also noted the extensive stakeholder engagement that had taken place.

ESG

The Board has ultimate oversight of environmental, social and governance matters working alongside the Sustainability Committee. During the year, in addition to reviewing its forward agenda of matters to be discussed, considering its constitution, composition and performance, and reviewing any new or amended Group policies, the Board considered the following governance matters:

- The Group's response to the blasting of the Juukan Gorge rock shelters, including consideration of the Board Review of the tragedy, the consequence management, the implementation of the recommendations for change, stakeholders' feedback and a meeting with the PKKP people.
- In February, the Board was updated on plans to publish the Group's 2020 carbon targets, climate strategy and proposed programme of engagement to accompany the publication of the company's second climate change report, following the methodology of the Task Force on Climate-related Financial Disclosures. During the update, the Board considered the approach to the climate change report and sustainability disclosures in the Rio Tinto Annual Report.
- In July, the Board received an update on the Group's short-to-medium-term roadmaps and actions required to achieve the new 2030 climate targets.
- In July, the Board received and noted the findings of the investor relations perception study. The study was intended to gather the thoughts of institutional investors with respect to the Group and the economic environment. The findings provided the Board with insight into the performance of the company and highlighted focus areas for improvement.
- In July, the Board received an update on the Group's ethics and integrity initiatives, including details of the Group's whistleblowing programme which was being updated to be more relevant for our people working remotely.
- In October, members of the Board met with employees from Oyu Tolgoi as part of a virtual site visit, and held five virtual 'town halls' with different groups of employees drawn from operations and functions.

People

The Board receives regular updates on our people-related initiatives to attract, develop and retain the best people, which is crucial to our success. Some of the topics covered in 2020 are below:

- In December the Board received a presentation on the Group's employee engagement survey results, and noted the actions that will be taken as a result of the findings.
- In April, the Board received an update on the Group's employee value proposition. The objective of the initial work was to seek a deeper understanding of the work culture and employees' perspectives. This helps to guide people-related decisions and enables the Group to connect more purposefully to attract and retain talent.
- In July, the Board received and noted a presentation on technical capability within the Group and the plans in place to further strengthen technical proficiency.

Strategy

The Board discussed and confirmed the Group's strategy in two separate two-day sessions in May and September 2020.

In May, topics discussed included:

- Strategic context for the business
- Impacts of COVID-19, including our response, recovery scenarios and commodity prices
- Iron ore – industry and market context
- Aluminium – revised industry perspectives
- Financial resilience and balance sheet strength

In September, the Board considered:

- Industry overviews for iron ore, minerals, aluminium and copper
- An update on Oyu Tolgoi
- Copper growth options
- The Group's portfolio and strategic options

Our Stakeholders

Our business and the decisions that we make affect the lives of many around the world. Understanding the interests of our stakeholders, as well as our shareholders, and doing our best to take them into account when we make choices, remains a Board priority. In the following section, we detail our key stakeholders and summarise their interests, how the Board has engaged with them, and how what the Board has heard has influenced our decision-making. This section serves as our 'section 172(1) statement'.

Employees

Introduction

We are proud of Rio Tinto's 45,000* employees, working in 35 countries around the world, who have demonstrated perseverance and resilience in a difficult year. We are committed to their health and safety and ensuring that they work in a positive and respectful environment where they can learn, develop, and feel proud of the work they do – every shift, every day.

How we engage and communicate

- Following the success of our 'employee AGMs' in past years, we have continued to engage directly with employees. While the outbreak of COVID-19 unfortunately prevented us holding a similar event this year, we continued to listen to the views of our employees.
- During November, the Chairman and non-executive directors held informal discussions with five diverse groups, totalling close to 150 employees, across many time zones and parts of the business. Simon Thompson and Megan Clark also had a meeting with a small group of employees in our Perth hub to hear their views and insights on 2020 and beyond. This conversation was recorded and shared with the Group.
- With COVID-19 severely impacting the traditional ways that our Chief Executive and other leaders engage with employees, we quickly developed new and innovative ways to remain connected and provide support and reassurance to the workforce during the pandemic. This included virtual site visits, town halls and team check-ins, and a number of remote safety engagements with operational site teams. The main themes and issues from these engagements were regularly reported to the Board and considered in our decision-making.
- During August and September, the company conducted 66 employee focus groups to understand how perceptions and expectations have been impacted by COVID-19, the events at Juukan Gorge, and a number of other global events. These sessions also explored experiences and expectations relating to inclusion, diversity and sustainability. The findings were reviewed in detail by the Board, together with the results of our employee survey which was held in October and November. This survey measures how people feel about the company and its direction.

How the Board has taken account of these interests

- The honesty and openness shown by employees in the small group meetings with the Board provided important insights. We heard employees' appreciation of the company's response to COVID-19, their disappointment and shame regarding the events surrounding Juukan Gorge, their commitment to safety, wellbeing, inclusion and diversity, and concerns about fatigue and work-life balance. We heard about difficulties in escalating unresolved issues, the need for a stronger focus on cultural heritage and awareness as well as diversity, and employees' desire to know more about the future shape and leadership of the organisation. These insights were an important consideration for the Board as we selected Jakob as our new Chief Executive and will receive greater focus as we set the agenda for the company under new leadership.
- The Board was pleased to see the positive response recorded in employee focus groups and the employee survey to the company's response to COVID-19, including its support for our people and the communities from which they come. Continuing to listen to employees, through focus groups, surveys and direct leader engagement, provides a wealth of opportunities for us to learn and improve as we continue to build a truly inclusive workplace culture. What has come through in all of the conversations the Board has had this year is how much employees appreciate the opportunity to share their thoughts. We see great value in these interactions and will continue the dialogue next year as part of our commitment to engage with Rio Tinto employees around the world.

Investors

Introduction

Our investors include pension funds, global fund managers, bondholders, employees and tens of thousands of individuals around the world. They have all put their faith in Rio Tinto to provide them with a financial return and expect us to allocate capital with discipline to create superior value. They are also increasingly focused on how that return is made. Our investors are closely interested in our strategy, the culture of the Group, sustainability, including cultural heritage, and our operational and financial performance as well as the threats and opportunities which could affect our business.

How we engage and communicate

- We hold two AGMs each year, in Australia and in the UK. The format of these, as both countries faced significant COVID-19-related restrictions on travel and gatherings, required a move to online events during 2020. By providing these online events, we ensured that investors were still able to engage with the Board and management.
- We also maintain a comprehensive programme of engagement with investors and analysts to ensure both current and potential new investors have the opportunity to hear from executives, the Chairman and subject matter experts from across the business. We held an online seminar in April in which the Chief Executive and experts from across the Group provided investors and analysts with an overview of our climate change strategy and approach to water management. This reflects growing investor interest in environmental, social and governance (ESG) issues.
- The Investor Forum in the UK and Australian Council of Superannuation Investors in Australia hosted meetings with the Board and investors to talk about the events of the year, with a focus on Juukan Gorge and the lessons learned. The agenda and Q&A sessions focused on Board effectiveness, oversight and accountability, as well as the Group's licence to operate. The meetings were well received, complementing direct investor engagement through the year and setting out a framework to allow investors to assess action in the early part of 2021.

How the Board has taken account of these interests

- In responding to feedback from investors, the Board has continued to deliver a strategy of maximising shareholder returns while allocating capital with discipline for future growth and sustained operational performance through the macroeconomic and commodity cycles.
- Given investor interest in ESG issues, including climate change and our work with communities around the world, the Board considers these during its strategy sessions when assessing our portfolio positions.
- The Chairman engaged extensively with investors across multiple markets following the events at Juukan Gorge to understand their perspectives. Following the release of the Board Review, further engagements took place. The broad spectrum of opinion that was garnered from these engagements was important in helping the Board's decision-making that led to management changes.
- During 2020, the Remuneration Committee reviewed the effectiveness of our Remuneration Policy, which is due for renewal at the 2021 AGMs. The Committee Chair, Sam Laidlaw, consulted with shareholders and proxies during 2020 and this consultation supported the Committee's view that the current policy has served our stakeholders well. Notwithstanding this, the Committee felt there was scope for simplification and an opportunity to align certain aspects more closely to shareholder and broader stakeholder expectations, most notably on pensions and by increasing the weighting of the ESG-related component in the short term incentive plan. These changes to the policy will be considered at the 2021 AGMs as part of the Committee's focus on ensuring that remuneration structure and policies reward fairly and responsibly with a clear link to corporate and individual performance that aligns remuneration outcomes with the delivery of long-term value for shareholders.

* This is the average employee headcount during 2020, including contractors.

Communities and governments

Introduction

The interests of the communities and governments that host our operations around the world are vital to our success. We recognise that our business has the potential to impact them significantly in a number of ways; they, in turn, expect us to commit to high standards in managing our environmental footprint and respecting community and human rights. Our impacts can be both positive and negative and require a proactive approach to building trust and partnership. This trust can be easily lost, as the events at Juukan Gorge have shown, and it therefore requires constant focus and careful management to maintain. The economic impact of our business through the taxes we pay and the jobs that we create has remained important while our support for managing the impact of COVID-19 and direct involvement in protecting the health of our communities have become critical.

How we engage and communicate

- In light of the events at Juukan Gorge, and following the release of the Board Review, the Board engaged extensively with stakeholders including Traditional Owners and Indigenous leaders. This provided an opportunity to apologise in person to the PKKP people and to see and feel their pain. As a Board, we are committed to learning from this event to ensure that the destruction of heritage sites of such exceptional archaeological and cultural significance never occurs again.
- We consult with our communities regularly, and always aim to do so in good faith, and in ways that are transparent, inclusive, and culturally appropriate. This covers every stage of the life of our assets. We strive to ensure that our engagement is participatory and representative of the community, including women, youth and vulnerable people. We recognise that our engagement processes can be further strengthened and have taken a number of actions to do so following the publication of our Board Review into cultural heritage management.
- Governments, at all levels, are critical stakeholders for our business and we regularly engage on matters including how we explore, mine and process ore, the conditions of land tenure, and health, safety and environmental requirements, as well as how we operate as a company in relation to securities, taxation, intellectual property, competition and foreign investment, provisions to protect data privacy, conditions of trade and export, and infrastructure access.
- We also engage with international organisations such as the World Bank and International Finance Corporation and actively participate in international forums like the Extractive Industries Transparency Initiative and the International Council on Mining and Metals.

How the Board has taken account of these interests

- While COVID-19 has significantly impacted plans for 2020, we have continued direct engagement between directors and those who advocate on behalf of communities around the world. The Chairman held a 'virtual roundtable' with civil society organisations, where the discussions focused on our response to Juukan Gorge, climate change and continuing concerns about industry lobbying.
- The Board has unreservedly apologised to the PKKP people for the destruction of the rock shelters at Juukan Gorge. The Board and senior leadership team have taken decisive action to implement the recommendations set out in the Board Review and the Interim Report of the Parliamentary Inquiry. Details of these changes can be found on pages 114 to 115.
- The Board recognises the need to further increase its engagement with stakeholders close to our operations, including communities and governments. The appointment of Simon McKeon as Senior Independent Director for Rio Tinto Limited, as well as Kellie Parker as Chief Executive of the business in Australia, will increase engagement in Australia and the full Board will continue to prioritise engagement with local communities when interacting with Rio Tinto sites remotely or in person. We are consulting with Traditional Owners to create an Indigenous Advisory Group (IAG), intended to bring Indigenous voices into the senior leadership and oversight of the business in Australia. Through our annual Board level engagements with civil society organisations, we listen, learn and look at ways we can improve on a number of issues of interest to our stakeholders.
- With COVID-19 impacting communities worldwide, we have an important role to play in keeping our communities safe while ensuring we can continue to keep our operations running safely. We have taken extensive measures across the business to help protect our communities, and have increased these as the pandemic has spread, in line with guidance or directives from governments and advice from international health organisations.

Customers and suppliers

Introduction

We want to build long-term relationships with our customers and suppliers based on trust and mutual benefits. Transparency and ensuring that we deliver on our promises are critical in maintaining this trust and we focus on both.

Through the volatility of 2020, customers and suppliers worked with us to safely maintain our operations and the uninterrupted flow of materials and products through the value chain, enhancing the integration between our markets and assets.

How we engage and communicate

- The inability to exchange physical documentation during COVID-19 was a catalyst for us to expand on our digital interfaces with customers and suppliers in 2020. We completed the industry's first end-to-end blockchain transaction in Renminbi, with the China Baowu Steel Group and will continue to pilot and adopt new digital tools to improve the experience of our customers and suppliers.
- We have extended our value chain and expanded our commercial activities into new areas to meet customer needs. This includes the expansion of our portside sales presence to nine ports in China, meeting demand from more than 80 new iron ore customers, and the expansion of bonded warehouse sales in our alumina business.
- We continue to focus on strategic partnerships as our customers become more concerned about how their products are produced. This includes partnering to develop new products such as with AB InBev to produce beverage cans made from low-carbon aluminium that meets industry-leading sustainability standards.

How the Board has taken account of these interests

- Building on our first customer survey in 2019, the Commercial team expanded the exercise in 2020, receiving feedback from more than 400 customers and suppliers across our products and major markets. The survey tested Rio Tinto's performance against more than 40 attributes, from product quality to technology. The high-level results of the survey were shared with the Board through regular updates provided by the Chief Executive in 2020. Key insights from the 2020 survey included the importance of digital capability to customers and improvements in areas such as collaboration and responsiveness.
- Amongst the Group's suppliers, the baseline provided by this first survey in 2020 will allow us to continue to shape these important relationships, building on general satisfaction and areas of focus. Both surveys will be repeated in 2021.
- The Board will begin to track progress in customer and supplier satisfaction from the baselines developed in the 2019 (customers) and 2020 (suppliers) surveys, and identify any additional areas for focus.
- As with our other stakeholders, the events of 2020 required the Board to adjust its engagement methods. Planned physical visits by the Board to major customers and suppliers in Asia were postponed and will be held as soon as the global situation allows. In the meantime, we are exploring how members of the Board can engage remotely with a number of key customer and supplier representatives.

Board Insights

Board tours Oyu Tolgoi in first virtual site visit: adapting to COVID-19

Site visits are an important part of the annual calendar for our Board – a chance for directors to deepen their understanding of our operations, and to meet with employees. This year, COVID-19 restrictions meant that plans for a physical visit to Mongolia had to be reconsidered – and the Oyu Tolgoi team were determined to give the Board a virtual tour that would be as close as possible to being there in person.

With exceptional planning, innovative use of technology, and the team's hard work and enthusiasm, they were able to create a four-hour interactive experience for the Board members, who joined from their respective homes.

Plan, test and plan some more

The Oyu Tolgoi team used elements of live video, 3D transition and pre-taped news style footage to showcase the different areas of our business.

The Board virtually visited open pit operations, the concentrator and the underground development. They heard from subject matter experts from across Oyu Tolgoi about the environmental, social and governance aspects of the business, including our water recycling activities, local procurement and, community partnerships.

The team tried something new with the background reading material sent to the Board members before the event too, and created an interactive book instead of the more usual PDF.

To complement the virtual site visit and ahead of key investment and project decisions regarding the OT underground project, including the approval of the OT Hugo North Lift 1 (HNL1) Panel 0 mine design feasibility study and underground project 2020 estimate, the Board received a teach-in providing an overview of the undercut criteria relating to the Oyu Tolgoi underground project. The Board discussed and agreed the criteria that would be developed for further Board review to manage the key risks to undercut initiation, including mine design, development and construction, power certainty, funding, and sovereign risk. The Board noted that Rio Tinto Copper & Diamonds and the Oyu Tolgoi joint venture would manage other aspects such as business readiness, technical assurance, permitting, and access to market.

OT has such a strong story on performance – particularly the safety ethos and enthusiasm for continuous improvement – that shines through from everyone. We really get the feeling you have developed a great culture on site, which is hugely impacted by the high and increasing local capability. A great example to others, and your pride in this is understandable – and tangible to the entire Board.

Simon Henry
Non-executive director

The time I spent with each of more than 30 senior leaders in the company enabled me to learn about each of the different businesses of Rio Tinto, as well as to begin to understand the different geographies within which Rio Tinto operates.

Ngaire Woods
Non-executive director

The induction sessions for new directors were extremely thorough and comprehensive, covering all product groups and major functions.

Jennifer Nason
Non-executive director

NED inductions

We have developed comprehensive induction processes for new Board members which aim to provide a broad introduction to the Group, and enable new directors to contribute to the Board's deliberations from the outset.

We appointed three new non-executive directors this year, Hinda Gharbi, Jennifer Nason and Ngaire Woods. Each received a tailored programme comprising one-to-one meetings with Board directors, Executive Committee members and senior leaders across the business. This was supported by a comprehensive library of internal and external reports, memos and presentations covering the key commercial, operational and functional areas of the Group. Ordinarily, visits to mine sites and operations form an important part of induction but, due to the COVID-19 related restrictions, this has not been possible during 2020. We very much hope to reintroduce site visits for directors during 2021 as restrictions ease. The absence of face-to-face engagement was reflected in feedback from new directors on the effectiveness of the induction process, but this was otherwise positive.

Employee engagement

As we have mentioned elsewhere in this report, the COVID-19 pandemic challenged us to rethink in 2020 how the Board engages with employees. Restrictions on international travel, and on social gathering, meant that our usual large-scale events such as 'employee AGMs' and town halls were not possible in 2020. Instead, we developed a series of smaller-scale engagements, primarily in virtual formats, to ensure that the Board continued to engage with employees and hear their views directly.

The events included five informal discussions. The Chairman and a number of non-executive directors attended each event and employee attendance was limited to between 15 and 35 employees per event to maximise the opportunity for active participation. By mixing time zones and participants, these sessions managed to include representatives from almost all product groups and Group functions.

In addition, in November, Simon Thompson and Megan Clark met in person with a group of five employees in our Perth hub to understand their thoughts on 2020 and beyond. That conversation was recorded, and the video was shared with all employees via the Group intranet to give everyone an opportunity to hear the reflections from colleagues and from the Board.

We sought feedback from participants after each of these events. It was good to see that employees were very positive about the format and conduct of the discussions and welcomed the opportunity to engage with the Board in this way. At each of the sessions employees were clearly very engaged and not afraid to ask difficult questions on sensitive topics.

The questions and comments raised covered a very wide range of topics including, among others, the events at Juukan Gorge and the Group's response, the desired credentials for the new Chief Executive (as the search was ongoing at that time) and the direction and culture of the organisation. The questions also reflected a clear interest in safety, work-life balance and inclusion and diversity.

These questions, feedback and insights from employees are hugely valuable to the Board. They have already been factored into discussions around the Board table and will continue to influence our decision-making and the monitoring of how culture is embedded under our new Chief Executive and the new Executive Committee team.

Whilst we all hope it will soon be possible to ease the current COVID-19 restrictions and return to some form of normality, the emergence and establishment of these new formats and channels of employee/Board engagement have been a positive development in 2020. We will continue to develop them, in addition to more traditional forms of face-to-face engagement as we continue in consultation with our newly designated non-executive director for workforce engagement, Simon McKeon, to make sure the voice of our employees is heard in the boardroom.

Evaluating our Performance

An effective Board depends on the personal development of individual directors and continuous improvement in the operation of the Board as a whole.

We measure our performance each year by carrying out a formal annual review of the Board, its committees and the Chairman. Every third year we engage a professional external adviser to carry out the Board review to obtain an independent evaluation. In 2020 we carried out an internal Board evaluation, with the process overseen by the Group Company Secretary. The evaluation is based on a questionnaire to all directors and the views of directors are consolidated into a formal report which is discussed by the Board and the relevant committees.

The Board evaluation process identified some areas of strength. This notably included the way in which Rio Tinto had responded to COVID-19, with the Chief Executive able to adjust priorities across the business to focus on responding to the immediate issues. The Board felt that it had adapted to the new way of working and that there was greater opportunity to use virtual meetings and site visits in the future. The atmosphere in the boardroom was rated highly and the Board felt that it had worked coherently and well during recent challenges, albeit the lack of informal time for the Board was noted and the importance of engagement with senior leadership was also stressed. Feedback on the skills and experience of the Board identified a need to bring a better understanding of China into the boardroom.

One area where some Board members felt more could have been done was engagement with stakeholders, which is a reflection of the events at Juukan Gorge. A clear theme that emerged was the importance of the transition to a new Chief Executive in 2021 and supporting them in evolving Rio Tinto's culture and rebuilding trust, notably in Australia. The Board's monitoring of the culture and behaviours throughout the organisation was identified as an area of focus. The need for the new Chief Executive to prioritise alignment of organisation culture with our values was stressed.

Individual assessments

The Chairman is responsible for evaluating the performance of non-executive directors. In 2020, he met each non-executive director to review their views on and contribution to the Board, as well as their training requirements.

The non-executive directors, led by Sam Laidlaw, senior independent director, Rio Tinto plc, are responsible for the performance evaluation of the Chairman. The senior independent director met with the non-executive directors and, separately, the executive directors to gather feedback to provide to the Chairman on his performance. This review concluded that the Chairman had led the Board effectively during a very challenging year.

2020 progress on 2019 actions	Actions for 2021
Board composition/dynamics	
In April 2020, we appointed Hinda Gharbi and Jennifer Nason to the Board. Professor Ngaire Woods joined us in September. All three new directors bring relevant experience of championing inclusion, diversity, cultural change and governance. The appointment of Jakob Stausholm as our new Chief Executive represents an important milestone as we continue the process of rebuilding trust and, as an internal successor, he can apply his existing knowledge and understanding of the Group to some of the key investment and growth decisions arising in the shorter term.	We currently have a search underway for a new NED, to replace David Constable. Among our selection criteria will be their ability to help lead cultural change, and experience of one of our key countries of operation. An appointment process for the permanent role of executive director and Chief Financial Officer is underway. With the global pandemic in 2020, it has been difficult to preserve more time for informal debate and discussion. We are exploring ways to achieve this in what is likely to remain a virtual environment for at least part of 2021.
Strategy	
The various aspects of the Board's oversight of strategy were rated positively overall in the Board evaluation, although the importance of growth options was stressed. Greater follow-through in terms of analysis and conclusions reached was requested. The Board was seen to have a good understanding of competitors overall. While the effectiveness with which sustainability is integrated into the company's business strategy and operations was highly rated, it was noted that Rio Tinto's reputation in the area of 'social' has been severely damaged as result of Juukan Gorge.	The Board will continue to focus on the following strategic priorities in 2021: i. China relations; ii. growth; iii. ESG performance and licence to operate; iv. Australian stakeholder relations; v. critical decisions regarding iron ore and copper; and vi. culture. The Chief Executive and interim Chief Financial Officer will continue to consider an enhanced framework of financial metrics against which the Board can analyse and stress-test strategic options, new investments and business plan scenarios. Further involvement of the executive team in strategic discussions will be considered.
Board management and reporting	
Overall, the quality of Board documentation received a positive rating, although a few felt that papers could be crisper, and point more clearly to the decision/ risk/input sought.	The management of Board meetings was rated highly, although the impact of COVID-19 on discussions was highlighted. It was felt the Board should spend more time on i. culture and people; ii. strategic choices; iii. external stakeholders; iv. engagement with leadership, notably product group heads; and v. technology. Shorter presentations at Board meetings to allow more time for discussions of key issues and risks was requested. On key investment decisions, discussion of upside/downside risks and alternative strategies could be improved.
Stakeholders	
The oversight of stakeholder views was considered somewhat mixed, although investor and regulatory understanding were identified as relative strengths. Understanding of China could improve, with China remaining a key stakeholder as a partner, customer and shareholder. Increased engagement and understanding of community issues was also highlighted. The Board's monitoring of the culture and behaviours throughout the organisation drew a mixed rating and the need for the new CEO to prioritise aspects of culture was stressed.	Engage with customers/suppliers during a Board visit to China. Increase Board engagement with top talent and senior leadership. Increase engagement with US investors. Increase Board awareness of government views in key countries of operation. Increase engagement with local communities on Board site visits. The Board and its committees will continue to utilise external speakers and subject matter experts to enhance understanding, including of China, and of climate change and the energy transition. Further workforce engagement initiatives will seek to build understanding, across different jurisdictions, of employee attitudes to work practices and to the company in general.

Directors' attendance at scheduled Board and committee meetings during 2020[1]

	Committee appointments	Board	Audit	Nominations	Remuneration	Sustainability
Chairman and executive directors						
Simon Thompson	N R S	7/7		6/6	6/6	4/4
Jean-Sébastien Jacques		7/7				
Jakob Stausholm		7/7				
Non-executive directors						
Megan Clark	N R S	7/7		6/6	6/6	5/5
David Constable[2]	A N S	7/7	5/6	5/6		4/4
Hinda Gharbi – joined 1 March 2020	A N S	6/6	4/4	3/4[3]		4/4
Simon Henry	A N S	7/7	6/6	6/6		5/5
Sam Laidlaw	N R S	7/7		6/6	6/6	5/5
Michael L'Estrange	N S	7/7		6/6		4/4
Simon McKeon	A N R	7/7	6/6	6/6	6/6	
Jennifer Nason – joined 1 March 2020	N R S	6/6		4/4	4/4	4/4
Ngaire Woods – joined 1 September 2020	N R S	3/3		2/2	2/2	2/2

1. Outside of the scheduled meetings of the Board and committees for 2020, numerous ad hoc meetings took place to consider more urgent matters, including seven Board meetings, three Nominations Committee meetings, two Remuneration Committee meetings, and one Sustainability Committee meeting.
2. David Constable was unable to attend an Audit Committee meeting on 14 December 2020 and a Nominations Committee meeting on 29 October 2020 due to unavoidable conflicting commitments with Fluor Corporation.
3. Hinda Gharbi was unable to attend the Nominations Committee meeting in May 2020 because of an unavoidable commitment that had been agreed prior to Hinda joining the Board in March 2020.

Our plans and priorities for 2021

The Board has identified the following focus areas for 2021:

Strategy and growth

Seek to identify appropriate growth options for the business, while maintaining the Group's disciplined approach to capital allocation.

Develop plans to address portfolio concentration risk (geographic/commodity).

Priorities for the new Chief Executive Officer

Build a more collaborative and trusting work environment.

Promote an inclusive and empowered culture that supports raising of concerns.

Re-balance risk aversion and long-term effectiveness versus short-term efficiency.

Work with the Chairman and Group Company Secretary to enhance the Board's oversight of culture and behaviours (including enhanced metrics and qualitative assessments).

Review the development needs of the senior executive team and finalise the appointment of a new Chief Financial Officer. Increased Board focus on talent development and succession planning with a deep dive on Executive Committee bench strength, development plans and diversity.

Consider appropriate mechanisms to improve the Group's reputation and standing in Australia and China, as key business partners.

Supporting Board dynamics

Ensure balance of face-to-face and virtual Board meetings as the 'new normal'.

Declutter Board agenda – more items to be taken as read or even offline between meetings.

Increase Executive Committee participation in Board meetings, including strategic discussions.

Establish clear and distinguished parameters and metrics for the Chief Executive Officer and Chief Financial Officer reports.

Focus Board papers and presentations on key issues and key decisions required.

Resume Board site visits as soon as possible.

Support the new Chief Executive Officer in his priorities and continue to enhance relations between executive and non-executive members of the Board, creating an informal, challenging but supportive environment.

Convene outside speakers' expertise on key topics such as sustainability, China or technology.

ESG and stakeholder engagement

Focus on communities and heritage and climate change – conduct a review of the Board's response to Juukan Gorge and build resilience for future crises.

Introduce and develop ESG metrics into executive remuneration structures.

Improve the Board's understanding of key customers and suppliers.

Continue to formalise mechanisms to hear the views of the Group's workforce, and to shape decision-making accordingly.

Training and development

Continue to enhance the Board's knowledge of Asia, and China in particular.

Teach-ins/deep dives will be organised in 2021 in relation to decarbonisation of the mining sector, technology, ethics and compliance, reserves and resources, and water management.

Nominations Committee Report

The Nominations Committee seeks to ensure that the Board has the requisite mix of skills, views, experience and expertise to provide robust oversight, and to identify and respond effectively to current and future opportunities and challenges.

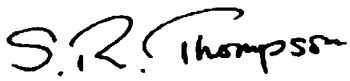
In our approach to succession planning and appointments, we are committed to building an effective, diverse, knowledgeable Board that can provide robust oversight, encourage differing perspectives, promote collaboration, fairness and inclusion, and convene expertise effectively to help it navigate the increasingly complex opportunities and threats facing the Group.

2020 was a year that tested many parts of our business. Our response to COVID-19 in many ways showed the Group at its best, with fast, delegated decision-making within a clear values-based framework that put the safety of our employees, contractors and local communities first, while allowing our operations to keep running and delivering for customers.

The events at Juukan Gorge, however, were a sobering reminder that, no matter how sophisticated our risk management processes, in cases like this, the effectiveness of Board oversight is ultimately dependent upon the recognition of risk and escalation of decision-making by front-line operational staff. Increasing cultural awareness and understanding of community, heritage and other social risks, and ensuring that operational management has access to the information it needs to support good decision-making, will be a key focus for the Board and the senior executive team in 2021.

With the departure of three of the most senior executives in the Group as a result of Juukan Gorge, the Nominations Committee was extremely busy in the latter part of 2020. Our top priority was the appointment of a new Chief Executive. Drawing upon our existing internal succession planning and an external search, in December 2020, we announced the appointment of Jakob Stausholm as Chief Executive. Jakob has made a significant contribution to the performance and the strategy of the Group since joining as CFO two years ago and his appointment represents an important milestone as we start the process of rebuilding trust. With strong values and an inclusive, collaborative leadership style, we are confident Jakob will provide clear leadership of our efforts to re-establish Rio Tinto's leadership in environmental and social performance. Further details of the appointment process and the selection of Jakob are set out on the following page.

In November, David Constable announced he would be stepping down from the Board to concentrate on his appointment as the Chief Executive of Fluor Corporation. On behalf of the Board, I would like to thank David for his significant contribution to our Board discussions. A search for David's replacement is underway as we seek to further strengthen representation on the Board from our key countries of operation.



Simon Thompson
Nominations Committee Chairman

22 February 2021

Nominations Committee members

Simon Thompson (Chairman)	Sam Laidlaw
Megan Clark	Michael L'Estrange
David Constable*	Simon McKeon
Hinda Gharbi	Jennifer Nason
Simon Henry	Ngaire Woods

* A member during 2020, stood down at the end of 2020.

Appointments to the Board – our policy

We base our appointments to the Board on merit, and on objective selection criteria, with the aim of bringing a range of skills, knowledge, and experience to Rio Tinto. This involves a formal and rigorous process to source strong candidates from diverse backgrounds and conducting appropriate background and reference checks on the shortlisted candidates. We aim to appoint people who will help us address the operational and strategic challenges and opportunities facing the company and ensure that our Board is diverse in terms of gender, nationality, social background and cognitive style. As such, we only engage recruitment agencies that are signed up to the Voluntary Code of Conduct on diversity best practice.

We believe that an effective Board combines a range of perspectives with strong oversight, combining the experience of directors who have developed a deep understanding of our business over several years with the fresh insights of newer appointees. We aim for our Board composition to reflect the global nature of Rio Tinto's business. We currently have six different nationalities (including dual nationalities) on a Board of 11.

The key skills and experience of our Board are set out on the table at the end of this report.

Our diversity and inclusion policy sets out our expectations around the behaviours needed for an inclusive and diverse workplace. The policy is co-owned and supported by the Rio Tinto Board and Executive Committee. At a Group level, we report against gender diversity targets (see page 76). In addition, each of our operations has local employment targets; their performance against these targets can be found in our 2020 Sustainability Fact Book.

Read our full policy on our website – riotinto.com/sustainability/policies.

Our key responsibilities

The purpose of the Nominations Committee is to review the composition of the Board. The Committee leads the process for appointments, making recommendations to the Board as part of succession planning for both non-executive and executive directors. It also approves proposals for appointments to the Executive Committee and monitors the succession planning and development of a diverse talent pipeline for Executive Committee members and their direct reports.

Membership of the Committee

All non-executive directors are members of the Nominations Committee.

The Chief Executive and the Chief People Officer are invited to attend all or part of meetings, as appropriate. The Committee is chaired by the Chairman of the Board, unless the matter under consideration relates to the role of the Chairman. During 2020, the Chief Executive did not attend meetings where his succession was discussed.

Our search process for the Chief Executive appointment

MWM Consulting were appointed to support the search process. Candidates proposed by MWM were shortlisted by the Nominations Committee before a series of interviews of the shortlisted candidates by various non-executive directors and the Chairman. The leading candidates were also assessed by YSC Consulting. Neither firm has any connection with Rio Tinto. A final proposal from the Nominations Committee recommending Jakob was made to the Board in December 2020 and the proposed terms of his appointment were reviewed by the Remuneration Committee.

Succession planning

In 2021, the Committee will re-focus on broader succession planning for the Board and Executive Committee. In his first year as Chief Executive, Jakob's priorities will include a review of the development needs of the senior executive team and the appointment of a new Chief Financial Officer. The Nominations Committee will oversee and recommend appointments to the Board and support Jakob in other senior appointments and leadership succession planning.

Changes affecting existing Board members

The role of the Senior Independent Director is well established in the UK. In 2020, in recognition of Rio Tinto's DLC structure and the importance of Australia to the Group's operations, the Board appointed Simon McKeon as Senior Independent Director of Rio Tinto Limited to provide an alternative, Australia-based sounding board for our key stakeholders. This newly created Board role will complement the existing Senior Independent Director role, which will continue to be performed by Sam Laidlaw for Rio Tinto plc.

Since Australia is also the country where our most significant operations are located, as well as the largest number of employees, Simon McKeon has also been appointed as the designated non-executive director for workforce engagement, working closely with the Chairman and Group Company Secretary.

New appointments – improving diversity on the Board

Rio Tinto is committed to promoting behaviours that support an inclusive and diverse workplace and that reflect our values of safety, teamwork, respect, integrity and excellence. This commitment is set out in our global code of conduct, *The Way We Work*.

In 2020, we were pleased to announce the appointment of Hinda Gharbi, Jennifer Nason and Ngaire Woods as non-executive directors, taking the proportion of women on the Board to 33.3% (four women and eight men) as at the end of 2020. Since 1 January 2021, following the departures of J-S Jacques and David Constable, this has increased to 40%. Hinda Gharbi has also identified herself as a 'director of colour' for the purposes of the Parker review, which champions greater ethnic diversity on UK boards.

Appointment of Jakob Stausholm as our new Chief Executive

In September 2020, we announced that, by mutual agreement, J-S Jacques would step down from his role as an executive director and Chief Executive of the Group. A formal process to identify his successor commenced. J-S agreed to remain in his role until the appointment of his successor or 31 March 2021, whichever was earlier. This was to ensure business continuity and, specifically, to maintain the resilient performance of the Group's global operations during the COVID-19 pandemic.

The Nominations Committee oversaw a selection process that drew upon existing internal succession planning and an external international search, culminating in the appointment of Jakob as Chief Executive with effect from 1 January 2021. J-S therefore stepped down from his role as an executive director and Chief Executive with effect from 1 January 2021 and will leave the Group on 31 March 2021.

Details of the structure of the remuneration package for Jakob and the leaving arrangements for J-S are disclosed in the Remuneration Report on pages 140-185.

Jakob has already played a key role in strategy development and performance management since joining the Group as Chief Financial Officer, delivering the company's disciplined capital allocation strategy, which in turn led the Group to deliver record shareholder returns. He has a proven track record as a senior executive with deep industrial and resources experience spanning strategy and technology as well as financial and risk management. He has also demonstrated the ability to build effective relationships, both internally and in some of our key countries of operation.

This blend of strategic and commercial expertise, taken together with Jakob's collaborative leadership style, strong values and personal commitment to the role of business in promoting sustainability, make him the ideal choice for our Chief Executive. A further advantage is that, as an internal candidate, he will be able to apply his existing knowledge and understanding of the Group to some of the key investment and growth decisions arising in the shorter term.

The Committee has engaged Spencer Stuart to support the searches for recent non-executive director appointments. Spencer Stuart does not have any other connection with Rio Tinto. When considering candidates, the Committee has requested that both gender and ethnic diversity be considered when putting candidates forward.

The Board recognises that it has a critical role to play in creating an environment in which all contributions are valued, different perspectives are embraced, and biases are acknowledged and overcome. The Board shares ownership with the Executive Committee of the Group's inclusion and diversity policy, which can be found on the Group's website. We also discuss diversity and inclusion in the Sustainability section of this Annual Report.

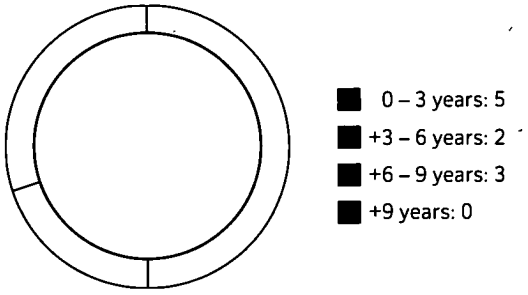
Senior leadership – gender diversity

The Group has continued to set measurable gender diversity objectives for the composition of senior leadership and graduate intake. Progress on diversity is shown in the Sustainability section on page 76, where we show a breakdown by seniority. In 2021, we plan to leverage the gains in 2020 and will expand our gender diversity targets beyond women in leadership to women at all levels of the organisation.

Focus of the Committee in 2021

In 2021, the Committee will support Jakob as he transitions into his new role as Chief Executive and fills the senior management vacancies created by recent departures and promotions. The Committee is currently conducting a search for a replacement for David Constable and will continue to review the skills and experience of the directors and the composition of committees.

Length of tenure of non-executive directors



Skills and experience of the Chairman and non-executive directors

Area of expertise		No. of Directors
Business leadership	Board level experience in a major corporation.	7
Capital projects	Experience of developing large-scale, long-cycle capital projects.	5
Financial	Proficiency in financial accounting and reporting, corporate finance, internal controls, treasury and associated risk management.	5
Mergers and acquisitions	Experience of mergers, acquisitions, disposals and joint ventures.	5
Global experience	Work experience in multiple global locations, exposed to a range of political, cultural, regulatory and business environments.	8
Corporate governance	Experience on the board of a major corporation subject to rigorous corporate governance standards.	6
Government and international relations	Interaction with governments and regulators or involvement in public policy development and implementation.	4
HSSE/ESG	Familiarity with issues associated with workplace health and safety, asset integrity, environment and social responsibility, and communities.	6
Climate change	Knowledge and experience of climate-related threats and opportunities including climate science, low-carbon transition and public policy.	6
Communities and social performance	Experience of working with communities to optimise the benefits and minimise negative impacts of business activities.	6
Marketing	Senior executive experience in marketing, and the development of product and/or customer management strategies.	2
Mining	Senior executive experience in a large, global mining organisation involved in the discovery, development, operation and closure of mines.	2
HR/remuneration	Experience of talent recruitment, retention, development and incentives.	4
Technology/digital	Experience of managing research, development, and innovation, including digital technology.	2

Audit Committee Report

I am pleased to report on the work of the Audit Committee (the 'Committee') in 2020. This is set out in detail over the following pages, but in this introduction I would just like to highlight a few aspects of a quite extraordinary year.

First and foremost, the Group had to respond to the unprecedented challenges of the global COVID-19 pandemic. I have been hugely impressed with the agility, innovation and tenacity our people have demonstrated to keep assets operating safely despite the severe restrictions on travel, and the need to socially distance and work remotely. From an Audit Committee perspective, it has been reassuring to see the organisation adapt to maintain the effectiveness of internal controls. We have also seen proactive responses to new risks emerging from the COVID-19 environment. While longer term there is no substitute for 'boots on the ground', the Group has embraced new ways of working in 2020 to support the continued integrity of our control framework.

We changed our external auditor, with the appointment of KPMG at the 2020 AGMs. To change auditors in a large and complex organisation such as Rio Tinto is a significant undertaking, requiring substantial transition planning and preparation work. KPMG shadowed PwC through the 2019 audits and engaged extensively with management to build their knowledge of this company and develop an audit plan. We are also already seeing some of the benefits of periodically rotating the external auditor as 'fresh eyes' suggest potential enhancements and challenge us to reconsider and substantiate assumptions.

The Audit Committee is acutely aware of the issues arising from the destruction of the Juukan Gorge rock shelters in May 2020, in particular the weaknesses it exposed in the risk management and internal control framework, and to relevant culture and behaviours within the company. Looking forward, the lessons learned, and actions now being taken, will form part of the Committee's consideration of the effectiveness of the overall control framework.

We welcomed Hinda Gharbi to the Board and as a member of this Committee in March 2020. Hinda has already familiarised herself with the Group and in just a few short months, this Committee has come to rely upon her experience and insight. David Constable stepped down as a director at the end of 2020. We will miss his wise counsel, but wish him well as he embarks on a new role as CEO of Fluor Corporation.

More widely, we continue to monitor developments in the UK audit market following the Brydon, Kingman and CMA reviews. While the final destination is not yet clear, discussions have continued during 2020 on the direction of travel, and we continue to play our part in the ongoing consultation process.

As we look to 2021, we see an increased focus on the way companies reflect the potential impact of climate change in financial reporting. In addition to the usual work of the Committee, this is something we expect to explore further, including appropriate consideration and assurance around reporting under the Task Force for Climate-related Financial Disclosures framework.



Simon Henry
Audit Committee chairman

22 February 2021

Audit Committee members

Simon Henry (Chairman)

David Constable*

Hinda Gharbi

Simon McKeon

* A member during 2020, stood down at the end of 2020.

Membership

The members of the Committee are all independent non-executive directors, and their biographies can be found on pages 116-117. The Chairman of the Board is not a member of the Committee.

As Rio Tinto's securities are listed in Australia, the UK and the US, we follow the regulatory requirements and best practice governance recommendations for audit committees in each of these markets.

Australian listing requirements

In Australia, the members, and the Committee as a whole, meet the independence requirements of the ASX Principles. Specifically, the Committee members between them have the accounting and financial expertise and a sufficient understanding of the industry in which the company operates to be able to discharge the Committee's mandate effectively.

Audit Committee Report
continued

UK listing requirements

In the UK, the members meet the requirements of the FCA's Disclosure Guidance and Transparency Rules, and the provisions of the Code relating to audit committee composition. Simon Henry, the chairman of the Committee, is considered by the Board to have recent and relevant financial experience.

Simon Henry and David Constable both have extensive prior experience of the natural resources sector. Simon McKeon has gained experience of the mining sector by serving on the Board and on the Committee, and through regular site visits, reports and presentations. The Committee as a whole has competence relevant to the sector in which the company operates.

US listing requirements

In the US, the requirements for the Committee's composition and role are set out in SEC and NYSE rules. The Board has designated Simon Henry as an 'audit committee financial expert'. The Board also believes that the other members of the Committee are financially literate by virtue of their wide business experience.

Induction for new members

New members receive a comprehensive induction. As part of her induction, Hinda Gharbi met the Group Financial Controller, the heads of Group Internal Audit, Ethics & Integrity and Investor Relations, and the lead audit engagement partners in the UK and Australia.

Committee remit

The Committee's objectives and responsibilities are set out in our terms of reference (see the Rio Tinto website). These follow the relevant best practice recommendations in Australia, the UK and the US.

Our main duties are:

Financial reporting – we review the key judgments needed to apply accounting standards and to prepare the Group's financial statements. We also review the narrative reporting that goes with these, with the aim of maintaining integrity in the Group's financial reporting. Finally, we monitor any exclusions made in deriving alternative (non-GAAP) performance measures such as underlying earnings.

External audit – we oversee the relationship with the external auditors and review all the non-audit services they provide, and the fees for these, to safeguard the auditors' independence and objectivity. We also assess the effectiveness of the external audit and, when necessary, carry out a formal tender process to select new auditors.

Framework for internal control and risk management – we monitor the effectiveness of the Group's internal controls, including those over financial reporting. We also oversee the Group's risk management framework.

Group Internal Audit (GIA) – we oversee the work of GIA, and its head, who reports functionally to our Committee chairman.

Ethics and Integrity – we oversee the work of the Group's Ethics & Integrity function.

Mineral Resources and Ore Reserves – we oversee the reporting and assurance of mineral resources, and consider the impact on financial reporting.

Distributable Reserves – we provide assurance to the Board that distributable reserves are sufficient, and in the correct corporate entities, to support any dividend proposals.

These duties feed into an annual work plan that ensures we consider issues on a timely basis. The Committee has authority to investigate any matters within its remit. We have the power to use any Group resources we may reasonably require, and we have direct access to the external auditors. We can also obtain independent professional advice at the Group's expense, where we deem necessary. No such advice was required during 2020.

The Committee chairman reports to the Board after each meeting on the main items discussed, and the minutes of our meetings are circulated to the Board.

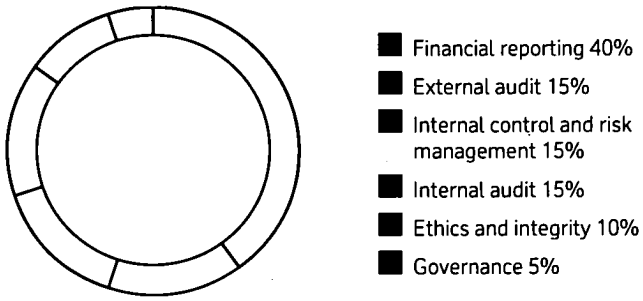
We had six Committee meetings in 2020. Attendance at these meetings is included in the table on page 127. The Committee has met twice to date in 2021.

The Chairman of the Board, the Chief Financial Officer, the Group Financial Controller and the heads of GIA, Ethics & Integrity and Risk regularly attend our meetings, as do the Group General Counsel and the Group Company Secretary. We invite other senior executives and subject-matter experts as needed.

The external auditors were present at all of the Committee meetings during the year. The auditors review all materials on accounting or tax matters in advance of each meeting, and their comments are included in the papers circulated to Committee members. The audit partners also meet with our Committee chairman ahead of each meeting to discuss key issues and raise any concerns.

The Committee meets regularly in private session. We also hold regular private discussions with the external auditors. Management do not attend these sessions. The Committee chairman also has regular contact and discussions with these stakeholders outside the formal meetings.

Use of Committee meeting time in 2020



Other focus areas in 2020

In addition to our scheduled workload, the Committee also considered:

- An annual review and benchmarking of Rio Tinto's accounting policies and an overview of newly issued IFRS standards and interpretations
- A summary of the key financial measures relating to the Group's pension plans and the factors affecting those figures
- Possible enhancements to the Group's Long Term Viability Statement, and the scenario modelling that underpins it, based on the recommendation in the Brydon Report
- After a robust process, in early 2021 the Committee recommended to the Board that the draft 2020 Annual Report is, taken as a whole, fair, balanced and understandable.

We also reviewed the quality and effectiveness of the Group's internal control and risk management systems in a joint session with the Sustainability Committee, which oversees a number of key corporate risks. This review included the effectiveness of the Group's internal controls over financial reporting, and the Group's disclosure controls and procedures in accordance with sections 404 and 302 of the US Sarbanes-Oxley Act 2002. The Committee also considered reports from GIA and KPMG on their work in reviewing and auditing the control environment.

Significant issues relating to the financial statements

There were six significant issues considered by the Committee in relation to the financial statements:

Matters considered	Conclusion
Review of carrying value of cash-generating units and impairment charges/reversals	The Committee assessed management's determination of cash-generating units, review of impairment triggers and consideration of potential impairment charges and reversals over the course of the year. For cash-generating units where impairment indicators were identified, the Committee considered the key judgments made by management in relation to discount rates and forecasted commodity prices. For cash-generating units with recent experience of impairments, the Committee discussed with management the conclusion supporting no further impairment trigger. Specifically with respect to Oyu Tolgoi the Committee received an update on the status of the mine design and the challenges relating to funding. The Committee reviewed disclosures related to impairment reviews in note 6 and the net impairment charges of $1.2 billion.
Application of the policy for items excluded from underlying earnings	The Committee reviewed the Group's policy for exclusion of certain items from underlying earnings and confirmed the consistent application of this policy year on year. The items excluded from underlying earnings comprised a net expense of $2.7 billion. A reconciliation of underlying earnings to net earnings is presented in note 2.
Estimate of provision for closure, restoration and environmental obligations	The Committee reviewed the significant changes in the estimated provision for closure, restoration and environmental obligations by product group and legacy management. The Committee received updates on closure studies completed in the period and discussed with management changes to the discount rate. At 31 December 2020, the Group's balance sheet included provision for close-down, restoration and environmental obligations of $13.3 billion. The Committee was pleased to see the enhanced voluntary disclosure of closure provisions in note 25.
Climate change	The Committee received an overview of the work management is undertaking in relation to climate change and the potential financial reporting implications thereof. The Committee reviewed the description of the internal price setting process described in note 1 and discussed with management the three strategic scenarios, the alignment with the Paris Agreement, and the connection between reserves and resources and accounting judgments.
The Group's tax exposures	The Committee considered management's assessment of the Group's tax exposures, including the recoverability of deferred tax assets which are uncertain due to the timing of expiry of tax loss carry-forwards in certain jurisdictions. The Committee received updates on the status of ongoing discussions with the Australian Tax Office relating to the transfer pricing of certain transactions with the Group's commercial centre in Singapore and considered the appropriateness of provisions for uncertain tax positions.
Litigation	The Committee considered any current or projected litigation and considered management's assessment of any financial provisions or contingent liabilities. Provisions are regularly updated and compared with the track record of settled outcomes.

External auditors

Engagement of the external auditors

For the 2020 financial year, KPMG are serving their first year as our auditors. The UK entity of KPMG audits Rio Tinto plc, and the Australian entity audits Rio Tinto Limited. The UK audit engagement partner, Stephen Oxley, and the Australian partner, Trevor Hart, were appointed in 2020. Stephen Oxley has announced that he will be retiring from KPMG to take up an external position after the Rio Tinto 2020 audit and will hand over to his successor as the UK audit engagement partner before leaving the firm at the end of March 2021.

We agreed the scope of the auditors' review of the half-year accounts, and of their audit of the full-year accounts taking into consideration the key risks and areas of material judgment for the Group. We also approved the fees for this work and the engagement letters for the auditors.

Safeguarding independence and objectivity, and maintaining effectiveness

In our relationship with the external auditor we need to ensure that they retain their independence and objectivity, and are effective in performing the statutory audit.

Use of the external auditors for non-audit services

The external auditors have significant knowledge of our business and of how we apply our accounting policies. That means it is sometimes cost-efficient for them to provide non-audit services. There may also be confidentiality reasons that make the external auditors the preferred choice for a particular task.

However, safeguarding the external auditors' objectivity and independence is an overriding priority. For this reason, and in line with the FRC's Ethical Standard, the Committee ensures that the external auditors do not perform any functions of management, undertake any work which they may later need to audit or rely upon in the audit, or serve in an advocacy role for the Group.

Audit Committee Report
continued

We have a policy governing the use of the auditors to provide non-audit services. The cap on the total fees that may be paid to the external auditors for non-audit services in any given year is 70% of the average of the audit fees for the preceding three years. This is in line with the FRC's Ethical Standard. Non-audit assignments fall into two broad categories:

- Audit, audit-related or other 'pre-approved' services where we believe there is no threat to auditors' independence and objectivity, other than through the fees payable.
- Other services approved under delegated authority.
  We apply different approval regimes to these areas of work. Approval of 'pre-approved' services is as follows:
  - Up to $50,000 – subject to prior notification to management, this work can be awarded.
  - From $50,001 to $100,000 – requires the Chief Financial Officer's approval.
  - Over $100,000 and with a tender process – if the external auditors are successful in the tender, the appointment requires the Chief Financial Officer's approval.
  - From $100,001 to $250,000 without a tender process – requires the Chief Financial Officer's approval.
  - Over $250,000, without a tender process – requires the Committee's or Committee chairman's approval.

In each case, the nature of the assignment and the fees payable are reported to the Committee.

The Chief Financial Officer can approve other services up to the value of $50,000 and an aggregate value of no more than $100,000. Fees exceeding $100,000 in aggregate require approval from the Committee or the Committee chairman.

At the half-year and year-ends, the Chief Financial Officer and the external auditors report to the Committee on non-audit services performed and the fees payable. Individual services are also reported to the Committee at each meeting that have either been approved since the previous meeting, or that require approval for commencement following the meeting.

All of the non-audit services provided by KPMG in 2020 were either within the predetermined approval levels or approved by the Committee. We are satisfied that the provision of non-audit services by KPMG in accordance with this procedure is compatible with the general standard of independence for auditors and the other requirements of the relevant Australian, UK and US regulations.

Fees for audit and non-audit services

The amounts payable to the external auditors, in each of the past two years were:

	2020 $m	2019 $m
Audit fees	**17.3**	16.4

Non-audit service fees:

Assurance services	**2.2**	2.7
Taxation services	**0.0**	0.1
All other fees	**0.1**	0.0
Total non-audit service fees	**2.3**	2.8
Non-audit: audit fees (in-year)	**13%**	17%

For further analysis of these fees, please see note 38.

None of the individual non-audit assignments was significant, either in terms of the work done or the fees payable. We have reviewed the non-audit work in aggregate. We are satisfied that neither the work done, nor the fees payable, compromised the independence or objectivity of KPMG as our external auditors.

Independence of the external auditors

KPMG are required to provide a declaration to the directors in relation to their compliance with the independence requirements of the Australian Corporations Act 2001 and the professional code of conduct for external auditors. A copy of this is on page 311.

No person who served as an officer of Rio Tinto during 2020 was a director or partner of KPMG at a time when they conducted an audit of the Group.

Effectiveness of the external auditors

We review the effectiveness of the external auditors each year at our meeting in June. We consider the results of a survey containing questions on the auditors' objectivity, quality and efficiency. The survey is completed by a range of operational and corporate executives across the business, and by Committee members. The review in June 2020 related to the outgoing auditors, PwC, and the overall rating was positive. The effectiveness of KPMG will be reviewed in June 2021.

In addition in 2020 the outgoing auditors PwC provided additional feedback to the Committee on the operation of financial processes and the internal control framework within the company, based on recent years' audit experience.

Appointment of the auditors

The Committee has reviewed the independence, objectivity and effectiveness of KPMG as external auditors in 2020 and in the year to date. We have recommended to the Board that KPMG should be retained in this role for 2021, which the Board supports.

KPMG have indicated that they are willing to continue as auditors of Rio Tinto. A resolution to reappoint them as auditors of Rio Tinto plc will therefore be proposed as a joint resolution at the 2021 AGMs, together with a separate resolution seeking authority for the Committee to determine the external auditors' remuneration.

Subject to the approval of the above resolution, KPMG will continue in office as auditors of Rio Tinto Limited.

Risk management and internal controls

We review Rio Tinto's internal control systems and the risk management framework. We also monitor risks falling within our remit, especially those relating to the integrity of financial reporting. A summary of the business's internal control and risk management systems, and of the principal risks and uncertainties we face, is in the Strategic Report on pages 92-95.

Importantly, responsibility for operating and maintaining the internal control environment and risk management systems sits at asset level. Leaders of our businesses and functions are required to confirm annually: that adequate internal controls are in place; that these are operating effectively and are designed to identify any failings and weaknesses that may exist; and that any required actions are taken promptly.

Two management committees, the Executive Committee and the Disclosure Committee, review reports on the Group's control framework. The work they do satisfies the relevant requirements of the Code, the ASX Principles, the NYSE Standards and section 404 of the US Sarbanes-Oxley Act 2002.

The Audit Committee also regularly monitors our risk management and internal control systems (including internal financial controls). We aim to have appropriate policies, standards and procedures in place, and ensure that they operate effectively.

As part of considering the risk management framework, the Committee receives regular reports from the Group financial controller, the General Counsel and the Head of Tax on material developments in the legal, regulatory and fiscal landscape in which the Group operates.

The Board, supported by the Audit Committee, has completed its formal annual review of the effectiveness of our risk management and internal control systems. This review included consideration of our material financial, operational and compliance controls. The Board concluded that the Group has an effective system of risk management and internal control.

Internal control over financial reporting

The main features of our internal control and risk management systems in relation to financial reporting are explained on pages 189-190.

Internal audit programme structure

GIA provides independent and objective assurance of the adequacy and effectiveness of risk management and internal control systems. It also may recommend improvements.

While the head of GIA reports administratively to the Chief Financial Officer, appointment to, or removal from, this role requires the consent of the Audit Committee chairman. The head of GIA is accountable to the chairs of both the Audit and the Sustainability Committees, communicates regularly with both, and attends all regular committee meetings. Our GIA team therefore operates independently of management. Their mandate is set out in a written charter, approved by the Audit Committee. GIA uses a formal internal audit methodology, which is consistent with the Institute of Internal Auditors' (IIA's) internationally recognised standards.

When needed, the team brings in external partners to help achieve its goals. There is a clear policy to address any conflicts of interest, which complies with the IIA's standards on independence. This policy identifies a list of services which need prior approval from the head of GIA.

Governance of the annual plan

Each year's internal audit plan is approved by the Audit Committee and the Sustainability Committee. The plan is focused on higher-risk areas and any specific areas or processes chosen by the committees. It is also aligned with any risks identified by the external auditors. Both committees are given regular updates on progress, including any material findings, and can refine the plans as needed.

Effectiveness of the internal audit programme

The Audit Committee monitors the effectiveness of the GIA function throughout the year, with updates on performance at every meeting.

We are satisfied that the quality, experience and expertise of GIA is appropriate for the business and that GIA was objective and performed its role effectively. We also monitored management's response to internal audits during the year. We are satisfied that improvements are being implemented promptly in response to internal audit findings, and believe that management supports the effective working of the internal audit function.

Ethics, integrity and the whistleblowing programme

The business has a long-established ethics programme, known as *The Way We Work*, supported by a business integrity standard and our whistleblowing programme. The business integrity standard requires employees, core contractors and associates acting for and on behalf of the company to not commit, authorise or be involved in bribery, corruption, fraud and other economic crimes. The whistleblowing programme enables employees, in confidence, to raise concerns about possible improprieties.

The head of Ethics & Integrity reported to the Committee on these matters during 2020. His reports covered a broad range of areas, including ethics, regulatory and compliance issues, and where applicable, any material breaches of *The Way We Work*, the business integrity standard, and our whistleblower programme.

Committee effectiveness

The Committee reviews its effectiveness annually. In 2020, this was accomplished through an internally facilitated evaluation of the Board and its committees.

The performance of the Audit Committee was highly rated, with no areas of concern raised and no significant changes recommended. In terms of improvements, it was agreed that the Committee's programme should continue to develop to ensure an appropriate focus on risk management and risk appetite.

Climate change-related financial reporting

The Directors have considered the relevance of the risks of climate change and transition risks associated with achieving the goals of the Paris Agreement when preparing and signing off the company's accounts. The Audit Committee reviews and approves all material accounting estimates and judgments relating to financial reporting, including those where climate issues are relevant.

Climate change risk is embedded in our central case commodity price forecasts which underpin our accounting judgments and are particularly important in respect to impairment testing and our assessment of mineral reserves and resources. The central case forecasts include carbon price assumptions that are derived from our three scenarios (Realpolitik 2.0, Society 3.0 and Technology 4.0). As only one of these scenarios is aligned with the goals of the Paris Agreement, our central case carbon prices are not consistent with the expectation of climate policies required to meet those goals. Currently, the pace of decarbonisation across the global economy is uncertain and existing climate policies in many countries are not aligned with stated ambitions. The narrative reporting on climate-related matters is consistent with the accounting assumptions and judgments made in this report.

Sustainability Committee Report

We must deliver strong performance, and do so sustainably, while earning the trust of our employees and contractors, partners and host communities – and society at large.

The Sustainability Committee helps oversee the sustainable development of Rio Tinto through the three pillars of its sustainability framework: running a safe, responsible and profitable business; collaborating with stakeholders to build respectful partnerships and enable long-term benefits where we operate; and producing materials essential for human progress, contributing to some of the greatest challenges facing society.

As we look back across 2020, we are deeply sorry and ashamed of the incalculable loss and pain caused by the damage to the Juukan Gorge rock shelters. We did not live up to our values and standards and we must listen and learn from this incident. We are committed to ensuring such an incident never happens again and to rebuilding respectful partnerships with the Traditional Owners of the land on which we operate.

At our best, we come together as a company to navigate the most significant challenges successfully. During the COVID-19 pandemic the response of our teams and communities was outstanding. When the pandemic emerged, in early 2020, our management team and our many thousands of employees mobilised to keep our operations running, safely and reliably. We changed rosters, shifts and safety protocols – including instituting rapid testing at key airports in Western Australia – at times, in a matter of days. Our employees and their families received ongoing health and mental health support. We instituted strict protocols to keep vulnerable communities safe. And through it all, we kept our customers supplied with the high-quality products they have come to expect from Rio Tinto.

This year we also recorded our second straight year of zero fatalities, which is an important milestone in our nearly 150-year history. This Committee commends our thousands of employees and contractors who worked hard to achieve this shared goal. I am also pleased to report that the number of potentially fatal incidents and occupational health illnesses decreased, year over year, and the number of people injured on the job fell by nearly 12%.

While we are proud of the safety performance of our teams, we are also focused on continuous improvement. We continue to analyse and learn from actual and potential significant incidents to prevent them happening again, and our critical risk management (CRM) programme – in which frontline teams verify that fatality prevention controls are in place before starting work – continues to be a key focus in our efforts to prevent an incident or injury occurring. This year over one million verifications of controls were made.

We must deliver strong business performance and earn the trust of our people, the trust of our stakeholders and partners and the trust of society by helping to address global challenges. We are committed to building this trust and will dedicate the required time and resources to achieve this goal.

The destruction of the rock shelters at Juukan Gorge was, for me, profoundly affecting and shameful. I offer my heartfelt apologies to the Puutu Kunti Kurrama and Pinikura (PKKP) people as well as to the many others affected, including Traditional Owners and other Indigenous and First Nations people in Australia and globally. I join the Board, the management team and the employees of Rio Tinto in my dedicated commitment to ensure something like this does not happen again.

We are redoubling our efforts to better manage our relationships with our host communities around the world, and particularly with Traditional Owners in Australia. In November, the Chairman and I met with the board of the PKKP people as well as nine Traditional Owners groups on whose land we operate across the Pilbara, in Western Australia. We listened to the hurt and pain that had been caused by Juukan Gorge and where our partnership relationships needed to be improved. The Board and this Committee are both committed to continuing this dialogue so that the voice and guidance of the Traditional Owners is reflected in the actions we take to improve, and regain the trust we have lost.

Those actions have already begun. This Committee continues its oversight of the implementation of the recommendations made in the Board Review (available in its entirety on riotinto.com). These changes include modernising our agreements with Traditional Owners, increasing the responsibility of our operating units for our Communities and Social Performance (CSP) partnerships and engagement, and establishing a CSP Area of Expertise to support the product groups, and to deliver a more rigorous assurance of our standards across operations. We have also enhanced the controls and governance at our Pilbara iron ore business for the management of activities with potential to impact cultural heritage sites. You can read more about our actions on cultural heritage on pages 10-11.

Another important change needed, also identified in the Board Review, is culture. By and large, our employees tell us they enjoy their work and their workmates, and the result over the past few years has shown a consistently improving trend in many areas. However, the company would benefit from fostering more inclusivity – a culture that is more accepting of challenge and different perspectives from all levels, and importantly, one in which a wider range of voices is at the table, and heard. In this context, we have committed $50 million to develop the required skills and capabilities to increase Indigenous representation and leadership across our business in Australia. We are committed to doing more, and will continue to report on actions and progress.

With regard to other risks, this year, the Sustainability Committee studied control frameworks that govern risk management for major underground events, major slope geotechnical events and mine closure. We oversaw a review of risk management at joint venture operations not managed by Rio Tinto.

We also oversaw a review of our control framework for tailings dams and water storage and continued to monitor updates to the Rio Tinto standard and procedure for management of tailings and water storage facilities, as well as updates to the Global Industry Standard for Tailings Management, published in August by the Global Tailings Review.

Climate change remains a pressing global challenge, and Rio Tinto remains committed to being part of the transition to a low-carbon future. The Committee supports the Board in its strategic response to climate change and in monitoring the Group's performance against our targets and aspirations. We oversee the work being done with our customers and suppliers, across the value chain, to manage emissions through innovative and focused partnerships.

Finally, as you will see on page 65, this year this Committee oversaw the selection of goals to focus our company's contribution towards achieving the United Nations Sustainable Development Goals (SDGs). Our new approach will allow better understanding of how our business can have the most meaningful impact on the biggest challenges faced by society.

As we look to the future, the Sustainability Committee is committed to provide governance and oversight as Rio Tinto, its management team, employees, contractors and partners together make strides to strengthen the company's sustainability performance, build trust with our people, our partners and stakeholders and build trust with society. As a result we look forward to making an even greater contribution to the health and strength of the countries and communities so many of us call home.



Megan Clark
Sustainability Committee chair

22 February 2021

Sustainability Committee Report
continued

Sustainability Committee members

Megan Clark (Chair)	Michael L'Estrange
David Constable*	Jennifer Nason
Hinda Gharbi	Simon Thompson
Simon Henry	Ngaire Woods
Sam Laidlaw	

* A member during 2020, stood down at the end of 2020.

Our key responsibilities

The purpose of the Sustainability Committee is to help the Board oversee the sustainable development of Rio Tinto as a business, as well as Rio Tinto's contribution to the sustainable development of the communities and countries in which we operate, and to global sustainable development.

The Committee does this by overseeing, on behalf of the Board, key areas of sustainable development: health and safety, environment (including climate change, and closure and legacy management) and asset security.

The Committee also oversees Rio Tinto's relationships with communities and its social performance, including cultural heritage management and relationships with Traditional Owners, the economic and social development of the communities in which we operate, and sustainable development issues as they relate to suppliers and supply chains. In relation to these important areas we oversee company performance, monitor compliance with company responsibilities and commitments, and review the effectiveness of controls designed to manage the associated risks.

The Committee has the authority and ability to investigate all matters falling within its terms of reference. These terms of reference are published on the Rio Tinto website, and feature a full list of our responsibilities, which include:

- Reviewing the Group's relevant policies, and overseeing the management processes designed to ensure compliance with them.
- Monitoring management's commitment to the behaviours required by those policies and standards.
- Assessing the Group's health, safety, security, environment and Communities and Social Performance framework.
- Reviewing reports from management on fatalities and other serious incidents, considering recommendations for improvement, and receiving follow-up reports on their implementation.
- Making recommendations to the Board's Remuneration Committee in relation to appropriate metrics for incentive plans for the executive team relating to safety and other applicable sustainable development matters, and the annual performance against those applicable metrics.
- Reviewing and approving the proposed annual plan for independent audit and assurance projects within our scope, and reviewing their outcomes and recommendations.
- Carrying out a formal review each year of the role and responsibilities of our Committee, its organisation and effectiveness, and its terms of reference.

Our year in review

We met six times in 2020, covering a wide range of activities, which are summarised below. In addition, we participated in six roundtables with civil society organisations and investors on sustainability issues. These meetings provided valuable feedback to Rio Tinto.

Health and safety

The Committee receives regular updates through the year in relation to the Group's safety performance across a range of key indicators.

Recognising that we must continue to learn from both actual and potential significant incidents to prevent them happening again, in 2020 the Committee examined the circumstances leading to, and key learnings from, the following incidents:

- A potentially fatal incident involving two AutoHaul™ trucks in December 2019 at Yandicoogina, Western Australia;
- A potentially fatal underground rock fall in August at the Diavik diamond mine, in the Northwest Territories, Canada; and
- An incident in October at Richards Bay Minerals, South Africa, in which an employee suffered a permanent disabling injury.

Other work relating to health and safety undertaken by the Committee this year included:

- Receiving regular updates on the steps being undertaken to ensure Rio Tinto's employees and contractors remained safe from COVID-19.
- Reviewing comparative safety performance data across peer companies.
- Receiving a report on Rio Tinto's control framework in relation to underground hazards, including observed incident trends from the major hazard incident tracking programme, and the development of remote assurance capability for the control framework in light of the impacts from COVID-19.
- Receiving a report on Rio Tinto's slope geotechnical hazard management and the Group's governance and assurance framework for these risks.

Environment, including climate change

Our work supporting the Board on environmental and climate change issues has included the following:

- Reviewing and approving the Group's report 'Our approach to climate change', released in February 2020.
- Oversight of the review of our control framework for tailings dams and water storage, and receiving an update on the new Global Industry Standard for Tailings Management.
- An update on the Group approach to environmental stewardship, risk-based improvement work and the underlying strategic plan that considers the changing operating environment.
- Monitoring progress against our climate change targets, and related projects, partnerships, and physical resilience work.
- A briefing on a Process Safety Management incident involving a caustic spill at Yarwun Alumina Refinery, in Queensland, Australia.

Communities and Social Performance

The Committee approves annually the Group's Communities and Social Performance plan and priorities, and receives annual updates of progress against the Group's CSP targets.

Following the destruction of the rock shelters at Juukan Gorge in May 2020, the Committee has undertaken the following activities:

- Monitored the work undertaken for the independent Board Review into the destruction of the rock shelters and oversaw the implementation of the recommendations of the Board Review.
- Oversaw a review of the controls in place within Rio Tinto Iron Ore for the management of activities with potential to impact cultural heritage sites.
- Monitored the joint process to work together with the Puutu Kunti Kurrama and Pinikura People (PKKP) to repair, improve and grow the relationship.

The Committee also oversaw changes to the Group's Communities and Social Performance function, and the establishment of the CSP Area of Expertise within the Safety, Technical and Projects function. We have fully integrated responsibility for management of cultural heritage into our mining operations so that our product groups will have primary responsibility for our Communities and Social Performance partnerships and engagement. This means that our mine management in the Pilbara will now be responsible for the relationships with the relevant Traditional Owners. The Area of Expertise team will own the relevant CSP standards and procedures, including in relation to cultural heritage, to ensure our best practices are consistent globally. The Area of Expertise team will also provide the second line of assurance on CSP performance and risks and ensure we have the right people with the right skills in the right locations. In addition, our Internal Audit team will provide the third level of assurance in relation to our CSP performance and risks, reporting directly to the Committee.

The Committee is also receiving ongoing updates on a continuing qualitative review of major CSP risks across the Group.

We continued to provide oversight of the Group's CSP strategy and performance.

The Committee has overseen a review of CSP metrics and targets and has reviewed the proposed approach for new targets to be adopted in 2021 and subsequently for 2022-26.

We supported the Board in its review of the Group's 2019 modern slavery statement.

Some of the initiatives we have overseen in relation to human rights, and the work being done to contribute to our local communities, are set out in the Sustainability section on pages 72-74 and 78 of this report.

Closure and remediation
We oversaw a review of the Group's closure strategy, the 2020 closure work plan and the control framework for the management of the risks associated with mine closure planning and implementation.

The Committee has also reviewed plans for the closure and rehabilitation of the Ranger uranium mine in Northern Territory, Australia, following the cessation of mining and processing activities in January 2021.

Security
The Committee's oversight of security included receiving reports on the various security incidents affecting operations at Richards Bay Minerals between November 2019 and January 2020.

United Nations Sustainable Development Goals (SDGs)
This year we decided to focus our future contribution on two leading SDGs: responsible consumption and production, and decent work and economic growth. The continual update of our sustainability metrics and targets will help communicate our global support.

Governance, risk, assurance, executive incentives, and disclosure
Each year, in a joint session with the Audit Committee, we review the Company's risk management and internal controls systems to support the Board's risk disclosures in the Annual Report.

We also review a selection of the Group's key risks associated with health, safety, security, environment, and Communities and Social Performance.

In February, the Committee received a report on a review of the effectiveness of Rio Tinto's operating model for the health, safety, environment and security functions implemented through 2018 and 2019. The review included internal stakeholder feedback from site management on the model's implementation. Following further development and refinement of the operating model during 2020, the Committee received a further presentation in October on the updated model, implementation of which was completed in December.

The Committee sees transparency as an important part of Rio Tinto's approach to sustainability, and we encourage disclosure of sustainability-related information both proactively and in response to regulatory requirements.

We reviewed and approved an assessment of the Group's most material sustainability topics to be reported on in the 2020 Annual Report and the Sustainability section of our website. This assessment combines feedback from internal leaders and subject matter experts, and considers stakeholder expectations as well as an analysis of the external environment.

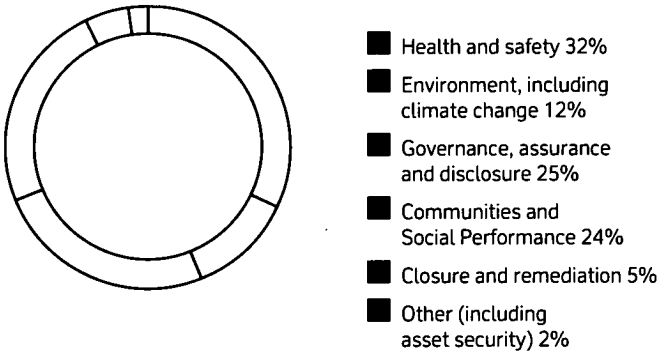
Our other work included:

- Reviewing the impact of the COVID-19 pandemic for assurance across the Group's technical risk areas due to the restrictions on travel and on the ability to do assurance on-site.
- The management of material risks at Rio Tinto's non-managed joint venture sites.
- Receiving a report on assurance process for Major Hazards reviews across the Rio Tinto Group.
- Reviewing the 2019 Sustainability Report, the Sustainable development sections of the 2019 Annual Report, and Rio Tinto's 2019 slavery and human trafficking statement.
- Reviewing the performance outcomes under the Group's 2019 short term incentive plan in relation to safety, and the design for the 2020 safety targets.
- Reviewing the approach to short-term incentive ESG and safety targets for 2021.
- Receiving a report on the external assurance programme in relation to the Group's external sustainability reporting, and in relation to the safety performance data supporting the safety performance outcomes under the short term incentive plan.
- Reviewing the Committee's scope and responsibilities as reflected in its terms of reference.

The Committee participated in a virtual site visit to the Oyu Tolgoi mine and development project in Mongolia, in which we reviewed our community engagement and partnerships.

In addition, the Committee conducted an evaluation of its processes and performance. Following this review, areas of focus going forward include increasing the number of meetings per year, managing the size of the Committee's agenda to allow due consideration of key issues, and an increased focus on cultural heritage.

Use of Committee meeting time in 2020



This illustration does not include time spent by the Committee on administrative items or attending site visits.

Our process

The Chief Executive; the Group Executive, Safety, Technical & Projects; the Chief Legal, Governance & Ethics Officer; the Head of Risk; and the Global Head of Health, Safety, Environment and Security all regularly attend our meetings.

The Committee chair reports to the Board after each meeting, and our minutes are tabled before the Board. All directors have access to the Committee's papers.

Our sustainable development strategy and performance are described in detail on pages 62-91 of this report as well as in our climate change report, which can be found on our website.

Annual Statement by the Remuneration Committee Chairman

The Committee's overarching purpose is to ensure the remuneration structure and policies reward fairly and responsibly.

In accordance with the triennial policy cycle, we will be submitting our Remuneration Policy (the new Policy) to shareholders for their approval at our 2021 AGMs.

Changes to our Remuneration Policy (the current Policy) are summarised at the end of this statement on page 144. The full Remuneration Policy can be found on pages 152-158.

On behalf of the Board, I am pleased to introduce our 2020 directors' Remuneration Report.

I would like to begin by acknowledging the challenging year we have faced. We deeply regret the events at Juukan Gorge and have unreservedly apologised to the Puutu Kunti Kurrama and Pinikura (PKKP) people. The destruction of the rock shelters should not have happened, and we are absolutely committed to listening, learning and changing.

We have also dealt with the impacts of the COVID-19 pandemic. In the face of these unprecedented challenges, I am proud of how our employees responded and remained focused on delivering strong operational performance, and above all, keeping each other safe.

One of the key focus areas for the Committee during 2020 hasbeen a detailed review of our Remuneration Policy ahead of it being submitted for shareholder approval at our 2021 AGMs. At this stage we are not proposing significant change, as the Committee believes the current Policy has served our stakeholders well, a view supported throughout my shareholder consultations over the last 12 months. The Committee's overarching purpose remains ensuring our remuneration structure and policies reward fairly and responsibly with a clear link to corporate and individual performance, aligning our remuneration outcomes with the delivery of long-term value.

Remuneration Committee members

Sam Laidlaw (Chairman)	Jennifer Nason
Megan Clark	Simon Thompson
Simon McKeon	Ngaire Woods

Juukan Gorge

This year was one of the most challenging in Rio Tinto's history. The destruction of the Juukan Gorge rock shelters on the land of the PKKP people in Australia should not have happened and it does not reflect our values as a company.

Following the events that occurred at the Juukan Gorge, the Board conducted a review of our cultural heritage management processes, procedures, reporting and governance. The Board's Review published on 24 August 2020 concluded that no single act of commission was responsible for the tragic events that occurred, rather it was the result of a series of systemic failures in the heritage management system over a considerable number of years. The Board concluded that the Chief Executive, Chief Executive Iron Ore and Group Executive Corporate Relations were however ultimately responsible for implementing fit for purpose management systems and would not therefore receive any 2020 short-term bonus. In addition, for the Chief Executive, a further reduction of £1 million would be applied to the vesting of his 2016 long term incentive plan (LTIP) award.

Following the publication of the Board Review on 24 August 2020, the Board engaged extensively with shareholders, Traditional Owners, Indigenous Leaders and other stakeholders. Despite general support for the changes recommended in the Board Review, it became clear that a number of stakeholders felt that the proposed financial penalties, per se, were insufficient and that to rebuild relationships with the Traditional Owners and other Australian stakeholders, changes of leadership were required to move the company forward. At the conclusion of this intense period of engagement, the Board unanimously concluded that the positions of the three executives had become untenable and initiated discussions to agree mutual separation terms, with executives treated as eligible leavers under the terms of their employment contracts and the LTIP plan rules.

In making the eligible leaver determination the Board fully recognised the gravity of the destruction at Juukan Gorge but was mindful that the three executives did not deliberately cause the events to happen, they did not do anything unlawful, nor did they engage in fraudulent or dishonest behaviour or wilfully neglect their duties. Without diminishing the significance of what occurred it was necessary to balance the findings of the Board Review, the malus adjustments that had been applied and the loss of employment for the three individuals, against the considerable achievements of those executives over many years, in making the final determination on their separation terms. In this context, the loss of employment was considered the greater sanction.

The full details of the separation terms for each executive which are in accordance with the Policy and their contractual terms are included on pages 169 and 174.

Remuneration Policy

We undertook a thorough review of our current Policy in 2020 as part of which we revisited the merits of restricted stock. We remain of the view that for a long-term cyclical business such as ours restricted stock has some logic. However it was very clear from our discussions with shareholders across different geographies that a significant proportion still prefer a performance tested long-term programme. We are therefore not proposing significant changes to the structure of the current Policy at this time.

Overall, the current Policy has served us well but the Committee felt there was scope for simplification and opportunity to align certain aspects more closely to shareholder and broader stakeholder expectations. Key aspects reviewed in detail included the overall quantum and the individual components of the remuneration package in terms of market positioning, the pay mix, executive pensions in the context of the provisions applicable to the broader workforce, and the performance metrics underpinning the short term incentive plan (STIP) and LTIP. As a result, we are proposing some changes which are outlined on pages 144-145 which includes an extension of our malus and clawback provisions to cover events that have a material impact on our social licence to operate.

On appointment as Chief Executive, Jakob Stausholm's pension benefit has been set at 14% of salary, which is in line with our new Policy to provide retirement benefits consistent with other employees in the Group. Previously, the maximum pension contribution for new appointments was 25% of salary. The weighted average contribution rate for UK and Australian based employees is around 14%. All members of the Executive Committee will be aligned to this level from 2021, except for the Chief Operating Officer who will retain the previous contribution level until his retirement in 2022. The target STIP of the Chief Executive is also being reduced from 120% of base salary to 100% of base salary with the removal of the previous 1.2 multiplier.

A key change proposed to our current Policy is to allocate half of the individual component of STIP (15%) to specific Environmental, Social and Governance (ESG) metrics. These will represent a bundle of targets related to our climate change initiatives comprising annual milestones towards the achievement of our 2030 targets, diversity and inclusion to reflect the communities in which we operate, and governance of our cultural heritage management and other risk-related areas. This proposed change was widely supported in our shareholder consultations this year. It was also clear from the feedback that shareholders want to see meaningful, transparent, quantifiable targets which tie to the broader strategy across the ESG dimensions whilst recognising that there are no easy solutions that readily tick all these boxes. Whilst the Committee is fully committed to setting ESG targets that meet most, if not all, of the above criteria, this will be an aspect that we expect to evolve over time. Our 2021 approach to ESG is set out on page 145.

While our policy review has confirmed the appropriateness of our current approach, we will continue to monitor the executive pay debate, as our shareholders would expect. We remain keen to explore any alternate arrangements that simplify remuneration, drive a balanced focus on the short and long-term, align outcomes with Group performance, drive the right behaviours, limit the potential for excessive outcomes, and deliver our objective to attract, retain and appropriately reward talented executives and will continue to engage with shareholders on this subject.

Chief Executive succession

The Committee's work this year was also focused on the remuneration implications of our Chief Executive's succession. Jakob Stausholm was appointed Chief Executive effective 1 January 2021. The terms of his appointment announced in December 2020 reflected the rules of our incentive arrangements and the new Policy that is being put to shareholders at the 2021 AGMs. Fixed pay on appointment was set at £1.311 million per annum, inclusive of base salary of £1.15 million per annum and a pension contribution of 14% base salary. This level of fixed pay will be a reduction of more than 10% from Jean- Sébastien Jacques' fixed pay of £1.467 million per annum. Further information in respect of Jakob Stausholm's remuneration is provided on page 169.

New executive appointments

The executives appointed into new roles on the Executive Committee set out on pages 118-119 have all been appointed on terms aligned with the new Policy set out in this Report.

COVID-19

Like all organisations, Rio Tinto was faced with navigating the COVID-19 pandemic. We could not have foreseen the challenges that would arise in 2020, but we continued to perform well and deliver to plan. Our executive team managed a rapid and effective response to COVID-19, without needing to furlough any employees without pay, seeking any government assistance, or cancelling dividends. We were fortunate to remain operating as an essential industry and continued to make a valuable contribution to the communities and economies in which we operate.

Thanks to the collective hard work of the entire organisation, we remained focused on our core priorities – the health and safety of our people and communities, the safe running of our operations to serve our customers, the focus on keeping our business and profits strong, maintaining positive partnerships with communities and governments, and above all, staying resilient.

Annual Statement by the Remuneration Committee Chairman continued

During 2020 we have seen outstanding examples of collaboration, speed and agility as our employees came together to tackle the complex issues of COVID-19 and overcome these hurdles to keep our operations running safely. We now look to the future to use the challenges presented by COVID-19 as an opportunity to strengthen our company and our position in the market even further.

2020 remuneration outcomes in the context of broader business performance

Short term incentive plan

Financial performance

In our At a glance section on page 146, and on page 163, we retrospectively disclose the financial STIP targets set by the Board for 2020.

To remind you, in considering financial performance against the annual plan, we measure half against the original plan; the other half is "flexed" to exclude the impact of fluctuations in exchange rates, and quoted metal and other prices during the year, which are outside management's control. We have used this approach consistently since 2005 for measuring our earnings performance, and have flexed the cash flow outcomes since the introduction of this measure in the STIP in 2009. When commodity prices rise, or there are favourable exchange rate variations, we protect shareholders by ensuring that 50% of the STIP opportunity (as relates to financial performance) is denied the benefit of that rise. When the reverse happens, and commodity prices fall or there are negative exchange rate variations, that STIP opportunity is safeguarded (as to 50%) against the fall. Our view is that this approach maintains appropriate incentive for executives, even in times of significant market volatility.

Notwithstanding the unprecedented challenges posed by the pandemic, the Group's overall financial performance was very strong, substantially aided by a favourable pricing environment for key commodities. On a flexed basis, earnings were just below and cash flow results were above target, while on an unflexed basis both earnings and cash flow results exceeded the outstanding range. Together, the outcomes resulted in an unadjusted Group performance against the financial targets of 77% of maximum. As in prior years the Committee considered whether any adjustments were warranted to ensure the outcome was a fair reflection of underlying performance. The Committee noted the COVID-19 related expenditure incurred in ensuring our operations continued to run safely which reduced the Group result by 2% but determined not to make any related adjustments or any other adjustments, recognising the impact of the pandemic on business and society globally.

Safety performance

In 2020 Rio Tinto achieved its second successive fatality free year. This achievement has been accomplished through leadership commitment to safety, implementation of critical risk management across our operations, increased sharing and analysis of incidents that have the potential to result in a fatality, and the continued implementation of the safety maturity model with its focus on leadership and coaching. Overall, the combined performance against our safety measures meant that the Group's STIP safety result was above target at 74% of maximum and the STIP safety results for all executives were above target.

2020 STIP awards

The 2020 STIP award for Jakob Stausholm is 71.3% of maximum. This includes a personal performance score of 60%, which balances strong leadership and contribution during the year with the events that occurred in 2020. As a result of the malus adjustment, Jean-Sébastien Jacques will not receive a 2020 STIP award.

Long term incentive plan

The estimated vesting for the 2016 award, combining the two TSR and EBIT margin portions, is 66.7% of maximum. In the context of the Group's overall performance during the five-year performance period and the shareholder experience over that timeframe, the Committee concluded that the vesting of awards was justified. Given Rio Tinto's strong share price performance since the grant of this award, 47% of the estimated vesting value relates to share price appreciation.

The portion of the award relating to TSR vested on 18 February 2021. The Committee will make a final determination of the relative improvement in the EBIT margin measure when the final EBIT margin performance of the comparator group companies becomes available in May 2021. If applicable, this portion of the award will vest on 31 May 2021.

Notwithstanding the substantial malus adjustment applied to Jean-Sébastien Jacques which includes a £1 million reduction to his 2016 LTIP vesting, his 2020 single total figure of remuneration is higher than 2019. This is due to the significant share price appreciation since grant of the 2016 LTIP and it being the first award he received in his capacity as Chief Executive. No LTIP award is due to vest for Jakob Stausholm who received his first award in 2018.

Pay in the broader context

Each year, the Board looks forward to engaging with our employees all over the world. Over the last several years, the Board has held events with employees across each of our major geographies, complemented by smaller town halls in more remote operating locations to ensure there remains widespread engagement. Much has changed over the past year, but as we respect travel restrictions, physical distancing and other safety measures, the Board's enthusiasm to engage with employees remains as strong as ever. The COVID-19 pandemic has challenged all of us to think and do things differently. The Board has adapted its style of engagement to virtual discussions across a broad range of topics including pay. The Committee remains cognisant of executive pay in the broader context of a post COVID-19 world, ensuring the new Policy reflects the desired attributes of fairness, transparency, simplicity, proportionality, and alignment to broader organisational culture.

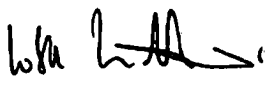
The CEO pay ratio of 81:1 is primarily driven by the LTIP vesting which ties closely to the shareholder experience over the relevant period which saw TSR increase by 210%.

Fairness and genuine care for the health and wellbeing of employees are key pillars of our approach to reward and benefits across the Group. These have underpinned the Group-wide response to the pandemic and continue to guide us. Pages 148-149 provide more insight into our approach to reward applicable to the broader employee population.

Our focus on pay equity is evident in our gender pay metrics on which we continue to make progress. Pay equity is a key pillar of our annual remuneration approach. The gender diversity in senior management roles also remains a key aspect of our broad agenda on diversity and inclusion. Further details of both equal pay and the gender pay gap, together with a wider discussion on diversity and inclusion, are provided in the Sustainability Report on pages 75-76.

As always, I welcome shareholder feedback and comments on the 2020 Remuneration Report.

Yours sincerely



Sam Laidlaw
Remuneration Committee Chairman

22 February 2021

Frequently asked questions

How does the new Policy ensure remuneration has a strong link to performance?

Outstanding business and individual performance are required to achieve the maximum level of remuneration. This comprises:

- outstanding performance against financial, health and safety, and individual STIP measures; and
- TSR outperformance against both the EMIX Global Mining and MSCI World indices, currently 6% per annum over five years.

The Committee believes that if these levels of performance are achieved, shareholders will benefit over time from superior returns.

How does the new Policy safeguard against reward for failure?

The Committee retains discretion in relation to all incentive outcomes and can therefore adjust payouts to ensure alignment to performance and shareholder experience.

Incentive awards are also subject to a broad malus, clawback, and suspension policy that provides the Committee with the ability to ensure that there is no payment for failure. We have further expanded this in our new Policy to cover events that materially impact our social licence to operate.

How did you arrive at a 14% pension contribution level for executives?

The 14% pension contribution rate is reflective of the average contribution rate received by our UK and Australian employees.

How will you ensure that the ESG measures are appropriate?

The Board is clear on ESG factors that are material to the creation of shareholder value – climate change, cultural heritage and diversity and inclusion. We have identified measures for each of these, but acknowledge that as we undertake this journey, they are likely to be refined and improved with experience and adjustments to strategy, as we do with all incentive measures.

What penalties were applied to executives for the Juukan Gorge event?

As a consequence of the event, the Chief Executive, Chief Executive Iron Ore and Group Executive Corporate Relations left the company. In addition, the entire 2020 STIP was forfeited by the three executives. The Chief Executive also had a malus adjustment of £1 million applied to his 2016 LTIP.

What changes have you made to incentive metrics?

The key change for 2021 has been the introduction of ESG measures into the STIP. These targets are related to our climate change initiatives towards the achievement of our 2030 targets, diversity and inclusion to reflect our external partnerships and the communities in which we operate, and governance of our cultural heritage management and other risk-related areas.

When considered alongside the existing STIP and LTIP measures, the Committee remains satisfied that the measures are closely aligned with our strategy and meet the criteria of simplicity and fairness.

In future years, the focus of the measures may need to be adapted to ensure they continue to support long-term value creation. The new Policy therefore enables the Committee to vary metrics for future awards. We would undertake appropriate consultation with our major shareholders prior to making any material changes in our approach.

Are overall pay levels appropriate?

The Committee is mindful of setting pay at an appropriate level and continues to be thoughtful in its approach to pay.

The company operates in a highly competitive and global talent market, and we need to set pay at a level which enables the company to attract and retain high quality people who are capable of managing and growing the business. This is essential to generate superior returns for our shareholders.

We remain committed to aligning pay with performance. Remuneration levels towards the upper-end of the payout scale are only delivered when justified by outstanding performance. The Committee pays close attention to pay practices in the wider Group, to ensure fairness and consistency in decision making. The Committee also retains the discretion to vary incentive outcomes (including negative adjustments) where they do not fairly reflect performance.

Overall, the Committee remains comfortable that a fair balance has been struck between pay and performance.

Remuneration at a Glance

Summary of remuneration changes for 2021

Our current Policy was approved by shareholders at our 2018 AGMs and is binding for executive directors.

Overall, the current Policy has served us well and we are not proposing changes to the underlying architecture of the Policy. However, we have taken the opportunity to simplify and align certain aspects more closely to the evolving governance and socio-economic landscape, as well as investor and broader stakeholder expectations. The key changes to the new Policy and its implementation for executive directors are summarised in the table below. For the full detail of the new Policy see pages 152-158.

Element	2018 Policy	Proposed changes for 2021
Base salary	– Base salaries are reviewed annually by the Committee. – Any increase is normally aligned with the wider workforce. – Maximum individual increase of 9%, or inflation if higher, per annum.	– Maximum individual base salary increase to be 5% plus CPI per annum. – Jakob Stausholm's salary has been set at £1.15 million.
Pension or superannuation	Rio Tinto may choose to offer: – Participation in a pension plan, superannuation fund or cash payments in lieu of pension contributions. – For appointments made from 1 June 2018, the maximum level of company contribution to an executive director's scheme annually is 25% of base salary.	– Pension benefit reduced to 14% of base salary for new appointments to align more closely with the broader employee population. Applies to Jakob Stausholm from 1 January 2021.
Benefits	Executive directors are eligible to receive benefits which may include healthcare, allowance for professional tax services, company car or car allowance, and international relocation allowance and benefits.	– Company car or car allowance to be removed for new appointments. Removed for Jakob Stausholm from 1 January 2021.
Short term incentive plan (STIP) including Bonus Deferral Award (BDA)	– At least 50% of the measures will relate to financial performance and a significant component will relate to safety performance. – 25% of maximum is awarded for threshold performance; 50% for target; and 100% for outstanding. Between threshold and target, and between target and outstanding, the award is pro-rated on a straight line basis. The percentage award is multiplied by 1.2 subject to the 200% cap although this was not applied to Jakob Stausholm on appointment to Chief Financial Officer. – The Committee retains the right to exercise discretion, both upwards and downwards, to ensure that the level of award payable is appropriate. – 50% of the STIP is delivered in shares that are deferred for three years as a BDA with the remainder of the STIP delivered in cash with no deferral. – Maximum opportunity is capped at 200% of salary for each executive. – Malus, clawback and suspension provisions apply to the STIP and BDA.	– Removal of 1.2 multiplier on STIP. – Introduction of an ESG component with a 15% weighting. – Extended the malus and clawback provisions to include material impacts on our social licence to operate. – Reduce the payment at threshold to zero and balance the range between threshold and outstanding, removing the cliff edge effect of the current Policy.
Performance Share Awards (PSA) under the long term incentive plan (LTIP)	Annual awards are made under the LTIP. Performance is measured against total shareholder return (TSR) relative to the EMIX Global Mining Index (50%) and to the MSCI World Index (50%). – Awards have a maximum face value of 438% of base salary (excluding dividend equivalents). – The awards have an expected value of approximately 50% of face value. – The maximum threshold value is 98.6% of base salary (being 438% x 22.5%). – How performance is generated is as important as what level of performance is delivered. Before vesting, the Committee will satisfy itself that relative TSR is an appropriate measure of the underlying performance of the business, and may adjust vesting accordingly. – Malus, clawback and suspension provisions apply.	– Maximum LTIP award to be reduced to 400% (excluding dividend equivalents). – Extended the malus and clawback provisions to include material impacts on our social licence to operate. – TSR to remain a key performance metric. – Other performance conditions may be incorporated in alignment with the company's strategic objectives.
Shareholding guidelines	Executive directors should build up a shareholding in Rio Tinto equivalent in value to: – Chief Executive: four times base salary. – Other executive directors: three times base salary.	– Executive directors will be required to retain their minimum shareholding (or their holding on termination, if lower) for two years after leaving the Group.

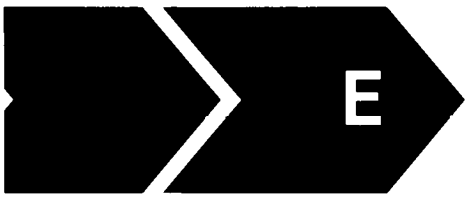
Other Executive Committee members

The Remuneration Policy is broadly applied to other members of the Executive Committee who are not directors. Potential variations in implementation may include lower shareholding requirements and STIP deferrals.

Incorporation of ESG into the Remuneration Policy

The social and environmental challenges facing the world and our business, together with investor and broader societal expectations and the events at Juukan Gorge, have highlighted the need for Rio Tinto to fully integrate environmental, social and governance ('ESG') performance management into the way we operate across our business.

A key enabler for success is a clear focus on the objectives that directly drive performance across each pillar and we believe that by linking pay outcomes to the achievement of these objectives this focus will be further strengthened. In addition to safety, which makes up 20% of the STIP, from 2021 15% of the STIP will be focused on specific E, S and G objectives. Set out below is the rationale for this change and the broader context within which the 2021 targets (see pages 172-173) have been set.



Environment

Climate change is one of the key long-term environmental challenges facing us as well as a source of potential opportunities. We must and want to be part of the solution. The targets set are driven from our roadmap to execute against our climate change ambitions. As we are neither able to control nor accurately measure scope 3 emissions, our strategy remains to impact positive change in this area through partnerships focused on the decarbonisation of the value chain.

In support of the four pillars of our climate change strategy, our focus is on three key dimensions:

- Strengthen our overall strategic approach to climate change including developing a carbon offset strategy and review of design standards for new projects.
- Progress on our emissions and abatement projects.
- Progress on our partnerships strategy across our value chain to ensure alignment with our climate change ambition.

Please refer to "Our Approach to Climate Change 2020" for more detail.

We will focus our 2021 'E' component on progressing our emissions and abatement projects and partnerships.



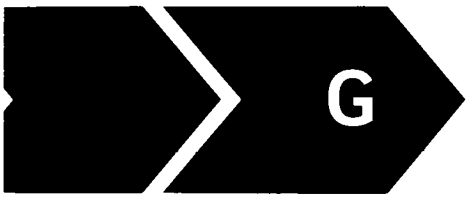
Social

The need for us to be reflective and representative of the communities in which we operate has never been more important. Alongside this, it is imperative that the work environment is one where everyone feels included, respected and heard.

Our aspiration is to have an environment where all aspects and dimensions of diversity are represented and celebrated but we need to focus our efforts to have an impact. Local and indigenous employment is a key priority in each of the countries in which we operate and we continue to have local targets and investment. The nationality diversity of our leadership teams will also become a greater priority.

We will continue to measure how we evolve our culture and improve inclusion through multiple channels, including our regular people survey. In addition, we are finding meaningful ways of measuring how the communities in which we operate, our customers and broader stakeholders see us to provide another lens on culture and organisational health.

We will focus the 2021 'S' component on improving the representation of women. This is a visible diversity that represents half of the population and is currently significantly underrepresented. Increasing female representation will help create an environment that is better prepared to welcome all other forms of diversity.



Governance

Following publication of the Board Review on Cultural Heritage Management, we developed an action plan (the Trusted Partnership Program – TPP) to address the specific findings and implement the recommendations of the Board Review. The actions map across a number of topic areas and groupings. Although the TPP seeks to address specifically the learnings from Juukan Gorge, with a clear and important focus on Australia, it is part of a Group-wide focus on rebuilding trust and strengthening our communities, partnerships and heritage function and engagement across all of our operations.

For 2021, we will measure under the 'G' component progress made on a Group level in the social performance function, on assurance and organisation alignment.

Remuneration at a Glance
continued

2020 remuneration outcomes

Executive director remuneration (£'000)

The charts below set out the maximum and actual executive remuneration, as calculated under the UK regulations. As explained on page 150, there are differences in both reporting and methodology for measuring remuneration under the Australian regulations.

Chief Executive
Jean-Sébastien Jacques

2020 Actual remuneration (percentage of maximum)



2020 Threshold remuneration (percentage of maximum)



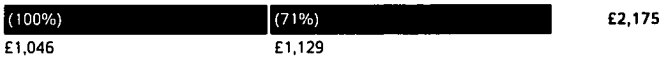
2020 Maximum remuneration



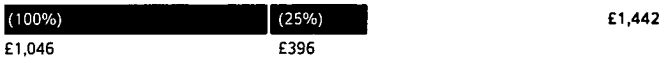
■ Fixed ■ STIP ■ LTIP

Chief Financial Officer
Jakob Stausholm

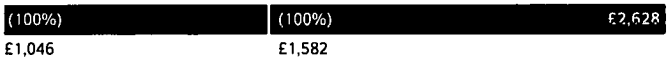
2020 Actual remuneration (percentage of maximum)



2020 Threshold remuneration (percentage of maximum)

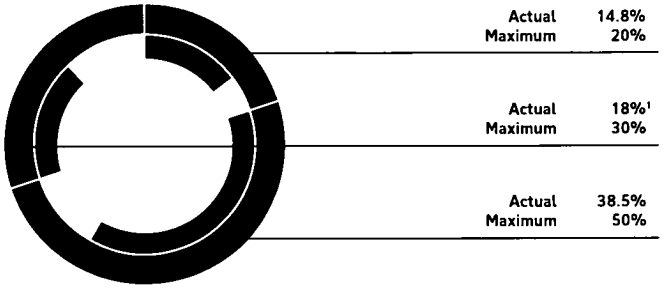


2020 Maximum remuneration



■ Fixed ■ STIP

2020 short term incentive plan



■ Safety performance ■ Financial performance ■ Individual performance

1. Chief Financial Officer

Safety performance is measured in three areas:

Binary fatality measure 100%

All injury frequency rate (AIFR) 50%

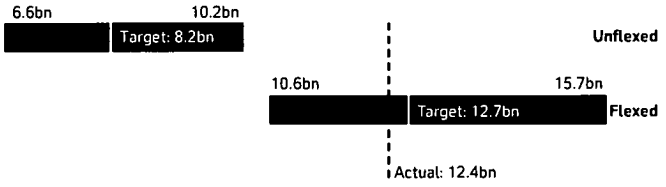
Implementation of safety maturity model (SMM) 60%

For 2020, the total assessment for the Group's safety performance was above target, at 74% of maximum. In 2020 there were zero fatalities across the Group, which meant that performance against the binary fatality measure was therefore maximum. AIFR performance was at target and SMM was just above target.

Financial performance

Two measures are used to assess financial performance, with both unflexed and flexed targets (adjusted for commodity prices) for each measure. We also adjust for exceptional and non-controllable items. An item is considered exceptional or non-controllable when it is not included in the target which is set at the start of the financial year. Overall, the Group financial STIP outcome was 77% of maximum. Actual performance against threshold, target, and outstanding performance for each measure is set out in the charts below:

Underlying earnings target range (threshold to outstanding) – US$

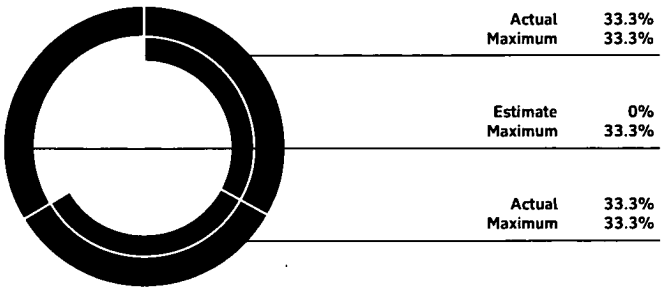


STIP free cash flow target range (threshold to outstanding) – US$



This section sets out key elements of our performance and remuneration outcomes for 2020.

2016 – 2020 LTIP



LTIP

Performance is measured against TSR relative to the EMIX Global Mining Index (33.3%) and to the MSCI World Index (33.3%). In addition, for PSAs granted from 2013 to 2017, there was an additional performance condition of improvement in EBIT margin relative to global mining comparators (33.3%).

Rio Tinto outperformed against the EMIX Global Mining Index and the MSCI World Index, resulting in a vesting of 66.7% under these two components, out of a maximum of 66.7%.

Share ownership requirements

Jean-Sébastien Jacques meets his share ownership target and will be required to maintain shares to a value equivalent to his minimum requirement for two years from his termination date. In his prior role as Chief Financial Officer, Jakob Stausholm was on target to reach his share ownership requirement within five years of appointment as an executive director. On appointment to Chief Executive, his minimum holding requirement increased to 4x base salary. Consistent with our Policy, he will be given one additional year to meet his higher new requirement.

Jean-Sébastien Jacques

Appointed July 2016

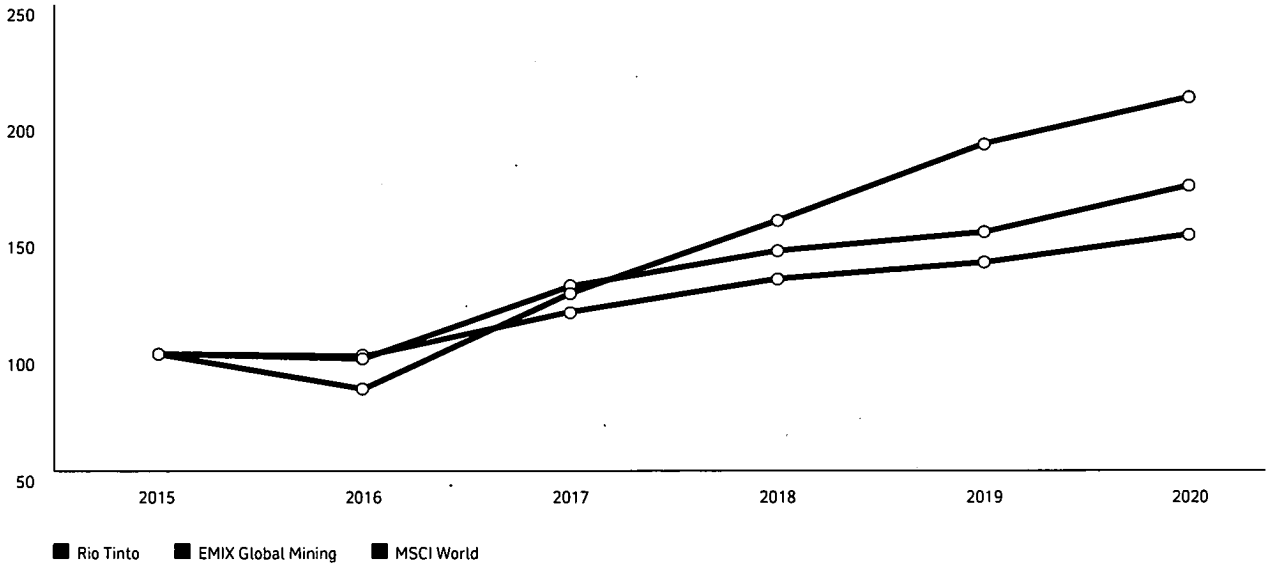


Jakob Stausholm

Appointed September 2018



Total shareholder return



The estimated performance against the EBIT margin measure is that Rio Tinto is ranked sixth against a comparator group of 11, which would result in a vesting of nil out of a maximum 33.3% for this measure. The estimated performance will be recalculated following the actual EBIT margin outcome in May 2021.

Remuneration at a Glance
continued

How is the Policy applied to the wider employee population?

The remuneration standard applied to the wider employee population is inspired by and consistent with the Policy applicable to the executives. This allows the total reward offering to employees to be competitive and strongly linked to performance whilst maintaining alignment with the company culture.

Remuneration principles

Competitive reward

Reward performance

Recognise potential

Focus on wellbeing

Retain talent

Fairness

Facilitating the achievement of equal pay for equivalent roles, contribution and performance. Pay equity is closely scrutinised and monitored through different lenses:

- In-depth pay equity analysis in the remuneration review process feeds into managing pay gaps from multiple perspectives including gender (see page 75).
- Minimum global standards apply (e.g. parental leave and life assurance) that ensure the foundations of our total reward offerings align to our values and support our employee value proposition irrespective of local market practices.

c.1% Gender pay gap in favour of women

c.2% Equal pay gap in favour of men

Ownership

- Promoting material participation in our global employee share plan (myShare) to create employee ownership and alignment with shareholders.
- As at 31 December 2020, approximately 22,000 of our employees across more than 30 countries were shareholders in the company.
- Employees invest approximately US$14 million in Rio Tinto shares every quarter through myShare.

22,000 employee shareholders

Consistency

- Consistency in implementation of the Policy allows for more uniform approaches to remuneration across the Group, enabling a more consistent employee experience and enhancing transparency.
- A good example is the incentive plans applicable to executives that are cascaded to the broader employee population.

19,000 STIP participants

1,700 LTIP participants

Wellbeing

- Leading benefits programmes, focused on holistic and integrated support for physical, mental and financial wellbeing.
- Flexible benefits that can be tailored to suit different needs and life stages, including employee assistance, minimum insurance standards for life, accident and disability, medical plans and virtual care, health screening and prevention and subsidised health and wellbeing services.
- Understanding life is about more than work, we offer family-friendly leave provisions and are proud to have established global family and domestic violence support.

Security

- Reward principles that protect employee purchasing power globally.
- Payroll governance that promotes accurate and timely payment of remuneration.
- Balance between fixed and variable pay at all levels.

Timely and accurate payroll

Inflation focused annual reviews

Competitive pay and benefits

Application to wider employee population

The application of the Policy to the broader employee population can be further illustrated as below.

Remuneration arrangements

Fixed

Base salary

- The base salary approach and review process for employees is consistent with that applied to executives.
- Focus on maintaining purchasing power, equity and market competitiveness.

Pension or superannuation

- Retirement benefits available to employees are market competitive.
- The reduction in the pension benefit for our executives provides increased alignment with the broader employee population.

Other benefits

- Our employee benefit offerings are broadly aligned with those offered to executives in similar locations supporting the focus on wellbeing and market competitiveness.

Remuneration arrangements

Performance-related (At risk)

Short term incentive plan

A significant number of our employees have a short term incentive based on a similar structure to executives with three components of financial, safety and personal. The maximum opportunity varies by employee grade and performance metrics are weighted more towards individual performance at lower grades. The incentive plans available to other employees are based on structures more applicable to their particular business unit.

Bonus deferral

Bonus deferral is applied only to our most senior management population with the STIP for the broader employee population being paid fully in cash.

Long term incentive plan (LTIP)

- The senior management population participates in the LTIP.
- Performance share awards are granted at senior levels, based on the same performance criteria as executives.
- A restricted share award is operated for roles below the Executive Committee.

Shareholding guidelines

Shareholding requirements apply to the senior management population at lower multiples of base salary than those applied to executives.

Remuneration at a Glance
continued

About our reporting

As our shares are listed on both the Australian and London Stock Exchanges, the information provided within our Remuneration Report must comply with the reporting requirements of both countries.

Our regulatory responsibilities impact the volume of information we provide, as well as the complexity. In Australia, we need to report on a wider group of executives, as described in the following paragraph. In addition, as set out in the summary table below, the two reporting regimes follow different methodologies for calculating remuneration.

In the UK, disclosure is required for the Board, including the executive directors. The Australian legislation requires disclosures in respect of "key management personnel" (KMP), being those persons having authority and responsibility for planning, directing and controlling the activities of the Group. For the reporting period ended 31 December 2020, our key management personnel are, in addition to the Board, all members of the Executive Committee. This includes the Chief Executive Iron Ore Chris Salisbury who stepped down on 11 September 2020; Ivan Vella (acting Chief Executive Iron Ore) from 15 September 2020, and Steve McIntosh (Group Executive Growth and Innovation) who retired on 30 September 2020.

Consistent with our efforts to simplify and align activities across the Group, and to coincide with the review of our Policy ahead of it being submitted for shareholder approval at our 2021 AGMs, after due consideration the Board has determined effective 1 January 2021 that aside from the Board, including the Chief Executive, our key management personnel comprises the interim Chief Financial Officer, all Product Group Chief Executives, the Chief Commercial Officer and the Group Executive Strategy & Development.

Throughout this Remuneration Report, the members of the Executive Committee are collectively referred to as "executives". They are listed on pages 118-119, with details of the positions held during the year and dates of appointment to those roles.

Structure of our Remuneration Report

We have included an At a Glance section that summarises key information in one place, resulting in our Remuneration Report being organised into the following parts:

Annual statement by the Remuneration Committee Chairman	140
Remuneration at a Glance	144
Remuneration Policy, which sets out the policy that will apply from 2021 onwards if approved by shareholders at our AGMs	152
Implementation Report, which shows how the current Policy has been applied and new Policy will be applied in 2021, including tables 1a-3a incorporating additional disclosures required under the Australian regulations	159

Shareholder voting

As required under UK legislation, the new Policy will be subject to a binding vote at our 2021 AGMs. The Implementation Report, together with the annual statement by the Remuneration Committee Chairman, is subject to an advisory vote each year as required by UK legislation. Under Australian legislation, the Remuneration Report as a whole is subject to an advisory vote. All remuneration related resolutions will be voted on at the AGMs as Joint Decision Matters by Rio Tinto plc and Rio Tinto Limited shareholders.

The differing approaches explained

As well as the difference in methodology for measuring remuneration, there are also key differences in how remuneration is reported in the UK and Australia.

UK

- For reporting purposes, remuneration is divided into fixed and variable elements.
- We report remuneration in the currency it is paid, for example, where a UK executive is paid in pound sterling, remuneration is reported in pound sterling.

Australia

- For reporting purposes, remuneration is divided into short and long-term elements.
- All remuneration is reported in US dollars, so using the previous example, the UK executives' remuneration would be converted to US dollars using the average exchange rate for the financial year (except STIP, which is converted at the year end exchange rate).
- The table below summarises the elements of each component of remuneration, as well as the significant differences in the approaches to measurement.

UK	Australia
Fixed	**Short-term**
Base salary	**Base salary**
+	+
Benefits	**STIP – cash element**
+	+
Pension	**Cash benefits**
The value of the pension contribution and payment in lieu of pension paid during the year.	+
	Non-monetary benefits
Variable	**Long-term**
STIP – cash element	**STIP – deferred share element**
+	Based on the amortised IFRS fair value of deferred shares at the time of grant.
STIP – deferred share element	+
+	**LTIP**
LTIP	Based on the amortised IFRS fair value of the award at time of grant.
Measured at point of vesting.	+
	Pension and superannuation
	Accounting basis.
=	=
Total remuneration	**Total remuneration**

Remuneration Policy

Remuneration Policy introduction

This Policy applies to our executive and non-executive directors and to the Chairman. In accordance with Australian law, it also sets out the broad policy principles that apply to members of the Executive Committee who are not directors.

Shareholders should note that our Policy is binding only in so far as it relates to directors. The implementation of this Policy for executives who are not directors may therefore vary from that of the executive directors.

In determining the new Policy the Committee followed a robust process which included multiple discussions regarding the content of the Policy taking into account the needs of the business and evolving market and best practice. The Committee considered input from both management and our independent advisers while ensuring that conflicts of interest were appropriately managed.

The overall structure of the new Policy remains broadly unchanged from the Policy previously approved by shareholders in 2018. Updates to the Policy largely reflect evolving corporate governance and market practice, with minor changes being made to aid the operation of the Policy. These changes include a reduction to pension for new executives to reflect arrangements operated for the wider employee population, the introduction of an ESG component into STIP and a reduction to the LTIP maximum award level to 400% of salary (from 438%).

Our remuneration policies, principles and practices

Our values of safety, teamwork, respect, integrity and excellence reflect who we are and what we stand for as a business. They guide the Committee in its decision making and are foundational to our remuneration-related policies, principles and practices.

Our first priority is to allocate remuneration resource wisely. We want our pay policies to be regarded as fair by employees and shareholders alike to reward both short and long-term performance and to reinforce the values and collective individual behaviours that drive sustainable performance. Although we believe that our Policy is fit for purpose, the Committee retains the discretion to override unforeseen and inappropriate mechanistic outcomes.

High-quality people, who are capable of managing and growing the business, are essential to generate superior returns for our shareholders. Rio Tinto operates in global and local markets where it competes for a limited pool of talented executives and our remuneration strategy is therefore designed to attract and retain the people that we need. We recognise that remuneration represents just one of the factors that encourage the attraction and retention of talent. We also seek to engage our employees over the long-term, to foster diversity, and to provide challenging work and development opportunities. Our people strategy is underpinned by our commitment to safety and our other core values of respect, integrity, excellence and teamwork.

Competitive remuneration linked to performance and shareholder value creation

Remuneration is linked to performance targets over both the short and long-term, to ensure that executive rewards are aligned to the delivery both of short-term priorities and long-term sustainable growth in shareholder value. In order to assess the competitiveness of the packages we offer, we benchmark ourselves against other companies in the FTSE 30 (excluding financial services companies), which typically have similar global reach and complexity, and other international mining and natural resources companies. The outcomes of these benchmarking exercises form just part of our consideration of the appropriate level of remuneration packages, but we would not expect either base salaries or the expected outcome of our short and long term incentive plans to deviate markedly from the median of these comparator groups. The actual outcome will depend on business and individual performance.

We take salary increases in the broader employee population into account in determining any change to the base salary of executives and consult with shareholders on the design of our short and long-term incentive plans to ensure that they are aligned with shareholder interests and priorities. We do not formally consult with our employees on the Policy, but approximately 50% of the workforce are shareholders through participation in our employee share plans and therefore have the right to vote on the Remuneration Report. Employees are invited to ask questions or express opinions through our normal employee communications channels.

Performance under the STIP is measured over one year based on a balanced scorecard including safety, financial, individual and from 2021 onwards ESG metrics. We recognise the importance of ensuring targets are achieved in the right way and are aligned to the company's values. Therefore in considering STIP outcomes, we also consider the extent to which outcomes are in accordance with our values. 50% of the STIP for executives is delivered in deferred shares that vest after three years.

Performance under the long term incentive plan (LTIP) is measured over five years and awards are typically delivered in shares together with cumulative dividends.

Our share ownership policy requires executives to build up and maintain a material shareholding in the company as described in the Implementation Report.

Alignment with the UK Corporate Governance Code

The UK Corporate Governance Code principles for developing a remuneration policy have been addressed as follows:

Principle	Remuneration Policy
Clarity	Our Policy is set out in a fully transparent manner. Communications and engagement with stakeholders promotes clarity around all elements of the Policy.
Simplicity	We have further simplified aspects of the new Policy to enhance transparency and aid understanding.
Risk	The incentive arrangements have been structured to support effective risk management. This includes a strong focus on long-term success. Risks include non-financial risk, such as safety, the environment and heritage protection. Malus, clawback and suspension provisions apply to all variable remuneration which allow for performance adjustment in the event of risk management failures.
Predictability	The remuneration outcomes under the different performance scenarios (threshold, target, and outstanding) are clearly set out with an estimate of potential maximum outcome if share price increased by 50%. See charts on page 155.
Proportionality	The Policy maintains a strong link to strategy and performance. This is set out in the Policy table on pages 152-154. The Committee also has discretion over all variable remuneration outcomes.
Alignment to culture	Our incentive plans are aligned with our strategic focus on long-term sustainable growth and a focus on safety, team work, respect, integrity and excellence.

Remuneration Policy
continued

Executive remuneration structure – Policy table

The Policy set out on the following pages is designed to provide a total remuneration package that is appropriately balanced between fixed and variable components, with an emphasis on long-term variable pay. The remuneration structure for executives, including the relationship between each element of remuneration and Group performance, is summarised below.

Further details on the KPIs used to assess Group performance are provided in the Strategic Report.

Any commitment made before this Policy takes effect or before an executive became or becomes a director will be honoured even if it is not consistent with this or any subsequent Policy.

Remuneration arrangements – Fixed

Base salary

Link to Group performance and strategy

- We pay competitive salaries to hire, motivate and retain highly competent people drawn from a global talent pool.

Operation

- Base salary provides the main fixed element of the remuneration package.
- Base salaries are reviewed annually, with a maximum individual increase of 5% plus CPI per annum. An individual increase may be higher than this in the circumstances described below.
- Any increase is generally aligned with the average base salary increases applying to the broader employee population unless there were significant changes to an individual's role and/or responsibilities during the year. Any increases are determined with reference to underlying Group and individual performance, global economic conditions, role responsibilities, an assessment against relevant comparator groups and internal relativities.
- An increase above the maximum noted above may be made in the event of promotion or increase in responsibility or where the executive's base salary is significantly below market positioning.
- Benchmarking is undertaken periodically but not annually, and our intention is to apply judgment in evaluating market data.

Pension or superannuation

Link to Group performance and strategy

- We provide locally competitive post-employment benefits in a cost-efficient manner in order to hire and retain.

Operation

- Employment benefits typically include participation in a pension plan, superannuation fund, or a cash allowance to contribute to a personal pension or superannuation fund, which are aligned with the arrangements for the broader workforce of the country of residence.
- The maximum annual benefit is set to reflect the pension arrangements for the wider employee population. This is currently capped at 14% of salary but may be adjusted to reflect changes in arrangements for the wider employee population.

Other benefits

Link to Group performance and strategy

- We provide competitive other benefits in a cost-efficient manner in order to hire and retain.

Operation

- Other benefits may include, but are not limited to, private healthcare cover for the executive and their dependents, life insurance, accident insurance, professional advice, participation in local flexible benefit programmes and certain other minor benefits (including modest retirement gifts in applicable circumstances, occasional spouse travel in support of the business, any Rio Tinto business expenses which are deemed to be taxable and any tax the company has paid on their behalf).
- Secondment, relocation and localisation benefits (for example, housing, tax equalisation, cost of living allowance, periodic visits home for the executive and their family and where relevant, transfer and localisation payments) may also be made to and on behalf of executives living outside their home country.
- Other benefits are paid at cost and, given the nature and variety of the items, there is no formal maximum level of company contribution.

Remuneration arrangements – Performance-related (At risk)

Short term incentive plan (STIP)

Link to Group performance and strategy

- STIP focuses participants on achieving demanding annual performance goals, which are based on the Group's priorities, in pursuit of the creation of sustainable value for our stakeholders.
- We demand that sustainable business practices are adhered to, particularly in the context of safety and ESG.
- We consider the individual performance of our executives against our values. *The way we work* outlines how we deliver both our purpose and strategy. It makes clear how all employees should behave, in accordance with our values of safety, team work, respect, integrity and excellence.

Operation

- Nil award for threshold performance and 100% for outstanding. Between threshold and outstanding, the award is normally pro-rated on a straight line basis between these points.
- The maximum award is capped at 200% of base salary for all executives. Any outcome from the formulaic STIP calculation is subject to the exercise of discretion by the Committee.
- A scorecard based on the Group's priorities is established for each executive at the commencement of the financial year. The measures and the relative weightings are selected by the Committee in order to drive business performance for the current year, including the achievement of financial, safety, ESG and other individual business outcomes that are priorities for the financial year in question. At least 50% of the measures will relate to financial performance and a significant component will relate to safety performance.

Remuneration arrangements – Performance-related (At risk) continued

Operation continued

- We expect to disclose the measures, weightings and targets for safety and ESG goals at the beginning of each year. In the area of financial and individual goals, we will, at the beginning of each year, disclose the measures and weightings only, because we regard the targets as commercially sensitive. However, we intend to disclose these targets and outcomes retrospectively.
- In making its year-end determination of STIP awards, the Committee seeks to ensure that actual performance is directly comparable to the targets set at the beginning of the year. This may result in adjustments to the targets or to the assessed results being made by the Committee (in particular to take account of events outside management's control), to ensure a like-for-like comparison. Both upward and downward adjustments can be made, with reference to principles agreed by the Committee, to ensure the outcomes are fair.
- Safety KPIs comprise a significant portion of the STIP for executives, and any fatality will have a material impact on the STIP result for all executives.
- Malus, clawback and suspension provisions that apply are set out later in the Policy.

Bonus deferral

Link to Group performance and strategy

- Ensures ongoing alignment between executives and shareholders through deferral of part of the STIP award into Rio Tinto shares.

Operation

- Normally 50% of the STIP is delivered in bonus deferred shares (known as a Bonus Deferral Award (BDA)) with the remainder delivered in cash with no deferral.
- BDAs normally vest in the December of the third year after the end of the STIP performance year to which they relate.
- Dividends (or equivalents) may accrue in respect of any BDA that vest.
- Where permitted by the plan rules, and where the Committee so decides, awards may be made or satisfied in cash in lieu of shares. Awards are normally, but not exclusively, granted with an intention to settle in shares.
- BDAs vest on a change of control.
- Malus, clawback and suspension provisions that apply are set out later in the Policy.

Remuneration arrangements – Performance-related (At risk)

Performance Share Awards (PSA) under the long term incentive plan (LTIP)

Link to Group performance and strategy

- PSAs are designed to provide a simple and transparent mechanism for aligning executive reward with the execution of an effective business strategy that delivers superior long-term shareholder returns.
- Award levels are set to provide substantive focus on and reward long-term performance. PSAs are the most significant component within the remuneration package and are calibrated so as to ensure the overall competitiveness of the remuneration package.

Operation

- PSAs are conditional share awards (or economic equivalent) that vest subject to the achievement of stretching performance conditions and continued employment.
- The Committee will set performance conditions aligned with the Group's long term strategic objectives for each PSA grant. Relative TSR has been chosen as the current measure of long-term performance as it provides an objective external assessment over a sustained period on a basis that is familiar to shareholders. Whilst we expect TSR will remain a key performance metric, the Committee retains the discretion to adjust the performance measures and weightings as appropriate. For the 2021 awards, there is no intention to make any adjustments to the two TSR performance metrics and their weighting.
- PSA are normally only released after five years. Currently awards are subject to a five-year performance period.
- Awards have a maximum face value of 400% of base salary which is currently determined using the average share price of the prior financial year. Actual annual award levels may vary for each executive.
- Threshold performance would result in the vesting of up to 22.5% of the face value of an award.
- Dividends (or equivalents) may accrue in respect of any PSA that vest.
- Where permitted by the plan rules, and where the Committee so decides, awards may be made or satisfied in cash in lieu of shares. Awards are normally, but not exclusively, granted with an intention to settle in shares.
- Awards and performance conditions may be adjusted to take account of variations of share capital and other transactions. Subject to this Policy, performance conditions may also be amended in other circumstances if the Committee considers that a changed performance condition would be a fairer measure of performance.
- If there is a change of control, awards will vest to the extent performance conditions are then satisfied. Unless the Committee determines otherwise, if the change of control happens during the first 36 months from the date of grant of the award, the number of shares that can vest will be reduced pro rata. The Committee may, alternatively, with agreement of an acquiring company, replace a PSA with equivalent new awards over shares in the acquiring company.
- The Committee retains the discretion, where circumstances warrant, to amend performance conditions under the relevant plan rules. The Committee will seek to ensure that outcomes are fair and that they take account of the overall performance of the company during the performance period.
- Malus, clawback and suspension provisions apply (see page 154).

Remuneration Policy
continued

Shareholding guidelines

Link to Group performance and strategy

- Shareholding guidelines align executives' interests with those of shareholders.

Operation

- The Group understands the importance of and expects executives to build up and maintain a material shareholding in Rio Tinto. Executives should aim to reach a share ownership (defined below) in Rio Tinto shares equivalent in value to:

Chief Executive
4 x base salary

Other executives
3 x base salary for the Chief Financial Officer and up to 3 x base salary for other executives.

- The Committee generally expects executives to build up their shareholding over a five-year period. Longer periods may be accepted for new appointments, given the five-year vesting period for the PSA.
- Shares are treated as "owned" if they are not subject to restriction (e.g. additional performance conditions), which includes shares directly held by an executive and any shares where there is a beneficial interest. A beneficial interest includes any shares for which an executive receives the benefit of ownership (such as a right to receive dividends) without directly owning the shares. Given its mandatory nature and the absence of performance conditions, a value for unvested BDA is included with a 50% discount for the likely effects of taxation.
- Executive directors are expected to continue to meet the share ownership policy for two years after stepping down from the Board (or if the holding requirement is not met at this date, the relevant holding at the time). When considered alongside the existing leaver provisions for share awards, this will ensure that executive directors will remain aligned with shareholders for an extended period after ceasing employment.
- The Committee retains the discretion to enforce shareholding requirements through the application of malus to unvested share awards and/or scale back of future grants.

Malus, clawback and suspension

"Malus", "clawback" and "suspension" provisions will apply to STIP and LTIP awards.

Under both the "malus" and "clawback" provisions, where the Committee determines that exceptional circumstances exist, the Committee may, at its discretion, reduce the number of shares to be received on vesting of an award, or, for a period of two years after the vesting of an award, the Committee can clawback value from a participant.

The circumstances under which the Committee exercises such discretion may include, inter alia:

- any fraud or misconduct by a participant or an exceptional event which has had, or may have, a material effect on the value or reputation of any member of the Group (excluding an exceptional event or events which have a material adverse effect on global macroeconomic conditions).
- an error in the Group's financial statements which requires a material downward restatement or is otherwise material or where information has emerged since the award date which would have affected the size of award granted or vested.
- where the Committee determines that the personal performance of a participant, of their product group or of the Group does not justify vesting or where the participant's conduct or performance has been in breach of their employment contract, any laws, rules or codes of conduct applicable to them or the standards reasonably expected of a person in their position.
- the performance of the company, business or undertaking in which a participant worked or works or for which he or she was or is directly or indirectly responsible is found to have been misstated or based upon any material misrepresentation and which resulted in the award being granted and/or vesting over a greater number of shares than would otherwise have been the case.
- where any team, business area, member of the Group or profit centre in which the participant works or worked has been found guilty in connection with any regulatory investigation or has been in breach of any laws, rules or codes of conduct applicable to it or the standards reasonably expected of it.
- where the Committee determines that there has been material damage to the Group's social licence to operate.
- a catastrophic safety or environmental event or events occurring in any part of the Group.

Under the suspension provisions, the Committee may suspend the vesting of an award (for up to five years) until the outcome of any internal or external investigation is concluded and may then reduce or lapse the participant's award based on the outcome of that investigation. Note that where suspension applies, the 24-month clawback period will not extend beyond the period commencing from the original vesting date.

Discretion

The Committee recognises the importance of ensuring that the outcomes of the Group's executive pay arrangements described in this Policy properly reflect the Group's overall performance and risk appetite.

The Committee therefore reserves the right to review all remuneration outcomes arising from mechanistic application of performance conditions and to exercise discretion to make adjustments where such outcomes do not properly reflect underlying performance or the experience of shareholders or other stakeholders.

The Committee may at its discretion adjust and/or set different performance measures if events occur (such as a change in strategy, a material acquisition or divestment, a catastrophic safety or environmental incident, a change in control or other unexpected event) which cause the Committee to determine that the measures are no longer appropriate or in the best interests of shareholders or other stakeholders, and that amendment is required so that the measures, as far as possible, achieve their original purpose. Such discretion will be exercised judiciously and clearly disclosed and explained in the Implementation Report.

Any discretionary adjustments for directors will be disclosed in the Implementation Report for the relevant financial period.

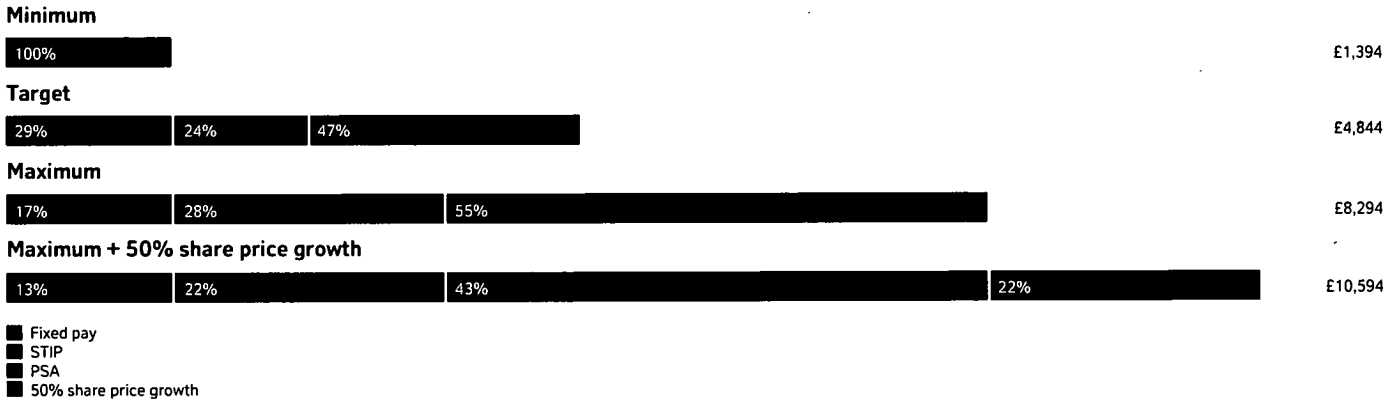
Total remuneration opportunity

The following charts provide an indication of the minimum, target and maximum total remuneration opportunity, subject to shareholder approval of the Remuneration Policy for the executive directors, together with the proportion of the package delivered through fixed and variable remuneration. The STIP and PSA are both performance-related remuneration.

Potential value of 2021 remuneration package

CEO

(£'000)



The following table provides the basis for the values included in the charts above:

Fixed (stated in £'000)	Base salary[a]	Pension	Benefits[b]	Total
Jakob Stausholm	£1,150	£161	£83	£1,394

(a) Base salary is the latest known salary.
(b) The value of benefits is as per the 2020 benefits figure in the single total figure of remuneration table, as set out in the Implementation Report.

Performance-related (At risk)	
Target STIP and LTIP performance	– A STIP award of 50% of the maximum award (equates to 100% of base salary) – Expected value of 2021 PSA of 50% of face value, calculated as 200% of base salary
Maximum STIP and LTIP performance	– A maximum STIP award of 200% of base salary – Full vesting of 2021 PSA, calculated as 400% of base salary

(a) PSAs granted under the LTIP consist of share awards only, measured at 2021 face value. This does not constitute an estimate of the value of awards that may potentially vest with respect to year-end 31 December 2025. An assumed 50% growth in share price has been included in the final illustration. No assumption has been made for payment of dividends.
(b) Further details of the 2021 PSA are disclosed in the 2020 Implementation Report.

Remuneration Policy
continued

Recruitment remuneration

The table below sets out the policy for both internal and external recruitment. No form of "golden hello" will be provided upon recruitment. In the case of internal appointments, existing commitments will be honoured.

Element	Recruitment policy
Base salary	We aim to position base salary at an appropriate level, taking into consideration a range of factors including the executive's current remuneration and experience, internal relativities, an assessment against relevant comparator groups and cost. If a new executive director is initially appointed at a lower rate, the Committee retains the ability to award larger increases in subsequent years in order to realign the salary over time as the individual develops in the role.
Pension or superannuation	Consistent with Policy table.
Other benefits	Will be established in line with our Policy.
Short term incentive plan (STIP)	Eligible to take part in our STIP with maximum opportunity capped at 200% of salary.
Performance Share Awards (PSA) under long term incentive plan	Maximum face value of 400% of base salary in line with our Policy.
Buy-out awards	Any compensation provided to an executive recruited from outside the Group for the forfeiture of remuneration arrangements on joining is considered separately to the establishment of forward-looking annual remuneration arrangements. Our policy with respect to such "buy-outs" is to determine a reasonable level of award, on a like-for-like basis, consisting primarily of equity-based awards, but also potentially cash, taking into consideration the quantum of forfeited awards, their performance conditions and vesting schedules. The Committee will obtain an independent external assessment of the value of awards proposed to be bought out and retains discretion, subject to the considerations noted above, to make such compensation as it deems necessary and appropriate to secure the relevant executive's employment. The Committee's intention is that buy-out compensation should include, where appropriate, performance conditions and equivalent time frames for release.
Relocation-related support	If the Committee concludes that it is necessary and appropriate to secure an appointment, relocation-related support and international mobility benefits may be provided depending on the circumstances and in line with the Group's broader approach. Any relocation arrangements will be set out in the Implementation Report.

Executives' service contracts and termination

Under normal circumstances, executive directors will be offered service contracts which can be terminated by either party with up to 12 months' notice in writing. In exceptional circumstances, an initial notice period of up to 24 months during the first two years of employment, reducing to up to 12 months thereafter, may be necessary to secure an external appointment. In some circumstances, it may also be appropriate to use fixed-term contracts for executive directors.

Other executives are offered service contracts which can be terminated by the company with up to 12 months' notice in writing, and by the employee with either six or up to 12 months' notice in writing.

The contracts for executives include appropriate non-compete and restrictive covenants.

The current contract terms of directors and the other executives are included in the Implementation Report. The letters of appointment are available for inspection at Rio Tinto plc's registered office, and at its AGM.

Executives may be required to go on "garden leave" during all or part of their notice period and may receive their base salary, STIP and other benefits during the notice period (or the cash equivalent). Where applicable, tax equalisation and other expatriate benefits will continue in accordance with the executive's prevailing terms and conditions.

If termination is a result of redundancy, the terms of the relevant local policy or practice will apply in the same way as for other local employees.

The STIP and LTIP rules govern the entitlements that executives may have under those plans upon termination of employment.

The concept of an "eligible leaver" is defined in the relevant plan rules. In general terms, an eligible leaver is an executive who leaves the Group by reason of ill-health; injury; disability (as determined by the executive's employer); retirement with company consent; redundancy; transfer of the undertaking in which the executive works; change of control of the executive's employing company; or death. In addition, the plan rules afford discretion to the Committee to award eligible leaver status in other circumstances.

In the case of dismissal for cause, the company can terminate employment without notice and without payment of any salary or compensation in lieu of notice. Outstanding awards under any of the Group's long term incentive plans may be forfeited in these circumstances.

If an executive resigns or is dismissed for misconduct, or as the result of malus being applied in accordance with the plan rules, share awards will lapse.

The table below sets out the policy on termination for eligible leavers:

Element	Termination policy
Base salary, pension and other benefits	Pay of base salary in lieu of any unexpired notice which may be paid progressively in instalments over the notice period. The Committee will for executive directors (to the extent permitted by relevant law) have regard to the executive director's ability to mitigate his or her loss in assessing the payment to be made. Executive directors and their dependants may also be eligible for post-retirement benefits such as medical and life insurance. The company may also agree to continue certain other benefits for a period following termination where the arrangements are provided under term contracts or in accordance with the terms of the service contract, for example, payment for financial advice, tax advice and preparation of tax returns for a tax year. In some cases, they may receive a modest leaving gift.
Short term incentive plan	If an eligible leaver leaves the Group during a performance year, the Committee may determine in its absolute discretion to award a pro rata portion of the STIP based on the amount of the year served and based on actual assessment of performance against targets. Any cash payment will be made at the normal STIP payment date and no portion of the award will be deferred into shares. If an executive provides the company notice of their resignation during the performance year, but does not leave the Group until after the end of the performance year, the Committee may determine in its absolute discretion to make an award under the STIP. In these circumstances, the executive will only be eligible to receive the cash portion of the award and will forfeit the deferred shares portion. Any cash payment will be made at the normal STIP payment date. No STIP award will be made where an executive who is not an eligible leaver leaves the Group, resigns or is terminated for cause prior to the end of the performance year.
Bonus Deferral Awards (BDA)	BDA will normally vest on the scheduled vesting date. There will be no pro-rating of BDA.
Performance Share Awards (PSA)	PSA will normally be retained, and vest on the scheduled vesting date, subject to time pro-rating and the satisfaction of any performance conditions. PSA will be pro-rated over 36 months from the grant date.
Management Share Awards (MSA)	Any MSA granted prior to appointment will normally be retained, and vest, at the Committee's discretion, at the scheduled vesting date (although awards for US taxpayers may vest on leaving). MSA will be reduced pro rata to reflect the period of employment between the date of grant of the award and the normal vesting date.
All employee share plans	All employee share awards will normally vest on or shortly after leaving. There will be no pro rata reduction of awards.
Dividend shares	Any dividend equivalent shares will be calculated on the vesting of all share awards.
Repatriation	On termination, the company will pay relocation or expatriation benefits as agreed at the time of the original expatriation and/or in accordance with applicable legislation and internal policies on travel and relocation.
Accrued but untaken leave	Accrued but untaken annual leave and any long service leave will be paid out on termination, in accordance with the relevant country legislation and applicable practice applying to all employees.
Legal expenses	The company may pay reasonable legal and other professional fees (including outplacement support) to or in respect of an executive in connection with the termination of his or her employment.
Settlement claims	Subject to the approval of the Committee, the company may pay such amount as it determines is reasonable to settle any claims that an executive may have in connection with the termination of his or her employment.
Restrictive covenants	While our employment agreements include appropriate restrictive covenants as a matter of practice, the Policy provides additional flexibility to make payments in respect of expanding or enhancing existing covenants to protect Rio Tinto and its shareholders. The amount of such payment will be determined by the Committee based on the content and duration of the covenant.

Remuneration Policy
continued

Chairman and non-executive directors' remuneration

The table below summarises how the fees are set and our Policy for the Chairman and non-executive directors:

Area	Chairman	Non-executive directors
Setting of fees	The Committee (excluding the Chairman, if he or she is a member) determines the terms of service and remuneration of the Chairman. The Chairman's fees are set by the Committee.	The non-executive directors' fees and other terms are set by the Board upon the recommendation of the Chairman's Committee (which comprises the Chairman, Chief Executive and Chief Financial Officer).
Fees	It is Rio Tinto's policy that the Chairman should be remunerated on a competitive basis and at a level which reflects his or her contribution to the Group, as assessed by the Board. The Chairman receives a fixed annual fee and does not receive any additional fee or allowance either for committee membership or chairmanship, or for travel. The Chairman does not participate in the Group's incentive plans.	Non-executive directors receive a base fee with additional fees paid for further Board responsibilities such as committee membership or committee chairmanship or taking on the senior independent director role. Allowances may be paid for attending meetings which involve medium or long-distance air travel. They do not participate in any of the Group's incentive plans. Fees paid to non-executive directors reflect their respective duties and responsibilities and the time required to be spent by them so as to make a meaningful and effective contribution to the affairs of Rio Tinto.
Pension and superannuation	Rio Tinto does not pay retirement or post-employment benefits to the Chairman.	Where the payment of statutory minimum superannuation contributions for Australian non-executive directors is required by Australian superannuation law, these contributions are deducted from the director's overall fee entitlements.
Benefits	The Chairman may be provided with a car and driver. Any use for transport between home and the office and other personal travel is a taxable benefit to the Chairman, and the company pays any tax arising on the Chairman's behalf. The Chairman would pay a fixed annual fee to the company for any personal travel element. Relocation and localisation benefits in accordance with the Policy for executive directors (for example, housing, tax equalisation, cost of living allowance, the payment of school fees, periodic visits home for the executive and their family and where relevant, localisation payments) may be made to and on behalf of a Chairman working outside his or her home country. Other benefits include accident insurance (note this is neither contractual nor a taxable benefit), other minor benefits (including modest retirement gifts in applicable circumstances), occasional spouse travel in support of the business and any Rio Tinto business-related expenses which are deemed to be taxable and any tax the company has paid on his or her behalf.	Non-executive directors may on occasion receive reimbursement for costs incurred in relation to the provision of professional advice. These payments, if made, are taxable benefits to the non-executive directors and the tax arising is paid by the company on the directors' behalf. Other benefits provided include accident insurance (note this is neither contractual nor a taxable benefit), other minor benefits (including modest retirement gifts in applicable circumstances), occasional spouse travel in support of the business and any Rio Tinto business expenses which are deemed to be taxable where the company has paid the tax on their behalf.

Appointment

The appointment of non-executive directors (including the Chairman) is handled through the Nominations Committee and Board processes. The current fee levels are set out in the Implementation Report.

The Chairman's letter of appointment from the company stipulates his or her duties as Chairman of the Group and appointment may be terminated without liability on the part of Rio Tinto in accordance with the Group's constitutional documents dealing with retirement, disqualification from office or other vacation from office. Otherwise, his or her appointment may be terminated by giving 12 months' notice. Accrued fees will be paid up to the termination date with the exception of dismissal for cause. The Committee has the discretion to make a payment in lieu of notice if the Chairman is not required to serve his or her full 12 months' notice. If the appointment as Chairman is terminated by reason of their removal as a director pursuant to a resolution of shareholders in general meeting, the company shall be liable to pay any fees accrued to the date of any such removal.

The non-executive directors' letters of appointment from the company stipulate their duties and responsibilities as directors. Each non-executive director is appointed subject to their election and annual re-election by shareholders. Non-executive directors' appointments may be terminated by either party giving three months' notice. There are no provisions for compensation payable on termination of their appointment. The letters of appointment are available for inspection at Rio Tinto plc's registered office.

The maximum aggregate fees payable to the non-executive directors (including the Chairman) in respect of any year, including fees received by the non-executive directors for serving on any committee of the Board, will not exceed the limits set out in the Group's constitutional documents (currently £3 million).

Implementation Report

This Implementation Report is presented to shareholders for approval at our AGMs. It outlines how our current Policy was implemented in 2020, and how we intend to operate the new Policy in 2021.

Introduction

The single total figure of remuneration table on page 161 shows remuneration for our executive directors, gross of tax and in the relevant currency of award or payment.

In table 1a on pages 176-177 we report information regarding executives in accordance with Australian statutory disclosure requirements. The information is shown gross of tax and in US dollars. The remuneration details in table 1a include accounting values relating to various parts of the remuneration package, most notably PSAs granted under the Group's LTIP arrangements, and require a different methodology for calculating the pension value. The figures in the single total figure of remuneration table are therefore not directly comparable with those in table 1a. Where applicable, amounts have been converted using the relevant average exchange rates included in the notes to table 1a.

In table 1b on page 178, we report the remuneration of the Chairman and the non-executive directors.

Certain information contained within the Remuneration Report is audited, as outlined on page 185.

Remuneration Committee responsibilities

The Committee's responsibilities are set out in our terms of reference, which we review each year, and are published in the corporate governance section of the Rio Tinto website. Our responsibilities include:

- Determining the Group's remuneration structure and policies, and assessing their cost, including pension and superannuation arrangements for executives.
- Determining the mix and use of short and long-term incentive plans for executives and ensuring alignment with the company's strategic objectives.
- Overseeing the operation of the Group's short and long-term incentive plans for executives, including approving awards, setting performance criteria, and determining any vesting.
- Determining contractual notice periods and termination commitments, and setting retention and termination arrangements for executives.
- Determining awards under the Group's all-employee share plan.
- Monitoring gender pay.
- Determining the terms of service upon appointment for the Chairman and executives, and any subsequent changes.

We consider the level of pay and conditions for all employees across the Group when determining executive remuneration.

Committee membership

The members of the Committee during the year and to the date of this report were:

Sam Laidlaw (Chairman)	
Megan Clark	
Simon McKeon	
Jennifer Nason	(from 1 March 2020)
Simon Thompson	
Ngaire Woods	(from 1 September 2020)

How we work

The Group Company Secretary attends meetings as secretary to the Committee. The Chief Executive, Group Executive Human Resources and Head of Reward attend appropriate parts of the meetings at the invitation of the Chairman of the Committee. No individual is in attendance during discussions about their own remuneration.

Independent advisers

The Committee has a protocol for engaging and working with remuneration consultants to ensure that "remuneration recommendations" (being advice relating to the elements of remuneration for key management personnel, as defined under the Australian Corporations Act) are made free from undue influence by key management personnel to whom they may relate. We monitored compliance with these requirements throughout 2020. Deloitte gave declarations to the effect that any remuneration recommendations were made free from undue influence by key management personnel to whom they related, and the Board has received assurance from the Committee and is satisfied that this was the case.

Deloitte, the appointed advisers to the Committee, are members of the Remuneration Consultants' Group, and voluntarily operate under its Code of Conduct (the Code) in relation to executive remuneration consulting in the UK. The Code is based upon principles of transparency, integrity, objectivity, competence, due care and confidentiality. Deloitte have confirmed that they adhered to the Code throughout 2020 for all remuneration services provided to Rio Tinto. The Code is available online at remunerationconsultantsgroup.com.

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The Committee is satisfied that the Deloitte engagement partners and advisory teams that provided remuneration advice to the Committee do not have any connections with the company or individual directors that may impair their independence. During 2020, Deloitte's services also included attending Committee meetings, support on the new Policy and giving advice in relation to management proposals. Deloitte was paid US$268,394 (2019: US$53,164) for these services. Fees were charged on the basis of time and expenses incurred, including work done regarding the new Policy.

Willis Towers Watson provided general and technical executive remuneration services. These services predominantly related to remuneration of employees other than key management personnel. We received other services and publications relating to remuneration data from a range of sources. During the year Deloitte also provided internal audit, tax compliance and other non-audit advisory services. These services were provided under separate engagement terms and the Committee is satisfied that there were no conflicts of interest.

How the Committee spent its time in 2020

During 2020, the Committee met eight times. We fulfilled our responsibilities as set out in our terms of reference.

Our work in 2020 and in the early part of 2021 included:

January 2020/2021

- Reviewing and determining any base salary adjustments and LTIP grants for executives.
- Conclude discussions with shareholders on our new Policy proposals.
- Approving appointment terms for the new Executive Committee members (2021).

February 2020/2021

- Reviewing and determining "threshold", "target" and "outstanding" targets for the safety and financial components of the 2020 STIP.
- Reviewing actual performance against the targets for the 2020 STIP and assessing applicable adjustments.
- Determining the respective ESG and safety targets for the 2021 STIP.

May 2020

- Reviewing and determining the final EBIT margin outcome for PSA with a performance period ending 31 December 2019.
- Considering alternative structures for the new Policy.

June 2020

- Review and debrief of 2020 AGM season.
- Determining the terms of appointment for the new Group Executive, Safety, Technical & Projects and Group Executive, Strategy & Development.
- Determining the terms of retirement for the outgoing Group Executive, Growth & Innovation.

July 2020

- Reviewing and refining the proposed changes in the Policy to discuss with shareholders.
- Reviewing progress towards the Group's share ownership requirements.

August 2020

- Determining the malus adjustments for the Chief Executive, Chief Executive Iron Ore, and Group Executive Corporate Relations.

September 2020

- Determining the terms of exit for the outgoing Chief Executive, Chief Executive Iron Ore, and Group Executive Corporate Relations.

October 2020

- Reviewing the strategy and annual reports on the Group's global benefit plans.

November 2020

- Acting in accordance with the terms of the deferral agreement for the former Chief Executive, Sam Walsh.
- Commence consultations with shareholders and proxy advisors on our new Policy proposals.

December 2020

- Preparing the Remuneration Report (including this Implementation Report).
- Approving and recommending to the Board endorsement of the appointment terms for the new Chief Executive.

Performance review process for executives

Rio Tinto conducts annual performance reviews for all its executives. Our key objectives for the performance review process are to:

- Improve organisational effectiveness by creating alignment between the executive's objectives and Rio Tinto's strategy.
- Provide a consistent, transparent and balanced approach to measure, recognise and reward executive performance.

The Chief Executive conducts the review for members of the Executive Committee, and recommends the performance outcomes to the Committee. The Chief Executive's performance is assessed by the Chairman of the Board and discussed and debated with the Committee and the full Board. Performance reviews for all executives took place in 2020 or early 2021.

■ Base salary
■ STIP
■ LTIP

Single total figure of remuneration (£'000)

Executive director (£'000)	Year	Base salary	Benefits	Pension	Total fixed	Bonus – STIP payment: Cash	Bonus – STIP payment: Deferred shares	Value of LTIP awards vesting: Face value	Value of LTIP awards vesting: Share price appreciation	Other	Total variable	Single total figure	% change
Jean-Sébastien Jacques	2020	1,158	51	287	1,496	–	–	3,590	3,138	(1,000)	5,728	7,224	20.4%
(Chief Executive)[1]	2019	1,133	71	280	1,484	850	851	2,257	557		4,515	5,999	
Jakob Stausholm	2020	789	83	174	1,046	564	565	–	–		1,129	2,175	15.6%
(Chief Financial Officer)	2019	775	62	172	1,009	436	437	–	–		873	1,882	

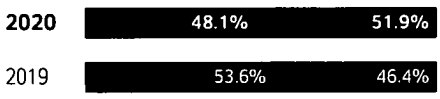
1. Malus adjustment applied against 100% of the 2020 STIP and £1 million of the 2016 LTIP vesting.

At the end of the performance period, LTIP values are based on estimates of both the number of shares that will ultimately vest and the share price. These estimates are restated in the following year, once actual values are known. See LTIP section for further detail.

Jean-Sébastien Jacques



Jakob Stausholm



Key: Percentage of total remuneration earned as:

Non-performance related:
■ Base salary, benefits and pension

Performance related:
■ STIP ■ LTIP

Fixed remuneration

Base salary (2020)

Consistent with prior practice, annual salary increases for executives are generally in line with the base salary increases applying to the broader employee population. Salaries are reviewed with effect from 1 March.

Executive director	Annual base salary at 1 January 2020 £'000	Annual base salary at 1 March 2020 £'000	Total base salary paid in 2020 £'000
Jean-Sébastien Jacques	1,138	1,162	1,158
Jakob Stausholm	775	791	789

Jakob Stausholm's salary on appointment as Chief Executive effective 1 January 2021 is £1,150,000.

Benefits (2020)

Includes healthcare, allowance for professional tax compliance services, car and fuel allowances (removed for all new appointments from 1 January 2021), and non-performance based awards under the all-employee share plans.

Pension (2020)

Pension benefits can either be paid as contributions to Rio Tinto's company pension fund or as a cash allowance. In line with the applicable UK policy, cash allowances may be reduced by the value of the employer's national insurance payable on cash allowances.

In addition to the payments set out in the accompanying table, under Australian Superannuation Guarantee legislation the company pays superannuation contributions to an Australian superannuation fund in respect of Jean-Sébastien Jacques' working days in Australia. The pound sterling equivalent of these superannuation contributions is offset against the cash allowance paid to Jean-Sébastien Jacques.

Executive director	Pension contributions paid to the Rio Tinto pension fund £'000	Cash in lieu of pension contributions paid £'000	Total £'000	Pension provision as percentage of base salary
Jean-Sébastien Jacques	6	281	287	24.8%
Jakob Stausholm	6	168	174	22%[a]

(a) Effective 1 January 2021, from appointment to Chief Executive the pension provision is now 14% of base salary.

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STIP (2020)

Outcome for 2020

For an executive's STIP outcome, the weighted safety, financial and individual STIP results are added to determine the total result. The resultant STIP is delivered equally in cash and deferred shares.

	Weighted result							Delivered in:		Percentage of:		
Executive director	Safety (20%)	Financial (50%)	Individual (30%)	Total	**Total STIP (% of base salary)**	Base salary £'000	**Total STIP £'000**	Cash	Deferred shares £'000	Max awarded	Max forfeited	Target awarded
Jakob Stausholm	14.8	38.5	18	**71.3**	**142.6**	791	**1,128**	564	565	71.3%	28.7%	142.6%

Following the application of malus, Jean-Sébastien Jacques' 2020 STIP was nil.

Maximum STIP is capped at 200% of base salary with awards of:

- 25% of maximum for threshold
- 50% of maximum for target
- 100% of maximum for outstanding performance

Half of the STIP award will be paid in cash in March 2021, and the remainder will be delivered in deferred shares as a BDA, vesting in December 2023. If the executive resigns or is dismissed for misconduct, or for any other reason that the Committee decides, the deferred shares will lapse.

Safety and financial measures for 2020

Performance categories	Weighting	Commentary
Safety	20%	Our goal is zero harm, including, above all, the elimination of workplace fatalities, so we consider safety as a key performance measure. We include Group safety measures alongside Group financial measures in the STIP for executive directors and other executives. Safety measures for all executives in 2020 included a standalone binary fatality measure (40%), with the remainder split between all-injury frequency rate (AIFR) (20%) and measures relating to our safety maturity model (SMM) (40%). Introduced in 2019, the Safety Maturity Model (SMM) provides a roadmap to improving safety and enabling comparable evaluation and learning across the organisation. The model has four categories: 1. Leadership and engagement. 2. Risk management (including Critical Risk Management – CRM). 3. Work planning and execution. 4. Learning and improvement. The model is assessed across levels of maturity with a scale of 1-9: Basic (1-3), Evolving (4-6) and Advanced (7-9) The Safety Maturity Model has been embraced by assets and proven as an effective methodology to drive improvement in culture and performance. There is a spread in individual asset maturity across the group and there is increased difficulty of advancing in maturity the more developed the site is. The 2020 Group aspiration for target was for individual assets to improve by 1 point above the prior year maturity score and for outstanding to improve by 2 points from the prior year assessment score. An end of year assessment by an independent team to the asset determined progress in maturity from the prior year baseline. In Q1 2020 seven additional assets joined the SMM programme. The baseline score for these additional assets was determined in independent assessments completed in H1 2020.
Financial	50%	Our current financial measures are based on KPIs that are used in managing the business. The first, underlying earnings, gives insight to cost management, production growth and performance efficiency on a like-for-like basis. This reflects the fact that Rio Tinto is focused on reducing operating costs, increasing productivity and generating maximum revenue from each of our assets. A reconciliation of underlying earnings to net earnings is provided in note 2 (Operating segments) on page 226. The second, STIP free cash flow, is also an important measure to the business. It demonstrates how we convert underlying earnings to cash, and provides further insight into how we are managing costs and increasing efficiency and productivity. STIP free cash flow comprises free cash flow (as defined on page 316) adjusted to exclude dividends paid to holders of non-controlling interests in subsidiaries and development capital expenditure. In 2020, this measure also incorporated an additional adjustment of US$0.1 billion to account for certain sustaining capital expenditure originally classified as development capital expenditure in the STIP target. When we measure financial performance against the annual plan, half is measured against the original plan, and half is "flexed" to exclude factors that are outside management's control, such as the impact of fluctuations in exchange rates, or quoted metal and other prices. "Flexed" financial targets are typically higher than the "unflexed" targets set by the Board when commodity prices rise and lower when commodity prices fall. Actual underlying earnings and STIP free cash flow results are compared against equally weighted "flexed" and "unflexed" targets.

The STIP measures for Product Group Chief Executive Officers (PGCEOs) include product group financial and safety measures in addition to Group financial measures.

Calculation of total STIP award

The following tables summarise the calculation of STIP award for the executive directors. Below threshold (25% relative performance) payout is nil on the Group safety and financial measures.

Group safety measures

	Weight (out of 100%)	2020 performance	Result (% of maximum)	Weighted result	Commentary on safety measures
Binary fatality	8.0	Actual 0; Maximum 0	100	8.0	In 2020 there were zero fatalities across the Group. Performance against the binary fatality measure was therefore maximum for all executives.
All-injury frequency rate (AIFR)	4.0	Threshold 0.42; Target 0.37 (Actual: 0.37); Maximum 0.31	50	2.0	In 2020, we ended the year at target with a Group AIFR of 0.37, which equates to an almost 12% improvement over the 2019 Group AIFR result of 0.42.
Safety maturity model (SMM)	8.0	Threshold 4.3; Target 5.2 (Actual: 5.4); Maximum 6.2	60	4.8	The 2019 end of year SMM scores served as baseline (threshold) for each individual asset for the 2020 assessments. The average baseline score across the Group from the 2019 assessments was 4.5. In H1 2020 seven additional assets were added to the programme. The baseline scores for these added assets was determined in assessments completed at that time. The combined average of the baseline scores (threshold) for all sites (including the seven additional sites) in 2020 was then adjusted to 4.3. The Group aspiration of improving by 1 point above the prior year assessment scores was realised in 2020, with a Group average outcome across all individual assets of 5.4. The Group STIP percentage for SMM is calculated based on the average of the SMM STIP percentage outcomes for each individual asset.
Total Group safety	20.0		74	14.8	

Group financial measures

	Weight (out of 100%)	2020 performance (US$bn)	Result (% of maximum)	Weighted result	Commentary on financial measures
Underlying earnings	12.5	Threshold 6.6bn; Target 8.2bn; Maximum 10.2bn (Actual: 12.4bn)	100	12.5	As in prior years the Committee considered whether any adjustments were warranted to ensure the outcome was a fair reflection of underlying performance. The Committee noted the COVID-19 related expenditure incurred in ensuring our operations continued to run safely which reduced the Group result by 2% but determined not to make any related adjustments, recognising the broader impact of the pandemic on the Group's operating and financial performance in the year.
Underlying earnings – flexed	12.5	Threshold 10.6bn; Target 12.7bn; Maximum 15.7bn (Actual: 12.4bn)	47	5.9	In accordance with our adjustment principles, the Committee considered the write-down of deferred tax assets in the Alcan Australia tax group which was recognised by the Aluminium product group in the year. The write-down results from a review in the year of the long term prospects for recovery of these deferred tax assets and did not result from operating performance or market conditions in 2020. An adjustment was therefore proposed to neutralise the impact of this write down on 2020 STIP outcomes.
STIP free cash flow	12.5	Threshold 5.5bn; Target 7.8bn; Maximum 10.8bn (Actual: 13.4bn)	100	12.5	
STIP free cash flow – flexed	12.5	Threshold 9.7bn; Target 12.6bn (Actual: 13.4bn); Maximum 16.5bn	59	7.5	The Committee determined that the adjustment was warranted but should only be applied to the Aluminium product group result, with no impact on the Group results. Consequently, the Group's financial results for the year remained at an unadjusted 77% of maximum.
Total Group financial	50.0		77	38.5	

Individual objectives

	Weight (out of 100%)	Result (% of maximum)	Weighted result	Commentary on individual measures
Jakob Stausholm	30.0	60.0	18.0	Refer to page 164.

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Commentary on individual performance against personal objectives.

Jean-Sébastien Jacques
Following the Board Review of the destruction of the Juukan Gorge rock shelters in May 2020, the Committee and Board exercised discretion and cancelled any payout due under the 2020 STIP, as discussed on page 141. For information only, the table below sets out performance against the targets agreed with Jean-Sébastien Jacques, all of which were set prior to the onset of the COVID-19 pandemic.

Safety	– Outstanding leadership and management response to COVID-19, prioritising the health and safety of employees, contractors and local communities while maintaining operations at all managed facilities. – Led the executive leadership team in delivering the second successive fatality free year in the Group's 148-year history.
People	– Employee engagement continued to improve, achieving a positive eNPS for the second successive year. – Improvement in female participation amongst senior management roles, but further work required on gender diversity across the workforce.
Cash	– Profitability at record levels with 51% underlying EBITDA margin and 27% ROCE, delivering a strong balance sheet and underpinning the Group's resilience in response to COVID-19. – TSR of 34%, including a record annual average share price.
Partnership	– Advancement of the sustainability agenda, including the development of the 2030 and 2050 climate change targets. – Partnership renewed with Tsinghua University and new partnerships confirmed with AB InBev, Paul Wurth and Nippon Steel. Further progress on climate change partnership with Baowu. Completion of the ELYSIS pilot plant in the Saguenay. – Agreements finalised with local communities in Canada, including the Cheslatta in British Colombia and Innu communities in Quebec and Labrador City. – Successful utilisation of commercial blockchain and development of portside trading and blending initiatives in China. – The relationship with Turquoise Hill Resources and the Government of Mongolia continued to be challenging.
Growth	– Advancement of the Simandou strategy. – Delivering the Definitive Estimate for Oyu Tolgoi within the previously disclosed range of possible outcomes. – Declaration of the Jadar maiden ore reserve.

Jakob Stausholm

Safety	– Member of the executive leadership team which delivered the second successive fatality free year in the Group's 148-year history. – Contributed to strong management response to COVID-19 challenges across the Group.
People	– Contributed to the continued improvement in employee engagement. – Year-on-year improvement in succession planning and leadership development across the Finance function. – Progress made towards gender and diversity targets, but further improvement needed.
Cash	– Against a backdrop of unprecedented market and economic volatility, continued to deliver a strong balance sheet and improved net debt position. – Strong focus on liquidity risk management against uncertain market backdrop. – Solid management of working capital and increased collaboration with commercial teams. – TSR of 34%, including a record annual average share price.
Partnership	– Active development of relationships with investors, particularly following the Juukan Gorge tragedy. – Ongoing engagement with ratings agencies and key stakeholders. – Commenced engagement with civil society stakeholders.
Growth	– Further progress made on the growth pipeline, with a focus on Tier 1 potential projects. – Active and disciplined approach to capital allocation decisions.

LTIP

PSAs granted in 2016 were based on three performance conditions, all measured over a five-year performance period:

- TSR relative to the EMIX Global Mining Index – one-third.
- TSR relative to the MSCI World Index – one-third.
- Improvements in EBIT margin relative to global mining comparators – one-third.

Performance against the improvement in the EBIT margin measure cannot be finalised until May in the year following the end of the five-year performance period. This is due to the reporting timeframes for companies in the EBIT margin comparator group and the time taken for the external source (currently S&P Capital IQ) to report the relevant data.

Accordingly, the value of the shares vesting included in the single total figure of remuneration table for 2020 is an estimate, which is finalised once the actual figures are known. The original estimate is based on:

- The TSR portion of the award (with estimated associated dividend equivalent shares) which vest in February following the end of the five-year performance period.
- An estimate of vesting of the EBIT margin portion of the award (with estimated associated dividend equivalent shares) based on the analysis of the latest available EBIT margin ranking prior to publication of this report.
- The average share prices for Rio Tinto plc and Rio Tinto Limited over the last quarter of the relevant year, as the share price on the date of which all shares vest is not ascertainable by the date on which the Remuneration Report is approved by the Board.

The actual values associated with the LTIP vesting are determined following the vesting of the EBIT margin portion of the award at the end of the following May based on the actual share prices on the date of vesting. The estimated LTIP values are then restated, if applicable, in the following Remuneration Report, as shown below for the 2015 PSA:

			Estimated					Actual			
Executive director	Year included in single figure	Award	EBIT margin rank out of 11[b]	Overall vesting %	Shares, (including dividend equivalents)	Share price	LTIP outcome (£'000)	EBIT margin rank out of 11[c]	Overall vesting %	Share price	LTIP outcome (£'000)
Jean-Sébastien Jacques	**2020[a]**	**2016 PSA**	**6th rank**	**66.67%**	**136,255 (26,942)**	**£49.38**	**5,728[d]**	**Will be determined in May 2021**			
	2019	2015 PSA	4th rank	67.9%	62,117 (12,691)	£42.04	2,611	3rd rank	75.98%	£37.16 for TSR element £43.72 for EBIT element	2,814

(a) 2016 PSA was granted in two tranches following on 11 March 2016 and 12 September 2016 with share price at grant of £20 and £22.95 respectively.
(b) Estimated vesting of the EBIT margin portion of the 2016 PSA is nil.
(c) Actual vesting of the EBIT margin portion of the 2015 PSA was 91.26%. Estimated vesting for 2015 PSA in 2019 was 67.07%.
(d) After application of the malus adjustment of £1 million.

Jakob Stausholm's first LTIP award was made in September 2018, with a performance period ending 31 December 2022.

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Calculation of 2016 PSA vesting

Our remuneration consultants, Deloitte, calculated performance against the TSR measures. The dual TSR measures recognise that the company competes in the global market for investors as well as within the mining sector, and aligns to the philosophy of rewarding executives for stable returns over the long-term relative to the broader market and the mining sector.

2020 vesting	Performance	Vesting	Weighting	Weighted achievement
TSR relative to EMIX Global Mining Index				
Threshold	Equal to index	22.5%	One third	
Maximum	Outperformance of the index by 6% per annum	100.0%		
Actual	6.6% per annum	100.0%		33.33%
TSR relative to MSCI World Index				
Threshold	Equal to index	22.5%	One third	
Maximum	Outperformance of the index by 6% per annum	100.0%		
Actual	9.7% per annum	100.0%		33.33%
Improvement in EBIT margin				
Threshold	Above the sixth ranked company	22.5%	One third	
Maximum	Rank of 1st or 2nd	100.0%		
Estimate	6th	Nil		Nil
Overall vesting				**66.67%**

PSAs granted in 2020

These awards are subject to TSR performance relative to the EMIX Global Mining Index and MSCI World Index (equal weighting). Target for threshold and maximum performance are unchanged from prior years.

Executive director	Type of award	Grant date	Face value of award (% of base salary)	Face value of award (£'000)	% of vesting at threshold performance	Grant price[a]	Conditional shares awarded	Vesting month	End of the period over which the performance conditions have to be fulfilled
Jean-Sébastien Jacques	PSA	16 March 2020	430%	4,997	22.5%	£43.43	115,049	Feb 2025	31 Dec 2024
Jakob Stausholm	PSA	16 March 2020	410%	3,245	22.5%	£43.43	74,711	Feb 2025	31 Dec 2024

PSAs to be granted in March 2021

Executive director	Type of award	Face value of award (% of base salary)	Face value of award (£'000)	% of vesting at threshold performance	Grant price[a]	Conditional shares to be awarded	Vesting month	End of the period over which the performance conditions have to be fulfilled
Jakob Stausholm	PSA	400%	4,600	22.5%	£44.44	103,510	Feb 2026	31 Dec 2025

(a) In line with Policy, the grant price for PSA awards is determined by reference to the average share price for the calendar year prior to year of grant.

Executive directors' shareholding

In line with our share ownership policy, executive directors' shareholdings are calculated using the closing price of Rio Tinto shares on the latest practicable date each year before the report is published. For the purposes of this 2020 report, the closing price on 5 February 2021 has been applied.

	Multiple of base salary					Holding of ordinary shares	
Executive director	31 December 2020	31 December 2019	Guidelines	Year guideline needs to be met	On target	31 December 2020	31 December 2019
Jean-Sébastien Jacques	8.2	4.3	4.0	2021	Meets	148,073	97,578
Jakob Stausholm	2.7	0.9	3.0	2023	Yes	30,280	15,078

The multiple of base salary shown above includes the value of 50% unvested Bonus Deferred Awards (BDA) held.

Following his appointment as Chief Executive on 1 January 2021, Jakob Stausholm's shareholding requirement will increase from 3 to 4x base salary which he will be expected to meet by 31 December 2024.

Service contracts

Executive director	Position held during 2020[a]	Date of appointment to position	Notice period
Jean-Sébastien Jacques	Chief Executive	2 July 2016	12 months
Jakob Stausholm	Chief Financial Officer	3 September 2018	12 months

(a) Jean-Sébastien Jacques stepped down as Chief Executive on 1 January 2021 and Jakob Stausholm was appointed Chief Executive on 1 January 2021.

Either party can terminate their contract with notice in writing, or immediately by paying the base salary only in lieu of any unexpired notice.

Executives' external and other appointments

Our executives may be invited to become non-executive directors of other companies. Our Policy is that such appointments can bring benefits to the Group by broadening the experience and knowledge of executives. Therefore where there is no likelihood of a conflict of interest, the Board will normally consent. Our Policy limits each executive's external appointment to one FTSE 100 company directorship or equivalent. The executive typically retains any fees earned.

Neither of the executive directors currently has an external directorship.

Chief Executive's remuneration over time: summary

Year	Chief Executive[a]	Single total figure of remuneration ('000)	Annual STIP award against maximum opportunity	Long-term incentive vesting against maximum opportunity (SOP)[b][c]	Long-term incentive vesting against maximum opportunity (PSA)[c]
2011	Tom Albanese	£4,256	0.0%	100.0%	0.0%
2012	Tom Albanese	£4,040	0.0%	100.0%	61.7%
2013	Tom Albanese	£53	0.0%		–
	Sam Walsh	A$9,993	72.1%		50.0%
2014	Sam Walsh	A$10,476	88.4%		49.0%
2015	Sam Walsh	A$9,141	81.9%		43.6%
2016	Sam Walsh[d]	A$5,772	68.2%		50.5%
	Jean-Sébastien Jacques	£3,116	82.4%		50.5%
2017	Jean-Sébastien Jacques	£3,821	73.4%		66.7%
2018	Jean-Sébastien Jacques	£4,551	70.1%		43.0%
2019	Jean-Sébastien Jacques[e]	£5,999	74.8%		76.0%
2020	Jean-Sébastien Jacques[f]	£7,224	0.0%		66.7%

(a) Tom Albanese held the role of Chief Executive until 17 January 2013, and left the Group on 16 July 2013. The single total figure of remuneration for Tom Albanese for 2013 is for the period up until 17 January 2013. Sam Walsh took over as Chief Executive from 17 January 2013, having previously been Chief Executive, Iron Ore and Australia. The single total figure of remuneration for Sam Walsh for 2016 is for the period up until 1 July 2016. Jean-Sébastien Jacques took over as Chief Executive on 2 July 2016, having previously been Chief Executive, Copper & Coal.

(b) In 2011 and 2012, Sam Walsh elected to receive his full LTIP awards under the PSP and as a result he has no options granted in 2011 or 2012 under the SOP and which had performance periods that ended on 31 December 2013 and 31 December 2014 respectively. The SOP ceased operation from 2013 and LTIP awards from 2013 have been made as PSA.

(c) All outstanding but unvested LTIP awards earned in previous years lapsed and were forfeited when Tom Albanese left the Group.

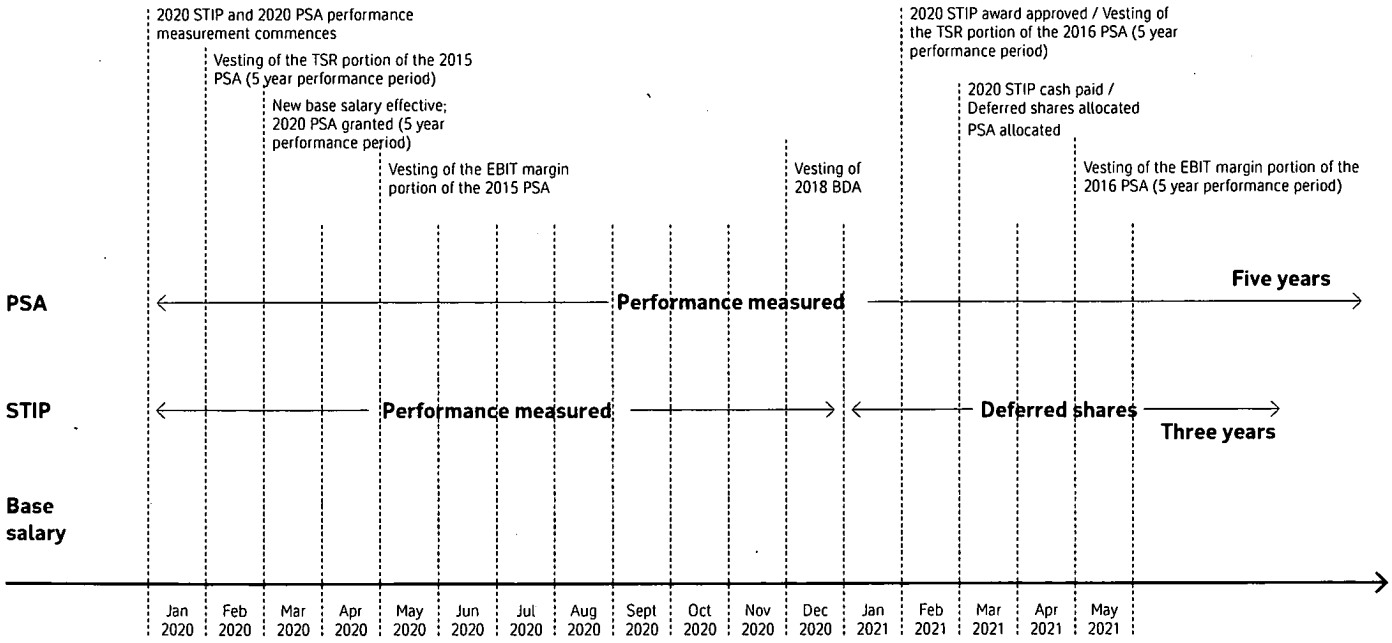
(d) STIP award and PSA vesting percentages restated following release from the deed of deferral.

(e) The 2019 single total figure of remuneration for Jean-Sébastien Jacques reported in the 2019 Annual Report was £5,796 based on the estimated vesting of the 2015 PSA of 67.9%. The restated 2019 single total figure of remuneration is £5,999 based on the actual vesting of the 2015 PSA of 75.98%.

(f) The 2020 single total figure of remuneration for Jean-Sébastien Jacques reported is based on the estimated vesting of the 2016 PSA of 66.7%.

When remuneration is delivered

The following chart provides a timeline of when total remuneration is delivered, using 2020 as an example



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TSR

We use relative TSR against the EMIX Global Mining Index and the MSCI World Index as two-thirds of our performance measures when we determine the vesting of PSA granted in 2016. The remaining third is based on the improvement in EBIT margin relative to the comparator group.

The effect of this performance on the value of shareholdings, as measured by TSR delivered over the past five years, based on the sum of dividends paid and share price movements during each calendar year, is detailed in the table below.

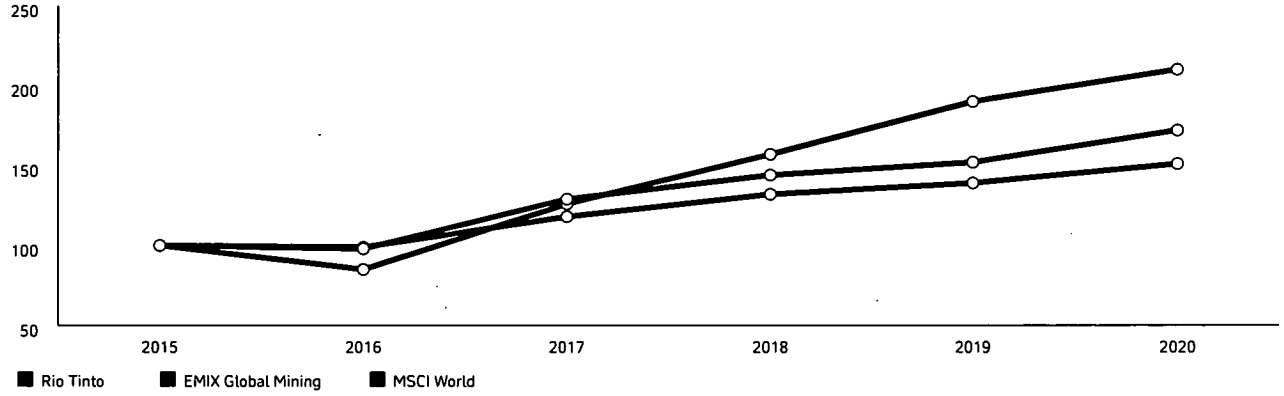
	Dividends paid during the year	Share price – Rio Tinto plc pence		Share price – Rio Tinto Limited A$		Total shareholder return (TSR)
Year	US cents per share	1 Jan	31 Dec	1 Jan	31 Dec	Group %
2016	152.5	1,980	3,159	44.71	59.90	41.4%
2017	235.0	3,159	3,942	59.90	75.81	43.8%
2018	307.0	3,942	3,730	75.81	78.47	(4.4%)
2019	635.0	3,730	4,503	78.47	100.40	38.5%
2020	386.0	4,503	5,470	100.40	113.83	33.9%

The data presented in this table reflects the dual corporate structure of Rio Tinto. We weight the two Rio Tinto listings to produce a Group TSR figure in line with the methodology used for the 2016 PSA.

The performance conditions for PSA are provided in the notes to table 3 on page 184.

The graph below shows Rio Tinto's TSR performance for the 2016 PSA. It uses the same methodology as that used to calculate the vesting for the PSA granted in 2016 with a performance period that ended on 31 December 2020.

Total shareholder return

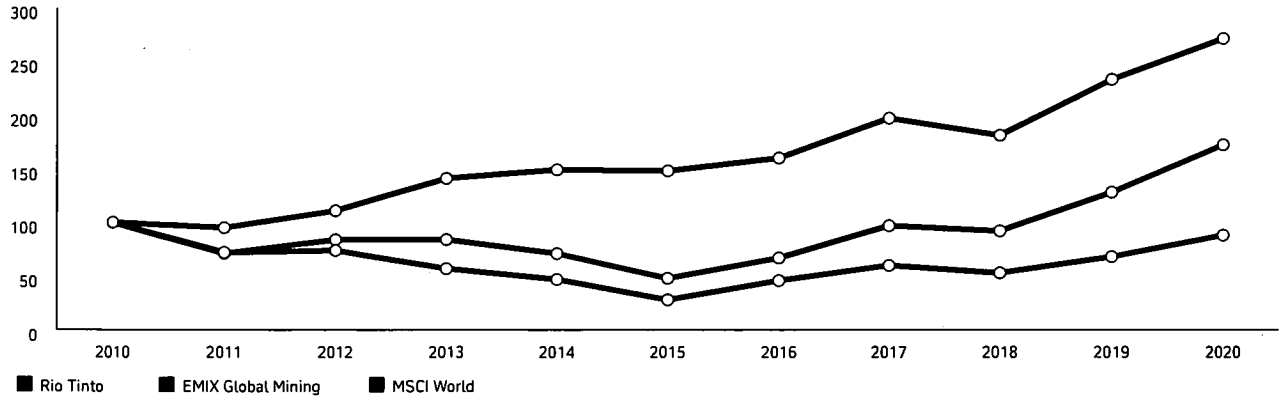


(a) TSR for the MSCI and EMIX indices has been calculated using 12 month average Return Index data for the year sourced from DataStream.
(b) Rio Tinto's Group TSR has been calculated using a weighted average for Rio Tinto plc and Rio Tinto Limited. The weighting is based on the free-float market capitalisation of each entity as at the start of the period.

The following graph illustrates the TSR performance of the Group against the EMIX Global Mining Index and the MSCI World Index over the ten years to the end of 2020.

The graph meets the requirements of Schedule 8 of the UK Large and Medium-sized Companies and Groups (Accounts and Reports) Regulations 2008 (as amended) and is not an indication of the likely vesting of PSA granted in 2016.

Total shareholder return



(a) TSR has been calculated using spot return index data as at the last trading day for the year sourced from DataStream. The indices chosen are those used for measuring PSA performance.
(b) Rio Tinto's Group TSR has been calculated using a weighted average for Rio Tinto plc and Rio Tinto Limited. The weighting is based on the free-float market capitalisation of each entity as at the start of the period.

The following table summarises the average vesting of PSA for executive directors since 2016. The estimated outcome for the 2015-2019 performance period, reported in the 2019 Annual Report of 67.9%, has been restated with the actual outcome of 76.0% The overall vesting level for the 2016-2020 performance period is an estimate based on the estimated EBIT margin outcome.

Performance period	Vesting year	% of award vested
2013-16	2017	50.5
2013-17	2018	66.7
2014-18	2019	43.0
2015-19	2020	76.0
2016-20	2021	66.7
Average vesting	–	60.6

Past-director payments

As previously disclosed, in light of the ongoing investigations by regulators in relation to the Simandou iron ore project in Guinea, a deed of deferral was mutually agreed between Rio Tinto and the former Chief Executive, Sam Walsh, as a matter of good corporate governance. The principal provision of this deed was that his incentive plan awards, which would have otherwise vested up to 2021, would be subject to a three-stage deferral.

Following an independent confidential and binding dispute resolution process, a determination was made that the first-stage deferral, which would have been payable on 31 December 2018 together with associated dividends and interest, should be paid to Sam Walsh. In accordance with this decision, an amount of A$7,304,309, less statutory deductions, was paid to him on 13 March 2020.

In light of the decision taken under the binding dispute resolution, combined with no further material information having emerged, the Board concluded that Sam Walsh should receive the second-stage deferral, payable on 31 December 2020 together with associated dividends and interest. Accordingly, he received payment of a further A$17,574,205, less statutory deductions, on 31 December 2020.

In accordance with the terms of his retirement arrangements and deed of deferral, and continued trailing tax compliance obligations, Sam Walsh continued to receive personal tax compliance services. The total gross cost of these services in 2020 was A$33,897.

A final disclosure with respect to the third-stage deferral will be made in the 2021 directors' Remuneration Report.

Loss of office payments

Jean-Sébastien Jacques stepped down from his role as an executive director and Chief Executive on 1 January 2021. He will remain on garden leave until 31 March 2021 and receive his base salary and contractual benefits including benefits-in-kind and pension (contributions or cash allowance in lieu) up to his termination date. He is eligible to receive payments of £519,000 in lieu of his remaining unworked notice of approximately five months which will be paid in monthly instalments and remain subject to mitigation. He will also receive payment of £215,000 for statutory accrued and unused annual and long service leave in line with relevant legislation and policy. Outstanding LTIP awards will be treated in accordance with eligible leaver provisions of each plan and in accordance with our Policy, with pro-rating for service where applicable, up to 31 March 2021. All LTIP awards will vest on their normal vesting dates with the PSAs remaining subject to achievement of applicable performance conditions. Under the terms of his settlement agreement, Jean-Sébastien Jacques must comply with a two year post-employment holding requirement.

Incoming director remuneration

Jakob Stausholm was appointed as the Chief Executive effective 1 January 2021.

The remuneration package offered to the new Chief Executive has been aligned with the new Policy and is comprised of the following elements:

- A base salary of £1,150,000. The next salary review will be in March 2022.
- Target STIP opportunity of 100% of base salary (with a maximum opportunity of 200% of base salary).
- LTIP award of up to 400% of base salary.
- A reduced company pension contribution of 14% of base salary.
- Other benefits include company provided health-care coverage, and continued eligibility to participate in the all-employee share plans.
- A minimum shareholding requirement of 400% of base salary (including a two-year post-employment holding requirement) applies.

Chief Executive pay ratio

The ratio of the total remuneration of the Chief Executive to the median total remuneration of all Rio Tinto employees for 2020 was 81:1 (2019: 68:1, restated for actual 2015 PSA vesting). This has been calculated using the single total figure of remuneration for the Chief Executive (£7.22 million) and the median employee in the Group (c.£90,000).

The ratio is primarily driven by the percentage of total remuneration that is performance related and reflects the increased LTIP vesting outcomes for 2020 compared to 2019. This further demonstrates the alignment to the shareholder experience as measured by total shareholder return. The Committee continues to be mindful of the relationship between executive remuneration and that of our broader workforce. The Committee's decision making will continue to be supported by regular and detailed reporting on these matters.

As the company employs fewer than 250 employees in the UK, this analysis has been provided on a voluntary basis.

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Gender pay

Rio Tinto is committed to ensuring that employees with similar skills, knowledge, qualifications, experience and performance are paid equally for the same or comparable work.

The company's statement on pay equity, and our approach to diversity and inclusion, are set out on pages 75-76, and on our website.

An additional voluntary disclosure on UK gender pay reporting is set out on our website.

Relative spend on remuneration

The table below shows our relative spend on remuneration across our global employee population and distributions to shareholders in the year. We have also shown other significant disbursements of the company's funds for comparison.

Stated in US$m	2020	2019	Difference in spend
Remuneration paid[a]	4,770	4,522	248
Distributions to shareholders[b]	6,340	11,886	(5,546)
Purchase of property, plant and equipment and intangible assets[c]	6,189	5,488	701
Corporate income tax paid[c]	5,289	4,549	740

(a) Total employment costs for the financial year as per note 5 to the financial statements.
(b) Distributions to shareholders include equity dividends paid to owners of Rio Tinto and own shares purchased from owners of Rio Tinto as per the Group cash flow statement.
(c) Purchase of property, plant and equipment and intangible assets, and corporate income tax paid during the financial year are as per the Group cash flow statement and are calculated as per note 1 to the financial statements.

Change in director and employee pay

In the table below we compare the changes from 2019 to 2020 in salary, benefits and annual incentives of the directors to that of the Australian employee population.

		Percentage change in salary/fees paid	Percentage change in other benefits paid[a]	Percentage change in annual incentive[b]
Chief Executive	Jean-Sébastien Jacques	2	(28)	(100)
Chief Financial Officer	Jakob Stausholm	2	34	29
Non-executive directors	Simon Thompson	0	3	
	Megan Clark	1	(54)	
	David Constable	12	(83)	
	Simon Henry	3	(88)	
	Sam Laidlaw	8	(87)	
	Michael L'Estrange[c]	46	(71)	
	Simon McKeon	9	(72)	
Rio Tinto plc workforce[d]		n/a		
Australian workforce[d]		4	5	19

(a) The change in non-executive director benefits paid reflects the reduction in travel allowances paid in 2020 as a result of COVID-19 travel restrictions.
(b) The percentage change in annual incentive compares the incentive outcomes for the 2019 performance year to that for the 2020 performance year.
(c) The increase in Michael L'Estrange's fees includes additional fees for leading the Board Review.
(d) Since Rio Tinto plc, the statutory entity for which this disclosure is required, does not have any employees, we have included voluntary disclosure of the change in employee pay for our Australian employees which make up more than 40% of our employee population.

What we paid our Chairman and non-executive directors

Positions held

We list the non-executive directors who held office during 2020 below. Each held office for the whole of 2020 unless otherwise indicated. Their years of appointment are reported in "Board of Directors" on pages 116-117.

Name	Title
Simon Thompson	Chairman
Megan Clark	Non-executive director
David Constable	Non-executive director
Hinda Gharbi	Non-executive director (from 1 March 2020)
Simon Henry	Non-executive director
Sam Laidlaw	Non-executive director
Michael L'Estrange	Non-executive director
Simon McKeon	Non-executive director
Jennifer Nason	Non-executive director (from 1 March 2020)
Ngaire Woods	Non-executive director (from 1 September 2020)

Annual fees payable

The table below shows the annual fees paid in 2020 and payable in 2021, to the Chairman and non-executive directors.

	2021	2020
Director fees		
Chairman's fee	**£730,000**	£730,000
Non-executive director base fee	**£95,000**	£95,000
Non-executive director base fee for Australian residents	**£105,000**	£105,000
Senior independent director	**£45,000**	£45,000
Committee fees		
Audit Committee Chairman	**£40,000**	£40,000
Audit Committee Member	**£25,000**	£25,000
Remuneration Committee Chairman	**£35,000**	£35,000
Remuneration Committee Member	**£20,000**	£20,000
Sustainability Committee Chairman	**£35,000**	£35,000
Sustainability Committee Member	**£20,000**	£20,000
Nominations Committee Member	**£7,500**	£7,500
Meeting allowances		
Long distance (flights over 10 hours per journey)	**£10,000**	£10,000
Medium distance (flights of 5-10 hours per journey)	**£5,000**	£5,000

The Chairman's fee is determined by the Committee and was last increased on 1 July 2013. All other fees are subject to review by the Board on the recommendation of the Chairman's Committee.

The Chairman's Committee conducted a review of non-executive director fees in November 2020. Following this review, it was determined that all fees and travel allowances should remain unchanged.

The additional £10,000 allowance for eligible Australian directors is to compensate them for additional UK National Insurance contributions which, unlike directors based in other jurisdictions, they are not able to offset against their local tax payments.

We set out details of each element of remuneration, and the single total figure of remuneration, paid to the Chairman and non-executive directors during 2020 and 2019 in US dollars in table 1b on page 178. No post-employment, termination or share-based payments were made. Statutory minimum superannuation contributions for non-executive directors are deducted from the director's overall fee entitlements when these are required by Australian superannuation law.

The total fee and allowance payments made to the Chairman and non-executive directors in 2020 are within the maximum aggregate annual amount of £3 million set out in the Group's constitutional documents, approved by shareholders at the 2009 AGMs.

Share ownership policy for non-executive directors

Rio Tinto has a policy that encourages non-executive directors to build up a shareholding equal in value to one year's base fee within three years of their appointment. Details of non-executive directors' share interests in the Group, including total holdings, are set out in table 2 on page 179.

Non-executive directors' share ownership

The non-executive directors' shareholdings are calculated using the market price of Rio Tinto shares on the latest practicable date before this report was published (5 February 2021):

Director	Share ownership level at 31 December 2020 as a multiple of base fee (or Chairman's fee)	Share ownership level at 31 December 2019 as a multiple of base fee (or Chairman's fee)
Simon Thompson	4.4 (0.6)	3.3 (0.4)
Megan Clark	3.9	2.9
David Constable	1.5	1.1
Hinda Gharbi	0.9	–
Simon Henry	0.9	0.2
Sam Laidlaw	4.4	3.3
Michael L'Estrange	1.9	1.5
Simon McKeon	6.1	5.0
Jennifer Nason	1.1	–
Ngaire Woods	–	–

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STIP

Overview of STIP weightings and measures for 2020

The following table shows the measures and weightings used to determine STIP awards for executives in 2020.

	Weighting for executive directors and Group executives	Weighting for PGCEOs
Safety – split between standalone binary measure for fatality, AIFR and SMM	20%	20%
Financial measures split equally between underlying earnings and STIP free cash flow for the Group	50%	20%
Financial measures split equally between underlying earnings and STIP free cash flow for the relevant product group	0%	30%
Individual measures based on key strategic initiatives of each role and contribution to overall company performance	30%	30%

The Group safety result was 74% of maximum and the average performance against safety goals for executives was above "target".

Detailed commentary on the performance of each product group is on pages 43-61. Average performance against the individual product group financial goals was above "target".

The Committee reviewed the individual performance of executives who are not executive directors and who are eligible for a 2020 STIP payout and approved individual performance scores ranging from "target" to above "target" performance.

The 2020 STIP awards are detailed in the table below.

			Percentage of:		
(000's)	2020 STIP award (% of salary)[a]	2020 STIP award	Maximum STIP awarded	Maximum STIP forfeited	Target STIP awarded
Bold Baatar	136.0%	£767	68.0%	32.0%	136.0%
Alfredo Barrios	147.0%	C$1,535	73.5%	26.5%	147.0%
Mark Davies[b]	136.6%	A$316	68.3%	31.7%	136.6%
Vera Kirikova	142.6%	£643	71.3%	28.7%	142.6%
Barbara Levi	142.6%	£627	71.3%	28.7%	142.6%
Stephen McIntosh[c]	141.0%	A$1,116	70.5%	29.5%	141.0%
Simone Niven	0%	£0	0%	100%	0%
Chris Salisbury	0%	A$0	0%	100%	0%
Arnaud Soirat	144.2%	£814	72.1%	27.9%	144.2%
Peter Toth[b]	136.6%	£151	68.3%	31.7%	136.6%
Simon Trott	142.6%	S$1,390	71.3%	28.7%	142.6%
Ivan Vella[d]	132.8%	A$224	66.4%	33.6%	132.8%

(a) Results out of 100% have been rounded to one decimal place and STIP awards have been rounded to the nearest thousand units. As the actual STIP awards do not use rounding conventions, small rounding variances may occur.
(b) STIP award for the period 1 October to 31 December 2020.
(c) STIP award for the period 1 January to 30 September 2020.
(d) STIP award for the period 15 September to 31 December 2020.

STIP measures, weightings and targets for 2021

The STIP measures and weightings for executives will be 50% for financial, 20% safety (both unchanged from 2020), 15% for ESG and 15% for individual. Some ESG-related aspects were previously embedded within the 30%-weighted individual component. From 2021 onwards, this has been split into a standalone ESG component of 15% and a reduced individual component of 15%. The individual component will continue to reflect key objectives set across our strategic pillars, which for the Chief Executive will include objectives related to evolving the organisational culture.

The financial and individual targets that have been set for 2021 are considered by the Board to be commercially sensitive. As such, the specific targets for these measures, and the performance against them, are expected to be described retrospectively in the 2021 Implementation Report. The Group financial targets relate to underlying earnings and free cash flow.

2021 ESG measures, weightings and targets

The ESG challenge is complex and evolving. The insight gained during the consultations with investors on the Policy and via other channels on this topic was helpful in finalising our approach for 2021. Given the long-term nature of many of the ESG challenges and the focus and stability needed to mobilise our company and teams effectively across the different aspects of ESG, the Committee considered carefully whether to incorporate ESG metrics into the long-term incentives. In the context of evolving expectations as to what good looks like and the desire to set meaningful, transparent and measurable targets, on balance, the Committee decided to further embed ESG in the short-term incentive.

As we gain experience and improve our ability to set targets across the three ESG pillars and measure progress, we may replace and/or amend ESG metrics and targets included in the STIP in future years. Other ESG related objectives outside of STIP will continue to be actively managed and may form part of business leaders' individual performance objectives. In selecting the focus areas and metrics for the ESG component, we have been conscious and mindful of the need to set credible stretch targets aligned to our strategic agenda that are transparent and measurable whilst recognising some inevitable limitations of what is possible.

The ESG metrics and targets for 2021 set out below were considered and approved by the Remuneration Committee and the Sustainability Committee.

Group STIP metrics		Target	Outstanding	Weighting out of 100%*
Environment ('E')	– Approve 0.22Mt CO_2e of abatement projects[1]	0.22Mt CO_2e	0.37Mt CO_2e	2.5%
	– Delivery of goals to progress scope 3 partnership strategy	3 out of 4	4 out of 4	2.5%
Social ('S')	– Percentage point increase of women in the overall workforce against 2020 baseline[2]	2%	3%	5%
Governance ('G')	– Support delivery of Group Communities and Social Performance improvements and cultural awareness training	(GIA review)[3]	(GIA review)[3]	2.5%
	– Improved assurance and risk management processes	(GIA review)[3]	(GIA review)[3]	2.5%
				15.0%

1. Excludes closures and in addition of abatements already approved in 2020, which include the 0.08Mt CO_2e Pilbara solar project and the 0.14Mt CO_2e Kennecott RECs, for a combined 0.5Mt CO_2e of approved abatement projects over 2020 and 2021.
2. Improvement measured against a baseline of 20.1% for the total workforce based on managed operations as of 31 December 2020. Employees in operations and general support make up almost 60% of our workforce and the representation of women has remained constant at around 14%. Any improvement in the overall gender balance will require a significant improvement in this category. Improvement to get to target will require the recruitment of 889 women.
3. Group Internal Audit (GIA) will perform an end of year certification of performance for each objective against a detailed baseline plan set out in the Trusted Partnership Program (TPP). The TPP was established in response to the Board Review which identified six priorities which have been mapped to a number of topic areas across three groupings: the Iron Ore product group, Australia and Group. Within each topic area there are multiple workstreams that cover the specific requirements contained in the Board Review and other activities identified through the engagement to date, each with an accountable lead. Progress is reported to the Board Sustainability Committee on a regular basis. The TPP is a multi-year effort requiring substantive change and focus at all levels of the Group and across multiple dimensions. The 2021 'G' objectives are part of the Group wide topic area of Social Performance, Function, Assurance and Organisation Alignment. We believe that achieving outstanding across all priorities and focus areas of the TPP would be industry leading.

* No payout below target. Payout of 50% of maximum for achieving target, going up in a straight line to outstanding.

2021 safety measures, weightings and targets

	Threshold	Target	Maximum
Fatality[1]	If a fatality occurs, there is no payment made in relation to this measure		An outcome of outstanding is paid if no fatality occurs.
AIFR	0.4	0.33	0.3 (with zero permanent disabling injuries (PDI))
SMM (basic and evolving assets)[2]	Sustained end of year 2020 score	Improvement of 1 point	Improvement of 2 points or achieve 7.5, whichever is less
SMM (advanced assets)[2]	Sustained end of year 2020 score	Improvement of 0.5 or achieve a total score of 7.4, whichever is less	Improvement of 1.5 or achieve a total score of 8.4, whichever is less

1. The metric will apply equally across all executives, regardless of the location of any fatality.
2. The 2020 SMM assessment outcomes at each individual asset of 5.4 will serve as the baseline scores for 2021. In the course of the year, as part of the continued embedding of SMM, further sites will be added and baseline assessment completed at each individual asset. This will be fully disclosed in the 2021 director's Remuneration Report.

Share ownership

The following table shows the share ownership level for members of the Executive Committee as a multiple of base salary.

	Share ownership level at 31 December 2020 as a multiple of base salary
Bold Baatar	4.1
Alfredo Barrios	8.0
Mark Davies	2.4
Vera Kirikova	2.2
Barbara Levi	0.2
Arnaud Soirat	3.4
Peter Toth	3.0
Simon Trott	3.9
Ivan Vella	1.0

Share ownership level is calculated using the market price of Rio Tinto shares on the latest practicable date before this report was published (5 February 2021), and we define "share ownership" on page 154.

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Departures from the Executive Committee

Chris Salisbury

Chris Salisbury stepped down from the Executive Committee as Chief Executive, Iron Ore with effect from 11 September 2020, and left the Group on 31 December 2020. Until this date, he received his base salary and contractual benefits including benefits-in-kind and pension (contributions or cash allowance in lieu) up to his termination date. As part of the Juukan Gorge malus adjustment, his 2020 STIP was forfeited (2019: A$1,110,000). He received his contractual payment of A$718,000 in lieu of his remaining unworked notice of approximately eight months. He also received payment of A$1,687,000 for statutory accrued and unused annual and long service leave in line with Australian legislation and policy. Outstanding LTIP awards will be treated in accordance with eligible leaver provisions of each plan and in accordance with our Policy, with pro-rating where applicable, up to 31 December 2020. All LTIP awards will vest on their normal vesting dates with PSA remaining subject to achievement of any applicable performance conditions.

Stephen McIntosh

Stephen McIntosh stepped down from the Executive Committee on 30 September 2020 and left the Group on 31 December 2020. He continued to receive his normal base salary and other contractual benefits until 31 December 2020. He will remain eligible to receive a STIP award for the period 1 January 2020 to 31 December 2020, which will be calculated on actual business and individual performance and will be paid fully in cash in March 2021. Outstanding LTIP awards will be treated, where required, in accordance with eligible leaver provisions of each plan with pro-rating, where applicable, up to 31 December 2020. Stephen received a contractual payment of A$ 85,768 in lieu of unused annual leave and long-service leave as at his termination date in line with Australian legislation and policy.

Simone Niven

The Board Review resulted in recommendations on the structure of cultural heritage management which substantially altered the scope of the Corporate Relations portfolio. The change to the portfolio meant that the role of Group Executive, Corporate Relations was going to be restructured. As a result, Simone Niven stepped down from the Executive Committee, and left the Group on 31 December 2020. Until this date, she received her base salary and contractual benefits including benefits-in-kind and pension (contributions or cash allowance in lieu) up to her termination date. As part of the Juukan Gorge malus adjustment, her 2020 STIP was forfeited (2019: £525,189). She received her contractual payment of £307,000 in lieu of her remaining unworked notice of approximately eight months. Consistent with our severance practice in the UK, she received a further severance payment of £448,000 based on her approximately 12 years of service. She also received payment of £49,000 for statutory accrued and unused annual leave in line with UK legislation and policy. Outstanding LTIP awards will be treated in accordance with eligible leaver provisions of each plan and in accordance with our Policy, with pro-rating where applicable, up to 31 December 2020. All LTIP awards will vest on their normal vesting dates with PSA remaining subject to achievement of any applicable performance conditions.

Service contracts

All executives have service contracts which can be terminated by the company with 12 months' notice in writing, or by the employee with six months' notice in writing, or immediately by the company by paying base salary only in lieu of any unexpired notice.

Name	Position(s) held during 2020	Date of appointment to position
Other executives		
Bold Baatar	Chief Executive Energy & Minerals	1 December 2016
Alfredo Barrios	Chief Executive Aluminium	1 June 2014
Mark Davies	Group Executive Safety, Technical & Projects	1 October 2020
Vera Kirikova	Group Executive Human Resources	1 January 2017
Barbara Levi	Group Executive Group General Counsel	1 January 2020
Arnaud Soirat	Chief Executive Copper & Diamonds	2 July 2016
Peter Toth	Group Executive Strategy & Development	1 October 2020
Simon Trott	Chief Commercial Officer	1 January 2018
Ivan Vella	Interim Chief Executive Iron Ore	15 September 2020

Other share plans

All employee share plans

The Committee believes that all employees should be given the opportunity to become shareholders in our business, and that share plans help engage, retain and motivate employees over the long-term. Rio Tinto's share plans are therefore part of its standard remuneration practice, to encourage employee share ownership and create alignment with the shareholder experience. Executives may participate in broad-based share plans that are available to Group employees generally and to which performance conditions do not apply.

A global employee share purchase plan is normally offered to all eligible employees unless there are local jurisdictional restrictions. Under the plan, employees may acquire shares up to the value of US$5,000 (or equivalent in other currencies) per year, or capped at 10% of their base salary if lower. Each share purchased will be matched by the company, providing the participant holds the shares, and is still employed, at the end of the three-year vesting period.

Approximately 22,000 (50%) of our employees are shareholders as a result of participating in these plans. In the UK, these arrangements are partially delivered through the UK Share Plan which is a UK tax approved arrangement. Under this plan, eligible participants may also receive an annual award of Free Shares up to the limits prescribed under UK tax legislation.

Management Share Awards (MSA)

The MSA are designed to help the Group attract the best staff in a competitive labour market, and to retain key individuals as we deliver our long-term strategy. MSA are conditional awards that are not subject to a performance condition. They vest at the end of three years subject to continued employment. Shares to satisfy the awards are bought in the market or re-issued from treasury. Executive Committee members are not eligible for the MSA after appointment.

Dilution

Awards under the 2013 Performance Share Plan, the 2018 EIP and all employee plans may be satisfied by, in the case of Rio Tinto plc, treasury shares or the issue of new shares or the purchase of shares in the market. In the case of Rio Tinto Limited, the plans are satisfied by the purchase of shares in the market and can be satisfied by the issue of new shares.

In the UK, the Investment Association has issued corporate governance guidelines in relation to the amount of new shares that may be issued having regard to the total issued share capital. Under the guidelines, the rules of a scheme must provide that commitments to issue new shares or reissue treasury shares, when aggregated with awards under all of a company's other schemes, must not exceed 10% of the issued ordinary share capital (adjusted for share issuance and cancellation) in any rolling ten-year period.

Furthermore, commitments to issue new shares or reissue treasury shares under executive (discretionary) schemes should not exceed 5% of the issued ordinary share capital of a company (adjusted for share issuance and cancellation) in any rolling ten-year period. This may be exceeded where vesting is dependent on the achievement of significantly more stretching performance criteria. Rio Tinto plc is in compliance with these guidelines. As at 31 December 2020 these limits had not been exceeded.

In Australia, as a condition of relief from prospectus requirements, the Australian Securities and Investments Commission has imposed a cap on the issue of shares to employees of 5% of issued capital during a three-year period. As Rio Tinto Limited satisfies awards by market purchase, Rio Tinto Limited is in compliance with this requirement.

All other share awards are satisfied by shares that are purchased in the market. Further information in respect of the share plan arrangements and outstanding balances under each plan can be found in note 41 to the financial statements.

Shareholder voting

In the table below, we set out the results of the remuneration-related resolutions approved at the Group's 2020 AGMs and the Group's 2018 AGMs for the current Policy. Our meetings with shareholders in 2020 were well attended and provided an opportunity for the Committee Chairman to discuss remuneration-related topics with shareholders.

Resolution	Total votes cast	Votes for	Votes against	Votes withheld[a]
Approval of the Directors' Remuneration Report: Implementation Report	1,137,495,323	1,062,225,236	75,270,087	26,050,466
		93.4%	6.6%	
Approval of the Directors' Remuneration Report	1,145,929,618	1,062,051,718	83,877,900	17,616,089
		92.7%	7.3%	
Approval of the Remuneration Policy (2018)	1,209,963,085	1,157,103,709	52,859,376	37,598,712
		95.6%	4.4%	

(a) A vote "withheld" is not a vote in law, and is not counted in the calculation of the proportion of votes for and against the resolution.

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Table 1a – Executives' remuneration

Stated in US$'000[a]		Short-term benefits				
		Base salary	Cash bonus[b]	Other cash-based benefits[c]	Non-monetary benefits[d][e]	Total short-term benefits
Executive directors						
Jean-Sébastien Jacques	**2020**	1,487	–	366	40	1,893
	2019	1,447	1,118	350	64	2,979
Jakob Stausholm	**2020**	1,012	768	235	79	2,094
	2019	989	573	223	57	1,842
Other executives						
Bold Baatar	**2020**	719	522	162	36	1,439
	2019	683	398	148	56	1,285
Alfredo Barrios	**2020**	777	601	249	106	1,733
	2019	769	383	247	123	1,522
Mark Davies[f]	**2020**	159	121	627	74	981
Vera Kirikova	**2020**	573	437	144	31	1,185
	2019	536	312	129	19	996
Barbara Levi	**2020**	565	427	114	76	1,182
Stephen McIntosh[g]	**2020**	544	857	84	70	1,555
	2019	717	414	150	81	1,362
Simone Niven	**2020**	573	–	132	18	723
	2019	536	345	124	17	1,022
Chris Salisbury[h]	**2020**	509	–	134	50	693
	2019	717	387	179	53	1,336
Arnaud Soirat	**2020**	719	553	162	60	1,494
	2019	683	465	148	61	1,357
Peter Toth[i]	**2020**	141	103	17	7	268
Simon Trott	**2020**	704	525	26	53	1,308
	2019	691	416	26	23	1,156
Ivan Vella[i]	**2020**	117	129	49	12	307

Notes to table 1a – Executives' remuneration

(a) "Table 1a – Executives' remuneration" is reported in US$ using A$1 = US$0.69082; £1 = US$1.28379; C$1 = US$0.74644; S$1 = US$0.72538 (2020 average rates), except for cash bonuses which use A$1 = US$0.76820; £1 = US$1.36027; C$1 = US$0.78342; S$1 = US$0.75537 (2020 year-end rates).

(b) "Cash bonus" relates to the cash portion of the 2020 STIP award to be paid in March 2021.

(c) "Other cash-based benefits" typically include cash in lieu of a car and fuel and, where applicable, cash in lieu of company pension or superannuation contributions.

(d) "Non-monetary benefits" for executives include healthcare coverage, provision of a car, professional tax compliance services/advice and flexible perquisites.

(e) "Non-monetary benefits" for executives living outside their home country include international assignment benefits comprising, where applicable, housing, education, relocation expenses, tax equalisation and related compliance services, assignee and family home leave trips and international assignment payments made to and on their behalf.

(f) The details for 2020 reflect remuneration for the period 1 October to 31 December 2020.

(g) The details for 2020 reflect remuneration for the period 1 January to 30 September 2020.

(h) The details for 2020 reflect remuneration for the period 1 January to 11 September 2020.

(i) The details for 2020 reflect remuneration for the period 15 September to 31 December 2020.

Stated in US$'000[a]		Long-term benefits: Value of shared-based awards[j] BDA[l]	PSA	MSA	Others[m]	Post-employment benefits[n] Pension and superannuation	Other post-employment benefits	Termination benefits	Total remuneration[o]	Currency of actual payment
Executive directors										
Jean-Sébastien Jacques	**2020**	1,661	9,732	–	11	22	–	–	13,319[k]	£
	2019	1,047	3,028	–	8	27	–	–	7,089	£
Jakob Stausholm	**2020**	362	808	–	3	7	–	–	3,274	£
	2019	174	491	–	1	15	–	–	2,523	£
Other executives										
Bold Baatar	**2020**	396	1,549	–	4	7	–	–	3,395	£
	2019	327	1,071	6	8	13	–	–	2,710	£
Alfredo Barrios	**2020**	466	2,209	–	3	21	–	–	4,432	C$
	2019	472	1,675	–	4	21	–	–	3,694	C$
Mark Davies	**2020**	42	57	38	1	4	–	–	1,123	A$
Vera Kirikova	**2020**	331	1,087	–	5	7	–	–	2,615	£
	2019	242	713	3	8	13	–	–	1,975	£
Barbara Levi	**2020**	100	86	354	–	17	–	–	1,739	£
Stephen McIntosh	**2020**	639	3,605	–	8	72	–	59	5,938[k]	A$
	2019	398	1,070	7	4	47	–	–	2,888	A$
Simone Niven	**2020**	514	2,808	–	5	19	–	1,054	5,123[k]	£
	2019	270	794	3	5	18	–	–	2,112	£
Chris Salisbury	**2020**	592	3,761	–	–	13	–	1,676	6,735[k]	A$
	2019	389	1,149	8	–	17	–	–	2,899	A$
Arnaud Soirat	**2020**	457	1,597	–	1	7	–	–	3,556	£
	2019	402	1,117	8	5	13	–	–	2,902	£
Peter Toth	**2020**	42	105	51	1	1	–	–	468	£
Simon Trott	**2020**	328	969	6	3	168	–	–	2,782	S$
	2019	211	694	48	4	165	–	–	2,278	S$
Ivan Vella	**2020**	26	79	50	1	4	–	–	467	A$

(j) The value of share-based awards has been determined in accordance with the recognition and measurement requirements of IFRS2 "Share-based Payment". The fair value of awards granted as Management Share Awards (MSA), Bonus Deferral Awards (BDA) and Performance Share Awards (PSA) have been calculated at their dates of grant using valuation models provided by external consultants, Lane Clark and Peacock LLP, including an independent lattice-based option valuation model and a Monte Carlo valuation model which take into account the constraints on vesting attached to these awards. Further details of the valuation methods and assumptions used for these awards are included in note 41 (Share-based Payments) in the financial statements. The fair value of other share-based awards is measured at the purchase cost of the shares from the market. The non-executive directors do not participate in the long-term incentive share plans.

(k) This includes an accelerated accounting charge under IFRS 2 for unvested share based awards that are retained on termination of employment, which remain subject to performance testing and pro-ration, as applicable. This does not reflect amounts actually paid in 2020 or the value of the share awards that will ultimately vest. Excluding this accelerated accounting charge, the total remuneration figure for 2020 would have been US$7,105 for Jean-Sébastien Jacques, US$3,728 for Chris Salisbury, US$3,087 for Stephen McIntosh and US$3,233 for Simone Niven (all figures stated in US$'000).

(l) "BDA" represents the portion of the 2017 – 2020 STIP awards deferred into Rio Tinto shares.

(m) "Others" includes the Global Employee Share Plan (myShare) and the UK Share Plan.

(n) The costs shown for defined benefit pension plans and post-retirement medical benefits are the service costs attributable to the individual, calculated in accordance with IAS 19. The cost for defined contribution plans is the amount contributed in the year by the company.

(o) "Total remuneration" represents the disclosure of total emoluments and compensation required under the Australian Corporations Act 2001 and applicable accounting standards.

Further details in relation to aggregate compensation for executives, including directors, are included in note 37 (Directors' and key management remuneration).

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Table 1b – Non-executive directors' remuneration

Stated in US$'000[a]		Fees and allowances[b]	Non-monetary benefits[c]	Post-employment benefits	Single total figure of remuneration[d]	Currency of actual payment
Chairman						
Simon Thompson	**2020**	937	2	–	939	£
	2019	932	2	–	934	£
Non-executive directors						
Megan Clark	**2020**	210	10	20	240	A$
	2019	240	21	23	284	A$
David Constable	**2020**	196	5	–	201	£
	2019	252	23	–	275	£
Hinda Gharbi[e]	**2020**	157	5	–	162	£
Simon Henry	**2020**	209	5	–	214	£
	2019	241	4	–	245	£
Sam Laidlaw	**2020**	260	4	–	264	£
	2019	270	3	–	273	£
Michael L'Estrange	**2020**	208	4	15	227	A$
	2019	172	13	16	201	A$
Simon McKeon	**2020**	233	5	1	239	A$
	2019	228	14	22	264	A$
Jennifer Nason[e]	**2020**	152	1	–	153	£
Ngaire Woods[f]	**2020**	60	–	–	60	£

(a) The remuneration is reported in US$. The amounts have been converted using the relevant 2020 average exchange rates of £1 = US$1.28379 and A$1 = US$0.69082 (1 January to 31 December 2020 average).

(b) "Fees and allowances" comprises the total fees for the Chairman and all non-executive directors, and travel allowances for the non-executive directors (other than the Chairman). The payment of statutory minimum superannuation contributions for Australian non-executive directors is required by Australian superannuation law. These contributions are included in the "Fees and allowances" amount disclosed for Australian non-executive directors.

(c) "Non-monetary benefits" include, as in previous years, amounts which are deemed by the UK tax authorities to be benefits in kind relating largely to the costs of non-executive directors' expenses in attending Board meetings held at the company's UK registered office (including associated hotel and subsistence expenses) and professional tax compliance services/advice. Given these expenses are incurred by directors in the fulfilment of their duties, the company pays the tax on them.

(d) Represents disclosure of the single total figure of remuneration under Schedule 8 of the Large- and Medium-sized Companies and Groups (Accounts and Reports) Regulations 2008 (as amended) and total remuneration under the Australian Corporations Act 2001 and applicable accounting standards.

(e) The amounts reported for Hinda Gharbi and Jennifer Nason reflect the period of active Board membership from 1 March 2020 to 31 December 2020.

(f) The amounts reported for Ngaire Woods reflect the period of active Board membership from 1 September 2020 to 31 December 2020.

Further details in relation to aggregate compensation for executives, including directors, are included in note 37 (Directors' and key management remuneration).

Table 2 – Directors' and executives' beneficial interests in Rio Tinto shares

	Rio Tinto plc[a]			Rio Tinto Limited			Movements	
	01 Jan 2020[b]	31 Dec 2020[c]	05 Feb 2021[d]	01 Jan 2020[b]	31 Dec 2020[c]	05 Feb 2021[d]	Compensation[e]	Other[f]
Directors								
Megan Clark	–	–	–	5,770	6,370	6,370	–	600
David Constable[g]	2,547	2,547	–	–	–	–	–	–
Hinda Gharbi[g]	–	1,400	1,400	–	–	–	–	1,400
Simon Henry	500	1,500	1,500	–	–	–	–	1,000
Jean-Sébastien Jacques[g]	97,578	143,073		–	–		96,087	(45,592)
Sam Laidlaw	7,500	7,500	7,500	–	–	–	–	–
Michael L'Estrange	–	–	–	3,103	3,103	3,103	–	–
Simon McKeon	–	–	–	10,000	10,000	10,000	–	–
Jennifer Nason[g]	–	1,765	1,765	–	–	–	–	1,765
Jakob Stausholm	15,078	30,280	30,298	–	–	–	209	15,011
Simon Thompson	7,458	7,458	7,458	–	–	–	–	–
Ngaire Woods[g]	–	–	–	–	–	–	–	–
Executives								
Bold Baatar	28,920	34,096	34,127	–	–	–	23,553	(18,346)
Alfredo Barrios	38,812	78,137	78,160	–	–	–	76,600	(37,252)
Mark Davies[g]	257	1,708	1,729	18,002	18,008	18,016	2,001	(515)
Vera Kirikova	6,788	11,999	12,024	–	–	–	9,407	(4,171)
Barbara Levi	–	1,768	1,768	–	–	–	3,380	(1,612)
Stephen McIntosh[g]	2,673	2,807		28,748	36,167		10,730	(3,177)
Simone Niven[g]	10,077	17,776		–	–		12,815	(5,116)
Chris Salisbury[g]	–	–		38,188	35,484		15,016	(17,720)
Arnaud Soirat	2,380	6,798	6,816	27,393	14,875	14,875	24,070	(32,152)
Peter Toth[g]	20,407	21,624	21,649	–	–	–	2,251	(1,009)
Simon Trott	169	1,731	1,731	18,391	24,730	24,751	10,850	(2,928)
Ivan Vella[g]	–	–	–	3,554	5,222	5,249	1,621	74

(a) Rio Tinto plc ordinary shares or American Depositary Receipts.
(b) Or date of appointment, if later.
(c) Or date of retirement / date stepped down from the Executive Committee, if earlier.
(d) Latest practicable date prior to the publication of the 2020 Annual Report.
(e) Shares obtained through awards under the Rio Tinto UK Share Plan, the Global Employee Share Plan and/or vesting of the Performance Share Awards (PSA), Management Share Awards (MSA) and Bonus Deferral Awards (BDA) granted under the Group's long term incentive plan (LTIP) arrangements.
(f) Share movements due to the sale or purchase of shares, or shares received under dividend reinvestment plans.
(g) Hinda Gharbi and Jennifer Nason joined as non-executive directors on 1 March 2020 and Ngaire Woods joined as a non-executive director on 1 September 2020 . David Constable retired as a non-executive director on 31 December 2020 and Jean-Sebastien Jacques stepped down as Chief Executive on 1 January 2021. Chris Salisbury, Stephen McIntosh and Simone Niven stepped down from the Executive Committee on 11 September 2020, 30 September 2020 and 31 December 2020 respectively. Ivan Vella joined the Executive Committee in an acting capacity on 15 September 2020, Mark Davies and Peter Toth joined the Executive Committee on 1 October 2020.

Interests in outstanding awards under LTIPs are set out in table 3 (see pages 180-184).

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Table 3 – Plan interests (awards of shares under long-term incentive plans)

Name	Award/grant date	Market price at award[a][b]	1 January 2020	Awarded	Lapsed/ cancelled	Dividend units	Vested	31 December 2020	5 February 2021	Vesting period concludes	Date of release	Market price at release	Market value of award at release US$[d]
Bonus Deferrat Awards													
Bold Baatar	15 May 2018	£42.30	7,389	–	–	1,330	8,719	–	–	1 Dec 2020	1 Dec 2020	£49.79	557,320
	18 Mar 2019	£42.67	5,205	–	–	–	–	5,205	5,205	1 Dec 2021	–	–	–
	16 Mar 2020	£33.58	–	9,329	–	–	–	9,329	9,329	1 Dec 2022	–	–	–
Alfredo Barrios	15 May 2018	£42.30	10,097	–	–	1,817	11,914	–	–	1 Dec 2020	1 Dec 2020	£49.79	761,545
	18 Mar 2019	£42.67	6,715	–	–	–	–	6,715	6,715	1 Dec 2021	–	–	–
	16 Mar 2020	£33.58	–	8,724	–	–	–	8,724	8,724	1 Dec 2022	–	–	–
Mark Davies	15 May 2018	£42.30	1,646	–	–	296	1,942	–	–	1 Dec 2020	1 Dec 2020	£49.79	124,133
	18 Mar 2019	£42.67	1,534	–	–	–	–	1,534	1,534	1 Dec 2021	–	–	–
	16 Mar 2020	£33.58	–	2,269	–	–	–	2,269	2,269	1 Dec 2022	–	–	–
Jean-Sébastien Jacques	15 May 2018	£42.30	21,401	–	–	3,852	25,253	–	–	1 Dec 2020	1 Dec 2020	£49.79	1,614,177
	18 Mar 2019	£42.67	18,681	–	–	–	–	18,681	18,681	1 Dec 2021	–	–	–
	16 Mar 2020	£33.58	–	26,234	–	–	–	26,234	26,234	1 Dec 2022	–	–	–
Vera Kirikova	15 May 2018	£42.30	6,308	–	–	1,135	7,443	–	–	1 Dec 2020	1 Dec 2020	£49.79	475,758
	18 Mar 2019	£42.67	4,581	–	–	–	–	4,581	4,581	1 Dec 2021	–	–	–
	16 Mar 2020	£33.58	–	7,317	–	–	–	7,317	7,317	1 Dec 2022	–	–	–
Stephen McIntosh	15 May 2018	A$83.61	7,569	–	–	1,204	8,773	–	–	1 Dec 2020	1 Dec 2020	A$102.55	621,509
	18 Mar 2019	A$93.17	6,467	–	–	–	–	6,467	6,467	1 Dec 2021	–	–	–
	16 Mar 2020	A$77.65	–	7,291	–	–	–	7,291	7,291	1 Dec 2022	–	–	–
Simone Niven	15 May 2018	£42.30	6,713	–	–	1,208	7,921	–	–	1 Dec 2020	1 Dec 2020	£49.79	506,312
	18 Mar 2019	£42.67	5,766	–	–	–	–	5,766	5,766	1 Dec 2021	–	–	–
	16 Mar 2020	£33.58	–	8,097	–	–	–	8,097	8,097	1 Dec 2022	–	–	–
Chris Salisbury	15 May 2018	A$83.61	8,525	–	–	1,356	9,881	–	–	1 Dec 2020	1 Dec 2020	A$102.55	700,003
	18 Mar 2019	A$93.17	5,214	–	–	–	–	5,214	5,214	1 Dec 2021	–	–	–
	16 Mar 2020	A$77.65	–	6,819	–	–	–	6,819	6,819	1 Dec 2021	–	–	–
Arnaud Soirat	15 May 2018	£42.30	6,328	–	–	1,139	7,467	6,328	6,328	1 Dec 2020	1 Dec 2020	£49.79	477,292
	18 Mar 2019	£42.67	8,913	–	–	–	–	8,913	8,913	1 Dec 2021	–	–	–
	16 Mar 2020	£33.58	–	10,920	–	–	–	10,920	10,920	1 Dec 2022	–	–	–
Jakob Stausholm	18 Mar 2019	£42.67	3,022	–	–	–	–	3,022	3,022	1 Dec 2021	–	–	–
	16 Mar 2020	£33.58	–	13,454	–	–	–	13,454	13,454	1 Dec 2022	–	–	–
Peter Toth	15 May 2018	£42.30	1,851	–	–	333	2,184	–	–	1 Dec 2020	1 Dec 2020	£49.79	139,602
	18 Mar 2019	£42.67	1,759	–	–	–	–	1,759	1,759	1 Dec 2021	–	–	–
	16 Mar 2020	£33.58	–	2,096	–	–	–	2,096	2,096	1 Dec 2022	–	–	–
Simon Trott	15 May 2018	£42.30	1,313	–	–	236	1,549	–	–	1 Dec 2020	1 Dec 2020	£49.79	99,012
	18 Mar 2019	£42.67	6,140	–	–	–	–	6,140	6,140	1 Dec 2021	–	–	–
	16 Mar 2020	£33.58	–	9,615	–	–	–	9,615	9,615	1 Dec 2022	–	–	–
Ivan Vella	15 May 2018	A$83.61	1,347	–	–	214	1,561	–	–	1 Dec 2020	1 Dec 2020	A$102.55	110,586
	18 Mar 2019	A$93.17	1,046	–	–	–	–	1,046	1,046	1 Dec 2021	–	–	–
	16 Mar 2020	A$77.65	–	1,201	–	–	–	1,201	1,201	1 Dec 2022	–	–	–

Name	Award/grant date	Market price at award[a][b]	1 January 2020	Awarded	Lapsed/ cancelled	Dividend units	Vested	31 December 2020	5 February 2021	Performance / vesting (MSA) period concludes	Date of release	Market price at release	Market value of award at release US$[d]
Management Share Awards													
Mark Davies	9 Mar 2017	A$60.14	2,638	–	–	386	3,024	–	–	17 Feb 2020	17 Feb 2020	A$97.88	204,475
	15 May 2018	£42.30	3,017	–	–	–	–	3,017	3,017	18 Feb 2021	–	–	–
	18 Mar 2019	£42.67	2,669	–	–	–	–	2,669	2,669	21 Feb 2022	–	–	–
	16 Mar 2020	£33.58	–	3,186	–	–	–	3,186	3,186	20 Feb 2023	–	–	–
Barbara Levi	16 Mar 2020	£33.58	–	3,380	–	–	3,380	–	–	1 Sep 2020	1 Sep 2020	£45.88	199,084
	16 Mar 2020	£33.58	–	5,070	–	–	–	5,070	5,070	1 Sep 2021	–	–	–
	16 Mar 2020	£33.58	–	8,450	–	–	–	8,450	8,450	1 Sep 2022	–	–	–
Peter Toth	9 Mar 2017	£32.03	5,669	–	–	1,084	6,753	–	–	17 Feb 2020	17 Feb 2020	£42.06	364,638
	15 May 2018	£42.30	3,991	–	–	–	–	3,991	3,991	18 Feb 2021	–	–	–
	18 Mar 2019	£42.67	3,582	–	–	–	–	3,582	3,582	21 Feb 2022	–	–	–
	16 Mar 2020	£33.58	–	4,099	–	–	–	4,099	4,099	20 Feb 2023	–	–	–
Simon Trott	9 Mar 2017	A$60.14	2,695	–	–	405	3,100	–	–	27 Feb 2020	27 Feb 2020	A$90.12	192,995
Ivan Vella	9 Mar 2017	A$60.14	2,716	–	–	397	3,113	–	–	17 Feb 2020	17 Feb 2020	A$97.88	210,492
	15 May 2018	A$83.61	3,344	–	–	–	–	3,344	3,344	18 Feb 2021	–	–	–
	18 Mar 2019	A$93.17	2,856	–	–	–	–	2,856	2,856	21 Feb 2022	–	–	–
	16 Mar 2020	A$77.65	–	1,931	–	–	–	1,931	1,931	20 Feb 2023	–	–	–
Performance Share Awards[c]													
Bold Baatar	23 Mar 2015	£29.43	14,954	–	(3,594)	3,160	14,520	–	–	31 Dec 2019	27 Feb 2020/ 1 Jun 2020	£37.16 / £43.72	411,801/ 330,452
	11 Mar 2016	£20.00	17,270	–	–	–	–	17,270	17,270	31 Dec 2020	–	–	–
	9 Mar 2017	£32.03	85,174	–	–	–	–	85,174	85,174	31 Dec 2021	–	–	–
	15 May 2018	£42.30	63,039	–	–	–	–	63,039	63,039	31 Dec 2022	–	–	–
	18 Mar 2019	£42.67	51,752	–	–	–	–	51,752	51,752	31 Dec 2023	–	–	–
	16 Mar 2020	£33.58	–	53,272	–	–	–	53,272	53,272	31 Dec 2024	–	–	–
Alfredo Barrios	23 Mar 2015	£29.43	66,390	–	(15,951)	14,037	64,476	–	–	31 Dec 2019	27 Feb 2020/ 1 Jun 2020	£37.16 / £43.72	1,828,441/ 1,467,558
	11 Mar 2016	£20.00	73,140	–	–	–	–	73,140	73,140	31 Dec 2020	–	–	–
	9 Mar 2017	£32.03	91,721	–	–	–	–	91,721	91,721	31 Dec 2021	–	–	–
	15 May 2018	£42.30	66,050	–	–	–	–	66,050	66,050	31 Dec 2022	–	–	–
	18 Mar 2019	£42.67	57,011	–	–	–	–	57,011	57,011	31 Dec 2023	–	–	–
	16 Mar 2020	£33.58	–	53,236	–	–	–	53,236	53,236	31 Dec 2024	–	–	–

Implementation Report
continued

Name	Award/grant date	Market price at award[a][b]	1 January 2020	Awarded	Lapsed/ cancelled	Dividend units	Vested	31 December 2020	5 February 2021	Performance period concludes	Date of release	Market price at release	Market value of award at release US$[d]
Mark Davies	23 Mar 2015	A$58.21	2,752	–	(662)	456	2,546	–	–	31 Dec 2019	17 Feb 2020/ 1 Jun 2020	A$97.88/ A$95.75	101,629/ 68,990
	11 Mar 2016	A$44.57	3,153	–	–	–	–	3,153	3,153	31 Dec 2020	–	–	–
	9 Mar 2017	A$60.14	10,555	–	–	–	–	10,555	10,555	31 Dec 2021	–	–	–
	15 May 2018	£42.30	9,051	–	–	–	–	9,051	9,051	31 Dec 2022	–	–	–
	18 Mar 2019	£42.67	8,008	–	–	–	–	8,008	8,008	31 Dec 2023	–	–	–
	16 Mar 2020	£33.58	–	6,373	–	–	–	6,373	6,373	31 Dec 2024	–	–	–
Jean-Sébastien Jacques[e][g]	23 Mar 2015	£29.43	72,768	–	(17,483)	15,385	70,670	–	–	31 Dec 2019	27 Feb 2020/ 1 Jun 2020	£37.16 / £43.72	2,004,096/ 1,608,538
	11 Mar 2016	£20.00	84,005	–	–	–	–	84,005	84,005	31 Dec 2020	–	–	–
	12 Sep 2016	£22.95	79,966	–	–	–	–	79,966	79,966	31 Dec 2020	–	–	–
	9 Mar 2017	£32.03	184,994	–	–	–	–	184,994	184,994	31 Dec 2021	–	–	–
	15 May 2018	£42.30	139,995	–	–	–	–	139,995	139,995	31 Dec 2022	–	–	–
	18 Mar 2019	£42.67	125,665	–	–	–	–	125,665	125,665	31 Dec 2023	–	–	–
	16 Mar 2020	£33.58	–	115,049	–	–	–	115,049	115,049	31 Dec 2024	–	–	–
Vera Kirikova	14 Sep 2015	£23.98	1,758	–	(424)	348	1,682	–	–	31 Dec 2019	27 Feb 2020/ 1 Jun 2020	£37.16 / £43.72	47,754/ 38,220
	11 Mar 2016	£20.00	5,636	–	–	–	–	5,636	5,636	31 Dec 2020	–	–	–
	9 Mar 2017	£32.03	66,803	–	–	–	–	66,803	66,803	31 Dec 2021	–	–	–
	15 May 2018	£42.30	45,219	–	–	–	–	45,219	45,219	31 Dec 2022	–	–	–
	18 Mar 2019	£42.67	40,591	–	–	–	–	40,591	40,591	31 Dec 2023	–	–	–
	16 Mar 2020	£33.58	–	42,576	–	–	–	42,576	42,576	31 Dec 2024	–	–	–
Barbara Levi	16 Mar 2020	£33.58	–	37,992	–	–	–	37,992	37,992	31 Dec 2024	–	–	–
Stephen McIntosh[f]	23 Mar 2015	A$58.21	11,429	–	(2,747)	1,927	10,609	–	–	31 Dec 2019	27 Feb 2020/ 1 Jun 2020	A$90.12/ A$95.75	390,597/ 286,742
	11 Mar 2016	A$44.57	13,093	–	–	–	–	13,093	13,093	31 Dec 2020	–	–	–
	9 Mar 2017	A$60.14	79,152	–	–	–	–	79,152	79,152	31 Dec 2021	–	–	–
	15 May 2018	A$83.61	58,040	–	(7,096)	–	–	50,944	50,944	31 Dec 2022	–	–	–
	18 Mar 2019	A$93.17	49,689	–	(19,993)	–	–	29,696	29,696	31 Dec 2023	–	–	–
	16 Mar 2020	A$77.65	–	41,989	(30,830)	–	–	11,159	11,159	31 Dec 2024	–	–	–
Simone Niven[f]	23 Mar 2015	£29.43	5,041	–	(1,212)	1,065	4,894	–	–	31 Dec 2019	27 Feb 2020/ 1 Jun 2020	£37.16 / £43.72	138,778/ 111,404
	11 Mar 2016	£20.00	9,109	–	–	–	–	9,109	9,109	31 Dec 2020	–	–	–
	9 Mar 2017	£32.03	66,803	–	–	–	–	66,803	66,803	31 Dec 2021	–	–	–
	15 May 2018	£42.30	49,440	–	(6,044)	–	–	43,396	43,396	31 Dec 2022	–	–	–
	18 Mar 2019	£42.67	44,379	–	(17,856)	–	–	26,523	26,523	31 Dec 2023	–	–	–
	16 Mar 2020	£33.58	–	42,576	(31,261)	–	–	11,315	11,315	31 Dec 2024	–	–	–

Name	Award/ grant date	Market price at award[a][b]	1 January 2020	Awarded	Lapsed/ cancelled	Dividend units	Vested	31 December 2020	5 February 2021	Performance period concludes	Date of release	Market price at release	Market value of award at release US$[c]
Chris Salisbury[f]	23 Mar 2015	A$58.21	16,175	–	(3,887)	2,728	15,016	–	–	31 Dec 2019	27 Feb 2020/ 1 Jun 2020	A$90.12/ A$95.75	552,775/ 405,937
	11 Mar 2016	A$44.57	13,898	–	–	–	–	13,898	13,898	31 Dec 2020	–	–	–
	9 Mar 2017	A$60.14	79,152	–	–	–	–	79,152	79,152	31 Dec 2021	–	–	–
	15 May 2018	A$83.61	63,457	–	(7,758)	–	–	55,699	55,699	31 Dec 2022	–	–	–
	18 Mar 2019	A$93.17	49,689	–	(19,993)	–	–	29,696	29,696	31 Dec 2023	–	–	–
	16 Mar 2020	A$77.65	–	41,989	(30,830)	–	–	11,159	11,159	31 Dec 2024	–	–	–
Arnaud Soirat	23 Mar 2015	A$58.21	17,658	–	(4,243)	2,979	16,394	–	–	31 Dec 2019	27 Feb 2020/ 1 Jun 2020	A$90.12/ A$95.75	603,514/ 443,177
	11 Mar 2016	A$44.57	20,230	–	–	–	–	20,230	20,230	31 Dec 2020	–	–	–
	9 Mar 2017	£32.03	85,174	–	–	–	–	85,174	85,174	31 Dec 2021	–	–	–
	15 May 2018	£42.30	57,657	–	–	–	–	57,657	57,657	31 Dec 2022	–	–	–
	18 Mar 2019	£42.67	56,582	–	–	–	–	56,582	56,582	31 Dec 2023	–	–	–
	16 Mar 2020	£33.58	–	53,272	–	–	–	53,272	53,272	31 Dec 2024	–	–	–
Jakob Stausholm	10 Sep 2018	£35.16	29,886	–	–	–	–	29,886	29,886	31 Dec 2022	–	–	–
	18 Mar 2019	£42.67	79,609	–				79,609	79,609	31 Dec 2023	–	–	–
	16 Mar 2020	£33.58	–	74,711	–	–	–	74,711	74,711	31 Dec 2024	–	–	–
Peter Toth	23 Mar 2015	£29.43	12,217	–	(2,936)	2,529	11,810	–	–	31 Dec 2019	17 Feb 2020/ 1 Jun 2020	£42.06/ £43.72	377,892/ 270,007
	11 Mar 2016	£20.00	14,808	–	–	–	–	14,808	14,808	31 Dec 2020	–	–	–
	9 Mar 2017	£32.03	22,677	–	–	–	–	22,677	22,677	31 Dec 2021	–	–	–
	15 May 2018	£42.30	7,982	–	–	–	–	7,982	7,982	31 Dec 2022	–	–	–
	18 Mar 2019	£42.67	10,747	–	–	–	–	10,747	10,747	31 Dec 2023	–	–	–
	16 Mar 2020	£33.58	–	8,199	–	–	–	8,199	8,199	31 Dec 2024	–	–	–
Simon Trott	23 Mar 2015	A$58.21	8,216	–	(1,975)	1,385	7,626	–	–	31 Dec 2019	27 Feb 2020/ 1 Jun 2020	A$90.12/ A$95.75	280,777/ 206,110
	11 Mar 2016	A$44.57	9,412	–	–	–	–	9,412	9,412	31 Dec 2020	–	–	–
	9 Mar 2017	A$60.14	8,085	–	–	–	–	8,085	8,085	31 Dec 2021	–	–	–
	15 May 2018	£42.30	57,188	–	–	–	–	57,188	57,188	31 Dec 2022	–	–	–
	18 Mar 2019	£42.67	50,598	–	–	–	–	50,598	50,598	31 Dec 2023	–	–	–
	16 Mar 2020	£33.58	–	52,838	–	–	–	52,838	52,838	31 Dec 2024	–	–	–
Ivan Vella	23 Mar 2015	A$58.21	4,023	–	(968)	667	3,722	–	–	31 Dec 2019	17 Feb 2020/ 1 Jun 2020	A$97.88/ A$95.75	148,623/ 100,806
	11 Mar 2016	A$44.57	3,072	–	–	–	–	3,072	3,072	31 Dec 2020	–	–	–
	9 Mar 2017	A$60.14	8,149	–	–	–	–	8,149	8,149	31 Dec 2021	–	–	–
	15 May 2018	A$83.61	13,376	–	–	–	–	13,376	13,376	31 Dec 2022	–	–	–
	18 Mar 2019	A$93.17	8,570	–	–	–	–	8,570	8,570	31 Dec 2023	–	–	–
	16 Mar 2020	A$77.65	–	3,862	–	–	–	3,862	3,862	31 Dec 2024	–	–	–

(a) Awards denominated in pounds sterling were for Rio Tinto plc ordinary shares of 10 pence each and awards denominated in Australian dollars were for Rio Tinto Limited shares. All awards are granted over ordinary shares.

(b) The weighted fair value per share of Bonus Deferral Awards and Management Share Awards granted in March 2020 was £32.74 for Rio Tinto plc and A$81.08 for Rio Tinto Limited and for Performance Share Awards was £13.54 for Rio Tinto plc and A$33.56 for Rio Tinto Limited. Conditional awards are awarded at no cost to the recipient and no amount remains unpaid on any shares awarded.

Implementation Report
continued

(c) For awards granted from 2013, for the TSR component (constituting two-thirds of the award for awards granted until 2017 and constituting 100% for awards granted from 2018), where TSR performance is measured against both the EMIX Global Mining Index and the Morgan Stanley Capital World Index, the award will vest as follows:

Out-performance of the index by 6% per annum	100% award vests
Performance between equal to the index and 6% per annum out-performance	Proportionate vesting between 22.5% and 100% vesting
Performance equal to the index	22.5% award vests
Performance less than index	Nil vesting

For awards granted prior to 2018, one-third of the award is subject to an EBIT margin condition measuring the change in the EBIT margin of Rio Tinto and each of the comparator companies (measured on a "point-to-point" basis using the last financial year in the performance period and the financial year prior to the start of the performance period). This will be calculated using independent third-party data. Vesting will be subject to Rio Tinto's interpolated ranking position using the following schedule.

Equal to or greater than 2nd ranked company	100% award vests
Between the 5th and 2nd ranked companies	Proportionate vesting between 22.5% and 100% vesting
Above the 6th ranked company	22.5% award vests
Equal to the 6th ranked company or below	Nil vesting

The TSR performance condition (two-thirds of the award) vests in February with the EBIT performance condition (one-third of the award) vesting in May. Due to the phased vesting nature of the award, details of each vest are displayed separately side by side within the table.

For awards granted from 2018 the EBIT performance condition does not apply. Instead the award is subject to the TSR measures described above, with each applied to 50% of the award.

If vesting is achieved, participants will be entitled to receive a number of additional shares whose market value reflects the aggregate cash amount of dividends that would have been received had the number of shares which have vested at the end of the performance period been held throughout the period.

(d) The amount in US dollars has been converted at the rate of US$1.28379 = £1 and US$0.69082 = A$1, being the average exchange rates for 2020.

(e) In addition to adjusting Jean-Sébastien Jacques' 2016 PSA to take account of applicable performance conditions, this award will be further adjusted on vesting to lapse such number of shares as is equal to £1 million in line with the Board Review of cultural heritage management published on 24 August 2020.

(f) For Chris Salisbury, Stephen McIntosh and Simone Niven, the change in position of their Performance Share Awards to 31 December 2020 is a result of their termination on 31 December 2020 and the pro-rating their remaining unvested awards in line with normal eligible leaver rules reflecting the time employed from the date of grant up to the date of leaving, as a proportion of the first three years from the date of grant.

(g) For Jean-Sébastien Jacques, his PSA awards will be pro-rated on his termination date of 31 March 2021, resulting in the lapse of 120,882 shares representing approximately 21% of his holding of PSA at the date of termination. The outstanding awards remain fully subject to performance testing, representing approximately 222,400 shares on a 50% expected value basis.

(h) For the Performance Share Awards granted on 11 March 2016 with a performance period that concluded on 31 December 2020, 100% of the award vested in relation to the TSR portion of the award. The remaining performance condition of relative EBIT margin will be assessed later in 2021.

(i) The closing price at 31 December 2020 was £54.70 for Rio Tinto plc ordinary shares and was A$113.83 for Rio Tinto Limited ordinary shares. The high and low prices during 2020 of Rio Tinto plc and Rio Tinto Limited shares were £57.71 and £29.54 and A$118.60 and A$72.77 respectively.

(j) As of 5 February 2021, members of the Executive Committee (excluding Jean-Sébastien Jacques, Chris Salisbury, Stephen McIntosh and Simone Niven) held 1,770,341 shares awarded and not vested under long-term incentive plans. No Executive Committee member held any options.

Table 3a – Plan interests (award of shares under all-employee share arrangements)

		myShare		UK Share Plan				Total activity in 2020		
	Plan interests at 1 January 2020[a]	Value of Matching shares awarded in year[b] ('000)	Value of Matching shares vested in year[c] ('000)	Value of Matching shares awarded in year[b] ('000)	Value of Matching shares vested in year[c] ('000)	Value of Free shares awarded in year[d] ('000)	Value of Free shares vested in year[d] ('000)	Grants in year ('000)	Vesting in year ('000)	Plan interests at 31 December 2020[a]
Bold Baatar	392.86	2	5	2	0	5	0	9	5	472.90
Alfredo Barrios	235.95	4	6	0	0	0	0	4	6	212.15
Mark Davies	236.28	5	6	0	0	0	0	5	6	243.06
Jean-Sébastien Jacques	520.29	0	3	0	3	5	6	5	12	418.67
Vera Kirikova	508.24	2	4	2	1	5	6	9	11	473.71
Stephen McIntosh	219.03	4	7	0	0	0	0	4	7	188.76
Simone Niven	286.00	0	0	0	0	5	6	5	6	260.00
Arnaud Soirat	250.96	2	0	2	0	5	3	9	3	350.36
Jakob Stausholm	60.09	2	0	2	0	5	0	9	0	217.50
Peter Toth	520.29	2	3	2	3	5	6	9	12	473.71
Simon Trott	260.09	0	7	0	0	0	0	0	7	173.27
Ivan Vella	181.70	3	5	0	0	0	0	3	5	162.02

(a) All shares shown are Rio Tinto plc shares except in the cases of Stephen McIntosh and Ivan Vella which are Rio Tinto Limited shares. Mark Davies and Simon Trott hold a combination of Rio Tinto plc and Rio Tinto Limited shares.

(b) myShare and UK Share Plan Matching share awards are granted on a quarterly basis (January, April, July and October) throughout the year.

(c) The vesting of a Matching share is dependent on continued employment with Rio Tinto and the retention of the associated Investment share purchased by the participant for three years.

(d) UK Share Plan Free shares vest after three years.

(e) UK Share Plan awards shown above and the vested Matching shares under myShare are included, where relevant, in the executive's share interests in table 2.

(f) All currency figures are shown in US$ and rounded.

Audited information

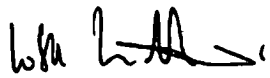
Under Schedule 8 of the Large- and Medium-sized Companies and Groups (Accounts and Reports) Regulations 2008 (as amended), the following information is auditable:

- The 2020 performance for the purposes of the STIP on page 146.
- The single total figure of remuneration for each director, as set out on page 161 and table 1b on page 178.
- Details of the directors' total pension entitlements, as set out on page 161.
- Details of taxable benefits on page 161.
- Details of scheme interests awarded to the directors during the financial year, as set out on page 166 and table 3 and 3a on pages 180-184.
- Details of payments to past directors as set out on page 169.
- Details of shareholding ownership policy and directors' share ownership on pages 166 and 171.
- Statement of the directors' shareholdings and share interests, as set out in tables 2, 3 and 3a on pages 179-184 of the Implementation Report.
- STIP objectives and outcomes for 2020 as set out on pages 162-164 and LTIP outcome and award granted for 2020 as set out on pages 165-166.

The Australian Securities and Investments Commission issued an order dated 14 December 2015, under which the Remuneration Report must be prepared and audited in accordance with the requirements of the Australian Corporations Act 2001 applied on the basis of certain modifications set out in the order (as detailed on page 310). The information provided in the Remuneration Report has been audited as required by section 308 (3C) of the Australian Corporations Act 2001.

Directors' approval statement

This directors' Remuneration Report is delivered in accordance with a resolution of the Board, and has been signed on behalf of the Board by:



Sam Laidlaw
Chairman of the Remuneration Committee

22 February 2021

Additional Statutory Disclosure

The directors present their report and audited consolidated financial statements for the year ended 31 December 2020.

Scope of this report

For the purposes of UK company law and the Australian Corporations Act 2001:

- the additional disclosures under the heading 'Shareholder information' on pages 359-366 are hereby incorporated by reference to, and form part of, this Directors' Report;
- the Strategic Report on pages 4-109 provides a comprehensive review of Rio Tinto's operations, its financial position and its business strategies and prospects, and is incorporated by reference into, and forms part of this Directors' Report; certain items that would ordinarily need to be included in this Directors' Report (including an indication of likely future developments in the business of the company and the Group) have, as permitted, instead been discussed in the Strategic Report, while details of the Group's policy on addressing financial risks and details about financial instruments are shown in note 29 to the Group financial statements; and
- taken together, the Strategic Report and this Directors' Report are intended to provide a fair, balanced and understandable assessment of: the development and performance of the Group's business during the year and its position at the end of the year; its strategy; likely developments; and any principal or emerging risks and uncertainties associated with the Group's business.
- The Directors' declaration on page 311 is also incorporated into this Directors' Report.

For the purposes of compliance with DTR 4.1.5R(2) and DTR 4.1.8R, the required content of the 'Management Report' can be found in the Strategic Report or this Directors' Report, including the material incorporated by reference.

A full report on director and executive remuneration and shareholdings can be found in the Remuneration Report on pages 140-158, which for the purposes of the Australian Corporations Act 2001, forms part of this Directors' Report.

Dual listed structure and constitutional documents

The dual listed companies (DLC) structure of Rio Tinto plc and Rio Tinto Limited, and their constitutional provisions and voting arrangements – including restrictions that may apply to the shares of either company under specified circumstances – are described on pages 359-360.

Operating and financial review

Rio Tinto's principal activities during 2020 were minerals and metals exploration, production and processing, development and marketing.

Subsidiary and associated undertakings principally affecting the profits or net assets of the Group in the year are listed in notes 32-35 to the financial statements.

The following significant changes and events affected the Group during 2020 and up to the date of this report:

- In February 2020 Rio Tinto announced it would conduct a strategic review of the ISAL smelter in Iceland, to determine the operation's ongoing viability and explore options to improve its competitive position.
- In February 2020, Rio Tinto's subsidiary Energy Resources of Australia Ltd (ERA) announced the completion of an entitlement offer, which was underwritten by the Group. As a result of the issue of new shares to the Group, our interest in ERA has increased from 68.39% to 86.33%.
- In February 2020, Rio Tinto announced the appointment of three new independent non-executive directors to the board. They were Hinda Gharbi, Jennifer Nason and Ngaire Woods.
- In February 2020, Rio Tinto announced that it expected Pilbara iron ore shipments in 2020 to be between 324 million tonnes and 334 million tonnes (100% basis) versus previous guidance of between 330 million tonnes and 343 million tonnes.
- In March 2020 Rio Tinto announced that it was working with the Government of Mongolia to ensure that Oyu Tolgoi was operating in accordance with the restrictions the Mongolian authorities had put in place to contain the spread of COVID-19.
- In March 2020 Rio Tinto announced that as a result of separate actions by the Premier of Quebec and the President of South Africa to contain the spread of COVID-19, some of its operations would be slowed down.
- In March 2020, in accordance with ASX Listing Rule 3.17A.1, Rio Tinto attached proposed resolutions received under section 249N of the Australian Corporations Act 2001 for consideration by shareholders at the 2020 Rio Tinto Limited annual general meeting to be held in Brisbane, on 7 May 2020.
- In March 2020 Rio Tinto announced revised arrangements to its 2020 AGM in order to comply with mandatory COVID-19 measures from the UK government.
- In June 2020 Rio Tinto announced that its report on payments to governments made by it and its subsidiary undertakings for the year ending 31 December 2019 as required under the UK's Report on Payments to Governments Regulations 2014 (as amended in December 2015) was filed at Companies House.
- In June 2020 Rio Tinto launched a Board-led review of its heritage management processes within Iron Ore following the events at Juukan Gorge, with a focus on recommending improvements to the effectiveness of its internal processes and governance.
- In June 2020 Rio Tinto announced that it had reached an agreement with Turquoise Hill and the government of Mongolia on the preferred domestic power solution for Oyu Tolgoi that paves the way for the government to fund and construct a state-owned power plant at Tavan Tolgoi.
- In July 2020 Rio Tinto announced that both Peter Toth and Mark Davies would join the Rio Tinto Executive Committee on 1 October, reporting to the then chief executive, J-S Jacques.
- In July 2020 Rio Tinto announced that Oyu Tolgoi LLC had completed an updated feasibility study and was in the process of submitting this to the government of Mongolia.
- In July 2020 Rio Tinto announced that it would start planning for the wind-down of operations and the eventual closure of New Zealand Aluminium Smelters (NZAS) following the conclusion of its strategic review which showed that the business was no longer viable given high energy costs and a challenging outlook for the aluminium industry.
- In July 2020 Rio Tinto announced that it had disclosed to the Australian Securities Exchange (ASX) the maiden Inferred Mineral Resource at the 100% owned Winu copper-gold project.
- In August 2020 Rio Tinto made a submission to the Australian Parliamentary Inquiry relating to the destruction of the rock shelters at Juukan Gorge in the Pilbara region of Western Australia. Rio Tinto set out in detail its relationship with the Puutu Kunti Kurrama and Pinikura people (PKKP) from 2003 to 2020 and the circumstances over this period that led to the events that occurred in Juukan Gorge.
- In August 2020 Rio Tinto announced that the Kennecott mine in Utah had experienced delays to the restart of the smelter due to unexpected issues following planned maintenance. As a result, Rio Tinto group production guidance for refined copper in 2020 became 135 to 175 kt (previously 165 to 205 kt).
- In August 2020 Rio Tinto published the Board Review of cultural heritage management, following the destruction of the Juukan Gorge rock shelters in May 2020. The review detailed which elements of Rio Tinto's systems, decision-making processes and governance had failed to work as they should have and set out recommendations to prevent a similar incident occurring in the future.
- In August 2020 Rio Tinto announced that it had noted Turquoise Hill Resources' publication of its '2020 Oyu Tolgoi Technical Report' in relation to the Oyu Tolgoi project in Mongolia.

- In September 2020 Rio Tinto announced that it had provided additional information to the Australian Parliamentary Inquiry into the destruction of the rock shelters at Juukan Gorge. The additional information related to questions taken on notice when Rio Tinto provided evidence to the Inquiry Committee and additional questions received from the Committee.
- In September 2020 Rio Tinto announced that it had entered into a memorandum of understanding with Turquoise Hill Resources, which provided a clear pathway to progress the financing for completion of the Oyu Tolgoi Underground Project in Mongolia and address TRQ's funding position.
- In September 2020 Rio Tinto announced that following consultation with a wide range of significant stakeholders in response to the Board Review of Cultural Heritage Management, changes to the Executive Committee and Board were to be made.
- In November 2020 Rio Tinto announced that David Constable would step down as a non-executive director of Rio Tinto with effect from 31 December 2020.
- In December 2020 Rio Tinto disclosed to the Australian Securities Exchange (ASX) a maiden Ore Reserve and updated Mineral Resource at the 100% owned Jadar lithium-borates project in western Serbia.
- In December 2020 Rio Tinto unveiled a pathway for the ongoing development of the underground project at Oyu Tolgoi in Mongolia, one of the largest known copper and gold deposits in the world. The definitive estimate detailed how Oyu Tolgoi underground would achieve sustainable production for Panel 0 by October 2022 for development capital of $6.75 billion.
- In December 2020 Rio Tinto announced that it had appointed Jakob Stausholm as Chief Executive, effective 1 January 2021.
- In January 2021 Rio Tinto announced a change to the classification of executives designated as Key Management Personnel (KMP) under the Australian corporations legislation.
- In January 2021 Rio Tinto announced that it had reached a new electricity agreement with Meridian Energy that allowed New Zealand Aluminium Smelter (NZAS) to continue operating the Tiwai Point aluminium smelter until 31 December 2024.
- In January 2021 Rio Tinto unveiled a new executive team.

Details of events that took place after the balance sheet date are further described in note 42 to the financial statements.

Risk identification, assessment and management

The Group's principal risks and uncertainties are listed on pages 95-108. The Group's approach to risk management is discussed on pages 92-94.

Share capital

Details of the Group's share capital as at 31 December 2020 are described in notes 26 and 27 to the financial statements. Details of the rights and obligations attached to each class of shares are covered on pages 359-360, under the heading 'Voting arrangements'.

In situations where an employee share plan operated by the company and plan participants are the beneficial owners of shares but not the registered owners, voting rights are normally exercised by the registered owner at the direction of the participant.

Details of certain restrictions on holding shares in Rio Tinto and certain consequences triggered by a change of control are described on page 360 under the heading 'Limitations on ownership of shares and merger obligations'. There are no other restrictions on the transfer of ordinary Rio Tinto shares save for:

- restrictions that may from time to time be imposed by laws, regulations or Rio Tinto policy (for example relating to market abuse, insider dealing, share trading or an Australian foreign investment);
- restrictions on the transfer of shares that may be imposed following a failure to supply information required to be disclosed, or where registration of the transfer may breach a court order or a law, or in relation to unmarketable parcels of shares;
- restrictions on the transfer of shares held under certain employee share plans while they remain subject to the plan.

At the AGMs held in 2020, shareholders authorised:

- the on-market purchase by Rio Tinto plc or Rio Tinto Limited or its subsidiaries, of up to 124,667,622 Rio Tinto plc shares (representing approximately 10% of Rio Tinto plc's issued share capital, excluding Rio Tinto plc shares held in Treasury at that time);
- the off-market purchase by Rio Tinto plc of up to 124,667,622 Rio Tinto plc shares acquired by Rio Tinto Limited or its subsidiaries under the above authority; and
- the off-market and/or on-market buy-back by Rio Tinto Limited of up to 55.6 million Rio Tinto Limited shares (representing approximately 15% of Rio Tinto Limited's issued share capital at that time).

Substantial shareholders

Details of substantial shareholders are included on page 361.

Dividends

Details of dividends paid and declared for payment, together with the company's shareholder returns policy, can be found on page 37.

Directors

The names of directors and their periods of appointment are listed on pages 116-117, together with details of each director's qualifications, experience and special responsibilities, and current directorships.

A table of directors' attendance at Board and committee meetings during 2020 is on page 127.

All directors will stand for re-election at the 2021 AGMs.

Previous listed directorships

Details of each director's previous directorships of other listed companies (where relevant) held in the past three years are set out below:

Jakob Stausholm A. P. Moller – Maersk A/S (December 2016 to March 2018)

Simon Henry Lloyds Banking Group plc (June 2014 to September 2020)

Directors' and executives' beneficial interests

A table of directors' and executives' beneficial interests in Rio Tinto shares is on page 179.

Secretaries

Steve Allen is company secretary of Rio Tinto plc and joint company secretary, together with Tim Paine, of Rio Tinto Limited. Steve's and Tim's qualifications and experience are described on page 117.

Indemnities and insurance

The Articles of Association of Rio Tinto plc and the Constitution of Rio Tinto Limited provide for them to indemnify, to the extent permitted by law, directors and officers of the companies, including officers of certain subsidiaries, against liabilities arising from the conduct of the Group's business. The directors, Group company secretary and joint company secretary of Rio Tinto Limited, together with employees serving as directors of eligible subsidiaries at the Group's request, have also received similar direct indemnities. Former directors also received indemnities for the period in which they were directors. These are qualifying third-party indemnity provisions for the purposes of the UK Companies Act 2006, in force during the financial year ended 31 December 2020 and up to the date of this report. During 2020, Rio Tinto paid legal costs under the terms of those indemnities for certain former directors and officers totalling $18,171,612.

Qualifying pension scheme indemnity provisions (as defined by section 235 of the UK Companies Act 2006) were in force during the course of the financial year ended 31 December 2020 and up to the date of this Directors' Report, for the benefit of trustees of the Rio Tinto Group pension and superannuation funds across various jurisdictions. No amount has been paid under any of these indemnities during the year.

The Group purchased directors' and officers' insurance during the year. In broad terms, this cover indemnifies individual directors and officers against certain personal legal liability and legal defence costs for claims arising out of actions connected with Group business. During 2020, the Group paid premiums totalling $35,098,751 net of statutory taxes and other local charges for this directors' and officers' insurance.

Additional Statutory Disclosure
continued

Employment of disabled persons
We give full and fair consideration to applications for employment by disabled persons, having regard to their particular aptitudes and abilities. We also continue the employment of, and arrange appropriate training for, employees who have become disabled during their employment as well as supporting the training, career development and promotion of disabled employees.

Further information on the employment of disabled persons is on page 76.

Engagement with UK employees
Our statement on engagement with UK employees is on page 122.

Engagement with suppliers, customers and others in a business relationship with the company
Our statement on engagement with suppliers, customers and others in a business relationship with the company is on page 123.

Statutory Audit Services Order
The Group has fully complied with the Statutory Audit Services Order.

Purchases

Rio Tinto plc shares of 10p each and Rio Tinto plc American Depositary Receipts (ADRs)

	Total number of shares purchased[a]	Average price per share US$[b]	Total number of shares purchased to satisfy company dividend reinvestment plans	Total number of shares purchased to satisfy employee share plans	Total number of shares purchased as part of publicly announced plans or programmes[c]	Maximum number of shares that may be purchased under plans or programmes
2020						
1 to 31 Jan	1,962,815	58.41	–	–	1,962,815	109,974,149[e]
1 to 29 Feb	1,664,753	53.79	–	–	1,664,753	108,309,396[e]
1 to 31 Mar	–	–	–	–	–	108,309,396[e]
1 to 30 Apr	1,036,556	46.50	520,647	515,909	–	124,667,622[f]
1 to 31 May	–	–	–	–	–	124,667,622[f]
1 to 30 Jun	76,182	56.69	–	76,182	–	124,667,622[f]
1 to 31 Jul	–	–	–	–	–	124,667,622[f]
1 to 31 Aug	–	–	–	–	–	124,667,622[f]
1 to 30 Sep	442,340	63.45	302,214	140,126	–	124,667,622[f]
1 to 31 Oct	–	–	–	–	–	124,667,622[f]
1 to 30 Nov	2	58.16	–	2	–	124,667,622[f]
1 to 31 Dec	149,942	76.51	–	149,942	–	124,667,622[f]
Total	**5,332,590[d]**	**55.55**	**822,861**	**882,161**	**3,627,568**	–
2021						
1 to 31 Jan	–	–	–	–	–	124,667,622[f]
1 to 05 Feb	–	–	–	–	–	124,667,622[f]

Rio Tinto Limited shares

	Total number of shares purchased[a]	Average price per share US$[b]	Total number of shares purchased to satisfy company dividend reinvestment plans	Total number of shares purchased to satisfy employee share plans[g]	Total number of shares purchased as part of publicly announced plans or programmes[c]	Maximum number of shares that may be purchased under plans or programmes
2020						
1 to 31 Jan	–	70.02	–	21,555	–	55,600,000[h]
1 to 29 Feb	–	–	–	–	–	55,600,000[h]
1 to 31 Mar	–	–	–	–	–	55,600,000[h]
1 to 30 Apr	–	57.11	1,186,788	215,749	–	55,600,000[h]
1 to 31 May	–	–	–	–	–	55,600,000[i]
1 to 30 Jun	–	67.47	–	97,000	–	55,600,000[i]
1 to 31 Jul	–	–	–	–	–	55,600,000[i]
1 to 31 Aug	–	–	–	–	–	55,600,000[i]
1 to 30 Sep	–	73.62	639,326	234,349	–	55,600,000[i]
1 to 31 Oct	–	–	–	–	–	55,600,000[i]
1 to 30 Nov	–	67.15	–	1	–	55,600,000[i]
1 to 31 Dec	–	88.48	–	685,508	–	55,600,000[i]
Total	–	**68.93**	**1,826,114**	**1,254,162**	–	–
2021						
1 to 31 Jan	–	–	–	–	–	55,600,000[i]
1 to 05 Feb	–	–	–	–	–	55,600,000[i]

(a) Monthly totals of purchases are based on the settlement date.
(b) The shares were purchased in the currency of the stock exchange on which the purchases took place and the sale price has been converted into US dollars at the exchange rate on the date of settlement.
(c) Shares purchased in connection with the dividend reinvestment plans and employee share plans are not deemed to form any part of any publicly announced plan or programme.
(d) This figure represents 0.425% of Rio Tinto plc issued share capital at 31 December 2020.
(e) At the Rio Tinto plc AGM held in 2019, shareholders authorised the on-market purchase by Rio Tinto plc, and Rio Tinto Limited and its subsidiaries of up to 126,772,263 Rio Tinto plc shares. This authorisation expired on 10 July 2020.
(f) At the Rio Tinto plc AGM held in 2020, shareholders authorised the on-market purchase by Rio Tinto plc, and Rio Tinto Limited and its subsidiaries of up to 124,667,622 Rio Tinto plc shares. This authorisation will expire on the later of 8 July 2021 or the date of the 2021 AGM.
(g) The average price of shares purchased on-market by the trustee of Rio Tinto Limited's employee share trust during 2020 was US$77.44.
(h) At the Rio Tinto Limited AGM held in 2019 shareholders authorised the off-market and/or on-market buy-back of up to 55.6 million Rio Tinto Limited shares.
(i) At the Rio Tinto Limited AGM held in 2020 shareholders authorised the off-market and/or on-market buy-back of up to 55.6 million Rio Tinto Limited shares.

Political donations

Rio Tinto prohibits the use of its funds to support political candidates or parties. No political donations were made by the Group for political purposes during the year. In the United States, in accordance with the United States Federal Election Campaign Act, we provide administrative support for the Rio Tinto America Political Action Committee (PAC), which was created in 1990 and encourages voluntary employee participation in the political process. All Rio Tinto America PAC employee contributions are reviewed for compliance with federal and state law and are publicly reported in accordance with US election laws. The PAC is controlled by neither Rio Tinto nor any of its subsidiaries but instead by a governing board of 5 employee members on a voluntary basis. In 2020, contributions to Rio Tinto America PAC by 15 employees amounted to $8,475.45, and Rio Tinto America PAC donated $11,500 in political contributions in 2020.

Government regulations

Our operations around the world are subject to extensive laws and regulations imposed by local, state, provincial and federal governments. These regulations govern many aspects of our work – from how we explore, mine and process ore, to conditions of land tenure and health, safety and environmental requirements. They also govern how we operate as a company in relation to securities, taxation, intellectual property, competition and foreign investment, provisions to protect data privacy, conditions of trade and export and infrastructure access. In addition to these laws, several of our operations are governed by specific agreements made with governments, some of which are enshrined in legislation. The geographic and product diversity of our operations reduces the likelihood of any single law or government regulation having a material effect on the Group's business as a whole.

Environmental regulations

Rio Tinto is subject to various environmental laws and regulations in the countries where it has operations. Rio Tinto measures its performance against environmental regulation by tracking and rating incidents according to their actual environmental and compliance impacts using five severity categories (minor, medium, serious, major or catastrophic). Incidents with a consequence rating of major or catastrophic are of a severity that require notification to the relevant product group chief executive and the Rio Tinto chief executive immediately after the incident occurring. In 2020, there were no environmental incidents at managed operations with a major or catastrophic impact.

During 2020, four managed operations incurred fines amounting to US$27,387 (2019: US$18,964). Details of these fines are reported in the Sustainability section of this report, page 84.

Australian corporations that exceed specific greenhouse gas emissions or energy use thresholds have obligations under the Australian National Greenhouse and Energy Reporting Act 2007 (NGER). All Rio Tinto entities covered under this Act have submitted their annual NGER reports by the required 31 October 2020 deadline.

Further information on the Group's environmental performance is included in the Sustainability section of this Annual Report, on pages 62-91, and on the website.

Energy efficiency action

Details of the measures taken to increase the company's energy efficiency are reported on pages 67, 79 and 97 of this report.

Energy consumption[a][b][c]

Energy consumption in GWh	2020	2019
From activities including the combustion of fuel and the operation of facilities	**86,389**	86,111
From the purchase of electricity, heat, steam or cooling	**22,778**	23,056
Total energy consumed[d]	**111,667**	112,778

(a) Rio Tinto does not report on the proportion of energy consumption associated with the UK and offshore area since it has no producing assets in the United Kingdom, only offices, and consequently falls below Rio Tinto's threshold level of reporting.

(b) Our approach and methodology used for the determination of measuring energy consumption is available at: https://www.riotinto.com/sustainability/sustainability-reporting.

(c) Data reported is for all managed operations, without adjustment for equity interest.

(d) Rio Tinto exports electricity and steam to others.

Greenhouse gas emissions (in million tCO_2-e)[e][f][g]

	2020	2019
Scope 1[h]	**17.1**	17.2[l]
Scope 2[i]	**9.5**	9.7
Total greenhouse gas emissions[j]	**26.2**	26.4
Ratios		
Greenhouse gas emissions intensity index[k]	**72.6**	71.0[l]
Greenhouse gas emissions intensity (tCO_2-e/t of product)	**0.060**	0.063[l]

(e) Rio Tinto's greenhouse gas emissions for managed operations are reported in accordance with the requirements under Part 7 of the UK Companies Act 2006 (Strategic report and Directors' report) Regulations 2013. Our approach and methodology used for the determination of these emissions are available at: https://www.riotinto.com/sustainability/sustainability-reporting.

(f) Rio Tinto's greenhouse gas emissions inventory is based on definitions provided by The World Resource Institute/World Business Council for Sustainable Development Greenhouse Gas Protocol: A Carbon Reporting and Accounting Standard, March 2004.

(g) Rio Tinto does not report on the proportion of CO_2 emissions associated with the UK and offshore area since it has no producing assets in the United Kingdom, only offices, and consequently falls below Rio Tinto's threshold level of reporting.

(h) Scope 1 emissions include emissions from combustion of fuel and operation of managed facilities. These include emissions from land management and livestock management at those facilities.

(i) Scope 2 emissions include emissions from the purchase of electricity, heat, steam or cooling.

(j) Total emissions is the sum of Scope 1 and Scope 2 emissions, minus emissions that are associated with the generation of electricity, heat, steam or cooling supplied to others. These emissions exclude indirect emissions associated with transportation and use of our products reported at https://www.riotinto.com/sustainability/sustainability-reporting.

(k) Rio Tinto greenhouse gas intensity index is the weighted emissions intensity for each of Rio Tinto's main commodities relative to the commodity intensities in the 2008 base year (set to 100). This index includes approximately 96.3% of Rio Tinto's emissions from managed operations.

(l) Numbers are restated to ensure comparability over time.

Exploration, research and development

The Group carries out exploration, research and development, described in the Innovation section on pages 58-59. Exploration and evaluation costs, net of any gains and losses on disposal, generated a net loss before tax of $624 million (2019: $614 million). Research and development costs were $45 million (2019: $45 million).

Financial instruments

Details of the Group's financial risk management objectives and policies, and exposure to risk, are described in note 29 to the financial statements.

Dealing in Rio Tinto securities

Rio Tinto Securities Dealing Policy restricts dealing in Rio Tinto securities by directors and employees who may be in possession of 'inside information'. These individuals must seek clearance before any proposed dealing takes place.

Our policy also prohibits such persons from engaging in hedging or other arrangements which limit the economic risk in connection to Rio Tinto securities issued, or otherwise allocated, as remuneration that are either unvested, or that have vested, but remain subject to a holding period. We also impose restrictions on a broader group of employees, requiring them to seek clearance before engaging in similar arrangements over any Rio Tinto securities.

Financial reporting

The directors are required to prepare financial statements for each financial period that give a true and fair view of the state of the Group at the end of the financial period, together with profit or loss and cash flows for that period. This includes preparing financial statements in accordance with UK company law and preparing a Remuneration Report that includes the information required by Regulation 11, Schedule 8 of the Large- and Medium-sized Companies and Groups (Accounts and Reports) Regulations 2008 (as amended) and the Australian Corporations Act 2001.

In addition, the UK Corporate Governance Code recommends that the Board provides a fair, balanced and understandable assessment of the company's position and prospects in its external reporting.

Additional Statutory Disclosure
continued

Rio Tinto's management conducts extensive review and challenge in support of the Board's obligations, aiming to strike a balance between positive and negative statements and provide good linkages throughout the Annual Report.

The directors were responsible for the preparation and approval of the Annual Report for the year ended 31 December 2020. They consider the Annual Report, taken as a whole, to be fair, balanced and understandable, and that it provides the information necessary for shareholders to assess the Group's position, performance, business model and strategy.

The directors are responsible for maintaining proper accounting records, in accordance with UK and Australian legislation. They have a general responsibility to safeguard the assets of the Group, and to prevent and detect fraud and other irregularities. The directors are also responsible for ensuring that appropriate systems are in place to maintain and preserve the integrity of the Group's website.

Legislation in the UK governing the preparation and dissemination of financial statements may differ from current and future legislation in other jurisdictions. The work carried out by the Group's external auditors does not take into account such legislation and, accordingly, the external auditors accept no responsibility for any changes to the financial statements after they are made available on the Group's website.

The directors, senior executives, senior financial managers and other members of staff who are required to exercise judgment while preparing the Group's financial statements, are required to conduct themselves with integrity and honesty and in accordance with the highest ethical standards, as are all Group employees.

The directors consider that the 2020 Annual Report presents a true and fair view and has been prepared in accordance with applicable accounting standards, using the most appropriate accounting policies for Rio Tinto's business, and supported by reasonable judgments and estimates. The accounting policies have been consistently applied as described on pages 206-222, and directors have received a written statement from the Chief Executive and the Chief Financial Officer to this effect. In accordance with the internal control requirements of the Code and the ASX Principles, this written statement confirms that the declarations in the statement are founded on a sound system of risk management and internal controls, and that the system is operating effectively in all material respects in relation to financial reporting risks. Further information on directors' responsibilities in the light of UK Disclosure and Transparency Rules is included on page 311.

Directors' declaration

The directors' statement of responsibilities in relation to the Group's financial statements is set out on page 311.

Non-audit services and auditor independence

Details of the non-audit services and a statement of independence regarding the provision of non-audit services undertaken by our external auditor, including the amounts paid for non-audit services, are set out on page 134 of the Directors' Report.

A copy of the Auditor's Independence Declaration as required under section 307C of the Corporations Act 2001 is set out on page 328.

Going concern

The directors, having made appropriate enquiries, have satisfied themselves that it is appropriate to adopt the going concern basis of accounting in preparing the financial statements. Additionally, the directors have considered longer-term viability, as described in their statement on page 94.

2021 AGMs

The 2021 AGMs will be held on 9 April in the UK and 6 May in Australia. Separate notices of the 2021 AGMs will be produced for the shareholders of each company.

Directors' approval statement

The Directors' Report is delivered in accordance with a resolution of the Board.

Simon Thompson
Chairman

22 February 2021

Compliance with Governance Codes and Standards

Application of and compliance with governance codes and standards

This section sets out our compliance with the applicable governance codes and standards. As our shares are listed on both the Australian Securities Exchange and the London Stock Exchange, we set out how we have complied with the codes and standards of those bodies on the following pages:

- London Stock Exchange – UK Corporate Governance Code (2018 version) (the UK Code), see pages 191-193.
- Australian Securities Exchange – ASX Corporate Governance Council's Corporate Governance Principles and Recommendations (4th edition) (the ASX Principles), see pages 193-195.

In addition, as explained below, as a foreign private issuer (FPI) with American Depository Receipts (ADRs) listed on the New York Stock Exchange (NYSE), we need to report any significant corporate governance differences from the NYSE listing standards (NYSE Standards) followed by US companies.

Statement of compliance with the Code and ASX Principles

Throughout 2020 and as at the date of this report, the Group has applied the Principles of the UK Code and the ASX Principles. The UK Code is available at www.frc.org.uk, and the ASX Principles at www.asx.com/au. For the purposes of ASX Listing Rule 4.10.3 and the ASX Principles, pages 113-139 of this report form our 'Corporate Governance Statement'. This statement is current as at 22 February 2021, unless otherwise indicated, and has been approved by the Board. Corporate governance documents and policies referenced can be found at riotinto.com/invest/corporategovernance.

We have complied with all relevant provisions of the UK Code throughout 2020.

Difference from NYSE listing standards

We have reviewed the NYSE Standards and consider that our practices are broadly consistent with them, with the following exceptions where the literal requirements of the NYSE Standards are not met due to differences in corporate governance between the US, UK and Australia:

- The NYSE Standards state that US companies must have a nominating/corporate governance committee which, in addition to identifying individuals qualified to become board members, develops and recommends to the board a set of corporate governance principles applicable to the company. Our Nominations Committee does not develop corporate governance principles for the Board's approval. The Board itself develops such principles.
- Under US securities law and the NYSE Standards, the company is required to have an audit committee that is directly responsible for the appointment, compensation, retention and oversight of the work of external auditors. While our Audit Committee makes recommendations to the Board on these matters, and is subject to legal and regulatory requirements on oversight of audit tenders, the ultimate responsibility for the appointment and retention of the external auditors of Rio Tinto rests with the shareholders.
- Under US securities law and the NYSE Standards, an audit committee is required to establish procedures for the receipt, retention and treatment of complaints regarding accounting, internal accounting controls and audit matters. The whistleblowing programme enables employees to raise any concerns confidentially or anonymously. The Board has responsibility to ensure that the programme is in place and to review the reports arising from its operations.

The UK Code

Board leadership and company purpose

A. Making the board effective

Our Board provides effective and entrepreneurial leadership. It is collectively responsible for the stewardship and long-term success of the Group. There is a framework of prudent and effective controls that enable risk to be assessed and managed. The Sustainability section on pages 61-91 sets out how we assess our impact on wider society. See page 121 for the key activities undertaken by the Board during the year and the factors that were considered when making decisions. In 2020, the Board undertook an internally facilitated effectiveness review and details of this are provided on pages 126-127 of the Governance report.

B. The company's purpose, values and strategy and alignment with culture

Through our *The Way We Work* framework, the Board sets the company's purpose, values, and standards for the Group's employees. The Board is committed to acting in accordance with these values, championing, and embedding these in the organisation. The Board also seeks to ensure that the culture of the company is aligned with these values and standards. In this report, we address the events at Juukan Gorge (see pages 10-11and 114-115) and the actions we have taken to strengthen our processes and approach to cultural heritage.

C. Company performance and risk management

The Board leads the development of long-term investment plans for the company. It aims to make good quality decisions at the right time, to achieve the company's objectives, in alignment with our purpose, values and strategy. The role of the Board in establishing and monitoring the internal control environment is set out in the Audit Committee report on pages 131-135. The way in which the company manages risk is set out on pages 92-109. For information on the delegation of business to management please refer to pages 118-119.

The formal schedule of matters reserved for the Board's decision, available on our website, covers areas including: setting the Group's purpose and strategic vision; monitoring performance of the delivery of the approved strategy; approving major investments, acquisitions and divestments; the oversight of risk and the setting of the Group's risk appetite; and reviewing the Group's governance framework.

D. Stakeholder engagement

The Chairman undertakes regular engagement with our major shareholders, in addition to that carried out by the Chief Executive, the Chief Financial Officer and the investor relations team. The committee chairs also engage with their relevant stakeholders and details of this engagement is provided in each of the committee reports. We have mapped our key stakeholders and continually work to understand their views and we take account of our responsibilities to our stakeholders when making business decisions. We explain more about this in our section 172 (1) statement, set out on pages 122-123. We also discuss stakeholders in the Strategic Report on pages 18-19 and in the Sustainability section.

During 2020, the full Board took responsibility for workforce engagement and we explain how we have engaged with employees during the year, what we have heard and what actions we have taken on page 122. From January 2021, the Board has appointed Simon McKeon as the designated non-executive director for workforce engagement. The Board considers that this approach will help sharpen the focus on dialogue with the workforce, with Simon leading the overall programme of engagement.

At Rio Tinto plc's AGM on 8 April 2020, Resolution 24 ('Authority to purchase Rio Tinto plc shares') was passed with less than 80% of votes in favour and Shining Prospect (a subsidiary of the Aluminium Corporation of China ('Chinalco')) voted against. Chinalco has not sold any Rio Tinto plc shares and now has a holding of over 14% given its non-participation in Rio Tinto's significant share buy-back programmes over the last four years. This places Chinalco close to the 14.99% threshold agreed with the Australian Government at the time of Chinalco's original investment in 2008. An update was given in the Interim financial statement provided on 29 July 2020, which was within the six month period.

Compliance with Governance Codes and Standards continued

E. Our workforce policies and practices
Group workforce policies are approved by the Board. All the policies relating to our workforce take account of the global nature of our company. Our whistleblowing process is overseen by the Board and every member of the workforce has access to the whistleblower programme and details of this programme are on page 87.

Division of responsibilities

F. The role of the Chairman
The Chairman leads the Board and is responsible for its overall effectiveness. He was independent on the date of his appointment and we consider he remains independent for the purposes of the Code. He recognises the importance of creating a boardroom culture which encourages openness and debate and ensures constructive relations between executive and non-executive directors.

The Chairman is responsible for: the management of the Board and its committees; director performance; induction; training and development; succession planning; engagement with external stakeholders; and attendance by the Board at shareholder meetings. The Chairman is supported by the senior independent directors, the Group company secretary and the Chief Executive. In line with the UK Code, the senior independent director, Rio Tinto plc, is responsible for acting as a sounding board for the Chairman and engages with shareholders to develop a balanced understanding of their interests and concerns. For further details, please see our Board Charter which sets out the role, responsibilities, structure, compositions and conduct of the Board, as well as the role of the Chairman, the Senior Independent Director Rio Tinto plc,the Senior Independent Director Rio Tinto Ltd and the Chief Executive – riotinto.com/en/invest/corporate-governance/board-governance.

G. Composition of the board
As at the date of this report, the Board comprises ten members: eight independent NEDs, the Chairman, and the Chief Executive.

As detailed in the Nominations Committee report, we have engaged Spencer Stuart to support the search for a new non-executive director following David Constable's departure. A process is also underway for the appointment of a permanent Chief Financial Officer.

The Board is satisfied that it has the appropriate balance of skills, experience, independence, and knowledge of the company to enable its members to discharge their respective duties and responsibilities effectively, and that no individual or group can dominate the Board's decision-making.

There is a clear division of responsibilities between the leadership of the Board and the executive leadership of our business. The Chief Executive is responsible for the day-to-day management of the business and, under a Group delegation of authority framework, delegates to other members of the Executive Committee.

H. Role of non-executive directors
We list all of the non-executive directors that we consider to be independent on pages 116-117 of this report. Over 50% of the Board (excluding the Chairman) are non-executive directors. The non-executive directors constructively challenge and help develop proposals on strategy. They are also responsible for scrutinising management performance and ensuring that financial information, risks and controls, and systems of risk management are robust. In order to enhance Board engagement in Australia, the role of Senior Independent Director, Rio Tinto Limited, was established this year. Simon McKeon was appointed to this position and the terms of this appointment were agreed by the Board.

The Board held an internally facilitated Board evaluation this year and as part of this process, the Board met without the Chairman present and a full assessment of the Chairman's capability was carried out. Details of this review are on pages 126-127. Each director has undertaken to allocate sufficient time to the Group in order to discharge their responsibilities effectively, and this is kept under review by the Nominations Committee. The directors' other appointments are listed on pages 116-117.

I. Board processes and role of the Company Secretary
The Governance Framework on page 120 explains the governance structure of the Board and sets out the relationship with the Chief Executive. The roles and responsibilities of each committee are explained. The Board insights section provides some examples of the decision making process of the Board and the steps it takes to function effectively, including how it considers stakeholders in this process.

The Group company secretary is the trusted interlocutor within the Board and its committees, and between senior leadership and the non-executive directors. He is responsible for advising the Board, through the Chairman, on all governance matters. He supports the Chairman in ensuring that the information provided to the Board is of sufficient quality and appropriate detail in order for the Board to function effectively and efficiently.

Composition, succession and evaluation

J. Appointments to the board
The Nominations Committee ensures a formal, rigorous and transparent procedure for the appointment of new directors. It is also responsible for Board succession planning, regularly assessing the balance of skills, experience, diversity and capacity required to oversee the delivery of Rio Tinto's strategy. It reviews proposals for appointments to the Executive Committee, and monitors executive succession planning. This year the Nominations Committee oversaw the succession of the Chief Executive and details of this process are provided in the Nominations Committee report on pages 128-130.

All non-executive directors are members of the Nominations Committee. The committee is chaired by the Chairman, apart from when the committee is dealing with the appointment of his or her successor. Only the Chairman and committee members have the right to attend the meetings of the Nominations Committee; attendance by all other individuals is by invitation only. The Nominations Committee report sets out the Board's approach to succession planning and how this supports the development of a diverse pipeline, at all levels. All directors are subject to annual re-election at the AGM.

Details of external search consultancies used for Board appointments can be found in the Nominations Committee report.

K. Skills, experience and knowledge of the board and its committees
In our succession planning, we aim to bring a diverse and complementary range of skills, knowledge and experience to the Board, so that we are equipped to navigate the operational, social, regulatory and geopolitical complexity in which our business operates. Achieving the right blend of skills and diversity to support effective decision-making is a continuing process. Further details on tenure and experience of the Board are set out in the Nominations Committee report on pages 128-130. The Board biographies set out the specific skills and experience which each director brings to the Board (page 116-117).

L. Board evaluation
A Board and committee effectiveness evaluation is carried out each year. The evaluation considers (but is not limited to): the balance of Board members' skills and experience; independence; diversity; the running of the Board; and directors' knowledge of the company. Every third year, the Board evaluation is externally facilitated. An internally facilitated Board evaluation was carried out in 2020. The terms of reference for this review and the outcomes are discussed on pages 126-127.

Audit, risk and internal control

M. Internal and external audit

The Audit Committee monitors the independence and effectiveness of the internal audit function and external auditors. The Audit Committee is responsible for reviewing key judgments within the Group's financial statements and narrative reporting, with the aim of maintaining the integrity of the Group's financial reporting. For further detail, please refer to the Audit Committee report on pages 131-135.

Following an audit tender process in 2018, the Board endorsed the appointment of KPMG as external auditor for the 2020 financial year. The appointment of KPMG was approved by shareholders at our AGMs in 2020.

N. Fair, balanced and understandable assessment

The Board is responsible for the presentation of a fair, balanced and understandable assessment of the company's position and prospects, not only in the Annual Report. We have a robust process in place including through the Disclosure Committee, to ensure that this is the case.

O. Risk management and internal control framework

The Board is ultimately responsible for aligning our long term strategic objectives with the risk appetite of the company, taking into account the principal and emerging risks faced by the company. Please refer to pages 92-94 for further details on our business planning cycle and risk management framework and how these support our longer-term viability statement. For further details on our approach to risk, please refer to the risk section on page 92.

Remuneration

P. Remuneration policies and practices

The Remuneration Committee supports the Board by setting our Remuneration Policy. Through long-term and short-term incentives, our Remuneration Policy is designed to help drive a performance culture which incentivises executives to deliver the Group's long-term strategy and create superior shareholder value over the short, medium and long term. The overarching aim is to ensure our remuneration structure and policies reward fairly and responsibly with a clear link to corporate and individual performance, and to the company's long-term strategy and values. We have worked to ensure that we have a clear policy that can be understood by shareholders and stakeholders. Our proposed new policy is included on pages 151-158.

Q. Procedure for developing Remuneration Policy

We have a formal and transparent procedure for developing our Remuneration Policy, and no director is involved in deciding their own remuneration. Executive remuneration is set with regard to the wider workforce and through market benchmarking. For further detail, please refer to the Remuneration Committee report on pages 140-185. The Remuneration Committee is supported by remuneration consultant Deloitte. The Board received assurance from the Remuneration Committee and from Deloitte that Deloitte did not have any connections with Rio Tinto or the Board that would have impaired its independence. Please refer to page 159 of this Annual Report for further detail.

R. Exercising independent judgement

The Remuneration Committee comprises four non-executive directors to ensure independent judgment with regard to remuneration outcomes. The Remuneration Committee considers remuneration on an annual basis and determines outcomes by assessing executive performance against performance criteria, details of which can be found in the Remuneration Committee report on pages 140-185 of this Annual Report. This states how our Remuneration Policy has been applied and sets out details of any adjustments made or discretions exercised.

ASX Principles

Principle 1: Lay solid foundations for management and oversight

Recommendation 1.1

Rio Tinto plc and Rio Tinto Limited have a common Board of Directors. The principal role of the Board is to set the Group's strategy and to review its strategic direction regularly. The Board also has responsibility for corporate governance. A Board Charter setting out the role of the Board and management and matters reserved for the Board is available on our website.

The Board delegates responsibility for day-to-day management of the business to the Chief Executive and other members of the Executive Committee. A number of management committees support the Chief Executive and the Executive Committee. The structure of these committees is set out on page 120.

Recommendation 1.2

The Nominations Committee, on behalf of the Board, ensures a formal, rigorous and transparent procedure for the appointment of new directors. Further information on the appointment approach is set out on pages 128-130. A similar process is followed with the Executive Committee and senior executive appointments, including a formal and rigorous process to source strong candidates from diverse backgrounds and conducting appropriate background and reference checks on the shortlisted candidates. Further information on the recently completed Chief Executive appointment process is set out on page 129.

The notice of annual general meeting provides all material information in Rio Tinto's possession relevant to decisions on election and re-election of directors, including a statement from the Board that it considers all directors continue to perform effectively and demonstrate appropriate levels of commitment. It also provides reasons why each director is recommended for re-election, highlighting their relevant skills and experience. Further information on the skills and experience of each director is set out on pages 116-117 of the Annual Report.

Recommendation 1.3

The company has written agreements setting out the terms of appointment for each director and senior executive. Non-executive directors are appointed by letters of appointment. Executive directors and other senior executives are employed through employment service contracts. Further information is set out on pages 158, 167 and 174 of the Annual Report.

Recommendation 1.4

The Group company secretary is accountable to the Board and advises the Chairman, and, through the Chairman, the Board on all governance matters. The appointment and removal of the Group company secretary is a matter reserved for the Board.

Recommendation 1.5

Rio Tinto has a Group-wide, Board-endorsed Inclusion and diversity policy. The policy is available on our website. The Board sets objectives for achieving diversity for the Board, senior executives and the workforce, and annually reviews the Group's performance against them. Page 67 of the Annual Report sets out the measurable objectives and our performance against them. The respective proportions of men and women on the Board, in senior executive positions and across the whole organisation, is reported on pages 67 and 129-130 of the Annual Report.

Recommendation 1.6

The performance of the Board, and of each of its committees and individual directors, was reviewed in 2020, as it is each year. Detailed information on the Board and committee evaluation and the evaluation of the Chairman and the non-executive directors is set out on pages 126, 135 and 138 of the Annual Report.

Recommendation 1.7

The performance of Executive Committee members, including executive directors, is continually evaluated as part of the Group's performance evaluation cycle. Further details are set out in the Remuneration Report on pages 140-185.

Compliance with Governance Codes and Standards continued

Principle 2: Structure the board to be effective and add value

Recommendation 2.1
The Nominations Committee includes all non-executive directors and is chaired by the Chairman of the Board. The Board is satisfied that all non-executive directors, including the Chairman (as appropriate), continue to meet the test for independence under the UK Code, the ASX Principles and the NYSE Standards. The Nominations Committee's terms of reference are available on our website. The Nominations Committee report on pages 128-130 provides further details on its role and responsibilities. Details on membership, the number of times the Committee met, and the attendance of members are set out on page 127.

Recommendation 2.2
A Board skills matrix showing key attributes in terms of skills, experience and diversity that are relevant to the Board is set out on page 130 of the Annual Report.

Recommendations 2.3, 2.4, 2.5
The Nominations Committee is responsible for assessing the independence of each non-executive director against an independence framework which combines the requirements of the Code, the ASX Principles and the NYSE Standards. The Nominations Committee reviews and approves this framework each year.

The Board is satisfied that all of its non-executive directors are independent in character and judgment and are free from any relationships (material or otherwise) or circumstances that could create a conflict of interest.

The Chairman was considered independent upon his appointment and, in the Board's view, he continues to satisfy the tests for independence under the ASX Principles and the NYSE Standards.

The name, skills and experience of each director, together with their terms in office are shown in the biographical details on pages 116-117.

Recommendation 2.6
On joining Rio Tinto, all directors receive a full, formal induction programme. It is delivered over a number of months, and tailored to their specific requirements, taking into account their prospective committee responsibilities. Further details are set out on pages 125 and 127 of the Annual Report.

The annual Board evaluation process identifies training and development needs for the Board and individual directors. All directors are expected to commit to continuing their development during their tenure. This is supported through a combination of: site visits, teach-ins, deep dives and internal business and operational briefings provided in or around scheduled Board and committee meetings. In addition, the Group company secretary provides regular updates on corporate governance developments in the UK, Australia and the US. Further details are set out on page 126 of the Annual Report.

Principle 3: Instil a culture of acting lawfully, ethically and responsibly

Recommendations 3.1, 3.2, 3.3, 3.4
We have articulated the purpose, values and standards which apply to our employees and directors on page 17 of the Annual Report and in *The Way We Work*. This is available on our website. We have discussed the events at Juukan Gorge and the actions we have taken to strengthen our processes and approach to cultural heritage and rebuild our reputation, on pages 10-11 of the Annual Report.

Rio Tinto's confidential and independently operated whistleblowing programme offers an avenue through which our employees, contractors, suppliers and customers can report concerns anonymously, subject to local law. These may include concerns about the business, or behaviour of individuals, including suspicion of violations of financial reporting, safety or environmental procedures or other business integrity issues. The programme features telephone and web submissions, a case management tool, and a reporting tool to allow for improved analysis of case statistics.

The whistleblowing procedure explains how concerns regarding matters relating to Rio Tinto, its business and its people can be raised, in confidence and without fear of retaliation. The procedure also sets out who can make a report and what they can expect from Rio Tinto if they do report a concern. The procedure is available on our website.

Rio Tinto's business integrity standard sets out the Group's position on issues relating to bribery and corruption. This is available on our website.

Oversight of the Group's ethics, integrity and compliance programme now falls within the remit of the Board.

Principle 4: Safeguard integrity in corporate reports

Recommendation 4.1
The Audit Committee report on pages 131-135 provides details of the role and responsibilities of the Committee. The Audit Committee's terms of reference are available on our website. Further details on membership, the number of times the Committee met during 2020 and, the attendance of members are set out on pages 116-117 and 127.

Recommendation 4.2
Details on compliance with the financial reporting requirements contemplated under this recommendation are set out on pages 189-190 of the Annual Report.

Recommendation 4.3
We have a thorough and rigorous review process in place to ensure integrity of the periodic reports we release to the market. Rio Tinto communicates with the market through accurate, clear, concise and effective reporting, and contents of periodic reports are verified by the subject matter experts and reviewed by the relevant Group functions. Such reports are then reviewed and considered by the Group Disclosure Committee for release to the market.

Principle 5: Make timely and balanced disclosure

Recommendation 5.1
Rio Tinto recognises the importance of effective and timely communication with shareholders and the wider investment community.

It is our policy to make sure that all information disclosed or released by the Group is accurate, complete and timely and complies with all continuous and other disclosure obligations under applicable Listing Rules and other relevant legislation.

To ensure that trading in our securities takes place in an informed and orderly market, we have established a Disclosure Committee to oversee compliance with our continuous disclosure obligations. The Group disclosure and communications policy, and the terms of reference of our Disclosure Committee, together with our adopted procedures in relation to disclosure and management of relevant information, support compliance with our disclosure obligations. A copy of the Group disclosure and communications policy is available on our website.

The Group's Disclosure Committee is responsible for determining whether information relating to Rio Tinto may require disclosure to the markets under the continuous disclosure requirements in the jurisdictions in which Rio Tinto is listed. In accordance with its terms of reference, the specific focus of the Disclosure Committee is to consider and determine on a timely basis whether information would, to the extent that the information is not public and relates directly or indirectly to Rio Tinto, be likely to have a material effect on the price of Rio Tinto securities if that information was generally available.

The members of the Committee are the Chief Executive; Interim Chief Financial Officer; Group Company Secretary; the Chief Legal Officer & External Affairs; the Head of Investor Relations; and the Vice President Corporate Relations.

Recommendation 5.2
Consistent with the Group's disclosure protocols, the Board is provided with copies of all material market announcements promptly after there being released to the market.

Recommendation 5.3
As a matter of practice, all our new or substantive investor presentations are released to the market via ASX and LSE market announcement platforms.

Principle 6: Respect the rights of security holders

Recommendation 6.1
Our website includes pages dedicated to corporate governance, providing information on compliance with governance codes and standards (the Code, ASX Principles and the NYSE Standards); the terms of reference of the committees; risk management and financial reporting; and Board governance including selection, appointment and re-election of directors, directors' independence and Board performance evaluation.

All information released to the markets is posted in the media section of our website. Our website also provides general investor information. Annual and half-year results, as well as any major presentations, are webcast and the materials are available on our website, which also contains presentation material from investor seminars.

Recommendation 6.2
Our main channels of communication with the investment community are through the Chairman, Chief Executive and Chief Financial Officer, who have regular meetings with the Group's major shareholders. The senior independent director for Rio Tinto plc has a specific responsibility under the UK Code to be available to shareholders who have concerns which have not been resolved through contact with the Chairman, Chief Executive or Chief Financial Officer, or for whom such contact is inappropriate. We have a number of processes and initiatives to ensure that members of the Board understand the views of major shareholders. The Chief Financial Officer reports to the Board at each meeting, and provides regular investor updates. In addition, the Head of Investor Relations reports regularly to the Board, and an annual survey of major shareholders' opinions is presented to the Board by the Group's investor relations advisers. Further information on engagement with shareholders and investors during 2020 is set out on page 122 of the Annual Report.

Recommendations 6.3, 6.4
The AGMs present an opportunity to provide a summary business presentation, to inform shareholders of recent developments, and to give them the opportunity to ask questions. Generally, the chairs of all Board committees are available to answer questions raised by shareholders, and all directors are expected to attend where possible. The AGMs are generally webcast and transcripts of the Chairman's and Chief Executive's speeches are made available on our website. A summary of the proceedings at the meetings, and the results of voting on resolutions, are made available as soon as practicable after the meetings. At Rio Tinto AGMs, all resolutions are decided by poll and not by show of hands.

In 2020, due to the pandemic, the Rio Tinto Limited AGM was held as a fully virtual meeting. With the use of technology, shareholders were offered the opportunity to virtually participate at the AGM, ask questions and vote on the resolutions.

Recommendation 6.5
Shareholders can choose to communicate electronically with the companies and the share registrars. The contact details for the registrars are on page 383 and on our website.

Principle 7: Recognise and manage risk

Recommendations 7.1, 7.2
The Board is ultimately responsible for risk management and internal controls and for ensuring that the systems in place are robust and take into account the principal risks faced by the Group. The Board delegates certain matters relating to the Group's risk management framework to the Audit Committee, and the Audit Committee provides updates to the Board on matters discussed at each meeting. The Sustainability Committee advises the Board on risk appetite tolerance and strategy with respect to sustainable development risks. Further information about the Sustainability Committee is set out on pages 136-139 of the Annual Report. Terms of reference for the Sustainability Committee are available on our website. Further details on the Group's governance framework for risk management and internal control are set out on pages 92-94, 132 and 134-135 of the Annual Report.

Recommendation 7.3
Further information on Rio Tinto's Group Internal Audit function is set out on page 135 of the Annual Report.

Recommendation 7.4
A description of the principal risks and uncertainties that could affect Rio Tinto (including economic, environmental and social sustainability risks), and of the Group's governance framework for risk management and internal control, is on pages 92-108 of the Annual Report. Further information on sustainability is available on pages 62-91 of the Annual Report.

Principle 8: Remunerate fairly and responsibly

Recommendation 8.1
The Remuneration Report on pages 140-185, provides details on the role and responsibilities of the Committee. The Remuneration Committee's terms of reference are available on our website. Further details on membership, the number of times the Committee met during 2020, and the attendance of members are set out on pages 116-117 and 127.

Recommendation 8.2
Rio Tinto's policies and practices regarding remuneration of non-executive directors, executive directors and senior executives are set out on pages 140-185 in the Remuneration Report.

Recommendation 8.3
Rio Tinto's approach on participating in equity-based remuneration schemes is set out on page 189 of the Annual Report. This is also addressed in the Rio Tinto Securities Dealing Policy which is available on our website.

Financial Statements

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Strengthening communities and social performance

Underlying EBITDA

$23.9bn

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Group Income Statement

Years ended 31 December

	Note	2020 US$m	2019 US$m	2018 US$m
Consolidated operations				
Consolidated sales revenue	2,3	**44,611**	43,165	40,522
Net operating costs (excluding items shown separately)	4	**(26,254)**	(27,307)	(27,115)
Impairment charges	6	**(904)**	(3,487)	(132)
Net (losses)/gains on consolidation and disposal of interests in businesses	2,36	**—**	(291)	4,622
Exploration and evaluation costs	13	**(625)**	(624)	(488)
Profit relating to interests in undeveloped projects	13	**1**	10	278
Operating profit		**16,829**	11,466	17,687
Share of profit after tax of equity accounted units	7	**652**	301	513
Impairment of investments in equity accounted units	6	**(339)**	—	—
Profit before finance items and taxation		**17,142**	11,767	18,200
Finance items				
Net exchange (losses)/gains on net external and intragroup debt balances		**(1,124)**	58	704
Net losses on derivatives not qualifying for hedge accounting		**(123)**	(68)	(57)
Finance income	8	**141**	300	249
Finance costs	8	**(268)**	(554)	(552)
Amortisation of discount		**(377)**	(384)	(377)
		(1,751)	(648)	(33)
Profit before taxation		**15,391**	11,119	18,167
Taxation	9	**(4,991)**	(4,147)	(4,242)
Profit after tax for the year		**10,400**	6,972	13,925
– attributable to owners of Rio Tinto (net earnings)		**9,769**	8,010	13,638
– attributable to non-controlling interests		**631**	(1,038)	287
Basic earnings per share	10	**604.0 c**	491.4 c	793.2 c
Diluted earnings per share	10	**599.8 c**	487.8 c	787.6 c

The notes on pages 206-300 are an integral part of these consolidated financial statements.

Group Statement of Comprehensive Income

Years ended 31 December

	Note	2020 US$m	2019 US$m	2018 US$m
Profit after tax for the year		**10,400**	6,972	13,925
Other comprehensive (loss)/income				
Items that will not be reclassified to profit or loss:				
Actuarial (losses)/gains on post-retirement benefit plans	42	**(474)**	(262)	907
Changes in the fair value of equity investments held at fair value through other comprehensive income (FVOCI)		**10**	(5)	(13)
Tax relating to these components of other comprehensive income	9	**112**	83	(271)
Share of other comprehensive losses of equity accounted units, net of tax		**(6)**	(6)	(1)
		(358)	(190)	622
Items that have been/may be subsequently reclassified to profit or loss:				
Currency translation adjustment[a]		**2,967**	343	(3,830)
Currency translation on companies disposed of, transferred to the income statement		**—**	215	14
Fair value movements:				
– Cash flow hedge gains		**24**	12	156
– Cash flow hedge (gains)/losses transferred to the income statement		**(63)**	(41)	40
Net change in costs of hedging[b]	28	**7**	3	(39)
Tax relating to these components of other comprehensive loss/(income)	9	**3**	(6)	(54)
Share of other comprehensive income/(loss) of equity accounted units, net of tax		**4**	10	(48)
Other comprehensive income/(loss) for the year, net of tax		**2,584**	346	(3,139)
Total comprehensive income for the year		**12,984**	7,318	10,786
– attributable to owners of Rio Tinto		**12,201**	8,351	10,663
– attributable to non-controlling interests		**783**	(1,033)	123

(a) Excludes a currency translation gain of US$333 million (2019: charge of US$29 million; 2018: charge of US$382 million) arising on Rio Tinto Limited's share capital for the year ended 31 December 2020, which is recognised in the Group statement of changes in equity. Refer to Group statement of changes in equity on page 204.

(b) As part of the 2018 bond buy-back programme, cross currency interest rate swaps hedging the bonds repurchased were closed out. This resulted in the reclassification of US$3 million from the cost of hedging reserve to finance costs in the income statement in 2018. There was no bond buy-back programme in 2019 or 2020.

The notes on pages 206-300 are an integral part of these consolidated financial statements.

Group Cash Flow Statement

Years ended 31 December

	Note	2020 US$m	2019 US$m	2018 US$m
Cash flows from consolidated operations[a]		**21,822**	19,705	15,655
Dividends from equity accounted units		**594**	669	800
Cash flows from operations		**22,416**	20,374	16,455
Net interest paid		**(569)**	(537)	(612)
Dividends paid to holders of non-controlling interests in subsidiaries		**(683)**	(376)	(420)
Tax paid		**(5,289)**	(4,549)	(3,602)
Net cash generated from operating activities		**15,875**	14,912	11,821
Cash flows from investing activities				
Purchases of property, plant and equipment and intangible assets	2	**(6,189)**	(5,488)	(5,430)
Disposals of subsidiaries, joint ventures, unincorporated joint operations and associates	36	**10**	(80)	7,733
Purchases of financial assets[b]		**(5)**	(43)	(1,572)
Sales of financial assets[b]		**63**	83	19
Sales of property, plant and equipment and intangible assets		**45**	49	586
Net funding of equity accounted units		**(43)**	(33)	(9)
Acquisitions of subsidiaries, joint ventures and associates	36	**—**	—	(5)
Other investing cash flows	18	**(437)**	11	(1)
Net cash (used)/generated in investing activities		**(6,556)**	(5,501)	1,321
Cash flows before financing activities		**9,319**	9,411	13,142
Cash flows from financing activities				
Equity dividends paid to owners of Rio Tinto	11	**(6,132)**	(10,334)	(5,356)
Proceeds from additional borrowings		**125**	80	54
Repayment of borrowings and associated derivatives[c]	21	**(721)**	(203)	(2,300)
Lease principal payments	22	**(324)**	(315)	—
Proceeds from issue of equity to non-controlling interests		**129**	101	85
Own shares purchased from owners of Rio Tinto		**(208)**	(1,552)	(5,386)
Other financing cash flows		**1**	4	(48)
Net cash flows used in financing activities		**(7,130)**	(12,219)	(12,951)
Effects of exchange rates on cash and cash equivalents		**165**	(54)	151
Net increase/(decrease) in cash and cash equivalents		**2,354**	(2,862)	342
Opening cash and cash equivalents less overdrafts		**8,027**	10,889	10,547
Closing cash and cash equivalents less overdrafts	20	**10,381**	8,027	10,889
(a) Cash flows from consolidated operations				
Profit after tax for the year		**10,400**	6,972	13,925
Adjustments for:				
– Taxation		**4,991**	4,147	4,242
– Finance items		**1,751**	648	33
– Share of profit after tax of equity accounted units		**(652)**	(301)	(513)
– Net losses/(gains) on consolidation and disposal of interests in businesses	36	**—**	291	(4,622)
– Impairment charges of investments in equity accounted units after tax	6	**339**	—	—
– Impairment charges	6	**904**	3,487	132
– Depreciation and amortisation		**4,279**	4,384	4,015
– Provisions (including exchange differences on provisions)		**894**	753	1,011
Utilisation of provisions		**(582)**	(539)	(620)
Utilisation of provision for post-retirement benefits	25	**(192)**	(205)	(219)
Change in inventories		**(281)**	28	(587)
Change in receivables and other assets		**(562)**	163	(421)
Change in trade and other payables		**558**	(191)	476
Other items[d]		**(25)**	68	(1,197)
		21,822	19,705	15,655

(b) In 2020, the Group received net proceeds of US$58 million (2019 and 2018 net purchase of US$28 million and US$1.6 billion respectively) from its sales and purchases of investments within a separately managed portfolio of fixed income instruments. Purchases and sales of these securities are reported on a net cash flow basis within "Sales of financial assets" or "Purchases of financial assets" depending on the overall net position at each reporting date.

(c) On 11 May 2020, we repaid our €402 million (nominal value) Rio Tinto Finance plc Euro Bonds on their maturity. The cash outflow relating to the repayment of the bonds and the realised loss on the derivatives have been recognised within "Repayment of borrowings and associated derivatives" in the Group cash flow statement and totalled US$526 million.

(d) In 2018 other items included adjustments to add back mark-to-market gains of US$288 million relating to derivative contracts transacted for operational purposes and not designated in a hedge relationship, a gain of US$549 million on the sale of surplus land at Kitimat and a gain of US$167 million on the revaluation of a financial asset arising from the disposal of the Mount Pleasant coal project in 2016.

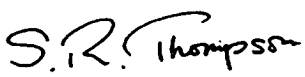
The notes on pages 206-300 are an integral part of these consolidated financial statements.

Group Balance Sheet
At 31 December

	Note	2020 US$m	2019 US$m
Non-current assets			
Goodwill	12	**946**	922
Intangible assets	13	**2,755**	2,637
Property, plant and equipment	14	**62,882**	57,372
Investments in equity accounted units	15	**3,764**	3,971
Inventories	16	**174**	139
Deferred tax assets	17	**3,385**	3,102
Receivables and other assets	18	**1,796**	1,716
Tax recoverable		**4**	5
Other financial assets	19	**829**	635
		76,535	70,499
Current assets			
Inventories	16	**3,917**	3,463
Receivables and other assets	18	**3,644**	3,027
Tax recoverable		**62**	116
Other financial assets	19	**2,851**	2,670
Cash and cash equivalents	20	**10,381**	8,027
		20,855	17,303
Total assets		**97,390**	87,802
Current liabilities			
Borrowings and other financial liabilities	21	**(607)**	(1,372)
Trade and other payables	24	**(7,421)**	(6,480)
Tax payable		**(1,850)**	(1,874)
Provisions including post-retirement benefits	25	**(1,729)**	(1,399)
		(11,607)	(11,125)
Non-current liabilities			
Borrowings and other financial liabilities	21	**(13,408)**	(13,341)
Trade and other payables	24	**(820)**	(794)
Tax payable		**(477)**	(376)
Deferred tax liabilities	17	**(3,239)**	(3,220)
Provisions including post-retirement benefits	25	**(15,936)**	(13,704)
		(33,880)	(31,435)
Total liabilities		**(45,487)**	(42,560)
Net assets		**51,903**	45,242
Capital and reserves			
Share capital			
– Rio Tinto plc	26	**207**	207
– Rio Tinto Limited	27	**3,781**	3,448
Share premium account		**4,314**	4,313
Other reserves	28	**11,960**	9,177
Retained earnings	28	**26,792**	23,387
Equity attributable to owners of Rio Tinto		**47,054**	40,532
Attributable to non-controlling interests		**4,849**	4,710
Total equity		**51,903**	45,242

The notes on pages 206-300 are an integral part of these consolidated financial statements.

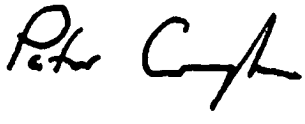
The financial statements on pages 200-300 were approved by the directors on 22 February 2021 and signed on their behalf by



Simon Thompson
Chairman



Jakob Stausholm
Chief Executive



Peter Cunningham
Interim Chief Financial Officer

Group Statement of Changes in Equity

Year ended 31 December 2020	Attributable to owners of Rio Tinto: Share capital (notes 26 and 27) US$m	Share premium account US$m	Other reserves (note 28) US$m	Retained earnings (note 28) US$m	Total US$m	Non-controlling interests US$m	Total equity US$m
Opening balance	**3,655**	**4,313**	**9,177**	**23,387**	**40,532**	**4,710**	**45,242**
Total comprehensive income for the year[a]	—	—	**2,798**	**9,403**	**12,201**	**783**	**12,984**
Currency translation arising on Rio Tinto Limited's share capital[b]	**333**	—	—	—	**333**	—	**333**
Dividends (note 11)	—	—	—	**(6,132)**	**(6,132)**	**(689)**	**(6,821)**
Share buy-back[c]	—	—	—	**(1)**	**(1)**	—	**(1)**
Own shares purchased from Rio Tinto shareholders to satisfy share awards to employees[d]	—	—	**(76)**	**(31)**	**(107)**	—	**(107)**
Change in equity interest held by Rio Tinto	—	—	—	**84**	**84**	**(84)**	—
Treasury shares reissued and other movements	—	**1**	—	—	**1**	—	**1**
Equity issued to holders of non-controlling interests	—	—	—	—	—	**129**	**129**
Employee share options and other IFRS 2 charges to the income statement	—	—	**61**	**82**	**143**	—	**143**
Closing balance	**3,988**	**4,314**	**11,960**	**26,792**	**47,054**	**4,849**	**51,903**

Year ended 31 December 2019	Attributable to owners of Rio Tinto: Share capital (notes 26 and 27) US$m	Share premium account US$m	Other reserves (note 28) US$m	Retained earnings (note 28) US$m	Total US$m	Non-controlling interests US$m	Total equity US$m
Opening balance	3,688	4,312	8,661	27,025	43,686	6,137	49,823
Adjustment for transition to new accounting pronouncements[e]	—	—	—	(113)	(113)	(2)	(115)
Restated opening balance	3,688	4,312	8,661	26,912	43,573	6,135	49,708
Total comprehensive income for the year[a]	—	—	519	7,832	8,351	(1,033)	7,318
Currency translation arising on Rio Tinto Limited's share capital[b]	(29)	—	—	—	(29)	—	(29)
Dividends (note 11)	—	—	—	(10,334)	(10,334)	(376)	(10,710)
Share buy-back[c]	(4)	—	4	(1,135)	(1,135)	—	(1,135)
Companies no longer consolidated	—	—	—	—	—	(32)	(32)
Own shares purchased from Rio Tinto shareholders to satisfy share options[d]	—	—	(63)	(43)	(106)	—	(106)
Change in equity interest held by Rio Tinto	—	—	—	85	85	(85)	—
Treasury shares reissued and other movements	—	1	—	—	1	—	1
Equity issued to holders of non-controlling interests	—	—	—	—	—	101	101
Employee share options and other IFRS 2 charges to the income statement	—	—	56	70	126	—	126
Closing balance	3,655	4,313	9,177	23,387	40,532	4,710	45,242

Year ended 31 December 2018	Attributable to owners of Rio Tinto: Share capital (notes 26 and 27) US$m	Share premium account US$m	Other reserves (note 28) US$m	Retained earnings (note 28) US$m	Total US$m	Non-controlling interests US$m	Total equity US$m
Opening balance	4,360	4,306	12,284	23,761	44,711	6,404	51,115
Adjustment for transition to new accounting pronouncements[f]	—	—	10	(179)	(169)	—	(169)
Restated opening balance	4,360	4,306	12,294	23,582	44,542	6,404	50,946
Total comprehensive income for the year[a]	—	—	(3,600)	14,263	10,663	123	10,786
Currency translation arising on Rio Tinto Limited's share capital[b]	(382)	—	—	—	(382)	—	(382)
Dividends (note 11)	—	—	—	(5,356)	(5,356)	(415)	(5,771)
Share buy-back[c]	(290)	—	9	(5,423)	(5,704)	—	(5,704)
Own shares purchased from Rio Tinto shareholders to satisfy share options[d]	—	—	(114)	(140)	(254)	—	(254)
Change in equity interest held by Rio Tinto	—	—	—	60	60	(60)	—
Treasury shares reissued and other movements	—	6	—	—	6	—	6
Equity issued to holders of non-controlling interests	—	—	—	—	—	85	85
Employee share options and other IFRS 2 charges to the income statement	—	—	50	61	111	—	111
Transfers and other movements	—	—	22	(22)	—	—	—
Closing balance	3,688	4,312	8,661	27,025	43,686	6,137	49,823

The notes on pages 206-300 are an integral part of these consolidated financial statements.

(a) Refer to Group statement of comprehensive income for further details. Adjustments to other reserves include currency translation attributable to owners of Rio Tinto, other than that arising on Rio Tinto Limited's share capital.
(b) Refer to note 1(d).
(c) In 2020, the amount of US$1 million together with the amounts paid during the year in respect of an irrevocable contract in place at the beginning of the year to cover the share buy-back programme totalled US$208 million as reported in the cash flow statement. In 2019, the total amount of US$1,135 million (2018: US$5,704 million) included own shares purchased from the owners of Rio Tinto as per the cash flow statement of US$1,552 million (2018: US$5,386 million) and a financial liability recognised in respect of an irrevocable contract in place as at the reporting date to cover the share buy-back programme, less amounts paid during the year in respect of a similar irrevocable contract in place at the beginning of the year.
(d) Net of contributions received from employees for share awards and share options.
(e) Impact of the transition to new accounting pronouncements; IFRS 16 "Leases" and IFRIC 23 "Uncertainty over income tax treatments" on 1 January 2019.
(f) impact of the transition to new accounting pronouncements; IFRS 9 "Financial Instruments" and IFRS 15 "Revenue from Contracts with Customers" on 1 January 2018.

Reconciliation with Australian Accounting Standards
The Group's financial statements have been prepared in accordance with IFRS, as defined in note 1, which differs in certain respects from the version of International Financial Reporting Standards that is applicable in Australia, referred to as Australian Accounting Standards (AAS).

Prior to 1 January 2004, the Group's financial statements were prepared in accordance with UK GAAP. Under IFRS, as defined in note 1, goodwill on acquisitions prior to 1998, which was eliminated directly against equity in the Group's UK GAAP financial statements, has not been reinstated. This was permitted under the rules governing the transition to IFRS set out in IFRS 1. The equivalent Australian Standard, AASB 1, does not provide for the netting of goodwill against equity. As a consequence, shareholders' funds under AAS include the residue of such goodwill, which amounted to US$374 million at 31 December 2020 (2019: US$379 million).

Save for the exception described above, the Group's financial statements drawn up in accordance with IFRS are consistent with the requirements of AAS.

Outline of dual listed companies structure and basis of financial statements
The Rio Tinto Group
These are the financial statements of the Group formed through the merger of economic interests of Rio Tinto plc and Rio Tinto Limited ("Merger"), and presented by both Rio Tinto plc and Rio Tinto Limited as their consolidated financial statements in accordance with both UK and Australian legislation and regulations.

Merger terms
On 21 December 1995, Rio Tinto plc and Rio Tinto Limited entered into a dual listed companies (DLC) merger. Rio Tinto plc is incorporated in the UK and listed on the London and New York Stock Exchanges and Rio Tinto Limited is incorporated in Australia and listed on the Australian Securities Exchange. The Merger was effected by contractual arrangements between the companies and amendments to Rio Tinto plc's Memorandum and Articles of Association and Rio Tinto Limited's Constitution.

As a result, Rio Tinto plc and Rio Tinto Limited and their respective groups operate together as a single economic enterprise, with neither assuming a dominant role. In particular, the arrangements:

- confer upon the shareholders of Rio Tinto plc and Rio Tinto Limited a common economic interest in both groups;
- provide for common boards of directors and a unified management structure;
- provide for equalised dividends and capital distributions; and
- provide for the shareholders of Rio Tinto plc and Rio Tinto Limited to take key decisions, including the election of directors, through an electoral procedure in which the public shareholders of the two companies in effect vote on a joint basis.

The Merger involved no change in the legal ownership of any assets of Rio Tinto plc or Rio Tinto Limited, nor any change in the ownership of any existing shares or securities of Rio Tinto plc or Rio Tinto Limited, nor the issue of any shares, securities or payment by way of consideration, save for the issue by each company of one special voting share to a trustee company which facilitates the joint electoral procedure for public shareholders. During 2002, each of the parent companies issued a DLC Dividend Share to facilitate the efficient management of funds within the DLC structure.

Accounting standards
The financial statements have been drawn up in accordance with IFRS as defined in note 1. The Merger was accounted for as a merger under UK GAAP. As permitted under the rules governing the transition to IFRS, which are set out in IFRS 1, the Group did not restate business combinations that occurred before the transition date of 1 January 2004. As a result, the DLC Merger of economic interests described above continues to be accounted for as a merger under IFRS as defined in note 1.

The main consequence of adopting merger rather than acquisition accounting is that the balance sheet of the merged Group includes the assets and liabilities of Rio Tinto plc and Rio Tinto Limited at their carrying values prior to the Merger, subject to adjustments to achieve uniformity of accounting policies, rather than at their fair values at the date of the Merger. For accounting purposes Rio Tinto plc and Rio Tinto Limited are viewed as a single public parent company (with their respective public shareholders being the shareholders in that single company). As a result, the amounts attributable to both Rio Tinto plc and Rio Tinto Limited public shareholders are included in the amounts attributed to owners of Rio Tinto on the balance sheet, income statement and statement of comprehensive income.

Australian Corporations Act
The financial statements are drawn up in accordance with an order, under section 340 of the Australian Corporations Act 2001, issued by the Australian Securities and Investments Commission (ASIC) on 24 July 2020. The main effect of the order is that the financial statements are prepared on the basis that Rio Tinto Limited, Rio Tinto plc and their respective controlled entities are treated as a single economic entity, and in accordance with the principles and requirements of International Financial Reporting Standards as adopted by the European Union (EU IFRS) and include a reconciliation from EU IFRS to the Australian equivalent of IFRS (see above).

For further details of the ASIC Class Order relief see page 310.

Notes to the 2020 Financial Statements

1 Principal accounting policies

Corporate information

Rio Tinto's business is finding, mining and processing mineral resources. Major products are aluminium, copper, diamonds, gold, industrial minerals (borates, titanium dioxide and salt), iron ore and uranium. Activities span the world and are strongly represented in Australia and North America, with significant businesses also in Asia, Europe, Africa and South America.

Rio Tinto plc is incorporated in the UK and listed on the London and New York Stock Exchanges and Rio Tinto Limited is incorporated in Australia and listed on the Australian Stock Exchange. Rio Tinto plc's registered office is at 6 St James's Square, London SW1Y 4AD, UK. Rio Tinto Limited's registered office is at Level 7, 360 Collins Street, Melbourne, Victoria 3000, Australia.

As described in the "Outline of dual listed companies structure and basis of financial statements" on page 205, for the purposes of preparing the IFRS compliant consolidated financial statements of the Rio Tinto Group, both the DLC companies, Rio Tinto plc and Rio Tinto Limited, are viewed as a single economic entity, and the interests of shareholders of both companies are presented as the equity interests of shareholders in the Rio Tinto Group.

These financial statements consolidate the accounts of Rio Tinto plc and Rio Tinto Limited (together "the Companies") and their respective subsidiaries (together "the Group") and include the Group's share of joint arrangements and associates as explained in note 1(b) below. The Group's financial statements for the year ended 31 December 2020 were authorised for issue in accordance with a directors' resolution on 22 February 2021.

Notes 32 to 35 provide more information on the Group's subsidiaries, joint arrangements and associates and note 39 provides information on the Group's transactions with other related parties.

The 2020 Annual Report satisfies the obligations of Rio Tinto Limited to prepare consolidated accounts under Australian company law, as amended by an order issued by the Australian Securities and Investments Commission on 24 July 2020. The 2020 financial statements disclose on page 205 the effect of the adjustments to the Group's consolidated profit/(loss), consolidated total comprehensive income/(loss) and consolidated shareholders' funds as prepared under IFRS as defined below that would be required under the version of IFRS that is applicable in Australia, referred to as Australian Accounting Standards (AAS).

The US dollar is the presentation currency used in these financial statements, as it most reliably reflects the Group's global business performance.

Basis of preparation of the financial statements

The basis of preparation and the accounting policies used in preparing the Group's 2020 financial statements are set out below.

The financial statements have been prepared on a going concern basis in accordance with international accounting standards in conformity with the requirements of the Companies Act 2006 applicable to companies reporting under IFRS and in accordance with applicable UK law, applicable Australian law as amended by the Australian Securities and Investments Commission Order dated 24 July 2020, Article 4 of the European Union IAS regulation and also with:

- International Financial Reporting Standards as issued by the International Accounting Standards Board (IASB) and interpretations issued from time to time by the IFRS Interpretations Committee (IFRS IC) both as adopted pursuant to Regulation (EC) No 1606/2002 as it applies in the European Union (IFRSs as adopted by the EU), and which are mandatory for EU reporting as at 31 December 2020; (EU IFRS) and
- International Financial Reporting Standards as issued by the IASB and interpretations issued from time to time by the IFRS IC which are mandatory as at 31 December 2020.

The above accounting standards and interpretations are collectively referred to as "IFRS" in this report. The Group has not early adopted any amendments, standards or interpretations that have been issued but are not yet mandatory.

The UK's transition period for leaving the EU ended on 31 December 2020. In accordance with consequent changes to applicable UK law, the Group will include the following in the basis of preparation for its 2021 financial statements:

- International Financial Reporting standards as issued by the IASB and interpretations issued from time to time as adopted by the United Kingdom (UK).

COVID-19 impact

Despite various COVID-19 related challenges, the Group's assets have continued to operate, with our first priority being the protection of the health and safety of all our employees and communities. During the COVID-19 pandemic, the Group has implemented strict protocols globally across the business. These range from physical distancing, travel restrictions, roster changes and team splits, to flexible working arrangements, rapid screening and personal hygiene controls. The Group has delivered a good operational performance across most of our assets, catching up on planned maintenance activity in the second half of the year, particularly in iron ore, and continuing to adapt to new operating conditions as we learn to live with COVID-19. Recognising the broad and complex impacts of the pandemic on our markets, operations and financial performance, we have chosen not to segregate COVID-19 related costs from our underlying performance metrics.

Going concern

Management has prepared cash flow forecast scenarios that represent plausible downside scenarios to the business and global economy including the effects arising from the COVID-19 pandemic for a period of at least 12 months from the date of approval of the financial statements, which have been reviewed by the directors. These forecasts demonstrate that the Group has sufficient cash, other liquid resources and undrawn credit facilities to enable it to meet its obligations as they fall due. As such the directors considered it appropriate to adopt the going concern basis of accounting in preparing the full year financial information.
Further detail on the going concern basis of accounting is included on page 190.

Climate change

The Group continues to develop its assessment of the potential impacts of climate change, the transition to a low-carbon future and our ambition to achieve net zero emissions across our operations by 2050.

We framed the strategic context for the Group and our internal price setting process, including carbon price assumptions, through the lens of three plausible scenarios structured around the interplay of three global forces: Realpolitik, Society and Technology.

- In Realpolitik, a fragmented world order, defined by strong nationalistic tendencies including structural tensions between the United States and China, holds back trade and global action on climate. Despite a low growth environment, global warming is on a path to reach or even exceed 3°C by 2100. Carbon prices remain low – in the range US$0-30/$tCO_2e$.
- In Society, strong global co-ordination of climate policies, supported by high and rising carbon prices (reaching US$130/$tCO_2e$ in developed countries by 2040), accelerates the energy transition. Despite stronger economic growth in low-income countries, global emissions peak and start to decline early, turning net-negative during the second half of the century, to meet the Paris goal of keeping temperature increases below 2°C.

- In Technology, the fast roll-out of innovation provides both a strong boost to global economic productivity and decarbonisation efforts. But, without adequate policy support and with carbon prices remaining modest (US$15 to US$30/tCO_2e by 2030) the decline in global emissions is insufficient to keep temperature increases below 2°C by 2100.

Through our strategy process we test the resilience of our portfolio against each of these three scenarios. Overall, our portfolio is expected to perform more strongly in scenarios with proactive climate action, however we have not yet assessed the complete financial reporting consequences of a single Paris aligned scenario (more details on our portfolio scenario analysis can be found in our 2020 Climate Change report).

The scenarios also inform the internal price setting process led by our Economics team. Those prices (including carbon) are used pervasively in our financial processes from budgeting, forecasting, capital allocation and project evaluation to the determination of Ore Reserves. In turn these prices are used to derive critical accounting estimates including as inputs to impairment testing (note 6), estimation of remaining economic life for units of production depreciation (note 1(i)) and discounting closure and rehabilitation provisions (note 25).

As only one of the scenarios is aligned with the goals of the Paris Agreement, our internal carbon prices are not consistent with the expectation of climate policies required to accelerate the global transition to meet those goals.

New standards issued

The Group's financial statements have been prepared on the basis of accounting policies consistent with those applied in the financial statements for the year ended 31 December 2019, except for the accounting requirements set out below, all of which were effective as at 1 January 2020 without restatement of prior years.

The Group's accounting policies and critical accounting judgments have been updated to include the Group's approach to materiality upon implementation of "Definition of Material, Amendments to IAS 1 and IAS 8" (refer to "Materiality" below). The amendments do not affect the Group's approach to identifying and evaluating material transactions, or result in any change to policies and procedures for reviewing whether a disclosure or presentation is material.

The IASB revised its Conceptual Framework which is mandatory in 2020. It is not a standard and does not override any standard, but its principles apply to arrangements not covered by IFRS standards. No arrangements have been identified which require a change in accounting treatment under the revised Conceptual Framework.

The Group has adopted the definition of a business as required by "Definition of a business - amendments to IFRS 3" (refer to note 1b), Basis of consolidation, Acquisitions). Changes might result in future investment in new operations being accounted for as asset acquisitions rather than as business combinations, however no evaluation of a transaction under the amended IFRS 3 has been required in 2020.

Standards issued, but not yet effective

Interest Rate Benchmark Reform – Phase 2 (Amendments to IFRS 9, IAS 39, IFRS 7, IFRS 4 and IFRS 16, endorsed by the UK and mandatory in 2021)

The amendments address the financial reporting impact from reform of the London Interbank Offered Rate (LIBOR) and other benchmark interest rates (collectively "IBOR reform"). Financial authorities have asked market participants to complete the transition to alternative Risk Free Rates (RFR) by the end of 2021. As part of the Group's transition plan, a multidisciplinary working group continues to assess the impact of IBOR reform on systems, processes and financial reporting.

The Group will take relevant Phase 2 practical reliefs from certain requirements in IFRS 9, IFRS 7, IFRS 4 and IFRS 16 relating to changes in the basis for determining contractual cash flows of financial assets, financial liabilities and hedge accounting.

Based on the Group's assessment we expect that the most significant practical impact from IBOR reform will be on our hedging arrangements and that this will arise from reform of US LIBOR. At 31 December 2020, the Group has interest rate risk exposure including US$7.3 billion nominal values of fixed-rate borrowings swapped to US dollar rates in fair value hedge relationships, described further in note 29 A (b) (v). It is anticipated that the Secured Overnight Financing Rate (SOFR) benchmark rate, recommended by the Alternative Reference Rates Committee, will be widely adopted by market participants and in practice will replace US LIBOR by the end of 2021. We expect application of the Phase 2 reliefs to result in continuation of the Group's pre-existing hedge accounting upon amendment of designated arrangements in response to the replacement of IBOR with new benchmarks. The Group early adopted, in the financial statements for the year ended 31 December 2019, "Phase 1 - Amendments to IFRS 9, IAS 39, and IFRS 7- Interest rate benchmark reform", which allowed temporary relief from applying specific hedge accounting requirements to hedging arrangements directly impacted by IBOR reform (refer to note 1 q (iv)). This temporary relief is expected to cease, on a hedge-by-hedge basis, when the designated hedge relationship is amended and application of Phase 2 reliefs begins.

In addition, the Group has a number of arrangements which reference IBOR benchmarks and extend beyond 2021. These include third-party borrowings relating to the Oyu Tolgoi LLC project finance facility and other secured loans (refer to note 21), a number of intragroup balances and certain commercial contracts. Other arrangements which currently reference IBOR benchmarks include accessible revolving lines of credit (refer to note 29 A (b)), and shareholder loan facilities. Phase 2 amendments will require the Group to account for a change in the basis for determining the cash flows of a financial asset or a financial liability measured at amortised cost, by updating their respective effective interest rates as required by IBOR reform. As a result of the relief the Group expects that no significant gain or loss will arise from these updates.

Property, Plant and Equipment: Proceeds before Intended Use (Amendments to IAS 16, mandatory in 2022 and not yet endorsed by the UK)

Under the amendments the proceeds from selling items before the related item of property, plant and equipment is available for use should be recognised in profit or loss, together with the costs of producing those items. The impact from adoption is not currently expected to be material for the Group.

Onerous Contracts – Cost of Fulfilling a Contract (Amendments to IAS 37, mandatory in 2022 and not yet endorsed by the UK)

The amendments specify which costs an entity includes in determining the cost of fulfilling a contract for the purpose of assessing whether the contract is onerous. The Group is currently evaluating the impacts of this amendment.

IFRS 17 Insurance Contracts and amendments to IFRS 17 Insurance Contracts (mandatory in 2023 and not yet endorsed by the UK)

The standard provides consistent principles for all aspects of accounting for insurance contracts. The Group is currently evaluating the impact of this pronouncement.

Amendments to IAS 1 "Presentation of financial statements" on classification of liabilities (mandatory in 2023 and not yet endorsed by the UK)

Narrow-scope amendments to IAS 1 clarify that liabilities are classified as either current or non-current, depending on the rights that exist at the end of the reporting period. Classification is unaffected by the expectations of the entity or events after the reporting date. The Group is currently evaluating the impacts of this amendment.

Notes to the 2020 Financial Statements

1 Principal accounting policies continued

Other standards

The following new and amended standards are not expected to have a significant impact on the Group's consolidated financial statements: COVID-19-Related Rent Concessions (Amendment to IFRS 16, effective in 2021), Reference to Conceptual Framework (Amendments to IFRS 3, effective in 2022) and Annual Improvements to IFRS Standards, (effective 2023).

Judgments in applying accounting policies and key sources of estimation uncertainty

The preparation of the financial statements requires management to use judgment in applying accounting policies and in making critical accounting estimates.

These judgments and estimates are based on management's best knowledge of the relevant facts and circumstances, having regard to previous experience, but actual results may differ materially from the amounts included in the financial statements. Areas of judgment in the application of accounting policies that have the most significant effect on the amounts recognised in the financial statements and key sources of estimation uncertainty that have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next financial year are noted below and further information is contained in the accounting policies and/or the notes to the financial statements.

These areas of judgment and estimation are discussed further in critical accounting policies and estimates on pages 219-222. The quantum of ore reserves and mineral resources impacts many of these areas and the basis of calculation is explained below. Information on less material judgments and sources of estimation uncertainty has been incorporated into the relevant accounting policy notes.

Areas of judgment in the application of accounting policies that have the most significant effect on the amounts recognised in the financial statements in the current year are:

- Impairment of non-current assets – determination of cash-generating units (CGUs) and assessment of indicators of impairment – note 1(e) and (i), critical policy (i), note 6, note 12 and note 13.
- Estimation of asset lives – determination of the life of the orebody and mine reserves, including grade cut-off assumptions consistent with the internal prices described in the Climate Change section – note 1(i) and critical policy (ii).
- Close-down, restoration and environmental obligations – determining when a closure study plan and cost estimate is sufficiently advanced and reliable to form the basis for an update – note 1(l) and critical policy (iii).
- Deferral of stripping costs – judgment on components/strip ratios and separate or integrated multiple pit mines – note 1(h) and critical policy (iv).
- Uncertain tax positions – technical interpretation of tax law and evaluation of outcomes in the determination of whether multiple or binary scenarios are the appropriate basis for provision measurement – note 1(n), critical policy (v), note 9 and note 30.
- Recoverability of potential deferred tax assets – recognition of deferred tax assets for loss making operations – critical policy (vi) and note 17.

Other areas of judgment impacting the financial statements are:

- Provision for onerous contracts – determination of assets dedicated to a contract – note 1(i) and critical policy (vii).
- Identification of functional currencies – different companies may make different judgments based on similar facts – note 1(d) and critical policy (viii).
- Basis of consolidation – judgment as to when the Group has control, joint control or significant influence – critical policy (ix) and notes 32-35.
- Contingencies – assessing the probability of any loss and whether it is possible to quantify any loss – critical policy (x) and note 30.
- Exclusions from underlying earnings – judgment on items to be excluded on grounds of nature or size – critical policy (xi) and note 2.
- Accounting for the Pilbara Iron Arrangements – treatment of payments made over a contractually specified period for network infrastructure capacity – critical policy (xiii) and note 33(c).

Key sources of estimation uncertainty that have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next financial year are:

- Impairment of non-current assets – review of asset carrying values, impairment charges and reversals and the recoverability of goodwill – determination of discounted cash flows – note1(e) and (i), critical estimates (i), note 6, note 12 and note 13.
- Close-down, restoration and environmental cost obligations – estimation of costs and the timing of expenditure – note 1(l), critical estimates (iii) and note 25.
- Uncertain tax positions – estimating the potential exposures for each possible scenario – note 1(n), critical estimates (v), note 9 and note 30.
- Recoverability of potential deferred tax assets – determination of cash flows – note 1(n), critical estimates (vi) and note 17.
- Estimation of obligations for post-employment costs – note 1(o), critical estimates (xiv) and note 42.

Materiality

The Group considers information to be material if correcting a misstatement, omission or obscuring could, in the light of surrounding circumstances, reasonably be expected to change the judgment of a reasonable person relying on the financial statements. The Group considers both quantitative and qualitative factors in determining whether information is material; the concept of materiality is therefore not driven purely by numerical values.

When considering the potential materiality of information, management makes an initial quantitative assessment using thresholds based on estimates of profit before taxation; for the year ended 31 December 2020 the quantitative threshold was US$550 million (year ended 31 December 2019: US$350 million based on underlying earnings). However, other considerations can result in a determination that lower values are material or, occasionally, that higher values are immaterial. These considerations include whether a misstatement, omission or obscuring: masks a change or trend in key performance indicators; causes reported key metrics to change from a positive to negative values or vice-versa; affects compliance with regulatory requirements or other contractual requirements; could result in an increase to management's compensation; or might conceal an unlawful transaction.

In assessing materiality, management also applies judgment based on its understanding of the business and its internal and external financial statement users. The assessment will consider user expectations of numerical and narrative reporting. Sources used in making this assessment would include, for example: published analyst consensus measures, experience gained in formal and informal dialogue with users (including regulatory correspondence), and peer group benchmarking.

Ore reserves and mineral resources

Estimates of ore reserves and, in some cases, mineral resources can impact: depreciation and amortisation rates; the carrying values of intangible assets and property, plant and equipment; deferred stripping costs; provisions for close-down and restoration costs; and the recovery of deferred tax assets.

The Group estimates its ore reserves and mineral resources based on information compiled by Competent Persons as defined in accordance with the Joint Ore Reserves Committee (JORC) code (see note 1(j)).

The estimation of ore reserves and mineral resources requires judgment to interpret available geological data and subsequently to select an appropriate mining method and then to establish an extraction schedule. Estimation requires assumptions about future commodity prices and demand, exchange rates, production costs, transport costs, close-down and restoration costs, recovery rates and discount rates and, in some instances, the renewal of mining licences.

There are many uncertainties in the estimation process and assumptions that are valid at the time of estimation may change significantly when new information becomes available. New geological or economic data, or unforeseen operational issues, may change estimates of ore reserves and mineral resources.

The Group uses judgment as to when to include mineral resources in accounting estimates, for example, the use of mineral resources in the Group's depreciation policy is described in note 1(i) below and in the determination of the date of closure as described in note 1(l). The unaudited statement of ore reserves is included on page 341 and of mineral resources on page 345.

(a) Accounting convention
The financial information included in the financial statements for the year ended 31 December 2020, and for the related comparative periods, has been prepared under the historical cost convention, as modified by the revaluation of certain derivative contracts and financial assets, the impact of fair value hedge accounting on the hedged item and the accounting for post-employment assets and obligations. The Group's policy in respect of these items is set out in the notes below.

All financial statement values are rounded to the nearest million (US$m) unless otherwise stated.

Where applicable, comparatives have been adjusted to measure or present them on the same basis as current period figures.

(b) Basis of consolidation (notes 32-35)
All intragroup transactions and balances have been eliminated on consolidation.

Where necessary, adjustments are made to the locally reported assets, liabilities, and results of subsidiaries, joint arrangements and associates to bring their accounting policies in line with those used by the Group.

Subsidiaries
Subsidiaries are entities controlled by either of the companies. Control exists where either of the companies has: power over the entities, that is, existing rights that give it the current ability to direct the relevant activities of the entities (those that significantly affect the companies' returns); exposure, or rights, to variable returns from its involvement with the entities; and the ability to use its power to affect those returns. Subsidiaries are fully consolidated from the date on which the Group obtains control. They are de-consolidated from the date that control ceases.

Joint arrangements
A joint arrangement is an arrangement in which two or more parties have joint control. Joint control is the contractually agreed sharing of control such that decisions about the relevant activities of the arrangement (those that significantly affect the companies' returns) require the unanimous consent of the parties sharing control. The Group has two types of joint arrangements:

Joint operations (JO)
A JO is a joint arrangement in which the parties that share joint control have rights to the assets, and obligations for the liabilities, relating to the arrangement. This includes situations where the parties benefit from the joint activity through a share of the output, rather than by receiving a share of the results of trading. In relation to its interest in a JO, the Group recognises: its share of assets and liabilities; revenue from the sale of its share of the output and its share of any revenue generated from the sale of the output by the JO; and its share of expenses. All such amounts are measured in accordance with the terms of the arrangement, which is usually in proportion to the Group's interest in the JO. These amounts are recorded in the Group's financial statements on the appropriate lines.

Joint ventures (JV)
A JV is a joint arrangement in which the parties that share joint control have rights to the net assets of the arrangement. JVs are accounted for using the equity accounting method.

Other unincorporated arrangements
In some cases, the Group participates in unincorporated arrangements and has rights to its share of the assets and obligations for its share of the liabilities of the arrangement rather than a right to a net return, but does not share joint control. In such cases, the Group recognises: its share of assets and liabilities; revenue from the sale of its share of the output and its share of any revenue generated from the sale of the output by the unincorporated arrangement; and its share of expenses. All such amounts are measured in accordance with the terms of the arrangement, which is usually in proportion to the Group's interest in the arrangement. These amounts are recorded in the Group's financial statements on the appropriate lines.

Associates
An associate is an entity that is neither a subsidiary nor a joint arrangement, over which the Group has significant influence. Significant influence is presumed to exist where there is neither control nor joint control and the Group has over 20% of the voting rights, unless it can be clearly demonstrated that this is not the case. Significant influence can arise where the Group holds less than 20% of the voting rights if it has the power to participate in the financial and operating policy decisions affecting the entity. Investments in associates are accounted for using the equity accounting method.

The Group uses the term "equity accounted units" (EAUs) to refer to associates and JVs collectively. Under the equity accounting method the investment is recorded initially at cost to the Group, including any goodwill on acquisition. In subsequent periods the carrying amount of the investment is adjusted to reflect the Group's share of the EAUs' retained post-acquisition profit or loss and other comprehensive income. Long-term loans to EAUs that in substance form part of the Group's net investment (quasi equity loans) are financial assets but are included in the line "Investments in equity accounted units" on the face of the balance sheet. When the Group's share of losses in an EAU equals or exceeds its interest in the EAU, including such long-term loans and any other unsecured receivables, the Group does not recognise further losses, unless it has incurred legal or constructive obligations to continue to make payments on behalf of the EAU.

Acquisitions (note 36)
Under the "acquisition" method of accounting for business combinations, the purchase consideration is allocated to the identifiable assets acquired and liabilities and contingent liabilities assumed (the identifiable net assets) on the basis of their fair value at the date of acquisition, which is the date on which control is obtained.

In determining whether a particular set of activities is a business, an acquired arrangement has to have an input and substantive process which together significantly contribute to the ability to create outputs.

Notes to the 2020 Financial Statements

1 Principal accounting policies continued

The consideration transferred for the acquisition of a subsidiary comprises the fair values of the assets transferred, the liabilities incurred to the former owners of the acquiree, the fair value of any asset or liability resulting from a contingent consideration arrangement and any equity interests issued by the Group. Costs related to the acquisition of a subsidiary are expensed as incurred.

The excess of the consideration transferred, the amount of any non-controlling interest in the acquiree and the acquisition-date fair value of any previous equity interest in the acquiree over the fair value of the identifiable net assets acquired is recorded as goodwill. Any shortfall is immediately recognised in the income statement.

Non-controlling interests in the acquiree, that are present ownership interests and entitle their holders to a proportionate share of the entity's net assets in the event of liquidation, are recognised by the Group in one of two ways with the choice being available on an acquisition-by-acquisition basis. They can be measured at either the non-controlling interest's proportionate share of the acquiree's identifiable net assets or at fair value. In some cases, non-controlling interests may be treated as equity options and valued on that basis. Goodwill (see note 1(e)) and amounts attributable to non-controlling interests will differ depending on the basis used.

Where the Group previously held a non-controlling interest in the acquiree, this is remeasured to fair value at the date control is obtained with any gain or loss recognised in the income statement. The cash cost of the share purchase that gives rise to control is included within "investing activities" in the cash flow statement.

Where the Group increases its ownership interest in a subsidiary, the difference between the purchase price and the carrying value of the share of net assets acquired is recorded in equity. The cash cost of such purchases is included within "financing activities" in the cash flow statement.

Provisional fair values allocated at a reporting date are finalised within 12 months of the acquisition date.

The results of businesses acquired during the year are included in the consolidated financial statements from the date on which control, joint control or significant influence is obtained.

Disposals (note 36)

Individual non-current assets or "disposal groups" (that is, groups of assets and liabilities) to be disposed of by sale or otherwise in a single transaction are classified as "held for sale" if the following criteria are met at the period end:

- The carrying amount will be recovered principally through a sale transaction rather than through continuing use; and
- The disposal group is available for immediate sale in its present condition subject only to terms that are usual and customary for such sales; and
- The sale is highly probable.

Disposal groups held for sale are carried at the lower of their carrying amount and fair value less costs to sell. The comparative balance sheet is not restated. Disposal groups acquired with a view to resale are held at the fair value determined at the acquisition date. For these assets acquired for resale no profits or losses are recognised between the acquisition date and the disposal date, unless there is a subsequent impairment.

On classification as held for sale, the assets are no longer depreciated and, if applicable, equity accounting ceases.

If control is lost, any interest in the entity retained by the Group is remeasured to its fair value and the change in carrying amount is recognised in the income statement. The retained interest may be subsequently accounted for as a joint venture, joint operation, associate or financial asset depending on the facts. Certain amounts previously recognised in other comprehensive income in respect of the entity disposed of, or for which control, joint control or significant influence has ceased, may be recycled to the income statement. The cash proceeds of disposals are included within "Investing activities" in the cash flow statement.

Changes in the Group's interest in a subsidiary that do not result in a loss of control are accounted for in equity. The cash proceeds of such disposals are included within "Financing activities" in the cash flow statement.

(c) Sales revenue

Recognition and measurement

The Group recognises sales revenue related to the transfer of promised goods or services when control of the goods or services passes to the customer. The amount of revenue recognised reflects the consideration to which the Group is or expects to be entitled in exchange for those goods or services.

Sales revenue is recognised on individual sales when control transfers to the customer. In most instances, control passes and sales revenue is recognised when the product is delivered to the vessel or vehicle on which it will be transported once loaded, the destination port or the customer's premises. There may be circumstances when judgment is required based on the five indicators of control below.

- The customer has the significant risks and rewards of ownership and has the ability to direct the use of, and obtain substantially all of the remaining benefits from, the good or service.
- The customer has a present obligation to pay in accordance with the terms of the sales contract. For shipments under the Incoterms Cost, Insurance and Freight (CIF)/Carriage Paid to (CPT)/Cost and Freight (CFR) this is generally when the ship is loaded, at which time the obligation for payment is for both product and freight.
- The customer has accepted the asset. Sales revenue may be subject to adjustment if the product specification does not conform to the terms specified in the sales contract but this does not impact the passing of control. Assay and specification adjustments have been immaterial historically.
- The customer has legal title to the asset. The Group usually retains legal title until payment is received for credit risk purposes only.
- The customer has physical possession of the asset. This indicator may be less important as the customer may obtain control of an asset prior to obtaining physical possession, which may be the case for goods in transit.

The Group sells a significant proportion of its products on CFR or CIF Incoterms. This means that the Group is responsible (acts as principal) for providing shipping services and, in some instances, insurance after the date at which control of goods passes to the customer at the loading port.

The Group therefore has separate performance obligations for freight and insurance services that are provided solely to facilitate sale of the commodities it produces. Other Incoterms commonly used by the Group are Free on Board (FOB), where the Group has no responsibility for freight or insurance once control of the goods has passed at the loading port, and Delivered at Place (DAP), where control of the goods passes when the product is delivered to the agreed destination. For these Incoterms there is only one performance obligation, being for provision of product at the point where control passes.

The Group's products are sold to customers under contracts which vary in tenure and pricing mechanisms, including some volumes sold in the spot market. Pricing for iron ore is on a range of terms, the majority being either monthly or quarterly average pricing mechanisms, with a smaller proportion of iron ore volumes being sold on the spot market.

Within each sales contract, each unit of product shipped is a separate performance obligation. Revenue is generally recognised at the contracted price as this reflects the stand-alone selling price. Sales revenue excludes any applicable sales taxes. Mining royalties payable are presented as an operating cost or, where they are in substance a profit-based tax, within taxation.

Sales of copper concentrate are stated net of the treatment and refining charges which will be required to convert it to an end product.

Certain of the Group's products may be provisionally priced at the date revenue is recognised; however, substantially all iron ore and aluminium sales are reflected at final prices in the results for the period. The final selling price for all provisionally priced products is based on the price for the quotational period stipulated in the contract. Final prices for copper concentrate are normally determined between 30-120 days after delivery to the customer. The change in value of the provisionally priced receivable is based on relevant forward market prices and is included in sales revenue.

Rio Tinto has a number of long-term contracts to supply product to customers in future periods. Generally, revenues are recognised on an as invoiced basis; hence, the right to consideration from a customer corresponds directly with the entity's performance completed to date.

A number of the Group's businesses provide volume discounts in certain circumstances. The impact of constraining such variable consideration under IFRS 15 was immaterial at both 31 December 2020 and 31 December 2019.

The Group applies the practical expedient in paragraph 121 of IFRS 15 and does not disclose information on the transaction price allocated to performance obligations that are unsatisfied.

Presentation and disclosures
Consolidated sales revenue as reported in the income statement comprises sales to third parties. Certain of the Group's products may be provisionally priced at the date revenue is recognised. Sales revenue includes revenue from contracts with customers, which is accounted for under IFRS 15 "Revenue from Contracts with Customers" and subsequent movements in provisionally priced receivables which are accounted for under IFRS 9 "Financial Instruments". A breakdown of sales revenue between these two amounts is disclosed in the product analysis in note 3 and further detail on provisional pricing in note 3. Sales revenue includes revenue from movements in provisionally priced receivables, consistent with the treatment in prior periods.

The Group considers that the impact of economic factors on its sales revenue, particularly pricing and volumes, is best understood by reference to the disclosure of sales revenue by product group and sales destination in note 3. The analysis of provisional pricing adjustments by commodity in the product analysis in note 3 shows which products are subject to price volatility post the transfer of control. With the exception of Oyu Tolgoi, which sells copper concentrate to China, this price uncertainty is largely resolved at the period end.

Typically, the Group has a right to payment before or at the point that control of the goods passes including a right, where applicable, to payment for provisionally priced products and unperformed freight and insurance services. Cash received before control passes is recognised as a contract liability. The amount of consideration does not contain a significant financing component as payment terms are less than one year.

Revenues from the sale of significant by-products, such as gold, are included in sales revenue. Sundry revenue (eg sales of surplus power) incidental to the main revenue-generating activities of the operations is treated as a credit to operating costs.

The Group does not disclose sales revenue from freight and insurance services separately as it does not consider that this is necessary in order to understand the impact of economic factors on the Group; the Group's Chief Executive, the chief operating decision maker, as defined under IFRS 8, "Operating Segments", does not review information specifically relating to these sources of revenue in order to evaluate the performance of business segments and Group information on these sources of revenue is not provided externally.

The Group does provide information on freight revenue for the iron ore and bauxite businesses on pages 45 and 49 to help stakeholders understand FOB operating margins for those products.

Third-party commodity swap arrangements principally for delivery and receipt of smelter-grade alumina are offset within operating costs.

(d) Currency translation
The functional currency for each entity in the Group, and for joint arrangements and associates, is the currency of the primary economic environment in which that entity operates. For many of these entities, this is the currency of the country in which they are located. Transactions denominated in other currencies are converted to the functional currency at the exchange rate ruling at the date of the transaction. Monetary assets and liabilities denominated in foreign currencies are retranslated at period-end exchange rates.

The Group's financial statements are presented in US dollars, as that presentation currency most reliably reflects the global business performance of the Group as a whole. On consolidation, income statement items for each entity are translated from the functional currency into US dollars at average rates of exchange, except for material one-off transactions, which are translated at the rate prevailing on the transaction date. Balance sheet items are translated into US dollars at period-end exchange rates.

Exchange differences arising on the translation of the net assets of entities with functional currencies other than the US dollar are recognised directly in the currency translation reserve. These translation differences are shown in the statement of comprehensive income, with the exception of translation adjustments relating to Rio Tinto Limited's share capital which are shown in the statement of changes in equity.

Where an intragroup balance is, in substance, part of the Group's net investment in an entity, exchange gains and losses on that balance are taken to the currency translation reserve.

Except as noted above, or in note 1(q) relating to derivative contracts, all other exchange differences are charged or credited to the income statement in the year in which they arise.

(e) Goodwill and intangible assets (excluding exploration and evaluation expenditure) (notes 12 and 13)
Goodwill is not amortised; it is tested annually for impairment or more frequently if events or changes in circumstances indicate a potential impairment. Investments in EAUs, including any goodwill, are tested for impairment as a single asset when a trigger for impairment has been identified. The Group's impairment policy is explained in note 1(i).

Notes to the 2020 Financial Statements

1 Principal accounting policies continued
Purchased intangible assets are initially recorded at cost. Finite-life intangible assets are amortised over their useful economic lives on a straight line or units of production basis, as appropriate. Intangible assets that are deemed to have indefinite lives and intangible assets that are not yet ready for use are not amortised; they are reviewed annually for impairment or more frequently if events or changes in circumstances indicate a potential impairment in accordance with accounting policy note 1(i).

The Group considers that intangible assets have indefinite lives when, based on an analysis of all of the relevant factors, there is no foreseeable limit to the period over which the asset is expected to generate cash flows for the Group. The factors considered in making this judgment include the existence of contractual rights for unlimited terms or evidence that renewal of the contractual rights without significant incremental cost can be expected for indefinite future periods in view of the Group's investment intentions. The life cycles of the products and processes that depend on the asset are also considered.

(f) Exploration and evaluation (note 13)
Exploration and evaluation expenditure comprises costs that are directly attributable to:

- Researching and analysing existing exploration data;
- Conducting geological studies, exploratory drilling and sampling;
- Examining and testing extraction and treatment methods; and/or
- Compiling various studies (order of magnitude, pre-feasibility and feasibility).

Exploration expenditure relates to the initial search for deposits with economic potential. Expenditure on exploration activity undertaken by the Group is not capitalised.

Evaluation expenditure relates to a detailed assessment of deposits or other projects (including smelter and refinery projects) that have been identified as having economic potential. Capitalisation of evaluation expenditure commences when there is a high degree of confidence that the Group will determine that a project is commercially viable, that is the project will provide a satisfactory return relative to its perceived risks, and therefore it is considered probable that future economic benefits will flow to the Group. The Group's view is that a high degree of confidence is greater than "more likely than not" (that is, greater than 50% certainty) and less than "virtually certain" (that is, less than 90% certainty).

Assessing whether there is a high degree of confidence that the Group will ultimately determine that an evaluation project is commercially viable requires judgment and consideration of all relevant factors such as the nature and objective of the project; the project's current stage; project timeline; current estimates of the project's net present value, including sensitivity analyses for the key assumptions; and the main risks of the project. Development expenditure incurred prior to the decision to proceed is subject to the same criteria for capitalisation, being a high degree of confidence that the Group will ultimately determine that a project is commercially viable.

In some cases, undeveloped projects are regarded as successors to orebodies, smelters or refineries currently in production. Where this is the case, it is intended that these will be developed and go into production when the current source of ore is exhausted or when existing smelters or refineries are closed.

Ore reserves may be declared for an undeveloped mining project before its commercial viability has been fully determined. Evaluation costs may continue to be capitalised during the period between declaration of ore reserves and approval to mine as further work is undertaken in order to refine the development case to maximise the project's returns.

In accordance with IFRS 6 "Exploration for and Evaluation of Mineral Resources", the criteria for the capitalisation of evaluation costs are applied consistently from period to period.

In the case of undeveloped mining projects which have arisen through acquisition, the allocation of the purchase price consideration may result in undeveloped properties being recognised at an earlier stage of project evaluation compared with projects arising from the Group's exploration and evaluation programme. Subsequent expenditure on acquired undeveloped projects is only capitalised if it meets the high degree of confidence threshold discussed above.

The carrying values of capitalised evaluation expenditure for undeveloped mining projects (projects for which the decision to mine has not yet been approved at the appropriate authorisation level within the Group) are reviewed at each reporting date for indicators of impairment in accordance with IFRS 6, and when indicators are identified are tested in accordance with IAS 36. Evaluation expenditure for non-mining projects is reviewed and tested under IAS 36.

The impairment review is based on a status report summarising the Group's intentions to recover value through development, sale or other partnering arrangements. If a project does not prove viable and is cancelled, all irrecoverable costs associated with the project net of any previously recorded impairment provisions are charged to the income statement.

(g) Property, plant and equipment (note 14)
Once an undeveloped mining project has been determined as commercially viable and approval to mine has been given, expenditure other than that on land, buildings, plant, equipment and capital work in progress is capitalised under "Mining properties and leases" together with any amount transferred from "Exploration and evaluation".

Costs which are necessarily incurred whilst commissioning new assets, in the period before they are capable of operating in the manner intended by management, are capitalised. Development costs incurred after the commencement of production are capitalised to the extent they are expected to give rise to a future economic benefit. Interest on borrowings related to construction or development projects is capitalised, at the rate payable on project-specific debt if applicable or at the Group or subsidiary's cost of borrowing if not, until the point when substantially all the activities that are necessary to make the asset ready for its intended use are complete. It may be appropriate to use a subsidiary's cost of borrowing when the debt was negotiated based on the financing requirements of that subsidiary.

Property, plant and equipment is stated at cost, as defined in IAS 16, less accumulated depreciation and accumulated impairment losses. The cost of property, plant and equipment includes, where applicable, the estimated close-down and restoration costs associated with the asset.

Property, plant and equipment includes right of use assets (note 14) arising from leasing arrangements, shown separately from owned and leasehold assets.

(h) Deferred stripping (note 14)
In open pit mining operations, overburden and other waste materials must be removed to access ore from which minerals can be extracted economically. The process of removing overburden and waste materials is referred to as stripping. During the development of a mine (or, in some instances, pit; see below), before production commences, stripping costs related to a component of an orebody are capitalised as part of the cost of construction of the mine (or pit) and are subsequently amortised over the life of the mine (or pit) on a units of production basis.

Where a mine operates several open pits that are regarded as separate operations for the purpose of mine planning, initial stripping costs are accounted for separately by reference to the ore from each separate pit. If, however, the pits are highly integrated for the purpose of mine planning, the second and subsequent pits are regarded as extensions of the first pit in accounting for stripping costs. In such cases, the initial stripping (ie overburden and other waste removal) of the second and subsequent pits is considered to be production phase stripping (see below).

The Group's judgment as to whether multiple pit mines are considered separate or integrated operations depends on each mine's specific circumstances.

The following factors would point towards the initial stripping costs for the individual pits being accounted for separately:

- If mining of the second and subsequent pits is conducted consecutively following that of the first pit, rather than concurrently;
- If separate investment decisions are made to develop each pit, rather than a single investment decision being made at the outset;
- If the pits are operated as separate units in terms of mine planning and the sequencing of overburden removal and ore mining, rather than as an integrated unit;
- If expenditures for additional infrastructure to support the second and subsequent pits are relatively large; and
- If the pits extract ore from separate and distinct orebodies, rather than from a single orebody.

If the designs of the second and subsequent pits are significantly influenced by opportunities to optimise output from several pits combined, including the co-treatment or blending of the output from the pits, then this would point to treatment as an integrated operation for the purposes of accounting for initial stripping costs. The relative importance of each of the above factors is considered in each case.

In order for production phase stripping costs to qualify for capitalisation as a stripping activity asset, three criteria must be met:

- It must be probable that there will be an economic benefit in a future accounting period because the stripping activity has improved access to the orebody;
- It must be possible to identify the "component" of the orebody for which access has been improved; and
- It must be possible to reliably measure the costs that relate to the stripping activity.

A "component" is a specific section of the orebody that is made more accessible by the stripping activity. It will typically be a subset of the larger orebody that is distinguished by a separate useful economic life (for example, a pushback).

Production phase stripping can give rise to two benefits: the extraction of ore in the current period and improved access to ore which will be extracted in future periods. When the cost of stripping which has a future benefit is not distinguishable from the cost of producing current inventories, the stripping cost is allocated to each of these activities based on a relevant production measure using a life-of-component strip ratio. The ratio divides the tonnage of waste mined for the component for the period either by the quantity of ore mined for the component or by the quantity of minerals contained in the ore mined for the component. In some operations, the quantity of ore is a more appropriate basis for allocating costs, particularly where there are significant by-products. Stripping costs for the component are deferred to the extent that the current period ratio exceeds the life of component ratio. The stripping activity asset is depreciated on a "units of production" basis based on expected production of either ore or minerals contained in the ore over the life of the component unless another method is more appropriate.

The life-of-component ratios are based on the ore reserves of the mine (and for some mines, other mineral resources) and the annual mine plan; they are a function of the mine design and, therefore, changes to that design will generally result in changes to the ratios. Changes in other technical or economic parameters that impact the ore reserves (and for some mines, other mineral resources) may also have an impact on the life-of-component ratios even if they do not affect the mine design. Changes to the ratios are accounted for prospectively.

It may be the case that subsequent phases of stripping will access additional ore and that these subsequent phases are only possible after the first phase has taken place. Where applicable, the Group considers this on a mine-by-mine basis. Generally, the only ore attributed to the stripping activity asset for the purposes of calculating a life-of-component ratio, and for the purposes of amortisation, is the ore to be extracted from the originally identified component.

Deferred stripping costs are included in "Mining properties and leases" within "Property, plant and equipment" or within "Investments in equity accounted units", as appropriate. Amortisation of deferred stripping costs is included in "Depreciation of property, plant and equipment" within "Net operating costs" or in "Share of profit after tax of equity accounted units", as appropriate.

(i) Depreciation and impairment (notes 13 and 14)

Depreciation of non-current assets

Property, plant and equipment is depreciated over its useful life, or over the remaining life of the mine or smelter or refinery if that is shorter and there is no reasonable alternative use for the asset by the Group.

The useful lives of the major assets of a cash-generating unit are often dependent on the life of the orebody to which they relate. Where this is the case, the lives of mining properties, and their associated refineries, concentrators and other long-lived processing equipment are generally limited to the expected life of the orebody. The life of the orebody, in turn, is estimated on the basis of the life-of-mine plan. Where the major assets of a cash-generating unit are not dependent on the life of a related orebody, management applies judgment in estimating the remaining service potential of long-lived assets. Factors affecting the remaining service potential of smelters include, for example, smelter technology and electricity purchase contracts when power is not sourced from the companies, or in some cases from local governments permitting electricity generation from hydro-power stations.

The useful lives and residual values for material assets and categories of assets are reviewed annually and changes are reflected prospectively.

Depreciation commences when an asset is available for use. The major categories of property, plant and equipment are depreciated on a units of production and/or straight line basis as follows:

Units of production basis

For mining properties and leases and certain mining equipment, consumption of the economic benefits of the asset is linked to production. Except as noted below, these assets are depreciated on the units of production basis.

Notes to the 2020 Financial Statements

1 Principal accounting policies continued

In applying the units of production method, depreciation is normally calculated based on production in the period as a percentage of total expected production in current and future periods based on ore reserves and, for some mines, other mineral resources. Other mineral resources may be included in the calculations of total expected production in limited circumstances where there are very large areas of contiguous mineralisation, for which the economic viability is not sensitive to likely variations in grade, as may be the case for certain iron ore, bauxite and industrial mineral deposits, and where there is a high degree of confidence that the other mineral resources can be extracted economically. This would be the case when the other mineral resources do not yet have the status of ore reserves merely because the necessary detailed evaluation work has not yet been performed and the responsible technical personnel agree that inclusion of a proportion of measured and indicated resources in the calculation of total expected production is appropriate based on historical reserve conversion rates.

The required level of confidence is unlikely to exist for minerals that are typically found in low-grade ore (as compared with the above), such as copper or gold. In these cases, specific areas of mineralisation have to be evaluated in detail before their economic status can be predicted with confidence.

Where measured and indicated resources are used in the calculation of depreciation for infrastructure, primarily rail and port, which will benefit current and future mines, then the measured and indicated resources may relate to mines which are currently in production or to mines where there is a high degree of confidence that they will be brought into production in the future. The quantum of mineral resources is determined taking into account future capital costs as required by the JORC code. The depreciation calculation, however, applies to current mines only and does not take into account future development costs for mines which are not yet in production. Measured and indicated resources are currently incorporated into depreciation calculations in the Group's Australian iron ore business.

Straight line basis

Assets within operations for which production is not expected to fluctuate significantly from one year to another or which have a physical life shorter than the related mine are depreciated on a straight line basis.

Impairment charges/reversals of non-current assets

Impairment charges and reversals are assessed at the level of cash-generating units which, in accordance with IAS 36 "Impairment of Assets", are identified as the smallest identifiable asset or group of assets that generate cash inflows which are largely independent of the cash inflows from other assets. Separate cash-generating units are identified where an active market exists for intermediate products, even if the majority of those products are further processed internally. Impairment of financial assets is evaluated in accordance with IFRS 9.

In some cases, individual business units consist of several operations with independent cash-generating streams which constitute separate cash-generating units.

Goodwill acquired through business combinations is allocated to the cash-generating unit or groups of cash-generating units that are expected to benefit from the related business combination, and tested for impairment at the lowest level within the Group at which goodwill is monitored for internal management purposes. All goodwill, intangible assets that have an indefinite life and intangible assets that are not ready for use are tested annually for impairment as at 30 September, regardless of whether there has been an impairment trigger, or more frequently if events or changes in circumstances indicate a potential impairment.

Property, plant and equipment and intangible assets with finite lives are reviewed for impairment if there is an indication that the carrying amount may not be recoverable. Right of use assets recognised under IFRS 16 "Leases" are included in the review. The Group conducts an internal review of the asset values annually as at 30 September which is used as a source of information to assess for indications of impairment or reversal of previously recognised impairment losses. External factors, such as changes in forecasted commodity prices, costs and other market factors as well as internal factors such as cancellation of a project or reduced project scope, are also monitored to assess for indications of impairment or reversal of previously recognised impairment losses. If any such indication exists then an impairment review is undertaken; the recoverable amount is assessed by reference to the higher of value in use (being the net present value of expected future cash flows of the relevant cash-generating unit in its current condition) and fair value less costs of disposal (FVLCD).

When the recoverable amount of the cash-generating unit is measured by reference to FVLCD, this amount is further classified in accordance with the fair value hierarchy for observable market data that is consistent with the unit of account for the cash-generating unit being tested. The Group considers that the best evidence of FVLCD is the value obtained from an active market or binding sale agreement and, in this case, the recoverable amount is classified in the fair value hierarchy as level 1. When FVLCD is based on quoted prices for equity instruments but adjusted to reflect factors such as a lack of liquidity in the market, the recoverable amount is classified as level 2 in the fair value hierarchy. No cash-generating units are currently assessed for impairment by reference to a recoverable amount based on FVLCD classified as level 1 or level 2.

Where unobservable inputs are material to the measurement of the recoverable amount, FVLCD is based on the best information available to reflect the amount the Group could receive for the cash-generating unit in an orderly transaction between market participants at the measurement date. This is often estimated using discounted cash flow techniques and is classified as level 3 in the fair value hierarchy.

Where the recoverable amount is assessed using FVLCD based on discounted cash flow techniques, the resulting estimates are based on detailed life-of-mine and/or long-term production plans. These may include anticipated expansions which are at the evaluation stage of study.

The cash flow forecasts for FVLCD purposes are based on management's best estimates of expected future revenues and costs, including the future cash costs of production, capital expenditure, and closure, restoration and environmental costs. For the purposes of determining FVLCD from a market participant's perspective, the cash flows incorporate management's price and cost assumptions in the short and medium term. In the longer term, operating margins are assumed to remain constant where appropriate, as it is considered unlikely that a market participant would prepare detailed forecasts over a longer term. The cash flow forecasts may include net cash flows expected to be realised from the extraction, processing and sale of material that does not currently qualify for inclusion in ore reserves. Such non-reserve material is only included when there is a high degree of confidence in its economic extraction. This expectation is usually based on preliminary drilling and sampling of areas of mineralisation that are contiguous with existing ore reserves. Typically, the additional evaluation required to achieve reserves status for such material has not yet been done because this would involve incurring evaluation costs earlier than is required for the efficient planning and operation of the mine.

As noted above, cost levels incorporated in the cash flow forecasts for FVLCD purposes are based on the current life-of-mine plan or long-term production plan for the cash-generating unit. This differs from value in use which requires future cash flows to be estimated for the asset in its current condition and therefore does not include future cash flows associated with improving or enhancing an asset's performance. Anticipated enhancements to assets may be included in FVLCD calculations and, therefore, generally result in a higher value.

Where the recoverable amount of a cash-generating unit is dependent on the life of its associated orebody, expected future cash flows reflect the current life of mine and/or long-term production plans, which are based on detailed research, analysis and iterative modelling to optimise the level of return from investment, output and sequence of extraction. The mine plan takes account of all relevant characteristics of the orebody, including waste-to-ore ratios, ore grades, haul distances, chemical and metallurgical properties of the ore impacting process recoveries and capacities of processing equipment that can be used. The life-of-mine plan and/or long-term production plans are, therefore, the basis for forecasting production output and production costs in each future year.

Forecast cash flows for ore reserve estimation for JORC purposes are generally based on Rio Tinto's commodity price forecasts, which assume short-term market prices will revert to the Group's assessment of the long-term price, generally over a period of three to five years. For most commodities, these forecast commodity prices are derived from a combination of analyses of the marginal costs of the producers and of the incentive price of these commodities. These assessments often differ from current price levels and are updated periodically. The Group does not believe that published medium- and long-term forward prices necessarily provide a good indication of future levels because they tend to be strongly influenced by spot prices. The price forecasts used for ore reserve estimation are generally consistent with those used for impairment testing unless management deems that in certain economic environments, a market participant would not assume Rio Tinto's view on prices, in which case in preparing FVLCD impairment calculations management estimates the assumptions that a market participant would be expected to use.

Forecast future cash flows of a cash-generating unit take into account the sales prices under existing sales contracts.

The discount rates applied to the future cash flow forecasts represent an estimate of the rate the market would apply having regard to the time value of money and the risks specific to the asset for which the future cash flow estimates have not been adjusted. The Group's weighted average cost of capital is generally used as a starting point for determining the discount rates, with appropriate adjustments for the risk profile of the countries in which the individual cash-generating units operate. For final feasibility studies and ore reserve estimation, internal hurdle rates, which are generally higher than the Group's weighted average cost of capital, are used. For developments funded with project finance, the debt component of the weighted average cost of capital may be calculated by reference to the specific interest rate of the project finance and anticipated leverage of the project.

For operations with a functional currency other than the US dollar, the impairment review is undertaken in the relevant functional currency. In estimating FVLCD, internal forecasts of exchange rates take into account spot exchange rates, historical data and external forecasts, and are kept constant in real terms after five years. The great majority of the Group's sales are based on prices denominated in US dollars. To the extent that the currencies of countries in which the Group produces commodities strengthen against the US dollar without an increase in commodity prices, cash flows and, therefore, net present values are reduced. Management considers that over the long term, there is a tendency for movements in commodity prices to compensate to some extent for movements in the value of the US dollar, particularly against the Australian dollar and Canadian dollar, and vice versa. However, such compensating changes are not synchronised and do not fully offset each other. In estimating value in use, the present value of future cash flows in foreign currencies is translated at the spot exchange rate on the testing date.

Non-current assets (excluding goodwill) that have suffered impairment are reviewed using the same basis for valuation as explained above whenever events or changes in circumstances indicate that the impairment loss may no longer exist, or may have decreased. If appropriate, an impairment reversal will be recognised. The carrying amount of the cash-generating unit after reversal must be the lower of (a) the recoverable amount, as calculated above, and (b) the carrying amount that would have been determined (net of amortisation or depreciation) had no impairment loss been recognised for the cash-generating unit in prior periods.

An onerous contract is defined under IAS 37 "Provisions, Contingent Liabilities and Contingent Assets" as a contract under which the unavoidable costs of meeting the obligations under the contract exceed the economic benefits expected to be received under it. Provision is made when the assets dedicated to the contract are fully impaired or the contract becomes stranded as a result of a business decision.

(j) Determination of ore reserve and mineral resource estimates

The Group estimates its ore reserves and mineral resources based on information compiled by Competent Persons as defined in accordance with the JORC code.

Ore reserves and, for certain mines, other mineral resources, determined in this way are used in the calculation of depreciation, amortisation and impairment charges and for forecasting the timing of the payment of close-down and restoration costs and the recovery of deferred tax assets. The depreciation and impairment policy above notes instances in which mineral resources are taken into account for accounting purposes. In addition, value may be attributed to mineral resources in purchase price allocations undertaken for the purposes of business combination accounting.

(k) Leases (notes 14, 21, 22)

IFRS 16 "Leases" applies to the recognition, measurement, presentation and disclosure of leases. Certain leases are exempt from the standard, including leases to explore for or use minerals, oil, natural gas and similar non-regenerative resources. The Group does not apply IFRS 16 to arrangements which fall within the scope of IAS 38 "Intangible Assets".

A significant proportion by value of the Group's lease arrangements relate to dry bulk vessels and offices. Other leases include land and non-mining rights, warehouses, ports, equipment and vehicles. The majority of lease terms are negotiated through the Group's procurement function, although agreements contain a wide range of different terms and conditions.

The Group recognises all lease liabilities and corresponding right of use assets, with the exception of short-term (12 months or fewer) and low value leases, on the balance sheet. Lease liabilities are recorded at the present value of: fixed payments; variable lease payments that depend on an index or rate; amounts payable under residual value guarantees; and extension options expected to be exercised. Where a lease contains an extension option which the Group can exercise without negotiation, lease payments for the extension period are included in the liability if the Group is reasonably certain that it will exercise the option. Variable lease payments not dependent on an index or rate are excluded from the calculation of lease liabilities. Payments are discounted at the incremental borrowing rate of the lessee, unless the interest rate implicit in the lease can be readily determined. For lease agreements relating to vessels, ports and properties, non-lease components are excluded from the projection of future lease payments and recorded separately within operating costs on a straight line basis. The lease liability is measured at amortised cost using the effective interest method. The right of use asset arising from a lease arrangement at initial recognition reflects the lease liability, initial direct costs, lease payments made before the commencement date of the lease, and capitalised provision for dismantling and restoration, less any lease incentives.

Notes to the 2020 Financial Statements

1 Principal accounting policies continued
The Group recognises depreciation of right of use assets and interest on lease liabilities in the income statement over the lease term. Repayments of lease liabilities are separated into a principal portion (presented within financing activities) and interest portion (which the Group presents in operating activities) in the cash flow statement. Payments made before the commencement date are included within financing activities unless they in substance represent investing cash flows, for example where pre-commencement cash flows are significant relative to aggregate cash flows of the leasing arrangement.

(l) Close-down, restoration and environmental obligations (note 25)
The Group has provisions for close-down and restoration costs which include the dismantling and demolition of infrastructure, the removal of residual materials and the remediation of disturbed areas for mines and certain refineries and smelters. These provisions are based on all regulatory requirements and any other commitments made to stakeholders.

Closure provisions are not made for those operations that have no known restrictions on their lives as the closure dates cannot be reliably estimated. This applies primarily to certain Canadian smelters which have indefinite-lived water rights from local governments permitting electricity generation from hydro-power stations.

Close-down and restoration costs are a normal consequence of mining or production, and the majority of close-down and restoration expenditure is incurred in the years following closure of the mine, refinery or smelter. Although the ultimate cost to be incurred is uncertain, the Group's businesses estimate their costs using current restoration standards and techniques.

Close-down and restoration costs are provided for in the accounting period when the obligation arising from the related disturbance occurs, based on the net present value of the estimated future costs of restoration to be incurred during the life of the operation and post closure. Where appropriate, the provision is estimated using probability weighting of the different remediation and closure scenarios. The obligation may occur during development or during the production phase of a facility.

Provisions for close-down and restoration costs do not include any additional obligations which are expected to arise from future disturbance.

The costs are estimated on the basis of a closure plan, and are reviewed at each reporting period during the life of the operation to reflect known developments. The estimates are also subject to formal review, with appropriate external support, at regular intervals.

The initial close-down and restoration provision is capitalised within "Property, plant and equipment". Subsequent movements in the close-down and restoration provisions for ongoing operations, including those resulting from new disturbance related to expansions or other activities qualifying for capitalisation, updated cost estimates, changes to the estimated lives of operations, changes to the timing of closure activities and revisions to discount rates are also capitalised within "Property, plant and equipment". These costs are then depreciated over the lives of the assets to which they relate.

Changes in closure provisions relating to closed operations are charged/credited to "Net operating costs" in the income statement.

Where rehabilitation is conducted systematically over the life of the operation, rather than at the time of closure, provision is made for the estimated outstanding continuous rehabilitation work at each balance sheet date and the cost is charged to the income statement.

In the context of current market volatility and uncertainty, the Group has taken a long-term view of interest rates into account in determining the appropriate discount rate for discounting of future costs for close-down, restoration and environmental obligations. The amortisation or "unwinding" of the discount applied in establishing the provisions is charged to the income statement in each accounting period. The amortisation of the discount is shown within "Finance items" in the income statement.

In some cases, Group companies make a contribution to trust funds in order to meet or reimburse future environmental and decommissioning costs. Amounts due for reimbursement from trust funds are not offset against the corresponding closure provision unless payments into the fund have the effect of passing the closure obligation to the trust.

Environmental costs result from environmental damage that was not a necessary consequence of operations, and may include remediation, compensation and penalties. Provision is made for the estimated present value of such costs at the balance sheet date. These costs are charged to "Net operating costs", except for the unwinding of the discount which is shown within "Finance items".

Remediation procedures may commence soon after the time the disturbance, remediation process and estimated remediation costs become known, but can continue for many years depending on the nature of the disturbance and the remediation techniques used.

(m) Inventories (note 16)
Inventories are valued at the lower of cost and net realisable value, primarily on a weighted average cost basis. Average costs are calculated by reference to the cost levels experienced in the relevant month together with those in opening inventory. The cost of raw materials and consumable stores is the purchase price. The cost of partly-processed and saleable products is generally the cost of production, including:

- Labour costs, materials and contractor expenses which are directly attributable to the extraction and processing of ore or the production of alumina and aluminium;
- The depreciation of mining properties and leases and of property, plant and equipment used in the extraction and processing of ore or the production of alumina and aluminium, copper and other refined products; and
- Production overheads.

Work in progress includes ore stockpiles and other partly processed material. Stockpiles represent ore that has been extracted and is available for further processing. If there is significant uncertainty as to if and/or when the stockpiled ore will be processed, the ore is expensed as mined. If the ore will not be processed within 12 months after the balance sheet date, it is included within non-current assets and net realisable value is calculated on a discounted cash flow basis. Quantities of stockpiled ore are assessed primarily through surveys and assays. Certain estimates, including expected metal recoveries, are calculated using available industry, engineering and scientific data, and are periodically reassessed taking into account technical analysis and historical performance.

(n) Taxation (note 9 and note 17)
Current tax is the tax expected to be payable on the taxable income for the year calculated using rates that have been enacted or substantively enacted at the balance sheet date. It includes adjustments for tax expected to be payable or recoverable in respect of previous periods. Where the amount of tax payable or recoverable is uncertain, Rio Tinto establishes provisions based on either: the Group's judgment of the most likely amount of the liability or recovery; or, when there is a wide range of possible outcomes, a probability weighted average approach.

Deferred tax is calculated in accordance with IAS 12. The Group provides for deferred tax in respect of fair value adjustments on acquisitions including mining rights that, in general, are not eligible for income tax allowances. Provision for deferred tax is based on the difference between the carrying value of the asset and its income tax base (which may be nil). Even when there is no income tax base, the existence of a tax base for capital gains tax purposes is not usually taken into account in determining the deferred tax provision for the assets, unless they are classified as held for sale or it is determined for other reasons that the carrying amount is expected to be recovered primarily through disposal and not through use of the assets. Where the recognition of an asset and liability from a single transaction gives rise to equal and off-setting temporary differences, Rio Tinto applies the Initial Recognition Exemption allowed by IAS 12, and consequently recognises neither a deferred tax asset nor a deferred tax liability in respect of these temporary differences. Primarily this occurs with new lease arrangements and changes in closure cost estimates for assets in operation.

(o) Post-employment benefits (note 42)

The Group operates a number of defined benefit plans which provide lump sums, pensions, medical benefits and life insurance to retirees. In accordance with IAS 19, for post-employment defined benefit plans, the difference between the fair value of any plan assets and the present value of the plan obligations is recognised as an asset or liability in the balance sheet.

Where appropriate, the recognition of assets may be restricted to the present value of any amounts the Group expects to recover by way of refunds from the plan or reductions in future contributions. In determining the extent to which a refund will be available the Group considers whether any third party, such as a trustee or pension committee, has the power to enhance benefits or to wind up a pension plan without the Group's consent.

The most significant assumptions used in accounting for pension plans are the discount rate, the inflation rate and mortality rates. The discount rate is used to determine the net present value of the obligations, the interest cost on the obligations and the interest income on plan assets. The discount rate used is the yield on high-quality corporate bonds with maturities and terms that match those of the post-employment obligations as closely as possible. Where there is no developed corporate bond market in a currency, the rate on government bonds is used. The inflation rate is used to project increases in future benefit payments for those plans that have benefits linked to inflation. The mortality rates are used to project the period over which benefits will be paid, which is then discounted to arrive at the net present value of the obligations.

The current service cost, any past service cost and the effect of any curtailment or settlements are recognised in the income statement. The interest cost less interest income on assets held in the plans is also charged to the income statement. All amounts charged to the income statement in respect of these plans are included within "Net operating costs" or in "Share of profit after tax of equity accounted units", as appropriate.

The Group's contributions to defined contribution plans are charged to the income statement in the period to which the contributions relate. These are included within "Net operating costs" or in "Share of profit after tax of equity accounted units", as appropriate.

(p) Cash and cash equivalents (note 20)

For the purpose of the balance sheet, cash and cash equivalents comprise: cash on hand, deposits held with banks, and short-term, highly liquid investments (mainly money market funds) that are readily convertible into known amounts of cash and which are subject to insignificant risk of changes in value. Bank overdrafts are shown as current liabilities in the balance sheet.

Further detail on cash and cash equivalents, including restricted cash, is shown in note 20.

For the purposes of the cash flow statement, cash and cash equivalents are net of bank overdrafts that are repayable on demand.

(q) Financial instruments (note 29)

(i) Financial assets

Classification and measurement

The Group classifies its financial assets into the following categories: those to be measured subsequently at fair value (either through other comprehensive income (FVOCI) or through the income statement (FVPL)) and those to be held at amortised cost.

Classification depends on the business model for managing the financial assets and the contractual terms of the cash flows.

Management determines the classification of financial assets at initial recognition. The Group's policy with regard to financial risk management is set out in note 29. Generally, the Group does not acquire financial assets for the purpose of selling in the short term.

The Group's business model is primarily that of "hold to collect" (where assets are held in order to collect contractual cash flows). When the Group enters into derivative contracts, these transactions are designed to reduce exposures relating to assets and liabilities, firm commitments or anticipated transactions.

(a) Financial assets held at amortised cost

This classification applies to debt instruments which are held under a hold to collect business model and which have cash flows that meet the "solely payments of principal and interest" (SPPI) criteria.

At initial recognition, trade receivables that do not have a significant financing component are recognised at their transaction price. Other financial assets are initially recognised at fair value plus related transaction costs; they are subsequently measured at amortised cost using the effective interest method. Any gain or loss on de-recognition or modification of a financial asset held at amortised cost is recognised in the income statement.

(b) Financial assets held at fair value through other comprehensive income (FVOCI)

This classification applies to the following financial assets:

- Debt instruments that are held under a business model where they are held for the collection of contractual cash flows and also for sale ("collect and sell") and which have cash flows that meet the SPPI criteria. An example would be where trade receivable invoices for certain customers were factored from time to time.

  All movements in the fair value of these financial assets are taken through other comprehensive income, except for the recognition of impairment gains or losses, interest revenue (including transaction costs by applying the effective interest method), gains or losses arising on de-recognition and foreign exchange gains and losses which are recognised in the income statement. When the financial asset is derecognised, the cumulative fair value gain or loss previously recognised in other comprehensive income is reclassified to the income statement.
- Equity investments where the Group has irrevocably elected to present fair value gains and losses on revaluation in other comprehensive income. The election can be made for each individual investment; however it is not applicable to equity investments held for trading.

  Fair value gains or losses on revaluation of such equity investments, including any foreign exchange component, are recognised in other comprehensive income. When the equity investment is derecognised, there is no reclassification of fair value gains or losses previously recognised in other comprehensive income to the income statement. Dividends are recognised in the income statement when the right to receive payment is established.

Notes to the 2020 Financial Statements

1 Principal accounting policies continued

(c) Financial assets held at fair value through profit or loss (FVPL)

This classification applies to the following financial assets. In all cases, transaction costs are immediately expensed to the income statement.

- Debt instruments that do not meet the criteria of amortised cost or fair value through other comprehensive income. The Group has a significant proportion of trade receivables with embedded derivatives for provisional pricing. These receivables are generally held to collect but do not meet the SPPI criteria and as a result must be held at FVPL. Subsequent fair value gains or losses are taken to the income statement. In addition, trade receivable invoices for certain customers which are routinely factored, in order to address credit risk and support value delivery through timelier realisation, are held at FVPL.
- Equity investments which are held for trading or where the FVOCI election has not been applied. All fair value gains or losses and related dividend income are recognised in the income statement.
- Derivatives which are not designated as a hedging instrument. All subsequent fair value gains or losses are recognised in the income statement.

(ii) Financial liabilities

Borrowings and other financial liabilities (including trade payables but excluding derivative liabilities) are recognised initially at fair value, net of transaction costs incurred, and are subsequently measured at amortised cost.

The Group participates in supply chain finance arrangements whereby vendors may elect to receive early payment of their invoice from a third-party bank by factoring their receivable from Rio Tinto. These arrangements do not modify the terms of the original liability with respect to either counterparty terms, settlement date or amount due. Utilisation of the early settlement facility is voluntary and at the vendors' discretion on an invoice-by-invoice basis. Financial liabilities subject to supply chain finance therefore continue to be classified as trade payables. At 31 December 2020, trade payables included US$551 million (2019: US$573 million) subject to early settlement election by vendors.

(iii) Impairment of financial assets

A forward-looking expected credit loss (ECL) review is required for: debt instruments measured at amortised cost or held at fair value through other comprehensive income; loan commitments and financial guarantees not measured at fair value through profit or loss; lease receivables; and trade receivables that give rise to an unconditional right to consideration.

As permitted by IFRS 9, the Group applies the "simplified approach" to trade receivable balances and receivables relating to net investment in finance leases and the "general approach" to all other financial assets. The general approach incorporates a review for any significant increase in counterparty credit risk since inception. The ECL reviews include assumptions about the risk of default and expected loss rates. For trade receivables and receivables relating to net investment in finance leases, the assessment takes into account the use of credit enhancements, for example, letters of credit. Impairments for undrawn loan commitments are reflected as a provision.

(iv) Derivatives and hedge accounting

The Group applies the hedge accounting requirements under IFRS 9 and its hedging activities are discussed in note 29 with movements on hedging reserves disclosed in note 28. Where applicable, the Group may defer the costs of hedging including currency basis spreads, forward points and the time value of options.

Phase 1 amendments related to IBOR reform adopted in the comparative period allowed temporary relief from applying specific hedge accounting requirements to hedging arrangements directly impacted by the reform. Application of the temporary reliefs mean that IBOR reform does not result in termination of hedging relationships referencing an IBOR during the anticipated period of IBOR-related uncertainty. The principal relief which the Group has applied to its hedging portfolio is in the assumption that US LIBOR remains a separately identifiable component for the duration of the hedge; and the US LIBOR rates referenced by fixed-to-floating rate swaps in fair value hedge relationships do not change as the result of IBOR reform, preserving the economic relationship and allowing the related hedges to remain effective (refer to note 29 A (b) (v)).

(r) Share-based payments (note 41)

The fair value of the Group's share plans is recognised as an expense over the expected vesting period with an offset to retained earnings for Rio Tinto plc plans and to other reserves for Rio Tinto Limited plans.

The Group uses fair values provided by independent actuaries calculated using either a lattice-based option valuation model or a Monte Carlo simulation model.

The terms of each plan are considered at the balance sheet date to determine whether the plan should be accounted for as equity-settled or cash-settled. The Group does not operate any plans as cash-settled. However, the Performance Share Plan can, at the discretion of the directors, offer employees an equivalent amount in cash. This is not standard practice. In some jurisdictions, employees are granted cash-settled awards where equity-settled awards are prohibited by local laws and regulations. The value of these awards is immaterial.

The Group's equity-settled share plans are settled either by: the issuance of shares by the relevant parent company; the purchase of shares on market; or the use of shares held in treasury which were previously acquired as part of a share buy-back. If the cost of shares acquired to satisfy the plans differs from the expense charged, the difference is taken to retained earnings or other reserves, as appropriate.

(s) Share capital (notes 26 and 27)

Ordinary shares are classified as equity. Incremental costs directly attributable to the issuance of new shares are shown in equity as a deduction, net of tax, from the proceeds.

Where any Group company purchases the Group's equity share capital (treasury shares), the consideration paid, including any directly attributable incremental costs (net of income taxes) is deducted from equity attributable to owners of Rio Tinto. Where such shares are subsequently reissued, any consideration received, net of any directly attributable incremental costs and the related income tax effects, is included in equity attributable to owners of Rio Tinto. If purchased Rio Tinto plc shares are cancelled, an amount equal to the nominal value of the cancelled share is credited to the capital redemption reserve.

(t) Segment reporting (notes 2 and 3)

Operating segments are reported in a manner consistent with the internal reporting provided to the chief operating decision maker (CODM). The Group considers that Rio Tinto's Chief Executive is the CODM, who is responsible for allocating resources and assessing performance of the operating segments.

Critical accounting policies and estimates

(i) Determination of CGUs, assessment of indicators of impairment, review of asset carrying values, impairment charges and reversals and the recoverability of goodwill (notes 6, 12 and 13)

Impairment is assessed at the cash-generating unit (CGU) level. A CGU is the smallest identifiable asset or group of assets that generates independent cash inflows. Judgment is applied to identify the Group's CGUs, particularly when assets belong to integrated operations, and changes in CGUs could impact impairment charges and reversals. The most significant examples of this judgment are: in 2020, the continued grouping of Rio Tinto Fer et Titane in Quebec, Canada and QIT Madagascar Minerals (QMM) into a single CGU on the basis that they are vertically integrated operations with no active market for ilmenite; and in 2019, disaggregation of the Weipa bauxite mine and the downstream Gladstone alumina refineries (Yarwun and QAL) in Queensland, Australia into three separate CGUs on the basis of the ramp-up of the Amrun expansion at Weipa which increased bauxite exports such that the mine is now considered to generate largely independent cash inflows. Prior to 2019, the Weipa mine and Gladstone refineries were grouped into a single CGU. Management reviews these judgments on an annual basis as part of the annual internal review of asset values as described in note (i) above.

External and internal factors are monitored for indicators of impairment and include an annual internal review of asset values as described in note (i) above. Judgment is required to determine whether the impact of adverse spot commodity price movements is significant and structural in nature. There were no material instances of this judgment resulting in an indicator of impairment as at 31 December 2020.

Generally, discounted cash flow models are used to determine the recoverable amount of CGUs. In this case, significant judgment is required to determine the appropriate estimates and assumptions used and there is significant estimation uncertainty. In particular, for fair value less costs of disposal valuations, judgment is required to determine the estimates a market participant would use. The discounted cash flow model is most sensitive to the following estimates: the timing of project expansions; the cost to complete assets under construction; long-term commodity prices; production timing and recovery rates; exchange rates; operating costs; reserve and resource estimates; closure costs; discount rates; allocation of long-term contract revenues between CGUs; and, in some instances, the renewal of mining licences. Some of these variables are unique to an individual CGU. Future changes in these variables may differ from management's expectations and may materially alter the recoverable amounts of the CGUs.

Note (i) above also describes the Group's methodology for estimating long-term commodity prices, exchange rates and discount rates for impairment testing purposes. Note 6 outlines the significant judgments, assumptions and sensitivities made for both measuring the impairments recorded and for determining whether reversal of part or all of a previous impairment was appropriate. Judgments, assumptions and sensitivities in relation to the testing of CGUs containing goodwill and indefinite-lived intangible assets are outlined in notes 12 and 13 respectively.

(ii) Estimation of asset lives

Intangible assets are considered to have indefinite lives (and therefore no related depreciation or amortisation charge) if, in the Group's judgment, there is no foreseeable limit to the period over which the asset is expected to generate cash flows. Factors that are considered in making this judgment include the existence of contractual rights for unlimited terms or evidence that renewal of the contractual rights without significant incremental costs can be expected for indefinite periods into the future in view of the Group's investment intentions. The most significant assessment of indefinite life applicable to intangible assets relates to contract based water rights in Canada acquired with Alcan, described further in note 13.

The useful lives of the major assets of a CGU are often dependent on the life of the orebody to which they relate. The life of the orebody will be determined on the basis of the life-of-mine plan which is based on the estimates of ore reserves as described on page 341.

(iii) Close-down, restoration and environmental obligations (note 25)

Provision is made for close-down, restoration and environmental costs when the obligation occurs, based on the net present value of estimated future costs required to satisfy the obligation. Management uses its judgment and experience to determine the potential scope of closure rehabilitation work required to meet the Group's legal, statutory and constructive obligations, and any other commitments made to stakeholders, and the options and techniques available to meet those obligations and estimate the associated costs and the likely timing of those costs. Significant judgment is also required to determine both the costs associated with that work and the other assumptions used to calculate the provision. External experts support the cost estimation process where appropriate but there remains significant estimation uncertainty.

The key judgment in applying this accounting policy is determining when an estimate is sufficiently reliable to make or adjust a closure provision.

Closure provisions are not made for those operations that have no known restrictions on their lives as the closure dates cannot be reliably estimated. This applies primarily to certain Canadian smelters which have indefinite-lived water rights or power agreements for renewably sourced power with local governments.

Cost estimates are updated throughout the life of the operation; generally cost estimates must comply with the Group's Capital Project Framework once the operation is ten years from expected closure. This means, for example, that where an Order of Magnitude (OoM) study is required for closure it must be of the same standard as an OoM study for a new mine, smelter or refinery. As at 31 December 2020, there are 10 operations with remaining lives of under ten years before taking into account unapproved extensions. The largest recent closure study is at Rio Tinto Kennecott, which was completed during 2020; information available from this study at 31 December 2020 resulted in an increase to closure and environmental liabilities of US$74 million (2019: US$444 million).

Adjustments are made to provisions when the range of possible outcomes becomes sufficiently narrow to permit reliable estimation. Depending on the materiality of the change, adjustments may require review and endorsement by the Group's Closure Steering Committee before the provision is updated.

In some cases, the closure study may indicate that monitoring and, potentially, remediation will be required indefinitely - for example ground water treatment. In these cases the underlying cash flows for the provision may be restricted to a period for which the costs can be reliably estimated, which on average is around 30 years. Where an alternative commercial arrangement to meet our obligations can be predicted with confidence, this period may be shorter.

Notes to the 2020 Financial Statements

1 Principal accounting policies continued
The most significant assumptions and estimates used in calculating the provision are:

- Closure timeframes. The weighted average remaining lives of operations is shown in note 25. Some expenditure may be incurred before closure whilst the operation as a whole is in production.
- The length of any post-closure monitoring period. This will depend on the specific site requirements and the availability of alternative commercial arrangements; some expenditure can continue into perpetuity. The Rio Tinto Kennecott closure and environmental remediation provision includes an allowance for ongoing monitoring and remediation costs, including ground water treatment, of approximately US$0.6 billion.
- The probability weighting of possible closure scenarios. The most significant impact of probability weighting is at the Pilbara operations (Iron Ore) relating to infrastructure and incorporates the expectation that some infrastructure will be retained by the relevant State authorities post closure. The assignment of probabilities to this scenario reduces the closure provision by US$1.2 billion.
- Appropriate sources on which to base the calculation of the discount rate. On 30 September 2020, management reviewed the rate used for discounting provisions and reduced the discount rate by 0.5%. The discount rate by nature is subjective and therefore sensitivities are shown in note 25 for how the provision balance, which at 31 December 2020 was US$13.3 billion, would change if discounted at alternative discount rates were applied.

There is significant estimation uncertainty in the calculation of the provision and cost estimates can vary in response to many factors including:

- Changes to the relevant legal or local/national government requirements and any other commitments made to stakeholders;
- Review of remediation and relinquishment options;
- Additional remediation requirements identified during the rehabilitation;
- The emergence of new restoration techniques;
- Precipitation rates and climate change;
- Change in the expected closure date;
- Change in the discount rate; and
- The effects of inflation.

Experience gained at other mine or production sites may also change expected methods or costs of closure, although elements of the restoration and rehabilitation of each site are relatively unique to a site. Generally, there is relatively limited restoration and rehabilitation activity and historical precedent elsewhere in the Group, or in the industry as a whole, against which to benchmark cost estimates.

The expected timing of expenditure can also change for other reasons, for example because of changes to expectations around ore reserves and mineral resources, production rates, renewal of operating licences or economic conditions.

As noted in note (l) above, changes in closure and restoration provisions for ongoing operations are usually capitalised and therefore will impact assets and liabilities but have no impact on profit or loss at the time the change is made. However, these changes will impact depreciation and the unwind of discount in future years. Changes in closure estimates at the Group's ongoing operations could result in a material adjustment to assets and liabilities in the next 12 months.

Changes to closure cost estimates for closed operations, and changes to environmental cost estimates at any operation, would impact profit or loss; however, the Group does not consider that there is significant risk of a change in estimates for these liabilities causing a material adjustment to profit or loss in the next 12 months. Any new environmental incidents may require a material provision but cannot be predicted.

Project specific risks are embedded within the cash flows which are based on a central case estimate of closure activities assuming that the obligation is fulfilled by the Group. These cash flows are then discounted using a discount rate specific to the class of obligations. The selection of appropriate sources on which to base the calculation of the discount rate requires judgment. The 1.5% real rate currently used by the Group is based on a number of inputs including observable historical yields on 30 year US Treasury Inflation Protected Securities (TIPS), and consideration of findings by independent valuation experts.

(iv) Deferral of stripping costs (note 14)
Stripping of waste materials takes place throughout the production phase of a surface mine or pit. The identification of components within a mine and of the life of component strip ratios requires judgment and is dependent on an individual mine's design and the estimates inherent within that. Changes to that design may introduce new components and/or change the life of component strip ratios. Changes in other technical or economic parameters that impact ore reserves may also have an impact on the life of component strip ratios, even if they do not affect the mine's design. Changes to the life of component strip ratios are accounted for prospectively.

The Group's judgment as to whether multiple pit mines are considered separate or integrated operations determines whether initial stripping of a pit is deemed to be pre-production or production phase stripping and, therefore, the amortisation base for those costs. The analysis depends on each mine's specific circumstances and requires judgment: another mining company could make a different judgment even when the fact pattern appears to be similar.

(v) Uncertain tax positions
The Group operates across a large number of jurisdictions and is subject to periodic challenges by local tax authorities on a range of tax matters during the normal course of business, including transfer pricing, indirect taxes and transaction related issues.

Uncertain tax provisions include the related interest and penalties for all matters worldwide based on the Group's judgment of the most likely amount of the liability or recovery; or, when there is a wide range of possible outcomes, a probability weighted average approach. The most significant judgments are in relation to transfer pricing matters. Whilst the potential outcomes are highly variable our current expectation is that there will be no material change to the amounts provided in the 12 months from 31 December 2020.

(vi) Recoverability of potential deferred tax assets (note 17)
The Group has tax losses and other deductible temporary differences, mainly in Australian, Canadian, US and Mongolian taxable entities, that have the potential to reduce tax payments in future years. Deferred tax assets have been recognised to the extent that their recovery is probable, having regard to the availability of sufficient taxable temporary differences relating to the same taxation authority and the same taxable entity, the estimates of projected future taxable income of these taxable entities and after taking account of specific risk factors that are expected to affect the recovery of these assets including the risk of expiry of losses. Further information on deferred tax assets is given in note 17.

In addition to the risk of expiry of losses, the projections on which recovery of tax losses are based are subject to the same estimation uncertainty as noted in (i) above in relation to impairment. The key judgment in the application of this accounting policy is the recognition of deferred tax assets for losses where the operation is not currently profitable for tax purposes.

(vii) Provision for onerous contracts
Provision for an onerous contract is made only when the assets dedicated to that contract are fully impaired or the contract becomes stranded as a result of a business decision. Judgment is required in determining which assets are considered dedicated to a contract when there is optionality as to how the contract obligations can be settled. Key estimates are the cash flows associated with the contract and the discount rate assumption. The Group completed the disposal of its remaining coking coal assets in 2018 and has retained the onerous provisions made in past periods for rail infrastructure "take or pay" contracts which were considered stranded. Refer to note 36. As at 31 December 2020, the balance of the provision was US$219 million (2019: US$284 million). In 2019, the Group's investment in the Escondida Joint Venture reduced by US$138 million relating to contractual payments under a power purchase agreement which became stranded and was judged to be onerous upon early cancellation in favour of renewable energy sources.

(viii) Identification of functional currencies
The functional currency for each subsidiary, unincorporated arrangement, joint operation and equity accounted unit, is the currency of the primary economic environment in which it operates. Determination of functional currency involves significant judgment and other companies may make different judgments based on similar facts. For many of Rio Tinto's businesses, their functional currency is the currency of the country in which they operate. The Group reconsiders the functional currency of its businesses if there is a change in the underlying transactions, events or conditions which determine their primary economic environment.

The determination of functional currency is a key judgment which affects the measurement of non-current assets included in the balance sheet and, as a consequence, the depreciation and amortisation of those assets included in the income statement. It also impacts exchange gains and losses included in the income statement and in equity. The Group applies judgment in determining whether settlement of certain intragroup loans is neither planned nor likely in the foreseeable future and therefore whether the associated exchange gains and losses can be taken to equity. During 2020, A$14 billion of intragroup loans continued to meet these criteria; associated exchange gains and losses are taken to equity.

(ix) Basis of consolidation (notes 32-35)
Judgment is sometimes required to determine whether after considering all relevant factors, the Group has control, joint control or significant influence over an entity or arrangement. Significant influence includes situations of collective control (see note 35 (a)). Other companies may make different judgments regarding the same entity or arrangement. The most significant instance of such a judgment by the Group is in the determination that Escondida is a joint venture, based on the nature of significant commercial decisions, including capital expenditure, which require approval by both Rio Tinto and its partner BHP.

(x) Contingencies (note 30)
Disclosure is made of material contingent liabilities unless the possibility of any loss arising is considered remote based on the Group's judgment and legal advice. Contingent liabilities are quantified unless, in the Group's judgment, the amount cannot be reliably estimated.

The unit of account for claims is the matter taken as a whole and therefore when a provision has been recorded for the best estimate of the cost to settle the obligation there is no further contingent liability component. This means that when a provision is recognised for the best estimate of the expenditure required to settle the present obligation from a single past event, a further contingent liability is not reported for the maximum potential exposure in excess of that already provided. We also consider the requirements of IAS 1 and provide disclosure when there is a significant risk the value of assets or liabilities could materially change within the next 12 months.

(xi) Exclusions from underlying earnings (note 2)
As set out in note 2, certain items are excluded from net earnings/(loss) in arriving at underlying earnings in each period irrespective of materiality. In addition, there is a final judgmental category which includes, where applicable, other credits and charges that, individually or in aggregate if of a similar type, are of a nature or size to require exclusion in order to provide additional insight into underlying business performance.

The exclusion of provisions for obligations, including impact of change in discount rate in respect of legacy operations was the only application of the judgmental category in 2020.

(xii) Funding of Oyu Tolgoi
As described in note 32(l), Turquoise Hill, a 50.8% subsidiary of Rio Tinto, has funded common share investments in Oyu Tolgoi on behalf of Erdenes Oyu Tolgoi LLC ("Erdenes"), a company controlled by the Mongolian government, which owns the 34% non-controlling interest in Oyu Tolgoi not owned by Turquoise Hill. Funded amounts earn interest at an annual effective rate of LIBOR plus 6.5% and are repayable via a pledge over Erdenes' share of future Oyu Tolgoi common share dividends; Erdenes also has the right to reduce the outstanding balance by making payments directly to Turquoise Hill.

Since these funding balances, including accrued interest, are expected to be recovered principally through dividends from Oyu Tolgoi or sale by Erdenes of its interests in Oyu Tolgoi, related amounts are recorded as a reduction to the net carrying value of non-controlling interests.

(xiii) Pilbara Iron Arrangements
The arrangements described in note 33 (c) to the accounts permit each of the partners to the joint operation to request the other to construct assets on their tenure to increase the capacity of the rail and port infrastructure network. The requesting partner's (Asset User's) share of the capacity of the network will increase by the capacity of the newly constructed asset but, generally, that capacity may be provided from any of the network assets. The Asset User will pay an annual charge (Committed Use Charge – "CUC") over a contractually specified period irrespective of usage of the network. The constructing partner (Asset Owner) has an ongoing obligation to make available capacity from those assets and to maintain the assets in good working order as required under relevant State Agreements and associated tenure.

The Group considered whether the CUC arrangements give rise to a lease between the Asset Owner and the Asset User. The conclusion that they do not is because there is no specified asset; rather the Asset User has a first priority right to the capacity in the CUC asset. This treatment was grandfathered on adoption of IFRS 16 "Leases" on 1 January 2019, following assessment under the preceding standards IAS 17 "Leases" and IFRIC 4 "Determining whether an arrangement contains a lease", with no change to the conclusion under IFRS 16 for subsequent expenditure subject to the existing CUC arrangements. Management considers that these arrangements are unique and has used judgment to apply the principles of IFRS to the accounting for the arrangements as described above. The obligation of the Asset Owner to make capacity available is fulfilled over time and not at a point in time. The CUC arrangement is therefore an executory contract as defined under IAS 37 "Provisions, contingent liabilities and contingent assets" whereby neither party has performed any of its obligations, or both parties have partially performed their obligations to an equal extent, and so the CUC payments are expensed as incurred. An alternative interpretation of the fact pattern could have resulted in a gross presentation in the Group's balance sheet with an asset and a corresponding liability to reflect the present value of the CUC payments. The Asset User is a wholly owned subsidiary of Rio Tinto, whereas the Asset Owner is a joint operation. This impact would be some US$2 billion (calculated on the basis of grossing up the tax written down value of the CUC assets). Other methods of calculating the gross up might give rise to different numbers.

Notes to the 2020 Financial Statements

1 Principal accounting policies continued

(xiv) Estimation of obligations for post-employment costs (note 42)
The value of the Group's obligations for post-employment benefits is dependent on the amount of benefits that are expected to be paid out, discounted to the balance sheet date. The discount rate is a key assumption and is based upon the yields on high quality corporate bonds in the relevant currency which have durations consistent with the term of the obligations. The discount rate will vary from one period to another in line with movements in corporate bond yields, but at any given measurement date there is relatively little estimation uncertainty. This rate is also used to calculate the interest cost on obligations and interest income on plan assets.

The following key assumptions are used to calculate the estimated benefit: future pay increases to be received by members of final pay plans, the level of inflation (for those benefits that are subject to some form of inflation protection), current mortality rates and future improvements in mortality rates. The assumption regarding future inflation is based on market yields on inflation linked instruments, where possible, combined with consensus views. The Group reviews the actual mortality rates of retirees in its major pension plans on a regular basis and uses these rates to set its current mortality assumptions. It also uses its judgment with respect to allowances for future improvements in longevity having regard to standard improvement scales in each relevant country and after taking external actuarial advice.

Most of the Group's defined benefit pension plans are closed to new entrants and the majority of the obligations relate to former employees. The carrying value of the Group's post-employment obligations is therefore less sensitive to assumptions about future salary increases than it is to assumptions regarding future inflation.

Details of the key assumptions, how they have moved since the previous balance sheet date and the sensitivity of the carrying value to changes in the assumptions are set out in note 42.

2 Operating segments

Rio Tinto's management structure is based on the principal product groups (PG) together with global support functions whose leaders make up the Executive Committee. The Executive Committee members each report directly to the Chief Executive of Rio Tinto who is the chief operating decision maker (CODM) and is responsible for allocating resources and assessing performance of the operating segments. The CODM monitors the performance of each product group based on a number of measures, including underlying earnings, underlying EBITDA, capital expenditure, net cash generated from operating activities and free cash flow. Finance costs and net debt are managed on a group-wide basis.

The Group's reportable segments are based on principal product groups and are consistent with the internal reporting structure as at 31 December 2020. Business units (BUs) are allocated to PGs based on management structure. The reportable segments are described as follows:

Reportable segment	Principal activities
Iron Ore	Iron ore mining and salt and gypsum production in Western Australia.
Aluminium	Bauxite mining; alumina refining; aluminium smelting.
Copper & Diamonds	Mining and refining of copper, gold, silver, molybdenum and other by-products; exploration activities. Also includes diamond mining, sorting and marketing.
Energy & Minerals	Includes businesses with products such as uranium, borates, titanium dioxide feedstock together with the Iron Ore Company of Canada (iron ore mining and iron concentrate/pellet production) and the Simandou iron ore project, which are the responsibility of the Energy & Minerals product group chief executive. The Group's coal operations were included in Energy & Minerals until the divestment of these assets, which was completed during 2018.

Following a reassessment in 2020 of the Group's reportable segments, Other Operations, which included our 100% interest in the Gove alumina refinery (in closure), Rio Tinto Marine, and the remaining legacy liabilities of Rio Tinto Coal Australia are separately shown from the above reportable segments as none of these operations met the quantitative thresholds to be reportable segments. The Underlying earnings and Underlying EBITDA of Rio Tinto Marine are attributed back to the product groups. Legacy operations are not an operating segment as they do not earn revenue and are not expected to do so in the future. Comparatives have been adjusted to ensure comparability with the current year disclosures.

Other items includes amounts in relation to Group functions, unallocated corporate costs and central items.

The financial information by business unit provided on pages 306-309 of these financial statements provides additional voluntary disclosure which the Group considers useful to the users of the financial statements.

Gross product sales	2020 US$m	2019 US$m	2018 US$m
Iron Ore	**27,508**	24,075	18,731
Aluminium	**9,314**	10,340	12,191
Copper & Diamonds	**5,428**	5,815	6,468
Energy & Minerals	**5,014**	5,150	5,451
Reportable segments total	**47,264**	45,380	42,841
Other Operations	**18**	18	9
Inter-segment transactions	**(264)**	(31)	(15)
Product group total	**47,018**	45,367	42,835
Share of equity accounted unit sales and adjustments for intra-subsidiary/equity accounted units sales	**(2,407)**	(2,202)	(2,313)
Consolidated sales revenue per income statement	**44,611**	43,165	40,522

Gross product sales includes the Group's proportionate share of product sales by equity accounted units (after adjusting for sales to subsidiaries) of US$2,441 million (2019: US$2,234 million; 2018: US$2,354 million) which are not included in consolidated sales revenue. Consolidated sales revenue includes subsidiary sales of US$34 million (2019: US$32 million; 2018: US$41 million) to equity accounted units which are not included in gross product sales.

Capital expenditure	2020 US$m	2019 US$m	2018 US$m
Iron Ore	**2,941**	1,741	1,302
Aluminium	**1,085**	1,456	1,373
Copper & Diamonds	**1,864**	2,087	2,150
Energy & Minerals	**428**	551	442
Reportable segments total	**6,318**	5,835	5,267
Other Operations	**2**	(4)	12
Product group total	**6,320**	5,831	5,279
Other items	**79**	64	65
Less: capital expenditure of equity accounted units	**(255)**	(456)	(500)
Capital expenditure per financial information by business unit	**6,144**	5,439	4,844
Add back: proceeds from disposal of property, plant and equipment[a]	**45**	49	586
Capital expenditure per cash flow statement	**6,189**	5,488	5,430

(a) In 2018, proceeds from disposal of property, plant and equipment included US$508 million received on the sale of surplus land at Kitimat.

Capital expenditure for reportable segments comprises the net cash outflow on purchases less disposals of property, plant and equipment, capitalised evaluation costs and purchases less disposals of other intangible assets. The details provided include 100% of subsidiaries' capital expenditure and Rio Tinto's share of the capital expenditure of joint operations and equity accounted units.

Notes to the 2020 Financial Statements

Depreciation and amortisation	2020 US$m	2019 US$m	2018 US$m
Iron Ore	**1,838**	1,723	1,702
Aluminium	**1,191**	1,312	1,122
Copper & Diamonds	**1,153**	1,320	1,317
Energy & Minerals	**392**	428	455
Reportable segments total	**4,574**	4,783	4,596
Other Operations	**199**	177	26
Product group total	**4,773**	4,960	4,622
Other items	**82**	77	43
Less: depreciation and amortisation of equity accounted units	**(576)**	(653)	(650)
Depreciation and amortisation per note 4	**4,279**	4,384	4,015

Product group depreciation and amortisation for reportable segments include 100% of subsidiaries' depreciation and amortisation and Rio Tinto's share of the depreciation and amortisation of equity accounted units. Rio Tinto's share of the depreciation and amortisation charge of equity accounted units is deducted to arrive at depreciation and amortisation as shown in note 4. These figures do not include impairment charges and reversals, which are excluded from underlying earnings.

Tax charge/(credit)	2020 US$m	2019 US$m	2018 US$m
Iron Ore	**5,035**	4,198	2,830
Aluminium	**320**	211	532
Copper & Diamonds	**(238)**	65	118
Energy & Minerals	**360**	411	500
Reportable segments total	**5,477**	4,885	3,980
Other Operations	**(7)**	(51)	(51)
Inter-segment transactions	**(24)**	(2)	—
Product group total	**5,446**	4,832	3,929
Other items	**(179)**	(67)	(276)
Exploration and evaluation not attributed to product groups	**(34)**	(83)	(38)
Net finance costs	**(38)**	(144)	(174)
	5,195	4,538	3,441
Tax (credit)/charge excluded from underlying earnings	**(204)**	(391)	801
Taxation per income statement	**4,991**	4,147	4,242

Tax charge/(credit) excludes amounts relating to equity accounted units. Further information on the tax charge/(credit) excluded from underlying earnings is provided in the section "Underlying earnings", below.

Underlying EBITDA	2020 US$m	2019 US$m	2018 US$m
Iron Ore	**18,837**	16,098	11,378
Aluminium	**2,152**	2,285	3,095
Copper & Diamonds	**2,172**	2,073	2,776
Energy & Minerals	**1,646**	1,762	2,140
Reportable segments total	**24,807**	22,218	19,389
Other Operations	**—**	(77)	(70)
Inter-segment transactions	**(94)**	(9)	—
Product group total	**24,713**	22,132	19,319
Central pension costs, share-based payments and insurance	**72**	59	(128)
Restructuring, project and one-off costs	**(133)**	(183)	(272)
Central costs	**(500)**	(496)	(552)
Exploration and evaluation not attributed to product groups	**(250)**	(315)	(231)
Underlying EBITDA	**23,902**	21,197	18,136
Impairment charges	**(1,272)**	(3,487)	(132)
Gains/(losses) on embedded commodity derivatives not qualifying for hedge accounting (including exchange)	**6**	(260)	279
Net (losses)/gains on consolidation and disposal of interests in businesses	**—**	(291)	4,622
Change in closure estimates (non-operating and fully impaired sites)	**(401)**	—	(376)
Gain on sale of wharf and land in Kitimat, Canada	**—**	—	602
Change in other exclusions	**—**	(171)	—
Items excluded from underlying EBITDA	**(1,667)**	(4,209)	4,995
Depreciation and amortisation in subsidiaries and equity accounted units	**(4,650)**	(4,925)	(4,559)
Taxation and finance items in equity accounted units	**(443)**	(296)	(372)
Finance items	**(1,751)**	(648)	(33)
Profit before taxation	**15,391**	11,119	18,167

2 Operating segments continued

Underlying earnings	2020 US$m	2019 US$m	2018 US$m
Iron Ore	**11,398**	9,638	6,531
Aluminium	**471**	599	1,347
Copper & Diamonds	**763**	554	1,054
Energy & Minerals	**577**	611	995
Reportable segments total	**13,209**	11,402	9,927
Other Operations	**(54)**	(89)	(102)
Inter-segment transactions	**(32)**	(3)	—
Product group total	**13,123**	11,310	9,825
Central pension costs, share-based payments and insurance	**81**	60	(90)
Restructuring, project and one-off costs	**(108)**	(94)	(190)
Central costs	**(418)**	(550)	(410)
Exploration and evaluation not attributed to product groups	**(216)**	(231)	(193)
Net finance costs	**(14)**	(122)	(134)
Underlying earnings	**12,448**	10,373	8,808
Items excluded from underlying earnings	**(2,679)**	(2,363)	4,830
Net earnings attributable to owners of Rio Tinto per income statement	**9,769**	8,010	13,638

Underlying EBITDA and underlying earnings are reported by Rio Tinto to provide greater understanding of the underlying business performance of its operations and to enhance comparability of reporting periods.

The measures of underlying EBITDA and underlying earnings, in conjunction with net cash generated from operating activities and capital expenditure (net of proceeds on disposals), are used by the Chief Executive of Rio Tinto to assess the performance of the product groups. Underlying earnings and net earnings both represent amounts net of tax attributable to owners of Rio Tinto.

The following items are excluded from net earnings in arriving at underlying earnings in each period irrespective of materiality:

- Net gains/(losses) on disposal of interests in businesses.
- Impairment charges and reversals.
- Profit/(loss) after tax from discontinued operations.
- Exchange and derivative gains and losses. This exclusion includes exchange gains/(losses) on external net debt and intragroup balances, unrealised gains/(losses) on currency and interest rate derivatives not qualifying for hedge accounting, unrealised gains/(losses) on certain commodity derivatives not qualifying for hedge accounting, and unrealised gains/(losses) on embedded derivatives not qualifying for hedge accounting.

In addition, there is a final judgmental category which includes, where applicable, other credits and charges that, individually or in aggregate with similar items, are of a nature or size to require exclusion in order to provide additional insight into underlying business performance.

Underlying EBITDA excludes the EBITDA impact of the same items that are excluded from underlying earnings.

Product group underlying earnings include the Group's share of the underlying earnings of subsidiaries and equity accounted units stated before finance items but after the amortisation of discount on provisions.

Rio Tinto's share of the underlying earnings of equity accounted units amounted to US$656 million in 2020 (2019: US$302 million; 2018: US$513 million). This amount is attributable as follows: US$640 million profit to the Copper & Diamonds product group and US$16 million profit to other product groups (2019: US$292 million profit to the Copper & Diamonds product group and US$10 million profit to other product groups; 2018: US$476 million profit to the Copper & Diamonds product group and US$37 million profit to other product groups). These amounts are included in underlying earnings and include the underlying earnings of the Group's tolling entities which process alumina. Tolling entities recharge the majority of their costs and generally have minimal earnings.

Notes to the 2020 Financial Statements

Reconciliation of underlying earnings to net earnings

	Pre-tax[h] 2020 US$m	Taxation 2020 US$m	Non-controlling interests 2020 US$m	Net amount 2020 US$m	Net amount 2019 US$m	Net amount 2018 US$m
Underlying earnings	**18,282**	**(5,195)**	**(639)**	**12,448**	10,373	8,808
Items excluded from underlying earnings						
Impairment charges (note 6)	**(1,243)**	**128**	**—**	**(1,115)**	(1,658)	(104)
Net (losses)/gains on consolidation and disposal of interests in businesses[a]	**—**	**—**	**—**	**—**	(291)	3,996
Exchange and derivative gains/(losses):						
– Exchange (losses)/gains on external net debt, intragroup balances and derivatives[b]	**(1,138)**	**5**	**8**	**(1,125)**	51	550
– Losses on currency and interest rate derivatives not qualifying for hedge accounting[c]	**(142)**	**(19)**	**4**	**(157)**	(59)	(48)
– Gains/(losses) on embedded commodity derivatives not qualifying for hedge accounting[d]	**33**	**(10)**	**(5)**	**18**	(192)	202
Net losses from movements to closure estimates (non-operating and fully impaired sites)[e]	**(401)**	**100**	**1**	**(300)**	—	(335)
Gain relating to surplus land at Kitimat[f]	**—**	**—**	**—**	**—**	—	569
Other exclusions[g]	**—**	**—**	**—**	**—**	(214)	—
Total excluded from underlying earnings	**(2,891)**	**204**	**8**	**(2,679)**	(2,363)	4,830
Net earnings	**15,391**	**(4,991)**	**(631)**	**9,769**	8,010	13,638

(a) In 2019, the net loss mainly related to the disposal of our entire 68.62% stake in Rössing Uranium on 16 July 2019 for which we recorded a pre-tax loss of US$289 million (US$289 million net of tax). In 2018, the net gain related mainly to the sales of the Hail Creek coal mine and the Kestrel underground coal mine, which both completed on 1 August 2018, the sale of the Dunkerque aluminium smelter on 14 December 2018 and the sale of Grasberg on 21 December 2018. The net gain in 2018 also includes a gain on consolidation recognised on the formation on 10 May 2018 of ELYSIS, a new joint venture to develop a carbon-free smelting process. Refer to note 36 for further details in respect of these transactions.

(b) Exchange losses on external net debt and intragroup balances comprise post-tax foreign exchange losses on intragroup balances of US$1,330 million partially offset by post-tax gains of US$205 million on external net debt, primarily as a result of strengthening of the Australian dollar against the US dollar. In 2019, exchange gains on external net debt and intragroup balances comprise post-tax foreign exchange gains on net debt of US$60 million and post-tax losses of US$9 million on intragroup balances, primarily as a result of the Canadian dollar strengthening against the US dollar. From 1 January 2019, all foreign exchange gains and losses relating to net debt are excluded from underlying earnings. In 2018 and previous years, foreign exchange gains and losses on non-US dollar cash held in US dollar functional currency entities was included within underlying earnings. The impact of this change on the reported 2018 comparatives is insignificant, and therefore the comparatives have not been restated. In 2018 the net exchange gains comprise post-tax foreign exchange losses of US$386 million on US dollar denominated net debt and US$936 million gains on intragroup balances.

(c) Valuation changes on currency and interest rate derivatives, which are ineligible for hedge accounting, other than those embedded in commercial contracts, and the currency revaluation of embedded US dollar derivatives contained in contracts held by entities whose functional currency is not the US dollar.

(d) Valuation changes on derivatives, embedded in commercial contracts, that are ineligible for hedge accounting, but for which there will be an offsetting change in future Group earnings. Mark-to-market movements on commodity derivatives entered into with the commercial objective of achieving spot pricing for the underlying transaction at the date of settlement are included in underlying earnings.

(e) In 2020 the pre-feasibility study for the Gove refinery closure was completed, resulting in an increase to the closure provision. As a non-operating asset, this increase was recognised through the income statement. Also in 2020, the feasibility study for the Argyle mine closure was completed, resulting in a decrease to the closure provision. As the assets at Argyle had previously been fully impaired this decrease was recognised through the income statement, in line with previous movements to the closure provision. This amount also includes an increase in Diavik's closure provision to reflect the latest findings from the ongoing Pre-Feasibility Study, recognised through the incomes statement as Diavik was fully impaired during the year. It also includes the net earnings impact (US$138 million loss) in respect of increases to these closure provisions following a reduction to the closure discount rate to 1.5%.
In 2018, the pre-feasibility study for the Argyle mine closure was completed, resulting in an increase to the closure provision. As the assets at Argyle had previously been fully impaired, this increase was not capitalised and was instead recognised in the income statement. Also in 2018, the feasibility study for the closure of the Ranger Project Area at Energy Resources of Australia (ERA) was finalised, resulting in an increase to the closure provision. As the assets of ERA had been fully impaired, this increase was recognised in the income statement. The charge was excluded from underlying earnings.

(f) In November 2018, Rio Tinto completed the lease and sale of a wharf and land in Kitimat. The resulting gain on disposal of property, plant and equipment and other income were both excluded from underlying earnings on the grounds of materiality.

(g) In 2019, other exclusions included provisions for obligations in respect of legacy operations of US$246 million (loss of US$233 million after tax), partially offset by the write-back of a net realisable value provision in respect of low grade stockpile inventories at Oyu Tolgoi of US$75 million (gain of US$19 million after tax and non-controlling interests). As a result of increased uncertainty over timing of production from the Oyu Tolgoi underground project (refer to note 6), we expected to utilise low grade stockpiles sooner than previously forecast. This was excluded from underlying earnings, consistent with the related impairment charge recognised in 2019.

(h) Exclusions from underlying earnings relating to equity accounted units are stated after tax and are included in the column "Pre-tax".

3 Operating segments – additional information

Consolidated sales revenue by destination[a]

	2020 %	2019 %	2018 %	2020 US$m	2019 US$m	2018 US$m
China	**58.1**	51.3	44.6	**25,940**	22,135	18,061
Asia (excluding China and Japan)	**10.2**	10.6	11.5	**4,536**	4,558	4,665
United States of America	**10.9**	14.2	15.6	**4,867**	6,125	6,337
Japan	**7.5**	8.9	9.6	**3,354**	3,855	3,873
Europe (excluding UK)	**5.9**	6.0	9.3	**2,623**	2,610	3,788
Canada	**2.9**	3.3	3.3	**1,289**	1,478	1,330
Australia	**1.7**	1.7	1.8	**745**	737	720
UK	**0.5**	0.6	0.7	**242**	248	264
Other countries	**2.3**	3.4	3.6	**1,015**	1,419	1,484
Consolidated sales revenue	**100**	100	100	**44,611**	43,165	40,522

(a) Consolidated sales revenue by geographical destination is based on the ultimate country of destination of the product, if known. If the eventual destination of the product sold through traders is not known then revenue is allocated to the location of the product at the time when control is transferred. Rio Tinto is domiciled in both the UK and Australia.

Consolidated sales revenue by product

Consolidated sales revenues of the Group are derived from the following products sold to external customers:

	Revenue from contracts with customers 2020 US$m	Other revenue[a] 2020 US$m	Consolidated sales revenue 2020 US$m
Iron ore	**28,202**	**1,000**	**29,202**
Aluminium, Alumina and Bauxite	**9,092**	**54**	**9,146**
Copper	**1,721**	**64**	**1,785**
Industrial minerals	**2,054**	**(3)**	**2,051**
Gold	**471**	**6**	**477**
Diamonds	**459**	**—**	**459**
Uranium[b]	**299**	—	**299**
Other[b]	**1,194**	**(2)**	**1,192**
Consolidated sales revenue	**43,492**	**1,119**	**44,611**
Share of equity accounted unit sales and intra-subsidiary/equity accounted unit sales			**2,407**
Gross product sales			**47,018**

	Revenue from contracts with customers 2019 US$m	Other revenue[a] 2019 US$m	Consolidated sales revenue 2019 US$m	Revenue from contracts with customers 2018 US$m	Other revenue[a] 2018 US$m	Consolidated sales revenue 2018 US$m
Iron ore	25,516	229	25,745	19,888	(21)	19,867
Aluminium, Alumina and Bauxite	10,207	(32)	10,175	12,041	(22)	12,019
Copper	2,030	(7)	2,023	2,420	(32)	2,388
Coal	—	—	—	986	3	989
Industrial minerals	2,251	(12)	2,239	2,168	—	2,168
Gold	667	2	669	869	—	869
Diamonds	619	—	619	695	—	695
Uranium[b]	375	—	375	415	—	415
Other[b]	1,322	(2)	1,320	1,112	—	1,112
Consolidated sales revenue	42,987	178	43,165	40,594	(72)	40,522
Share of equity accounted unit sales and intra-subsidiary/equity accounted unit sales			2,202			2,313
Gross product sales			45,367			42,835

(a) Certain of the Group's products may be provisionally priced at the date revenue is recognised. The change in value of the provisionally priced receivables is based on relevant forward market prices and is included in "Other revenue" above.

(b) Uranium sales revenues were previously included within "Other". These sales revenues are now presented separately and the 2018 and 2019 comparatives have been adjusted to ensure comparability.

Notes to the 2020 Financial Statements

Non-current assets other than excluded items[a]

The total of non-current assets other than excluded items is shown by location below.

	2020 US$m	2019 US$m
Australia	**32,290**	27,944
Canada	**14,666**	14,644
Mongolia	**10,285**	9,187
United States of America	**6,090**	5,459
Africa	**3,294**	3,583
South America	**2,718**	2,652
Europe (excluding France and the UK)	**157**	193
UK	**117**	158
France	**55**	64
Other countries	**1,008**	1,314
Total non-current assets other than excluded items	**70,680**	65,198
Non-current assets excluded from analysis above:		
Deferred tax assets	**3,385**	3,102
Other financial assets[b]	**829**	635
Quasi equity loans to equity accounted units[b]	**112**	113
Tax recoverable	**4**	5
Receivables and other assets	**1,525**	1,446
Total non-current assets per balance sheet	**76,535**	70,499

(a) Allocation of non-current assets by country is based on the location of the business units holding the assets. It includes investments in equity accounted units totalling US$3,652 million (2019: US$3,858 million) which represents the Group's share of net assets excluding quasi equity loans shown separately above.

(b) Loans to equity accounted units comprise quasi equity loans of US$112 million (2019: US$113 million) included in "Investments in equity accounted units" on the face of the balance sheet and non-current non-quasi equity loans of US$1 million (2019: US$39 million) shown within "Other financial assets".

4 Net operating costs (excluding items shown separately)

	Note	2020 US$m	2019 US$m	2018 US$m
Raw materials, consumables, repairs and maintenance		**8,490**	9,485	10,613
Amortisation of intangible assets	13	**161**	133	133
Depreciation of property, plant and equipment	14	**4,118**	4,251	3,882
Employment costs	5	**4,770**	4,522	4,728
Shipping and other freight costs[a]		**2,088**	2,257	2,580
(Increase)/decrease in finished goods and work in progress		**(47)**	42	(186)
Royalties		**2,763**	2,501	2,117
Amounts charged by equity accounted units[b]		**958**	1,136	1,200
Net foreign exchange losses/(gains)		**300**	(52)	(56)
Other external costs[a]		**3,083**	3,627	3,184
Loss/(gain) on sale of property, plant and equipment[c]		**50**	31	(506)
Provisions (including exchange differences on provisions)	25	**894**	753	1,011
Research and development		**45**	45	45
Costs included above capitalised or shown separately as exploration and evaluation costs[d]		**(708)**	(651)	(589)
Other operating income		**(711)**	(773)	(1,041)
Net operating costs (excluding items shown separately)		**26,254**	27,307	27,115

(a) In 2020, other external costs include US$314 million (2019: US$327 million) of short-term lease costs and US$30 million (2019: US$15 million) of variable lease costs recognised in the income statement in accordance with IFRS 16 "Leases". Refer to note 22. In 2018, net operating costs included US$787 million of operating lease expenses under IAS 17 "Leases". Costs for leases of dry bulk vessels (which included costs for crewing services) were included within "Shipping and other freight costs" and other lease costs were included within "Other external costs".

(b) Amounts charged by equity accounted units relate to toll processing and also include purchases from equity accounted units of bauxite and aluminium which are then processed by the product group or sold to third parties. Generally, purchases are in proportion to the Group's share of the equity accounted unit but in 2020, US$129 million (2019: US$291 million; 2018: US$332 million) related to purchases of the other investors' share of production.

(c) In 2018, includes a US$549 million pre-tax gain on the sale of property, plant and equipment at Kitimat. Refer to note 2.

(d) In 2020, US$537 million (2019: US$469 million; 2018: US$400 million) of operating costs were capitalised and US$171 million (2019: US$182 million; 2018: US$189 million) of costs were shown separately within "Exploration and evaluation costs" in the Group income statement.

5 Employment costs

	Note	2020 US$m	2019 US$m	2018 US$m
Total employment costs				
– Wages and salaries		**4,141**	3,923	4,154
– Social security costs		**330**	328	336
– Net post-retirement charge	42	**469**	384	532
– Share-based payment charge	41	**138**	123	122
		5,078	4,758	5,144
Less: charged within provisions[a]	25	**(308)**	(236)	(416)
Total employment costs	4	**4,770**	4,522	4,728

(a) Amounts included above relate to provisions for pensions, post-retirement healthcare, long service leave and other employee entitlements. These are included in "Provisions (including exchange differences on provisions)" in note 4.

6 Impairment charges

	Note	Pre-tax amount 2020 US$m	Taxation 2020 US$m	Non-controlling interest 2020 US$m	Net amount 2020 US$m	Pre-tax amount 2019 US$m	Pre-tax amount 2018 US$m
Aluminium – Pacific Aluminium		**(489)**	**17**	**—**	**(472)**	—	
Aluminium – Sohar		**(220)**	**—**	**—**	**(220)**	—	—
Aluminium – ISAL		**(93)**	**(38)**	**—**	**(131)**	(109)	(123)
Copper & Diamonds – Diavik		**(441)**	**149**	**—**	**(292)**	—	
Copper & Diamonds – Oyu Tolgoi		**—**	**—**	**—**	**—**	(2,240)	—
Aluminium - Yarwun alumina refinery		**—**	**—**	**—**	**—**	(1,138)	—
Energy & Minerals – Rössing		**—**	**—**	**—**	**—**	—	(9)
Total impairment charge		**(1,243)**	**128**	**—**	**(1,115)**	(3,487)	(132)
Allocated as:							
Intangible assets	13	**(4)**				(1)	(2)
Property, plant and equipment	14	**(900)**				(3,486)	(130)
Investment in equity accounted units ("EAUs")		**(339)**				—	—
Total impairment charge		**(1,243)**				(3,487)	(132)
Comprising:							
Impairment charges of consolidated balances					**(904)**	(3,487)	(132)
Impairment charges related to EAUs (pre-tax)					**(368)**	—	—
Total impairment charges in the financial information by business unit (page 306)					**(1,272)**	(3,487)	(132)
Taxation (including related to EAUs)					**157**	323	25
Non-controlling interests					**—**	1,506	3
Total impairment in the income statement					**(1,115)**	(1,658)	(104)

Aluminium – Pacific Aluminium, Australia and New Zealand

On 9 July 2020, we announced the conclusion of the NZAS strategic review and gave Meridian Energy 14 months' notice for the termination of the power contract. As a result of the decision to wind-down operations an impairment trigger was identified. The net present value of post-tax cash flows over the remaining life for this cash-generating unit (CGU) was negative and therefore the non-current assets of the smelter were fully impaired. On 14 January 2021 a new agreement was reached with Meridian Energy in relation to power prices, allowing NZAS to continue operating the Tiwai Point aluminium smelter until December 2024. The extension allows time for detailed closure studies to be completed and for NZAS to support the government and Southland community in planning for the future. We have evaluated and concluded that these updated circumstances are not a trigger for impairment reversal.

The high operating costs and challenging outlook for the aluminium industry have also resulted in impairment triggers being identified at the Bell Bay aluminium smelter in Tasmania, Australia and at Boyne Smelter in Queensland, Australia at 30 June 2020. Bell Bay has a power contract to 2025 with Hydro Tasmania and with the current market context the forecast net present value of cash flows over that period was negative. The property, plant and equipment of the Bell Bay smelter was therefore fully impaired. We determined the recoverable amount for our share of the Boyne Smelter CGU which also includes the Gladstone Power Station as US$273 million based on post-tax cash flows expressed in real terms and discounted at 6.6%. Accordingly our share of impairment after tax in the equity accounted unit was US$119 million (US$148 million pre-tax) related to the smelter and US$26 million (US$36 million pre-tax) related to the power station.

Aluminium – Sohar

In 2020, the challenging outlook for the Middle Eastern aluminium industry was identified as an impairment trigger at the Sohar aluminium smelter in Oman, an equity accounted unit of the Group.

At 30 September 2020 we determined the recoverable amount for our share of the Sohar CGU to be US$258 million based on post-tax cash flows expressed in real terms and discounted at 7.6%. Accordingly our share of impairment after tax in the equity accounted unit was US$220 million.

Notes to the 2020 Financial Statements

6 Impairment charges continued

Aluminium – ISAL smelter, Iceland

In 2018, we reached agreement with Hydro to sell the ISAL smelter in Iceland, our 53.3% interest in the Aluchemie anode plant in the Netherlands and our 50% share in the Aluminium fluoride plant in Sweden (ISAL). The anticipated headline sales price of US$345 million was lower than the carrying value of these assets, leading us to recognise an impairment charge of US$123 million. This was based on a fair value less cost of disposal (FVLCD) model, against property, plant and equipment and acquired software. Subsequently, Hydro withdrew its offer.

In 2019, these assets no longer met the accounting criteria to be classified as assets held for sale. Accordingly these non-current assets were tested for impairment. We calculated the recoverable amount for the CGUs based on the IAS 36 value-in-use methodology by reference to the net present value of post-tax cash flows expressed in real terms and discounted at 6.9%. These were US$302 million for the CGU comprising ISAL and Aluchemie and US$46 million for Alufluor. This resulted in a pre-tax impairment charge of US$109 million allocated to property, plant and equipment and intangibles in the ISAL and Aluchemie CGU.

In February 2020 we announced a strategic review of the ISAL smelter in Iceland and the challenging market conditions were identified as an impairment trigger. The net present value of cash flows projected over the remaining life for this CGU did not support retaining any carrying value for the non-current assets of the CGU, which were fully impaired following a pre-tax impairment charge of US$204 million in the first half of 2020.

During subsequent negotiations Landsvirkjun tabled an improved offer for power delivery, restoring the competitiveness of the smelter over its remaining life. We have concluded these updated circumstances, represent an indicator of partial impairment reversal. When combined with improved pricing since the half year we have calculated a recoverable amount of US$139 million based on the IAS 36 fair value less cost of disposal (FVLCD) methodology, discounted using a post-tax discount rate of 6.6% expressed in real terms. As a result we have reversed previously recorded pre-tax impairment of US$111 million reflected as an adjustment to the impairment charge recognised in the first half of 2020.

Copper & Diamonds – Diavik, Canada

The COVID-19 pandemic has significantly disrupted the global demand for diamonds with many countries restricting the movement of citizens and closing retail outlets. Our 40% joint venture partner at the Diavik diamond mine filed for creditor protection in April 2020 and has since defaulted on its cash calls. Together these circumstances were identified as an impairment trigger. The net present value of post-tax cash flows projected over the remaining life of the Diavik diamond mine to 2025 did not support retaining any carrying value for the property, plant and equipment and intangible assets of the CGU, which have therefore been fully impaired.

Copper & Diamonds – Oyu Tolgoi, Mongolia

On 16 July 2019 we announced that the first sustainable production from the Oyu Tolgoi underground project could be delayed by 16 to 30 months compared with the original feasibility study guidance in 2016. We also announced that development capital spend for the project may increase by between US$1.2 billion and US$1.9 billion in excess of the US$5.3 billion previously disclosed.

We identified these matters as an impairment trigger and prepared an assessment of the recoverable amount for the CGU at 30 June 2019 using a FVLCD model, as prescribed by IAS 36 "Impairment of Assets".

In arriving at a recoverable amount, as at 30 June 2019, we estimated post-tax cash flows expressed in real terms over the current life of mine plus anticipated future expansions, utilising mineral resources. The mineral resources incorporate almost two billion tonnes of ore, which contributes approximately 20% to the total recoverable amount. We discounted the cash flows using a post-tax discount rate of 8.3% expressed in real terms. Due to the inputs used, the recoverable amount of the Oyu Tolgoi CGU was classified as level 3 under the fair value hierarchy.

At 30 June 2019 we determined the recoverable amount to be US$8.3 billion on a post-tax basis which resulted in a pre-tax impairment charge of US$2.2 billion (100% basis). This was allocated to mining properties and the underground development assets under construction. The net adjustment to tax represented an increase to deferred tax assets of US$320 million for the temporary difference corresponding to the impairment and a decrease in deferred tax assets of US$359 million for tax losses that were expected to expire without utilisation.

Since June 2019, the carrying value of Oyu Tolgoi on the same basis has increased to US$10.1 billion (100% basis), mainly due to capital expenditure completed in the interim. The execution of this capital expenditure also results in a corresponding increase in the value of the asset over this period. Prior to completion of the underground project, the net present value of cash flows also increases by approximately US$1.1 billion per annum due to unwinding of the discount for the time value of money. Such valuation increases are not indicative of impairment reversal.

On 16 December 2020 we confirmed the completion of the Definitive Estimate and selection of a preferred development option for the Oyu Tolgoi underground project. Development capital assumptions of US$6.75 billion and forecast sustainable production by October 2022 incorporate the impacts of COVID-19. The latest information is within the range of assumptions used to calculate the CGU's recoverable amount in the most recent impairment test, described above, and is not indicative of an impairment loss. The next major milestone for the project development is the undercut, scheduled for mid-2021, which initiates the caving process. Study work also continues on the Panel 1 and Panel 2 sections of the underground, with initial recommendations expected mid-2021. These studies will also consider options and associated costs to recover the copper and gold contained within the pillars added to the mine design of Panel 0.

On 4 January 2021, the Government of Mongolia advised Rio Tinto that they were dissatisfied with the results of the Definitive Estimate and the funding implications for the sharing of economic benefits between the shareholders of Oyu Tolgoi LLC. The Government has also stressed the importance of achieving a comprehensive solution which addresses the social issues of importance to Mongolia, such as water usage and the tax matters which have been referred to International Arbitration. We are engaging with the Government in relation to the definitive estimate and are in active discussions with them to address and close all outstanding issues and increase the project's benefit to all stakeholders. Should future negotiations with the Government of Mongolia result in changes to the operating cash profile of the assets, an impairment test may be necessary.

The funding of equity contributions to the project have been accounted for in accordance with the accounting policy in note 1 (xii) and additional information regarding the lending certificates and non-controlling interests are provided in note 32.

Aluminium – Yarwun alumina refinery

In 2019, our annual impairment assessment of the Yarwun CGU resulted in a pre-tax impairment charge of US$1,138 million to property, plant and equipment as a result of this CGU being assessed on a stand-alone basis for the first time and a 30% year-on-year reduction in the spot price of alumina to US$275/t at 31 December 2019.

In 2020, we continued to monitor the Yarwun CGU closely for additional indicators of impairment given the limited headroom as a consequence of previous impairment, together with the sensitivity of the valuation to movements in the alumina price and headwinds faced by the aluminium sector since the onset of the COVID-19 pandemic.

We have considered the impact of recent volatility in the alumina spot price through 2020, noting its recovery from a low of US$226/t in June 2020 to over US$300/t by the end of the year, as well as valuation upside attributable to a reduction in input costs over the period under review. No impairment triggers have been identified in 2020 and the carrying value remains supportable.

7 Share of profit after tax of equity accounted units

	2020 US$m	2019 US$m	2018 US$m
Sales revenue: Rio Tinto share[a]	**2,490**	2,358	2,497
Operating costs	**(1,439)**	(1,812)	(1,656)
Profit before finance items and taxation	**1,051**	546	841
Finance items	**(59)**	(65)	(69)
Share of profit after tax of equity accounted units	**23**	10	14
Profit before taxation	**1,015**	491	786
Taxation	**(363)**	(190)	(273)
Profit for the year (Rio Tinto share)	**652**	301	513

(a) Sales revenue of equity accounted units includes sales by equity accounted units to Group subsidiaries.

Further information relating to the Group's interests in joint ventures and associates is given in notes 34 and 35.

8 Finance income and finance costs

	Note	2020 US$m	2019 US$m	2018 US$m
Finance income from equity accounted units		**4**	4	7
Other finance income (including bank deposits, net investment in leases, and other financial assets)		**137**	296	242
Total finance income		**141**	300	249
Interest on:				
– Financial liabilities at amortised cost (excluding lease liabilities) and associated derivatives		**(561)**	(816)	(775)
– Lease liabilities		**(50)**	(55)	(2)
Fair value movements:				
– Bonds designated as hedged items in fair value hedges		**(284)**	(185)	96
– Derivatives designated as hedging instruments in fair value hedges		**287**	181	(73)
Loss on early redemption of bonds[a]		**—**	—	(94)
Amounts capitalised	14	**340**	321	296
Total finance costs		**(268)**	(554)	(552)

(a) In 2018 we completed a bond buy-back programme of US$1.9 billion (nominal value). Loss on early redemption of bonds included a premium charge of US$72 million, unamortised debt issuance costs and fees of US$9 million, the write-off of the fair value hedge adjustment of US$16 million and the reclassification of a gain out of the cost of hedging reserve of US$3 million. Net interest paid in the Group cash flow statement included the payment of the premiums and the accelerated interest associated with the bond redemptions (US$80 million). There was no bond buy-back programme in 2020 or 2019.

Notes to the 2020 Financial Statements

9 Taxation

Taxation charge

	Note	2020 US$m	2019 US$m	2018 US$m
– Current		**5,169**	4,436	3,726
– Deferred	17	**(178)**	(289)	516
Total taxation charge		**4,991**	4,147	4,242

Prima facie tax reconciliation

	2020 US$m	2019 US$m	2018 US$m
Profit before taxation	**15,391**	11,119	18,167
Deduct: share of profit after tax of equity accounted units[a]	**(652)**	(301)	(513)
Add: impairment after tax of investments in equity accounted units [a]	**339**	—	—
Parent companies' and subsidiaries' profit before tax	**15,078**	10,818	17,654
Prima facie tax payable at UK rate of 19% (2019: 19%; 2018: 19%)	**2,865**	2,055	3,354
Higher rate of taxation on Australian underlying earnings	**1,779**	1,495	1,106
Impact of items excluded in arriving at underlying earnings[b]:			
– Impairment charges[c]	**44**	340	—
– Net gains and losses on consolidation and disposal of interests in businesses	**—**	55	(251)
– Exchange and gains/losses on derivatives	**260**	(22)	32
– Losses from increases to closure estimates (non-operating and fully impaired sites)	**(24)**	—	30
– Gain relating to surplus land at Kitimat	**—**	—	(81)
– Other exclusions	**—**	38	—
Impact of changes in tax rates and laws	**—**	1	47
Other tax rates applicable outside the UK and Australia on underlying earnings	**(80)**	(110)	(47)
Resource depletion and other depreciation allowances	**(34)**	(57)	(46)
Recognition of previously unrecognised deferred tax assets[d]	**(182)**	—	—
Write-down of previously recognised deferred tax assets[e]	**173**	42	13
Amounts under/(over) provided in prior years	**9**	83	(108)
Other items[f]	**181**	227	193
Total taxation charge[a]	**4,991**	4,147	4,242

(a) This tax reconciliation relates to the Group's parent companies, subsidiaries and joint operations, and excludes equity accounted units. The Group's share of profit of equity accounted units is net of tax charges of US$363 million (2019: US$190 million; 2018: US$273 million). Impairment after tax of investments in equity accounted units is net of tax credits of US$29 million (2019: US$nil; 2018: US$nil).

(b) The impact for each item includes the effect of tax rates applicable outside the UK.

(c) The tax impact of impairments includes the write-down of deferred tax assets at ISAL and NZAS and non-recognition of deferred tax on those impairments. The tax impact also includes recognition at local tax rates of deferred tax assets arising on the impairments of Bell Bay, Gladstone Power Station and Diavik. In the comparative period to 31 December 2019, the tax impact of impairment includes the write down of deferred tax assets in respect of prior year tax losses in Mongolia and recognition of deferred tax on impaired assets. Refer to note 6.

(d) The recognition of previously unrecognised deferred tax assets relates to the recognition of prior year deferred tax assets on losses and on impaired assets at Oyu Tolgoi due to improved deferred tax asset recovery expectations.

(e) Write down of previously recognised deferred tax assets relates primarily to the partial de-recognition of deferred tax assets in our Australian Aluminium business.

(f) Other items include non-deductible costs and withholding taxes, and various adjustments to provisions for taxation, the most significant of which relate to transfer pricing matters, including issues under discussion with the Australian Tax Office.

	2020 US$m	2019 US$m	2018 US$m
Tax on fair value movements:			
– Cash flow hedge fair value gains	**3**	(6)	(54)
Tax credit/(charge) on actuarial gains and losses on post-retirement benefit plans	**112**	83	(271)
Tax relating to components of other comprehensive income/(loss) for the year[a]	**115**	77	(325)

(a) This comprises a deferred tax credit of US$115 million (2019: credit of US$77 million; 2018: charge of US$325 million) and a current tax charge of US$nil (2019: US$nil; 2018: US$nil), see note 17.

10 Earnings per ordinary share

	2020 Earnings US$m	2020 Weighted average number of shares (millions)	2020 Per share amount (cents)	2019 Earnings US$m	2019 Weighted average number of shares (millions)	2019 Per share amount (cents)
Basic earnings per share attributable to ordinary shareholders of Rio Tinto[a]	**9,769**	**1,617.4**	**604.0**	8,010	1,630.1	491.4
Diluted earnings per share attributable to ordinary shareholders of Rio Tinto[b]	**9,769**	**1,628.6**	**599.8**	8,010	1,642.1	487.8

	2018 Earnings US$m	2018 Weighted average number of shares (millions)	2018 Per share amount (cents)
Basic earnings per share attributable to ordinary shareholders of Rio Tinto[a]	13,638	1,719.3	793.2
Diluted earnings per share attributable to ordinary shareholders of Rio Tinto[b]	13,638	1,731.7	787.6

(a) The weighted average number of shares is calculated as the average number of Rio Tinto plc shares outstanding not held as treasury shares of 1,246.5 million (2019: 1,259.4 million; 2018: 1,312.7 million) plus the average number of Rio Tinto Limited shares outstanding of 370.9 million (2019: 370.7 million; 2018: 406.6 million) over the relevant period. There were no cross holdings of shares between Rio Tinto Limited and Rio Tinto plc at 31 December 2020 (31 December 2019: nil).

(b) For the purposes of calculating diluted earnings per share, the effect of dilutive securities of 11.2 million shares in 2020 (2019: 12.0 million; 2018: 12.4 million) is added to the weighted average number of shares described in (a) above. This effect is calculated under the treasury stock method, in accordance with IAS 33 "Earnings per Share". The Group's only potential dilutive ordinary shares are share options for which terms and conditions are described in note 41.

11 Dividends

	2020 US$m	2019 US$m	2018 US$m
Rio Tinto plc previous year final dividend paid	**2,783**	2,245	2,446
Rio Tinto plc previous year special dividend paid	**—**	3,032	—
Rio Tinto plc interim dividend paid	**1,937**	1,930	1,666
Rio Tinto plc interim special dividend paid	**—**	780	—
Rio Tinto Limited previous year final dividend paid	**857**	666	731
Rio Tinto Limited previous year special dividend paid	**—**	900	—
Rio Tinto Limited interim dividend paid	**555**	556	513
Rio Tinto Limited interim special dividend paid	**—**	225	—
Dividends paid during the year	**6,132**	10,334	5,356
Dividends per share: paid during the year	**386.0 c**	635.0 c	307.0 c
Final dividends per share: proposed in the announcement of the results for the year	**309.0 c**	231.0 c	180.0 c
Special dividends per share: proposed in the announcement of the results for the year	**93.0 c**	—	243.0 c

	Dividends per share 2020	Dividends per share 2019	Dividends per share 2018
Rio Tinto plc previous year final (pence)	**177.47 p**	135.96 p	129.43 p
Rio Tinto plc previous year special (pence)	**—**	183.55 p	—
Rio Tinto plc interim (pence)	**119.74 p**	123.32 p	96.82 p
Rio Tinto plc interim special (pence)	**—**	49.82 p	—
Rio Tinto Limited previous year final – fully franked at 30% (Australian cents)	**349.74 c**	250.89 c	228.53 c
Rio Tinto Limited previous year special – fully franked at 30% (Australian cents)	**—**	338.70 c	—
Rio Tinto Limited interim – fully franked at 30% (Australian cents)	**216.47 c**	219.08 c	170.84 c
Rio Tinto Limited interim special – fully franked at 30% (Australian cents)	**—**	88.50 c	—

	Number of shares 2020 (millions)	Number of shares 2019 (millions)	Number of shares 2018 (millions)
Rio Tinto plc previous year final	**1,246.4**	1,265.0	1,334.8
Rio Tinto plc previous year special	**N/A**	1,265.0	N/A
Rio Tinto plc interim	**1,246.5**	1,256.4	1,308.4
Rio Tinto plc interim special	**N/A**	1,256.4	N/A
Rio Tinto Limited previous year final	**371.2**	371.2	412.4
Rio Tinto Limited previous year special	**N/A**	371.2	N/A
Rio Tinto Limited interim	**371.2**	371.2	412.4
Rio Tinto Limited interim special	**N/A**	371.2	N/A

Notes to the 2020 Financial Statements

11 Dividends continued

The dividends paid in 2020 are based on the following US cents per share amounts: 2019 final – 231.0 cents, 2020 interim – 155.0 cents (2019 dividends paid: 2018 final – 180.0 cents, 2018 final special – 243.0 cents, 2019 interim – 151.0 cents; 2019 interim special – 61.0 cents, 2018 dividends paid: 2017 final – 180.0 cents, 2018 interim – 127.0 cents).

The number of shares on which Rio Tinto plc dividends are based excludes those held as treasury shares and those held by employee share trusts which waived the right to dividends. Employee share trusts waived dividends on 258,779 Rio Tinto plc ordinary shares and 28,743 American Depository Receipts (ADRs) for the 2019 final dividend and on 171,213 Rio Tinto plc ordinary shares and 29,634 ADRs for the 2020 interim dividend (2019: on 852,283 Rio Tinto plc ordinary shares and 37,678 ADRs for the 2018 final dividend and on 564,099 Rio Tinto plc ordinary shares and 47,674 ADRs for the 2019 interim dividend; 2018: on 132,294 Rio Tinto plc ordinary shares and 22,824 ADRs for the 2017 final dividend and on 314,529 Rio Tinto plc ordinary shares and 36,321 ADRs for the 2018 interim dividend). In 2020, 2019 and 2018, no Rio Tinto Limited shares were held by Rio Tinto plc.

The number of shares on which Rio Tinto Limited dividends are based excludes those held by shareholders who have waived the rights to dividends. Employee share trusts waived dividends on 98,065 Rio Tinto Limited ordinary shares for the 2019 final dividend and on 84,377 shares for the 2020 interim dividend (2019: on 628,566 shares for the 2018 final dividend and 342,062 shares for the 2019 interim dividend; 2018: on 130,129 shares for the 2017 final dividend and 251,394 shares for the 2018 interim dividend).

In addition, the directors of Rio Tinto announced a final dividend of 309.0 cents per share and a special dividend of 93.0 cents per share on 17 February 2021. This is expected to result in payments of US$6.5 billion. The dividend will be paid on 15 April 2021 to Rio Tinto plc and Rio Tinto Limited shareholders on the register at the close of business on 5 March 2021.

The proposed Rio Tinto Limited dividends will be franked out of existing franking credits or out of franking credits arising from the payment of income tax during 2021.

The approximate amount of the Rio Tinto Limited consolidated tax group's retained profits and reserves that could be distributed as dividends and franked out of available credits that arose from net payments of income tax in respect of periods up to 31 December 2020 (after deducting franking credits expected to be utilised on the 2020 final and special dividends declared) is US$11,014 million (2019: US$8,599 million; 2018: US$6,178 million).

12 Goodwill

	2020 US$m	2019 US$m
Net book value		
At 1 January	**922**	912
Adjustment on currency translation	**24**	10
At 31 December	**946**	922
– cost	**17,341**	16,926
– accumulated impairment	**(16,395)**	(16,004)
At 1 January		
– cost	**16,926**	15,861
– accumulated impairment	**(16,004)**	(14,949)

At 31 December, goodwill has been allocated as follows:

	2020 US$m	2019 US$m
Net book value		
Richards Bay Minerals	**468**	487
Pilbara	**383**	349
Dampier Salt	**95**	86
	946	922

12 Goodwill continued

Impairment tests for goodwill

Richards Bay Minerals

Richards Bay Minerals' annual impairment review resulted in no impairment charge for 2020 (2019: no impairment charge). The recoverable amount has been assessed by reference to fair value less cost of disposal (FVLCD), in line with the policy set out in note 1(i) and classified as level 3 under the fair value hierarchy. FVLCD was determined by estimating cash flows until the end of the life-of-mine plan including anticipated expansions. In arriving at FVLCD, a post-tax discount rate of 8.6% (2019: 8.6%) has been applied to the post-tax cash flows expressed in real terms.

The key assumptions to which the calculation of FVLCD for Richards Bay Minerals is most sensitive and the corresponding decrease in FVLCD are set out below:

	US$m
5% decrease in the titanium slag price	**182**
1% increase in the discount rate applied to post-tax cash flows	**213**
10% strengthening of the South African rand	**393**

Other assumptions include the long-term pig iron and zircon prices and operating costs. Future selling prices and operating costs have been estimated in line with the policy set out in note 1(i). The recoverable amount of the cash-generating unit (CGU) exceeds the carrying value when each of these sensitivities are applied whilst keeping all other assumptions constant.

Pilbara

The annual impairment review of the Pilbara CGU has been assessed by reference to FVLCD using discounted cash flows, which is in line with the policy set out in note 1(i) and is classified as level 3 under the fair value hierarchy. In arriving at FVLCD, a post-tax discount rate of 6.6% (2019: 6.6%) has been applied to the post-tax cash flows expressed in real terms. The recoverable amount was determined to be significantly in excess of carrying value, and there are no reasonably possible changes in key assumptions that would cause the remaining goodwill to be impaired.

13 Intangible assets

Year ended 31 December 2020	**Exploration and evaluation[a] US$m**	**Trademarks, patented and non-patented technology US$m**	**Contract based intangible assets[b] US$m**	**Other intangible assets US$m**	**Total US$m**
Net book value					
At 1 January 2020	**173**	**44**	**1,947**	**473**	**2,637**
Adjustment on currency translation	**17**	**3**	**56**	**35**	**111**
Expenditure during the year	**87**	**—**	**—**	**69**	**156**
Amortisation for the year[c]	**—**	**(14)**	**(8)**	**(139)**	**(161)**
Impairment charges[d]	**—**	**—**	**—**	**(4)**	**(4)**
Disposals, transfers and other movements	**(6)**	**—**	**(1)**	**23**	**16**
At 31 December 2020	**271**	**33**	**1,994**	**457**	**2,755**
– cost	**2,415**	**232**	**3,070**	**1,710**	**7,427**
– accumulated amortisation and impairment	**(2,144)**	**(199)**	**(1,076)**	**(1,253)**	**(4,672)**

Year ended 31 December 2019	Exploration and evaluation[a] US$m	Trademarks, patented and non-patented technology US$m	Contract based intangible assets[b] US$m	Other intangible assets US$m	Total US$m
Net book value					
At 1 January 2019	233	59	1,982	505	2,779
Adjustment on currency translation	(1)	(1)	74	(1)	71
Expenditure during the year	57	—	—	34	91
Amortisation for the year[c]	—	(14)	(8)	(111)	(133)
Impairment charges[d]	—	—	—	(1)	(1)
Disposals, transfers and other movements[e]	(116)	—	(101)	47	(170)
At 31 December 2019	173	44	1,947	473	2,637
– cost	2,306	214	3,002	1,516	7,038
– accumulated amortisation and impairment	(2,133)	(170)	(1,055)	(1,043)	(4,401)

Notes to the 2020 Financial Statements

13 Intangible assets continued

(a) Exploration and evaluation assets' useful lives are not determined until transferred to property, plant and equipment.
(b) The Group benefits from certain intangible assets acquired with Alcan, including power supply contracts, customer contracts and water rights. The water rights are expected to contribute to the efficiency and cost effectiveness of operations for the foreseeable future; accordingly, these rights are considered to have indefinite lives and are not subject to amortisation but are tested annually for impairment. These water rights constitute the majority of the amounts in "Contract based intangible assets".
The remaining carrying value of the water rights of US$1,798 million as at 31 December 2020 (31 December 2019: US$1,759 million) relates wholly to the Quebec smelters cash-generating unit (CGU). The Quebec smelters CGU was tested for impairment by reference to fair value less cost of disposal (FVLCD) using discounted cash flows, which is in line with the policy set out in note 1(i). The recoverable amount of the Quebec smelters is classified as level 3 under the fair value hierarchy. In arriving at FVLCD, post-tax cash flows expressed in real terms have been estimated over the expected useful economic lives of the underlying smelting assets and discounted using a real post-tax discount rate of 6.6% (2019: 6.6%).
The recoverable amounts were determined to be significantly in excess of carrying value, and there are no reasonably possible changes in key assumptions that would cause the remaining water rights to be impaired.
(c) Finite life intangible assets are amortised over their useful economic lives on a straight line or units of production basis, as appropriate. Where amortisation is calculated on a straight line basis, the following useful lives have been determined:
Trademarks, patented and non-patented technology:
Trademarks: 14 to 20 years
Patented and non-patented technology: ten to 20 years
Contract-based intangible assets:
Power contracts/water rights: two to 45 years
Other purchase and customer contracts: five to 15 years
Other intangible assets:
Internally generated intangible assets and computer software: two to five years
Other intangible assets: two to 20 years
(d) Impairment charges in 2020 relate to the Diavik diamond mine. Impairment charges in 2019 relate to the ISAL smelter. See note 6.
(e) In 2019, disposals, transfers and other movements included the transfer from exploration and evaluation of the Zulti South project at Richards Bay Minerals to construction in progress following approval in April 2019 and reclassification of certain mineral rights from contract based intangibles to property, plant and equipment.

Exploration and evaluation expenditure

The charge for the year and the net amount of intangible assets capitalised during the year are as follows:

	2020 US$m	2019 US$m	2018 US$m
Net expenditure in the year (net of cash proceeds of US$1 million (2019: US$10 million; 2018: US$233 million) on disposal of undeveloped projects)	**(711)**	(671)	(345)
Non-cash movements and non-cash proceeds on disposal of undeveloped projects	**—**	—	45
Amount capitalised during the year	**87**	57	90
Net charge for the year	**(624)**	(614)	(210)
Reconciliation to income statement:			
Exploration and evaluation costs	**(625)**	(624)	(488)
Profit relating to interests in undeveloped projects[a]	**1**	10	278
Net charge for the year	**(624)**	(614)	(210)

(a) During 2018, profit relating to interests in undeveloped properties related to the gains on the sales of Valeria (US$83 million) and Winchester South (US$195 million) undeveloped properties which were included within underlying earnings.

At 31 December 2020, a total of US$271 million has been capitalised related to projects which have not yet been approved to proceed (31 December 2019: US$173 million).

14 Property, plant and equipment

Property, plant and equipment comprises owned and leased assets.

	2020 US$m	2019 US$m
Property, plant and equipment – owned	**62,007**	56,307
Right of use assets – leased	**875**	1,065
Net book value	**62,882**	57,372

14 Property, plant and equipment continued

Property, plant and equipment – Owned

Year ended 31 December 2020	Note	Mining properties and leases[e] US$m	Land and buildings US$m	Plant and equipment US$m	Capital works in progress US$m	Total US$m
Net book value						
At 1 January 2020		**10,402**	**6,403**	**31,491**	**8,011**	**56,307**
Adjustment on currency translation[b]		**457**	**307**	**1,758**	**366**	**2,888**
Adjustments to capitalised closure costs	25	**946**	**—**	**—**	**—**	**946**
Interest capitalised[c]	8	**—**	**—**	**—**	**340**	**340**
Additions		**329**	**45**	**726**	**5,211**	**6,311**
Depreciation for the year[a][d]		**(666)**	**(354)**	**(2,776)**	**—**	**(3,796)**
Impairment charges[e]		**(327)**	**(85)**	**(369)**	**(82)**	**(863)**
Disposals		**(2)**	**(13)**	**(64)**	**(16)**	**(95)**
Transfers and other movements[f]		**34**	**66**	**1,988**	**(2,119)**	**(31)**
At 31 December 2020		**11,173**	**6,369**	**32,754**	**11,711**	**62,007**
– cost		**25,052**	**12,178**	**71,603**	**12,906**	**121,739**
– accumulated depreciation and impairment		**(13,879)**	**(5,809)**	**(38,849)**	**(1,195)**	**(59,732)**
Non-current assets pledged as security[g]		**1,712**	**494**	**5,065**	**6,974**	**14,245**

Year ended 31 December 2019	Note	Mining properties and leases[e] US$m	Land and buildings US$m	Plant and equipment US$m	Capital works in progress US$m	Total US$m
Net book value						
At 1 January 2019		11,063	6,263	32,019	7,016	56,361
Adjustment for transition to new accounting standard[h]		—	—	(31)	—	(31)
Restated opening balance		11,063	6,263	31,988	7,016	56,330
Adjustment on currency translation[b]		27	72	286	41	426
Adjustments to capitalised closure costs	25	840	—	—	—	840
Interest capitalised[c]	8	—	—	—	321	321
Additions		433	46	616	4,435	5,530
Depreciation for the year[a][d]		(729)	(381)	(2,869)	—	(3,979)
Impairment charges[e]		(1,339)	(96)	(1,115)	(926)	(3,476)
Disposals		—	(9)	(44)	(19)	(72)
Transfers and other movements[f]		107	508	2,629	(2,857)	387
At 31 December 2019		10,402	6,403	31,491	8,011	56,307
– cost		24,875	11,517	66,705	9,188	112,285
– accumulated depreciation and impairment		(14,473)	(5,114)	(35,214)	(1,177)	(55,978)
Non-current assets pledged as security[g]		1,805	571	5,111	5,271	12,758

(a) At 31 December 2020, the net book value of capitalised production phase stripping costs totalled US$2,398 million, with US$2,019 million within "Property, plant and equipment" and a further US$379 million within "Investments in equity accounted units" (2019: total of US$2,276 million, with US$1,833 million in "Property, plant and equipment" and a further US$443 million within "Investments in equity accounted units"). During the year, capitalisation of US$380 million was partly offset by depreciation of US$267 million (including amounts recorded within equity accounted units). Depreciation of deferred stripping costs in respect of subsidiaries of US$145 million (2019: US$139 million; 2018: US$134 million) is included within "Depreciation for the year".

(b) Adjustment on currency translation represents the impact of exchange differences arising on the translation of the assets of entities with functional currencies other than the US dollar, recognised directly in the currency translation reserve. The adjustment in 2020 arose from the strengthening of the Australian dollar and Canadian dollar against the US dollar.

(c) Interest is capitalised at a rate based on the Group or relevant subsidiary's cost of borrowing or at the rate on project specific debt, where applicable. The Group's average borrowing rate used for capitalisation of interest is 4.20% (2019: 5.30%).

(d) Assets within operations for which production is not expected to fluctuate significantly from one year to another or which have a physical life shorter than the related mine are depreciated on a straight line basis as follows:
Land and buildings:
Land: not depreciated
Buildings: five to 50 years
Plant and equipment:
Other plant and equipment: three to 50 years
Power assets: 25 to 50 years
Capital work in progress: not depreciated

(e) During 2020, impairment charges relate to Pacific Aluminium smelters, the ISAL smelter in Iceland and our interest in the Diavik diamond mine (see note 6). During 2019, impairment charges primarily related to the Oyu Tolgoi underground project, Yarwun alumina refinery and the ISAL smelter (see note 6).

(f) "Transfers and other movements" includes reclassifications between categories. In 2019, "Transfers and other movements" included ISAL assets held for sale as these assets no longer met the criteria to be classified as assets held for sale.

(g) Excludes assets held under capitalised lease arrangements. Non-current assets pledged as security represent amounts pledged as collateral against US$4,518 million (2019: US$4,540 million) of loans, which are included in note 21.

(h) The impact of the transition to new accounting standard IFRS 16 "Leases" on 1 January 2019.

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Right-of-use assets – Leased

	Land and buildings US$m	Plant and equipment US$m	Total US$m
Net book value			
31 December 2020	**475**	**400**	**875**
31 December 2019	507	558	1,065
Additions for the year			
31 December 2020	**30**	**75**	**105**
31 December 2019	89	212	301
Depreciation for the year (included within operating costs)			
31 December 2020	**(93)**	**(229)**	**(322)**
31 December 2019	(69)	(203)	(272)
Impairment charges[a]			
31 December 2020	**(6)**	**(31)**	**(37)**
31 December 2019	(6)	(4)	(10)

(a) Impairment charges in 2020 relate to Pacific Aluminium smelters, the ISAL smelter in Iceland and our interest in the Diavik diamond mine (see note 6). Impairment charges in 2019 related to the ISAL smelter (see note 6).

The leased assets of the Group comprise land and buildings (mainly office buildings) and plant and equipment, the majority of which are marine vessels. Lease terms are negotiated on an individual basis and contain a wide range of terms and conditions. Right of use assets are depreciated on a straight line basis over the life of the lease, taking into account any extensions that are likely to be enacted.

15 Investments in equity accounted units

Summary balance sheet (Rio Tinto share)

	2020 US$m	2019 US$m
Rio Tinto's share of assets		
– Non-current assets	**5,307**	5,820
– Current assets	**1,077**	831
	6,384	6,651
Rio Tinto's share of liabilities		
– Current liabilities	**(785)**	(675)
– Non-current liabilities	**(1,835)**	(2,005)
	(2,620)	(2,680)
Rio Tinto's share of net assets	**3,764**	3,971

Further details of investments in equity accounted units are set out in notes 34 and 35.

At 31 December 2020 and 2019, the Group had no investments in equity accounted units with shares listed on recognised stock exchanges.

At 31 December 2020, net debt of equity accounted units, excluding amounts due to Rio Tinto, was US$931 million (2019: US$1,248 million).

16 Inventories

	2020 US$m	2019 US$m
Raw materials and purchased components	**640**	675
Consumable stores	**1,050**	925
Work in progress	**1,288**	1,066
Finished goods and goods for resale	**1,113**	936
Total inventories	**4,091**	3,602
Comprising:		
Expected to be used within one year	**3,917**	3,463
Expected to be used after more than one year	**174**	139
Total inventories	**4,091**	3,602

During 2020, the Group recognised a net inventory write back of US$15 million (2019: net inventory write down of US$42 million). This comprised inventory write-offs of US$35 million (2019: US$134 million) partly offset by write-back of previously written down inventory due to an increase in realisable values amounting to US$50 million (2019: US$92 million).

At 31 December 2020, US$621 million (2019: US$611 million) of inventories were pledged as security for liabilities.

17 Deferred taxation

	2020 US$m	2019 US$m
At 1 January – deferred tax liability	**(118)**	(532)
Adjustment on currency translation	**(43)**	(77)
Credited to the income statement	**178**	289
Credited to statement of comprehensive income[a]	**115**	77
Other movements[b]	**14**	125
At 31 December – deferred tax asset/(liability)	**146**	(118)
Comprising:		
– deferred tax assets[c][d]	**3,385**	3,102
– deferred tax liabilities[e]	**(3,239)**	(3,220)

Notes to the 2020 Financial Statements

17 Deferred taxation continued

Deferred tax balances for which there is a right of offset within the same tax jurisdiction are presented net on the face of the balance sheet as permitted by IAS 12. The closing deferred tax assets and liabilities, prior to this offsetting of balances, are shown below.

Analysis of deferred tax

	Total 2020 US$m	Total 2019 US$m
Deferred tax assets arising from:		
Tax losses[c]	**1,867**	1,847
Provisions	**2,121**	1,810
Capital allowances	**529**	604
Post-retirement benefits	**698**	599
Unrealised exchange losses	**204**	176
Other temporary differences	**1,046**	931
Total	**6,465**	5,967
Deferred tax liabilities arising from:		
Capital allowances	**(4,966)**	(4,742)
Unremitted earnings[e]	**(402)**	(411)
Capitalised interest	**(351)**	(387)
Post-retirement benefits	**(224)**	(253)
Unrealised exchange gains	**(7)**	(3)
Other temporary differences	**(369)**	(289)
Total	**(6,319)**	(6,085)
Credited /(charged) to the income statement		
Unrealised exchange losses	**25**	(21)
Tax losses	**12**	(164)
Provisions	**188**	175
Capital allowances	**(82)**	181
Tax on unremitted earnings	**1**	(5)
Post-retirement benefits	**9**	(18)
Other temporary differences	**25**	141
Total	**178**	289

(a) The amounts credited directly to the statement of comprehensive income include provisions for tax on exchange differences on intragroup loans qualifying for reporting as part of the net investment in subsidiaries, on cash flow hedges and on actuarial gains and losses on pension schemes and on post-retirement healthcare plans.

(b) "Other movements" include deferred tax relating to tax payable recognised by subsidiary holding companies on the profits of the equity accounted units to which it relates.

(c) There is a limited time period, the shortest of which is one year, for the recovery of US$1,617 million (2019: US$1,186 million; six years) of tax losses and other tax assets which have been recognised as deferred tax assets in the financial statements.

(d) Recognised and unrecognised deferred tax assets are shown in the table below and totalled US$7,226 million at 31 December 2020 (2019: US$6,264 million). Of this total, US$3,385 million has been recognised as deferred tax assets (2019: US$3,102 million), leaving US$3,841 million (2019: US$3,162 million) unrecognised, as recovery is not considered probable.

(e) Deferred tax liabilities are not recognised on the unremitted earnings of subsidiaries and joint ventures totalling US$2,895 million (2019: US$3,861 million) where the Group is able to control the timing of the remittance and it is probable that there will be no remittance in the foreseeable future. If these earnings were remitted, tax of US$112 million (2019: US$164 million) would be payable.

The recognised amounts in the table below do not include deferred tax assets that have been netted off against deferred tax liabilities.

Analysis of deferred tax assets

	Recognised		Unrecognised	
At 31 December	**2020 US$m**	2019 US$m	**2020 US$m**	2019 US$m
France	**—**	—	**1,284**	1,111
Canada	**617**	492	**574**	566
US	**938**	920	**84**	51
Australia	**649**	698	**528**	316
Mongolia[a]	**974**	704	**540**	721
Other	**207**	288	**831**	397
Total[b]	**3,385**	3,102	**3,841**	3,162

(a) Deferred tax assets in Mongolia include US$292 million (2019: US$130 million) from tax losses that expire if not recovered against taxable profits within eight years. Tax losses have been calculated in accordance with the tax stability provisions of the Oyu Tolgoi Investment Agreement and Mongolian laws. Recovery of the recognised deferred tax assets is expected to commence from 2021 based on projected cash flows, consistent with the latest life of mine plan described in note 6. The interpretation of the stabilised tax laws by the Mongolian Tax Authority has been, and is expected to continue to be, subject to dispute. Changes to agreements or their interpretation could have a material impact on the amount and period of recovery of deferred tax assets.

(b) US$720 million (2019: US$695 million) of the unrecognised assets relate to realised or unrealised capital losses, the recovery of which depends on the existence of capital gains in future years. There are time limits, the shortest of which is one year, for the recovery of US$551 million of the unrecognised assets (2019: US$491 million).

18 Receivables and other assets

	Non-current 2020 US$m	Current 2020 US$m	Total 2020 US$m	Non-current 2019 US$m	Current 2019 US$m	Total 2019 US$m
Trade receivables[a]	1	2,543	2,544	1	2,097	2,098
Other financial receivables[a]	339	332	671	286	453	739
Receivables relating to net investment in finance leases[a]	29	9	38	52	11	63
Amounts due from equity accounted units[a]	—	33	33	—	38	38
Other receivables[b]	369	422	791	123	209	332
Prepayment of tolling charges to jointly controlled entities[c]	218	—	218	221	—	221
Pension surpluses (note 42)	782	—	782	984	—	984
Other prepayments	58	305	363	49	219	268
Total	1,796	3,644	5,440	1,716	3,027	4,743

(a) At 31 December 2020, trade and other financial receivables, receivables relating to net investment in finance leases and amounts due from equity accounted units are stated net of allowances for expected credit losses of US$59 million (2019: US$54 million).

(b) At 31 December 2020, other non-current receivables included US$315 million (2019: US$53 million) and other current receivables US$95 million (2019: US$nil) related to Energy Resources of Australia Ltd (ERA's) deposit held in a trust fund which is controlled by the Government of Australia. During 2020, ERA deposited US$299 million into the trust fund which is recorded in "Other investing cash flows" in the Group cash flow statement. ERA are entitled to reimbursement from the fund once specific phases of rehabilitation relating to the Ranger Project are completed. The fund is outside of the scope of IFRS 9 - "Financial Instruments" and therefore classified as an "other receivable" within "Receivables and other assets".

(c) These prepayments will be charged to Group operating costs as tolling services are rendered and product processing occurs.

There is no material element of receivables and other assets that is interest-bearing or financing in nature.

The fair value of current trade and other receivables and the majority of amounts classified as non-current trade and other receivables approximates to their carrying value.

19 Other financial assets

	Non-current 2020 US$m	Current 2020 US$m	Total 2020 US$m	Non-current 2019 US$m	Current 2019 US$m	Total 2019 US$m
Derivative financial instruments	531	134	665	308	58	366
Equity shares and quoted funds	66	9	75	52	9	61
Other investments, including loans[a]	231	2,668	2,899	236	2,603	2,839
Loans to equity accounted units	1	40	41	39	—	39
Total	829	2,851	3,680	635	2,670	3,305

(a) Current "Other investments, including loans" includes US$2,538 million (2019: US$2,584 million) of highly liquid financial assets held in managed investment funds classified as held for trading.

Detailed information relating to other financial assets is given in note 29.

20 Cash and cash equivalents

	2020 US$m	2019 US$m
Cash at bank and in hand	1,150	978
Money market funds, reverse repurchase agreements and other cash equivalents[a]	9,231	7,049
Balance per Group balance sheet and Group cash flow statement	10,381	8,027

(a) We continue to diversify the financial products we invest our surplus cash in. During the year, we purchased securities under resale agreements ("reverse repurchase agreements"). At 31 December 2020 we held US$1,200 million of reverse repurchase agreements, measured at amortised cost and reported within cash and cash equivalents as they are highly liquid products maturing within three months. We accepted collateral of investment grade quality in respect of these reverse repurchase agreements, with a fair value of US$1,260 million as at 31 December 2020. Collateral is not recognised on our balance sheet and in the event of counterparty's default we would be able to sell it.

Restricted cash and cash equivalent analysis

Cash and cash equivalents of US$295 million (2019: US$315 million) are held in countries where there are restrictions on remittances. Of this balance, US$238 million (2019: US$245 million) could be used to repay subsidiaries' third-party borrowings.

There are also restrictions on a further US$1,422 million (2019: US$1,644 million) of cash and cash equivalents, the majority of which is held by partially owned subsidiaries and is not available for use in the wider Group due to legal and contractual restrictions currently in place. Of this balance US$1,215 million (2019: US$1,442 million) could be used to repay subsidiaries' third-party borrowings.

Notes to the 2020 Financial Statements

21 Borrowings and other financial liabilities

Borrowings at 31 December

	Note	Non-current 2020 US$m	Current 2020 US$m	Total 2020 US$m	Non-current 2019 US$m	Current 2019 US$m	Total 2019 US$m
Rio Tinto Finance plc Euro Bonds 2.0% due 2020[a][b][c]		—	—	—	—	455	455
Rio Tinto Finance plc Euro Bonds 2.875% due 2024[a][b]		**555**	—	**555**	508	—	508
Rio Tinto Finance (USA) Limited Bonds 3.75% 2025[a]		**1,299**	—	**1,299**	1,229	—	1,229
Rio Tinto Finance (USA) Limited Bonds 7.125% 2028[a]		**1,005**	—	**1,005**	958	—	958
Alcan Inc. Debentures 7.25% due 2028[a]		**109**	—	**109**	104	—	104
Rio Tinto Finance plc Sterling Bonds 4.0% due 2029[a][b]		**717**	—	**717**	647	—	647
Alcan Inc. Debentures 7.25% due 2031[d]		**438**	—	**438**	419	—	419
Alcan Inc. Global Notes 6.125% due 2033[d]		**744**	—	**744**	742	—	742
Alcan Inc. Global Notes 5.75% due 2035[d]		**292**	—	**292**	289	—	289
Rio Tinto Finance (USA) Limited Bonds 5.2% 2040[a]		**1,173**	—	**1,173**	1,137	—	1,137
Rio Tinto Finance (USA) plc Bonds 4.75% 2042[a]		**501**	—	**501**	483	—	483
Rio Tinto Finance (USA) plc Bonds 4.125% 2042[a]		**743**	—	**743**	716	—	716
Oyu Tolgoi LLC MIGA Insured Loan LIBOR plus 2.65% due 2027[e]		**674**	**4**	**678**	676	3	679
Oyu Tolgoi LLC Commercial Banks "B Loan" LIBOR plus 3.4% due 2027[e]		**1,571**	**10**	**1,581**	1,581	8	1,589
Oyu Tolgoi LLC Export Credit Agencies Loan 2.3% due 2028[e]		**275**	**2**	**277**	273	3	276
Oyu Tolgoi LLC Export Credit Agencies Loan LIBOR plus 3.65% due 2029[e]		**867**	**5**	**872**	869	5	874
Oyu Tolgoi LLC International Financial Institutions "A Loan" LIBOR plus 3.78% due 2030[e]		**771**	**6**	**777**	771	4	775
Other secured loans		**246**	**68**	**314**	302	45	347
Other unsecured loans		**322**	**256**	**578**	382	197	579
Lease liabilities	22	**945**	**233**	**1,178**	1,007	302	1,309
Total borrowings including overdrafts[f]		**13,247**	**584**	**13,831**	13,093	1,022	14,115

(a) These borrowings are subject to hedging arrangements and are summarised in the interest rate risk section of note 29.
(b) Rio Tinto has a US$10 billion (2019: US$10 billion) European Debt Issuance Programme against which the cumulative amount utilised was US$1.2 billion equivalent at 31 December 2020 (2019: US$1.6 billion). The carrying value of these bonds after hedge accounting adjustments amounted to US$1.3 billion (2019: US$1.6 billion) in aggregate.
(c) On 11 May 2020, we repaid our €402 million (nominal value) Rio Tinto Finance plc Euro Bonds on their maturity. The cash outflow relating to the repayment of the bonds and the realised loss on the derivatives have been recognised within "Repayment of borrowings and associated derivatives" in the Group cash flow statement and totalled US$526 million.
(d) In 2020 we entered into new swaps to convert the interest payable in relation to these bonds from fixed to floating rates. Refer to Note 29 for more details.
(e) These borrowings relate to the Oyu Tolgoi LLC project finance facility. The project finance facility provides for interest-only payments for the first five years from 2016 followed by minimum repayments according to a stepped amortisation schedule for the remaining life of the facility. The due dates stated represent the final repayment date. The interest rates stated are pre-completion and will increase by 1% post-completion.
(f) The Group's borrowings of US$13.8 billion (2019: US$14.1 billion) include US$4.5 billion (2019: US$4.5 billion) of subsidiary entity borrowings that are subject to various financial and general covenants with which the respective borrowers were in compliance as at 31 December 2020.

Other financial liabilities

	Non-current 2020 US$m	Current 2020 US$m	Total 2020 US$m	Non-current 2019 US$m	Current 2019 US$m	Total 2019 US$m
Derivative financial instruments	**161**	**23**	**184**	248	103	351
Other financial liabilities[a]	—	—	—	—	247	247
Total other financial liabilities	**161**	**23**	**184**	248	350	598
Total borrowings including overdrafts (as above)	**13,247**	**584**	**13,831**	13,093	1,022	14,115
Total borrowings and other financial liabilities	**13,408**	**607**	**14,015**	13,341	1,372	14,713

(a) At 31 December 2019, other financial liabilities included US$207 million in relation to the share buy-back programme, which was completed in February 2020.

22 Leases

Lessee arrangements

We have made the following payments associated with leases:

Description of payment	2020 US$m	2019 US$m	Included within
Principal lease payments	**324**	315	Cash flows from financing activities
Interest payments on leases	**50**	53	Cash flows from operating activities
Payments for short-term leases	**314**	327	Net operating costs
Payments for variable lease components	**30**	15	Net operating costs
Payments for low value leases (>12 months in duration)	**1**	1	Net operating costs
Total lease payments	**719**	711	

22 Leases continued

Lease liabilities

The maturity profile of lease liabilities recognised at the balance sheet date is:

	Note	2020 US$m	2019 US$m
Lease liabilities			
Due within 1 year		**271**	349
Between 1 and 3 years		**386**	424
Between 3 and 5 years		**185**	226
More than 5 years		**724**	671
Total undiscounted cash payments expected to be made		**1,566**	1,670
Effect of discounting		**(388)**	(361)
Present value of minimum lease payments	21	**1,178**	1,309

At 31 December 2020, commitments for leases not yet commenced were US$125 million (2019: US$119 million); commitments relating to short-term leases which had already commenced at 31 December 2020 were US$155 million (2019: US$108 million). Short-term and low value leases are not recognised on the balance sheet as a lease liability and are expensed as incurred.

23 Consolidated net (debt)/cash

	Financing liabilities			Other assets		
Year ended 31 December 2020	**Borrowings excluding overdrafts[a] US$m**	**Lease liabilities[b] US$m**	**Debt-related derivatives (included in Other financial assets/ liabilities)[c] US$m**	**Cash and cash equivalents[d] US$m**	**Other investments[e] US$m**	**Net debt US$m**
Analysis of changes in consolidated net debt						
Opening balance	**(12,806)**	**(1,309)**	**(147)**	**8,027**	**2,584**	**(3,651)**
Foreign exchange adjustment	**(83)**	**(47)**	**39**	**165**	**—**	**74**
Cash movements excluding exchange movements	**505**	**324**	**91**	**2,189**	**(58)**	**3,051**
Other non-cash movements	**(269)**	**(146)**	**265**	**—**	**12**	**(138)**
Closing balance	**(12,653)**	**(1,178)**	**248**	**10,381**	**2,538**	**(664)**

	Financing liabilities			Other assets		
Year ended 31 December 2019	Borrowings excluding overdrafts[a] US$m	Lease liabilities[b] US$m	Debt-related derivatives (included in Other financial assets/ liabilities)[c] US$m	Cash and cash equivalents[d] US$m	Other investments[e] US$m	Net (debt)/cash US$m
Analysis of changes in consolidated net (debt)/cash						
Opening balance	(12,707)	(44)	(288)	10,772	2,522	255
Adjustment for transition to new accounting standard[f]	—	(1,248)	—	—	—	(1,248)
Foreign exchange adjustment	(5)	(9)	3	(54)	—	(65)
Cash movements excluding exchange movements	123	315	—	(2,808)	28	(2,342)
Other non-cash movements	(217)	(323)	138	117	34	(251)
Closing balance	(12,806)	(1,309)	(147)	8,027	2,584	(3,651)

(a) Borrowings excluding overdrafts and including lease liabilities at 31 December 2020 of US$13,831 million (2019: US$14,115 million) differ from total borrowings and other financial liabilities of US$14,015 million (2019: US$14,713 million) on the balance sheet as they exclude other current financial liabilities of US$23 million (2019: US$350 million) and other non-current financial liabilities of US$161 million (2019: US$248 million).

(b) Other movements in lease liabilities include the net impact of additions, modifications and terminations during the year.

(c) Included within "Debt-related derivatives" are interest rate and cross currency interest rate swaps that are in hedge relationships with the Group's debt.

(d) Other non-cash movements in the year ended 31 December 2019 of US$117 million represents the elimination of cash movements during the year in respect of assets held for sale which are included in the cash flow statement.

(e) Other investments comprise US$2,538 million (2019: US$2,584 million) of highly liquid financial assets held in managed investment funds classified as held for trading.

(f) The impact of the transition to new accounting pronouncement IFRS 16 "Leases" on 1 January 2019.

Further information relating to the currency and interest rate exposures arising from net debt and related derivatives is given in note 29.

Notes to the 2020 Financial Statements

24 Trade and other payables

	Non-current 2020 US$m	Current 2020 US$m	Total 2020 US$m	Non-current 2019 US$m	Current 2019 US$m	Total 2019 US$m
Trade payables	1	3,124	3,125	—	2,855	2,855
Other financial payables	298	862	1,160	272	668	940
Other payables	97	115	212	110	97	207
Deferred income[a]	133	344	477	143	200	343
Accruals	27	1,294	1,321	27	1,305	1,332
Employee entitlements	—	762	762	—	650	650
Royalties and mining taxes	3	863	866	4	596	600
Amounts owed to equity accounted units	190	51	241	167	104	271
Government grants deferred	71	6	77	71	5	76
Total	820	7,421	8,241	794	6,480	7,274

(a) Deferred income includes contract liabilities of US$338 million (2019: US$158 million).

The fair value of trade payables and financial instruments within other payables approximates their carrying value.

25 Provisions (including post-retirement benefits)

	Note	Pensions and post-retirement healthcare[a] US$m	Other employee entitlements[b] US$m	Close-down and restoration/ environmental[c] US$m	Other US$m	Total 2020 US$m	Total 2019 US$m
At 1 January		2,714	354	11,090	945	15,103	13,608
Adjustment to opening balance on transition to new accounting standard[d]		—	—	—	—	—	(66)
Restated opening balance		2,714	354	11,090	945	15,103	13,542
Adjustment on currency translation		83	34	736	37	890	65
Adjustments to mining properties/right of use assets:	14						
– increases to existing and new provisions		—	—	130	11	141	840
– change in discount rate		—	—	816	—	816	—
Charged/(credited) to profit:							
– increases to existing and new provisions		200	127	562	185	1,074	850
– change in discount rate		—	—	138	2	140	—
– unused amounts reversed		—	(19)	(123)	(157)	(299)	(100)
– exchange losses on provisions		—	—	(21)	(1)	(22)	3
– amortisation of discount		—	—	373	4	377	387
Utilised in year		(192)	(77)	(366)	(139)	(774)	(744)
Actuarial losses recognised in equity		250	—	—	—	250	235
Transfers and other movements		—	—	—	(31)	(31)	25
At 31 December		3,055	419	13,335	856	17,665	15,103
Balance sheet analysis:							
Current		70	327	777	555	1,729	1,399
Non-current		2,985	92	12,558	301	15,936	13,704
Total		3,055	419	13,335	856	17,665	15,103

Projected cash spend for the undiscounted close-down and restoration/environmental clean up provision

Undiscounted close-down and environmental restoration cash flows	<1yr US$m	1-3 yrs US$m	3-5 yrs US$m	> 5 yrs US$m	Total US$m
At 31 December 2020	776	1,203	1,433	13,988	17,400
At 31 December 2019	541	955	1,100	13,470	16,066

(a) The main assumptions used to determine the provision for pensions and post-retirement healthcare, and other information, including the expected level of future funding payments in respect of those arrangements, are given in note 42.

(b) The provision for other employee entitlements includes a provision for long service leave of US$283 million (2019: US$248 million), based on the relevant entitlements in certain Group operations and includes US$62 million (2019: US$30 million) of provision for redundancy and severance payments.

(c) The Group's policy on close-down and restoration costs is described in note 1(l) and in paragraph (iii) under "Critical accounting policies and estimates" on page 219. Close-down and restoration costs are a normal consequence of mining, and the majority of close-down and restoration expenditure is incurred in the years following closure of the mine, refinery or smelter. Non-current provisions for close-down and restoration/environmental expenditure include amounts relating to environmental clean-up of US$468 million (2019: US$382 million) expected to take place between one and five years from the balance sheet date, and US$937 million (2019: US$883 million) expected to take place later than five years after the balance sheet date. Close-down and restoration/environmental liabilities at 31 December 2020 have not been adjusted for closure related receivables amounting to US$574 million (31 December 2019: US$166 million) due from the ERA trust fund, the co-owners of the Diavik Joint Venture and other financial assets held for the purposes of meeting closure obligations.

(d) Impact of the transition to new accounting pronouncement IFRS 16 "Leases" on 1 January 2019.

25 Provisions (including post-retirement benefits) continued

Analysis of close-down and restoration/environmental clean up provisions

As at 31 December	2020 US$m	2019 US$m
Undiscounted close-down and environmental restoration obligations	**17,400**	16,066
Impact of discounting	**(4,065)**	(4,976)
Present closure obligation	**13,335**	11,090
Attributable to:		
Operating sites	**10,736**	9,255
Non-operating sites	**2,599**	1,835
Total	**13,335**	11,090

Remaining lives of operations and infrastructure range from one to over 50 years with an average for all sites, weighted by present closure obligation, of around 17 years (2019: 18 years). Although the ultimate cost to be incurred is uncertain, the Group's businesses estimate their respective costs based on current restoration standards, techniques and expected climate conditions.

Provisions of US$13,335 million (2019: US$11,090 million) for close-down and restoration costs and environmental clean-up obligations are based on risk-adjusted cash flows. The Group completed a review of the discount rate used to present value the obligations on 30 September 2020 and updated it to a real-rate of 1.5%, applied prospectively from that date. Prior to 30 September 2020 and in recent years, the close-down and restoration costs and environmental clean-up obligations were discounted at a real-rate of 2.0%. To illustrate the sensitivity of the provision to discounting, if the discount rate at 31 December 2020 was decreased to 1.0% then the provision would be US$1.3 billion higher, of which approximately US$1.2 billion would be capitalised within "Property, plant and equipment" at operating sites and US$0.1 billion would be charged to the income statement for non-operating and fully impaired sites. If the discount rate was increased to 3.0% then the provision would be US$2.6 billion lower, of which approximately US$2.4 billion would result in a decrease within "Property, plant and equipment" at operating sites and US$0.2 billion would be credited to the income statement for non-operating and fully impaired sites.

Closure cost composition as at 31 December	2020 US$m	2019 US$m
Decommissioning, decontamination and demolition	**3,131**	2,066
Closure and rehabilitation earthworks [(a)]	**4,223**	3,889
Long-term water management costs [(b)]	**966**	920
Post closure monitoring and maintenance	**1,318**	855
Indirect costs, owners' costs and contingency [(c)]	**3,697**	3,360
Total	**13,335**	11,090

The underlying costs for closure have been estimated with varying degrees of accuracy based on a function of the age of the underlying asset and proximity to closure. For assets within ten years of closure, closure plans and cost estimates are supported by detailed studies which are refined as the closure date approaches. These closure studies consider climate change and plan for resilience to expected climate conditions with a particular focus on precipitation rates. For new developments, consideration of climate change and ultimate closure conditions are an important part of the approval process. For longer-lived assets, closure provisions are typically based on conceptual level studies that are refreshed at least every five years; these are evolving to incorporate greater consideration of forecast climate conditions at closure.

(a) A key component of earthworks rehabilitation involves re-landscaping the area disturbed by mining activities utilising the largely diesel powered heavy mobile equipment. In developing low-carbon solutions for our mobile fleet, this may include electrification of the vehicles during the mine life. The forecast cash flows for the heavy mobile equipment in the closure cost estimate are based on existing fuel sources; these could reduce if this power is sourced from renewable energy.

(b) Long-term water management relates to the post-closure treatment of water due to acid rock drainage and other environmental commitments and is an area of research and development focus for our Closure team. The cost of this water processing can continue for many years after the bulk earthworks and demolition activities have completed and are therefore exposed to long-term climate change. This could materially affect rates of precipitation and therefore change the volume of water requiring processing. It is not currently possible to forecast accurately the impact this could have on the closure provision as some of our locations could experience drier conditions whereas others could experience greater rainfall. A further consideration relates to the alternative commercial use for the processed water which could support ultimate transfer of these costs to a third party.

(c) Indirect costs, owners' costs and contingency include adjustments to the underlying cash flows to align the closure provision with a central-case estimate. This excludes allowances for quantitative estimation uncertainties which are allocated to the underlying cost driver and presented within the respective cost categories above.

Geographic composition as at 31 December	2020 US$m	2019 US$m
Australia	**7,076**	5,610
USA	**3,819**	3,377
Canada	**1,482**	1,267
Rest of World	**958**	836
Total	**13,335**	11,090

The geographic composition of the closure provision shows that our closure obligations are largely in countries with established levels of regulation in respect of mine and site closure.

Notes to the 2020 Financial Statements

26 Share capital – Rio Tinto plc

	2020 Number (million)	2019 Number (million)	2018 Number (million)	2020 US$m	2019 US$m	2018 US$m
Issued and fully paid up share capital of 10p each						
At 1 January	**1,259.345**	1,287.660	1,351.609	**207**	211	220
Ordinary shares issued[a][c]	**0.039**	0.041	0.035	**—**	—	—
Shares purchased and cancelled[b]	**(3.628)**	(28.356)	(63.984)	**—**	(4)	(9)
At 31 December	**1,255.756**	1,259.345	1,287.660	**207**	207	211
Shares held by public						
At 1 January	**1,249.924**	1,278.215	1,342.058			
Shares reissued from treasury[a]	**0.569**	0.024	0.106			
Ordinary shares issued[a][c]	**0.039**	0.041	0.035			
Shares purchased and cancelled[b]	**(3.628)**	(28.356)	(63.984)			
At 31 December	**1,246.904**	1,249.924	1,278.215			
Shares held in treasury	**8.852**	9.421	9.445			
Shares held by public	**1,246.904**	1,249.924	1,278.215			
Total share capital	**1,255.756**	1,259.345	1,287.660			
Other share classes						
Special Voting Share of 10p each[d]	**1 only**	1 only	1 only			
DLC Dividend Share of 10p each[d]	**1 only**	1 only	1 only			
Equalisation Share of 10p each[d]	**1 only**	1 only	1 only			

(a) 39,273 ordinary shares were issued in 2020 under the Global Employee Share Plan (GESP). 568,863 ordinary shares were reissued from treasury during the year resulting from the vesting of awards under Rio Tinto plc employee share-based payment plans, with market values between £32.74 and £56.32 per share (2019: 40,974 ordinary shares were issued under the GESP and 23,659 ordinary shares were reissued from treasury with exercise prices and market values between £36.33 and £49.74 per share; 2018: 35,380 ordinary shares were issued under the GESP and 106,045 ordinary shares reissued from treasury with exercise prices and market values between £16.53 and £43.79 per share).

(b) The authority for the company to buy back its ordinary shares was renewed at the 2020 annual general meeting. 3,627,568 shares were bought back and cancelled in 2020 under the on-market buy-back programme. 28,356,034 shares were bought back and cancelled in 2019 under the on-market buy-back programme. 63,984,287 shares were bought back in 2018 under the on-market buy-back programme.

(c) The aggregate consideration for new shares issued under the GESP was US$1.3 million (2019: US$1.1 million; 2018: US$1.0 million). The difference between the nominal value and the issue price of the shares issued was credited to the share premium account. The aggregate consideration received for treasury shares reissued was US$1 million (2019: US$1 million; 2018: US$6 million). No new shares were issued as a result of the exercise of options under Rio Tinto plc employee share-based payment plans in 2020, 2019 and 2018.

(d) The "Special Voting Share" was issued to facilitate the joint voting by shareholders of Rio Tinto plc and Rio Tinto Limited on Joint Decisions, following the DLC Merger. The "DLC Dividend Share" was issued to facilitate the efficient management of funds within the DLC structure. Directors have the ability to issue an Equalisation Share if that is required under the terms of the DLC Merger Sharing Agreement.

During 2020, US$31 million of shares and ADRs (2019: US$43 million; 2018: US$140 million) were purchased by employee share ownership trusts on behalf of Rio Tinto plc to satisfy employee share awards on vesting. At 31 December 2020, 273,902 shares and 41,240 ADRs were held in the employee share ownership trusts on behalf of Rio Tinto plc.

Information relating to share-based incentive schemes is given in note 41.

27 Share capital – Rio Tinto Limited

	2020 Number (million)	2019 Number (million)	2018 Number (million)	2020 US$m	2019 US$m	2018 US$m
Issued and fully paid up share capital						
At 1 January	**371.21**	371.21	412.41	**3,448**	3,477	4,140
Adjustment on currency translation				**333**	(29)	(382)
Ordinary shares purchased and cancelled[a]	**—**	—	(41.20)	**—**	—	(281)
At 31 December	**371.21**	371.21	371.21	**3,781**	3,448	3,477
– Special Voting Share[b]	**1 only**	1 only	1 only			
– DLC Dividend Share[c]	**1 only**	1 only	1 only			
Total share capital	**371.21**	371.21	371.21			

(a) In November 2018, 41,198,134 Rio Tinto Limited ordinary shares were purchased at A$69.69 per share and cancelled under an off-market share buy-back programme carried out pursuant to the shareholder approval granted at Rio Tinto Limited's 2018 annual general meeting for off-market and on-market buy-backs of up to 41.2 million Rio Tinto Limited ordinary shares.

(b) The "Special Voting Share" was issued to facilitate the joint voting by shareholders of Rio Tinto Limited and Rio Tinto plc on Joint Decisions following the DLC Merger. The "DLC Dividend Share" was issued to facilitate the efficient management of funds within the DLC structure. Directors have the ability to issue an Equalisation Share if that is required under the terms of the DLC Merger Sharing Agreement.

During 2020, US$76 million of shares (2019: US$63 million; 2018: US$114 million) were purchased by employee share ownership trusts on behalf of Rio Tinto Limited to satisfy employee share awards on vesting. At 31 December 2020, 828,338 shares were held in the employee share ownership trusts on behalf of Rio Tinto Limited.

Information relating to share-based incentive schemes is given in note 41.

28 Other reserves and retained earnings

	2020 US$m	2019 US$m	2018 US$m
Capital redemption reserve[a]			
At 1 January	**51**	47	38
Own shares purchased and cancelled	**—**	4	9
At 31 December	**51**	51	47
Cash flow hedge reserve			
At 1 January	**160**	195	32
Adjustment for transition to new accounting pronouncements[b]	**—**	—	(4)
Cash flow hedge gains	**24**	12	156
Cash flow hedge (gains)/losses transferred to the income statement	**(63)**	(41)	40
Tax on the above	**3**	(6)	(54)
Transfers and other movements	**—**	—	25
At 31 December	**124**	160	195
Available for sale revaluation reserves			
At 1 January	**—**	—	20
Adjustment for transition to new accounting pronouncements[b]	**—**	—	(20)
Gains on available for sale securities	**—**	—	—
Losses on available for sale securities transferred to the income statement	**—**	—	—
Tax on the above	**—**	—	—
Transfers and other movements	**—**	—	—
At 31 December	**—**	—	—
Fair value through other comprehensive income reserve			
At 1 January	**(11)**	(6)	—
Adjustment for transition to new accounting pronouncements[b]	**—**	—	8
Losses on equity investments	**9**	(5)	(11)
Transfers to retained earnings	**—**	—	(3)
At 31 December	**(2)**	(11)	(6)
Cost of hedging reserve			
At 1 January	**(10)**	(13)	—
Adjustment for transition to new accounting pronouncements[b]	**—**	—	26
Cost of hedging deferred to reserves during the year	**7**	3	(36)
Transfer of cost of hedging to the income statement	**—**	—	(3)
At 31 December	**(3)**	(10)	(13)
Other reserves[c]			
At 1 January	**11,643**	11,650	11,714
Own shares purchased from Rio Tinto Limited shareholders to satisfy share options	**(76)**	(63)	(114)
Employee share options: value of services	**60**	52	52
Deferred tax on share options	**1**	4	(2)
At 31 December	**11,628**	11,643	11,650
Foreign currency translation reserve[d]			
At 1 January	**(2,656)**	(3,212)	480
Parent and subsidiaries' currency translation and exchange adjustments	**2,814**	331	(3,658)
Equity accounted units currency translation adjustments	**4**	10	(48)
Currency translation reclassified on disposal	**—**	215	14
At 31 December	**162**	(2,656)	(3,212)
Total other reserves per balance sheet	**11,960**	9,177	8,661

Notes to the 2020 Financial Statements

28 Other reserves and retained earnings continued

	2020 US$m	2019 US$m	2018 US$m
Retained earnings[e]			
At 1 January	**23,387**	27,025	23,761
Adjustment for transition to new accounting pronouncements[b]	**—**	(113)	(179)
Parent and subsidiaries' profit for the year	**9,456**	7,709	13,125
Equity accounted units' profit after tax for the year	**313**	301	513
Actuarial (losses)/gains[f]	**(482)**	(259)	894
Tax relating to components of other comprehensive income	**116**	81	(269)
Total comprehensive income for the year	**9,403**	7,832	14,263
Share buy-back programme	**(1)**	(1,135)	(5,423)
Dividends paid	**(6,132)**	(10,334)	(5,356)
Change in equity interest held by Rio Tinto	**84**	85	60
Own shares purchased/treasury shares reissued for share options and other movements	**(31)**	(43)	(140)
Employee share options and other IFRS 2 charges taken to the income statement	**82**	70	61
Transfer from FVOCI reserve	**—**	—	3
Transfers and other movements	**—**	—	(25)
At 31 December	**26,792**	23,387	27,025

(a) The capital redemption reserve was set up to comply with section 733 of the UK Companies Act 2006 (previously section 170 of the UK Companies Act 1985) when shares of a company are redeemed or purchased wholly out of the company's profits. Balances reflect the amount by which the company's issued share capital is diminished in accordance with this section.

(b) The impact of the transition to new accounting pronouncements; IFRS 16 "Leases" and IFRIC 23 "Uncertainty over income tax treatments" on 1 January 2019 and IFRS 9 "Financial Instruments" and IFRS 15 "Revenue from Contracts with Customers" on 1 January 2018.

(c) Other reserves includes US$11,936 million which represents the difference between the nominal value and issue price of the shares issued arising from Rio Tinto plc's rights issue completed in July 2009. No share premium was recorded in the Rio Tinto plc financial statements through the operation of the merger relief provisions of the UK Companies Act 1985.
Other reserves also include the cumulative amount recognised under IFRS 2 in respect of options granted but not exercised to acquire shares in Rio Tinto Limited, less, where applicable, the cost of shares purchased to satisfy share options exercised. The cumulative amount recognised under IFRS 2 in respect of options granted but not exercised to acquire shares in Rio Tinto plc is recorded in retained earnings.

(d) Exchange differences arising on the translation of the Group's net investment in foreign controlled companies are taken to the foreign currency translation reserve, as described in note 1(d). The cumulative differences relating to an investment are transferred to the income statement when the investment is disposed of.

(e) Retained earnings and movements in reserves of subsidiaries include those arising from the Group's share of joint operations.

(f) There were US$11 million actuarial losses relating to equity accounted units in 2020 (31 December 2019: US$7 million; 31 December 2018: US$nil).

29 Financial instruments and risk management

In this note, except where stated, the information relates to the financial instruments of the parent companies and their subsidiaries and joint operations, and excludes those of equity accounted units. We have grouped the information in the following sections:

A – Financial assets and liabilities by categories
B – Derivative financial instruments
C – Fair values

A (a) Financial assets and liabilities by categories

At 31 December 2020	Note	Total US$m	Amortised cost US$m	Fair value through other comprehensive income US$m	Fair value through profit and loss US$m
Financial assets					
Cash and cash equivalents	20	**10,381**	**3,970**	—	**6,411**
Trade and other financial receivables[a][b]	18	**3,286**	**1,479**	—	**1,807**
Equity shares and quoted funds	19	**75**	—	**64**	**11**
Other investments, including loans[c]	19	**2,899**	**138**	—	**2,761**
Derivatives related to net debt: designated as hedges[d]	19, 23	**388**	—	—	**388**
Derivatives and embedded derivatives not related to net debt: not designated as hedges[d]	19	**204**	—	—	**204**
Embedded derivatives not related to net debt: designated as hedges[d]	19	**73**	—	—	**73**
Loans to equity accounted units including quasi equity loans		**153**	**153**	—	—
Total financial assets		**17,459**	**5,740**	**64**	**11,655**
Financial liabilities					
Trade and other financial payables[e]	24	**(5,847)**	**(5,817)**		**(30)**
Short-term borrowings and bank overdrafts	21	**(584)**	**(584)**		—
Medium-term and long-term borrowings	21	**(13,247)**	**(13,247)**		—
Derivatives related to net debt: designated as hedges[d]	21, 23	**(140)**	—		**(140)**
Derivatives and embedded derivatives not related to net debt: not designated as hedges[d]	21	**(24)**	—		**(24)**
Embedded derivatives not related to net debt: designated as hedges[d]	21	**(20)**	—		**(20)**
Other financial liabilities	21	—	—		—
Total financial liabilities		**(19,862)**	**(19,648)**		**(214)**

At 31 December 2019	Note	Total US$m	Amortised cost US$m	Fair value through other comprehensive income US$m	Fair value through profit and loss US$m
Financial assets					
Cash and cash equivalents	20	8,027	2,707	—	5,320
Trade and other financial receivables[a][b]	18	2,938	1,801	—	1,137
Equity shares and quoted funds	19	61	—	50	11
Other investments, including loans[c]	19	2,839	21	—	2,818
Derivatives related to net debt: designated as hedges[d]	19, 23	151	—	—	151
Derivatives and embedded derivatives not related to net debt: not designated as hedges[d]	19	149	—	—	149
Embedded derivatives not related to net debt: designated as hedges[d]	19	66	—	—	66
Loans to equity accounted units including quasi equity loans		152	152	—	—
Total financial assets		14,383	4,681	50	9,652
Financial liabilities					
Trade and other financial payables[e]	24	(5,398)	(5,341)		(57)
Short-term borrowings and bank overdrafts	21	(1,022)	(1,022)		—
Medium-term and long-term borrowings	21	(13,093)	(13,093)		—
Derivatives related to net debt: designated as hedges[d]	21, 23	(298)	—		(298)
Derivatives and embedded derivatives not related to net debt: not designated as hedges[d]	21	(29)	—		(29)
Embedded derivatives not related to net debt: designated as hedges[d]	21	(24)	—		(24)
Other financial liabilities	21	(247)	(247)		—
Total financial liabilities		(20,111)	(19,703)		(408)

(a) Trade and other financial receivables comprise trade receivables, other financial receivables, receivables relating to net investments in finance leases and amounts due from equity accounted units within note 18.
(b) Provisionally priced receivables are fair valued.
(c) Other investments, including loans, include US$2,538 million (2019: US$2,584 million) of highly liquid financial assets in managed investment funds classified as held for trading.
(d) These financial assets and liabilities in aggregate agree to the total derivative financial instruments disclosed in notes 19 and 21.
(e) Trade and other financial payables comprise trade payables, other financial payables, accruals and amounts due to equity accounted units within note 24. The trade and other payables held at fair value are valued using Level 2 inputs.

Notes to the 2020 Financial Statements

29 Financial instruments and risk management continued
A (b) Financial risk management
Objectives and policy
Our financial risk management objectives are:

- to have in place a robust capital structure to manage the organisation through the commodity cycle; and
- to allow our financial exposures to float with the market.

Any exceptions to these require formal approval by the Board.

The Group operates a floating prices and rates policy for the management of our key economic exposure to commodity price, foreign exchange and interest rates risks. We do not seek to hedge this floating exposure and will re-float, where possible, any material price or rates that are fixed. Where this is impossible (or sub-optimal) any non-floating price risks are managed within defined market risk tolerances. Derivatives are used as and when required in order to manage our exposure in accordance with this underlying financial risk management principle.

In the paragraphs below, we summarise the risks that we are exposed to, and outline how our Treasury and Commercial teams manage these risks in accordance with agreed policies. These teams operate under a strong control environment, within approved limits. Our Board reviews and approves limits at least annually.

(i) Capital and liquidity risk
Our overriding objective when managing capital and liquidity is to safeguard the business as a going concern. Capital is allocated in a consistent and disciplined manner, prioritising sustaining capital expenditure, followed by the ordinary dividend and then an iterative allocation between investing in compelling growth opportunities, maintaining balance sheet strength and delivering further returns to shareholders.

Our Board and senior management regularly review the capital structure and liquidity of the Group. They take into account our strategic priorities, the economic and business conditions, and any identified investment opportunities, along with the expected returns to shareholders. We expect total cash returns to shareholders over the longer term to be in a range of 40–60% of underlying earnings in aggregate through the commodity cycle.

We consider various financial metrics when managing our risk, including net debt, gearing, the overall level of borrowings and their maturity profile, liquidity levels, total capital, future cash flows, underlying EBITDA and interest cover ratios.

Our total capital as at 31 December was:

Total capital	Note	**2020 US$m**	2019 US$m
Equity attributable to owners of Rio Tinto (see Group balance sheet)		**47,054**	40,532
Equity attributable to non-controlling interests (see Group balance sheet)		**4,849**	4,710
Net debt	23	**664**	3,651
Total capital		**52,567**	48,893

Our net debt decreased to US$0.7 billion at 31 December 2020 from US$3.7 billion at 31 December 2019. This was driven by operating cash inflows, partially offset by capital expenditure and cash returns to shareholders during the year. At 31 December 2020 net gearing was 1% (2019: 7%) and interest cover was 39 times (2019: 28 times).

We have access to various forms of financing including our US Shelf Programme, European Debt Issuance Programme, Commercial Paper and credit facilities. We did not issue any debt in 2020 or 2019 under these programmes.

We have US$7.5 billion fully committed Revolving Credit Facilities, which were extended in 2020 to November 2023 and remained undrawn throughout the year. The funds available can be used for general corporate purposes. Advances under these revolving facilities bear an interest rate per annum based on LIBOR (or EURIBOR, CDOR or BBSW in relation to any euro, Canadian dollar or Australian dollar loans respectively) plus a margin (which is dependent on our long-term credit rating as determined by Moody's and Standard & Poor's and the level of drawdown). The facility agreements contain no financial covenants.

Our credit ratings, as provided by Standard & Poor's and Moody's investor services, as at 31 December were:

	2020	2019
Long-term rating	**A/A2**	A/A2
Short-term rating	**A-1/P-1**	A-1/P-1
Outlook	**Stable/Stable**	Stable/Stable

Our unified credit status is maintained through cross guarantees, which mean the contractual obligations of Rio Tinto plc and Rio Tinto Limited are automatically guaranteed by the other.

In the table below, we summarise the maturity profile of our financial liabilities based on contractual undiscounted payments, which will therefore not necessarily agree with the amounts disclosed in the balance sheet.

Financial liability analysis

At 31 December 2020 (Outflows)/Inflows	Within 1 year or on demand US$m	Between 1 and 2 years US$m	Between 2 and 3 years US$m	Between 3 and 4 years US$m	Between 4 and 5 years US$m	After 5 years US$m	Total US$m
Non-derivative financial liabilities							
Trade and other financial payables[a]	**(5,251)**	**(53)**	**(15)**	**(34)**	**(19)**	**(394)**	**(5,766)**
Expected lease liability payments	**(271)**	**(231)**	**(155)**	**(101)**	**(84)**	**(724)**	**(1,566)**
Borrowings before swaps	**(351)**	**(667)**	**(743)**	**(1,256)**	**(1,892)**	**(7,477)**	**(12,386)**
Expected future interest payments[a]	**(525)**	**(522)**	**(495)**	**(469)**	**(427)**	**(2,999)**	**(5,437)**
Derivative financial liabilities[b]							
Derivatives related to net debt – net settled	**—**	**—**	**—**	**—**	**—**	**—**	**—**
Derivatives related to net debt – gross settled[a]:							
– gross inflows	**27**	**27**	**27**	**27**	**27**	**790**	**925**
– gross outflows	**(34)**	**(34)**	**(34)**	**(34)**	**(34)**	**(943)**	**(1,113)**
Derivatives not related to net debt – net settled	**(20)**	**(7)**	**(2)**	**(2)**	**(2)**	**(9)**	**(42)**
Derivatives not related to net debt – gross settled:							
– gross inflows	**290**	**—**	**—**	**—**	**—**	**—**	**290**
– gross outflows	**(291)**	**—**	**—**	**—**	**—**	**—**	**(291)**
Total	**(6,426)**	**(1,487)**	**(1,417)**	**(1,869)**	**(2,431)**	**(11,756)**	**(25,386)**

At 31 December 2019 (Outflows)/Inflows	Within 1 year or on demand US$m	Between 1 and 2 years US$m	Between 2 and 3 years US$m	Between 3 and 4 years US$m	Between 4 and 5 years US$m	After 5 years US$m	Total US$m
Non-derivative financial liabilities							
Trade and other financial payables[a]	(4,841)	(45)	(12)	(14)	(15)	(380)	(5,307)
Expected lease liability payments	(349)	(267)	(157)	(133)	(93)	(671)	(1,670)
Borrowings before swaps	(723)	(171)	(665)	(741)	(1,209)	(9,320)	(12,829)
Expected future interest payments[a]	(607)	(594)	(590)	(551)	(514)	(3,518)	(6,374)
Other financial liabilities	(247)	—	—	—	—	—	(247)
Derivative financial liabilities[b]							
Derivatives related to net debt – net settled	(16)	(16)	(16)	9	(3)	3	(39)
Derivatives related to net debt – gross settled[a]:							
– gross inflows	495	40	40	40	507	788	1,910
– gross outflows	(588)	(53)	(53)	(53)	(599)	(977)	(2,323)
Derivatives not related to net debt – net settled	(31)	—	—	(2)	(4)	(23)	(60)
Derivatives not related to net debt – gross settled:							
– gross inflows	699	—	—	—	—	—	699
– gross outflows	(703)	—	—	—	—	—	(703)
Total	(6,911)	(1,106)	(1,453)	(1,445)	(1,930)	(14,098)	(26,943)

(a) The interest payable at year end was removed from trade and other financial payables and is shown within expected future interest payments. Interest payments have been projected using interest rates applicable at the end of the applicable financial year. Where debt is subject to variable interest rates, future interest payments are subject to change in line with market rates.
(b) The maturity grouping is based on the earliest payment date.

Offsetting and enforceable master netting agreements

When we have a legally enforceable right to offset our financial assets and liabilities and an intention to settle on a net basis, or realise the asset and settle the liability simultaneously, we report the net amount in the consolidated balance sheet. Agreements with derivative counterparties are based on the International Swaps and Derivatives Association master netting agreements that do not meet the criteria for offsetting, but allow for the related amounts to be set-off in certain circumstances. During the year, there were no material amounts offset in the balance sheet.

(ii) Commodity price risk

Our broad commodity base means our exposure to commodity prices is diversified. Our normal policy is to sell our products at prevailing market prices. Exceptions to this rule are subject to strict limits laid down by the Board, and to defined market risk tolerances and internal controls.

We sell our products to customers under contracts which vary in tenure and pricing mechanisms, including some volumes sold in the spot market. Sales revenue may be subject to adjustment if product specifications do not conform to the terms specified in a sales contract.

Pricing for iron ore is on a range of terms, the majority being either monthly or quarterly average pricing mechanisms. We sell a smaller proportion of iron ore volumes on the spot market.

Notes to the 2020 Financial Statements

29 Financial instruments and risk management continued

(ii) Commodity price risk (continued)

We generally sell copper and aluminium under contracts which vary in tenure and pricing mechanisms, with some volumes sold in the spot market. The prices are determined by reference to prevailing market prices on terminal markets, such as the London Metal Exchange (LME) and the Commodities Exchange (COMEX) in New York. Prices fluctuate widely in response to changing levels of supply and demand but, in the long run, prices are related to the marginal cost of supply. Gold is also priced in an active market in which prices respond to daily changes in quantities offered and sought. Newly mined gold is only one source of supply; investment and disinvestment can be important elements of supply and demand.

At the date revenue is recognised, certain of our products are provisionally priced, based on the amount we expect to receive in the future. After initial recognition of revenue, we record any change in revenue relating to market prices separately in "Other revenue" (refer to note 3). Substantially all iron ore and aluminium sales are reflected at final prices at each reporting period. Final prices for copper concentrate, however, are normally determined between 30 and 180 days after delivery to our customer.

At 31 December 2020, we had 261 million pounds of copper sales, including share of equity accounted unit (31 December 2019: 220 million pounds), that were provisionally priced at US 336 cents per pound (2019: US 271 cents per pound). The final price of these sales will be determined during the first half of 2021. A 10% change in the price of copper realised on the provisionally priced sales, all other factors held constant, would increase or reduce net earnings by US$58 million (2019: US$38 million).

For some products, particularly aluminium, we are also exposed to fluctuations in power prices.

Hedging strategy

We do not generally consider that using derivatives to fix commodity prices would provide a long-term benefit to our shareholders. However, for certain physical commodity transactions for which the price was fixed at the contract date, we enter into derivatives to achieve the prevailing market prices at the point of revenue recognition.

To mitigate our exposure to changes in the relationship between aluminium prices and power prices, we have a number of electricity purchase contracts which are directly linked to the daily official LME cash ask price for high grade aluminium ("LME price") and to the US Midwest Transaction Premium ("Midwest premium").

In accordance with IFRS 9, we apply hedge accounting to two embedded derivatives within our power contracts. The embedded derivatives (notional aluminium forward sales) have been designated as the hedging instrument. The forecasted aluminium sales, priced using the LME price and the Midwest premium, represent the hedged item.

The hedging ratio is 1:1, as the quantity of sales designated as being hedged matches the notional amount of the hedging instrument. The hedging instrument's notional amount, expressed in equivalent metric tonnes of aluminium, is derived from our expected electricity consumption under the power contracts as well as other relevant contract parameters.

When we designate such embedded derivatives as the hedging instrument in a cash flow hedge, we recognise the effective portion of the change in the fair value of the hedging instrument in other comprehensive income, and it is accumulated in the cash flow hedge reserve. The amount that is recognised in other comprehensive income is limited to the lesser of the cumulative change in the fair value of the hedging instrument and the cumulative change in the fair value of the hedged item, in absolute terms.

We recognise any ineffectiveness relating to the hedging relationship immediately in the income statement.

Sources of ineffectiveness include: differences in the timing of the cash flows between the hedged item and the hedging instrument, non-zero initial fair value of the hedging instrument, the existence of a cap on the Midwest premium in the hedging instrument and counterparty credit risk.

We held the following notional aluminium forward sales contracts embedded in the power contracts:

At 31 December 2020	**Total**	**Within 1 year**	**Between 1 and 5 years**	**Between 5 and 10 years**	**After 10 years**
Notional amount (in tonnes)	**640,963**	**72,548**	**287,587**	**280,828**	**—**
Notional amount (in US$ millions)	**1,522**	**159**	**663**	**701**	**—**
Average hedged rate (in US$ per tonne)	**2,375**	**2,189**	**2,305**	**2,495**	**—**

At 31 December 2019	Total	Within 1 year	Between 1 and 5 years	Between 5 and 10 years	After 10 years
Notional amount (in tonnes)	704,370	65,226	286,617	352,527	—
Notional amount (in US$ millions)	1,656	138	647	871	—
Average hedged rate (in US$ per tonne)	2,351	2,114	2,257	2,471	—

The impact on our financial statements of these hedging instruments and hedging items are:

	Aluminium embedded derivatives separated from the power contract (Hedging instrument)[a]			Highly probable forecast aluminium sales (Hedged item)				
	Nominal US$m	Carrying amount US$m	Change in fair value in the period US$m	Cash flow hedge reserve[b] US$m	Change in fair value in the period US$m	Total hedging gain/(loss) recognised in reserves US$m	Hedge ineffective-ness in the period[c] US$m	Amount reclassified from reserves to income statement[d] US$m
2020	**1,522**	**46**	**23**	**184**	**(49)**	**27**	**(4)**	**40**
2019	1,656	42	29	196	(50)	36	(7)	19

(a) Aluminium embedded derivatives (forward contracts and options) are contained within certain aluminium smelter electricity purchase contracts. US$66 million (2019: US$66 million) of the carrying value is shown within "Other financial assets" and US$20 million (2019: US$24 million) shown within "Other financial liabilities".
(b) The difference between this amount and the total cash flow hedge reserve of the Group (shown in note 28) relates to our cash flow hedge on the sterling bond (refer to interest rate risk section).
(c) Hedge ineffectiveness is included in net operating costs (raw materials, consumables, repairs and maintenance) in the income statement.
(d) On realisation of the hedge, realised amounts are reclassified from reserves to consolidated sales revenue in the income statement.

There was no cost of hedging recognised in 2020 or 2019 relating to this hedge relationship.

We set out details of our commodity derivatives that are not designated as hedges in section B.

Sensitivities
Our commodity derivatives are impacted by changes in market prices. The table below summarises the impact that changes in aluminium market prices have on aluminium forward and option contracts embedded in power supply agreements outstanding at 31 December 2020. Any change in price will result in an offsetting change in our future earnings.

	Change in market prices	2020 US$m	2019 US$m
Effect on net earnings	**+10 %**	**(19)**	(28)
	(10)%	**19**	27
Effect on equity	**+10 %**	**(98)**	(97)
	(10)%	**100**	101

We exclude our "own use contracts" from this sensitivity analysis as they are outside the scope of IFRS 9. Our business units continue to hold these types of contracts to satisfy their expected purchase, sale or usage requirements.

(iii) Credit risk
We are exposed to credit risk in our operating activities (primarily from customer trade receivables); and from our investing activities (primarily investments in separately managed funds). We are also exposed to credit risk arising from our deposits in treasury and liquidity funds, deposits with banks and financial institutions and from our interest rate and currency derivative contracts.

Credit risks related to receivables
Our Commercial team manages customer credit risk subject to our established policy, procedures and controls. The team establishes credit limits for all of our customers. Where customers are rated by an independent credit rating agency, these ratings are used as a guide to set credit limits. Where there are no independent credit ratings available, we assess the credit quality of the customer through a credit rating model and assign appropriate credit limit. The Commercial team monitors outstanding customer receivables regularly and highlights any credit concerns to senior management. Receivables to high risk customers are often secured by letters of credit or other forms of credit enhancement.

The expected credit loss on our trade receivable portfolio is insignificant (see note 18).

Credit risk related to financial instruments and cash deposits
Our Treasury team manages credit risk from investments in government securities (primarily US Government), corporate and asset-backed securities, reverse re-purchase agreements, money market funds, and balances with banks and financial institutions in accordance with a Board-approved credit risk framework which sets the risk appetite. Our Board reviews this annually. We make investments of surplus funds only with approved investment grade (BBB- and above) counterparties who have been assigned specific credit limits. The limits are set to minimise the concentration of credit risk and therefore mitigate the potential for financial loss through counterparty failure.

Notes to the 2020 Financial Statements

29 Financial instruments and risk management continued
The maximum credit risk exposure arising on our financial assets at the balance sheet date is as follows:

	Note	2020 US$m	2019 US$m
Cash and cash equivalents	20	**10,381**	8,027
Trade and other financial receivables	18	**3,286**	2,938
Investments	19	**2,899**	2,839
Derivative assets	19	**665**	366
Loans to equity accounted units		**41**	39
Total		**17,272**	14,209

(iv) Foreign exchange risk
The broad geographic spread of our sales and operations means that our earnings, cash flows and shareholders' equity are influenced by a wide variety of currencies.

The majority of our sales are denominated in the US dollar.

Our operating costs are influenced by the currencies of those countries where our mines and processing plants are located, and by those currencies in which we buy imported equipment and services. The US dollar, the Australian dollar and the Canadian dollar are the most important currencies influencing our costs. In any particular year, currency fluctuations may have a significant impact on our financial results. A strengthening of the US dollar against the currencies in which our costs are partly denominated has a positive effect on our underlying earnings. However, a strengthening of the US dollar reduces the value of non-US dollar denominated net assets, and therefore total equity.

Our external borrowings and cash are mainly denominated in US dollars, either directly or through the use of derivatives, as we consider the US dollar the most appropriate currency for financing our operations.

In most cases our debt and other financial assets and liabilities, including intragroup balances, is held in the functional currency of the relevant subsidiary. There are instances where these balances are held in currencies other than the functional currency of the relevant subsidiary. This means we recognise exchange gains and losses in our income statement (except where they can be taken to equity) as these balances are translated into the functional currency of the relevant subsidiary. Our income statement also includes exchange gains and losses arising on US dollar net debt and intragroup balances. On consolidation, these balances are retranslated to our US dollar presentation currency and there is a corresponding and offsetting exchange difference recognised directly in the currency translation reserve. There is no impact on total equity.

The table below summarises, by currency, our net debt, after taking into account relevant cross currency interest rate swaps and foreign exchange contracts:

Net debt by currency	Total borrowings excluding overdrafts US$m	Lease liabilities US$m	Derivatives related to net debt US$m	Cash and cash equivalents US$m	Other investments US$m	Net debt 2020 US$m	Net debt 2019 US$m
US dollar	**(12,102)**	**(342)**	**248**	**9,517**	**2,538**	**(141)**	(2,843)
Australian dollar	**(375)**	**(350)**	**—**	**439**	**—**	**(286)**	(561)
Euro	**(4)**	**(25)**	**—**	**43**	**—**	**14**	10
South African rand	**—**	**(1)**	**—**	**141**	**—**	**140**	171
Canadian dollar	**(170)**	**(199)**	**—**	**36**	**—**	**(333)**	(322)
Other	**(2)**	**(261)**	**—**	**205**	**—**	**(58)**	(106)
Total	**(12,653)**	**(1,178)**	**248**	**10,381**	**2,538**	**(664)**	(3,651)

Hedging strategy
Under normal market conditions, we do not consider that active currency hedging of transactions would provide long-term benefits to shareholders. We review our exposure on a regular basis and will undertake hedging if deemed appropriate. We may deem currency protection measures appropriate in specific commercial circumstances. Capital expenditures and other significant financial items such as acquisitions, disposals, tax and dividend cash flows may be economically hedged subject to strict limits laid down by the Board. Details of the cross-currency interest rate swaps and the currency forward contracts used to manage our currency risk exposures at 31 December 2020 are in section B.

Sensitivities
The table below shows the estimated retranslation effect on financial assets and financial liabilities, including intragroup balances, of a 10% strengthening in the closing exchange rate of the US dollar against significant currencies. We deem 10% to be the annual exchange rate movement that is reasonably probable (on an annual basis over the long run) for any of our significant currencies and therefore an appropriate representation.

We calculate sensitivities in relation to the functional currencies of our individual entities. We translate the impact of these on net earnings and underlying earnings into US dollars at the exchange rates on which the sensitivities are based. The impact to net earnings associated with a 10% weakening of a particular currency, shown below, is broadly offset within equity through movements in the currency translation reserve and therefore generally has no impact on our net assets. The impact is expressed in terms of the effect on net earnings, underlying earnings, and equity, assuming that each exchange rate moves in isolation. The sensitivities are based on financial assets and financial liabilities held at 31 December 2020, where balances are not denominated in the functional currency of the subsidiary or joint operation, and exclude financial assets and liabilities held by equity accounted units. These balances will not remain constant throughout 2021, and therefore the following information should be used with care.

At 31 December 2020
Gains/(losses) associated with 10% strengthening of the US dollar

Currency exposure	Closing exchange rate US cents	Effect on net earnings US$m	Of which amount impacting underlying earnings US$m	Impact directly on equity US$m
Australian dollar	**77**	**625**	**(11)**	**(1,105)**
Canadian dollar	**78**	**(167)**	**6**	**—**
Euro	**123**	**139**	**3**	**—**

At 31 December 2019
Gains/(losses) associated with 10% strengthening of the US dollar

Currency exposure	Closing exchange rate US cents	Effect on net earnings US$m	Of which amount impacting underlying earnings US$m	Impact directly on equity US$m
Australian dollar	70	453	(4)	(1,002)
Canadian dollar	77	(143)	7	—
Euro	112	178	4	—

(v) Interest rate risk
Our interest rate management policy is generally to borrow and invest at floating interest rates. This approach is based on the historically lower cost of borrowing at floating rates, and the historical correlation between interest rates and commodity prices. It does mean, however, that movements in market interest rates impact our earnings. In certain circumstances, we may elect to maintain a higher proportion of fixed-rate funding.

Hedging strategy
Because we aim to borrow and invest at floating interest rates, we enter into interest rate swaps and review these positions on a regular basis. During 2020, we entered into US$1.5 billion of interest rate swaps to convert the remaining fixed Alcan debt to floating interest rates. This is in accordance with our floating interest rate policy. We have put these swaps into fair value hedge relationships with the respective tranches of debt.

At 31 December 2020, US$5.9 billion (2019: US$4.5 billion) US dollar notional fixed-rate US dollar borrowings continue to be swapped to floating US dollar rates and €417 million (2019: €818 million) euro notional fixed-rate borrowings continue to be fully swapped to floating US dollar interest rates at an effective exchange rate of 1.3105. These swaps are in fair value hedge relationships.

Since 2012, we have also held cross-currency interest rate swaps to convert the principal and annual interest coupons of the Rio Tinto Finance plc £500m Sterling Bond to a US dollar notional with fixed US dollar annual interest coupons. We applied cash flow hedge accounting to this relationship to limit our US dollar cash flow exposure on the principal and interest payments. The hedge was fully effective in the 2020 and 2019 financial years as the notional amount, maturity, payment and reset dates match.

				2020		2019	
Nominal amount of the bond	Nominal amount of the hedging instrument	Maturity	Effective exchange rate	**Gain in fair value of the interest component of the hedged item US$m**	**Loss in fair value of the interest component of the hedging instrument US$m**	Loss in fair value of the interest component of the hedged item US$m	Gain in fair value of the interest component of the hedging instrument US$m
£500 million	US$807 million	November 2029	1.6132	**7**	**(7)**	(24)	24

In 2019, we swapped the resulting fixed US dollar annual interest coupon payments to floating rates. Fair value hedge accounting has been applied to this relationship in addition to the pre-existing cash flow hedge.

Notes to the 2020 Financial Statements

29 Financial instruments and risk management continued

The effective interest rates of our borrowings, impacted by swaps, are summarised below. All nominal values are fully hedged unless otherwise stated:

Borrowings in a hedge relationship	Nominal value US$m	Weighted average interest rate after swaps	Swap maturity	Carrying value 2020 US$m	Carrying value 2019 US$m
Rio Tinto Finance plc Euro Bonds 2.0% due 2020[a]	526	3 month LIBOR +1.35%	2020	—	455
Rio Tinto Finance plc Euro Bonds 2.875% due 2024	546	3 month LIBOR +1.64%	2024	**555**	508
Rio Tinto Finance (USA) Limited Bonds 3.75% 2025	1,200	3 month LIBOR +1.39%	2025	**1,299**	1,229
Rio Tinto Finance (USA) Limited Bonds 7.125% 2028	750	3 month LIBOR +3.27%	2028	**1,005**	958
Alcan Inc. Debentures 7.25% due 2028	100	3 month LIBOR +5.43%	2024	**109**	104
Rio Tinto Finance plc Sterling Bonds 4.0% due 2029	807	3 month LIBOR +2.65%	2024	**717**	647
Alcan Inc. US$400m Debentures 7.25% due 2031[b]	400	3 month LIBOR +5.72%	2025	**438**	—
Alcan Inc. US$750m Global Notes 6.125% due 2033[b]	750	3 month LIBOR +5.67%	2025	**744**	—
Alcan Inc. US$300m Global Notes 5.75% due 2035[b]	300	3 month LIBOR +5.18%	2025	**292**	—
Rio Tinto Finance (USA) Limited Bonds 5.2% 2040	1,150	3 month LIBOR +3.79%	2022	**1,173**	1,137
Rio Tinto Finance (USA) plc Bonds 4.75% 2042	500	3 month LIBOR +3.42%	2023	**501**	483
Rio Tinto Finance (USA) plc Bonds 4.125% 2042	750	3 month LIBOR +2.83%	2023	**743**	716

(a) On 11 May 2020 we repaid, in full, the nominal amount of the Rio Tinto Finance plc Euro Bonds 2% due 2020.
(b) In 2020 we entered into new swaps to convert the interest payable in relation to these bonds from fixed to floating rates.

The fair value of interest rate and cross currency interest rate swaps at 31 December 2020 was US$388 million (2019: US$151 million) asset and US$140 million (2019: US$298 million) liability, respectively. These are included within "Other financial assets" and "Other financial liabilities" in the balance sheet.

The main sources of ineffectiveness of the fair value hedges include changes in the timing of the cash flows of the hedging instrument compared to the underlying hedged item, and changes in the credit risk of parties to the hedging relationships. Refer to Note 8 for the changes in fair value of the bonds and the swaps as well as the ineffectiveness recognised in the period. Refer to Note 1 "New standards Issued not yet effective" for the impacts of IBOR reform.

Taking into account the interest and currency interest rate swaps, at 31 December 2020, US$11.7 billion (2019: US$10.8 billion) of our adjusted gross borrowings were at floating rates. This has resulted in a floating to fixed debt ratio of 86% floating to 14% fixed (2019: 76% floating to 24% fixed). Our weighted average debt maturity was approximately 9 years (2019: 10 years) based on current interest rates and the carrying value of gross borrowings at the year end.

Sensitivities

Based on our floating rate financial instruments outstanding at 31 December 2020, the effect on our net earnings of a 100 basis point increase in US dollar LIBOR interest rates, with all other variables held constant, would be an expense of US$7 million (2019: expense of US$20 million), reflecting the lower net debt position in 2020 compared to 2019. We have an exposure to interest rate volatility within shareholders' equity arising from fair value movements on derivatives in the cash flow hedge reserve. These derivatives have an underlying exposure to sterling and US dollars. With all factors remaining constant, and based on the composition of derivatives impacting the cash flow reserve at 31 December 2020, the sensitivity of a 100 basis point increase in interest rates in each of the currencies in isolation would impact equity, before tax, by a charge of US$68 million (2019: US$68 million charge) for sterling and a credit of US$78 million (2019: US$78 million credit) for US dollars. A 100 basis point decrease would have broadly the same impact in the opposite direction.

B Derivative financial instruments

In the table below we summarise our derivatives, including embedded derivatives, as at 31 December.

	Total fair value			
	2020		2019	
	Asset US$m	Liability US$m	Asset US$m	Liability US$m
Derivatives designated as hedges				
Interest rate swaps[a]	**386**	**(1)**	151	(38)
Cross-currency interest rate swaps[b]	**2**	**(139)**	—	(260)
Aluminium embedded derivatives[c]	**66**	**(20)**	66	(24)
Currency forward contracts	**7**	**—**	—	—
Total derivatives designated as hedges	**461**	**(160)**	217	(322)
Derivatives not designated as hedges				
Currency forward contracts and swaps	**63**	**(1)**	13	(5)
Aluminium embedded derivatives[c]	**80**	**—**	96	—
Other embedded derivatives	**28**	**(16)**	14	—
Other commodity contracts[d]	**33**	**(7)**	26	(24)
Total derivatives not designated as hedges	**204**	**(24)**	149	(29)
Total derivative instruments	**665**	**(184)**	366	(351)
Analysed by maturity:				
Less than 1 year	**134**	**(23)**	58	(103)
Between 1 and 5 years	**330**	**(14)**	96	(86)
More than 5 years	**201**	**(147)**	212	(162)
Total	**665**	**(184)**	366	(351)
Total net derivative instruments	**481**		15	

Reconciliation to balance sheet	Note	**2020 US$m**	2019 US$m
Non-current assets	19	**531**	308
Current assets	19	**134**	58
Current liabilities	21	**(23)**	(103)
Non-current liabilities	21	**(161)**	(248)
Total net derivative instruments		**481**	15

(a) The interest rate swaps are used to convert certain fixed rate borrowings to a floating rate.
(b) The cross-currency interest rate swaps are used to convert non-US dollar denominated borrowings to either fixed or floating US dollar borrowings.
(c) Aluminium embedded derivatives (forward contracts and options) are contained within certain aluminium smelter electricity purchase contracts. These contracts reduce our margin exposure to movements in the aluminium price.
(d) Other commodity derivatives mainly relate to forward contracts which we have entered into to swap some of our fixed priced product sales to prevailing market prices at the point of revenue recognition. None of these derivatives is in a hedge relationship.

C Fair values

The following table shows the carrying amounts and fair values of our borrowings including those which are not carried at an amount which approximates their fair value at 31 December 2020 and 31 December 2019. The fair values of our cash equivalents, loans to equity accounted units and other financial liabilities approximate their carrying values because of their short maturity, or because they carry floating rates of interest.

		2020		2019	
	Note	Carrying value US$m	Fair value US$m	Carrying value US$m	Fair value US$m
Borrowings	21	**12,653**	**15,076**	12,806	14,678

Total borrowings with a carrying value of US$7.6 billion (2019: US$7.7 billion) relate to listed bonds with a fair value of US$9.5 billion (2019: US$9.1 billion) and are categorised as level 1 in the fair value hierarchy.

Borrowings with a carrying value of US$4.2 billion (2019: US$4.2 billion) relate to project finance drawn down by Oyu Tolgoi, with a fair value of US$4.7 billion (2019: US$4.7 billion) and are categorised as level 3 in the fair value hierarchy. We use different valuation inputs for the pre-and post-completion phases to reflect Rio Tinto's completion support guarantee during the pre-completion phase. To measure the fair value of the project finance pre-completion our valuation input includes market yield over the pre-completion period, the variability of which we consider a reasonable indicator of fair value movements on amounts outstanding under the project finance facility. Post-completion, we estimate the fair value with reference to the annual interest rate on each tranche of the facility, and after considering factors that could indicate a change in the credit assessment of Oyu Tolgoi LLC as a counterparty to project finance. These factors include in-country risk relating to the Oyu Tolgoi project, and the assumed date of transition from pre-completion to post-completion. These valuation inputs are considered to be level 3. Transition from pre-completion to post-completion is determined by a set of tests for both completion of physical infrastructure and the ability to extract and process ore of defined grades over a defined period.

Notes to the 2020 Financial Statements

29 Financial instruments and risk management continued

Our remaining borrowings have a fair value measured by discounting estimated cash flows with an applicable market quoted yield, and are categorised as level 2 in the fair value hierarchy.

C (a) Valuation hierarchy

The tables below show the financial instruments by valuation method in accordance with IFRS 9 at 31 December 2020 and 31 December 2019.

			Held at fair value			
At 31 December 2020	**Note**	**Total US$m**	**Level 1[a] US$m**	**Level 2[b] US$m**	**Level 3[c] US$m**	**Held at amortised cost US$m**
Assets						
Cash and cash equivalents[d]		**10,381**	**6,411**	**—**	**—**	**3,970**
Investments in equity shares and funds		**75**	**35**	**—**	**40**	**—**
Other investments, including loans[e]	19	**2,899**	**2,563**	**—**	**198**	**138**
Trade and other financial receivables[f]	18	**3,286**	**5**	**1,802**	**—**	**1,479**
Derivatives (net)						
Forward contracts and option contracts: designated as hedges[g] (Section B)		**53**	**—**	**7**	**46**	**—**
Forward contracts and option contracts, not designated as hedges[g] (Section B)		**180**	**—**	**69**	**111**	**—**
Derivatives related to net debt[h] (Section B)		**248**	**—**	**248**	**—**	**—**
Liabilities						
Trade and other financial payables	24	**(5,847)**	**—**	**(30)**	**—**	**(5,817)**
Total		**11,275**	**9,014**	**2,096**	**395**	**(230)**

			Held at fair value			
At 31 December 2019	Note	Total US$m	Level 1[a] US$m	Level 2[b] US$m	Level 3[c] US$m	Held at amortised costs US$m
Assets						
Cash and cash equivalents[d]		8,027	5,320	—	—	2,707
Investments in equity shares and funds		61	26	—	35	—
Other investments, including loans[e]	19	2,839	2,607	—	211	21
Trade and other financial receivables[f]	18	2,938	15	1,122	—	1,801
Derivatives (net)						
Forward contracts and option contracts: designated as hedges[g] (Section B)		42	—	—	42	—
Forward contracts and option contracts, not designated as hedges[g] (Section B)		120	—	25	95	—
Derivatives related to net debt[h] (Section B)		(147)	—	(147)	—	—
Liabilities						
Trade and other financial payables	24	(5,398)	—	(57)	—	(5,341)
Total		8,482	7,968	943	383	(812)

(a) Valuation is based on unadjusted quoted prices in active markets for identical financial instruments. This category includes listed equity shares and other quoted funds.
(b) Valuation is based on inputs that are observable for the financial instruments; which include quoted prices for similar instruments or identical instruments in markets which are not considered to be active, or inputs, either directly or indirectly based on observable market data.
(c) Valuation is based on inputs that are not based on observable market data (unobservable inputs).
(d) Cash and cash equivalents include money market funds which are treated as fair value through profit or loss (FVPL) under IFRS 9 with the fair value movements going into finance income.
(e) Other investments, including loans, comprise: cash deposits in rehabilitation funds, government bonds, managed investment funds and royalty receivables. The royalty receivables are valued based on future expected output as well as forward commodity prices.
(f) Trade receivables include provisionally priced invoices. The related revenue is initially based on forward market selling prices for the quotation periods stipulated in the contracts with changes between the provisional price and the final price recorded separately within "Other revenue". The selling price can be measured reliably for the Group's products, as it operates in active and freely traded commodity markets. At 31 December 2020, US$1,671 million (31 December 2019: US$1,040 million) of provisionally priced receivables were recognised.
(g) Level 3 derivatives consist of derivatives embedded in electricity purchase contracts linked to the LME with terms expiring between 2025 and 2029 (2019: 2025 and 2030). The embedded derivatives are measured using discounted cash flows and option model valuation techniques.
(h) Interest rate and currency interest rate swaps are valued using applicable market quoted swap yield curves adjusted for relevant basis and credit default spreads. Currency interest rate swap valuations also use market quoted foreign exchange rates. A discounted cash flow approach is used to derive fair value from these inputs to the underlying cash flows.

There were no material transfers between level 1 and level 2, or between level 2 and level 3 in the year ended 31 December 2020 or in the year ended 31 December 2019.

C (b) Level 3 financial assets and financial liabilities

The table below shows the summary of changes in the fair value of the Group's level 3 financial assets and financial liabilities.

	2020 Level 3 financial assets and financial liabilities US$m	2019 Level 3 financial assets and financial liabilities US$m
Opening balance	**383**	637
Currency translation adjustments	**16**	(1)
Total realised gains/(losses) included in:		
– consolidated sales revenue	**11**	—
– net operating costs	**(39)**	(7)
Total unrealised (losses)/gains included in:		
– net operating costs	**24**	(254)
Total unrealised gains transferred into other comprehensive income through cash flow hedges	**26**	28
Additions	**1**	1
Disposals/maturity of financial instruments	**(27)**	(21)
Closing balance	**395**	383
Net losses for the year included in the income statement for assets and liabilities held at year end[a]	—	(263)

(a) In 2020 gains and losses included in the income statement offset each other to the extent that the net result is less than US$1 million.

Sensitivity analysis in respect of level 3 derivatives

Forward contracts and options whose fair value is determined using unobservable inputs are calculated using appropriate discounted cash flow and option model valuation techniques.

To value the long-term aluminium embedded derivatives, we use unobservable inputs when the term of the derivative extends beyond observable market prices. In 2020 and 2019, changing the level 3 inputs to reasonably possible alternative assumptions does not change the fair value significantly, taking into account the expected remaining term of contracts. The fair value of the long-term aluminium embedded derivatives is US$126 million at 31 December 2020 (2019: US$120 million).

We also have royalty receivables, with a carrying value of US$113 million (2019: US$124 million), arising from the sale of our coal assets in prior periods. These are classified as "Other investments", including loans within "Other financial assets". The fair values are determined using level 3 unobservable inputs.

The main unobservable input is the long-term coal price used over the life of the royalty receivable. A 15% increase in the coal spot price would result in a US$198 million increase (2019: US$214 million increase) in the carrying value. A 15% decrease in the coal spot price would result in a US$46 million decrease (2019: US$57 million decrease) in the carrying value. We have used a 15% assumption to calculate our exposure as it represents the annual coal price movement that we deem to be reasonably probable (on an annual basis over the long run).

30 Contingencies and commitments

	2020 US$m	2019 US$m
Capital commitments excluding the Group's share of joint venture capital commitments		
Within 1 year	**3,021**	3,069
Between 1 and 3 years	**97**	851
Between 3 and 5 years	**—**	133
After 5 years	**34**	—
Total	**3,152**	4,053
Group's share of joint venture capital commitments		
Within 1 year	**9**	92
Between 1 and 3 years	**—**	1
Total	**9**	93

Our capital commitments include open purchase orders for managed operations and expenditure on major projects already authorised by our Investment Committee for non-managed operations. On a legally enforceable basis, capital commitments would be approximately US$1.5 billion (2019: US$0.9 billion) as many of the contracts relating to the Group's projects have various cancellation clauses.

Notes to the 2020 Financial Statements

30 Contingencies and commitments continued

Unrecognised commitments to contribute funding or resources to joint ventures

We have a commitment to purchase and market a portion (in excess of the Group's ownership interest) of the output of Sohar Aluminium Company L.L.C., an aluminium smelter in which the Group is a joint venture partner. The Group immediately sells the purchased products to third parties.

Along with the other joint venture partners, we have commitments to provide emergency funding (ie funding required to preserve the life or assets of the company or to comply with applicable laws) if required by Sohar Aluminium Company L.L.C., subject to approved thresholds.

At 31 December 2020, Minera Escondida Ltda held an undrawn shareholder line of credit for US$225 million (Rio Tinto share) (31 December 2019: US$225 million). The current facility will mature in September 2022.

Purchase obligations

The aggregate amount of future payment commitments under purchase obligations outstanding at 31 December was:

	2020 US$m	2019 US$m
Within 1 year	**3,100**	2,920
Between 1 and 2 years	**1,715**	1,705
Between 2 and 3 years	**1,291**	1,431
Between 3 and 4 years	**1,242**	1,084
Between 4 and 5 years	**848**	1,082
After 5 years	**8,437**	8,697
Total	**16,633**	16,919

Purchase obligations are enforceable and legally binding agreements to buy goods or services. They specify all significant terms, including: fixed or minimum quantities to be purchased or consumed; fixed, minimum or variable price provisions; and the approximate timing of the transactions.

Purchase obligations for goods mainly relate to purchases of raw materials and consumables and purchase obligations for services mainly relate to charges for the use of infrastructure, commitments to purchase power and freight contracts. These goods and services are expected to be used in the business. To the extent that this changes, a provision for onerous obligations may be made as described in note 1- critical policy (vii).

Purchases from joint arrangements or associates are included if the quantity purchased is in excess of our ownership interest in the entity. However, purchase obligations exclude contracted purchases of bauxite, alumina and aluminium from joint arrangements and associates and contracted purchases of alumina from third parties. This is because these purchases are made for commercial reasons and the Group is, overall, a net seller of these commodities.

As described above, we also have a commitment to buy and market a portion (in excess of our ownership interest) of the output of Sohar Aluminium Company L.L.C.

Contingent liabilities (subsidiaries and joint operations)

	2020 US$m	2019 US$m
Indemnities and other performance guarantees[a][b]	**146**	204

(a) Indemnities and other performance guarantees represent the potential outflow of funds from the Group for the satisfaction of obligations including those under contractual arrangements (for example undertakings related to supplier agreements) not provided for in the balance sheet, where the likelihood of the guarantees or indemnities being called is assessed as possible rather than probable or remote.

(b) There were no material contingent liabilities arising in relation to the Group's joint ventures and associates.

Contingent liabilities
In October 2017, Rio Tinto announced that it had been notified by the U.S. Securities and Exchange Commission (SEC) that the SEC had filed a complaint in relation to Rio Tinto's disclosures and timing of the impairment of Rio Tinto Coal Mozambique (RTCM). The impairment was reflected in Rio Tinto's 2012 year-end accounts. The SEC alleges that Rio Tinto, a former chief executive, Tom Albanese, and a former chief financial officer, Guy Elliott, committed violations of the antifraud, reporting, books and records and internal control provisions of the federal securities law by not accurately disclosing the value of RTCM and not impairing it when Rio Tinto published its 2011 year-end accounts in February 2012 or its 2012 interim results in August 2012. In June 2019, the trial court dismissed an associated US class action on behalf of securities holders. In August 2020, the appeals court partially overturned the court's dismissal and the case is with the trial court for further consideration.

In March 2018, the Australian Securities and Investments Commission (ASIC) filed civil proceedings in the NSW District Registry of the Federal Court of Australia against Rio Tinto Limited, Albanese, and Elliott. On 1 May 2018, ASIC expanded its proceedings. ASIC alleges that Rio Tinto committed violations of the disclosure, accounting, and misleading or deceptive conduct provisions of the Corporations Act by making misleading or deceptive statements related to RTCM in its 2011 Annual Report and its 2012 interim financial statements, not complying with accounting standards in respect of its 2012 interim financial statements, and not disclosing an impairment of RTCM in its 2012 interim financial statements. ASIC further alleges Albanese and Elliott breached their duties as directors or officers, and failed to take all reasonable steps to comply with relevant accounting requirements.

Rio Tinto believes that the SEC case and the ASIC proceedings are unwarranted and will defend the allegations vigorously. Hence, no provisions have been recognised for these cases.

Rio Tinto continues to co-operate fully with relevant authorities in connection with their investigations in relation to contractual payments totalling US$10.5 million made to a consultant who had provided advisory services in 2011 on the Simandou project in Guinea. In August 2018, the court dismissed a related US class action commenced on behalf of securities holders. No provision has been recognised for this case.

The outcomes of these matters remain uncertain, but they could ultimately expose the Group to material financial cost. The Board is giving these matters its full and proper attention and a dedicated Board committee continues to monitor the progress of these matters, as appropriate.

The Group has not established provisions for certain additional legal claims in cases where we have assessed that a payment is either not probable or cannot be reliably estimated. A number of Group companies are, and will likely continue to be, subject to various legal proceedings and investigations that arise from time to time. As a result, the Group may become subject to substantial liabilities that could affect our business, financial position and reputation. Litigation is inherently unpredictable and large judgments may at times occur. The Group may incur, in the future, judgments or enter into settlements of claims that could lead to material cash outflows. We do not believe that any of these proceedings will have a materially adverse effect on our financial position.

Guarantees by parent companies
Rio Tinto plc and Rio Tinto Limited have, jointly and severally, fully and unconditionally guaranteed the following securities issued by the following 100% owned finance subsidiaries: US$4.4 billion (31 December 2019: US$4.4 billion) Rio Tinto Finance (USA) Limited and Rio Tinto Finance (USA) plc bonds with maturity dates up to 2042; and US$1.2 billion (31 December 2019: US$1.6 billion) on the European Debt Issuance Programme. In addition, Rio Tinto Finance plc and Rio Tinto Finance Limited have entered into facility arrangements for an aggregate amount of US$7.5 billion (31 December 2019: US$7.5 billion). The facilities are guaranteed by Rio Tinto plc and Rio Tinto Limited.

Rio Tinto plc has provided a guarantee, known as the completion support undertaking (CSU), in favour of the Oyu Tolgoi LLC project finance lenders. At 31 December 2020, US$4.3 billion of project finance debt was outstanding under this facility (2019: US$4.3 billion). Oyu Tolgoi LLC is jointly owned by Erdenes Oyu Tolgoi LLC (34%), which is controlled by the Government of Mongolia, and Turquoise Hill Resources Ltd (66%, of which Rio Tinto owns 51%). The project finance has been raised for development of the underground mine and the CSU will terminate on the completion of the underground mine according to a set of completion tests set out in the project finance facility.

The Rio Tinto guarantee applies to the extent that Turquoise Hill Resources Ltd cannot satisfy Oyu Tolgoi LLC's project finance debt servicing obligations under its own guarantee to the lenders, called the sponsor debt service undertaking (DSU). Both the CSU and DSU contain a carve-out for certain political risk events.

Contingent assets
The Group has, from time to time, various insurance claims outstanding with reinsurers.

Notes to the 2020 Financial Statements

31 Average number of employees

	Subsidiaries and joint operations			Equity accounted units (Rio Tinto share)			Group total		
	2020	2019	2018	**2020**	2019	2018	**2020**	2019	2018
Principal locations of employment:									
Australia and New Zealand	**20,482**	19,195	19,017	**634**	619	578	**21,116**	19,814	19,595
Canada	**11,814**	11,576	10,620	**—**	—	—	**11,814**	11,576	10,620
UK	**172**	190	287	**—**	—	—	**172**	190	287
Europe	**1,020**	959	1,418	**—**	—	—	**1,020**	959	1,418
Africa	**2,559**	3,121	3,496	**1,214**	1,250	1,262	**3,773**	4,371	4,758
US	**3,543**	3,400	3,792	**—**	—	—	**3,543**	3,400	3,792
Mongolia	**3,465**	3,215	2,886	**—**	—	—	**3,465**	3,215	2,886
Indonesia	**—**	—	1,615	**—**	—	—	**—**	—	1,615
South America	**220**	243	210	**1,293**	1,270	1,289	**1,513**	1,513	1,499
India	**324**	272	288	**—**	—	—	**324**	272	288
Singapore	**456**	430	422	**—**	—	—	**456**	430	422
Other countries[a]	**278**	267	278	**—**	—	—	**278**	267	278
Total	**44,333**	42,868	44,329	**3,141**	3,139	3,129	**47,474**	46,007	47,458

(a) "Other countries" primarily includes employees in the Middle East (excluding Oman which is included in Africa), and other countries in Asia which are not shown separately in the table above.

Employee numbers, which represent the average for the year, include 100% of employees of subsidiary companies. Employee numbers for joint operations and equity accounted units are proportional to the Group's interest under contractual agreements. Average employee numbers include a part-year effect for companies acquired or disposed of during the year.

Part-time employees are included on a full-time-equivalent basis. Temporary employees are included in employee numbers.

People employed by contractors are not included.

32 Principal subsidiaries
At 31 December 2020

Company and country of incorporation/operation	Principal activities	Class of shares held	Proportion of class held (%)	Group interest (%)	Non-controlling interest (%)
Australia					
Argyle Diamonds Limited	Mining and processing of diamonds	Ordinary	100	100	—
Dampier Salt Limited	Salt and gypsum production	Ordinary	68.36	68.36	31.64
Energy Resources of Australia Ltd[a]	Uranium processing	Ordinary	86.33	86.33	13.67
Hamersley Iron Pty Limited	Iron ore mining	Ordinary	100	100	—
North Mining Limited[b]	Iron ore mining	Ordinary	100	100	—
Rio Tinto Aluminium (Holdings) Limited	Bauxite mining; alumina production; primary aluminium smelting	Ordinary	100	100	—
Robe River Mining Co Pty Ltd[b]	Iron ore mining	Class A	40	60	40
		Class B	76.36		
Brazil					
Alcan Alumina Ltda.[c]	Alumina production and bauxite mining	Quota	100	100	—
Canada					
Iron Ore Company of Canada[d]	Iron ore mining; iron ore pellets production	Common	58.72	58.72	41.28
Rio Tinto Fer et Titane Inc.	Titanium dioxide feedstock; high purity iron and steel production	Common	100	100	—
		Class B preference	100	100	—
		CAD 0.01 preferred	100	100	—
Rio Tinto Alcan Inc.	Bauxite mining; alumina refining; aluminium smelting	Common	100	100	—
Diavik Diamond Mines (2012) Inc.[e]	Diamond mining and processing	Common	100	100	—
Guinea					
Simfer Jersey Limited[f]	Iron ore project	Ordinary	53	53	47
Madagascar					
QIT Madagascar Minerals SA[g]	Ilmenite mining	Common	80	80	15
		Investment certificates	100	100	
		Voting certificates	80	80	20
Mongolia					
Turquoise Hill Resources Ltd (including Oyu Tolgoi LLC)[h]	Copper and gold mining	Common	50.79	50.79	49.21
South Africa					
Richards Bay Titanium (Proprietary) Limited[i]	Titanium dioxide; high purity iron production	B Ordinary	100	74	26
		B preference	100		
		Parent Preference	100		
Richards Bay Mining (Proprietary) Limited[i]	Ilmenite, rutile and zircon mining	B Ordinary	100	74	26
		B preference	100		
		Parent Preference	100		
US					
Kennecott Holdings Corporation (including Kennecott Utah Copper and Kennecott Exploration)	Copper and gold mining, smelting and refining and exploration activities	Common US$0.01	100	100	—
U.S. Borax Inc.	Mining, refining and marketing of borates	Common US$0.10	100	100	—

This list includes only those companies that have a more significant impact on the profit or operating assets of the Group. Refer to note 44 for a list of related undertakings.

Notes to the 2020 Financial Statements

32 Principal subsidiaries continued

The Group's principal subsidiaries are mostly held by intermediate holding companies and not directly by Rio Tinto plc or Rio Tinto Limited.

(a) In February 2020, Rio Tinto's interest in Energy Resources of Australia (ERA) increased from 68.4% to 86.3% as a result of new ERA shares issued to Rio Tinto under the Entitlement Offer and Underwriting Agreement to raise funds for the rehabilitation of the Ranger Project Area.
(b) Robe River Mining Co Pty Ltd (which is 60% owned by the Group) holds a 30% interest in Robe River Iron Associates (Robe River). North Mining Ltd (which is wholly owned by the Group) holds a 35% interest in Robe River. Through these companies the Group recognises a 65% share of the assets, liabilities, revenues and expenses of Robe River, with a 12% non-controlling interest. The Group therefore has a 53% beneficial interest in Robe River.
(c) Alcan Alumina Ltda holds the Group's 10% interest in Consórcio De Alumínio Do Maranhão, a joint operation in which the Group participates but is not a joint operator. The Group recognises its share of assets, liabilities, revenues and expenses relating to this arrangement.
(d) Iron Ore Company of Canada is incorporated in the US, but operates in Canada.
(e) Diavik Diamond Mines (2012) Inc. (DDMI) is the legal entity that owns the Group's 60% interest in the Diavik Joint Venture, an unincorporated arrangement. The Group recognises its share of assets, revenue and expenses relating to this arrangement. Liabilities are recognised according to DDMI's contractual obligations, with a corresponding 40% receivable or contingent asset representing the co-owner's share where applicable.
(f) Simfer Jersey Limited, a company incorporated in Jersey in which the Group has a 53% interest, has an 85% interest in Simfer S.A., the company that operates the Simandou mining project in Guinea. The Group therefore has a 45.05% indirect interest in Simfer S.A. These entities are consolidated as subsidiaries and together referred to as the Simandou iron ore project.
(g) The Group's shareholding in QIT Madagascar Minerals SA carries an 80% economic interest and 80% of the total voting rights; a further 5% economic interest is held through non-voting investment certificates to give an economic interest of 85%. The non-controlling interests have a 15% economic interest and 20% of the total voting rights.
(h) The Group has a 50.79% interest in Turquoise Hill Resources Ltd, which holds a 66% interest in Oyu Tolgoi LLC (OT) which is a subsidiary of Turquoise Hill Resources Ltd. The Group therefore has a 33.5% indirect interest in OT. Turquoise Hill Resources Ltd is incorporated in Canada but operates principally in Mongolia.
(i) Additional classes of shares issued by Richards Bay Titanium (Proprietary) Limited and Richards Bay Mining (Proprietary) Limited representing non-controlling interests are not shown. The Group's total legal and beneficial interest in Richards Bay Titanium (Proprietary) Limited and Richards Bay Mining (Proprietary) Limited is 74%.

Summary financial information for subsidiaries that have non-controlling interests that are material to the Group

This summarised financial information is shown on a 100% basis. It represents the amounts shown in the subsidiaries' financial statements prepared in accordance with IFRS under Group accounting policies, including fair value adjustments, and before intercompany eliminations.

Income statement summary for the year ended 31 December	**Iron Ore Company of Canada 2020 US$m**	Iron Ore Company of Canada 2019 US$m	**Energy Resources of Australia 2020 US$m**	Energy Resources of Australia 2019 US$m	**Turquoise Hill[(j)(k)(l)] 2020 US$m**	Turquoise Hill[(j)(k)(l)] 2019 US$m
Revenue	**2,269**	2,014	**162**	145	**1,078**	1,166
Profit/(loss) after tax	**611**	543	**9**	5	**357**	(2,137)
– attributable to non-controlling interests	**252**	224	**3**	2	**130**	(1,490)
– attributable to Rio Tinto	**359**	319	**5**	3	**227**	(647)
Other comprehensive income	**56**	57	**20**	2	**2**	—
Total comprehensive income/(loss)	**667**	600	**29**	7	**359**	(2,137)

Balance sheet summary as at 31 December	**2020 US$m**	2019 US$m	**2020 US$m**	2019 US$m	**2020 US$m**	2019 US$m
Non-current assets	**2,733**	2,585	**329**	76	**10,930**	9,589
Current assets	**670**	610	**371**	258	**1,496**	2,449
Current liabilities	**(462)**	(532)	**(176)**	(127)	**(540)**	(493)
Non-current liabilities	**(993)**	(927)	**(427)**	(462)	**(4,404)**	(4,405)
Net assets/(liabilities)	**1,948**	1,736	**97**	(255)	**7,482**	7,140
– attributable to non-controlling interests	**804**	718	**18**	—	**2,424**	2,369
– attributable to Rio Tinto	**1,144**	1,018	**79**	(255)	**5,058**	4,771

Cash flow statement summary for the year ended 31 December	**2020 US$m**	2019 US$m	**2020 US$m**	2019 US$m	**2020 US$m**	2019 US$m
Cash flow from operations	**1,027**	1,039	**(15)**	(73)	**380**	298
Dividends paid to non-controlling interests	**(180)**	(228)	**—**	—	**—**	—

(j) Turquoise Hill Resources Ltd holds a controlling interest in Oyu Tolgoi LLC (OT).
(k) Under the terms of the project finance facility held by OT, there are certain restrictions on the ability of OT to make shareholder distributions.
(l) Since 2011, Turquoise Hill has funded common share investments in OT on behalf of Erdenes Oyu Tolgoi LLC ("Erdenes"). In accordance with the Amended and Restated Shareholders Agreement dated 8 June 2011, such funded amounts earn interest at an effective annual rate of LIBOR plus 6.5% and are repayable to them via a pledge over Erdenes' share of future OT common share dividends. Erdenes also has the right to reduce the outstanding balance by making payments directly to Turquoise Hill. Common share investments funded on behalf of Erdenes, including accrued interest, are recorded as a reduction to the net carrying value of their component of non-controlling interests. As at 31 December 2020, the cumulative amount of such funding was US$1,378 million (31 December 2019: US$1,241 million), excluding accrued interest of US$804 million (31 December 2019: US$655 million) relating to this funding.

Income statement summary for the year ended 31 December	Robe River Mining Co Pty 2020 US$m	Robe River Mining Co Pty 2019 US$m	Other companies and eliminations[m] 2020 US$m	Other companies and eliminations[m] 2019 US$m	Robe River 2020 US$m	Robe River 2019 US$m
Revenue	**1,738**	1,493	**2,028**	1,743	**3,766**	3,236
Profit after tax	**939**	808	**1,019**	825	**1,958**	1,633
– attributable to non-controlling interests	**376**	312	**—**	—	**376**	312
– attributable to Rio Tinto	**563**	496	**1,019**	825	**1,582**	1,321
Other comprehensive income/(loss)	**294**	(13)	**136**	(12)	**430**	(25)
Total comprehensive income	**1,233**	795	**1,155**	813	**2,388**	1,608

Balance sheet summary as at 31 December	2020 US$m	2019 US$m	2020 US$m	2019 US$m	2020 US$m	2019 US$m
Non-current assets	**3,452**	2,622	**4,247**	3,687	**7,699**	6,309
Current assets	**865**	1,161	**2,239**	1,873	**3,104**	3,034
Current liabilities	**(380)**	(173)	**(414)**	(303)	**(794)**	(476)
Non-current liabilities	**(255)**	(84)	**(4,752)**	(3,392)	**(5,007)**	(3,476)
Net assets	**3,682**	3,526	**1,320**	1,865	**5,002**	5,391
– attributable to non-controlling interests	**1,397**	1,404	**—**	—	**1,397**	1,404
– attributable to Rio Tinto	**2,285**	2,122	**1,320**	1,865	**3,605**	3,987

Cash flow statement summary for the year ended 31 December	2020 US$m	2019 US$m	2020 US$m	2019 US$m	2020 US$m	2019 US$m
Cash flow from operations	**1,491**	1,255	**1,771**	1,447	**3,262**	2,702
Dividends paid to non-controlling interests	**(332)**	(139)	**(165)**	—	**(497)**	(139)

(m) "Other companies and eliminations" includes North Mining Limited (a wholly owned subsidiary of the Group which accounts for its interest in Robe River) and goodwill of US$383 million (2019: US$349 million) that arose on the Group's acquisition of its interest in Robe River.

33 Principal joint operations
At 31 December 2020

Company and country of incorporation/operation	Principal activities	Group interest (%)
Australia		
Tomago Aluminium Joint Venture	Aluminium smelting	51.6
Gladstone Power Station	Power generation	42.1
Hope Downs Joint Venture	Iron ore mining	50
Queensland Alumina Limited[a] [b]	Alumina production	80
Pilbara Iron Arrangements	Infrastructure, corporate and mining services	(c)
New Zealand		
New Zealand Aluminium Smelters Limited[a] [b]	Aluminium smelting	79.4
Canada		
Aluminerie Alouette Inc.	Aluminium production	40
US		
Pechiney Reynolds Quebec Inc[b] [d]	Aluminium smelting	50.2

This list includes only those joint operations that have a more significant impact on the profit or operating assets of the Group. Refer to note 44 for a list of related undertakings.

The Group's joint operations are held by intermediate holding companies and not directly by Rio Tinto plc or Rio Tinto Limited.

(a) Although the Group has a 79.4% interest in New Zealand Aluminium Smelters Limited and an 80% interest in Queensland Alumina Limited, decisions about activities that significantly affect the returns that are generated require agreement of both parties to the arrangements, giving rise to joint control.

(b) Queensland Alumina Limited, New Zealand Aluminium Smelters Limited and Pechiney Reynolds Quebec Inc. are joint arrangements that are primarily designed for the provision of output to the parties sharing joint control; this indicates that the parties have rights to substantially all the economic benefits of the assets. The liabilities of the arrangements are in substance satisfied by cash flows received from the parties; this dependence indicates that the parties in effect have obligations for the liabilities. It is these facts and circumstances that give rise to the classification of these entities as joint operations.

(c) A number of arrangements are in place between the Australian Iron Ore operations managed by Rio Tinto which allow their respective assets to be operated as a single integrated network across the Pilbara region. The arrangements are managed through two wholly owned subsidiaries: Pilbara Iron (Company) Services Pty Ltd and Pilbara Iron Pty Ltd. In assessing the Pilbara Iron Arrangements, it has been concluded that they collectively constitute a joint operation on the basis that decisions about relevant activities require unanimous consent. The resulting efficiencies are shared between Rio Tinto and Robe River Iron Associates (Robe River), and the parties fund all of the cash flow requirements of Pilbara Iron (Company) Services Pty Ltd and Pilbara Iron Pty Ltd.

(d) Pechiney Reynolds Quebec Inc. has a 50.1% interest in the Aluminerie de Bécancour, Inc. aluminium smelter, which is located in Canada.

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34 Principal joint ventures
At 31 December 2020

Company and country of incorporation/operation	Principal activities	Number of shares held	Class of shares held	Proportion of class held (%)	Group interest (%)
Chile					
Minera Escondida Ltda[a]	Copper mining and refining	—	—	—	30
Oman					
Sohar Aluminium Co. L.L.C.[b]	Aluminium smelting; power generation	37,500	Ordinary	20	20

This list includes only those joint ventures that have a more significant impact on the profit or operating assets of the Group. Refer to note 44 for a list of related undertakings.

The Group's principal joint ventures are held by intermediate holding companies and not directly by Rio Tinto plc or Rio Tinto Limited.

(a) Although the Group has a 30% interest in Minera Escondida Ltda, participant and management agreements provide for an Owners' Council whereby significant commercial and operational decisions about the relevant activities that significantly affect the returns that are generated in effect require the joint approval of both Rio Tinto and BHP Billiton (holders of a 57.5% interest). It is therefore determined that Rio Tinto has joint control.
The year end of Minera Escondida Ltda is 30 June. The amounts included in the consolidated financial statements of Rio Tinto are, however, based on accounts of Minera Escondida Limitada that are coterminous with those of the Group.

(b) Although the Group holds a 20% interest in Sohar Aluminium Co. L.L.C, decisions about relevant activities that significantly affect the returns that are generated require agreement of all parties to the arrangement. It is therefore determined that Rio Tinto has joint control.

Summary information for joint ventures that are material to the Group

This summarised financial information is shown on a 100% basis. It represents the amounts shown in the joint ventures' financial statements prepared in accordance with IFRS under Group accounting policies, including fair value adjustments and amounts due to and from Rio Tinto.

	Minera Escondida Ltda[c] 2020 US$m	Minera Escondida Ltda[c] 2019 US$m	Sohar Aluminum Co.L.L.C.[d] 2020 US$m	Sohar Aluminum Co.L.L.C.[d] 2019 US$m
Revenue	**7,650**	7,120	**640**	715
Depreciation and amortisation	**(1,427)**	(1,693)	**(115)**	(115)
Impairment charges (note 6)	**—**	—	**(1,100)**	—
Other operating costs	**(2,756)**	(3,670)	**(430)**	(505)
Operating profit/(loss)	**3,467**	1,757	**(1,005)**	95
Finance expense	**(137)**	(157)	**(20)**	(35)
Income tax	**(1,197)**	(627)	**(15)**	(10)
Profit/(loss) after tax	**2,133**	973	**(1,040)**	50
Other comprehensive loss	**(40)**	(17)	**—**	—
Total comprehensive income/(loss)	**2,093**	956	**(1,040)**	50
Non-current assets	**11,833**	12,450	**1,850**	3,045
Current assets	**3,107**	2,250	**270**	290
Current liabilities	**(1,813)**	(1,827)	**(675)**	(205)
Non-current liabilities	**(4,560)**	(4,670)	**(200)**	(845)
Net assets	**8,567**	8,203	**1,245**	2,285
Assets and liabilities above include:				
– cash and cash equivalents	**1,103**	603	**30**	20
– current financial liabilities	**(790)**	(807)	**(565)**	(110)
– non-current financial liabilities	**(2,560)**	(2,380)	**(30)**	(675)
Dividends received from joint venture (Rio Tinto share)	**585**	666	**—**	—
Reconciliation of the above amounts to the investment recognised in the Group balance sheet				
Group interest	**30%**	30%	**20%**	20%
Net assets	**8,567**	8,203	**1,245**	2,285
Group's ownership interest	**2,570**	2,461	**249**	457
Carrying value of Group's interest	**2,570**	2,461	**249**	457

(c) In addition to its "Investment in equity accounted units", the Group recognises deferred tax liabilities of US$358 million (2019: US$362 million) relating to tax on unremitted earnings of equity accounted units.

(d) Under covenants stipulated in the agreement to Sohar Aluminium Co. L.L.C.'s secured loan facilities, Sohar Aluminium Co. L.L.C. is currently restricted from making any shareholder distributions until 2021 unless a specified amount of the loan facilities is funded.

35 Principal associates
At 31 December 2020

Company and country of incorporation/operation	Principal activities	Number of shares held	Class of shares held	Proportion of class held (%)	Group interest (%)
Australia					
Boyne Smelters Limited[a]	Aluminium smelting	153,679,560	Ordinary	59.4	59.4
Brazil					
Mineração Rio do Norte S.A.[b]	Bauxite mining	25,000,000,000 47,000,000,000	Ordinary Preferred	12.5 11.75	12
US					
Halco (Mining) Inc.[c]	Bauxite mining	4,500	Common	45	45

This list includes only those associates that have a more significant impact on the profit or operating assets of the Group. Refer to note 44 for a list of related undertakings.

The Group's principal associates are held by intermediate holding companies and not directly by Rio Tinto plc or Rio Tinto Limited.

(a) The parties that collectively control Boyne Smelters Limited do so through decisions that are determined on an aggregate voting interest that can be achieved by several combinations of the parties. Although each combination requires Rio Tinto's approval, this is not joint control as defined under IFRS 11. Rio Tinto is therefore determined to have significant influence over this company.
(b) Although the Group holds only 12% of Mineração Rio do Norte S.A., it has representation on its board of directors and a consequent ability to participate in the financial and operating policy decisions. It is therefore determined that Rio Tinto has significant influence.
(c) Halco (Mining) Inc. has a 51% indirect interest in Compagnie des Bauxites de Guinée, a bauxite mine, the core assets of which are located in Guinea.

Summary information for associates that are material to the Group

This summarised financial information is shown on a 100% basis. It represents the amounts shown in the associate's financial statements prepared in accordance with IFRS under Group accounting policies, including fair value adjustments and amounts due to and from Rio Tinto.

	Boyne Smelters Limited[a] 2020 US$m	Boyne Smelters Limited[a] 2019 US$m
Revenue	—	—
Loss after tax[b]	**(198)**	(7)
Other comprehensive income/(loss)[c]	**30**	(3)
Total comprehensive loss	**(168)**	(10)
Non-current assets	**1,037**	1,229
Current assets	**98**	96
Current liabilities	**(146)**	(114)
Non-current liabilities	**(779)**	(814)
Net assets	**210**	397
Reconciliation of the above amount to the investment recognised in the Group balance sheet		
Group interest	**59.4%**	59.4%
Net assets	**210**	397
Group's ownership interest	**125**	236
Loans to equity accounted units	**112**	113
Carrying value of Group's interest	**237**	349

(a) Boyne Smelters Limited is a tolling operation; as such it is dependent on its participants for funding which is provided through cash calls. Rio Tinto has made certain prepayments to Boyne for toll processing of alumina. These are charged to Group operating costs as processing takes place.
(b) In 2020, includes US$200 million of impairment changes. Refer to note 6.
(c) "Other comprehensive income/(loss)" is net of amounts recognised by subsidiaries in relation to quasi equity loans.

Notes to the 2020 Financial Statements

35 Principal associates continued

Summary information for joint ventures and associates that are not individually material to the Group

	Associates 2020 US$m	Associates 2019 US$m
Carrying value of Group's interest	**708**	704
Profit after tax	—	3
Other comprehensive income	**(5)**	10
Total comprehensive income	**(5)**	13

There were no individually material joint ventures in 2019 or 2020.

36 Purchases and sales of subsidiaries, joint ventures, associates and other interests in businesses

Acquisitions

We have made no material acquisitions over the last three years.

In 2018, we created a joint venture, ELYSIS, with Alcoa and other partners to develop a carbon-free aluminium smelting process. We treated this as an acquisition and accounted for our interest in ELYSIS using the equity method. We invested cash of US$5 million and contributed patents and licensed intellectual property (IP) to the venture. The patents and IP had no carrying value; however, on formation of the arrangement, they were recorded at fair value to reflect the contributions of the other parties in the joint venture. This value was US$171 million (US$141 million after tax).

Disposals

We have made no material disposals in 2020.

On 16 July 2019 we disposed of our entire 68.62% interest in Rössing Uranium to China National Uranium Corporation Limited for gross cash proceeds of US$6.5 million. After adjusting for cash held on Rössing's balance sheet at the date of disposal and included in the sale, we reported a net cash outflow of US$118 million and recognised a loss on disposal of US$289 million. This includes cumulative currency translation losses of US$212 million recycled from the currency translation reserve on sale of the business.

On 1 June 2018 we disposed of our entire 75% interest in the Winchester South coal development project in Queensland, Australia to Whitehaven Coal Limited for US$200 million. This comprised US$150 million cash which was received during 2018 and an unconditional cash payment of US$50 million which was subsequently received in June 2019. Both receipts were recognised within "net cash generated from operating activities" within the cash flow statement. We recognised a gain on disposal of US$195 million within "profit relating to interests in undeveloped projects" in the income statement.

On 1 August 2018 we completed the sale of our entire interest in the Hail Creek coal mine (82.0%) and the Valeria coal development project (71.2%) in Queensland, Australia to Glencore for a total consideration of US$1.7 billion.

We received net proceeds of US$1,545 million after completion adjustments in respect of the Hail Creek component of this transaction, resulting in a pre-tax gain of US$1,141 million. During 2019 we received a further US$26 million relating to working capital adjustments in respect of this sale. We also received cash proceeds in 2018 of US$170 million in respect of Valeria. Of this amount, US$87 million, relating to the sale of land and investments in associates, was included in investing cash flow, resulting in a pre-tax gain of US$18 million. The remaining US$83 million proceeds were recognised in operating cash flow, resulting in a pre-tax gain of US$83 million in "profit relating to interests in undeveloped projects".

Also on 1 August 2018, we completed the sale of our entire interest in the Kestrel underground coal mine (80.0%) for US$2.25 billion to a consortium comprising EMR Capital (EMR) and PT Adaro Energy Tbk (Adaro). We received net cash proceeds of US$2,270 million, resulting in a pre-tax gain of US$1,010 million.

On 14 December 2018 we completed the sale of the Dunkerque aluminium smelter in northern France to Liberty House for US$500 million, subject to final adjustments. In 2018 we received net cash proceeds of US$385 million. We recognised a pre-tax gain on disposal of US$128 million.

On 21 December 2018 we sold our interest in the Grasberg mine for US$3.5 billion as part of a series of transactions involving Inalum (PT Indonesia Asahan Aluminium (Persero)) and Freeport-McMoRan Inc. Of the US$3.5 billion received, US$107 million related to our attributable share of copper and gold revenues for 2018, net of our capital contribution for the year. The remaining net proceeds of US$3,392 million were included in investing cash flows and gave rise to a gain on disposal of US$2,146 million.

On 1 September 2017, we disposed of our 100% shareholding in Coal & Allied Industries Limited to Yancoal Australia Limited for a total consideration of US$2.69 billion (before working capital adjustments). This comprised US$2.45 billion in cash paid on the closing date and a further US$240 million of unconditional guaranteed royalty payments. Total net cash proceeds received in 2017, net of working capital adjustments, transaction costs and cash transferred, were US$2.54 billion. This included receipt of US$110 million of the unconditional royalty payments. In 2018 we received a further US$90 million of unconditional royalty payments and in 2019 an additional US$20 million. We received US$10 million in 2020 and the final US$10 million was received in early 2021.

37 Directors' and key management remuneration

Aggregate remuneration, calculated in accordance with the UK Companies Act 2006, of the directors of the parent companies was as follows:

	2020 US$'000	2019 US$'000	2018 US$'000
Emoluments	**6,686**	7,524	9,069
Long-term incentive plans	**8,974**	4,748	2,923
	15,660	12,272	11,992
Pension contributions: defined contribution plans	**29**	42	80
Gains made on exercise of share options	**—**	—	107

The Group defines key management personnel as the directors and members of the Executive Committee. The Executive Committee comprises the executive directors, product group chief executive officers and Group executives. Details of the directors and members of the Executive Committee are shown in the Directors' Report on pages 116-119.

The aggregate remuneration including pension contributions incurred by Rio Tinto plc in respect of its directors was US$14,983,000 (2019: US$11,565,000; 2018: US$11,465,000). The aggregate pension contribution to defined contribution plans was US$29,000 (2019: US$42,000; 2018: US$80,000). The aggregate remuneration, including pension contributions and other retirement benefits, incurred by Rio Tinto Limited in respect of its directors was US$707,000 (2019: US$749,000; 2018: US$607,000). The aggregate pension contribution to defined contribution plans was US$nil (2019: US$nil; 2018: US$nil).

During 2020, no director (2019:nil; 2018:nil), directors accrued retirement benefits under defined benefit arrangements, and two directors (2019: two; 2018: three) accrued retirement benefits under defined contribution arrangements.

Emoluments included in the table above have been translated from local currency at the average exchange rate for the year with the exception of bonus payments, which have been translated at the year-end rate.

Detailed information concerning directors' remuneration, shareholdings and options is shown in the Remuneration Report, including tables 1 to 3, on pages 176-184.

Aggregate compensation, representing the expense recognised under IFRS, as defined in note 1, of the Group's key management, including directors, was as follows:

	2020 US$'000	2019 US$'000	2018 US$'000
Short-term employee benefits and costs	**21,685**	22,075	23,978
Post-employment benefits	**369**	477	629
Employment termination benefits	**2,789**	310	69
Share-based payments	**34,954**	17,632	14,916
Total	**59,797**	40,494	39,592

The figures shown above include employment costs which comprise social security and accident premiums in Canada, the UK and US and payroll taxes in Australia paid by the employer as a direct additional cost of hire. In total, they amount to US$2,130,000 (2019: US$2,066,000; 2018: US$2,360,000) and, although disclosed here, are not included in table 1 of the Remuneration Report.

More detailed information concerning the remuneration of key management is shown in the Remuneration Report, including tables 1 to 3 on pages 176-184.

Notes to the 2020 Financial Statements

38 Auditors' remuneration

Group auditors' remuneration[a]

	2020 US$m	2019 US$m	2018 US$m
Audit of the Group	**11.0**	9.6	9.2
Audit of subsidiaries	**6.3**	6.8	7.5
Total audit	**17.3**	16.4	16.7
Audit-related assurance service	**0.8**	0.8	0.9
Other assurance services[b]	**1.4**	1.9	3.3
Total assurance services	**2.2**	2.7	4.2
Tax compliance	**—**	0.1	—
Other non-audit services not covered above	**0.1**	—	0.2
Total non-audit services	**2.3**	2.8	4.4
Total Group auditors' remuneration	**19.6**	19.2	21.1
Audit fees payable to other accounting firms			
Audit of the financial statements of the Group's subsidiaries[c]	**0.6**	1.4	1.4
Fees in respect of pension scheme audits	**0.1**	0.1	0.1
Total audit fees payable to other accounting firms	**0.7**	1.5	1.5

(a) In 2020, all amounts were paid to member firms of KPMG. In 2019 and 2018, all amounts were paid to member firms of PwC, being the Group's auditors for these financial years. The remuneration payable to KPMG, the Group auditors, is approved by the Audit Committee. The Committee sets the policy for the award of non-audit work to the auditors and approves the nature and extent of such work, and the amount of the related fees, to ensure that independence is maintained. The fees disclosed above consolidate all payments made to member firms of KPMG by the companies and their subsidiaries, along with fees in respect of joint operations paid for by the Group and includes an estimate of the costs to complete the 2020 audit. Non-audit services arise largely from assurance and/or regulation related work.

(b) Other assurance services relates to the review of non-statutory financial information including sustainability reporting.

(c) In 2019 and 2018 these amounts include fees payable to KPMG in respect of subsidiaries who's statutory auditor was KPMG prior to their appointment as the Group's auditor.

39 Related-party transactions

Information about material related-party transactions of the Rio Tinto Group is set out below.

Subsidiary companies and joint operations

Details of investments in principal subsidiary companies are disclosed in note 32. Information relating to joint operations can be found in note 33.

Equity accounted units

Transactions and balances with equity accounted units are summarised below. Purchases, trade and other receivables, and trade and other payables relate largely to amounts charged by equity accounted units for toll processing of alumina and purchasing of bauxite and aluminium. Sales relate largely to sales of alumina to equity accounted units for smelting into aluminium.

	Note	2020 US$m	2019 US$m	2018 US$m
Income statement items				
Purchases from equity accounted units		**(960)**	(1,155)	(1,209)
Sales to equity accounted units		**271**	268	493
Cash flow statement items				
Dividends from equity accounted units		**594**	669	800
Net funding of equity accounted units		**(43)**	(33)	(9)
Balance sheet items				
Investments in equity accounted units[a]	15	**3,764**	3,971	4,299
Loans to equity accounted units	19	**41**	39	38
Trade and other receivables: amounts due from equity accounted units[b]	18	**251**	259	278
Trade and other payables: amounts due to equity accounted units	24	**(241)**	(271)	(223)

(a) Investments in equity accounted units include quasi equity loans. Further information about investments in equity accounted units is set out in notes 34 and 35.

(b) This includes prepayments of tolling charges.

Pension funds

Information relating to pension fund arrangements is set out in note 42.

Directors and key management

Details of directors' and key management's remuneration are set out in note 37 and in the Remuneration Report on pages 176-184.

40 Exchange rates in US$

The principal exchange rates used in the preparation of the 2020 financial statements were:

	Full-year average			Year-end		
	2020	2019	2018	**2020**	2019	2018
Sterling	**1.28**	1.28	1.34	**1.36**	1.31	1.27
Australian dollar	**0.69**	0.70	0.75	**0.77**	0.70	0.70
Canadian dollar	**0.75**	0.75	0.77	**0.78**	0.77	0.73
Euro	**1.14**	1.12	1.18	**1.23**	1.12	1.14
South African rand	**0.061**	0.069	0.076	**0.068**	0.071	0.069

41 Share-based payments

Rio Tinto plc and Rio Tinto Limited have a number of share-based incentive plans, which are described in detail in the Remuneration Report. These plans have been accounted for in accordance with the fair value recognition provisions of IFRS 2 "Share-based Payment".

The charge that has been recognised in the income statement for Rio Tinto's share-based incentive plans, and the related liability (for cash-settled awards), is set out in the table below.

	Charge recognised for the year			Liability at the end of the year	
	2020 US$m	2019 US$m	2018 US$m	**2020 US$m**	2019 US$m
Equity-settled awards	**131**	118	118	**—**	—
Cash-settled awards	**7**	5	4	**7**	19
Total	**138**	123	122	**7**	19

The main Rio Tinto plc and Rio Tinto Limited plans are as follows:

UK Share Plan (formerly the Share Ownership Plan)

The fair values of Matching and Free Shares made by Rio Tinto plc are taken to be the market value of the shares on the date of purchase. These awards are settled in equity.

Equity Incentive Plan

In 2018, shareholders approved the introduction of the Rio Tinto 2018 Equity Incentive Plan (the "EIP"). From 2018, all long-term incentive awards have been granted under this umbrella plan which allows for awards in the form of Performance Share Awards (PSA), Management Share Awards (MSA) and Bonus Deferral Awards (BDA) to be granted.

Performance Share Awards (Performance Share Plans prior to 2018)

Participants are generally assigned shares in settlement of their PSA on vesting and therefore the awards are accounted for in accordance with the requirements applying to equity-settled share-based payment transactions, including the dividends accumulated from date of award to vesting.

For the parts of awards with Total Shareholder Return (TSR) performance conditions, the fair value of the awards is calculated using a Monte Carlo simulation model taking into account the TSR performance conditions. One third of the awards granted up to 2017 (inclusive) are subject to an earnings margin performance target relative to ten global mining comparators. As this is a non-market related performance condition, under IFRS 2, the fair value recognised is reviewed at each accounting date based on the directors' expectations for the proportion vesting. Forfeitures prior to vesting are assumed at 5% per annum of outstanding awards (2019: 5% per annum).

For grants made from 2018, the earnings margin performance target applying to the PSA was removed and instead all of the awards are subject to the TSR performance conditions set out in the Remuneration Report.

Management Share Awards (Management Share Plans prior to 2018)

The vesting of these awards is dependent on service conditions being met; no performance conditions apply. In general, the awards will be settled in equity, including the dividends accumulated from date of award to vesting and therefore the awards are accounted for in accordance with the requirements applying to equity-settled share-based payment transactions.

The fair value of each award on the day of grant is equal to the share price on the day of grant. Forfeitures prior to vesting are assumed at 7% per annum of outstanding awards (2019: 7% per annum).

Notes to the 2020 Financial Statements

41 Share-based payments continued

Bonus Deferral Awards (Bonus Deferral Plans prior to 2018)

Bonus Deferral Awards (BDA) provide for the mandatory deferral of 50% of the bonuses for executive directors and Executive Committee members and 25% of the bonuses for other executives.

The vesting of these awards is dependent only on service conditions being met. In general, the awards will be settled in equity including the dividends accumulated from date of award to vesting and therefore the awards are accounted for in accordance with the requirements applying to equity-settled share-based payment transactions. The fair value of each award on the day of grant is equal to the share price on the day of grant. Forfeitures prior to vesting are assumed at 3% per annum of outstanding awards (2019: 3% per annum).

Global Employee Share Plans

The Global Employee Share Plans were introduced in 2012. Under these Plans, the companies provide a matching share award for each investment share purchased by a participant. The vesting of these matching awards is dependent on service conditions being met and the continued holding of investment shares by the participant until vesting. These awards are settled in equity including the dividends accumulated from date of award to vesting. The fair value of each matching share on the day of grant is equal to the share price on the date of purchase less a deduction of 15% for cancellations (caused by employees electing to withdraw their investment shares before vesting of their matching shares). Forfeitures prior to vesting are assumed at 5% per annum of outstanding awards (2019: 5% per annum).

The Management Share Awards, Performance Share Awards, Bonus Deferral Awards, Equity Incentive Plan, Global Employee Share Plans and UK Share Plan together represent 100% (2019: 100%) of the total IFRS 2 charge for Rio Tinto plc and Rio Tinto Limited plans in 2020.

Performance Share Awards (granted under either the Performance Share Plans or the Equity Incentive Plans)

	Rio Tinto plc awards				Rio Tinto Limited awards			
	2020 number	**Weighted average fair value at grant date 2020 £**	2019 number	Weighted average fair value at grant date 2019 £	**2020 number**	**Weighted average fair value at grant date 2020 A$**	2019 number	Weighted average fair value at grant date 2019 A$
Unvested awards at 1 January	**3,803,394**	**22.20**	3,845,082	21.86	**1,636,517**	**45.11**	1,797,279	43.34
Awarded	**716,111**	**13.55**	755,735	24.68	**198,863**	**33.56**	297,189	54.55
Forfeited	**(136,030)**	**21.13**	(122,961)	23.95	**(178,921)**	**46.37**	(126,775)	44.02
Failed performance conditions	**(145,661)**	**16.64**	(384,130)	23.79	**(63,852)**	**33.38**	(188,956)	46.42
Vested	**(459,773)**	**20.55**	(290,332)	21.36	**(201,234)**	**41.21**	(142,220)	41.72
Unvested awards at 31 December	**3,778,041**	**21.01**	3,803,394	22.20	**1,391,373**	**44.40**	1,636,517	45.11

	Rio Tinto plc awards				Rio Tinto Limited awards			
	2020 number	**Weighted average fair value at grant date 2020 £**	2019 number	Weighted average fair value at grant date 2019 £	**2020 number**	**Weighted average fair value at grant date 2020 A$**	2019 number	Weighted average fair value at grant date 2019 A$
Vested awards settled in shares during the year (including dividend shares applied on vesting)	**476,602**	**43.13**	339,821	45.52	**217,287**	**93.48**	151,607	100.30
Vested awards settled in cash during the year (including dividend shares applied on vesting)	**108,887**	**43.13**	1,279	43.65	**28,208**	**93.82**	1,347	92.97

In addition to the equity-settled awards shown above, there were 48,191 Rio Tinto plc and 15,164 Rio Tinto Limited cash-settled awards outstanding at 31 December 2020 (2019: 49,019 Rio Tinto plc and 276,722 Rio Tinto Limited cash-settled awards outstanding). The total liability for these awards at 31 December 2020 was US$3 million (2019: US$13 million).

Management Share Awards, Bonus Deferral Awards (granted under the Management Share Plans, Bonus Deferral Plans or Equity Incentive Plans), Global Employee Share Plans and UK Share Plan (combined)

	Rio Tinto plc awards[a]				Rio Tinto Limited awards			
	2020 number	**Weighted average fair value at grant date 2020 £**	2019 number	Weighted average fair value at grant date 2019 £	**2020 number**	**Weighted average fair value at grant date 2020 A$**	2019 number	Weighted average fair value at grant date 2019 A$
Unvested awards at 1 January[b]	**2,613,013**	**37.14**	3,042,020	31.43	**2,273,669**	**75.46**	2,613,930	61.71
Awarded	**1,190,528**	**36.27**	1,043,817	40.41	**921,070**	**83.20**	846,008	86.56
Forfeited	**(99,038)**	**44.42**	(224,402)	39.46	**(60,935)**	**85.01**	(174,025)	72.18
Cancelled	**(33,955)**	**37.72**	(24,043)	32.87	**(50,354)**	**71.45**	(35,481)	60.91
Vested	**(1,019,687)**	**34.46**	(1,224,379)	25.40	**(866,716)**	**65.19**	(976,763)	49.39
Unvested awards at 31 December[b]	**2,650,861**	**37.50**	2,613,013	37.14	**2,216,734**	**82.52**	2,273,669	75.46
Comprising:								
– Management Share Awards	**1,352,759**	**38.73**	1,398,039	38.68	**1,291,203**	**85.80**	1,363,601	78.67
– Bonus Deferral Awards	**211,905**	**36.14**	192,878	41.95	**53,324**	**85.53**	87,930	87.81
– Global Employee Share Plan	**1,050,608**	**36.06**	982,932	33.98	**872,207**	**77.47**	822,138	68.82
– UK Share Plan	**35,589**	**41.54**	39,164	37.86	**—**	**—**	—	—

		Weighted average fair value at grant date 2020 £		Weighted average fair value at grant date 2019 £		**Weighted average fair value at grant date 2020 A$**		Weighted average fair value at grant date 2019 A$
	2020 number		2019 number		**2020 number**		2019 number	
Vested awards settled in shares during the year (including dividend shares applied on vesting):								
– Management Share Awards	**707,133**	**42.26**	681,242	43.68	**640,948**	**97.74**	582,948	93.05
– Bonus Deferral Awards	**111,233**	**49.71**	163,076	42.53	**63,404**	**101.96**	85,142	97.30
– Global Employee Share Plan	**401,169**	**43.82**	543,426	43.04	**299,381**	**98.60**	421,614	91.50
– UK Share Plan	**2,392**	**45.73**	34,196	42.21	**—**	**—**	—	—
Vested awards settled in cash during the year (including dividend shares applied on vesting):								
– Bonus Deferral Awards	**19,617**	**48.34**	—	—	**—**	**—**	—	—

(a) Awards of Rio Tinto American Depository Receipts (ADRs) under the Global Employee Share Plan are included within the totals for Rio Tinto plc awards for the purpose of these tables.
(b) These numbers are presented and calculated in accordance with IFRS 2 and represent awards for which an IFRS 2 charge continues to be accrued for.

In addition to the equity-settled awards shown above, there were 89,253 Rio Tinto plc and 14,878 Rio Tinto Limited cash-settled awards outstanding at 31 December 2020 (2019: 52,881 Rio Tinto plc and 81,050 Rio Tinto Limited cash-settled awards outstanding). The total liability for these awards at 31 December 2020 was US$4 million (2019: US$6 million).

Notes to the 2020 Financial Statements

42 Post-retirement benefits

Description of plans

The Group operates a number of pension and post-retirement healthcare plans around the world. Some of these plans are defined contribution and some are defined benefit, with assets held in separate trusts, foundations and similar entities.

Defined benefit pension and post-retirement healthcare plans expose the Group to a number of risks:

Uncertainty in benefit payments	The value of the Group's liabilities for post-retirement benefits will ultimately depend on the amount of benefits paid out. This in turn will depend on the level of future pay increases, the level of inflation (for those benefits that are subject to some form of inflation protection) and how long individuals live.
Volatility in asset values	The Group is exposed to future movements in the values of assets held in pension plans to meet future benefit payments.
Uncertainty in cash funding	Movements in the values of the obligations or assets may result in the Group being required to provide higher levels of cash funding, although changes in the level of cash required can often be spread over a number of years. In some countries control over the rate of cash funding or over the investment policy for pension assets might rest to some extent with a trustee body or other body that is not under the Group's direct control. In addition the Group is also exposed to adverse changes in pension regulation.

For these reasons the Group has a policy of moving away from defined benefit pension provisions and towards defined contribution arrangements instead. The defined benefit pension plans for salaried employees are closed to new entrants in almost all countries. For unionised employees, some plans remain open.

The Group does not usually participate in multi-employer plans in which the risks are shared with other companies using those plans. The Group's participation in such plans is immaterial and consequently no detailed disclosures are provided in this note.

Pension plans

The majority of the Group's defined benefit pension obligations are in Canada, the UK, the US and Switzerland.

In Canada the benefits for salaried staff are generally linked to final average pay and the plans are generally closed to new entrants. Benefits for bargaining employees are reviewed in negotiation with unions and are typically linked either to final average pay or to a flat monetary amount per year of service. New employees join arrangements which are defined contribution from the Group's perspective, with any required additional funding being provided by employees. The plans are subject to the regulatory requirements that apply to Canadian pension plans in the relevant provinces and territories (predominantly Quebec). Pension Committees are responsible for ensuring that the plans operate in a manner that is compliant with the relevant regulations. The Pension Committees generally have a number of members appointed by the sponsor and a number appointed by the plan participants. In some cases there is also an independent Committee member.

The defined benefit sections of the UK arrangements are linked to final pay. New employees are admitted to defined contribution sections. The plans are subject to the regulatory requirements that apply to UK pension plans. Trustees are responsible for ensuring that the plans operate in a manner that is compliant with UK regulations. The trustee board governing the main UK plans has a number of directors appointed by the sponsor, a number appointed by the plan participants and an independent trustee director.

A number of defined benefit pension plans are sponsored by the US entities. Benefits for salaried staff are generally linked to final average pay. Benefits for bargaining employees are reviewed in negotiation with unions and are typically a flat monetary amount per year of service. New employees are admitted to defined contribution plans. A Benefits Governance Committee is responsible for ensuring that the plans are compliant with US regulations. Members of that Committee are appointed by the sponsor.

In Europe, there are defined benefit plans in Switzerland, Germany and France. The largest single plan is in Switzerland, which provides benefits linked to final average pay. The Swiss plan is overseen by a foundation board which is responsible for ensuring that the plan complies with Swiss regulations. Foundation board members are appointed by the plan sponsor, by employees and by retirees.

In Australia, the main arrangements are principally defined contribution in nature but there are sections providing defined benefits linked to final pay, typically paid in lump sum form. These arrangements are managed by an independent financial institution. Rio Tinto may nominate candidates to be considered for appointment to the governing board, as may other employers. One third of the board positions are nominated by employers, with the remaining positions being filled by independent directors and directors nominated by participants.

The Group also operates a number of unfunded defined benefit plans, which are included in the figures below.

Post-retirement healthcare plans

Certain subsidiaries of the Group, mainly in the US and Canada, provide health and life insurance benefits to retired employees and in some cases to their beneficiaries and covered dependants. Eligibility for cover is dependent upon certain age and service criteria. These arrangements are generally unfunded, and are included in the figures below.

Plan assets

The assets of the pension plans are invested predominantly in a diversified range of equities, bonds and property. Consequently, the funding level of the pension plans is affected by movements in the level of equity markets and also by movements in interest rates. The Group monitors its exposure to changes in interest rates and equity markets and also measures its balance sheet pension risk using a value at risk approach. These measures are considered when deciding whether significant changes in investment strategy are required. Investment strategy reviews are conducted on a periodic basis for the main pension plans to determine the optimal investment mix bearing in mind the Group's tolerance for risk, the risk tolerance of the local sponsor companies and the views of the Pension Committees and trustee boards who are legally responsible for the investments of the plans. The assets of the pension plans may also be invested in Qualifying Insurance Policies which provide a stream of payments to match the benefits being paid out by the plans, thereby removing investment, inflation and longevity risks. In Canada, the UK and Switzerland, the Group works with the governing bodies to ensure that the investment policy adopted is consistent with the Group's tolerance for risk. In the US the Group has direct control over the investment policy, subject to local investment regulations.

The proportions of the total fair value of assets in the pension plans for each asset class at the balance sheet date were:

	2020		2019	
Equities	**21.1%**		20.4%	
– Quoted		**17.9%**		17.0%
– Private		**3.2%**		3.4%
Bonds	**55.8%**		63.4%	
– Government fixed income		**17.7%**		18.4%
– Government inflation-linked		**9.6%**		16.2%
– Corporate and other publicly quoted		**22.6%**		24.1%
– Private		**5.9%**		4.7%
Property	**7.5%**		8.8%	
– Quoted property funds		**3.1%**		3.4%
– Unquoted property funds		**4.4%**		5.4%
Qualifying insurance policies	**11.3%**		3.1%	
Cash & other	**4.3%**		4.3%	
Total	**100.0%**		100.0%	

The assets of the plans are managed on a day-to-day basis by external specialist fund managers. These managers may invest in the Group's securities subject to limits imposed by the relevant fiduciary committees and local legislation. The approximate total holding of Group securities within the plans is US$4 million (2019: US$3 million).

The holdings of quoted equities are invested either in pooled funds or segregated accounts held in the name of the relevant pension funds. These equity portfolios are well diversified in terms of the geographic distribution and market sectors.

The holdings of government bonds are generally invested in the debt of the country in which a pension plan is situated. Corporate and other quoted bonds are usually of investment grade. Private debt is mainly held in the North American and UK pension funds and is invested in North American and European companies.

The property funds are invested in a diversified range of properties.

The holdings of cash & other are predominantly cash and short-term money market instruments.

Investments in private equity, private debt and property are less liquid than the other investment classes listed above and therefore the Group's investment in those asset classes is restricted to a level that does not endanger the liquidity of the pension plans.

Qualifying insurance policies are held with insurance companies that are regulated by the relevant local authorities. The value of those policies is calculated by the local actuaries using assumptions consistent with those adopted for valuing the insured obligations. The significant increase in the allocation to Qualifying insurance policies during 2020 results from an insurance transaction completed by one of the UK pension plans. The purchase price was financed predominantly from that plan's inflation-linked government bonds.

The Group makes limited use of futures, repurchase agreements and other instruments to manage the interest rate risk in some of its plans. Fund managers may also use derivatives to hedge currency movements within their portfolios and, in the case of bond managers, to take positions that could be taken using direct holdings of bonds but more efficiently.

Maturity of defined benefit obligations

An approximate analysis of the maturity of the obligations is given in the table below:

	Pension benefits	Other benefits	2020 Total	2019 Total	2018 Total
Proportion relating to current employees	21 %	19 %	**21 %**	20 %	19 %
Proportion relating to former employees not yet retired	12 %	0 %	**11 %**	12 %	11 %
Proportion relating to retirees	67 %	81 %	**68 %**	68 %	70 %
Total	100 %	100 %	**100 %**	100 %	100 %
Average duration of obligations (years)	14.4	13.5	**14.3**	14.4	13.4

Geographical distribution of defined benefit obligations

An approximate analysis of the geographic distribution of the obligations is given in the table below:

	Pension benefits	Other benefits	2020 Total	2019 Total	2018 Total
Canada	54 %	46 %	**53 %**	53 %	48 %
UK	30 %	2 %	**28 %**	28 %	28 %
US	7 %	50 %	**10 %**	10 %	14 %
Switzerland	5 %	0 %	**5 %**	5 %	5 %
Other	4 %	2 %	**4 %**	4 %	5 %
Total	100 %	100 %	**100 %**	100 %	100 %

Notes to the 2020 Financial Statements

42 Post-retirement benefits continued

Total expense recognised in the income statement

	Pension benefits US$m	Other benefits US$m	2020 Total US$m	2019 Total US$m	2018 Total US$m
Current employer service cost for defined benefit plans	(131)	(6)	**(137)**	(125)	(165)
Past service cost	(2)	—	**(2)**	—	(36)
Curtailment gains	—	—	**—**	—	2
Settlement (losses)/gains	(1)	—	**(1)**	51	5
Net interest on net defined benefit liability	(22)	(27)	**(49)**	(58)	(79)
Non-investment expenses paid from the plans	(16)	—	**(16)**	(14)	(15)
Total defined benefit expense	(172)	(33)	**(205)**	(146)	(288)
Current employer service cost for defined contribution and industry-wide plans	(262)	(2)	**(264)**	(238)	(244)
Total expense recognised in the income statement	(434)	(35)	**(469)**	(384)	(532)

The above expense amounts are included as an employee cost within net operating costs. No amounts have been excluded from underlying earnings in 2020, 2019 or 2018.

The settlement gains in 2019 and 2018 were the result of certain US obligations being transferred to external insurance companies and of certain US obligations being settled through a lump sum window exercise being offered to members with a deferred pension. The past service cost in 2018 related primarily to benefit amendments in the US and also included US$9 million to reflect the estimated cost of equalising benefits in the Group's UK schemes, in line with the requirements of the court judgment on 26 October 2018 in the case involving Lloyds Banking Group and relating to Guaranteed Minimum Pensions. A past service cost of US$1 million was recognised in 2020 in relation to the subsequent court judgment addressing the need to equalise historical transfer values.

Total amount recognised in other comprehensive income before tax

	2020 US$m	2019 US$m	2018 US$m
Actuarial (losses)/gains	**(1,242)**	(1,295)	1,382
Return on assets, net of interest on assets	**768**	1,033	(527)
Gain on application of asset ceiling	**—**	—	52
Total (loss)/gain recognised in other comprehensive income	**(474)**	(262)	907

Amounts recognised in the balance sheet

The following amounts were measured in accordance with IAS 19 at 31 December:

	Pension benefits US$m	Other benefits US$m	2020 Total US$m	2019 Total US$m
Total fair value of plan assets	14,905	—	**14,905**	13,923
Present value of obligations – funded	(15,731)	—	**(15,731)**	(14,311)
Present value of obligations – unfunded	(479)	(968)	**(1,447)**	(1,342)
Present value of obligations – total	(16,210)	(968)	**(17,178)**	(15,653)
Net deficit to be shown in the balance sheet	(1,305)	(968)	**(2,273)**	(1,730)
Comprising:				
– Deficits	(2,087)	(968)	**(3,055)**	(2,714)
– Surpluses	782	—	**782**	984
Net deficits on pension plans	(1,305)	—	**(1,305)**	(831)
Unfunded post-retirement healthcare obligation	—	(968)	**(968)**	(899)

The surplus amounts shown above are included in the balance sheet as "Receivables and other assets". See note 18.

Deficits are shown in the balance sheet within "Provisions (including post-retirement benefits)". See note 25.

Funding policy and contributions to plans

The Group reviews the funding position of its major pension plans on a regular basis and considers whether to provide funding above the minimum level required in each country. In Canada and the US the minimum level is prescribed by legislation. In the UK and Switzerland the minimum level is negotiated with the local trustee or foundation in accordance with the funding guidance issued by the local regulators. In deciding whether to provide funding above the minimum level the Group takes into account other possible uses of cash within the Group, the tax situation of the local sponsoring entity and any strategic advantage that the Group might obtain by accelerating contributions. The Group does not generally pre-fund post-retirement healthcare arrangements.

	Pension benefits US$m	Other benefits US$m	**2020 Total US$m**	2019 Total US$m	2018 Total US$m
Contributions to defined benefit plans	169	32	**201**	257	248
Contributions to defined contribution plans	259	2	**261**	235	244
Total	428	34	**462**	492	492

The level of surplus in the Rio Tinto Pension Fund in the UK is such that it may be used to pay for the employer contributions to the defined contribution section of that Fund, in accordance with the funding arrangements agreed with the Trustee of that Fund. Consequently, the cash paid to defined contribution plans is lower than the defined contribution service cost by US$3 million. Contributions to defined benefit pension plans are kept under regular review and actual contributions will be determined in line with the Group's wider financing strategy, taking into account relevant minimum funding requirements. As contributions to many plans are reviewed on at least an annual basis, the contributions for 2021 and subsequent years cannot be determined precisely in advance. Most of the Group's largest pension funds are fully funded on their local funding basis and do not require long-term funding commitments at present. Contributions to defined benefit pension plans for 2021 are estimated to be around US$150 million but may be higher or lower than this depending on the evolution of financial markets and voluntary funding decisions taken by the Group. Contributions for subsequent years are expected to be at similar levels. Healthcare plans are generally unfunded and contributions for future years will be equal to benefit payments net of participant contributions. The Group's contributions in 2021 are expected to be similar to the amounts paid in 2020.

Movements in the net defined benefit liability

A summary of the movement in the net defined benefit liability is shown in the first table below. The subsequent tables provide a more detailed analysis of the movements in the present value of the obligations and the fair value of assets.

	Pension benefits US$m	Other benefits US$m	**2020 Total US$m**	2019 Total US$m
Change in the net defined benefit liability				
Net defined benefit liability at the start of the year	(831)	(899)	**(1,730)**	(1,551)
Amounts recognised in income statement	(172)	(33)	**(205)**	(146)
Amounts recognised in other comprehensive income	(416)	(58)	**(474)**	(262)
Employer contributions	169	32	**201**	257
Arrangements added/divested	—	—	**—**	(5)
Assets transferred to defined contribution section	(3)	—	**(3)**	(3)
Currency exchange rate (loss)	(52)	(10)	**(62)**	(20)
Net defined benefit liability at the end of the year	(1,305)	(968)	**(2,273)**	(1,730)

	Pension benefits US$m	Other benefits US$m	**2020 Total US$m**	2019 Total US$m
Change in present value of obligation				
Present value of obligation at the start of the year	(14,754)	(899)	**(15,653)**	(14,754)
Current employer service costs	(131)	(6)	**(137)**	(125)
Past service cost	(2)	—	**(2)**	—
Settlements	6	—	**6**	638
Interest on obligation	(357)	(27)	**(384)**	(476)
Contributions by plan participants	(22)	—	**(22)**	(23)
Benefits paid	746	32	**778**	862
Experience gains	46	15	**61**	111
Changes in financial assumptions (loss)	(1,357)	(85)	**(1,442)**	(1,447)
Changes in demographic assumptions gain	127	12	**139**	41
Arrangements (added)	—	—	**—**	(5)
Currency exchange rate (loss)	(512)	(10)	**(522)**	(475)
Present value of obligation at the end of the year	(16,210)	(968)	**(17,178)**	(15,653)

Notes to the 2020 Financial Statements

42 Post-retirement benefits continued

	Pension benefits US$m	Other benefits US$m	2020 Total US$m	2019 Total US$m
Change in plan assets				
Fair value of plan assets at the start of the year	13,923	—	**13,923**	13,203
Settlements	(7)	—	**(7)**	(587)
Interest on assets	335	—	**335**	418
Contributions by plan participants	22	—	**22**	23
Contributions by employer	169	32	**201**	257
Benefits paid	(746)	(32)	**(778)**	(862)
Non-investment expenses	(16)	—	**(16)**	(14)
Return on plan assets, net of interest on assets	768	—	**768**	1,033
Assets transferred to defined contribution section	(3)	—	**(3)**	(3)
Currency exchange rate gain	460	—	**460**	455
Fair value of plan assets at the end of the year	14,905	—	**14,905**	13,923

Most of the settlement amounts shown above relate to the US, where assets and obligations for some pensions in payment were transferred to insurance companies. Obligations were also settled through a lump sum window exercise being offered to members with a deferred pension in the US.

The asset ceiling had no effect during the year. In determining the extent to which the asset ceiling has an effect, the Group considers the funding legislation in each country and the rules specific to each pension plan. The calculation takes into account any minimum funding requirements that may be applicable to the plan, whether any reduction in future Group contributions is available, and whether a refund of surplus may be available. In considering whether any refund of surplus is available the Group considers the powers of trustee boards and similar bodies to augment benefits or wind up a plan. Where such powers are unilateral, the Group does not consider a refund to be available at the end of the life of a plan. Where the plan rules and legislation both permit the employer to take a refund of surplus, the asset ceiling may have no effect, although it may be the case that a refund will only be available many years in the future.

Main assumptions (rates per annum)

The main assumptions for the valuations of the plans under IAS 19 are set out below. Where there are multiple plans in a country the rates below are weighted-average figures.

	Canada	UK	US	Switzerland
At 31 December 2020				
Discount rate	**2.5%**	**1.2%**	**2.2%**	**0.1%**
Inflation[a]	**1.6%**	**2.9%**	**2.1%**	**0.9%**
Rate of increase in pensions	**0.1%**	**2.5%**	**—%**	**0.5%**
Rate of increase in salaries	**2.8%**	**3.6%**	**3.6%**	**1.9%**
At 31 December 2019				
Discount rate	3.1%	2.0%	3.1%	0.2%
Inflation[a]	1.6%	2.9%	2.0%	1.1%
Rate of increase in pensions	0.1%	2.5%	—%	0.2%
Rate of increase in salaries	2.8%	3.5%	3.5%	2.1%

(a) The inflation assumption shown for the UK is for the Retail Price Index. The assumption for the Consumer Price Index at 31 December 2020 was 2.1% (2019: 2.0%).

The main financial assumptions used for the healthcare plans, which are predominantly in the US and Canada, were: discount rate: 2.5% (2019: 3.3%); medical trend rate: 6.3% reducing to 4.6% by the year 2031 broadly on a straight line basis (2019: 6.1%, reducing to 4.6% by the year 2029); claims costs based on individual company experience.

For both the pension and healthcare arrangements the post-retirement mortality assumptions allow for future improvements in longevity. The mortality tables used imply that a man aged 60 at the balance sheet date has a weighted average expected future lifetime of 27 years (2019: 27 years) and that a man aged 60 in 2040 would have a weighted average expected future lifetime of 28 years (2019: 28 years).The mortality tables are generally based upon the latest standard tables published in each country, adjusted appropriately to reflect the actual mortality experience of the plan participants where credible data is available..

Sensitivity

The values reported for the defined benefit obligations are sensitive to the actuarial assumptions used for projecting future benefit payments and discounting those payments. In order to estimate the sensitivity of the obligations to changes in assumptions, we calculate what the obligations would be if we were to make changes to each of the key assumptions in isolation. The difference between this figure and the figure calculated using our stated assumptions is an indication of the sensitivity to changes in each assumption. The results of this sensitivity analysis are summarised in the table below. Note that this approach is valid for small changes in the assumptions but will be less accurate for larger changes in the assumptions. The sensitivity to inflation includes the impact on pension increases, which are generally linked to inflation where they are granted.

		2020		2019	
		Approximate (increase)/ decrease in obligations		Approximate (increase)/ decrease in obligations	
Assumption	**Change in assumption**	**Pensions US$m**	**Other US$m**	Pensions US$m	Other US$m
Discount rate	Increase of 0.5 percentage points	**988**	**62**	894	56
	Decrease of 0.5 percentage points	**(1,186)**	**(66)**	(1,057)	(60)
Inflation	Increase of 0.5 percentage points	**(484)**	**(19)**	(447)	(17)
	Decrease of 0.5 percentage points	**450**	**17**	422	15
Salary increases	Increase of 0.5 percentage points	**(81)**	**(1)**	(55)	(1)
	Decrease of 0.5 percentage points	**72**	**1**	54	1
Demographic – allowance for future improvements in longevity	Participants assumed to have the mortality rates of individuals who are one year older	**520**	**19**	443	18
	Participants assumed to have the mortality rates of individuals who are one year younger	**(562)**	**(19)**	(465)	(18)

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43 Rio Tinto Limited parent company disclosures
As at 31 December

	2020 A$m	2019 A$m
Assets		
Current assets	**12,024**	8,338
Non-current assets	**3,167**	7,332
Total assets	**15,191**	15,670
Liabilities		
Current liabilities	**(2,665)**	(2,541)
Non-current liabilities	**(541)**	(411)
Total liabilities	**(3,206)**	(2,952)
Net assets	**11,985**	12,718
Shareholders' equity		
Share capital	**3,504**	3,504
Other reserves	**345**	370
Retained earnings	**8,136**	8,844
Total equity	**11,985**	12,718
Profit of the parent company	**11,890**	11,026
Total comprehensive income of the parent company	**11,890**	11,026

Prepared under Australian Accounting Standards (AAS) and in accordance with Australian Corporations Act (see page 310). In relation to Rio Tinto Limited there are no significant measurement differences between AAS and IFRS as defined in note 1.

Rio Tinto Limited guarantees
Rio Tinto Limited provides a number of guarantees in respect of Group companies.

Rio Tinto plc and Rio Tinto Limited have jointly guaranteed the Group's external listed debt under the US Shelf Programme, European Debt Issuance Programme and Commercial Paper Programme which totalled A$7.2 billion at 31 December 2020 (31 December 2019: A$8.5 billion); in addition these entities also jointly guarantee the Group's undrawn credit facility which was A$9.8 billion at 31 December 2020 (31 December 2019: A$10.7 billion).

Rio Tinto Limited has guaranteed other external debt held by Rio Tinto Group entities which totalled A$0.1 billion at 31 December 2020 (31 December 2019: A$0.1 billion).

In addition, Rio Tinto Limited has provided a guarantee of all third-party obligations, including contingent obligations, of Rio Tinto Finance Limited, a wholly owned subsidiary.

Pursuant to the DLC Merger, both Rio Tinto plc and Rio Tinto Limited issued deed poll guarantees by which each company guaranteed contractual obligations incurred by the other or guaranteed by the other.

44 Related undertakings

In accordance with section 409 of the UK Companies Act 2006, disclosed below is a full list of related undertakings of the Group. Related undertakings include "subsidiaries", "associated undertakings", and "significant holdings in undertakings other than subsidiary companies". The registered office address, country of incorporation, classes of shares and the effective percentage of equity owned by the Group calculated by reference to voting rights, is disclosed as at 31 December 2020.

The definition of a subsidiary undertaking in accordance with the UK Companies Act 2006 is different from the definition under IFRS. As a result, the related undertakings included within this list may not be the same as the related undertakings consolidated in the Group IFRS financial statements. Unless otherwise disclosed, all undertakings with an effective equity holding of greater than 50% are considered subsidiary undertakings for the purpose of this note.

Refer to notes 32-35 for further information on accounting policies, basis of consolidation, principal subsidiaries, joint operations, joint ventures and associates.

An explanation of the dual listed companies structure of Rio Tinto plc and Rio Tinto Limited can be found on pages 375-376. For completeness, the effective ownership by the Group relates to effective holdings by both entities either together or individually.

Wholly owned subsidiary undertakings

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
1043802 Ontario Ltd.; Canada	CAD Ordinary shares	100	100	5300-66 Wellington Street West, Toronto ON M5K 1E6, Canada
10676276 Canada Inc.; Canada	CAD Common shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal QC H3B 0E3, Canada
10676284 Canada Inc.; Canada	CAD Common shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal QC H3B 0E3, Canada
1109723 B.C. Ltd.; Canada	CAD Common shares	100	100	1800-510 West Georgia Street, Vancouver BC V6B 0M3, Canada
46106 Yukon Inc.; Canada	CAD Common shares	100	100	200-204 Lambert Street, Whitehorse YT Y1A 3T2, Canada
46117 Yukon Inc.; Canada	CAD Common shares	100	100	200-204 Lambert Street, Whitehorse YT Y1A 3T2, Canada
	CAD Preferred shares	100	100	
535630 Yukon Inc.; Canada	CAD Common shares	100	100	200-204 Lambert Street, Whitehorse YT Y1A 3T2, Canada
	CAD Preferred shares	100	100	
7999674 Canada Inc.; Canada	CAD Common shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal QC H3B 0E3, Canada
Alcan Alumina Ltda.; Brazil	BRL1.00 Quota shares	100	100	Avenida Engenheiro Emiliano Macieira, 1–km 18, Pedrinhas, São Luis, MA, 65095-603, Brazil
Alcan Asia Limited; Hong Kong	HKD Ordinary shares	100	100	6/F, Luk Kwok Centre, 72 Gloucester Road, Wan Chai, Hong Kong
Alcan Betriebs- und Verwaltungsgesellschaft GmbH; Germany	€51.13 Ordinary shares	100	100	Alusingenplatz 1, D-78221, Singen, Germany
Alcan Chemicals Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Alcan Composites Brasil Ltda; Brazil	BRL0.01 Ordinary shares	100	100	Avenida das Nações Unidas, 10.989, 14th floor, Suite 141, São Paulo, 04578-000, Brazil
Alcan Corporation; United States	US$0.01 Ordinary shares	100	100	CSC, 211 East 7th Street, Suite 620, Austin TX 78701-3218, United States

Notes to the 2020 Financial Statements

44 Related undertakings continued
Wholly owned subsidiary undertakings continued

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Alcan Farms Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Alcan Finances USA LLC; United States	US$1,000.00 Ordinary shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States
Alcan Gove Development Pty Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Alcan Holdings Australia Pty Limited; Australia	AUD Class A shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
	AUD Ordinary shares	100	100	
Alcan Holdings Europe B.V.; Netherlands	€4,570,000,000.00 Common shares	100	100	Welplaatweg 104, 3197 KS, Botlek-Rotterdam, Netherlands
Alcan Holdings Nederland B.V.; Netherlands	€4,555.00 Ordinary shares	100	100	Welplaatweg 104, 3197 KS, Botlek-Rotterdam, Netherlands
Alcan Holdings Switzerland AG (SA/Ltd.); Switzerland	CHF0.01 Registered shares	100	100	Badenerstrasse 549, CH-8048 , Zürich, Switzerland
Alcan International Network U.S.A. Inc.; United States	US$ Ordinary shares	100	100	CSC, 80 State Street, Albany NY 12207-2543, United States
Alcan Lebensmittelverpackungen GmbH; Germany	€51.13 Ordinary shares	100	100	Alusingenplatz 1, D-78221, Singen, Germany
Alcan Management Services (Shanghai) Co., Ltd.; China	US$1.00 Ordinary shares	100	100	Unit E, 40F Wheelock Square, No. 1717 West Nanjing Road, Jing'an District, Shanghai, 200040, China
Alcan Management Services Canada Limited; Canada	CAD Ordinary shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal QC H3B 0E3, Canada
Alcan Northern Territory Alumina Pty Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Alcan Packaging Mühltal GmbH & Co. KG; Germany	€51.13 Ordinary shares	100	100	Alusingenplatz 1, D-78221, Singen, Germany
Alcan Primary Metal Australia Pty Ltd; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Alcan Primary Products Company LLC; United States	US$ Shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States
Alcan Primary Products Corporation; United States	US$0.01 Ordinary shares	100	100	CSC, 211 East 7th Street, Suite 620, Austin TX 78701-3218, United States
Alcan Realty Limited; Canada	CAD Ordinary shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal QC H3B 0E3, Canada
Alcan South Pacific Pty Ltd; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Alcan Trading AG (SA/Ltd.); Switzerland	CHF1000.00 Registered shares	100	100	Herostrasse 9, P.O. Box 1954, CH-8048 Zurich, Switzerland
Aluminium Company of Canada Limited; Canada	CAD Ordinary shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal QC H3B 0E3, Canada
AML Properties Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Anglesey Aluminium Metal Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
AP Service; France	€15.00 Ordinary shares	100	100	725 rue Aristide Bergès, 38340, Voreppe, France
Argyle Diamond Mines Pty Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Argyle Diamonds Limited; Australia[a]	AUD Class A shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
	AUD Class B shares	100	100	

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Ashton Mining Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Ashton Nominees Pty Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Australian Coal Holdings Pty. Limited; Australia[a]	AUD Class A shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
	AUD Ordinary shares	100	100	
Australian Mining & Smelting Pty Ltd; Australia[a]	AUD Ordinary shares	100	100	Level 7, 360 Collins Street, Melbourne VIC 3000, Australia
Beasley River Management Pty Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Beasley River Mining Pty Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Borax España, S.A.; Spain	€150.00 Ordinary shares	100	100	CN 340, Km 954, Apartado 197, 12520 NULES, Castellón, Spain
Borax Europe Limited; United Kingdom	£0.25 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Borax Français; France	€2.75 Ordinary shares	100	100	89 Route de Bourbourg, 59210, Coudekerque-Branche, France
Borax Malaysia Sdn Bhd; Malaysia	MYR1.00 Ordinary shares	100	100	Level 7, Menara Milenium, Jalan Damanlela, Pusat Bandar Damansara, Damansara Heights 50490 Kuala Lumpur, Malaysia
Borax Rotterdam N.V.; Netherlands	€453.78 Ordinary shares	100	100	Welplaatweg 104, 3197 KS, Botlek-Rotterdam, Netherlands
British Alcan Aluminium Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Canning Resources Pty Limited; Australia[a]	AUD Ordinary shares	100	100	Level 7, 360 Collins Street, Melbourne VIC 3000, Australia
Capricorn Diamonds Investments Pty Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Cathjoh Holdings Pty Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Champlain Reinsurance Company Ltd.; Switzerland	CHF1.23 Registered shares	100	100	Badenerstrasse 549, CH-8048 , Zürich, Switzerland
Channar Management Services Pty Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Channar Mining Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
CIA. Inmobiliaria e Inversiones Cosmos S.A.C.; Peru	PEN1,000.00 Ordinary shares	100	100	Calle Santa Maria No. 110 Urb. Miraflores - Miraflores-Lima, Peru
Compania de Transmision Sierraoriente S.A.C.; Peru	PEN1,000.00 Ordinary shares	100	100	Calle Santa Maria No. 110 Urb. Miraflores - Miraflores-Lima, Peru
CRA Investments Pty. Limited; Australia[a]	AUD Ordinary shares	100	100	Level 7, 360 Collins Street, Melbourne VIC 3000, Australia
CRA Pty Ltd; Australia[a]	AUD Ordinary shares	100	100	Level 7, 360 Collins Street, Melbourne VIC 3000, Australia
Daybreak Development LLC; United States	US$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States
Daybreak Property Holdings LLC; United States[c]	—	—	100	CSC, 15 West South Temple, Suite 1701, Salt Lake City UT 84101, United States
Daybreak Secondary Water Distribution Company; United States	US$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States
Daybreak Water Holding LLC; United States	US$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States
DB Medical I LLC; United States	US$ Shares	100	100	CSC, 15 West South Temple, Suite 600, Salt Lake City UT 84101, United States

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44 Related undertakings continued
Wholly owned subsidiary undertakings continued

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
DBVC1 LLC; United States[c]	—	—	100	CSC, 15 West South Temple, Suite 600, Salt Lake City UT 84101, United States
Diavik Diamond Mines (2012) Inc.; Canada	CAD Common shares	100	100	300-5201 50th Avenue, P.O. Box 2498, Yellowknife NT X1A 2P8, Canada
East Kalimantan Coal Pte. Ltd; Singapore[a][d]	SGD1.00 Ordinary share	100	100	12 Marina Boulevard, #20-01 Marina Bay Financial Centre Tower 3, 018982, Singapore
	US$1.00 Common shares	100		
Eastland Management Inc.; United States	US$1.00 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States
Electric Power Generation Limited; New Zealand[a]	NZD1.00 Ordinary shares	100	100	1530 Tiwai Road, Tiwai Point, Invercargill 9877, New Zealand
Flambeau Mining Company; United States	US$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States
Fundsprops Pty. Limited; Australia[a]	AUD Ordinary shares	100	100	Level 7, 360 Collins Street, Melbourne VIC 3000, Australia
Gladstone Infrastructure Pty Ltd; Australia	AUD Class G Redeemable Preference shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
	AUD Ordinary shares	100		
Gove Aluminium Ltd; Australia	AUD A Non-redeemable Preference shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
	AUD A redeemable Preference shares	100		
	AUD Ordinary shares	100		
GPS Energy Pty Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
GPS Nominee Pty Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
GPS Power Pty. Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Hamersley Exploration Pty Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Hamersley HMS Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Hamersley Holdings Limited; Australia[a]	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Hamersley Iron – Yandi Pty Limited; Australia[a]	AUD Class B shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
	AUD Class C shares	100		
	AUD Ordinary shares	100		
Hamersley Iron Pty. Limited; Australia	AUD Ordinary shares		100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Hamersley Resources Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
	AUD Z Class Ordinary shares	100		

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Hamersley WA Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Henlopen Manufacturing Co., Inc.; United States	US$100.00 Ordinary shares	100	100	CSC, 80 State Street, Albany NY 12207-2543, United States
High Purity Iron Inc.; United States	US$1.00 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States
Hismelt Corporation Pty Limited; Australia[a][d]	AUD Class A shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Hunter Valley Resources Pty Ltd; Australia	AUD A Class shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
	AUD B Class shares	100		
IEA Coal Research Limited; United Kingdom	£1.00 Ordinary shares	100	100	Apsley House, Third Floor, 176 Upper Richmond Road, London, SW15 2SH, United Kingdom
IEA Environmental Projects Limited; United Kingdom	£1.00 Ordinary shares	100	100	IEAGHG, Pure Offices Cheltenham Office Park, Hatherley Lane, Cheltenham, GL51 6SH, United Kingdom
Industrias Metalicas Castello S.A.; Spain	€6.01 Ordinary shares	100	100	Calle Tuset 10, 08006, Barcelona, Catalonia, Spain
Integrity Land and Cattle LLC; United States	US$ Shares	100	100	CSC, 8825 N. 23rd Avenue, Suite 100, Phoenix AZ 85021, United States
IOC Sales Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Itallumina Srl; Italy[d]	€1.00 Quotas shares	100	100	Viale Castro Pretorio 122, 00185, Roma, Italy
Johcath Holdings Pty Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Juna Station Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Kalimantan Gold Pty Limited; Australia	AUD Ordinary shares	100	100	Level 7, 360 Collins Street, Melbourne VIC 3000, Australia
Kelian Pty. Limited; Australia[a]	AUD Ordinary shares	100	100	Level 7, 360 Collins Street, Melbourne VIC 3000, Australia
Kembla Coal & Coke Pty. Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Kennecott Barneys Canyon Mining Company; United States	US$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States
Kennecott Exploration Company; United States	US$0.01 Common shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States
Kennecott Exploration Mexico, S.A. de C.V.; Mexico	MXN1,000.00 Ordinary shares	100	100	Felix Berenguer 125 - 4 Col. Lomas Virreyes, Distrito Federal, 11000, Mexico
Kennecott Holdings Corporation; United States	US$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States
Kennecott Land Company; United States	US$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States
Kennecott Land Investment Company LLC; United States[c]	—	—	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States
Kennecott Molybdenum Company; United States	US$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States
Kennecott Nevada Copper Company; United States	US$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States
Kennecott Ridgeway Mining Company; United States	US$1.00 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States

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44 Related undertakings continued
Wholly owned subsidiary undertakings continued

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Kennecott Royalty Company; United States	US$100.00 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States
Kennecott Services Company; United States	US$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States
Kennecott Uranium Company; United States	US$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States
Kennecott Utah Copper LLC; United States	US$ Shares	100	100	CSC, 15 West South Temple, Suite 600, Salt Lake City UT 84101, United States
Kennecott Water Distribution LLC; United States	US$ Ordinary shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States
Kutaibar Holdings Pty Ltd; Australia[a]	AUD Ordinary shares	100	100	Level 7, 360 Collins Street, Melbourne VIC 3000, Australia
Lawson Mardon Flexible Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Lawson Mardon Smith Brothers Ltd.; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Metallwerke Refonda AG; Switzerland	CHF 125.00 Bearer shares	100	100	Badenerstrasse 549, CH-8048 , Zürich, Switzerland
Metals & Minerals Insurance Pte. Limited; Singapore	SGD Redeemable Preference shares	100	100	2 Shenton Way, #2601, SGX Centre 1, 068804, Singapore
	SGD Ordinary shares	100		
Minera Kennecott, S.A. de C.V.; Mexico[d]	MXN1.00 Series B shares	100	100	Florencia 57, Piso 3, Col. Juarez, Delegación Cuauhtemoc, Mexico, D.F., 06600, Mexico
Mitchell Plateau Bauxite Co. Pty. Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane, QLD 4000, Australia
Mount Bruce Mining Pty Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Mount Pleasant Pty Ltd; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Mutamba Mineral Sands S.A.; Mozambique	MZN100.00 Ordinary shares	100	100	Av. da Marginal Nº 4985, 1º andar – Prédio ZEN, Maputo, Mozambique
NBH Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Nhulunbuy Corporation Limited; Australia[c]	—	—	100	19 Westal Street, Nhulunbuy NT 0880, Australia
Norgold Pty Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
	AUD Redeemable Preference shares	100		
North Gold (W.A.) Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
	AUD Redeemable Preference shares	100		
North Insurances Pty. Ltd.; Australia	AUD Ordinary shares	100	100	Level 7, 360 Collins Street, Melbourne VIC 3000, Australia
North IOC (Bermuda) Holdings Limited; Bermuda	US$1.00 Ordinary shares	100	100	Clarendon House, 2 Church Street, Hamilton, HM 11, Bermuda
North IOC (Bermuda) Limited; Bermuda	US$143.64 Class A Ordinary shares	100	100	Clarendon House, 2 Church Street, Hamilton, HM 11, Bermuda
	US$100,000.00 Preference shares	100		
	US$1.00 Ordinary shares	100		
North IOC Holdings Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
North Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
North Mining Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
	AUD Redeemable Preference shares	100		
Pacific Aluminium (New Zealand) Limited; New Zealand	NZD1.00 Ordinary shares	100	100	1530 Tiwai Road, Tiwai Point, Invercargill 9877, New Zealand
	NZD2.00 Ordinary shares	100	100	
Pacific Aluminium Pty. Limited; Australia[a]	AUD Ordinary shares	100	100	Level 7, 360 Collins Street, Melbourne VIC 3000, Australia
Pacific Coast Mines, Inc.; United States	US$1.00 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States
Pechiney Aviatube Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Pechiney Bâtiment; France	€15.00 Ordinary shares	100	100	60 Avenue Charles de Gaulle, 92200, Neuilly-Sur-Seine, France
Pechiney Bécancour, Inc.; United States	US$1.00 Ordinary shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States
Pechiney Cast Plate, Inc.; United States	US$1.00 Ordinary shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States
Pechiney Consolidated Australia Pty Limited; Australia	US$1.00 Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
	US$1.00 preference shares	100		
Pechiney Holdings, Inc.; United States	US$1.00 Ordinary shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States
Pechiney Metals LLC; United States[c]	—	—	—	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States
Pechiney Plastic Packaging, Inc.; United States	US$ Ordinary shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States
Pechiney Sales Corporation; United States	US$1.00 Ordinary shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States
Peko Exploration Pty Ltd.; Australia	AUD Ordinary shares	100	100	37 Belmont Avenue, Belmont WA 6104, Australia
Peko-Wallsend Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Pilbara Iron Company (Services) Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Pilbara Iron Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Project Generation Group Pty Ltd; Australia[a]	AUD Ordinary shares	100	100	Level 7, 360 Collins Street, Melbourne VIC 3000, Australia
PT Rio Tinto Consultants; Indonesia[d]	US$1.00 Ordinary shares	100	100	31st Floor, Menara BTPN, Jl. Dr. Ide Anak Agung Gde Agung Lot 5.5-5.6, Mega Kuningan, Jakarta, 12950, Indonesia
QIT Madagascar Minerals Ltd; Bermuda	US$1.00 Ordinary shares	100	100	Victoria Place, 5th Floor, 31 Victoria Street, , Hamilton HM 10, Bermuda
Queensland Coal Pty. Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Química e Metalúrgica Mequital Ltda.; Brazil	BRL Ordinary shares	100	100	Av. das Nações Unidas, 12551 19o, andar, CJ 1911, 04578-000, São Paulo, SP, Brazil
Ranges Management Company Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Ranges Mining Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Resolution Copper Company; United States	US$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States
Richards Bay Mining Holdings (Proprietary) Limited; South Africa	ZAR1.00 A Ordinary shares	100	100	The Farm RBM, Number 16317, KwaZulu-Natal, South Africa
	ZAR1.00 B Ordinary shares	100		

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44 Related undertakings continued
Wholly owned subsidiary undertakings continued

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Richards Bay Titanium Holdings (Proprietary) Limited; South Africa	ZAR1.00 A Ordinary shares	100	100	The Farm RBM, Number 16317, KwaZulu-Natal, South Africa
	ZAR1.00 B Ordinary shares	100		
Rio de Contas Desenvolvimentos Minerais Ltda; Brazil	BRL Quota shares	100	100	Rua Coronel Durval Matos, S/N. Centro, Municipio de Jaguaquara, Estado da Bahia, CEP45345-000, Brazil
Rio Santa Rita Empreenimentos e-Participações Ltda; Brazil	BRL Quota shares	100	100	SIG, QUADRA 04, Lote 75, Sala 109 Parte E, Edifício Capital Financial Center, Brasília DF, CEP 71.610-440, Brazil
Rio Sava Exploration DOO; Serbia[c]	—	—	—	Resavska 23, 11000 Beograd, 11000, Serbia
Rio Tinto (Commercial Paper) Limited; Australia[a]	AUD Ordinary shares	100	100	Level 7, 360 Collins Street, Melbourne VIC 3000, Australia
Rio Tinto (Hong Kong) Ltd; Hong Kong	HKD Ordinary shares	100	100	Level 54, Hopewell Centre, 183 Queen's Road East, Hong Kong
Rio Tinto Advisory Services Pty Limited; Australia	AUD Ordinary shares	100	100	Level 7, 360 Collins Street, Melbourne VIC 3000, Australia
Rio Tinto Alcan Fund Inc.; Canada	CAD Ordinary shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal QC H3B 0E3, Canada
Rio Tinto Alcan Inc.; Canada	CAD Common shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal QC H3B 0E3, Canada
Rio Tinto Alcan International Ltd.; Canada	CAD Common shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal QC H3B 0E3, Canada
Rio Tinto Alcan Technology Pty Ltd; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Rio Tinto Aluminium (Bell Bay) Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Rio Tinto Aluminium (Holdings) Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Rio Tinto Aluminium Bell Bay Sales Pty Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Rio Tinto Aluminium Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Rio Tinto Aluminium Pechiney	€10.00 Ordinary shares	100	100	725 rue Aristide Bergès, 38340, Voreppe, France
Rio Tinto Aluminium Services Pty Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Rio Tinto America Holdings Inc.; United States	US$0.01 Class A Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States
	US$100.00 Series A Preferred stock	100		
Rio Tinto America Inc.; United States	US$100.00 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States
Rio Tinto Asia Ltd; Hong Kong	HKD Ordinary shares	100	100	6/F, Luk Kwok Centre, 72 Gloucester Road, Wan Chai, Hong Kong
Rio Tinto Asia Pty. Limited; Australia[a]	AUD Class A shares	100	100	Level 7, 360 Collins Street, Melbourne VIC 3000, Australia
	AUD Ordinary shares	100	100	
Rio Tinto AuM Company; United States	US$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States
Rio Tinto Australian Holdings Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
	AUD 0.10 Preference shares	100	100	
	US$0.32 Ordinary shares	100	100	
Rio Tinto Bahia Holdings Limited; United Kingdom	US$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Base Metals Pty. Limited; Australia[a]	AUD Ordinary shares	100	100	Level 7, 360 Collins Street, Melbourne VIC 3000, Australia

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Rio Tinto Brazilian Holdings Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
	US$1.00 Ordinary shares	100	100	
Rio Tinto Brazilian Investments Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
	US$1.00 Ordinary shares			
Rio Tinto Canada Diamond Operation Management Inc.; Canada	CAD Common shares	100	100	300-5201 50th Avenue, P.O. Box 2498, Yellowknife NT X1A 2P8, Canada
Rio Tinto Canada Inc.; Canada	CAD Class B shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal QC H3B 0E3, Canada
	CAD Class C shares	100		
	CAD Class D shares	100		
	CAD Class J shares	100		
	CAD Class S shares	100		
Rio Tinto Canada Management Inc.; Canada	CAD Common shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal QC H3B 0E3, Canada
	CAD Preferred shares	100		
Rio Tinto Canada Uranium Corporation; Canada	CAD Common shares	100	100	300 - 815 West Hastings Street, Vancouver BC V6C 1B4, Canada
Rio Tinto Coal (Clermont) Pty Ltd; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Rio Tinto Coal Australia Pty Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Rio Tinto Coal Investments Pty Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Rio Tinto Coal NSW Holdings Limited; Australia[a]	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Rio Tinto Commercial Americas Inc.; United States	US$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States
Rio Tinto Commercial GmbH; Germany	€1.00 Common shares	100	100	Alfred-Herrhausen-Allee 3-5, 65760, Eschborn, Germany
Rio Tinto Commercial Pte. Ltd; Singapore	US$1.00 Ordinary shares	100	100	12 Marina Boulevard, #20-01 Marina Bay Financial Centre Tower 3, 018982, Singapore
Rio Tinto Desenvolvimentos Minerais Ltda.; Brazil	BRL Quotas shares	100	100	SIG Quadra 04, Lote 175, Torre A, Salas 106 a 109, Edifício Capital Financial Center, Brasília, CEP 70610-440, Brazil
Rio Tinto Diamonds and Minerals Canada Holding Inc.; Canada	CAD Class A (dividend rights) shares	100	100	300-5201 50th Avenue, P. O. Box 2498, Yellowknife NT X1A 2P8, Canada
	CAD Class B shares	100		
	CAD Class C (voting rights) shares	100		
	CAD Class P1 Preferred shares	100		
Rio Tinto Diamonds Limited; United Kingdom	US$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Diamonds Netherlands B.V.; Netherlands	€500.00 Ordinary shares	100	100	Welplaatweg 104, 3197 KS, Botlek-Rotterdam, Netherlands
Rio Tinto Diamonds NV; Belgium	€ Ordinary shares	100	100	Hoveniersstraat 53, 2018 Antwerp, Belgium
Rio Tinto Eastern Investments B.V.; Netherlands	€12,510,234,217.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Energy America Inc.; United States	US$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States
Rio Tinto Energy Limited; United Kingdom	US$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Escondida Limited; Bermuda	US$1.00 Common shares	100	100	22 Canon's Court, Victoria Street, Hamilton, HM 12, Bermuda
Rio Tinto European Holdings Limited; United Kingdom[b]	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Exploration (Asia) Holdings Pte. Ltd.; Singapore	US$1.00 Ordinary shares	100	100	12 Marina Boulevard, #20-01 Marina Bay Financial Centre Tower 3, 018982, Singapore

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44 Related undertakings continued
Wholly owned subsidiary undertakings continued

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Rio Tinto Exploration (PNG) Limited; Papua New Guinea[a]	PGK1.00 Ordinary shares	100	100	c/- BDO Accountants, Section 15, Lot 15, Bernal Street, National Capital District, Port Moresby, Papua New Guinea
Rio Tinto Exploration and Mining (India) Private Limited; India[d]	INR10.00 Ordinary shares	100	100	21st Floor, DLF Building No.5, Tower A, DLF Cyber City, Phase -III, Gurgaon, Haryana, 122002, India
Rio Tinto Exploration Canada Inc.; Canada	CAD Class A shares	100	100	300 - 815 West Hastings Street, Vancouver BC V6C 1B4, Canada
	CAD Class B shares	100		
	CAD Class C shares	100		
	CAD Class D shares	100		
Rio Tinto Exploration Dunav d.o.o. Beograd-Vracar; Serbia[c]	—	—	100	Resavska 23, 11000 Beograd, 11000, Serbia
Rio Tinto Exploration Finland OY; Finland	€ Ordinary shares	100	100	c/o Revico Grant Thornton Oy, PL 18, Helsinki, 00271, Finland
Rio Tinto Exploration India Private Limited; India	INR10.00 Ordinary shares	100	100	21st Floor, DLF Building No. 5, Tower A DLF Cyber City, Phase III, Gurgaon, HR, 122002, India
Rio Tinto Exploration Kazakhstan LLP; Kazakhstan[c]	—	—	100	Dostyk 310/G, Almaty, 050020, Kazakhstan
Rio Tinto Exploration Pty Limited; Australia(a)	AUD Class B shares	100	100	37 Belmont Avenue, Belmont WA 6104, Australia
	AUD Class C shares	100		
	AUD Ordinary shares	100		
Rio Tinto Exploration Zambia Limited; Zambia	ZMW1.00 Ordinary shares	100	100	Suit FF08, No.4 Bishops Road, Kabulonga, Lusaka, Zambia
Rio Tinto FalCon Diamonds Inc.; Canada	CAD1,000.00 Common shares	100	100	300 - 815 West Hastings Street, Vancouver BC V6C 1B4, Canada
Rio Tinto Fer et Titane Inc.; Canada	CAD Class B Preference shares	100	100	1625 Route Marie-Victorin, Sorel-Tracy QC J3R 1M6, Canada
	CAD Common shares	100		
	CAD$0.01 Preference shares	100		
Rio Tinto Finance (USA) Limited; Australia[a]	AUD Ordinary shares	100	100	Level 7, 360 Collins Street, Melbourne VIC 3000, Australia
Rio Tinto Finance (USA) Inc; United States	US$1.00 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States
Rio Tinto Finance (USA) plc; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Finance Limited; Australia[a]	AUD Ordinary shares	100	100	Level 7, 360 Collins Street, Melbourne VIC 3000, Australia
Rio Tinto Finance plc; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
	US$1.00 Ordinary shares	100		
Rio Tinto France S.A.S.; France	€10.00 Ordinary shares	100	100	60 Avenue Charles de Gaulle, 92200, Neuilly-Sur-Seine, France
Rio Tinto Global Employment Company Pte. Ltd.; Singapore	US$1.00 Ordinary shares	100	100	12 Marina Boulevard, #20-01 Marina Bay Financial Centre Tower 3, 018982, Singapore
Rio Tinto Guinée S.A.; Guinea	GNF100,000.00 Ordinary shares	100	100	Manquépas-Commune de Kaloum, République de Guinée, Guinea
Rio Tinto Holdings LLC; Mongolia	MNT20,000.00 Ordinary shares	100	100	Floor 17, Shangri-La Center, Olympic Street-19, Khoroo 1, Sukhbaatar District, Ulaanbaatar, 14241, Mongolia
Rio Tinto Hydrogen Energy LLC; United States[c]	—	—	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States
Rio Tinto Iceland Ltd.; Iceland	ISK1.00 Registered shares	100	100	P.O. Box 244, IS-222, Hafnarfjördur, Iceland
Rio Tinto India Private Limited; India	INR10.00 Ordinary shares	100	100	21st Floor, DLF Building No.5, Tower A, DLF Cyber City, Phase–III, Gurgaon, Haryana, 122022, India

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Rio Tinto Indonesian Holdings Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
	US$1.00 Ordinary shares	100		
Rio Tinto International Holdings Limited; United Kingdom[b]	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Investments One Pty Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Rio Tinto Investments Two Pty Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Rio Tinto Iron & Titanium (Suzhou) Co., Ltd; China	US$1.00 Ordinary shares	100	100	418 Nanshi Street, Suzhou Industrial Park, Suzhou, 215021, China
Rio Tinto Iron & Titanium GmbH; Germany[c]	—	—	100	Alfred-Herrhausen-Allee 3-5, 65760, Eschborn, Germany
Rio Tinto Iron & Titanium Holdings GmbH; Germany[c]	—	—	100	Alfred-Herrhausen-Allee 3-5, 65760, Eschborn, Germany
Rio Tinto Iron & Titanium Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Iron and Titanium Canada Inc.; Canada	CAD Common shares	100	100	1625 Route Marie - Victorin, Sorel - Tracy QC J3R 1M6, Canada
Rio Tinto Iron Ore Atlantic Limited; United Kingdom	US$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Iron Ore Europe S.A.S.; France	€100.00 Ordinary shares	100	100	60 Avenue Charles de Gaulle, 92200, Neuilly-Sur-Seine, France
Rio Tinto Iron Ore Trading China Limited; United Kingdom	US$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Japan Ltd; Japan	JPY500.00 Ordinary shares	100	100	8th Floor, Kojimachi Diamond Building, 1 Kojimachi 4-chome, Chiyoda-ku, Tokyo 102-0083, Japan
Rio Tinto Jersey Holdings 2010 Limited; Jersey	US$ Ordinary shares	100	100	22 Grenville Street, St Helier, JE4 8PX, Jersey
Rio Tinto Korea Ltd; Republic of Korea	KRW10,000.00 Ordinary shares	100	100	2nd Floor, JS Tower, 6 Teheran-ro 79-gil, Gangnam-Gu, Seoul, 135-877, Republic of Korea
Rio Tinto London Limited; United Kingdom	£1.00 Ordinary share	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Management Services South Africa (Proprietary) Ltd: South Africa	ZAR2.00 Ordinary share	100	100	1 Harries Road, Illovo, Sandton, 2196, South Africa
Rio Tinto Marketing Pte. Ltd.; Singapore	SGD$1.00 Ordinary share	100	100	12 Marina Boulevard, #20-01 Marina Bay Financial Center Tower 3,018982, Singapore
	US$1.00 Ordinary share	100		
Rio Tinto Marketing Services Limited; United Kingdom	£1.00 Ordinary share	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Medical Plan Trustees Limited; United Kingdom	£1.00 Ordinary share	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Metals Limited; United Kingdom	£1.00 Ordinary share	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
	US$1.00 Ordinary share	100	100	
Rio Tinto Minera Peru Limitada SAC; Peru	PEN100.00 Ordinary share	100	100	Av. La Paz 1049, Oficina 503, Miraflores, Lima 18 Peru
Rio Tinto Mineração do Brasil Ltda; Brazil	BRL1.00 Quotas shares	100	100	SIG Quadra 04, Lote 75, Torre A, Sala 109 Parte B, Edifício Capital Financial Center, Brasília, CEP 70610-440, Brazil
Rio Tinto Minerals Asia Pte Ltd; Singapore	SGD$1.00 Ordinary shares	100	100	12 Marina Boulevard, #20-01 Marina Bay Financial Centre Tower 3, 018982, Singapore
	US$1.00 Ordinary shares	100		
Rio Tinto Minerals Development Limited; United Kingdom	£0.25 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
	US$1.00 Ordinary shares	100	100	
Rio Tinto Minerals Exploration (Beijing) Co., Ltd;	US$1.00 Ordinary shares	100	100	Units 15-16, 18/F, China World Office Building 2, No. 1 Jianguomenwai Dajie, Chaoyang District, Beijing, China
Rio Tinto Minerals Inc.; United States	US$0.01 Common shares	100	100	CSC, 15 West South Temple, Suite 6000, Salt Lake City UT 84101, United States

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44 Related undertakings continued
Wholly owned subsidiary undertakings continued

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Rio Tinto Mining and Exploration Inc.; United States	US$1.00 Common shares	100	100	251 Little Falls Drive, Wilmington DE 19808, United States
Rio Tinto Mining and Exploration Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
	US$1.00 Ordinary shares	100		
Rio Tinto Mining and Exploration S.A.C.; Peru	PEN0.50 Ordinary shares	100	100	Av, La Paz 1049, Oficina 503, Miraflores, Lima 18, Peru
Rio Tinto Mining Commercial (Shanghai) Co., Ltd.; China	CNY 1.00 Ordinary shares	100	100	Room 328, 3rd Floor, Unit 2, 231 Shibocun Road, China (Shanghai) Pilot Free Trade Zone, Shanghai, 200125, China
Rio Tinto Mongolia LLC; Mongolia	MNT1,240.00 Common shares	100	100	Level 17, Shangri-La Centre, Olympic Street 19A, Sukhbaatar District, Ulaanbaatar, 14241, Mongolia
Rio Tinto Nominees Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto OT Management Limited; United Kingdom	US$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Overseas Holdings Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
	US$1.00 Ordinary shares	100		
Rio Tinto PACE Australia Pty Limited; Australia[a]	AUD Ordinary shares	100	100	Level 18 152-158 St. Georges Terrace, Perth WA 6000, Australia
Rio Tinto PACE Canada Inc.; Canada	CAD Ordinary shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal QC H3B 0E3, Canada
Rio Tinto Peru Limited; United Kingdom	US$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Potash Management Inc.; Canada	CAD Common shares	100	100	354-200 Granville Street, Vancouver BC V6C 1S4, Canada
Rio Tinto Procurement (Singapore) Pte Ltd; Singapore	US$1.00 Ordinary shares	100	100	12 Marina Boulevard, #20-01 Marina Bay Financial Centre Tower 3, 018982, Singapore
Rio Tinto Pte Ltd; Singapore	SGD$1.00 Ordinary shares	100	100	12 Marina Boulevard, #20-01 Marina Bay Financial Centre Tower 3, 018982, Singapore
	SGD$1.00 Preference shares	100		
Rio Tinto Saskatchewan Management Inc.; Canada	CAD Common shares	100	100	354-200 Granville Street, Vancouver BC V6C 1S4, Canada
Rio Tinto Saskatchewan Potash Holdings General Partner Inc.; Canada	CAD Common shares	100	100	5300-66 Wellington Street West, Toronto ON M5K 1E6, Canada
Rio Tinto Saskatchewan Potash Holdings Limited Partnership; Canada[c]	—	—	100	5300,-66 Wellington Street West, Toronto ON M5K 1E6, Canada
Rio Tinto Secretariat Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Services Inc.; United States	US$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States
Rio Tinto Services Limited; Australia[a]	AUD Class Z shares	100	100	Level 7, 360 Collins Street, Melbourne VIC 3000, Australia
	AUD Ordinary shares	100		
Rio Tinto Shared Services Pty Limited; Australia	AUD Ordinary shares	100	100	Level 7, 360 Collins Street, Melbourne VIC 3000, Australia
Rio Tinto Shipping (Asia) Pte. Ltd.; Singapore	US$1.00 Ordinary shares	100	100	12 Marina Boulevard, #20-01 Marina Bay Financial Centre Tower 3, 018982, Singapore
Rio Tinto Shipping Pty. Limited; Australia[a]	AUD Ordinary shares	100	100	Level 7, 360 Collins Street, Melbourne VIC 3000, Australia
Rio Tinto Simfer UK Limited; United Kingdom	US$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Singapore Holdings Pte Ltd; Singapore	SGD$1.00 Ordinary shares	100	100	12 Marina Boulevard, #20-01 Marina Bay Financial Centre Tower 3, 018982, Singapore
	US$ Ordinary shares	100		

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Rio Tinto South East Asia Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
	US$1.00 Ordinary shares	100		
Rio Tinto Staff Fund (Retired) Pty Limited; Australia[a]	AUD Ordinary shares	100	100	Level 7, 360 Collins Street, Melbourne VIC 3000, Australia
Rio Tinto Sulawesi Holdings Limited; United Kingdom	US$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Technological Resources Inc.; United States	USD$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States
Rio Tinto Technological Resources UK Limited; United Kingdom	US$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Trading (Shanghai) Co., Ltd.; China	US$1.00 Ordinary shares	100	100	41/F Wheelock Square, No. 1717 West Nanjing Road, Jing'an District, Shanghai, 200040, China
Rio Tinto Uranium Limited; United Kingdom	US$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Rio Tinto Western Holdings Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
	US$1.00 Ordinary shares	100		
Rio Tinto Winu Pty Limited; Australia[a]	AUD Ordinary shares	100	100	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000, Australia
Riversdale Connections (Proprietary) Ltd; South Africa	ZAR1.00 Ordinary shares	100	100	Ground Floor - Cypress Place North, Woodmead Business Park 140/142 Western Service Road, Woodmead, 2191, South Africa
Robe River Limited; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Rocklea Station Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
RTA AAL Australia Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
RTA Boyne Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
RTA Gove Pty Limited; Australia	AUD Class A shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
	AUD Class B shares	100		
RTA Holdco 1 Limited; United Kingdom	US$0.0001 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
RTA Holdco 4 Limited; United Kingdom	US$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
	US$0.73 Ordinary shares	100		
RTA Holdco 7 Limited; United Kingdom	US$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
	US$0.001 Class A Preference shares	100		
RTA Holdco 8 Limited; United Kingdom	US$1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
	US$0.001 Class A Preference shares	100		
RTA Holdco Australia 1 Pty Ltd; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
RTA Holdco Australia 3 Pty Ltd; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
RTA Holdco Australia 5 Pty Ltd; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
RTA Holdco Australia 6 Pty Ltd; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
RTA Holdco France 1 S.A.S; France	€10.00 Ordinary Shares	100	100	60 Avenue Charles de Gaulle, 92200, Neuilly-Sur-Seine, France
RTA Holdco France 2 S.A.S; France	€10.00 Ordinary Shares	100	100	60 Avenue Charles de Gaulle, 92200, Neuilly-Sur-Seine, France

Notes to the 2020 Financial Statements

44 Related undertakings continued
Wholly owned subsidiary undertakings continued

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
RTA Pacific Pty Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
RTA Sales Pty Ltd; Australia	AUD Class A shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
	AUD Class B shares	100		
RTA Smelter Development Pty Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
RTA Weipa Pty Ltd; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
RTA Yarwun Pty Ltd; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
RTAlcan 1 LLC; United States	US$ Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States
	US$ Class A Preferred shares	100		
RTAlcan 2 LLC; United States	US$ Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States
RTAlcan 3 LLC; United States	US$ Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States
RTLDS Aus Pty. Ltd; Australia[a]	AUD Ordinary shares	100	100	Level 7, 360 Collins Street, Melbourne VIC 3000, Australia
RTLDS UK Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
RTPDS Aus Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 7, 360 Collins Street, Melbourne VIC 3000, Australia
Scheuch Unterstuetzungskasse GmbH; Germany	€51.13 Ordinary shares	100	100	Alusingenplatz 1, D-78221, Singen, Germany
Skymont Corporation; United States	US$ Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States
Société De Financement Des Risques Industriels; Luxembourg	€ Ordinary shares	100	100	534, rue de Neudorf, B.P. 593, L-2015, Luxembourg
Sohio Western Mining Company; United States	US$100.00 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States
Southern Copper Pty. Limited; Australia	AUD A shares	100	100	Level 7, 360 Collins Street, Melbourne VIC 3000, Australia
	AUD B shares	100		
	AUD Non-cumulative Redeemable Preference shares	100		
	AUD Ordinary shares	100		
Swift Current Land & Cattle LLC; United States[c]	—	—	100	CSC, 8825 N. 23rd Avenue, Suite 100, Phoenix AZ 85021
Swiss Aluminium Australia Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
	AUD Stock Unit A shares	100		
	AUD Stock Unit B shares	100		
	AUD Stock Unit C shares	100		
TBAC Limited; United Kingdom	£1.00 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Technological Resources Pty. Limited; Australia[a]	AUD A Ordinary shares	100	100	Level 7, 360 Collins Street, Melbourne VIC 3000, Australia
	AUD B Ordinary shares	100		

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
The Barrier Corporation (Vic.) Pty. Limited; Australia[a]	AUD Ordinary shares	100	100	Level 7, 360 Collins Street, Melbourne VIC 3000, Australia
The Kelian Community and Forest Protection Trust; Singapore[c]	—	—	100	10 Collyer Quay, #10-01 Ocean Financial Centre, 049315, Singapore
The Pyrites Company, Inc.; United States	US$1.00 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States
The Roberval and Saguenay Railway Company; Canada	CAD$100.00 Ordinary shares	100	100	400-1190 Avenue des Canadiens-de-Montréal, Montréal QC H3B 0E3, Canada
	CAD$100.00 Preference shares 6% non-cumulative	100		
The Zinc Corporation Pty Ltd; Australia	AUD Ordinary shares	100	100	Level 7, 360 Collins Street, Melbourne VIC 3000, Australia
	AUD Z Class Ordinary shares	100		
Thos. W. Ward Limited; United Kingdom	£0.25 Ordinary shares	100	100	6 St James's Square, London, SW1Y 4AD, United Kingdom
Three Crowns Insurance Company Limited; United States	US$2.00 Common shares	100	100	CT Corporation, 1108 E. South Union Avenue, Midvale UT 84047, United States
Tinto Holdings Australia Pty. Limited; Australia	AUD A shares	100	100	Level 7, 360 Collins Street, Melbourne VIC 3000, Australia
	AUD Ordinary shares	100		
Trans Territory Pipeline Pty Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
U.S. Borax Inc.; United States	US$0.10 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States
Victoria Technology Inc.; United States[a]	US$1.00 Ordinary shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States
Waste Solutions and Recycling LLC; United States	US$ shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States
West Kutai Foundation Limited; Singapore[c]	—	—	100	10 Collyer Quay, #10-01 Ocean Financial Centre, 049315, Singapore
Wimmera Industrial Minerals Pty. Limited; Australia[a]	AUD Ordinary shares	100	100	Level 7, 360 Collins Street, Melbourne VIC 3000, Australia
Winchester South Development Company Proprietary Limited; Australia	AUD Ordinary shares	100	100	123 Albert Street, Brisbane QLD 4000, Australia
Wyoming Coal Resources Company; United States	US$0.01 Common shares	100	100	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States

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44 Related undertakings continued

Other Group entities including subsidiaries where the effective ownership is less than 100%, associated undertakings and significant holdings in undertakings other than subsidiary companies

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
201 Logistics Center, LLC; United States[c]	—	—	50	Corporation Trust Center, 1209 Orange Street, Wilmington DE 19801, United States
AGM Holding Company Pte Ltd; Singapore	US$ Ordinary shares	100	50.8	77 Robinson Road, #13-00, Robinson 77, 068896, Singapore
Alufluor AB; Sweden	SEK1,000.00 Ordinary shares	50	50	Industrigatan 70, Box 902, S-25109, Helsingborg, Sweden
Aluminerie Alouette Inc.; Canada	CAD Ordinary shares	40	40	400, Chemin de la Pointe-Noire, C.P. 1650, Sept-Îles QC G4R 5M9, Canada
Aluminerie De Bécancour, Inc.; Canada	CAD1.00 Ordinary shares	50.1	25.2	5555 Pierre Thibault Street, PO 30, Bécancour, Québec G0X 1B, Canada
Aluminium & Chemie Rotterdam B.V.; Netherlands	€4,555.00 Ordinary shares	65.8	65.8	Oude Maasweg 80, 3197 KJ, Botlek, Rotterdam, Netherlands
Asia Gold Mongolia LLC; Mongolia	MNT1,250.00 Common shares	100	50.7	Level 17, Shangri-La Centre, Olympic Street 19A, Sukhbaatar District, Ulaanbaatar, 14241 Mongolia
Asia Naran Bulag LLC; Mongolia	MNT1,000.00 Common shares	100	50.7	Level 17, Shangri-La Centre, Olympic Street 19A, Sukhbaatar District, Ulaanbaatar, 14241 Mongolia
Balkhash Saryshagan LLP; Kazakhstan[c]	—	—	75	Dostyk 310/G, Almaty, 050020, Kazakhstan
Beasley River Marketing Pty Ltd; Australia	AUD A class shares	100	53	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Bektau B.V.; Netherlands	€200.00 Ordinary shares	75	75	Welplaatweg 104, 3197 KS, Botlek-Rotterdam, Netherlands
Boyne Smelters Limited; Australia	AUD A1 Class shares	100	59.4	123 Albert Street, Brisbane QLD 4000, Australia
	AUD A2 Class shares	100		
	AUD B1 Class shares	100		
CanPacific Potash Inc.; Canada[c]	—	—	32	374 Third Avenue South, Saskatoon SK S7K 1M5, Canada
Carol Lake Company Ltd.; Canada	CAD$100.00 Ordinary shares	100	58.7	400-1190 Avenue des Canadiens-de-Montréal, Montréal QC H3B 0E3, Canada
Chinalco Rio Tinto Exploration Co. Ltd; China[d]	CNY1.00 Capital Contribution (Ordinary shares)	49	49	Unit 402, China Resources Building, No. 8 Jianguomenbei Avenue, Dong Cheng District, Beijing, 100005 P.R., China
Chlor Alkali Unit Pte Ltd; Singapore	SGD$1.00 Ordinary (SGD) shares	100	68.4	12 Marina Boulevard, #20-01 Marina Bay Financial Centre Tower 3, 018982, Singapore
	US$1.00 Ordinary (USD) shares	68.4		
Dampier Salt Limited; Australia	AUD Ordinary ($1.00257) shares	68.4	68.4	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
	AUD Ordinary ($1.88 on 31/01/2013) shares	68.4		
ELYSIS Limited Partnership/ELYSIS Société en Commandite; Canada	US$1,000.00 Class B shares	100	48.2	2323-1 Place Ville Marie, Montréal QC H3B 5M5, Canada
Empresa de Mineração Finesa Ltda.; Brazil	BRL Quotas shares	100	49	SIG, QUADRA 04, Lote 75, Sala 109 Parte C, Edifício Capital Financial Center, Brasília DF, CEP 71.610-440, Brazil
Enarotali Gold Project Limited; Jersey	£0.001 Ordinary shares	25	25	IFC 5, St Helier, JE1 1ST, Jersey
Energy Resources of Australia Ltd; Australia	AUD A Class Ordinary shares	86.3	86.3	c/o Mallesons Stephen Jacques, Level 5 NICTA Building, B 7 London Circuit, Canberra City ACT 2601, Australia
Fabrica De Plasticos Mycsa, S.A.; Bolivarian Republic of Venezuela[d]	VEF1.00 Common shares	49	49	Urbanización Industrial San Ignacio, parcela 2-A, vía San Pedro, Los Teques, Estado Miranda, Bolivarian Republic of Venezuela
Global Hubco B.V.; Netherlands	€1.00 Ordinary shares	33.3	33.3	c/o TMF Netherlands B.V., Luna Arena, Herikerbergweg 238, 1101, CM Amsterdam Zuidoost, Netherlands
Gulf Power Company; Canada	CAD$100.00 Ordinary shares	100	58.7	400-1190 Avenue des Canadiens-de-Montréal, Montréal QC H3B 0E3, Canada
Halco (Mining) Inc.; United States	US$100.00 Ordinary shares	45	45	30 Isabella Street, 3rd Floor, Pittsburgh, Pennsylvania, 15212, United States

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Heruga Exploration LLC; Mongolia	MNT12,500.00 Common Shares	100	50.8	Level 17, Shangri-La Centre, Olympic Street 19A, Sukhbaatar District, Ulaanbaatar, 14241 Mongolia
Hope Downs Marketing Company Pty Ltd; Australia	AUD A Class shares	100	50	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
IAL Holdings Singapore Pte Ltd; Singapore	US$ Ordinary shares	100	50.8	77 Robinson Road, #13-00, Robinson 77, 068896, Singapore
Iron Ore Company of Canada; United States	US$1,000.00 Series A shares	91.4	58.7	1209 Orange Street, Wilmington, Delaware 19801, United States
	US$1,000.00 Series E shares	100		
	US$1,000.00 Series F shares	100		
Korgantas LLP; Kazakhstan[c]	—	—	75	Dostyk 310/G, Almaty, 050020, Kazakhstan
Lao Sanxai Minerals Company Limited; Lao People's Democratic Republic	US$1.00 Ordinary shares	70	70	5th Floor, ANZ Bank Building, 33 Lane Xang Avenue, Hatsady Village, Chanthaboury District, Vientiane Capital, Lao People's Democratic Republic
Magma Arizona Railroad Company; United States	US$100.00 Common shares	99.9	54.9	CSC, 8825 N. 23rd Avenue, Suite 100, Phoenix AZ 85021
Mineração Tabuleiro Ltda; Brazil	BRL Quotas shares	100	48	SIG, QUADRA 04, Lote 75, Sala 109 Parte D, Edifício Capital Financial Center, Brasília DF, CEP 71.610-440, Brazil
Minera Escondida Ltda; Chile[c]	—	—	30	Av. Cerro Plomo, Piso 18, Las Condes, Santiago, 7580154, Chile
Minmetals Rio Tinto Exploration Company Limited; China	CNY1.00 Ordinary shares	50.0	50.0	Section C239, Level 3, Phase II, Standard Workshop, Innovative Industrial Park, Sanya City, Hainan Province, China
New Zealand Aluminium Smelters Ltd; New Zealand	NZD1.00 Class A Ordinary shares	100	79.4	1530 Tiwai Road, Tiwai Point Invercargill, 9877 New Zealand
Northern Land Company Ltd; Canada	CAD$1.00 Ordinary shares	100	58.7	2 Avalon Drive, Labrador City NL A2V 2V6, Canada
Nozalela Mineral Sands (Pty) Ltd; South Africa	ZAR1.00 Ordinary shares	100	74	The Farm RBM, Number 16317, KwaZulu-Natal, South Africa
NZAS Retirement Fund Trustee Limited; New Zealand	NZD Ordinary shares	100	79.4	Mercer (N.Z.) Limited, Level 2, 20 Customhouse Quay, Wellington, 6011, New Zealand
Oyu Tolgoi LLC; Mongolia[e]	MNT10,000.00 Common shares	66	33.5	Level 12 Monnis Tower, Chinggis Avenue-15, 1st khoroo, Sukhbaatar District, Ulaanbaatar, 14240, Mongolia
Oyu Tolgoi Netherlands B.V.; Netherlands	€100.00 Ordinary shares	100	50.8	Prins Bernhardplein 200, 1097 JB, Amsterdam, Netherlands
Pechiney Philippines Inc.; Philippines	PHP10.00 Ordinary shares	99.9	99.9	Room 306, ITC Building, 337 Sen Gil Puyat Avenue, Makati, Metro Manila, Philippines
Pechiney Reynolds Quebec, Inc.; United States	US$10.00 Common shares	50	50.2	CSC, 233 South 13th Street, Suite 1900, Lincoln NE 68508, United States
	US$100.00 Preferred shares	100		
Port d'Ehoala S.A.; Madagascar	US$100.00 Ordinary shares	100	80	Immeuble ASSIST, Ivandry, Lot N°35, 5ème étage, 101 Antananarivo, Madagascar
Procivis Savoie; France	€19.00 Ordinary shares	22.1	22.1	116 Quai Charles Roissard, 73000, Chambéry, France
PT Hutan Lindung Kelian Lestari; Indonesia	IDR9,803.00 Ordinary shares	99	99	Kelian Mine Site, West Kutai, East Kalimantan, Indonesia
PT Kelian Equatorial Mining; Indonesia	IDR1,080.00 Ordinary shares	90	90	Sampoerna Strategic Square, South Tower, Level 30, Jl. Jenderal Sudirman Kav. 45-46, Jakarta, 12930, Indonesia
QIT Madagascar Minerals SA; Madagascar	US$10.00 Certificats d'investissement	100	80	Immeuble ASSIST, Ivandry, Lot N°35, 5ème étage, 101 Antananarivo, Madagascar
	US$10.00 Common shares	85		
Quebec North Shore and Labrador Railway Company; Canada	CAD$27.59 Ordinary shares	100	58.7	400-1190 Avenue des Canadiens-de-Montréal, Montréal QC H3B 0E3, Canada
Queensland Alumina Limited; Australia	AUD Class B shares	100	80	Plant Operations Building, Parsons Point, Gladstone QLD 4680, Australia
	AUD Class C shares	100		
	AUD Class D shares	100		
Resolution Copper Mining LLC; United States[c]	—	—	55	CSC, 251 Little Falls Drive, Wilmington DE 19808, United States
Richards Bay Mining (Proprietary) Limited; South Africa	ZAR0.01 B Ordinary shares	100	73.9	The Farm RBM, Number 16317, KwaZulu-Natal, South Africa
	ZAR0.01 B Preference shares	100		
	ZAR 0.01 BHP Billiton	100		
Richards Bay Prefco (Pty) Ltd; South Africa	ZAR0.01 Preference shares	100	99.9	The Farm RBM, Number 16317, KwaZulu-Natal, South Africa

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44 Related undertakings continued

Other Group entities including subsidiaries where the effective ownership is less than 100%, associated undertakings and significant holdings in undertakings other than subsidiary companies continued

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Richards Bay Titanium (Proprietary) Limited; South Africa	ZAR0.01 B Preference shares	100	73.9	The Farm RBM, Number 16317, KwaZulu-Natal, South Africa
	ZAR0.01 BHP Billiton Preference	100		
	ZAR0.01 B Ordinary shares	100		
Rightship Pty Ltd; Australia	AUD Ordinary shares	33.3	33.3	Level 20, 500 Collins Street, Melbourne VIC 3000, Australia
Rio Tinto Orissa Mining Private Ltd; India	INR100.00 Ordinary shares	51	51	220, 2nd Floor, DLF, Cyber City, Chandaka Industrial Area, Patia, Bhubneshwar, Odisha, 751024, India
Rio Tinto Sohar Logistics LLC; Oman	OMR1.00 Ordinary shares	70	70	P.O. Box 686, Ruwi, 112, Sultanate of Oman
Robe River Mining Co. Pty. Ltd.; Australia	AUD A shares	40	73.6	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
	AUD B shares	76.4		
Robe River Ore Sales Pty. Ltd.; Australia	AUD Ordinary shares	65	57.1	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia
Saryarka B.V.; Netherlands	€200.00 Ordinary shares	75	75	Welplaatweg 104, 3197 KS, Botlek-Rotterdam, Netherlands
SGLS LLC; Mongolia	MNT10,000.00 Common shares	100	50.8	Level 17, Shangri-La Centre, Olympic Street 19A, Sukhbaatar District, Ulaanbaatar, 14241 Mongolia
Sharp Strategic Funding Pte. Ltd.; Singapore	US$ Common shares	100	50.8	77 Robinson Road, #13-00, Robinson 77, 068896, Singapore
Simfer Jersey Finance 1 Ltd; Jersey[d]	US$ Ordinary shares	100	53	PO Box 536, 13-14 Esplanade, St Helier, JE4 5UR, Jersey
Simfer Jersey Finance 2 Ltd; Jersey[d]	US$ Ordinary shares	53	53	PO Box 536, 13-14 Esplanade, St Helier, JE4 5UR, Jersey
Simfer Jersey Limited; Jersey	US$ Ordinary shares	53	53	PO Box 536, 13-14 Esplanade, St Helier, JE4 5UR, Jersey
Simfer Jersey Nominee Limited; United Kingdom	£1.00 Ordinary shares	100	53	6 St James's Square, London, SW1Y 4AD, United Kingdom
SIMFER S.A.; Guinea[e]	GNF100,000.00 Ordinary shares	85	45	Résidence Dolphine1 Coléah Corniche Sud, Commune de Matam, Conakry, BP 848, Guinea
Singapore Metals Pte. Ltd.; Singapore	US$ Ordinary shares	100	50.8	77 Robinson Road, #13-00, Robinson 77, 068896, Singapore
Société Minière Et De Participations Guinée Alusuisse; Guinea[c]	—	—	50.0	Tougue, Guinea
Sohar Aluminium Co. L.L.C.; Oman	OMR1.00 Ordinary shares	20	20.0	Sohar Industrial Estate, P.O. Box 80, PC 327, Sohar, Sultanate of Oman
THR Aruba Holdings LLC A.V.V.; Aruba	US$1.00 Common shares	100	50.8	IMC International Management Trust Company N.V., L.G. Smith Blvd. 62, Miramar Building, Oranjestad, Aruba
THR Delaware Holdings, LLC; United States[c]	—	—	50.8	National Corporate Research, Ltd., 850 New Burton Road, Suite 201, Dover DE 19904, United States
THR Kharmagtai Pte Ltd.; Singapore	US$ Ordinary shares	100	50.8	77 Robinson Road, #13-00, Robinson 77, 068896, Singapore
THR MINES (BC) LTD.; Canada	CAD Common shares	100	50.8	1800 - 510 West Georgia Street, Vancouver BC V6B 0M3, Canada
	US$ Common shares	100		
THR Mines Services Co. Ltd.; Canada	CAD Common shares	100	50.8	Lackowicz Shier & Hoffman Barristers & Solicitors, 300-204 Black Street, Whitehorse YT Y1A 2M9, Canada
THR OYU TOLGOI LTD.; British Virgin Islands	US$1.00 Ordinary shares	100	50.8	Craigmuir Chambers, Road Town, Tortola, VG1110 British Virgin Islands
THR Ulaan Pte. Ltd.; Singapore	US$ Ordinary shares	100	50.8	77 Robinson Road, #13-00, Robinson 77, 068896, Singapore

Name of undertaking and country of incorporation	Share class	% of share class held by Group companies	Effective Group % ownership	Registered office address
Tisand (Proprietary) Limited; South Africa	ZAR1.00 A Ordinary shares	100	74	The Farm RBM, Number 16317, KwaZulu-Natal, South Africa
	ZAR1.00 B Ordinary shares	100		
	ZAR1,000.00 Cumulative Preference shares	100		
Tomago Aluminium Company Pty Limited; Australia	AUD Ordinary shares	100	51.6	638 Tomago Road, Tomago, NSW 2322, Australia
TRQ Australia Pty. Ltd.; Australia	AUD Ordinary shares	100	50.8	c/o Intertrust Australia Pty. Ltd., Level 25, Suite 2, 100 Miller Street, North Sydney NSW 2060, Australia
Turquoise Hill (Beijing) Services Company Ltd; China[c]	—	—	50.8	07-119 Inner Room 101, 7th Floor, No.219 Wangfujing Street, Dongcheng District, Beijing, China
Turquoise Hill Netherlands Cooperatief U.A.; Netherlands	US$ COOP shares	100	50.8	Prins Bernhardplein 200, 1097 JB, Amsterdam, Netherlands
Turquoise Hill Resources Ltd.; Canada	CAD Common Shares	50.8	50.8	300-204 Black Street, Whitehorse YT Y1A 2M9, Canada
Turquoise Hill Resources Philippines Inc.; Philippines[d]	PHP100.00 Common shares	99.9	50.8	Romulo Mabanta Buenaventura Sayoc & De Los Angeles, 21st Floor, Philamlife Tower, 8767 Paseo Roxas, Makati City, 1226, Philippines
Turquoise Hill Resources Singapore Pte Ltd.; Singapore	SGD1.00 Common shares	100	50.8	2 Venture Drive, #24-01 Vision Exchange, Singapore 608526
Twin Falls Power Corporation Ltd; Canada	CAD Class B shares	74.4	14.6	Hydro Place, P.O. Box 12500, St-John's NL A1B 3T5, Canada
Wright Mgmt Services Pte. Ltd.; Singapore	US$ Common shares	100	50.8	77 Robinson Road, #13-00, Robinson 77, 068896, Singapore
Yalleen Pastoral Co. Pty Ltd: Australia	AUD Ordinary shares	65.7	57.4	Level 18 Central Park, 152-158 St.Georges Terrace, Perth WA 6000, Australia
Zululand Titanium (Pty) Ltd; South Africa	ZAR1.00 Ordinary shares	100	74	The Farm RBM, Number 16317, KwaZulu-Natal, South Africa

In addition, the Group participates in the following unincorporated arrangements:

Name of undertaking and country of incorporation	Address or principal place of business	Interest % owned by the Group
Bao-HI Ranges Joint Venture; Australia	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia	54
Beasley River Joint Venture; Australia	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia	53
Cape Bougainville Joint Venture; Australia	123 Albert Street, Brisbane QLD 4000, Australia	67.5
Channar Mining Joint Venture; Australia	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia	60
Diavik Joint Venture; Canada	300-5201 50th Avenue, Yellowknife NT X1A 2P9, Canada	60
Gladstone Power Station Joint Venture; Australia	NRG Gladstone Operating Service, Gladstone Power Station, Gladstone QLD 4680, Australia	42.1
Green Mountain Mining Venture; United States	CSC 251 Little Falls Drive, Wilmington DE 19808, United States	100
Hope Downs Joint Venture; Australia	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia	50
Mitchell Plateau Joint Venture; Australia	123 Albert Street, Brisbane QLD 4000, Australia	65.6
Rhodes Ridge Joint Venture; Australia	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia	50
Robe River Iron Associates Joint Venture; Australia	Level 18, Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia	57.1
Tomago Aluminium Joint Venture; Australia	638 Tomago Road, NSW 2322, Tomago, Australia	51.6
Winter Road Joint Venture; Canada	300-5201 50th Avenue, Yellowknife NT X1A 2P9, Canada	33.3
Yarraloola Pastoral Co.; Australia	Level 18 Central Park, 152-158 St. Georges Terrace, Perth WA 6000, Australia	57.1

(a) Directly held by Rio Tinto Limited.
(b) Directly held by Rio Tinto plc.
(c) Group ownership is held through an interest in capital. The entity has no classes of shares.
(d) In liquidation or application for dissolution filed.
(e) Classed as a subsidiary in accordance with section 1162 (4)(a) of the UK Companies Act 2006 on the grounds of dominant influence.

Notes to the 2020 Financial Statements

45 Events after the balance sheet date
There were no significant events after the balance sheet date requiring disclosure.

Rio Tinto plc
Company balance sheet

As at 31 December	Note	2020 US$m	2019 US$m
Non-current assets			
Investments	B	**36,320**	36,250
Trade and other receivables		**206**	263
		36,526	36,513
Current assets			
Trade and other receivables	C	**5,710**	6,439
Cash at bank and in hand		**11**	5
		5,721	6,444
Total assets		**42,247**	42,957
Current liabilities			
Trade and other payables	D	**(13,205)**	(13,018)
Dividends payable		**(24)**	(18)
Other financial liabilities	G	**(67)**	(278)
		(13,296)	(13,314)
Non-current liabilities			
Other financial liabilities	G	**(156)**	(223)
Total liabilities		**(13,452)**	(13,537)
Net assets		**28,795**	29,420
Capital and reserves			
Share capital	E	**207**	207
Share premium account		**4,313**	4,312
Other reserves	F	**12,005**	12,005
Retained earnings		**12,270**	12,896
Total equity		**28,795**	29,420

The Rio Tinto plc company balance sheet has been prepared in accordance with Financial Reporting Standard 101 "Reduced Disclosure Framework" (FRS 101). Note A explains the principal accounting policies.

Profit after tax and total comprehensive income for the year amounted to US$4,027 million (2019: US$4,959 million). As permitted by section 408 of the UK Companies Act 2006, no statement of comprehensive income for the Rio Tinto plc parent company is shown.

The Rio Tinto plc company balance sheet, statement of comprehensive income and the related notes were approved by the directors on 22 February 2021 and the balance sheet is signed on their behalf by

Simon Thompson
Chairman

Jakob Stausholm
Chief Executive

Peter Cunningham
Interim Chief Financial Officer

Rio Tinto plc

Registered number: 719885

Rio Tinto plc (the "Company") is incorporated in the United Kingdom, registered in England and Wales, and domiciled in the United Kingdom.

Rio Tinto plc
Company statement of changes in equity

Year ended 31 December 2020	Share capital US$m	Share premium account US$m	Other reserves US$m	Retained earnings US$m	Total equity US$m
Opening balance	**207**	**4,312**	**12,005**	**12,896**	**29,420**
Profit for the financial year (comprehensive income)	**—**	**—**	**—**	**4,027**	**4,027**
Dividends	**—**	**—**	**—**	**(4,720)**	**(4,720)**
Proceeds from issue of shares	**—**	**1**	**—**	**—**	**1**
Share-based payments	**—**	**—**	**—**	**67**	**67**
Total	**207**	**4,313**	**12,005**	**12,270**	**28,795**

Year ended 31 December 2019	Share capital US$m	Share premium account US$m	Other reserves US$m	Retained earnings US$m	Total equity US$m
Opening balance	211	4,311	12,001	16,995	33,518
Profit for the financial year (comprehensive income)	—	—	—	4,959	4,959
Dividends	—	—	—	(7,987)	(7,987)
Proceeds from issue of shares	—	1	—	—	1
Share buy-back	(4)	—	4	(1,135)	(1,135)
Share-based payments	—	—	—	64	64
Total	207	4,312	12,005	12,896	29,420

Notes to the Rio Tinto plc Financial Statements

A Principal accounting policies

a. Basis of preparation

The Rio Tinto plc company financial statements have been prepared using the historical cost convention, as modified by the revaluation of certain financial liabilities and in accordance with the UK Companies Act 2006 and FRS 101. The financial statements have been prepared on a going concern basis.

The accounting policies set out below have been applied consistently to all periods presented in these financial statements. The following exemptions available under FRS 101 have been applied:

- Paragraphs 45(b) and 46 to 52 of IFRS 2, "Share-based payment" (details of the number and weighted average exercise prices of share options and how the fair value of goods and services received was determined).
- Paragraphs 91-99 of IFRS 13 "Fair value measurement" (disclosure of valuation techniques and inputs used for fair value measurement of assets and liabilities).
- IFRS 7 "Financial Instruments: Disclosures".
- Paragraph 38 of IAS 1 "Presentation of financial statements", comparative information requirements in respect of Paragraph 79(a)(iv) of IAS 1.
- The following paragraphs of IAS 1 "Presentation of financial statements":
  - 10 (d) (statement of cash flows);
  - 16 (statement of compliance with all IFRS);
  - 38A (requirement for minimum of two primary statements, including cash flow statements);
  - 38B-D (additional comparative information);
  - 111 (cash flow statement information); and
  - 134-136 (capital management disclosures).
- IAS 7 "Statement of cash flows".
- Paragraph 30 and 31 of IAS 8 "Accounting policies, changes in accounting estimates and errors" (requirement for the disclosure of information when an entity has not applied a new IFRS that has been issued and is not yet effective).
- Paragraph 17 of IAS 24 "Related party disclosures" (key management compensation).
- The requirements of IAS 24, "Related party disclosures" to disclose related party transactions entered into between two or more members of a group.

b. Judgments in applying accounting policies and key sources of estimation uncertainty

The preparation of the financial statements requires management to make assumptions, judgments and estimates and to use judgment in applying accounting policies and making critical accounting estimates. These judgments, estimates and assumptions are based on management's best knowledge of the relevant facts and circumstances, having regard to previous experience, but actual results may differ materially from the amounts included in the financial statements.

The key area of judgment that has the most significant effect on the amounts recognised in the financial statements is the review for impairment of investment carrying values.

Investments in subsidiaries are reviewed for impairment where events or changes in circumstances indicate that the carrying amount of the investment may not be recoverable. The unit of account being the equity of the subsidiary taken as a whole, which may comprise interests in multiple cash-generating units.

If any such indication exists, Rio Tinto plc makes an assessment of the recoverable amount. If the asset is determined to be impaired, an impairment loss will be recorded and the asset written down based on the amount by which the asset carrying amount exceeds the higher of fair value less cost of disposal and value in use. An impairment loss is recognised immediately in the income statement.

c. Currency translation

Items included in the financial statements are measured using the currency of the primary economic environment in which the Company operates (the functional currency). The financial statements are presented in US dollars, which is the Company's functional and presentation currency. Transactions denominated in other currencies, including the issue of shares, are translated into the functional currency using the exchange rates prevailing at the date of the transaction.

Foreign exchange gains and losses resulting from the settlement of such transactions, and from the translation at year-end exchange rates of monetary assets and liabilities denominated in foreign currencies, are recognised in the profit and loss account.

Exchange rates used are consistent with the rates used by the Group as disclosed in the consolidated financial statements (note 40).

d. Investments

Investments in Group companies are valued at cost less accumulated impairment losses. Investments are reviewed for impairment if events or changes in circumstances indicate that the carrying amount may not be recoverable.

e. Financial guarantees

Financial guarantees are recognised initially at fair value. Subsequently, the liability is measured at the higher of the best estimate of the expenditure required to settle the present obligation and the amount initially recognised less cumulative amortisation.

f. Share-based payments

The Company operates a number of share-based payment plans for Group employees, the details of which are included in the consolidated financial statements (note 41). The fair value of the Company's share plans is recognised as an addition to the cost of the investment in the subsidiary in which the relevant employees work over the expected vesting period, with a corresponding entry to retained earnings. Payments received from the Company's subsidiaries in respect of these share-based payments are recognised as a reduction in the cost of the investment. The Company uses fair values provided by independent actuaries calculated using either a lattice-based option valuation model or a Monte Carlo simulation model. The fair value of the share plans is determined at the date of grant, taking into account any market-based vesting conditions attached to the award.

Non-market based vesting conditions (eg relative EBIT margin performance targets) are taken into account in estimating the number of awards likely to vest. The estimate of the number of awards likely to vest is reviewed at each balance sheet date up to the vesting date, at which point the estimate is adjusted to reflect the actual awards issued. No adjustment is made after the vesting date even if the awards are forfeited or not exercised.

g. Dividend income

Dividend income is recognised when the right to receive payment is established.

h. Treasury shares

The consideration paid for shares repurchased by the Company and held as treasury shares is recognised as a reduction in shareholders' funds through retained earnings.

Notes to the Rio Tinto plc Financial Statements

B Investments

	2020 US$m	2019 US$m
Investments in Group companies:		
At 1 January	**36,250**	36,159
Additions	**70**	91
At 31 December	**36,320**	36,250

At 31 December 2020, the Company had the following principal subsidiaries:

Company	Principal activity	Country of incorporation	Percentage shareholding
Rio Tinto International Holdings Limited	Holding company	UK	100%
Rio Tinto European Holdings Limited	Holding company	UK	100%

In accordance with section 409 of the UK Companies Act 2006, a full list of related undertakings is disclosed in the consolidated financial statements (note 44).

C Trade and other receivables

Trade and other receivables includes US$5,656 million (31 December 2019: US$6,256 million), which is subject to interest based on LIBOR, is unsecured and repayable on demand.

D Trade and other payables

Trade and other payables include US$13,042 million (31 December 2019: US$12,968 million) which is subject to interest rates based on LIBOR, is unsecured and repayable on demand.

E Share capital

	2020 US$m	2019 US$m
Issued and fully paid up share capital of 10p each[a]		
At 1 January	**207**	211
Ordinary shares purchased and cancelled[b]	**—**	(4)
At 31 December	**207**	207

(a) 39,273 new shares (2019: 40,974 new shares) were issued during the year and 568,863 shares (2019: 23,659 shares) were reissued from Treasury during the year resulting from the vesting of awards and the exercise of options under Rio Tinto plc employee share-based payment plans, with exercise prices and market values between £32.74 and £56.32 per share.

(b) The authority for the Company to buy back its ordinary shares was renewed at the 2020 annual general meeting. 3,627,568 shares (2019: 28,356,034 shares) were bought back and cancelled in 2020 under the on-market buy-back programme.

F Other reserves

Other reserves include US$11,936 million (2019: US$11,936 million) which represents the difference between the nominal value and issue price of the shares issued arising from Rio Tinto plc's rights issue completed in July 2009.

G Rio Tinto plc guarantees

Rio Tinto plc provides a number of guarantees in respect of Group companies.

Rio Tinto plc and Rio Tinto Limited have jointly guaranteed the Group's external listed debt under the US Shelf Programme, European Debt Issuance Programme and Commercial Paper Programme which totalled US$5.5 billion at 31 December 2020 (31 December 2019: US$5.9 billion). In addition, these entities also jointly guarantee the Group's undrawn credit facility which was US$7.5 billion at 31 December 2020 (31 December 2019: US$7.5 billion). Rio Tinto plc has provided guarantees in respect of certain derivative contracts that are in a liability position of US$141 million at 31 December 2020 (31 December 2019: US$290 million).

Rio Tinto plc has provided a guarantee, known as the completion support undertaking (CSU), in favour of the Oyu Tolgoi LLC project finance lenders. At 31 December 2020, US$4.3 billion of project finance debt was outstanding under this facility (31 December 2019: US$4.3 billion). Oyu Tolgoi LLC is owned by Erdenes Oyu Tolgoi LLC (34%), which is controlled by the Government of Mongolia, and Turquoise Hill Resources Ltd (66%, of which Rio Tinto owns 51%). The project finance has been raised for development of the underground mine and the CSU will terminate on the completion of the underground mine according to a set of completion tests set out in the project finance facility.

The Rio Tinto guarantee applies to the extent that Turquoise Hill Resources Ltd cannot satisfy Oyu Tolgoi LLC's project finance debt servicing obligations under its own guarantee to the lenders, called the sponsor debt service undertaking (DSU). Both the CSU and DSU contain a carve-out for certain political risk events.

During 2020, fees of US$108 million (2019: US$157 million) were received from Oyu Tolgoi LLC and Turquoise Hill Resources Ltd as consideration for the provision of the CSU.

G Rio Tinto plc guarantees continued

Rio Tinto plc has provided a number of guarantees in relation to various pension funds. Subject to certain conditions, Rio Tinto plc would pay any contributions due from Group companies participating in these funds in the event that the companies fail to meet their contribution requirements. The guarantees were not called upon in 2020. The aggregate of company contributions to these plans in 2020 was US$10 million (2019: US$37 million).

Other guarantees issued by Rio Tinto plc in relation to Rio Tinto Group entities as at 31 December 2020 amount to US$388 million (31 December 2019: US$353 million). Included within this balance is US$35 million (31 December 2019: US$32 million) in relation to non-wholly owned subsidiaries.

Pursuant to the DLC Merger, both Rio Tinto plc and Rio Tinto Limited issued deed poll guarantees by which each company guaranteed contractual obligations incurred by the other or guaranteed by the other.

The liability recognised for financial guarantees is US$223 million (31 December 2019: US$294 million) presented in "Other financial liabilities" in the balance sheet.

H Contingent liabilities
Details of contingent liabilities are included in note 30 to the Group financial statements.

I Events after the balance sheet date
There were no significant events after the balance sheet date requiring disclosure.

Rio Tinto Financial Information by Business Unit

	Rio Tinto interest %	Gross product sales[a] for the year ended 31 December 2020 US$m	2019 US$m	2018 US$m	Underlying EBITDA[b] for the year ended 31 December 2020 US$m	2019 US$m	2018 US$m	Net earnings[c] for the year ended 31 December 2020 US$m	2019 US$m	2018 US$m
Iron Ore										
Pilbara	(d)	**27,027**	23,681	18,359	**18,896**	15,936	11,267	**11,551**	9,619	6,460
Dampier Salt	68.4	**252**	271	246	**43**	75	56	**12**	27	18
Evaluation projects/other	(e)	**657**	123	126	**(32)**	87	55	**(112)**	(8)	53
Intra-segment	(e)	**(428)**	—	—	**(70)**	—	—	**(53)**	—	—
Total Iron Ore		**27,508**	24,075	18,731	**18,837**	16,098	11,378	**11,398**	9,638	6,531
Aluminium	(f)									
Bauxite		**2,302**	2,490	2,364	**943**	1,045	852	**434**	498	466
Alumina		**2,233**	2,720	3,423	**262**	567	808	**92**	247	390
Primary Metal		**4,489**	4,940	6,468	**904**	755	1,418	**169**	40	595
Pacific Aluminium		**1,944**	2,204	2,541	**112**	(22)	148	**(6)**	(137)	—
Intra-segment and other		**(2,510)**	(3,079)	(4,084)	**6**	30	(92)	**(159)**	21	(69)
Integrated operations		**8,458**	9,275	10,712	**2,227**	2,375	3,134	**530**	669	1,382
Other product group items		**856**	1,065	1,479	**7**	16	17	**(5)**	10	11
Product group operations		**9,314**	10,340	12,191	**2,234**	2,391	3,151	**525**	679	1,393
Evaluation projects/other		**—**	—	—	**(82)**	(106)	(56)	**(54)**	(80)	(46)
Total Aluminium		**9,314**	10,340	12,191	**2,152**	2,285	3,095	**471**	599	1,347
Copper & Diamonds										
Rio Tinto Kennecott	100.0	**1,529**	1,879	1,862	**588**	843	785	**149**	397	293
Escondida	30.0	**2,296**	2,136	2,274	**1,462**	1,034	1,301	**650**	325	506
Grasberg joint venture	(h)	**—**	—	457	**—**	—	281	**—**	—	217
Oyu Tolgoi and Turquoise Hill	(i)	**1,078**	1,166	1,180	**390**	357	375	**160**	25	69
Diamonds	(j)	**459**	619	695	**83**	151	301	**9**	(21)	118
Product group operations		**5,362**	5,800	6,468	**2,523**	2,385	3,043	**968**	726	1,203
Evaluation projects/other		**66**	15	—	**(351)**	(312)	(267)	**(205)**	(172)	(149)
Total Copper & Diamonds		**5,428**	5,815	6,468	**2,172**	2,073	2,776	**763**	554	1,054
Energy & Minerals										
Rio Tinto Coal Australia	(k)	**—**	—	989	**—**	—	893	**—**	—	591
Iron Ore Company of Canada	58.7	**2,444**	2,189	1,583	**1,130**	1,024	586	**383**	332	166
Rio Tinto Iron & Titanium	(l)	**1,651**	1,938	1,782	**476**	611	510	**216**	254	174
Rio Tinto Borates	100.0	**564**	593	622	**126**	180	197	**65**	96	111
Uranium	(m)	**303**	375	415	**24**	55	18	**6**	25	(4)
Product group operations		**4,962**	5,095	5,391	**1,756**	1,870	2,204	**670**	707	1,038
Simandou iron ore project	(n)	**—**	—	—	**(14)**	(12)	(15)	**(6)**	(5)	(7)
Evaluation projects/other		**52**	55	60	**(96)**	(96)	(49)	**(87)**	(91)	(36)
Total Energy & Minerals		**5,014**	5,150	5,451	**1,646**	1,762	2,140	**577**	611	995
Other operations	(o)	**18**	18	9	**—**	(77)	(70)	**(54)**	(89)	(102)
Inter-segment transactions		**(264)**	(31)	(15)	**(94)**	(9)	—	**(32)**	(3)	—
Product group total		**47,018**	45,367	42,835	**24,713**	22,132	19,319	**13,123**	11,310	9,825
Central pension costs, share-based payments and insurance					**72**	59	(128)	**81**	60	(90)
Restructuring, project and one-off costs					**(133)**	(183)	(272)	**(108)**	(94)	(190)
Central costs					**(500)**	(496)	(552)	**(418)**	(550)	(410)
Exploration and evaluation					**(250)**	(315)	(231)	**(216)**	(231)	(193)
Net interest								**(14)**	(122)	(134)
Underlying EBITDA/earnings					**23,902**	21,197	18,136	**12,448**	10,373	8,808
Items excluded from underlying EBITDA/earnings					**(395)**	(722)	5,127	**(2,679)**	(2,363)	4,830
Reconciliation to Group income statement										
Share of equity accounted unit sales and intra-subsidiary/equity accounted unit sales		**(2,407)**	(2,202)	(2,313)						
Impairment charges					**(1,272)**	(3,487)	(132)			
Depreciation and amortisation in subsidiaries excluding capitalised depreciation					**(4,074)**	(4,272)	(3,909)			
Depreciation and amortisation in equity accounted units					**(576)**	(653)	(650)			
Taxation and finance items in equity accounted units					**(443)**	(296)	(372)			
Finance items					**(1,751)**	(648)	(33)			
Consolidated sales revenue/profit before taxation/net earnings		**44,611**	43,165	40,522	**15,391**	11,119	18,167	**9,769**	8,010	13,638

Rio Tinto Financial Information by Business Unit

	Rio Tinto interest %	Capital expenditure[p] for the year ended 31 December 2020 US$m	2019 US$m	2018 US$m	Depreciation and amortisation for the year ended 31 December 2020 US$m	2019 US$m	2018 US$m	Operating assets[q] as at 31 December 2020 US$m	2019 US$m	2018 US$m	Employees for the year ended 31 December 2020	2019	2018
Iron Ore													
Pilbara	(d)	**2,919**	1,720	1,288	**1,819**	1,704	1,682	**16,253**	13,865	14,486	**11,522**	10,634	10,422
Dampier Salt	68.4	**22**	21	14	**19**	19	20	**163**	152	165	**351**	347	239
Evaluation projects/other	(e)	**—**	—	—	**—**	—	—	**338**	2	2	**10**	—	—
Intra-segment	(e)	**—**	—	—	**—**	—	—	**(104)**	—	—	**—**	—	—
Total Iron Ore		**2,941**	1,741	1,302	**1,838**	1,723	1,702	**16,650**	14,019	14,653	**11,883**	10,981	10,661
Aluminium	(f)												
Bauxite		**142**	387	953	**290**	286	165	**2,593**	2,597	2,494	**2,853**	2,940	2,676
Alumina		**228**	282	218	**138**	187	194	**2,294**	2,009	2,721	**2,383**	2,269	2,009
Primary Metal		**602**	658	595	**643**	682	615	**9,361**	9,674	9,306	**6,282**	6,357	6,497
Pacific Aluminium		**114**	129	115	**119**	154	149	**455**	970	1,156	**2,469**	2,356	2,278
Intra-segment and other		**(1)**	—	—	**1**	—	(1)	**662**	780	769	**141**	127	180
Integrated operations		**1,085**	1,456	1,881	**1,191**	1,309	1,122	**15,365**	16,030	16,446	**14,128**	14,049	13,640
Other product group items	(g)	**—**	—	(508)	**—**	—	—	**—**	—	—	**—**	—	—
Product group operations		**1,085**	1,456	1,373	**1,191**	1,309	1,122	**15,365**	16,030	16,446	**14,128**	14,049	13,640
Evaluation projects/other		**—**	—	—	**—**	3	—	**—**	—	—	**—**	—	—
Total Aluminium		**1,085**	1,456	1,373	**1,191**	1,312	1,122	**15,365**	16,030	16,446	**14,128**	14,049	13,640
Copper & Diamonds													
Rio Tinto Kennecott	100.0	**618**	444	318	**472**	457	427	**2,317**	2,012	1,864	**2,171**	2,066	1,993
Escondida	30.0	**178**	315	302	**428**	508	518	**2,726**	2,871	3,057	**1,124**	1,068	1,087
Grasberg joint venture	(h)	**—**	—	171	**—**	—	30	**—**	—	—	**—**	—	1,615
Oyu Tolgoi and Turquoise Hill	(i)	**1,038**	1,289	1,284	**189**	208	219	**8,111**	6,780	6,072	**3,450**	3,152	2,863
Diamonds	(j)	**25**	38	64	**60**	144	118	**(7)**	195	267	**885**	940	967
Product group operations		**1,859**	2,086	2,139	**1,149**	1,317	1,312	**13,147**	11,858	11,260	**7,630**	7,226	8,525
Evaluation projects/other		**5**	1	11	**4**	3	5	**192**	152	129	**159**	150	146
Total Copper & Diamonds		**1,864**	2,087	2,150	**1,153**	1,320	1,317	**13,339**	12,010	11,389	**7,789**	7,376	8,671
Energy & Minerals													
Rio Tinto Coal Australia	(k)	**—**	—	32	**—**	—	34	**—**	—	(837)	**—**	—	1,005
Iron Ore Company of Canada	58.7	**243**	255	189	**170**	172	154	**1,009**	803	975	**2,716**	2,617	2,397
Rio Tinto Iron & Titanium	(l)	**144**	249	169	**173**	193	201	**3,390**	3,507	3,390	**4,151**	4,115	4,058
Rio Tinto Borates	100.0	**42**	43	44	**49**	60	62	**502**	525	518	**966**	924	980
Uranium	(m)	**—**	5	8	**—**	3	4	**(71)**	(363)	(406)	**364**	857	1,324
Product group operations		**429**	552	442	**392**	428	455	**4,830**	4,472	3,640	**8,197**	8,513	9,764
Simandou iron ore project	(n)	**(2)**	(1)	—	**—**	—	—	**16**	20	15	**69**	74	70
Evaluation projects/other		**1**	—	—	**—**	—	—	**33**	37	41	**77**	53	33
Total Energy & Minerals		**428**	551	442	**392**	428	455	**4,879**	4,529	3,696	**8,343**	8,640	9,867
Other operations	(o)	**2**	(4)	12	**199**	177	26	**(479)**	(83)	(442)	**124**	159	187
Inter-segment transactions								**129**	127	129			
Product group total		**6,320**	5,831	5,279	**4,773**	4,960	4,622	**49,883**	46,632	45,871	**42,267**	41,205	43,026
Net assets of disposal groups held for sale	(r)							—	—	440			
Other items		**79**	64	65	**82**	77	43	**(2,165)**	(2,449)	(2,880)	**5,207**	4,802	4,432
Less: equity accounted units		**(255)**	(456)	(500)	**(576)**	(653)	(650)	**—**	—	—	**—**	—	—
Total		**6,144**	5,439	4,844	**4,279**	4,384	4,015	**47,718**	44,183	43,431	**47,474**	46,007	47,458
Add back: Proceeds from disposal of property, plant and equipment		**45**	49	586									
Total capital expenditure per cash flow statement		**6,189**	5,488	5,430									
Less: Net (debt)/cash								**(664)**	(3,651)	255			
Equity attributable to owners of Rio Tinto								**47,054**	40,532	43,686			

Notes to Financial Information by Business Unit

Business units are classified according to the Group's management structure.

The disclosures in this note include certain Alternative performance measures (APMs). For more information on the APMs used by the Group, including definitions and calculations, please refer to pages 329-333.

(a) Gross product sales includes the sales revenue of equity accounted units on a proportionately consolidated basis (after adjusting for sales to subsidiaries) in addition to consolidated sales. Consolidated sales revenue includes subsidiary sales to equity accounted units which are not included in gross product sales.

(b) Underlying EBITDA of subsidiaries and the Group's share relating to equity accounted units represents earnings attributable to owners of Rio Tinto before: tax, net finance items, depreciation and amortisation charged to the income statement in the period and excludes the EBITDA impact of the same items that are excluded from underlying earnings as defined in note 2.

(c) Represents profit after tax for the period attributable to the owners of the Rio Tinto Group. Business unit earnings are stated before finance items but after the amortisation of discount related to provisions. Earnings attributed to business units do not include amounts that are excluded in arriving at underlying earnings.

(d) Pilbara represents the Group's 100% holding in Hamersley, 50% holding in Hope Downs Joint Venture and 65% holding in Robe River Iron Associates. The Group's net beneficial interest in Robe River Iron Associates is 53%, as 30% is held through a 60% owned subsidiary and 35% is held through a 100% owned subsidiary.

(e) Gross product sales, Underlying EBITDA, Net Earnings and Operating assets within Evaluation projects/other include activities relating to the shipment and blending of Pilbara and Iron Ore Company of Canada (IOC) iron ore inventories held at portside in China and sold to domestic customers. Transactions between the Pilbara and our portside trading business are eliminated through the Iron Ore "intra-segment" line and transactions between IOC and the portside trading business are eliminated through "inter-segment transactions".

(f) In order to reflect the evolution of the Aluminium business, the following changes have been implemented:

- The consolidation line for Bauxite & Alumina has been removed to reflect the less integrated nature of the business and the evolution of the Bauxite business towards a primarily export oriented operation. As a result of this change, the intra-group segment elimination for Gross product sales, Underlying EBITDA, Net Earnings and Operating assets between bauxite and alumina are now reported on line "Intra-segment and other". The intra-segment eliminations for the year ended 31 December 2020 would have been US$722 million, US$31 million, US$21 million and US$7 million respectively. For the year ended 31 December 2019 the eliminations were US$825 million, US$10 million, US$7 million and US$27 million. For the year ended 31 December 2018 the eliminations were US$861 million, US$7 million, US$5 million and US$20 million.

- The Underlying EBITDA and Net Earnings have been restated to include the impact of the legacy alumina contracts (2019: US$218 million and US$171 million, respectively; 2018: US$457 million and US$355 million, respectively) in the Alumina business instead of being included in the Other product group items line, in order to provide a comprehensive view of the performance of the Alumina business.

- The Gross product sales, Underlying EBITDA and Net Earnings have been restated to reallocate the margin generated by internal shipping activities to Bauxite (2019: US$31 million, US$76 million and US$57 million, respectively; 2018: US$40 million, US$62 million and US$54 million, respectively) and Alumina businesses (2019: US$63 million, US$157 million and US$117 million, respectively; 2018: US$83 million, US$128 million and US$111 million, respectively), instead of being included in the Evaluation project/other line in order to provide a comprehensive view of the performance of the Bauxite and Alumina businesses.

Gross product sales, Underlying EBITDA, Net Earnings and Operating assets of the overall Rio Tinto Aluminium business were not impacted by these changes.

(g) In 2018, Aluminium capital expenditure was reported net of US$508 million proceeds received from the sale of surplus land at Kitimat. These proceeds were not included in Aluminium's free cash flow and the associated gain was excluded from business unit earnings and Underlying EBITDA.

(h) Through a joint venture agreement with Freeport-McMoRan Inc. (Freeport), we were entitled to 40% of material mined above an agreed threshold as a consequence of expansions and developments of the Grasberg facilities since 1998 (until 21 December 2018). On 21 December 2018, we sold our entire interest in the Grasberg mine to PT Indonesia Asahan Aluminium (Persero) (Inalum).

(i) Our interest in Oyu Tolgoi is held indirectly through our 50.8% investment in Turquoise Hill Resources Ltd (TRQ), where TRQ's principal asset is its 66% investment in Oyu Tolgoi LLC, which owns the Oyu Tolgoi copper-gold mine.

(j) Includes our interests in Argyle (100%) and Diavik (60%).

(k) Includes our 82% interest in the Hail Creek coal mine (until 1 August 2018), our 80% interest in the Kestrel underground coal mine (until 1 August 2018) and interests in the Winchester South (until 1 June 2018) and Valeria development projects (until 1 August 2018).

On 1 June 2018, we sold our entire 75% interest in the Winchester South coal development project in Queensland, Australia, to Whitehaven Coal Limited for US$200 million.

On 1 August 2018, we sold our entire 82% interest in the Hail Creek coal mine and 71.2% interest in the Valeria coal development project in Queensland, Australia, to Glencore for US$1.7 billion.

On 1 August 2018, we sold our entire 80% interest in the Kestrel underground coal mine in Queensland, Australia, to a consortium comprising private equity manager EMR Capital (EMR) and PT Adaro Energy Tbk (Adaro), an Indonesian listed coal company, for US$2.25 billion.

Rio Tinto Coal Australia's operating assets of US$(837) million at 31 December 2018 included provisions for onerous contracts in relation to rail infrastructure capacity and capital gains tax payable on the divestments announced in the year, partly offset by financial assets and receivables relating to contingent royalties and disposal proceeds. Following a change in management responsibility in 2019, these amounts are reported within "Other operations" at 31 December 2020 and 31 December 2019, with no restatement of the 31 December 2018 comparative amount.

(l) Includes our interests in Rio Tinto Fer et Titane (100%), QIT Madagascar Minerals (QMM, 80%) and Richards Bay Minerals (attributable interest of 74%).

(m) Includes our interests in Energy Resources of Australia (ERA) and in Rössing Uranium Limited (Rössing) (68.6%), up until the sale of Rössing on 16 July 2019. In February 2020, our interest in ERA increased from 68.4% to 86.3% as a result of new ERA shares issued to Rio Tinto under the Entitlement Offer and Underwriting Agreement to raise funds for the rehabilitation of the Ranger Project Area.

(n) Simfer Jersey Limited, in which the Group has a 53% interest, has an 85% interest in Simfer S.A., the company that manages the Simandou project in Guinea. The Group therefore has a 45.05% indirect interest in Simfer S.A. These entities are consolidated as subsidiaries and together referred to as the Simandou iron ore project.

(o) Other operations include our 100% interest in the Gove alumina refinery, Rio Tinto Marine and, with effect from the first half of 2019, the remaining operating assets of Rio Tinto Coal Australia. As at 31 December 2020, these include provisions for onerous contracts in relation to rail infrastructure capacity, partly offset by deferred tax assets and financial assets and receivables relating to contingent royalties and disposal proceeds. Refer to note (k).

(p) Capital expenditure is the net cash outflow on purchases less sales of property, plant and equipment, capitalised evaluation costs and purchases less sales of other intangible assets. The details provided include 100% of subsidiaries' capital expenditure and Rio Tinto's share of the capital expenditure of joint operations and equity accounted units.

(q) Operating assets of subsidiaries is comprised of net assets excluding post-retirement assets and liabilities, net of tax, and before deducting net debt. Operating assets are stated after the deduction of non-controlling interests – these are calculated by reference to the net assets of the relevant companies (ie inclusive of such companies' debt and amounts due to or from Rio Tinto Group companies).

(r) Assets and liabilities held for sale at 31 December 2018 included our interest in Rössing Uranium Limited, the ISAL smelter, the Aluchemie anode plant, and the Alufluor aluminium fluoride plant.

Australian Corporations Act – summary of ASIC relief

Pursuant to section 340 of the Australian Corporations Act 2001 (Corporations Act), the Australian Securities and Investments Commission issued an order dated 24 July 2020 that granted relief to Rio Tinto Limited from certain requirements of the Corporations Act in relation to its financial statements and associated reports. The order essentially continues the relief that has applied to Rio Tinto Limited since the formation of the Group's dual listed companies (DLC) structure in 1995. The order applies to Rio Tinto Limited's financial reporting obligations for the financial years and half-years ending between 30 June 2020 and 30 June 2023 inclusive.

In essence, instead of being required under the Corporations Act to prepare consolidated financial statements covering only itself and its controlled entities, the order allows Rio Tinto Limited to prepare consolidated financial statements in which it, Rio Tinto plc and their respective controlled entities are treated as a single economic entity. In addition, those consolidated financial statements are to be prepared:

- in accordance with the principles and requirements of International Financial Reporting Standards as adopted by the European Union (EU IFRS) rather than the Australian Accounting Standards (AAS) (except for one limited instance in the case of any concise report), and in accordance with UK financial reporting obligations generally;
- on the basis that the transitional provisions of International Financial Reporting Standard 1, First-time Adoption of International Financial Reporting Standards, should be applied using the combined financial statements previously prepared for Rio Tinto Limited, Rio Tinto plc and their respective controlled entities under Generally Accepted Accounting Principles in the United Kingdom, under which the DLC Merger between Rio Tinto Limited and Rio Tinto plc was accounted for using "merger", rather than "acquisition", accounting (reflecting that neither Rio Tinto Limited nor Rio Tinto plc was acquired by, or is controlled by, the other; and meaning that the existing carrying amounts, rather than fair values, of assets and liabilities at the time of the DLC Merger were used to measure those assets and liabilities at formation);
- on the basis that Rio Tinto Limited and Rio Tinto plc are a single company (with their respective shareholders being the shareholders in that single company); and
- with a reconciliation, from EU IFRS to AAS, of the following amounts: consolidated loss/profit for the financial year, total consolidated comprehensive loss/income for the financial year and total consolidated equity at the end of the financial year (see page 205).

Those consolidated financial statements must also be audited in relation to their compliance with relevant Australian and UK requirements.
Rio Tinto Limited must also prepare a Directors' Report which satisfies the content requirements of the Corporations Act (applied on the basis that for these purposes the consolidated entity is the Group, and the consolidated financial statements cover the Group). This includes a Remuneration Report (see pages 140-185) prepared in accordance with the requirements of the Corporations Act.

Rio Tinto Limited is also required to comply generally with the lodgement and distribution requirements of the Corporations Act (including timing requirements) in relation to those consolidated financial statements (including any concise financial statements), the Auditors' report and the Directors' Report. The Corporations Act also requires that a non-binding resolution to adopt the Remuneration Report be voted on by shareholders at Rio Tinto Limited's annual general meeting.

Rio Tinto Limited is not required to prepare separate consolidated financial statements solely for it and its controlled entities. Rio Tinto Limited is also not required to prepare and lodge parent entity financial statements for itself in respect of each relevant financial year.

Rio Tinto Limited must, however, in accordance with the Corporations Act include in the consolidated financial statements for the Group, as a note, various parent entity information regarding Rio Tinto Limited (including in relation to assets, liabilities, shareholders' equity, profit and loss, income, guarantees, contingent liabilities, and contractual commitments) prepared in accordance with AAS (see page 280).

Directors' declaration

Directors' statement of responsibilities in relation to the Group financial statements, Rio Tinto plc financial statements and Rio Tinto Limited financial statements

The directors are responsible for preparing the Annual Report, the Remuneration Report and the financial statements in accordance with applicable law and regulations.

UK and Australian company law requires the directors to prepare financial statements for each financial year. Under UK law the directors have elected to prepare the Group financial statements in accordance with international accounting standards in conformity with the requirements of the Companies Act 2006 and International Financial Reporting Standards (IFRSs) as adopted pursuant to Regulation (EC) No 1606/2002 as it applies in the European Union (IFRSs as adopted by the EU), and the Rio Tinto plc financial statements in accordance with United Kingdom Generally Accepted Accounting Practice (United Kingdom Accounting Standards and applicable law), including FRS 101 "Reduced disclosure framework". Under Australian law, the directors are also required to prepare certain Rio Tinto Limited parent company financial statements in accordance with Australian Accounting Standards (AAS). In preparing the Group financial statements, the directors have also elected to comply with IFRSs, issued by the International Accounting Standards Board (IASB).

Under UK and Australian company law the directors must not approve the financial statements unless they are satisfied that they give a true and fair view of the state of affairs of the Group and the companies as at the end of the financial year, and of the profit or loss of the companies and Group for the period (as applicable).

In preparing these financial statements, the directors are required to:

- select suitable accounting policies and apply them consistently;
- make judgments and estimates that are reasonable and prudent;
- state whether IFRSs as adopted by the EU, applicable UK Accounting Standards and AAS have been followed, subject to any material departures disclosed and explained in the Group and parent company financial statements respectively; and
- prepare the financial statements on the going concern basis unless it is inappropriate to presume that the Group and the companies will continue in business.

The directors are responsible for keeping adequate accounting records that are sufficient to show and explain the transactions of the companies and the Group and disclose with reasonable accuracy at any time the financial position of the companies and the Group and enable them to ensure that:

- the Group financial statements comply with the UK Companies Act 2006, the Australian Corporations Act 2001 as amended by the Australian Securities and Investments Commission Order dated 24 July 2020 and Article 4 of the IAS Regulation;
- the Rio Tinto plc financial statements comply with the UK Companies Act 2006;
- the Rio Tinto Limited parent company disclosures comply with the Corporations Act as amended by the Australian Securities and Investments Commission Order dated 24 July 2020; and
- the Remuneration Report complies with the UK Companies Act 2006 and the Australian Corporations Act 2001 as amended by the Australian Securities and Investments Commission Order dated 24 July 2020 .

The directors are also responsible for safeguarding the assets of the companies and the Group and hence for taking reasonable steps for the prevention and detection of fraud and other irregularities.

The directors are responsible for the maintenance and integrity of the Group's website. Legislation governing the preparation and dissemination of financial statements may differ between jurisdictions in which the Group reports.

Each of the current directors, whose names and function are listed on pages 116-117 in the Governance section, confirm that, to the best of their knowledge:

- the Rio Tinto Group financial statements and notes, which have been prepared in accordance with international accounting standards in conformity with the requirements of the Companies Act 2006, IFRS as adopted by the EU, the Australian Corporations Act 2001 as amended by the Australian Securities and Investments Commission Order dated 24 July 2020, the UK Companies Act 2006 and Article 4 of the IAS Regulation, give a true and fair view of the assets, liabilities, financial position and profit of the Group;
- the Rio Tinto plc financial statements and notes, which have been prepared in accordance with United Kingdom Generally Accepted Accounting Practice, give a true and fair view of the assets, liabilities, financial position and profit of the company;
- the Rio Tinto Limited parent company disclosures, which have been prepared in accordance with the AAS and Australian Corporations Act 2001 as amended by the Australian Securities and Investments Commission Order dated 24 July 2020, give a true and fair view of the assets, liabilities, financial position and profit of the company;
- the Strategic Report section of the Annual Report includes a fair review of the development and performance of the business and the position of the Group, together with a description of the principal risks and uncertainties that it faces; and
- there are reasonable grounds to believe that each of the Rio Tinto Group, Rio Tinto plc and Rio Tinto Limited will be able to pay its debts as and when they become due and payable.

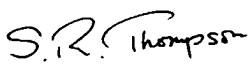
The directors have been given the declarations by the Chief Executive and Chief Financial Officer required by section 295A of the Australian Corporations Act 2001 as amended by the Australian Securities and Investments Commission Order dated 24 July 2020.

Disclosure of information to auditors

The directors in office at the date of this report have each confirmed that:

- so far as they are aware, there is no relevant audit information of which the Group's auditors are unaware; and
- they have taken all the steps that they ought to have taken as a director to make themselves aware of any relevant audit information and to establish that the Group's auditors are aware of that information.

This declaration is made in accordance with a resolution of the Board.



Simon Thompson
Chairman



Jakob Stausholm
Chief Executive

Independent auditors' reports

of KPMG LLP to the members of Rio Tinto plc

and of KPMG to the members of Rio Tinto Limited

1. OUR OPINIONS ARE UNMODIFIED

In KPMG UK's opinion:

- the financial statements give a true and fair view of the state of the Group's and of the UK Parent Company's, Rio Tinto plc, affairs as at 31 December 2020, and of the Group's profit for the year then ended;
- the Group financial statements have been properly prepared in accordance with international accounting standards in conformity with the requirements of the Companies Act 2006, and International Financial Reporting Standards (IFRSs) adopted pursuant to Regulation (EC) No. 1606/2002 as it applies in the European Union ("IFRSs as adopted by the EU");
- the Group financial statements have been properly prepared in accordance with IFRSs as issued by the International Accounting Standards Board (IASB). As explained in note 1 to the financial statements, the Group, in addition to complying with its legal obligation to apply international accounting standards in conformity with the requirements of the Companies Act, the Group has also applied IFRSs as issued by the IASB;
- the Rio Tinto plc financial statements have been properly prepared in accordance with UK accounting standards, including FRS101 Reduced Disclosure Framework; and
- the financial statements have been prepared in accordance with the requirements of the Companies Act 2006 and, as regards to the Group financial statements, Article 4 of the IAS Regulation to the extent applicable.

In KPMG Australia's opinion:

- the consolidated financial statements are in accordance with the Australian Corporations Act 2001, as amended by the Australian Securities and Investments Commission Order dated 24 July 2020 (the "ASIC Order") including:
  - giving a true and fair view of the Group's financial position as at 31 December 2020 and of its financial performance for the year then ended; and
  - comply with IFRSs as adopted by the EU and the Australian Corporations Regulations 2001

For the purpose of these reports, the terms 'we' and 'our' denote KPMG UK (KPMG LLP) in relation to UK responsibilities and reporting obligations to the members of Rio Tinto plc, and KPMG Australia (KPMG) in relation to Australian responsibilities and reporting obligations to the members of Rio Tinto Limited. Rio Tinto ('the Group') consists of Rio Tinto plc, Rio Tinto Limited and the entities they controlled, including the Group's share of joint arrangements and associates, during the financial year ended 31 December 2020.

What our opinions cover

We have audited the Group financial statements for the year ended 31 December 2020 (FY20) included in the Annual Report and Accounts, which comprise:

Rio Tinto Group
▪ Group Balance Sheet ▪ Group Income Statement ▪ Group Statement of Comprehensive Income ▪ Group Statement of Changes in Equity ▪ Group Statement of Cash Flows Notes [a] to the Group Financial Statements, including the summary of significant accounting policies, the outline of dual listed companies structure and basis of financial statements; and the Rio Tinto financial information by business unit

KPMG UK has audited the Rio Tinto plc company financial statements for the year ended 31 December 2020, which comprise the parent company balance sheet; the parent company statement of changes in equity; and related notes, which include a description of the significant accounting policies and other explanatory information.

KPMG Australia has considered the Directors' declaration to be part of the Group financial statements when forming its opinion under the requirements of the Corporations Act 2001, as amended by the ASIC Order. Included within the Group financial statements KPMG Australia has audited is the Reconciliation with Australian Accounting Standards. KPMG Australia has also audited the Remuneration Report included in the Directors' report for the year ended 31 December 2020.

Basis for opinions

We conducted our audits in accordance with International Standards on Auditing (UK) ("ISAs (UK)"), Australian Auditing Standards ("ASAs") and applicable laws. Our responsibilities under those standards are further described in the Auditor's responsibilities for the audit of the Financial Statements section of our report. We believe that the audit evidence we have obtained is a sufficient and appropriate basis for our opinions.

[a] KPMG UK has audited notes 1 – 42 and notes 44 – 45. KPMG Australia has audited notes 1 – 45.

Independent auditors' reports

of KPMG LLP to the members of Rio Tinto plc
and of KPMG to the members of Rio Tinto Limited

2. OVERVIEW OF OUR AUDITS

Key audit matters

	Item
Evaluation of indicators of impairment or impairment reversal of intangible assets and property plant and equipment in specific cash generating units	3.1
Evaluation of provisions for close-down, restoration and environmental obligations	3.2
Evaluation of provisions for uncertain tax positions	3.3
Recoverability of Rio Tinto Plc's investments in its subsidiaries	3.4

Audit Committee interaction

During the year, the Audit Committee (AC) met six times. KPMG is invited to attend all Audit Committee meetings and is invited to meet with the AC in private sessions without Executive Directors being present. For each Key Audit Matter, we have set out communications with the Audit Committee in Section 3, including matters that required particular judgment.

The matters included in the Audit Committee Chair's report on page 133 are consistent with our observations of those meetings. Our audit opinions and matters included in this report are consistent with those discussed and included in our reports to the Rio Tinto Audit Committee.

Our Independence

We have fulfilled our ethical responsibilities under, and we remain independent of the Group in accordance with, UK ethical requirements including the FRC Ethical Standard as applied to listed public interest entities; the Australian Corporations Act 2001 as amended by the ASIC Order; and the relevant ethical requirements of the Australian Accounting Professional and Ethical Standards Board's APES 110 Code of Ethics for Professional Accountants (including Independence Standards).

We have not provided any services which are prohibited by the standards noted above to the Group during the year ended 31 December 2020 (FY20) or subsequently.

We were first appointed as auditor in May 2020 by the shareholders following votes at the Rio Tinto plc and Rio Tinto Limited annual general meetings, this being our first year of engagement.

Total audit fee	$17.3m
Total non-audit fees	$2.3m
Non-audit fee as a % of audit fee %	13.3%
Next financial period which requires a tender	31 December 2030
Tenure of Group signing and component partners	1 year

Materiality (Section 6 below)

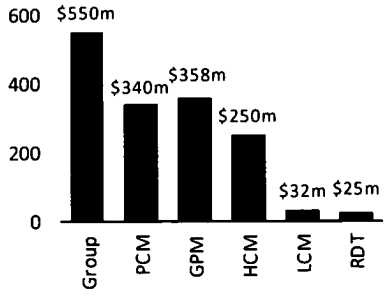
The scope of our work is influenced by our view of materiality and our assessed risk of material misstatement.

We have determined overall materiality for the Group at $550m.

A key judgment in determining materiality (and performance materiality) was the appropriate benchmark to select, based on our perception of the needs of shareholders. We considered which benchmarks and Key Performance Indicators have the greatest bearing on shareholder decisions.

We determined that Profit Before Tax for continuing operations, is the key measure for performance of the Group. As such, we based our materiality on Profit Before Tax for continuing operations excluding certain identified items which could significantly distort results in any one particular year, of which $550m represents 3.3%.

Materiality levels used in our audit



Group	Group Materiality
PCM	Parent Company Materiality
GPM	Group Performance Materiality
HCM	Highest Component Materiality
LCM	Lowest Component Materiality
RDT	Reporting Differences Threshold

Independent auditors' reports

of KPMG LLP to the members of Rio Tinto plc

and of KPMG to the members of Rio Tinto Limited

Group scope
(section 7 below)

Top-down, we performed our risk assessment and planning to determine the Group's components that required involvement from component auditors around the world. We scoped:

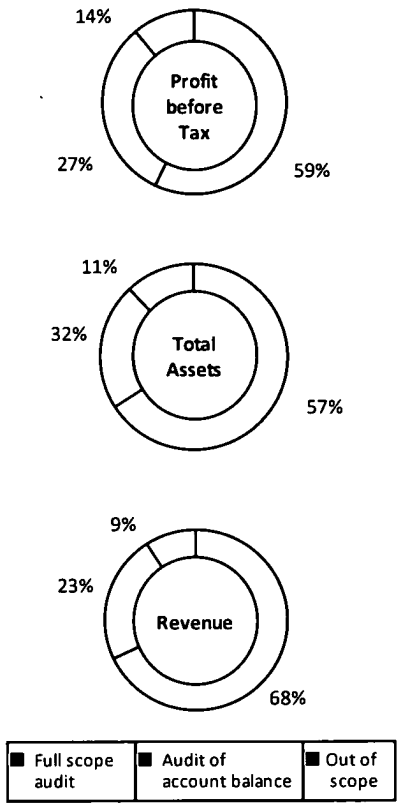
- 2 components, the Pilbara and Oyu Tolgoi as individually financially significant components which were subject to full scope audits by component auditors;
- 12 further components subject to full scope audits by component auditors;
- 8 components subject to audit of account balances associated to significant or elevated risks on either provision for close-down, restoration and environmental obligations or asset valuations; and
- 15 further components subject to audit of account balances to ensure sufficient audit coverage.

We also considered the extent to which Rio Tinto operates shared service centres for its transaction processing. In particular, across sales and purchase processes, transactions that originate in one country may be processed in Singapore and Delhi. As a result, we established teams in Singapore and Delhi. The extent of testing of controls in these locations is specific to the nature of transactions processed. We performed audit procedures centrally across the Group, set out in more detail in Section 7 below.

In addition, we performed Group level analysis on the remaining components to determine whether further risks of material misstatement exist in those components.

We consider the scope of our audits, as agreed with the Audit Committee, to be an appropriate basis for our audit opinions.

Coverage of Group financial statements



The impact of climate change on our audit

In planning our audit, we considered the potential impacts of climate change on the Group's business and its financial statements. Unlike other major resources companies, the Group does not mine or extract hydrocarbons such as coal, natural gas or oil but it does emit greenhouse gases directly from energy used in its mining operations, the processing of metals and minerals, and the transportation of its products. The Group's products are used in energy and carbon intensive industries including steel or aluminium production. The Group has set out its targets under the Paris Agreement to reduce carbon intensity by 30% and absolute emissions by 15% by 2030, and to be net carbon neutral by 2050 for Scope 1 and Scope 2 emissions. Further information is provided in the Strategic Report on pages 79 to 85 and the Group's Climate Change report.

Climate change initiatives and commitments impact the preparation of the Group's financial statements in a variety of ways, all with inherent uncertainties. As explained in note 1 of the financial statements, the Group has considered certain commodity and carbon pricing scenarios in assessing the impact of climate change in preparing its financial statements. For the Group, other judgments and estimates are also expected to include the setting of useful economic lives for carbon intensive property and equipment (such as aluminium smelting or coal fired power plants), the valuation of assets or the determination of impairment charges taking into account future pricing assumptions and estimates of mine life and closure and rehabilitation costs. Climate change also impacts the long-term viability of aspects of the mining industry especially given greenhouse gas intensity in the use of certain of the industry's products (measured under Scope 3 emissions).

However, whilst the Group has set targets to be carbon neutral by 2050, the consequences, in terms of investment, its cost base and impact on cash flows are still being assessed as the Group considers how it will work towards meeting these targets. To the extent there are known implications these have been reflected in the financial statements in accordance with IFRS requirements and have been considered in our audit as set out in our key audit matters. It is therefore likely that the future carrying amounts of assets or liabilities will change for these other judgments and estimates as the Group responds to its climate change targets.

Our Key Audit Matters explain how we have assessed the Group's climate related assumptions and relevant disclosures in arriving at our audit conclusions. This includes the use of our own climate change and sustainability specialists. We have also read the Group's disclosure of climate related information in the front half of the annual report and compared this to our knowledge gained from our financial statement audit work.

The Group's disclosures in the financial statements of the potential impacts of climate change and the assumptions used in setting key estimates and judgments has increased significantly this year. We have discussed with the Group ways in which climate change disclosures should continue to evolve as the Group continues to evaluate pathways to being net carbon neutral.

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3. KEY AUDIT MATTERS

What we mean

Key audit matters are those matters that, in our professional judgment, were of most significance in the audit of the financial statements and include the most significant assessed risks of material misstatement (whether or not due to fraud) identified by us, including those which had the greatest effect on:

- the overall audit strategy;
- the allocation of resources in the audit; and
- directing the efforts of the engagement team.

We include below the key audit matters in decreasing order of audit significance, together with our principal audit procedures to address those matters and, as required for EU public interest entities, our results from those procedures. These matters were addressed in the context of, and our results are based on, procedures undertaken for the purpose of our audit of the financial statements as a whole and in forming our opinions thereon. We do not provide a separate opinion on these matters.

3.1 Evaluation of indicators of impairment or impairment reversal of intangible assets and property plant and equipment in specific cash generating units

Financial Statement Elements	Our results
Cash Generating Units Oyu Tolgoi copper-gold mine Yarwun alumina refinery Kitimat aluminium smelter	FY20: Acceptable

Description of the Key Audit Matter

The recoverable amounts of the Group's assets are affected by forward-looking assumptions and estimation uncertainties. Specific to this year, these include the effects of macroeconomic disruption caused by the COVID-19 pandemic which has impacted pricing of some of the Group's products, and, longer term, the impacts of climate change which affect forward looking assumptions such as commodity pricing.

Assessment of impairment indicators

The Group's determination of whether an indicator of impairment or impairment reversal exists is judgmental and includes consideration of external factors such as changes in commodity prices as well as internal factors such as changes to estimated future operating or capital costs.

The Oyu Tolgoi copper-gold mine, Yarwun alumina refinery and Kitimat aluminium smelter cash generating units (CGUs), have previously been impaired. We assessed these CGUs as most at risk of additional impairment or impairment reversal and as the subject of this key audit matter. For Oyu Tolgoi this included an assessment of the finalisation of the Definitive Estimate in December 2020. The Group did not identify indicators of impairment or impairment reversal in respect of these CGUs.

Our response to the risk

Our procedures to address the risk included:

Control operation

Testing the effectiveness of the Group's internal controls over assessment of impairment indicators.

Tests of detail

In respect of the CGUs noted, we challenged the Group's assessment of potential indicators of impairment or impairment reversal, through;

- comparing operational and financial performance in the period to approved budgets;
- assessing changes in external market conditions that could impact operating costs; and
- comparing forecast commodity prices used in the Group's assessment to market consensus forecasts.

In addition to the above, our work in relation to the Oyu Tolgoi CGU included:

- understanding the impact of the Definitive Estimate on mine plan assumptions, including remaining capital expenditure costs and date of first production, to assess if the Definitive Estimate represented an indicator of impairment or impairment reversal; and
- understanding the status of discussions, with the Government of Mongolia, to assess the basis for management's conclusion that this is not an impairment indicator.

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Description of the Key Audit Matter	Our response to the risk
The net impairment charge recorded in FY20 of $1,115 million relates largely to now fully impaired assets. As part of our risk assessment we satisfied ourselves that events or conditions had caused these assets to have negligible value and therefore limited estimation uncertainty. >> Refer to notes 1(i) and 6, and the Audit Committee's views set out on page 133.	*Impact of climate change* We used our sustainability specialists to assist in understanding the Group's approach to incorporating the impacts of climate change into its pricing process. We used this information to challenge how the Group's analysis of indicators of impairment took factors such as the impact of climate change on commodity pricing into account. *Assessing disclosures* We assessed the appropriateness of the related disclosures in notes 1 and 6 of the financial statements against the accounting requirements.

Communications with Rio Tinto's Audit Committee

We discussed with and reported to the Audit Committee:

- How the outcome of the Definitive Estimate for Oyu Tolgoi compared to the scenarios considered as part of the 2019 impairment test.
- How the current status of discussions with the Government of Mongolia compare to the risks anticipated at the time of the 2019 impairment test.
- How the Group considered the impacts of climate change within its assessment of potential indicators of impairment or impairment reversal, and, as explained in note 1 to the financial statements, that the financial statements do not yet reflect the financial reporting consequences of how the Group will meet its target to be carbon net neutral by 2050.

Based on the risk identified and our procedures performed, we found the Group's conclusion that there are no indicators of impairment or impairment reversal in respect of the Oyu Tolgoi copper-gold mine, Yarwun alumina refinery and Kitimat aluminium smelter cash generating units (CGUs) and related disclosures to be acceptable.

3.2 Evaluation of provisions for close-down, restoration and environmental obligations

Financial Statement Elements	Our results
Closure Provision carrying value $13,335m at 31 December 2020	FY20: Acceptable

Description of the Key Audit Matter	Our response to the risk
The Group incurs legal and constructive obligations for close-down and restoration activities which include the dismantling and demolition of infrastructure, the removal of residual materials and the remediation of disturbed areas for mines and certain refineries and smelters. Generally, there is relatively limited activity within the Group or broader industry of completing large scale restoration and rehabilitation projects, and elements of restoration and rehabilitation of each site are relatively unique to the site. As such, there are limited comparable historical precedents against which to benchmark estimates of future costs, which increases estimation uncertainty. A significant proportion of the Group's assets have long remaining lives, which also increases the estimation uncertainty relating to the rehabilitation activities required, including considering the impact of future environmental requirements and climate change, and the timing and amount of the associated future cash flows. Because of this, the effect of the time value of money is material.	Our procedures to address the risk included: *Control operation* Testing internal controls over the Group's process to estimate provisions for close-down, restoration and environmental obligations, including controls over the Groups selection of the assumptions, data, methods and models to be used. This included controls over the determination of key inputs such as future rehabilitation costs, the timing of these costs, the life of the operation or site, the discount rate and the preparation of the underlying closure plan scenarios. *Tests of detail* For Pilbara, Kennecott and Gove refinery closure provisions as at 31 December 2020, we performed the following procedures: ▪ we performed a retrospective review of the key cost assumptions to evaluate the accuracy of the Group's forecasting; ▪ we examined the most recent closure studies and other technical material prepared by the Group relating to changes in the closure provision to assess the nature and scope of work undertaken. We compared estimated closure costs included in the studies with those used in the calculation of the provision; ▪ for operations that the Group determined did not require a change in key assumptions during the year, we considered the consistency of the Group's conclusion with our understanding of the obligations associated with that operation and its closure remediation plan;

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Description of the Key Audit Matter

Close-down, restoration and environmental remediation activities are governed by a combination of legislative requirements, the Group's policies, and commitments made to stakeholders. These vary across location, product and operation.

The Group has disclosed that the determination of when an estimate associated with close-down, restoration and environmental obligations is sufficiently reliable to update is an area of judgment that may have a significant effect on the amounts recognised in the financial statements.

The evaluation of provisions for close-down, restoration and environmental obligations is a key audit matter due to the amount of the provision and the judgment and specialised skills involved in auditing the key inputs used by the Group to determine the provision including:

- the nature and timing of future close-down and restoration activities including post-closure monitoring and associated costs;
- the life of the operation and timing of commencement of rehabilitation activities;
- the interpretation of legislative requirements; and
- the discount rate.

In 2020 the Group reduced the discount rate used to value future closure obligations which resulted in an increase to the close-down, restoration and environmental provisions of $954 million.

We focussed on the locations most material and sensitive to changes in key inputs being:

- Rio Tinto Iron Ore (Pilbara)
- Rio Tinto Kennecott
- Gove refinery

>> Refer to notes 1(l) and 25, and the Audit Committee's views set out on page 133.

Our response to the risk

- we assessed the sensitivity of closure provision calculations to changes in key assumptions, and considered the reasonableness of the assumptions with the greatest impact on the assessment for each site by comparing them to independent sources of data or considering the approach undertaken by the Group to determine them where external comparable data was not available; and
- We assessed an immaterial audit misstatement identified in the context of the overall balance and the financial statements as a whole.

Our closure and valuation expertise

For Pilbara and the Gove refinery we used our closure specialists to assist us in assessing:

- the scope, competency and objectivity of the Group's experts, both internal and external to the Group, who produce the cost estimates;
- the reasonableness of key assumptions made by the Group for closure activities included in the closure scenarios by comparing them against our understanding of the legislative requirements, the Group's closure commitments, industry practice and our understanding of the business;
- the Group's assumptions regarding the timing and costs of such activities based on their experience and familiarity with applicable regulations and the forecast life of the operation; and
- the consistency of closure activities reflected in the Group's models used to determine the provision with the relevant closure plan.

We used our valuations specialists to assist us in evaluating the discount rate applied by the Group to calculate the net present value of these provisions by evaluating it against external data including yields on long-term government bonds and external market research, using our specialist knowledge. .

Assessing disclosures

We assessed the appropriateness of the related disclosures in notes 1 and 25 of the financial statements against the accounting requirements.

Communications with Rio Tinto's Audit Committee

We discussed with and reported to the Audit Committee:

- Our support for additional disclosures provided by management in addition to those in FY19, given the size of the company's closure obligations and the degree of estimation uncertainty and judgment in applying the relevant accounting principles to such long-lived commitments.

Areas of particular auditor judgment

- Having found the discount rate (1.5%) to be toward the upper end of the range we considered to be acceptable, we exercised judgment to determine the acceptability of the closure provision balance given the discount rate used, taking into account our assessment of the associated cash flows and the clarity of the associated disclosure of the sensitivity and impact of the closure provision to changes in the discount rate.

Based on the risk identified and our procedures performed, we consider that the level of provisions for close-down, restoration and environmental obligations and related disclosures to be acceptable.

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3.3 Evaluation of provisions for uncertain tax positions

Financial Statement Elements	Our results
Provisions for uncertain tax positions	FY20: Acceptable

Description of the Key Audit Matter

The Group operates across multiple tax jurisdictions and is subject to periodic challenge by local tax authorities on a range of tax matters including transfer pricing, royalties, other resource and production-based taxes, and indirect taxes.

Where the amount of tax payable is uncertain, the Group establishes provisions based on judgment and estimates relating to tax law, settlement negotiations or changes in legislation. The Group maintain material provisions for uncertain tax positions.

We focused our work on a number of uncertain tax positions, including disputes with the Australian Taxation Office (ATO) and outstanding assessments received from the Mongolian Tax Authority.

As part of our risk assessment, we determined that these uncertain tax positions have a high degree of estimation uncertainty with a wide range of potential outcomes. The evaluation of these provisions for uncertain tax positions is a key audit matter due to the judgment, estimation uncertainty and specialised skills involved in auditing these provisions for uncertain tax positions.

>> Refer to notes 1(n) and 9, and the Audit Committee's views set out on page 133.

Our response to the risk

Our procedures to address the risk included:

Control operation

We tested the effectiveness of certain internal controls over the Group's assessment of uncertain tax positions, including controls relating to the interpretation of the relevant tax regulations in assessing transfer pricing positions.

Our taxation expertise

Our tax and transfer pricing specialists used their knowledge and experience of the application of legislation by the relevant tax authorities to assist us in challenging the Group's assessment of uncertain tax positions. This included assessing:

- the implications of results of historical tax audits, and outcomes from comparable situations for the positions taken by the Group;
- correspondence with tax authorities;
- transfer pricing documentation and methodology for compliance with tax law;
- third party tax advice received by the Group; and
- changes in tax legislation.

Assessing disclosures

We assessed the appropriateness of the Group's tax disclosures in notes 1 and 9 of the financial statements against the accounting requirements.

Communications with Rio Tinto's Audit Committee

We discussed with and reported to the Audit Committee:

- How we considered specific external advice obtained by the Group in respect of these disputes when forming our conclusions regarding the appropriateness of provisioning.
- How we considered the merits of the technical tax positions adopted by the Group, having regard to relevant tax legislation and case law, in determining the Group's tax provisions.
- The Group's history of resolving disputes with tax authorities.

Based on the risk identified and our procedures performed, we consider that the level of tax provisioning and related disclosures to be acceptable.

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3.4 Recoverability of Rio Tinto plc's investments in its subsidiaries (KPMG UK Only)

Financial Statement Elements	
Carrying value of Rio Tinto plc's investments in its subsidiaries	FY20 $36,320m

Our results

FY20: Acceptable

Description of the Key Audit Matter

In respect of KPMG UK's audit of the parent company, Rio Tinto plc, the sole key audit matter relates to the recoverability of its investment in its subsidiaries of the group.

Their recoverability is not at a high risk of significant misstatement or subject to significant judgment. However, due to the value of these investments in the context of the parent company financial statements, this is the area that had the greatest effect overall on our parent company audit.

Our response to the risk

We performed the tests below rather than seeking to rely on any of the company's controls because the nature of the balance is such that we would expect to obtain audit evidence primarily through the detailed procedures described.

Our procedures to address the risk included:

Tests of detail

Comparing the carrying amount of its investments with the relevant subsidiaries' draft balance sheet to identify whether their net assets, being an approximation of their minimum recoverable amount, were in excess of their carrying amount and assessing whether those subsidiaries have historically been profit-making.

Communications with Rio Tinto's Audit Committee

We reported to the Audit Committee that based on the risk identified and our procedures performed, we found the company's conclusion that there is no impairment of its investments in subsidiaries to be acceptable.

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4. GOING CONCERN, VIABILITY AND PRINCIPAL RISKS AND UNCERTAINTIES (KPMG UK ONLY)

The Directors have prepared the financial statements on the going concern basis as they do not intend to liquidate the Company or the Group or to cease their operations, and they have concluded that the Company's and the Group's financial position means that this is realistic. They have also concluded that there are no material uncertainties that could have cast significant doubt over their ability to continue as a going concern for at least a year from the date of approval of the financial statements ("the going concern period").

Going Concern

We used our knowledge of the Group, its industry, and the general economic environment to identify the inherent risks to its business model and analysed how those risks might affect the Group's financial resources or ability to continue operations over the going concern period. The risks we consider as most relevant to the level of the Group's financial resources over this period relate to levels of demand and commodity pricing.

We critically assessed the assumptions in the Directors' downside scenarios relevant to liquidity and covenant metrics, in particular in relation to revenue growth by comparing to historical trends and assessing whether downside scenarios applied take into account reasonably possible downsides. The extent of our work was influenced by the level of liquidity.

We assessed the completeness of the going concern disclosure.

Our conclusions

We consider that the Directors' use of the going concern basis of accounting in the preparation of the Group's and Company's financial statements is appropriate.

We have not identified, and concur with the Directors' assessment that there is not, a material uncertainty related to events or conditions that, individually or collectively, may cast significant doubt on the Group's or Company's ability to continue as a going concern for the going concern period.

We have nothing material to add or draw attention to in relation to the Directors' statement in Note 1 to the financial statements on the use of the going concern basis of accounting with no material uncertainties that may cast significant doubt over the Group and Company's use of that basis for the going concern period, and we found the going concern disclosure in Note 1 to be acceptable.

The related statement under the UK Listing Rules set out on page 190 is materially consistent with the financial statements and our audit knowledge.

However, as we cannot predict all future events or conditions and as subsequent events may result in outcomes that are inconsistent with judgments that were reasonable at the time they were made, the above conclusions are not a guarantee that the Group or the Company will continue in operation.

Disclosures of emerging and principal risks and longer-term viability

Our responsibility

We are required to perform procedures to identify whether there is a material inconsistency between the Directors' disclosures in respect of emerging and principal risks and the viability statement, and the financial statements and our audit knowledge.

Our reporting

Based on the knowledge we acquired during our financial statement audit, we have nothing further to add or draw attention to in relation to:

- the Directors' confirmation within the viability statement that they have carried out a robust assessment of the emerging and principal risks facing the Group, including those that would threaten its business model, future performance, solvency and liquidity;
- the Principal Risks and Uncertainties disclosures describing these risks and explaining how they are being managed and mitigated; and
- the Directors' explanation in the viability statement of how they have assessed the prospects of the Group, over what period they have done so and why they considered that period to be appropriate, and their statement as to whether they have a reasonable expectation that the Group will be able to continue in operation and meet its liabilities as they fall due over the period of their assessment, including any related disclosures drawing attention to any necessary qualifications or assumptions.

Under the UK Listing Rules we are also required to review the Viability Statement. Based on the above procedures, we have concluded that the above disclosures are materially consistent with the financial statements and our audit knowledge.

Our work is limited to assessing these matters in the context of only the knowledge acquired during our financial statement audit. As we cannot predict all future events or conditions and as subsequent events may result in outcomes that are inconsistent with judgments that were reasonable at the time they were made, the absence of anything to report on these statements is not a guarantee as to the Group's and Company's longer-term viability.

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5. KPMG UK'S REPORTING ON OUR ABILITY TO DETECT IRREGULARITIES, AND OUR RESPONSE

Fraud – Identifying and responding to risks of material misstatement due to fraud

Fraud risk assessment	To identify risks of material misstatement due to fraud ("fraud risks") we assessed events or conditions that could indicate an incentive or pressure by management to commit, or provide an opportunity to commit, fraud. Our risk assessment procedures included: ▪ Enquiries of management, internal audit and the Audit Committee, including obtaining and reviewing supporting documentation, concerning the Group's policies and procedures relating to: - detecting and responding to the risks of fraud; and - internal controls established to mitigate risks related to fraud; ▪ Enquiries of management, internal audit and the Audit Committee as to whether they had knowledge of any actual, suspected or alleged fraud; ▪ Reading Board and Audit Committee minutes; ▪ Considering remuneration incentive schemes and performance targets for management and Directors, including the flexed and unflexed underlying earnings and STIP free cash flow target ranges for executive remuneration; and ▪ Discussions among the engagement team regarding how and where fraud might occur in the financial statements and any potential indicators of fraud. The engagement team includes audit partners and staff who have extensive experience of working with companies in the mining sector, and this experience was relevant to the discussion about where fraud risks may arise. The discussions also involved our own forensic specialists to assist us in identifying fraud risks based on discussions of the circumstances of the Group, who advised the engagement team of fraud schemes that had arisen in similar sectors and industries and participated in the initial fraud risk assessment discussions.
Risk communications	We communicated identified fraud risks throughout the audit team and remained alert to any indications of fraud throughout the audit. This included communication from the group to component audit teams of relevant fraud risks identified at the group level and requests to component audit teams to report to the group audit team any instances of fraud that could give rise to a material misstatement of the Group financial statements.
Fraud risks	As required by auditing standards we addressed the risk of management override of controls and the risk of fraudulent revenue recognition. In particular we considered the risk that revenue is recorded in the wrong period and the risk that Group and component management may be in a position to make inappropriate accounting entries, and the risk of bias in accounting estimates and judgments
Procedures to address fraud risks	Our audit procedures included evaluating the design and implementation, and operating effectiveness of internal controls relevant to mitigate these risks. We also performed substantive audit procedures including: ▪ Comparing journal entries to supporting documentation for a selection based on risk including, for example, those posted by senior finance management, those posted to unusual accounts or those containing unusual journal descriptions; ▪ Assessing significant accounting estimates for bias; ▪ Obtaining third party confirmations for all material cash balances; and ▪ Assessing when revenue was recognised, particularly focusing on revenue recognised in the days before and after the year end date, and whether it was recognised in the correct year. Work on the fraud risks was performed by a combination of component auditors and the group audit team.

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Laws and regulations – Identifying and responding to risks of material misstatement due to non-compliance with laws and regulations

Risk assessment	We identified areas of laws and regulations that could reasonably be expected to have a material effect on the financial statements. For this risk assessment, matters considered included the following: ▪ our general commercial and mining sector experience; ▪ through discussion with the Directors and other management (as required by auditing standards); ▪ from inspection of the Group's regulatory and legal correspondence; and ▪ discussions with the Directors and other management about the policies and procedures regarding compliance with laws and regulations. As the Group operates in a regulated environment, our assessment of risks of material misstatement also involved gaining an understanding of control environment including the Group's higher-level procedures for complying with regulatory requirements. Our work included understanding the facts and circumstances associated with the destruction of rockshelters at Juukan Gorge and the Group's assessment of its compliance with relevant laws and regulations in relation to this matter.
Risk communication	Our communication of identified laws and regulations risks was made throughout our team and we remained alert to any indications of non-compliance throughout the audit. This included communication from the group to all component audit teams of relevant laws and regulations identified at group level, and a request for component auditors to report to the group team any instances of non-compliance with laws and regulations that could give rise to a material misstatement of the Group financial statements.
Direct laws context and link to audit	The potential effect of these laws and regulations on the financial statements varies considerably. Firstly, the Group is subject to laws and regulations that directly affect the financial statements including: ▪ financial reporting legislation (including related companies' legislation) ▪ distributable profits legislation ▪ taxation legislation (direct and indirect) ▪ pensions legislation We assessed the extent of compliance with these laws and regulations as part of our procedures on the related financial statement items.
Most significant indirect law/ regulation areas	Secondly, the Group is subject to many other laws and regulations where the consequences of non-compliance could have a material effect on amounts or disclosures in the financial statements, for instance through the imposition of fines or litigation or harm to the Group's license to operate. We identified the following areas as those most likely to have such an effect: ▪ anti-bribery fraud and corruption ▪ health and safety legislation ▪ employment and social security legislation ▪ environmental protection legislation ▪ competition legislation Auditing standards limit the required audit procedures to identify non-compliance with these laws and regulations to enquiry of the Directors and other management and inspection of regulatory and legal correspondence, if any. Therefore, if a breach of law or regulations is not disclosed to us or evident from relevant correspondence, our audit will not detect that breach. For the contingent liabilities disclosed in Note 30 we assessed disclosures against our understanding from legal confirmations received from external counsel. For the uncertain tax positions referred to in Note 1 we performed procedures as detailed in our key audit matter (page 318).

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Context of the ability of the audit to detect fraud or breaches of law or regulation

Owing to the inherent limitations of an audit, there is an unavoidable risk that we may not have detected some material misstatements in the financial statements, even though we have properly planned and performed our audit in accordance with auditing standards. For example, the further removed non-compliance with laws and regulations is from the events and transactions reflected in the financial statements, the less likely the inherently limited procedures required by auditing standards would identify it.

In addition, as with any audit, there remained a higher risk of non-detection of fraud, as these may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal controls. Our audit procedures are designed to detect material misstatement. We are not responsible for preventing non-compliance or fraud and cannot be expected to detect non-compliance with all laws and regulations.

6. OUR DETERMINATION OF MATERIALITY

The scope of our audit was influenced by our application of materiality. We set quantitative thresholds and overlay qualitative considerations to help us determine the scope of our audit and the nature, timing and extent of our procedures, and in evaluating the effect of misstatements, both individually and in the aggregate, on the financial statements as a whole.

$550m **Materiality for the financial statements as a whole**	*What we mean by materiality* This is the amount representing the total magnitude of misstatements that we expect to influence the economic decisions of the primary users of these financial statements. *Basis for determining materiality and judgments applied* Our assessment of overall group materiality was $550m. This was derived from the level of profit before tax for continuing operations, excluding items which are outside of the normal course of business. Profit before tax excluding certain identified items, removes the effects of items which could significantly distort results in any one particular year. Furthermore, analyst forecasts predominately feature profit before tax, excluding identified items, as the basis for earnings. Analyst consensus data supports our judgment that profit before tax, excluding identified items, is a key indicator of performance from a reasonable investor perspective. The identified items excluded in FY20 were: ▪ net pre-tax impairments ($1,243m charge), Materiality of $550m was determined by applying a percentage to the calculated adjusted profit before tax ($16,634 million). When using a profit-related measure to determine overall materiality, KPMG's approach is to ordinarily apply a percentage between 3 – 5% to the pre-tax measure. In setting overall materiality, we applied a rate of 3.3%, which is at the low end of the allowable percentage range recognising that this was our first audit of the Group since appointment in May 2020. Materiality for the parent company financial statements as a whole was set at $340 million, determined with reference to a benchmark of the parent company's total assets of which it represents 0.8%.
$358m **Performance materiality**	*What we mean* Our procedures on individual account balances and disclosures were performed to performance materiality, to reduce to an acceptable level the risk that individually immaterial misstatements in individual account balances might add up to a material amount across the financial statements as a whole. *Basis for determining performance materiality and judgments applied* We have considered performance materiality at a level of 65% of materiality for Rio Tinto Group's financial statements as a whole, and for the Parent Company financial statements to be appropriate, having taken account of: ▪ The level of audit differences (adjusted and unadjusted) identified during previous audits by PwC; and ▪ Our view of the strength and robustness of the control environment, including the tone at the top and culture of Rio Tinto's organisation as well as control deficiencies identified in previous audits. Parent Company (Rio Tinto Plc) performance materiality is set at $221 million.
$25m **Audit misstatement posting threshold**	*What we mean* This is the amount below which identified misstatements are clearly trivial from a quantitative point of view. We may become aware of misstatements below this threshold which could alter the nature, timing and extent of our audit procedures, for example if we identify smaller misstatements which are indicators of fraud. This is also the amount above which all misstatements identified are communicated to Rio Tinto's Audit Committee. *Basis for determining the audit misstatement reporting threshold and judgments applied* We set our audit misstatement posting at 5% of our materiality, rounded down to $25m. We will also report to the Audit Committee any items that warrant reporting on qualitative grounds.

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Group materiality of $550m compares to the main Financial Statement captions amounts as follows:

	Total Revenue 2020	Total Assets 2020	Profit Before Taxation 2020
Financial Statement Caption	$44,611m	$97,390m	$15,391m
Group Materiality as % of caption	1.2%	0.6%	3.6%

7. THE SCOPE OF OUR AUDIT

Group Scope

What we mean

How the Group audit team determined the procedures to be performed across the Group by component audit teams.

Top-down, we performed our risk assessment and planning to determine the Group's components that required involvement from component auditors around the world. We have scoped:

- Two components, the Pilbara and Oyu Tolgoi as individually financially significant components which were subjected to full scope audits by component auditors;
- Twelve further components subjected to full scope audits by component auditors;
- Eight components subjected to audit of account balances associated with significant or elevated risks on either provision for close-down, restoration and environmental obligations or asset valuations; and
- Fifteen futher components subjected to audit of account balances to ensure sufficient audit coverage.

Scope	Number of components	Range of materiality applied
Full scope audit	14	$32m – $250m
Audit of account balance	23	$32m – $125m

We have also performed audit procedures centrally across the Group, beyond the component scope set out above, in the following areas:

- Testing of IT systems and configurations;
- Consolidation of the financial information;
- Journal entry analytics, to identify journal entries with higher risk such as those posted by Group management into component books, and manual entries into accounts where these are not expected (e.g. revenue);
- Uncertain tax positions; and
- Pensions.

In addition, we have performed group level analysis on the remaining components to determine whether further risks of material misstatement exist in those components.

Work on the key audit matters (detailed in section 3) was performed by a combination of component auditors and the group audit team.

Group audit team oversight

What we mean

The extent of the Group audit team's involvement in component audits.

As part of determining the scope and preparing our audit plan and strategy, the Group audit team held a global planning conference in London to discuss key audit risks and obtain input from component teams.

The Group team instructed component auditors as to the significant areas to be covered, including the relevant risks detailed above and the information to be reported back. The Group team approved the component materialities, which ranged from $32m to $250m, having regard to the mix of size and risk profile of the components.

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	2020	2019 (Planning)
Sites visited	Pilbara	Oyu Tolgoi (Mongolia)
	Oyu Tolgoi (Virtual)	Montreal (Northern Hemisphere Hub)
	Perth (Southern Hemisphere Hub)	Perth (Southern Hemisphere Hub)
		Delhi (Group Services)
		Brisbane (Controls and IT)
		Richards Bay Minerals (South Africa)
		Singapore commercial centre

The Group audit team shadowed PwC during its 2019 audit and during this time visited 7 component sites as part of planning the 2020 audit. As a result of the coronavirus pandemic, site visits in 2020 were limited to the Pilbara, Perth and a virtual visit to Oyu Tolgoi. The Group team met with the local audit teams and with local Rio Tinto management to understand the performance of these business and the risks faced.

Aside from the site visits, frequent video conference calls were held throughout the audit with the component auditors. The Group audit team inspected the component team's key work papers related to the significant risks and assessed the appropriateness of conclusions and the consistency between reported findings and work performed. At these meetings, the findings reported to the Group team were discussed in more detail, and any further work required by the Group team was then performed by the component auditor

8. KPMG AUSTRALIA'S AUDIT OF THE DIRECTORS' REMUNERATION REPORT

Our responsibilities	KPMG Australia is required to express an opinion on the Remuneration Report, included in pages 159 to 185 of the Annual Report, based on its audit conducted in accordance with Australian Auditing Standards.
Directors' responsibilities	The Directors of Rio Tinto Limited are responsible for the preparation and presentation of the Remuneration Report in accordance with Section 300A of the Corporations Act 2001.
Opinion	In our opinion, the Remuneration Report of Rio Tinto Limited for the year ended 31 December 2020 complies with Section 300A of the Australian Corporations Act 2001.

9. OTHER INFORMATION IN THE ANNUAL REPORT

The Directors are responsible for the other information presented in the Annual Report together with the financial statements. Other Information is financial and non-financial information in Rio Tinto's annual reporting which is provided in addition to the consolidated financial statements and the Auditor's Report. Our opinion on the financial statements does not cover the other information and, accordingly, we do not express an audit opinion or, except as explicitly stated below, any form of assurance conclusion thereon.

All other information

Our responsibility	*Our results*
Our responsibility is to read the other information and, in doing so, consider whether, based on our financial statements audit work, the information is materially misstated or inconsistent with the financial statements or our audit knowledge and report such misstatements or inconsistencies.	Based solely on that work we have not identified material misstatements or inconsistencies in the other information.

Independent auditors' reports

of KPMG LLP to the members of Rio Tinto plc

and of KPMG to the members of Rio Tinto Limited

Strategic report and directors' report (KPMG UK only)

Our responsibility	*Our reporting*
Based solely on our work on the other information described above we are required to report to you as follows:	
▪ we have not identified material misstatements in the strategic report and the Directors' report;	We have not identified material misstatements in the strategic report and the Directors' report.
▪ in our opinion the information given in those reports for FY20 is consistent with the financial statements; and	In our opinion the information given in those reports for the year is consistent with the financial statements.
▪ in our opinion those reports have been prepared in accordance with the Companies Act 2006.	In our opinion those reports have been prepared in accordance with the Companies Act 2006.

Directors' Remuneration Report

Our responsibility	*Our reporting*
KPMG UK is required to form an opinion as to whether the part of the Directors' Remuneration Report to be audited has been properly prepared in accordance with the Companies Act 2006.	In our opinion the part of the Directors' Remuneration Report to be audited has been properly prepared in accordance with the Companies Act 2006.

Corporate governance disclosures (KPMG UK ONLY)

Our responsibility	*Our reporting*
We are required to perform procedures to identify whether there is a material inconsistency between the financial statements and our audit knowledge, and: ▪ the Directors' statement that they consider that the annual report and financial statements taken as a whole is fair, balanced and understandable, and provides the information necessary for shareholders to assess the Group's position and performance, business model and strategy; ▪ the section of the annual report describing the work of the Audit Committee, including the significant issues that the Audit Committee considered in relation to the financial statements, and how these issues were addressed; and ▪ the section of the annual report that describes the review of the effectiveness of the Group's risk management and internal control systems.	Based on those procedures, we have concluded that each of these disclosures is materially consistent with the financial statements and our audit knowledge.
We are also required to review the part of Corporate Governance Statement relating to the Group's compliance with the provisions of the UK Corporate Governance Code specified by the Listing Rules for our review, and to report if a corporate governance statement has not been prepared by the company.	We have nothing to report in this regard.

Independent auditors' reports

of KPMG LLP to the members of Rio Tinto plc

and of KPMG to the members of Rio Tinto Limited

Other matters on which we are required to report by exception (KPMG UK ONLY)

Our responsibility

- Under the Companies Act 2006, we are required to report to you if, in our opinion:
- adequate accounting records have not been kept by the parent Company, or returns adequate for our audit have not been received from branches not visited by us; or
- the parent Company financial statements and the part of the Directors' Remuneration Report to be audited are not in agreement with the accounting records and returns; or
- certain disclosures of Directors' remuneration specified by law are not made; or
- we have not received all the information and explanations we require for our audit.

Our reporting

We have nothing to report in these regards.

10. RESPECTIVE RESPONSIBILITIES

Directors' responsibilities for the financial statements

As explained more fully in their statement set out on page 99, the Directors are responsible for: the preparation of the financial statements, including being satisfied that they give a true and fair view in accordance with the relevant financial reporting frameworks; implementing such internal control as they determine is necessary to enable the preparation of financial statements that give a true and fair view and are free from material misstatement, whether due to fraud or error; assessing the Group, Rio Tinto plc's and Rio Tinto Limited's ability to continue as a going concern and whether the use of the going concern basis of accounting is appropriate, disclosing, as applicable, matters related to going concern; and using the going concern basis of accounting unless they either intend to liquidate the Group, Rio Tinto plc and Rio Tinto Limited or to cease operations, or have no realistic alternative but to do so.

Auditors' responsibilities for the audit of the financial statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or other irregularities, or error, and to issue our opinions in an auditor's report. Reasonable assurance is a high level of assurance but does not guarantee that an audit conducted in accordance with ISAs (UK) and ASAs will always detect a material misstatement when it exists. Misstatements can arise from fraud, other irregularities or error and are considered material if, individually or in aggregate, they could reasonably be expected to influence the economic decisions of the primary users taken on the basis of the financial statements.

A fuller description of KPMG UK's responsibilities is provided on the FRC's website at www.frc.org.uk/auditorsresponsibilities. A further description of KPMG Australia's responsibilities for the audit of the Financial Statements is located at the Auditing and Assurance Standards Board website at: https://www.auasb.gov.au/admin/file/content102/c3/ar1_2020.pdf. This description forms part of our Australian auditor's report.

11. THE PURPOSE OF OUR AUDIT WORK AND TO WHOM WE OWE OUR RESPONSIBILITIES

KPMG UK's report is made solely to Rio Tinto Plc's members, as a body, in accordance with Chapter 3 of Part 16 of the Companies Act 2006 and the terms of our engagement by the Company. KPMG Australia's report is made solely to Rio Tinto Limited's members, as a body, in accordance with the Australian Corporations Act 2001. Our audit work has been undertaken so that we might state to the members of each company those matters we are required to state to them in an auditor's report, and the further matters we are required to state to them in accordance with the terms agreed with the company, and for no other purpose. Accordingly, each of KPMG UK and KPMG Australia makes the following statement: to the fullest extent permitted by law, we do not accept or assume responsibility to anyone other than the Company and the Company's members, as a body, for our audit work, for this report, or for the opinions we have formed.

Stephen Oxley (Senior Statutory Auditor)

for and on behalf of KPMG LLP, Statutory Auditor
Chartered Accountants

London, United Kingdom

22 February 2021

Trevor Hart

Partner
KPMG

Perth, Australia

22 February 2021

Lead Auditor's Independence Declaration under Section 307C of the Australian Corporations Act 2001

To the Directors of Rio Tinto Limited

I declare that, to the best of my knowledge and belief, in relation to the audit of Rio Tinto Limited for the year ended 31 December 2020 there have been:

(a) no contraventions of the auditor independence requirements as set out in the Australian Corporations Act 2001 in relation to the audit; and

(b) no contraventions of any applicable code of professional conduct in relation to the audit.

This declaration is in respect of Rio Tinto Limited and the entities it controlled during the period.

KPMG

Trevor Hart
Partner
Perth
22 February 2021

Liability limited by a scheme approved under Professional Standards Legislation

Alternative Performance Measures

The Group presents certain alternative performance measures ("APMs") which are reconciled to directly comparable IFRS financial measures below. These APMs are used by management to assess the performance of the business and provide additional information which investors may find useful. APMs are presented in order to give further insight into the underlying business performance of the Group's operations.

APMs are not consistently defined and calculated by all companies, including those in the Group's industry. Accordingly, these measures used by the Group may not be comparable with similarly titled measures and disclosures made by other companies. Consequently, these APMs should not be regarded as a substitute for the IFRS measures and should be considered supplementary to those measures.

The following tables present the Group's key financial measures not defined according to IFRS and a reconciliation between those APMs and their nearest respective IFRS measure.

APMs derived from the income statement

The following income statement measures are used by the Group to provide greater understanding of the underlying business performance of its operations and to enhance comparability of reporting periods. They indicate the underlying commercial and operating performance of our assets including revenue generation, productivity and cost management.

Gross product sales

Gross product sales includes the sales revenue of equity accounted units on a proportionately consolidated basis (after adjusting for sales to subsidiaries) in addition to consolidated sales. Consolidated sales revenue includes subsidiary sales to equity accounted units which are not included in gross product sales.

Gross product sales measures revenue on a basis that is comparable to our Underlying EBITDA metric.

	2020 US$m	2019 US$m	2018 US$m
Consolidated sales revenue	**44,611**	43,165	40,522
Share of equity accounted unit sales and inter-subsidiary/equity accounted unit sales	**2,407**	2,202	2,313
Gross product sales[a]	**47,018**	45,367	42,835

(a) Gross product sales was previously referred to as Gross sales revenue in the 2019 Annual Report.

Underlying EBITDA

Underlying EBITDA represents earnings attributable to owners of Rio Tinto before tax, net finance items, depreciation and amortisation excluding the EBITDA impact of the same items that are excluded in arriving at underlying earnings (as defined on page 331).

	2020 US$m	2019 US$m	2018 US$m
Profit after tax	**10,400**	6,972	13,925
Less (profits)/losses attributable to non-controlling interests	**(631)**	1,038	(287)
Profit after tax attributable to owners of Rio Tinto (net earnings)	**9,769**	8,010	13,638
Depreciation and amortisation in subsidiaries excluding capitalised depreciation	**4,074**	4,272	3,909
Depreciation and amortisation in equity accounted units	**576**	653	650
Finance items in subsidiaries	**1,751**	648	33
Taxation in subsidiaries	**4,991**	4,147	4,242
Taxation and finance items in equity accounted units	**443**	296	372
Add back profits/(losses) attributable to non-controlling interests	**631**	(1,038)	287
Impairment charges	**1,272**	3,487	132
(Gains)/losses on embedded commodity derivatives not qualifying for hedge accounting (including exchange)	**(6)**	260	(279)
Net losses/(gains) on consolidation and disposal of interests in businesses	**—**	291	(4,622)
Change in closure estimates (non-operating and fully impaired sites)	**401**	—	376
Gain on sale of wharf and land in Kitimat, Canada	**—**	—	(602)
Change in other exclusions	**—**	171	—
Underlying EBITDA	**23,902**	21,197	18,136

Alternative Performance Measures

Underlying EBITDA margin

Underlying EBITDA margin is defined as Group underlying EBITDA divided by gross product sales.

	2020 US$m	2019 US$m	2018 US$m
Underlying EBITDA	**23,902**	21,197	18,136
Gross product sales	**47,018**	45,367	42,835
Underlying EBITDA margin	**51 %**	47 %	42 %

Pilbara underlying FOB EBITDA margin

The Pilbara underlying free on board (FOB) EBITDA margin is defined as Pilbara underlying EBITDA divided by Pilbara revenues, excluding freight revenue.

	2020 US$m	2019 US$m	2018 US$m
Pilbara			
Underlying EBITDA	**18,896**	15,936	11,267
Pilbara gross product sales	**27,027**	23,681	18,359
Freight revenue	**1,487**	1,671	1,688
Gross product sales	**25,540**	22,010	16,671
Pilbara underlying FOB EBITDA margin	**74 %**	72 %	68 %

Underlying EBITDA margin from Aluminium integrated operations

Underlying EBITDA margin from integrated operations is defined as underlying EBITDA divided by gross product sales.

	2020 US$m	2019 US$m	2018 US$m
Aluminium			
Underlying EBITDA - integrated operations	**2,227**	2,375	3,134
Gross product sales - integrated operations	**8,458**	9,275	10,712
Underlying EBITDA margin from integrated operations	**26 %**	26 %	29 %

Underlying EBITDA margin (product group operations)

Underlying EBITDA margin (product group operations) is defined as underlying EBITDA divided by gross product sales.

	2020 US$m	2019 US$m	2018 US$m
Copper & Diamonds			
Underlying EBITDA - product group operations	**2,523**	2,385	3,043
Gross product sales - product group operations	**5,362**	5,800	6,468
Underlying EBITDA margin - product group operations	**47 %**	41 %	47 %

	2020 US$m	2019 US$m	2018 US$m
Energy & Minerals			
Underlying EBITDA - product group operations	**1,756**	1,870	2,204
Gross product sales - product group operations	**4,962**	5,095	5,391
Underlying EBITDA margin - product group operations	**35 %**	37 %	41 %

Underlying earnings

Underlying earnings represent net earnings attributable to the owners of Rio Tinto, adjusted to exclude items which do not reflect the underlying performance of the Group's operations.

Exclusions from underlying earnings are those gains and losses, that individually, or in aggregate with similar items, are of a nature and size to require exclusion in order to provide additional insight into underlying business performance.

The following items are excluded from net earnings in arriving at underlying earnings in each period irrespective of the magnitude:

- Net gains/(losses) on disposal and consolidation of interests in businesses.
- Impairment charges and reversals.
- Profit/(loss) after tax from discontinued operations.
- Certain exchange and derivative gains and losses (as defined in note 2).

The reconciliation of underlying earnings to net earnings can be found in note 2.

Basic underlying earnings per share

Basic underlying earnings per share is calculated as underlying earnings divided by the weighted average number of shares outstanding during the year.

On a per share basis, this allows the comparability of underlying financial performance adjusted to exclude items which do not reflect the underlying performance of the Group's operations.

	2020 (cents)	2019 (cents)
Basic earnings per ordinary share	**604.0**	491.4
Items excluded from underlying earnings per share	**165.6**	144.9
Basic underlying earnings per ordinary share	**769.6**	636.3

Alternative Performance Measures

APMs derived from cash flow statement

Capital expenditure

Capital expenditure comprises sustaining and development expenditure on property, plant and equipment, and on intangible assets. This is equivalent to "Purchases of property, plant and equipment and intangible assets" in the cash flow statement, hence, presented gross, before taking into account any cash received from disposals of property, plant and equipment and intangible assets.

This measure is used to support management's objective of effective and efficient capital allocation as we need to invest in existing assets in order to maintain and improve productive capacity, and in new assets to grow the business.

Free cash flow

Free cash flow is defined as net cash generated from operating activities minus purchases of property, plant and equipment and intangibles and payments of lease principal, plus proceeds from the sale of property, plant and equipment and intangible assets.

This measures the net cash returned by the business after the expenditure of sustaining and development capital. This cash can be used for shareholder returns, reducing debt and other investing/financing activities.

	2020 US$m	2019 US$m	2018 US$m
Net cash generated from operating activities	**15,875**	14,912	11,821
Less: Purchase of property, plant and equipment and intangible assets	**(6,189)**	(5,488)	(5,430)
Less: Lease principal payments	**(324)**	(315)	—
Add: Sales of property, plant and equipment and intangible assets	**45**	49	586
Free cash flow	**9,407**	9,158	6,977

APMs derived from the balance sheet

Net debt

Net debt is total borrowings plus lease liabilities less cash and cash equivalents and other liquid investments, adjusted for derivatives related to net debt.

Net debt measures how we are managing our balance sheet and capital structure. Refer to Consolidated net debt note for the reconciliation on page 243.

Net gearing ratio

Net gearing ratio is defined as net debt divided by the sum of net debt and total equity at the end of each period. It demonstrates the degree to which the Group's operations are funded by debt versus equity.

	2020 US$m	2019 US$m
Net debt	**664**	3,651

Net debt	**664**	3,651
Total equity	**51,903**	45,242
Net debt plus total equity	**52,567**	48,893
Net gearing ratio	**1%**	7%

Operating assets

The Group's operating assets comprise our share of net assets before deducting net debt.

This measure shows the net value of assets and liabilities used to generate profits.

	2020 US$m	2019 US$m
Equity attributable to owners of Rio Tinto	**47,054**	40,532
Add: Net debt	**664**	3,651
Operating assets	**47,718**	44,183

Underlying return on capital employed

Underlying return on capital employed ("ROCE") is defined as underlying earnings excluding net interest divided by average capital employed (operating assets).

ROCE measures how efficiently we generate profits from investment in our portfolio of assets.

	2020 US$m	2019 US$m
Profit after tax attributable to owners of Rio Tinto (net earnings)	**9,769**	8,010
Items added back to derive underlying earnings (refer to page 226)	**2,679**	2,363
Underlying earnings	**12,448**	10,373
Add/(deduct):		
Finance income per the income statement	**(141)**	(300)
Finance costs per the income statement	**268**	554
Tax on finance cost	**(38)**	(145)
Non-controlling interest share of net finance costs	**(107)**	(25)
Net interest cost in equity accounted units (Rio Tinto share)	**32**	38
Adjusted net interest	**14**	122
Adjusted underlying earnings	**12,462**	10,495
Equity attributable to owners of Rio Tinto - beginning of the period	**40,532**	43,686
Net debt/(cash) - beginning of the period	**3,651**	(255)
Capital employed - beginning of the period	**44,183**	43,431
Equity attributable to owners of Rio Tinto - end of the period	**47,054**	40,532
Net debt - end of the period	**664**	3,651
Capital employed - end of the period	**47,718**	44,183
Average capital employed	**45,951**	43,807
Return on capital employed	**27 %**	24 %

Financial Summary 2011-2020

US$m	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Gross product sales[a]	65,298	55,597	54,575	50,041	36,784	35,336	41,867	42,835	45,367	**47,018**
Share of equity accounted units' sales revenue and items excluded from underlying earnings	(4,769)	(4,655)	(3,404)	(2,377)	(1,955)	(1,555)	(1,837)	(2,313)	(2,202)	**(2,407)**
Consolidated sales revenue	60,529	50,942	51,171	47,664	34,829	33,781	40,030	40,522	43,165	**44,611**
Underlying profit before interest and tax (PBIT)	23,662	13,467	16,039	13,851	7,310	8,053	13,363	13,208	15,979	**18,786**
Finance costs[b]	(759)	(616)	(794)	(967)	(1,076)	(1,360)	(1,090)	(680)	(638)	**(504)**
Exchange differences and derivatives[c]	2	695	(3,362)	(2,021)	(3,458)	622	(1,078)	923	(273)	**(1,247)**
Other exclusions from underlying earnings	(9,633)	(15,977)	(8,378)	(1,311)	(3,502)	(972)	1,621	4,716	(3,949)	**(1,644)**
Profit/(loss) before tax (PBT)	13,272	(2,431)	3,505	9,552	(726)	6,343	12,816	18,167	11,119	**15,391**
Tax on exclusions	135	2,896	2,642	423	567	(155)	(596)	(801)	391	**204**
Tax on underlying PBT	(6,607)	(3,485)	(5,068)	(3,476)	(1,560)	(1,412)	(3,369)	(3,441)	(4,538)	**(5,195)**
Loss after tax from discontinued operations	(10)	(7)	—	—	—	—	—	—	—	**—**
Attributable to non-controlling interests	(955)	(1)	2,586	28	853	(159)	(89)	(287)	1,038	**(631)**
Net earnings/(loss)[d]	5,835	(3,028)	3,665	6,527	(866)	4,617	8,762	13,638	8,010	**9,769**
Underlying EBITDA	28,640	19,245	21,509	19,665	12,621	13,510	18,580	18,136	21,197	**23,902**
Underlying earnings	15,572	9,269	10,217	9,305	4,540	5,100	8,627	8,808	10,373	**12,448**
Earnings/(loss) per share (basic) – continuing operations	303.9c	(163.4)c	198.4c	353.1c	(47.5)c	256.9c	490.4c	793.2c	491.4c	**604.0c**
Underlying earnings per share (basic) – continuing operations	809.7c	501.3c	553.1c	503.4c	248.8c	283.8c	482.8c	512.3c	636.3c	**769.6c**
Dividends per share: declared for year[e]										
Rio Tinto shareholders (US cents)	145.00c	167.00c	192.00c	215.00c	215.00c	170.00c	290.00c	307.00c	231.00c	**309.00c**
Rio Tinto plc (pence)	90.47p	106.77p	120.10p	134.88p	143.13p	134.36p	212.56p	232.78p	177.47p	**221.86p**
Rio Tinto Limited (Aus. cents)	134.01c	160.18c	213.14c	256.07c	296.80c	222.75c	366.25c	421.73c	349.74c	**397.48c**
Net assets										
Fixed assets[f]	91,529	90,580	81,554	80,669	70,226	68,104	70,735	64,351	64,902	**70,347**
Other assets less liabilities	1,632	8,478	8,224	4,596	4,037	4,128	2,495	2,498	2,314	**3,124**
Provisions (including deferred tax liabilities)	(25,935)	(22,126)	(18,221)	(18,176)	(16,352)	(16,915)	(18,270)	(17,281)	(18,323)	**(20,904)**
Net (debt)/cash	(8,342)	(19,192)	(18,055)	(12,495)	(13,783)	(9,587)	(3,845)	255	(3,651)	**(664)**
Non-controlling interests	(6,685)	(11,187)	(7,616)	(8,309)	(6,779)	(6,440)	(6,404)	(6,137)	(4,710)	**(4,849)**
Equity attributable to owners of Rio Tinto	52,199	46,553	45,886	46,285	37,349	39,290	44,711	43,686	40,532	**47,054**
Capital expenditure[g]	(12,573)	(17,615)	(13,001)	(8,162)	(4,685)	(3,012)	(4,482)	(5,430)	(5,488)	**(6,189)**
Acquisitions	(4,156)	(1,335)	4	—	(3)	—	—	(5)	—	**—**
Disposals	386	251	1,896	887	(38)	761	2,675	7,733	(80)	**10**
Net cash generated from operating activities[h]	20,235	9,430	15,078	14,286	9,383	8,465	13,884	11,821	14,912	**15,875**
Cash flows before financing activities[i]	3,245	(8,813)	4,132	7,783	4,783	6,361	11,511	13,142	9,411	**9,319**
Ratios										
Operating margin[j]	37%	25%	30%	28%	20%	23%	32%	31%	36%	**39%**
Net (debt)/cash to total capital[k]	-12%	-25%	-25%	-19%	-24%	-17%	-7%	1%	7%	**1%**
Underlying earnings: owners' equity[l]	28%	19%	22%	20%	11%	13%	21%	20%	25%	**28%**
Interest cover[m]	27	13	13	13	7	7	14	22	28	**39**

(a) Gross product sales includes 100% of subsidiaries' sales revenue and the Group's share of the sales revenue of equity accounted units (after adjusting for sales to subsidiaries).
(b) Finance costs include net interest and amortisation of discount. From 1 January 2019, it also included the impact of adopting IFRS 16 "Leases".
(c) Under IFRS, as defined in note 1, certain gains and losses on currency exchange and on revaluation of derivatives are included in the Group's net earnings/(loss). These items are excluded from underlying earnings.
(d) Underlying earnings is an additional measure of earnings, which is reported by Rio Tinto with its IFRS (as defined in note 1) results to provide greater understanding of the underlying business performance of its operations. It is defined in note 2 to the financial statements. Underlying profit before interest and tax (PBIT) is similar to underlying earnings except that it is stated before interest and tax.
(e) Dividends per share are the amounts declared in respect of each financial year. These usually include an interim dividend paid in the year, and a final dividend paid after the end of the year. The special dividend of 93 US cents per share paid out based on the 2020 results is not included above.
(f) Fixed assets include: property, plant and equipment, intangible assets, goodwill, and investments in, and long-term loans to, equity accounted units. From 1 January 2019, it also included the impact of adopting IFRS 16 "Leases".
(g) Capital expenditure is presented gross, before taking into account any disposals of property, plant and equipment or intangible assets.
(h) Net cash generated from operating activities represents the cash generated by the Group's consolidated operations, after payment of interest, taxes, and dividends to non-controlling interests in subsidiaries.
(i) Cash flow before financing activities is stated before deducting dividends payable to owners of Rio Tinto.
(j) Operating margin is the percentage of underlying PBIT, after excluding tax on equity accounted units, to gross product sales.
(k) Total capital comprises equity attributable to owners of Rio Tinto plus net debt and non-controlling interests.
(l) Underlying earnings: owners' equity represents underlying earnings expressed as a percentage of the mean of opening and closing equity attributable to owners of Rio Tinto.
(m) Interest cover represents the number of times interest payable less receivable (excluding the amortisation of discount but including capitalised interest) is covered by underlying operating profit, less amortisation of discount, plus dividends from equity accounted units. Underlying operating profit is similar to underlying earnings but is stated before tax, interest and share of profit after tax of equity accounted units.

Summary Financial Data in Australian Dollars, Sterling and US Dollars

2020 A$m	2019 A$m	2020 £m	2019 £m		2020 US$m	2019 US$m
68,061	64,810	**36,624**	35,443	Gross product sales	**47,018**	45,367
64,577	61,664	**34,749**	33,723	Consolidated sales revenue	**44,611**	43,165
22,279	15,884	**11,989**	8,687	Profit before tax from continuing operations	**15,391**	11,119
15,055	9,960	**8,101**	5,447	Profit for the year from continuing operations	**10,400**	6,972
14,141	11,443	**7,609**	6,258	Net earnings attributable to Rio Tinto shareholders	**9,769**	8,010
34,599	30,281	**18,618**	16,560	Underlying EBITDA	**23,902**	21,197
18,019	14,819	**9,696**	8,104	Underlying earnings[a]	**12,448**	10,373
874.3c	702.0c	**470.5p**	383.9p	Basic earnings per ordinary share[b]	**604.0p**	491.4p
1114.1c	909.1c	**599.5p**	497.1p	Basic underlying earnings per ordinary share[a][b]	**769.6p**	636.3p
				Dividends per share to Rio Tinto shareholders[c]		
566.21c	469.97c	**297.21p**	259.28p	- paid – ordinary dividend	**386.0c**	331.0c
—	427.20c	**—**	233.37p	- paid – special dividend	**—**	304.0c
397.48c	349.74c	**221.86p**	177.47p	- proposed – ordinary dividend	**309.0c**	231.0c
119.63c	**—**	**66.77p**	**—**	- proposed – special dividend	**93.0c**	**—**
13,490	13,444	**7,259**	7,352	Cash flow before financing activities	**9,319**	9,411
(864)	(5,216)	**(488)**	(2,787)	Net debt	**(664)**	(3,651)
61,252	57,903	**34,592**	30,940	Equity attributable to Rio Tinto shareholders	**47,054**	40,532

(a) Underlying earnings exclude impairments and other charges of US$2,679 million (2019: US$2,363 million), which are analysed on page 226.
(b) Basic earnings per ordinary share and basic underlying earnings per ordinary share do not recognise the dilution resulting from share options on issue.
(c) The Australian dollar and sterling amounts are based on the US dollar amounts, retranslated at average or closing rates as appropriate, except for the dividends which are the actual amounts.

The financial data above has been extracted from the financial information set out on pages 200-300.

Production, Reserves and Operations

An employee at our QMM operation in Madagascar, where we delivered one of the best safety performances across the Group. The wind turbine generates power at the Diavik diamond mine in the Northwest Territories, Canada.

Taking action

to fight climate change

$1 bn

for climate-related projects

Production, Reserves and Operations

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Metals and Minerals Production

	Rio Tinto % share[a]	2020 Production Total	2020 Production Rio Tinto share	2019 Production Total	2019 Production Rio Tinto share	2018 Production Total	2018 Production Rio Tinto share
ALUMINA ('000 tonnes)							
Jonquière (Vaudreuil) (Canada)[b]	100.0%	**1,424**	**1,424**	1,413	1,413	1,444	1,444
Jonquière (Vaudreuil) specialty plant (Canada)	100.0%	**94**	**94**	109	109	124	124
Queensland Alumina (Australia)	80.0%	**3,701**	**2,961**	3,454	2,763	3,697	2,958
São Luis (Alumar) (Brazil)	10.0%	**3,848**	**385**	3,679	368	3,509	351
Yarwun (Australia)	100.0%	**3,175**	**3,175**	3,091	3,091	3,103	3,103
Rio Tinto total			**8,039**		7,744		7,980
ALUMINIUM ('000 tonnes)							
Alma (Canada)	100.0%	**473**	**473**	472	472	465	465
Alouette (Sept-Îles) (Canada)	40.0%	**623**	**249**	602	241	584	234
Arvida (Canada)	100.0%	**169**	**169**	175	175	173	173
Arvida AP60 (Canada)	100.0%	**60**	**60**	60	60	52	52
Bécancour (Canada)	25.1%	**393**	**98**	77	19	136	34
Bell Bay (Australia)	100.0%	**192**	**192**	189	189	189	189
Boyne Island (Australia)	59.4%	**510**	**303**	499	296	497	295
Grande-Baie (Canada)	100.0%	**225**	**225**	233	233	233	233
ISAL (Reykjavik) (Iceland)	100.0%	**183**	**183**	184	184	212	212
Kitimat (Canada)	100.0%	**329**	**329**	385	385	436	436
Laterrière (Canada)	100.0%	**250**	**250**	257	257	257	257
Sohar (Oman)	20.0%	**397**	**79**	391	78	380	76
Tiwai Point (New Zealand)	79.4%	**333**	**265**	351	279	341	270
Tomago (Australia)	51.6%	**592**	**305**	588	303	592	305
Rio Tinto total			**3,180**		3,171		3,231
BAUXITE ('000 tonnes)							
Gove (Australia)	100.0%	**12,299**	**12,299**	12,201	12,201	12,540	12,540
Porto Trombetas (MRN) (Brazil)	12.0%	**11,629**	**1,395**	11,060	1,327	13,134	1,576
Sangaredi (Guinea)	23.0%[c]	**16,506**	**7,428**	13,701	6,165	13,039	5,868
Weipa (Australia)	100.0%	**35,009**	**35,009**	35,411	35,411	30,437	30,437
Rio Tinto total			**56,131**		55,105		50,421
BORATES ('000 tonnes)[d]							
Rio Tinto Borates – Boron (US)	100.0%	**480**	**480**	520	520	512	512
COPPER (mined) ('000 tonnes)							
Bingham Canyon (US)	100.0%	**140.0**	**140.0**	186.8	186.8	203.9	203.9
Escondida (Chile)	30.0%	**1,125.9**	**337.8**	1,138.6	341.6	1,167.9	350.4
Oyu Tolgoi (Mongolia)[e]	33.5%	**149.6**	**50.2**	146.3	49.1	159.1	53.3
Rio Tinto total			**527.9**		577.4		607.6
COPPER (refined) ('000 tonnes)							
Escondida (Chile)	30.0%	**233.9**	**70.2**	250.2	75.0	266.8	80.0
Rio Tinto Kennecott (US)	100.0%	**84.8**	**84.8**	184.6	184.6	194.7	194.7
Rio Tinto total			**155.0**		259.6		274.8
DIAMONDS ('000 carats)							
Argyle (Australia)	100.0%	**10,945**	**10,945**	12,999	12,999	14,069	14,069
Diavik (Canada)	60.0%	**6,218**	**3,731**	6,719	4,031	7,264	4,358
Rio Tinto total			**14,676**		17,030		18,427
GOLD (mined) ('000 ounces)							
Bingham Canyon (US)	100.0%	**171.2**	**171.2**	234.7	234.7	196.7	196.7
Escondida (Chile)	30.0%	**169.5**	**50.9**	246.7	74.0	265.6	79.7
Oyu Tolgoi (Mongolia)[e]	33.5%	**181.9**	**61.0**	241.8	81.1	285.4	95.7
Rio Tinto total			**283.0**		389.7		372.1
GOLD (refined) ('000 ounces)							
Rio Tinto Kennecott (US)	100.0%	**117.5**	**117.5**	218.7	218.7	198.0	198.0
IRON ORE ('000 tonnes)							
Hamersley mines (Australia)	[f]	**210,682**	**210,682**	209,392	209,392	220,612	220,612
Hamersley – Channar (Australia)[g]	100.0%	**9,175**	**6,139**	7,970	4,782	7,173	4,304
Hope Downs (Australia)	50.0%	**49,045**	**24,522**	48,264	24,132	45,368	22,684
Iron Ore Company of Canada (Canada)	58.7%	**17,715**	**10,402**	17,943	10,536	15,245	8,952
Robe River – Robe Valley (Australia)	53.0%	**30,295**	**16,056**	26,951	14,284	31,947	16,932
Robe River – West Angelas (Australia)	53.0%	**34,209**	**18,131**	34,086	18,066	32,672	17,316
Rio Tinto total			**285,932**		281,192		290,800
MOLYBDENUM ('000 tonnes)							
Bingham Canyon (US)	100%	**20.4**	**20.4**	11.2	11.2	5.8	5.8

See notes on page 340.

Metals and Minerals Production
continued

		2020 Production		2019 Production		2018 Production	
	Rio Tinto % share[a]	Total	Rio Tinto share	Total	Rio Tinto share	Total	Rio Tinto share
SALT ('000 tonnes)							
Dampier Salt (Australia)	68.4%	**7,111**	**4,861**	7,931	5,422	9,001	6,153
SILVER (mined) ('000 ounces)							
Bingham Canyon (US)	100.0%	**2,205**	**2,205**	2,815	2,815	2,520	2,520
Escondida (Chile)	30.0%	**6,196**	**1,859**	7,687	2,306	9,433	2,830
Oyu Tolgoi (Mongolia)[e]	33.5%	**876**	**293**	867	290	914	306
Rio Tinto total			**4,357**		5,412		5,656
SILVER (refined) ('000 ounces)							
Rio Tinto Kennecott (US)	100.0%	**1,363**	**1,363**	2,853	2,853	2,865	2,865
TITANIUM DIOXIDE SLAG ('000 tonnes)							
Rio Tinto Iron & Titanium							
(Canada/South Africa)[h]	100.0%	**1,120**	**1,120**	1,206	1,206	1,116	1,116
URANIUM ('000 lbs U_3O_8)							
Energy Resources of Australia (Australia)[i]	86.3%	**3,471**	**2,870**	3,860	2,640	4,407	3,014
Rössing (Namibia)[j]	–	–	–	3,080	2,114	5,465	3,750
Rio Tinto total			**2,870**		4,754		6,764

Production data notes:

Mine production figures for metals refer to the total quantity of metal produced in concentrates, leach liquor or doré bullion irrespective of whether these products are then refined onsite, except for the data for bauxite and iron ore which can represent production of marketable quantities of ore plus concentrates and pellets. Production figures are sometimes more precise than the rounded numbers shown, hence small differences may result from calculation of Rio Tinto share of production. Rio Tinto's interest in the Kestrel, Hail Creek, Dunkerque and Grasberg operations were sold in 2018. No data for these operations are included in the production table.

(a) Rio Tinto percentage share, shown above, is as at the end of 2020. The footnotes below include all ownership changes over the three years.

(b) Jonquière's (Vaudreuil's) production shows smelter grade alumina only and excludes hydrate produced and used for specialty alumina.

(c) Rio Tinto has a 22.95% shareholding in the Sangaredi mine but benefits from 45.0% of production.

(d) Borate quantities are expressed as B_2O_3.

(e) Rio Tinto owns a 33.52% indirect interest in Oyu Tolgoi through its 50.79% interest in Turquoise Hill Resources Ltd.

(f) Includes 100% of production from Paraburdoo, Mt Tom Price, Marandoo, Yandicoogina, Brockman, Nammuldi, Silvergrass and the Eastern Range mines. Whilst Rio Tinto owns 54% of the Eastern Range mine, under the terms of the joint venture agreement, Hamersley Iron manages the operation and is obliged to purchase all mine production from the joint venture and therefore all of the production is included in Rio Tinto's share of production.

(g) Rio Tinto's ownership interest in Channar mine increased from 60% to 100%, following conclusion of its joint venture with Sinosteel Corporation upon reaching planned 290 million tonnes production on 22 October 2020. Production is reported at 100% from this date onward. Historic data is unchanged.

(h) Quantities comprise 100% of Rio Tinto Fer et Titane and Rio Tinto's 74% share of Richards Bay Minerals' production. Ilmenite mined in Madagascar is being processed in Canada.

(i) ERA report drummed U_3O_8. In February 2020, our interest in Energy Resources of Australia (ERA) increased from 68.4% to 86.3% as a result of new ERA shares issued to Rio Tinto under the Entitlement Offer and Underwriting Agreement to raise funds for the rehabilitation of the Ranger Project Area. Production is reported including this change from 1 March 2020.

(j) Rössing report drummed U_3O_8. On 16 July 2019, Rio Tinto completed the sale of its entire interest in the Rössing uranium mine in Namibia to China National Uranium Corporation Limited.

Ore Reserves

Ore Reserves and Mineral Resources for Rio Tinto managed operations are reported in accordance with the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves, December 2012 (the JORC Code) as required by the Australian Securities Exchange (ASX). Codes or guidelines similar to JORC with only minor regional variations have been adopted in South Africa, Canada, the US, Chile, Peru, the Philippines, the UK, Ireland and Europe. Together these Codes represent current best practice for reporting Ore Reserves and Mineral Resources.

The JORC Code envisages the use of reasonable investment assumptions, including the use of projected long-term commodity prices, in calculating Ore Reserve estimates. However, for US reporting, the US Securities and Exchange Commission requires historical price data to be used. For this reason, some Ore Reserves reported to the SEC in the Form 20-F may differ from those reported below.

Ore Reserve and Mineral Resource information in the tables below is based on information compiled by Competent Persons (as defined by JORC), most of whom are full time employees of Rio Tinto or related companies. Each has had a minimum of five years' relevant estimation experience and is a member of a recognised professional body whose members are bound by a professional code of ethics. Each Competent Person consents to the inclusion in this report of information they have provided in the form and context in which it appears. Competent Persons responsible for the estimates are listed on pages 350-351, by operation, along with their professional affiliation, employer and accountability for Ore Reserves and/or Mineral Resources. Where operations are not managed by Rio Tinto, the Ore Reserves are published as received from the managing company. The Ore Reserve figures in the following tables are as of 31 December 2020. Summary data for year end 2019 are shown for comparison. Metric units are used throughout. The figures used to calculate Rio Tinto's share of Ore Reserves are often more precise than the rounded numbers shown in the tables, hence small differences might result if the calculations are repeated using the tabulated figures.

		Proved ore reserves at end 2020		Probable ore reserves at end 2020		Total ore reserves 2020 compared with 2019				Average mill recovery	Interest	Rio Tinto share
	Type of mine[a]	Tonnage	Grade	Tonnage	Grade	**2020** Tonnage	2019 Tonnage	**2020** Grade	2019 Grade	%	%	
Bauxite[b]		millions of tonnes	% Al_2O_3	millions of tonnes	% Al_2O_3	**millions of tonnes**	millions of tonnes	**% Al_2O_3**	% Al_2O_3			**Recoverable mineral millions of tonnes**
Reserves at operating mines												
Gove (Australia)[c]	O/P	77	50.4	3.3	49.7	**80**	131	**50.4**	49.3		100.0	**80**
Porto Trombetas (MRN) (Brazil)[d]	O/P	19	48.1	2.5	48.5	**21**	33	**48.2**	48.3		12.0	**3**
Sangaredi (Guinea)[e]	O/P	359	47.1	37	48.1	**396**	428	**47.2**	47.1		23.0	**91**
Weipa (Australia)[f]												
– Amrun[g]	O/P	211	54.1	833	53.9	**1,044**	1,253	**54.0**	53.1		100.0	**1,044**
– East Weipa and Andoom[h]	O/P	100	51.4			**100**	146	**51.4**	50.8		100.0	**100**
Total												**1,318**
Borates[i]		millions of tonnes		millions of tonnes		**millions of tonnes**	millions of tonnes					**Marketable product millions of tonnes**
Reserves at operating mines												
Rio Tinto Borates – Boron (US)	O/P	11		4		**15**	16				100.0	**15**
Reserves at development projects												
Jadar (Serbia)[j]	U/G			2		**2**	–				100.0	**2**
Copper		millions of tonnes	% Cu	millions of tonnes	% Cu	**millions of tonnes**	millions of tonnes	**% Cu**	% Cu			**Recoverable metal millions of tonnes**
Reserves at operating mines												
Bingham Canyon (US)[k]	O/P	365	0.47	187	0.39	**552**	612	**0.44**	0.43	87	100.0	**2.126**
Escondida (Chile)												
– sulphide	O/P	3,359	0.69	1,792	0.57	**5,151**	5,366	**0.65**	0.65	83	30.0	**8.320**
– sulphide leach	O/P	1,324	0.42	324	0.41	**1,648**	1,642	**0.42**	0.42	41	30.0	**0.856**
– oxide[l]	O/P	72	0.62	111	0.52	**183**	224	**0.56**	0.59	60	30.0	**0.182**
Oyu Tolgoi (Mongolia)												
– Oyut open pit	O/P	283	0.52	460	0.39	**743**	783	**0.44**	0.44	78	33.5	**0.860**
– Oyut stockpiles[m]		57	0.32			**57**	48	**0.32**	0.33	73	33.5	**0.045**
Total												**12.390**
Reserves at development projects												
Oyu Tolgoi (Mongolia)												
– Hugo Dummett North[n]	U/G			409	1.51	**409**	447	**1.51**	1.64	93	33.5	**1.920**
– Hugo Dummett North Extension[o]	U/G			39	1.56	**39**	32	**1.56**	1.64	93	29.5	**0.166**
Total												**2.086**

Ore Reserves
continued

	Type of mine[a]	Proved ore reserves at end 2020		Probable ore reserves at end 2020		Total ore reserves 2020 compared with 2019				Average mill recovery	Interest	Rio Tinto share
		Tonnage	Grade	Tonnage	Grade	**2020** Tonnage	2019 Tonnage	**2020** Grade	2019 Grade	%	%	
												Recoverable diamonds
Diamonds[b]		millions of tonnes	carats per tonne	millions of tonnes	carats per tonne	**millions of tonnes**	millions of tonnes	**carats per tonne**	carats per tonne			**millions of carats**
Reserves at operating mines												
Argyle (Australia)[p]	U/G					**–**	5.1	**–**	1.9		–	**–**
Diavik (Canada)[q]	O/P + U/G	5.6	2.2	3.4	2.1	**9**	11	**2.1**	2.4		60.0	**11.6**
Total												**11.6**
												Recoverable metal
Gold		millions of tonnes	grammes per tonne	millions of tonnes	grammes per tonne	**millions of tonnes**	millions of tonnes	**grammes per tonne**	grammes per tonne			**millions of ounces**
Reserves at operating mines												
Bingham Canyon (US)[t]	O/P	365	0.16	187	0.16	**552**	612	**0.16**	0.16	67	100.0	**1.940**
Oyu Tolgoi (Mongolia)												
– Oyut open pit	O/P	283	0.40	460	0.24	**743**	783	**0.30**	0.29	67	33.5	**1.620**
– Oyut stockpiles[m]		57	0.13			**57**	48	**0.13**	0.12	45	33.5	**0.035**
Total												**3.595**
Reserves at development projects												
Oyu Tolgoi (Mongolia)												
– Hugo Dummett North[r][n]	U/G			409	0.29	**409**	447	**0.29**	0.34	79	33.5	**1.012**
– Hugo Dummett North Extension[o]	U/G			39	0.54	**39**	32	**0.54**	0.57	81	29.5	**0.161**
Total												**1.174**
												Marketable product
Iron Ore[s][b]		millions of tonnes	% Fe	millions of tonnes	% Fe	**millions of tonnes**	millions of tonnes	**% Fe**	% Fe			**millions of tonnes**
Reserves at operating mines												
Hamersley Iron (Australia)[t]												
– Channar (Brockman ore)[u]	O/P	7	61.5	5	60.8	**12**	16	**61.2**	61.4		100.0	**7**
– Greater Brockman 2 Nammuldi (Brockman and Marra Mamba ore)	O/P	172	62.3	98	60.1	**269**	298	**61.5**	61.1		100.0	**269**
– Gudai-Darri (Brockman ore)[v]	O/P	286	62.2	275	61.3	**561**	516	**61.8**	61.7		100.0	**561**
– Brockman 4 (Brockman and Marra Mamba ore)[w]	O/P	211	62.3	69	60.6	**280**	345	**61.9**	61.9		100.0	**280**
– Marandoo (Marra Mamba ore)[x]	O/P	141	63.9	21	57.9	**162**	196	**63.1**	62.5		100.0	**162**
– Greater Tom Price (Brockman and Marra Mamba ore)	O/P	183	62.5	119	61.5	**302**	313	**62.1**	62.1		100.0	**302**
– Paraburdoo (Brockman ore)[y]	O/P	2	61.9	4	62.9	**6**	7	**62.6**	62.2		100.0	**6**
– Yandicoogina (Pisolite ore)[z]	O/P	460	58.3			**460**	509	**58.3**	58.3		100.0	**460**
Eastern Range JV (Australia)[t]												
– Eastern Range (Brockman ore)[aa]	O/P	18	61.4	4	60.3	**22**	28	**61.2**	61.6		54.0	**12**
Hope Downs JV (Australia)[t]												
– Hope Downs 1 (Marra Mamba ore)[bb]	O/P	76	62.7	64	60.2	**140**	165	**61.6**	61.4		50.0	**70**
– Hope Downs 4 (Brockman ore)[bb]	O/P	41	63.7	57	63.2	**98**	116	**63.4**	63.4		50.0	**49**
Robe River JV (Australia)[t]												
– Robe Valley (Pisolite ore)	O/P	172	56.4	154	56.2	**326**	344	**56.3**	56.4		53.0	**173**
– West Angelas (Marra Mamba ore)[cc]	O/P	105	62.0	69	61.5	**173**	201	**61.8**	61.9		53.0	**92**
Iron Ore Company of Canada (Canada)[dd]	O/P	296	65.0	214	65.0	**510**	528	**65.0**	65.0		58.7	**299**
Total												**2,743**
Reserves at development projects												
Hamersley Iron (Australia)[t]												
– Turee Central (Brockman ore)	O/P	72	62.0	6	61.4	**78**	78	**61.9**	61.9		100.0	**78**
– Western Range (Brockman ore)[ee]	O/P	106	62.2	53	62.0	**159**	201	**62.2**	62.5		100.0	**159**
Total												**237**

	Type of mine[a]	Proved ore reserves at end 2020		Probable ore reserves at end 2020		Total ore reserves 2020 compared with 2019				Average mill recovery %	Interest %	Rio Tinto share
		Tonnage	Grade	Tonnage	Grade	**2020** Tonnage	2019 Tonnage	**2020** Grade	2019 Grade			
												Marketable product
Lithium		millions of tonnes	% Li_2O	millions of tonnes	% Li_2O	**millions of tonnes**	millions of tonnes	**% Li_2O**	% Li_2O			**millions of tonnes**
Reserves at development projects												
Jadar (Serbia)[ij]	U/G			17	1.8	**17**	–	**1.8**	–	84	100.0	**0.25**
												Recoverable metal
Molybdenum		millions of tonnes	% Mo	of tonnes	% Mo	**millions of tonnes**	millions of tonnes	**% Mo**	% Mo			**millions of tonnes**
Reserves at operating mines												
Bingham Canyon (US)[f][k]	O/P	365	0.035	187	0.023	**552**	612	**0.031**	0.034	55	100.0	**0.094**
												Recoverable metal
Silver		millions of tonnes	grammes per tonne	millions of tonnes	grammes per tonne	**millions of tonnes**	millions of tonnes	**grammes per tonne**	grammes per tonne			**millions of ounces**
Reserves at operating mines												
Bingham Canyon (US)[k]	O/P	365	2.10	187	2.13	**552**	612	**2.11**	2.04	73	100.0	**27.337**
Oyu Tolgoi (Mongolia)												
– Oyut open pit	O/P	283	1.32	460	1.13	**743**	783	**1.20**	1.21	53	33.5	**5.103**
– Oyut stockpiles[m]		57	0.93			**57**	48	**0.93**	0.93	47	33.5	**0.267**
Total												**32.708**
Reserves at development projects												
Oyu Tolgoi (Mongolia)												
– Hugo Dummett North[n]	U/G			409	3.12	**409**	447	**3.12**	3.35	80	33.5	**11.029**
– Hugo Dummett North Extension[o]	U/G			39	3.69	**39**	32	**3.69**	3.84	82	29.5	**1.123**
Total												**12.152**
												Marketable product
Titanium Dioxide Feedstock[gg]		millions of tonnes	% Ti Minerals	millions of tonnes	% Ti Minerals	**millions of tonnes**	millions of tonnes	**% Ti Minerals**	% Ti Minerals			**millions of tonnes**
Reserves at operating mines												
QMM (Madagascar)	D/O	346	3.5	12	3.4	**358**	382	**3.5**	3.5		80.0	**4.9**
RBM (South Africa)	D/O+O/P	931	2.3	495	2.6	**1,426**	1,500	**2.4**	2.4		74.0	**11.3**
RTFT (Canada)	O/P			152	80.1	**152**	149	**80.1**	80.3		100.0	**48.2**
Total												**64.4**

Ore Reserves
continued

	Type of mine[a]	Proved ore reserves at end 2020		Probable ore reserves at end 2020		Total ore reserves 2020 compared with 2019				Average mill recovery	Interest	Rio Tinto share
		Tonnage	Grade	Tonnage	Grade	**2020** Tonnage	2019 Tonnage	**2020** Grade	2019 Grade	%	%	
												Recoverable metal
Uranium		millions of tonnes	% U_3O_8	millions of tonnes	% U_3O_8	**millions of tonnes**	millions of tonnes	**% U_3O_8**	% U_3O_8			**millions of tonnes**
Reserves at operating mines												
Energy Resources of Australia (Australia)												
– Ranger #3 stockpiles[hh]						–	2.4	–	0.071		–	–
												Marketable product
Zircon[ii]		millions of tonnes	% Zircon	millions of tonnes	% Zircon	**millions of tonnes**	millions of tonnes	**% Zircon**	% Zircon			**millions of tonnes**
Reserves at operating mines												
QMM (Madagascar)	D/O	346	0.2	12	0.1	**358**	382	**0.2**	0.2		80.0	**0.4**
RBM (South Africa)	D/O+O/P	931	0.3	495	0.4	**1,426**	1,500	**0.3**	0.3		74.0	**2.8**
Total												**3.1**

(a) Type of mine: O/P = open pit, U/G = underground, D/O = dredging operation.

(b) Reserves of bauxite, diamonds and iron ore are shown as recoverable Reserves of marketable product after accounting for all mining and processing losses. Mill recoveries are therefore not shown.

(c) Gove Reserves are stated as dry tonnes and total alumina grade. Gove Reserve tonnes decreased following updated economic assumptions and mining depletion. A JORC Table 1 in support of this change will be released to the market contemporaneously with the release of this Annual Report and can be viewed at riotinto.com/invest/financial-news-performance/resources-and-reserves.

(d) Porto Trombetas (MRN) Reserves are stated as dry tonnes and available alumina grade. Reserve tonnes decreased following mining depletion.

(e) Sangaredi Reserve tonnes are reported on a 3% moisture basis and alumina grades are reported as total alumina.

(f) Weipa Reserves are stated as dry tonnes and total alumina grade.

(g) Amrun Reserve tonnes decreased following updated economic assumptions and mining depletion. A JORC Table 1 in support of this change will be released to the market contemporaneously with the release of this Annual Report and can be viewed at riotinto.com/invest/financial-news-performance/resources-and-reserves.

(h) East Weipa and Andoom Reserve tonnes decreased following updated economic assumptions and mining depletion. A JORC Table 1 in support of this change will be released to the market contemporaneously with the release of this Annual Report and can be viewed at riotinto.com/invest/financial-news-performance/resources-and-reserves.

(i) Reserves of borates are expressed in terms of marketable product (B_2O_3) after all mining and processing losses.

(j) A maiden in situ Reserve for Jadar of 16.6 million dry tonnes at 13.4% B_2O_3 and 1.81% Li_2O was released to the market by Rio Tinto on 10 December 2020 following the completion of a Pre-Feasibility Study. A JORC Table 1 in support of this change was released to the market and can be viewed at riotinto.com/invest/financial-news-performance/resources-and-reserves.

(k) Bingham Canyon Reserve tonnes decreased following mining depletion.

(l) Escondida Oxide Reserve tonnes decreased following a geological model update.

(m) Oyut stockpiles Reserve tonnes increased following mining production.

(n) The Hugo Dummett North underground mine is currently under construction.

(o) Hugo Dummett North Extension Reserve tonnes increased following changes to the underground mine design. These changes were reported to the market on 3 July 2020, with a subsequent update on 16 December 2020. A JORC Table 1 in support of the material change was released to the market in July and can be viewed at riotinto.com/invest/financial-news-performance/resources-and-reserves.

(p) Argyle Reserves were depleted with the cessation of mining in November 2020.

(q) Diavik Reserves are based on a nominal 1 millimetre lower cut-off size and a final re-crushing size of 5 millimetres. Diavik Reserve tonnes decreased following mining depletion.

(r) Hugo Dummett North Reserve grade decreased following changes to the underground mine design. These changes were reported to the market on 3 July 2020, with a subsequent update on 16 December 2020. A JORC Table 1 in support of the material change was released to the market in July and can be viewed at riotinto.com/invest/financial-news-performance/resources-and-reserves.

(s) Australian iron ore Reserve tonnes are reported on a dry weight basis. As Rio Tinto only markets blended iron ore products from multiple mine sources, a detailed breakdown of constituent elements by individual deposit is not reported.

(t) The updated assessment of Ore Reserves reflects measures Rio Tinto has put in place following the events in the Juukan Gorge on 24 May 2020. These measures are intended to protect a number of sites, and to mitigate impacts to sites where there are existing heritage approvals authorising mining impacts, or a decision has been made not to seek regulatory approval to conduct mining activities, given the heritage considerations identified by Traditional Owners. As a result, Rio Tinto has removed 54 million dry tonnes from Reserves across Brockman 4, Western Range, Gudai-Darri, Greater Brockman 2 Nammuldi and West Angelas, including the 17 million dry tonnes at Western Range, which is the subject of a separate JORC Table 1 report. Rio Tinto's approach to cultural heritage management generally will continue to evolve in response to changes in agreements with Traditional Owners, further engagement with Traditional Owners and changing heritage legislation. Any material changes to Ore Reserves as a result of the further refinement of Rio Tinto's approach will be disclosed at the appropriate time.

(u) Channar (Brockman ore) Reserves were previously reported under Channar JV (Australia). Channar (Brockman ore) Reserve tonnes decreased following mining depletion and updated pit designs.

(v) Gudai-Darri (Brockman ore) was previously reported as Koodaideri (Brockman ore) and classified as a development project.

(w) Brockman 4 (Brockman and Marra Mamba ore) Reserve tonnes decreased following mining depletion and updated geological models, pit designs and cut-off grades.

(x) Marandoo (Marra Mamba ore) Reserve tonnes decreased following mining depletion and an updated geological model.

(y) Paraburdoo (Brockman ore) Reserve tonnes decreased following mining depletion and updated pit designs.

(z) Yandicoogina (Pisolite ore) Reserve tonnes decreased following mining depletion.

(aa) Eastern Range (Brockman ore) Reserve tonnes decreased following mining depletion.

(bb) Hope Downs 1 (Marra Mamba ore) and Hope Downs 4 (Brockman ore) Reserve tonnes decreased following mining depletion.

(cc) West Angelas (Marra Mamba ore) Reserve tonnes decreased following mining depletion and updated pit designs.

(dd) Reserves at Iron Ore Company of Canada are reported as marketable product (57% pellets and 43% concentrate for sale) at a natural moisture content of 2%. The marketable product is derived from mined material comprising 703 million dry tonnes at 38.7% iron (Proved) and 507 million dry tonnes at 37.9% iron (Probable) using process recovery factors derived from current IOC concentrating and pellet operations.

(ee) Western Range (Brockman ore) Reserve tonnes decreased following updates to the geological model and updated pit designs. A JORC Table 1 in support of this change will be released to the market contemporaneously with the release of this Annual Report and can be viewed at riotinto.com/invest/financial-news-performance/resources-and-reserves. Joint venture discussions with China Baowu Group covering the Western Range mining hub are continuing.

(ff) Bingham Canyon Reserves molybdenum grades interpolated from exploration drilling assays have been factored based on a long reconciliation history to blast hole and mill samples.

(gg) The marketable product (TiO_2 slag) is shown after all mining and processing losses. The Reserves are expressed as in situ tonnes.

(hh) Ranger #3 stockpiles Reserves were depleted with the cessation of mining due to the expiry of the Ranger Project Area mining lease in January 2021.

(ii) The marketable product (zircon at RBM and zirsil at QMM) is shown after all mining and processing losses. The Reserves are expressed as in situ tonnes.

Mineral Resources

As required by the Australian Securities Exchange, the following tables contain details of other mineralisation that has a reasonable prospect of being economically extracted in the future but which is not yet classified as Proved or Probable Ore Reserves. This material is defined as Mineral Resources under the JORC Code. Estimates of such material are based largely on geological information with only preliminary consideration of mining, economic and other factors. While in the judgment of the Competent Person there are realistic expectations that all or part of the Mineral Resources will eventually become Proved or Probable Ore Reserves, there is no guarantee that this will occur as the result depends on further technical and economic studies and prevailing economic conditions in the future. As in the case of Ore Reserves, managed operations' estimates are completed using or testing against Rio Tinto long-term pricing and market forecasts/scenarios. Mineral Resources are stated as additional to the Ore Reserves reported earlier. Where operations are not managed by Rio Tinto, the Mineral Resources are published as received from the managing company. Where new project Mineral Resources or Ore Reserves are footnoted as being reported for the first time, additional information about them can be viewed on the Rio Tinto website.

	Likely mining method[a]	Measured resources at end 2020		Indicated resources at end 2020		Inferred resources at end 2020		Total resources 2020 compared with 2019				Rio Tinto Interest %
								2020	2019	2020	2019	
		Tonnage	Grade	Tonnage	Grade	Tonnage	Grade	Tonnage		Grade		
Bauxite		millions of tonnes	% Al_2O_3	millions of tonnes	% Al_2O_3	millions of tonnes	% Al_2O_3	**millions of tonnes**	millions of tonnes	**% Al_2O_3**	% Al_2O_3	
Gove (Australia)[c][b]	O/P	23	48.6	9	48.6	2	49.6	**34**	28	**48.7**	48.2	100.0
Porto Trombetas (MRN) (Brazil)[d]	O/P	281	49.7	41	48.9	134	49.9	**456**	456	**49.7**	49.7	12.0
Sangaredi (Guinea)[e]	O/P	293	43.8	5,983	46.6	752	45.8	**7,028**	6,785	**46.4**	46.5	23.0
Weipa (Australia)[b]												
– East Weipa and Andoom[f]	O/P	35	51.1					**35**	11	**51.1**	52.1	100.0
– North of Weipa	O/P					1,330	52.0	**1,330**	1,330	**52.0**	52.0	100.0
– Amrun[g]	O/P	57	49.0	348	50.3	273	50.5	**678**	580	**50.3**	50.1	100.0
Borates[h]		millions of tonnes		millions of tonnes		millions of tonnes		**millions of tonnes**	millions of tonnes			millions of tonnes
Jadar (Serbia)[i]	U/G			10		11		**20**	21			100.0
Copper		millions of tonnes	% Cu	millions of tonnes	% Cu	millions of tonnes	% Cu	**millions of tonnes**	millions of tonnes	**% Cu**	% Cu	
Bingham Canyon (US)												
– Open Pit[j]	O/P	128	0.46	142	0.33	15	0.25	**285**	42	**0.38**	0.39	100.0
– North Rim Skarn	U/G	1	3.50	9	3.60	10	3.70	**20**	20	**3.65**	3.65	100.0
Escondida (Chile)												
– Chimborazo – sulphide	O/P			139	0.50	84	0.60	**223**	223	**0.54**	0.54	30.0
– Escondida – sulphide	O/P	417	0.61	1,591	0.48	10,237	0.53	**12,245**	11,934	**0.53**	0.52	30.0
– Escondida – mixed[k]	O/P	34	0.68	15	0.46	25	0.44	**74**	56	**0.55**	0.47	30.0
– Escondida – oxide[l]	O/P	24	0.83	7	0.70	5	0.59	**36**	35	**0.77**	0.67	30.0
– Pampa Escondida – sulphide	O/P	294	0.53	1,150	0.55	6,000	0.43	**7,444**	7,444	**0.45**	0.45	30.0
– Pinta Verde – sulphide	O/P			23	0.50	37	0.45	**60**	60	**0.47**	0.47	30.0
– Pinta Verde – oxide	O/P	109	0.60	64	0.53	15	0.54	**188**	188	**0.57**	0.57	30.0
La Granja (Peru)	O/P			130	0.85	4,190	0.50	**4,320**	4,320	**0.51**	0.51	100.0
Oyu Tolgoi (Mongolia)												
– Heruga ETG	U/G					1,448	0.41	**1,448**	1,448	**0.41**	0.41	29.5
– Heruga OT	U/G					105	0.42	**105**	105	**0.42**	0.42	33.5
– Hugo Dummett North[n][m]	U/G	57	1.86	397	1.34	764	0.80	**1,218**	1,155	**1.02**	0.94	33.5
– Hugo Dummett North Extension[n]	U/G			86	1.59	167	1.02	**253**	254	**1.21**	1.21	29.5
– Hugo Dummett South	U/G					724	0.84	**724**	724	**0.84**	0.84	33.5
– Oyut Open Pit[o]	O/P	17	0.40	94	0.33	350	0.29	**460**	413	**0.30**	0.31	33.5
– Oyut Underground	U/G	10	0.47	56	0.38	166	0.39	**233**	257	**0.39**	0.39	33.5
Resolution Copper (US)	U/G			530	1.92	1,257	1.36	**1,787**	1,787	**1.53**	1.53	55.0
Winu (Australia)[p]	O/P					503	0.35	**503**	–	**0.35**	–	100.0
Diamonds		millions of tonnes	carats per tonne	millions of tonnes	carats per tonne	millions of tonnes	carats per tonne	**millions of tonnes**	millions of tonnes	**carats per tonne**	carats per tonne	
Diavik (Canada)	O/P + U/G			0.2	2.3	1.2	2.5	**1.5**	1.5	**2.5**	2.7	60.0

Mineral Resources
continued

	Likely mining method[a]	Measured resources at end 2020		Indicated resources at end 2020		Inferred resources at end 2020		Total resources 2020 compared with 2019				Rio Tinto Interest
								2020	2019	2020	2019	
		Tonnage	Grade	Tonnage	Grade	Tonnage	Grade	Tonnage		Grade		%
Gold		millions of tonnes	grammes per tonne	millions of tonnes	grammes per tonne	millions of tonnes	grammes per tonne	**millions of tonnes**	millions of tonnes	**grammes per tonne**	grammes per tonne	
Bingham Canyon (US)												
– Open Pit[j]	O/P	128	0.24	142	0.16	15	0.21	**285**	42	**0.20**	0.17	100.0
– North Rim Skarn	U/G	1	2.10	9	1.70	10	1.50	**20**	20	**1.62**	1.62	100.0
Escondida (Chile)												
– Pampa Escondida – sulphide	O/P	294	0.07	1,150	0.10	6,000	0.04	**7,444**	7,444	**0.05**	0.05	30.0
Oyu Tolgoi (Mongolia)												
– Heruga ETG	U/G					1,448	0.40	**1,448**	1,448	**0.40**	0.40	29.5
– Heruga OT	U/G					105	0.30	**105**	105	**0.30**	0.30	33.5
– Hugo Dummett North[n][m]	U/G	57	0.49	397	0.34	764	0.28	**1,218**	1,155	**0.31**	0.29	33.5
– Hugo Dummett North Extension[n]	U/G			86	0.54	167	0.36	**253**	254	**0.42**	0.42	29.5
– Hugo Dummett South	U/G					724	0.07	**724**	724	**0.07**	0.07	33.5
– Oyut Open Pit[o]	O/P	17	0.37	94	0.29	350	0.18	**460**	413	**0.21**	0.21	33.5
– Oyut Underground	U/G	10	0.87	56	0.57	166	0.39	**233**	257	**0.45**	0.48	33.5
Winu (Australia)[p]	O/P					503	0.27	**503**	–	**0.27**	–	100.0
Iron Ore[q]		millions of tonnes	% Fe	millions of tonnes	% Fe	millions of tonnes	% Fe	**millions of tonnes**	millions of tonnes	**% Fe**	% Fe	
Hamersley Iron (Australia)[s][r]												
– Boolgeeda[t]	O/P					532	57.9	**532**	–	**57.9**	–	100.0
– Brockman	O/P	276	62.1	607	62.5	2,533	62.1	**3,416**	3,401	**62.2**	62.2	100.0
– Brockman Process Ore	O/P	218	57.3	231	56.9	765	57.4	**1,214**	1,190	**57.3**	57.3	100.0
– Marra Mamba	O/P	205	62.2	297	61.6	1,165	61.3	**1,667**	1,625	**61.5**	61.5	100.0
– Detrital	O/P			103	61.5	734	61.2	**837**	781	**61.2**	61.1	100.0
– Channel Iron Deposit	O/P	498	56.9	264	56.6	1,867	56.9	**2,629**	2,738	**56.9**	56.7	100.0
Eastern Range JV (Australia)[s]												
– Brockman	O/P	13	61.9	5	61.8	1	61.3	**19**	20	**61.8**	61.8	54.0
– Brockman Process Ore[u]	O/P	9	57.0	2	57.1	1	57.0	**12**	15	**57.0**	56.9	54.0
Hope Downs JV (Australia)[s]												
– Brockman	O/P	89	62.5	337	62.4	245	62.1	**671**	671	**62.3**	62.3	50.0
– Brockman Process Ore	O/P	42	57.0	163	56.8	175	55.9	**380**	387	**56.4**	56.4	50.0
– Marra Mamba	O/P	136	62.9	126	61.6	154	60.7	**416**	414	**61.7**	61.7	50.0
– Detrital	O/P			23	59.2	83	59.6	**106**	106	**59.5**	59.5	50.0
Rhodes Ridge JV (Australia)[s]												
– Brockman[v]	O/P			565	63.9	1,880	62.9	**2,445**	2,027	**63.1**	62.9	50.0
– Brockman Process Ore[w]	O/P			176	57.6	724	56.8	**900**	660	**56.9**	56.8	50.0
– Marra Mamba[x]	O/P			25	61.3	2,844	62.0	**2,869**	2,591	**61.9**	62.0	50.0
– Detrital[y]	O/P					420	60.3	**420**	328	**60.3**	60.1	50.0
Robe JV (Australia)[s]												
– Brockman[z]	O/P			156	62.5	559	61.4	**715**	646	**61.7**	61.6	53.0
– Brockman Process Ore	O/P			75	56.8	444	56.7	**519**	490	**56.7**	56.7	53.0
– Marra Mamba	O/P	158	62.0	210	61.5	129	61.5	**497**	514	**61.7**	61.6	53.0
– Detrital	O/P			22	59.5	101	61.1	**123**	122	**60.8**	60.8	53.0
– Channel Iron Deposit	O/P	189	55.0	1,589	58.7	2,619	55.4	**4,397**	4,278	**56.6**	56.8	53.0
Iron Ore Company of Canada (Canada)[aa]	O/P	151	40.9	675	38.4	954	38.1	**1,781**	1,792	**38.4**	38.4	58.7
Simandou (Guinea)[bb]	O/P	324	66.8	1,709	65.3	723	65.1	**2,757**	2,757	**65.5**	65.5	45.1

	Likely mining method[a]	Measured resources at end 2020		Indicated resources at end 2020		Inferred resources at end 2020		Total resources 2020 compared with 2019				Rio Tinto Interest
								2020	2019	2020	2019	
		Tonnage	Grade	Tonnage	Grade	Tonnage	Grade	Tonnage		Grade		
Lithium		millions of tonnes	% Li_2O	millions of tonnes	% Li_2O	millions of tonnes	% Li_2O	**millions of tonnes**	millions of tonnes	**% Li_2O**	% Li_2O	%
Jadar (Serbia)[cc]	U/G			55	1.7	84	1.8	**139**	136	**1.8**	1.9	100.0
Molybdenum		millions of tonnes	% Mo	millions of tonnes	% Mo	millions of tonnes	% Mo	**millions of tonnes**	millions of tonnes	**% Mo**	% Mo	
Bingham Canyon (US)												
– Open Pit[dd][ii]	O/P	128	0.020	142	0.016	15	0.003	**285**	42	**0.017**	0.018	100.0
Oyu Tolgoi (Mongolia)												
– Heruga ETG	U/G					1,448	0.012	**1,448**	1,448	**0.012**	0.012	29.5
– Heruga OT	U/G					105	0.011	**105**	105	**0.011**	0.011	33.5
Resolution Copper (US)	U/G			530	0.039	1,257	0.035	**1,787**	1,787	**0.036**	0.036	55.0
Silver		millions of tonnes	grammes per tonne	millions of tonnes	grammes per tonne	millions of tonnes	grammes per tonne	**millions of tonnes**	millions of tonnes	**grammes per tonne**	grammes per tonne	
Bingham Canyon (US)												
– Open Pit[ii]	O/P	128	2.12	142	1.48	15	1.86	**285**	42	**1.79**	2.10	100.0
– North Rim Skarn	U/G	1	20.00	9	21.00	10	21.00	**20**	20	**20.95**	20.95	100.0
Oyu Tolgoi (Mongolia)												
– Heruga ETG	U/G					1,448	1.46	**1,448**	1,448	**1.46**	1.46	29.5
– Heruga OT	U/G					105	1.58	**105**	105	**1.58**	1.58	33.5
– Hugo Dummett North[n][m]	U/G	57	4.20	397	3.13	764	2.40	**1,218**	1,155	**2.72**	2.61	33.5
– Hugo Dummett North Extension[n]	U/G			86	4.12	167	2.78	**253**	254	**3.24**	3.24	29.5
– Hugo Dummett South	U/G					724	1.88	**724**	724	**1.88**	1.88	33.5
– Oyut Open Pit[o]	O/P	17	1.09	94	1.12	350	1.02	**460**	413	**1.04**	1.06	33.5
– Oyut Underground	U/G	10	1.28	56	1.15	166	1.23	**233**	257	**1.21**	1.19	33.5
Winu (Australia)[p]	O/P					503	2.15	**503**	–	**2.15**	–	100.0
Titanium Dioxide Feedstock		millions of tonnes	% Ti Minerals	millions of tonnes	% Ti Minerals	millions of tonnes	% Ti Minerals	**millions of tonnes**	millions of tonnes	**% Ti Minerals**	% Ti Minerals	
QMM (Madagascar)	D/O	469	4.2	804	4.3	154	3.1	**1,427**	1,427	**4.1**	4.1	80.0
RBM (South Africa)[ee]	D/O+O/P			11	12.3			**11**	13	**12.3**	13.3	74.0
RTFT (Canada)	O/P			11	84.9	16	79.2	**27**	27	**81.6**	81.6	100.0

Mineral Resources
continued

	Likely mining method[a]	Measured resources at end 2020		Indicated resources at end 2020		Inferred resources at end 2020		Total resources 2020 compared with 2019				Rio Tinto Interest
								2020	2019	2020	2019	
		Tonnage	Grade	Tonnage	Grade	Tonnage	Grade	Tonnage		Grade		%
Uranium		millions of tonnes	% U_3O_8	millions of tonnes	% U_3O_8	millions of tonnes	% U_3O_8	**millions of tonnes**	millions of tonnes	**%U_3O_8**	% U_3O_8	
Energy Resources of Australia (Australia)												
– Jabiluka[ff]	U/G	1.2	0.887	14	0.520	10	0.545	**25**	25	**0.547**	0.547	86.3
– Ranger #3 Deeps[gg]	U/G							**–**	20	**–**	0.224	-
– Ranger #3 stockpiles[gg]								**–**	27	**–**	0.040	-
Zircon		millions of tonnes	% Zircon	millions of tonnes	% Zircon	millions of tonnes	% Zircon	**millions of tonnes**	millions of tonnes	**% Zircon**	% Zircon	
QMM (Madagascar)	D/O	469	0.2	804	0.2	154	0.2	**1,427**	1,427	**0.2**	0.2	80.0
RBM (South Africa)[ee]	D/O+O/P			11	8.1			**11**	13	**8.1**	8.3	74.0

(a) Likely mining method: O/P = open pit; U/G = underground; D/O = dredging operation.

(b) Gove and Weipa Resources are stated as dry tonnes and total alumina grade.

(c) Gove Resource tonnes increased following conversion of Reserves to Resources based on updated economic assumptions. A JORC Table 1 in support of this change will be released to the market contemporaneously with the release of this Annual Report and can be viewed at riotinto.com/invest/financial-news-performance/resources-and-reserves.

(d) Porto Trombetas (MRN) Resources are stated as dry tonnes and available alumina grade.

(e) Sangaredi Resource tonnes are reported on a 3% moisture basis and alumina grades are reported as total alumina.

(f) East Weipa and Andoom Resource tonnes increased following conversion of Reserves to Resources based on updated economic assumptions. A JORC Table 1 in support of this change will be released to the market contemporaneously with the release of this Annual Report and can be viewed at riotinto.com/invest/financial-news-performance/resources-and-reserves.

(g) Amrun Resource tonnes increased following conversion of Reserves to Resources following updated economic assumptions. A JORC Table 1 in support of this change will be released to the market contemporaneously with the release of this Annual Report and can be viewed at riotinto.com/invest/financial-news-performance/resources-and-reserves.

(h) Borates Resources are reported as in situ B_2O_3, rather than marketable product as in Reserves.

(i) Jadar equivalent in situ Resource is 55.2 million tonnes at 17.9% B_2O_3 (Indicated) and 84.1 million tonnes at 12.6% B_2O_3 (Inferred). Jadar Resource tonnes decreased following an updated geological model which was partially offset by conversion of Resources to Reserves. This was released to the market by Rio Tinto on 10 December 2020. A JORC Table 1 in support of this change was released to the market and can be viewed at riotinto.com/invest/financial-news-performance/resources-and-reserves.

(j) Bingham Canyon – Open Pit Resource tonnes increased and grade changed following a major pit design change on the completion of an Order of Magnitude Study. A JORC Table 1 in support of this change will be released to the market contemporaneously with the release of this Annual Report and can be viewed at riotinto.com/invest/financial-news-performance/resources-and-reserves.

(k) Escondida – mixed Resource tonnes increased as a result of additional drilling, an updated geological model and updated pit designs.

(l) Escondida – oxide Resource grade increased as a result of additional drilling, an updated geological model and updated pit designs.

(m) The Hugo Dummett North Resources include approximately 1.5 million tonnes of stockpiled material at a grade of 0.27% copper, 0.09 grammes per tonnes gold and 0.67 grammes per tonnes silver.

(n) Hugo Dummett North Resource tonnes increased and Hugo Dummett North Extension Resource tonnes decreased following changes to the underground mine design. These changes were reported to the market on 3 July 2020, with a subsequent update on 16 December 2020. A JORC Table 1 in support of the material change was released to the market in July and can be viewed at riotinto.com/invest/financial-news-performance/resources-and-reserves.

(o) Oyut Open Pit Resource tonnes increased following a pit design update.

(p) The maiden Winu Resource was reported to the market on 28 July 2020. A JORC Table 1 in support of this change was released to the market and can be viewed at riotinto.com/invest/financial-news-performance/resources-and-reserves.

(q) Iron Ore Resources are reported on dry weight basis. As Rio Tinto only markets blended iron ore products from multiple mine sources, a detailed breakdown of constituent elements by individual deposit is not reported.

(r) Channar Resource tonnes previously reported under Channar JV (Australia) are now reported under Hamersley Iron (Australia) Brockman and Brockman Process Ore following the completion of the joint venture arrangement.

(s) The updated assessment of Mineral Resources reflects measures Rio Tinto has put in place following the events in the Juukan Gorge on 24 May 2020. These measures are intended to protect a number of sites, and to mitigate impacts to sites where there are existing heritage approvals authorising mining impacts, or a decision has been made not to seek regulatory approval to conduct mining activities, given the heritage considerations identified by Traditional Owners. The impact of the changes are not material to the total Resource. Rio Tinto's approach to cultural heritage management generally will continue to evolve in response to changes in agreements with Traditional Owners, further engagement with Traditional Owners and changing heritage legislation. Any material changes to Mineral Resources as a result of the further refinement of Rio Tinto's approach will be disclosed at the appropriate time.

(t) Hamersley Iron (Australia) – Boolgeeda Resources are being reported for the first time with the addition of the Poonda deposit. A JORC Table 1 in support of this change will be released to the market contemporaneously with the release of this Annual Report and can be viewed at riotinto.com/invest/financial-news-performance/resources-and-reserves.

(u) Eastern Ranges JV (Brockman Process Ore) Resource tonnes have decreased following mining depletion and updated pit designs.

(v) Rhodes Ridge JV (Brockman) Resource tonnes have increased following an updated geological model at Rhodes Ridge. A JORC Table 1 in support of this change will be released to the market contemporaneously with the release of this Annual Report and can be viewed at riotinto.com/invest/financial-news-performance/resources-and-reserves.

(w) Rhodes Ridge JV (Brockman Process Ore) Resources tonnes have increased following an updated geological model at Rhodes Ridge. A JORC Table 1 in support of this change will be released to the market contemporaneously with the release of this Annual Report and can be viewed at riotinto.com/invest/financial-news-performance/resources-and-reserves.

(x) Rhodes Ridge JV (Marra Mamba) Resources tonnes have increased mainly due to an updated geological model at Arrowhead. A JORC Table 1 in support of this change will be released to the market contemporaneously with the release of this Annual Report and can be viewed at riotinto.com/invest/financial-news-performance/resources-and-reserves.

(y) Rhodes Ridge JV (Detrital) Resource tonnes have increased mainly due to an updated geological model at Arrowhead. A JORC Table 1 in support of this change will be released to the market contemporaneously with the release of this Annual Report and can be viewed at riotinto.com/invest/financial-news-performance/resources-and-reserves.

(z) Robe JV (Brockman) Resource tonnes have increased due to an updated geological model.

(aa) Resources at Iron Ore Company of Canada are reported as in-situ material on a dry basis. This in-situ material has the potential to produce marketable product (57% pellets and 43% concentrate for sale at a natural moisture content of 2%) comprising 64 million tonnes at 65% iron (Measured), 282 million tonnes at 65% iron (Indicated) and 389 million tonnes at 65% iron (Inferred) using process recovery factors derived from current IOC concentrating and pellet operations.

(bb) Rio Tinto and Chinalco, who respectively own 45.05% and 39.95% of Simandou Blocks 3 and 4, are working with the government of Guinea to realise value from the world-class iron ore deposit. The government of Guinea owns a 15% stake in the project.

(cc) Jadar Resource tonnes increased following an updated geological model which was partially offset by conversion of Resources to Reserves. This was released to the market by Rio Tinto on 10 December 2020. A JORC Table 1 in support of this change was released to the market and can be viewed at riotinto.com/invest/financial-news-performance/resources-and-reserves.

(dd) Bingham Canyon open pit molybdenum grades interpolated from exploration drilling assays have been factored based on a long reconciliation history to blast hole and mill samples.

(ee) RBM Resource tonnes decreased following mining depletion.

(ff) In February 2020, Rio Tinto's interest in Energy Resources of Australia (ERA) increased from 68.4% to 86.3% as a result of new ERA shares issued to Rio Tinto under the Entitlement Offer and Underwriting Agreement to raise funds for the rehabilitation of the Ranger Project Area.

(gg) Ranger #3 Deeps and Ranger #3 stockpiles Resources were depleted with the cessation of mining due to the expiry of the Ranger Project Area mining lease in January 2021.

Mineral Resources and Ore Reserves Corporate Governance

Mineral Resources and Ore Reserves governance

We have well-established governance processes to support the generation and publication of Mineral Resources and Ore Reserves, including a series of business unit and product group structures and processes independent of operational reporting.

Audit Committee

The Audit Committee's remit includes the governance of Mineral Resources and Ore Reserves. This includes an annual review of Mineral Resources and Ore Reserves at a Group level, as well as a review of findings and progress from the Group Internal Audit programme.

Ore Reserves Steering Committee

The Ore Reserves Steering Committee (ORSC), chaired by the Group Executive, Safety, Technical & Projects, meets at least quarterly. ORSC comprises senior representatives across our technical, financial, governance and business groups and oversees the appointment of Competent Persons nominated by the business units, review of Exploration Results, Mineral Resource or Ore Reserve data prior to public reporting and the development of Group Mineral Resource and Ore Reserve standards and guidance.

Orebody Knowledge Centre of Excellence

In 2019, we created the Orebody Knowledge Centre of Excellence, which contains a dedicated Orebody Knowledge Technical Assurance team. Orebody Knowledge Technical Assurance, in conjunction with the ORSC, is the guardian and author of Group Mineral Resource and Ore Reserve standards and guidance and is responsible for the governance and compilation of Group Mineral Resource, Ore Reserve and reconciliation reporting. The technical assurance team also monitors the external reporting environment, facilitates internal audits and monitors actions with Group Internal Audit.

Group Internal Audit

The Mineral Resource and Ore Reserve internal audits are conducted by independent external consulting personnel in a programme managed by Group Internal Audit with the assistance of the Orebody Knowledge Centre of Excellence and ORSC. During 2020, due to COVID-19 restrictions, two internal Mineral Resource and Ore Reserve audits were completed remotely. Material findings are reported outside of the product group reporting line to the Audit Committee, and all reports and action plans are reviewed by the ORSC for alignment to internal and external reporting standards.

Joint Ore Reserves Committee (JORC) compliance

We have continued developing internal systems and controls in order to meet JORC compliance in all external reporting, including the preparation of all reported data by Competent Persons as members of The Australasian Institute of Mining and Metallurgy (The AusIMM), Australian Institute of Geoscientists (AIG) or recognised professional organisations (RPOs). JORC Table 1 reports for new or materially upgraded significant deposits are released to the market; they are also available on the Group's website. JORC Table 1 and NI 43-101 technical reports generated by non-managed units or joint venture partners are referenced within the reporting footnotes with the location and initial reporting date identified.

Mineral Resources and Ore Reserves from externally managed operations, in which Rio Tinto holds a minority share, are reported as received from the managing entity. Figures from our managed operations are the responsibility of the managing directors of the business units and estimates are carried out by Competent Persons as defined by JORC.

2020 Highlights

- Orebody Knowledge Centre of Excellence with dedicated Orebody Knowledge Technical Assurance team manage and assure the Mineral Resource and Ore Reserve reporting
- Ongoing professional development: over 25 hours of virtual Competent Persons workshops and training run
- Independent auditing: two remote Mineral Resource and Ore Reserve audits completed

Competent Persons

	Association[a]	Employer	Accountability	Deposits
Bauxite				
G Rogers	AusIMM	Rio Tinto	Resources	Gove, East Weipa and Andoom, North of Weipa, Amrun
A McIntyre	AusIMM		Resources	Gove, East Weipa and Andoom, North of Weipa, Amrun
W Saba	AusIMM		Reserves	Gove, East Weipa and Andoom, Amrun
M Keersemaker	AusIMM	CBG Consultant – Aluminpro	Reserves	Sangaredi
M A Diallo	AusIMM	Compagnie des Bauxites de Guinée	Resources	
M A H Monteiro	AusIMM	Mineração Rio de Norte	Resources	Trombetas
J P M Franco	AusIMM	MRN Consultant	Reserves	
Borates				
B Griffiths	SME	Rio Tinto	Resources and Reserves	Rio Tinto Borates – Boron
R Torres	AusIMM		Resources	
Copper				
A Schwarz	AusIMM	Rio Tinto	Resources	Resolution Copper[c]
H Martin	AusIMM		Resources	
M Bixley	AusIMM	Rio Tinto	Reserves	Oyu Tolgoi[b] [c] [d]
O Dendev	AusIMM		Resources	
F Prince	AusIMM		Reserves	
R Hayes	AusIMM	Rio Tinto	Resources	Bingham Canyon[b] [c] [d]
E Mader	AusIMM		Reserves	
P Rodriguez	AusIMM		Resources	
K Schroeder	AusIMM		Resources	
J Vickery	AusIMM		Resources and Reserves	
E Woods	AusIMM		Reserves	
R Maureira	AusIMM	Minera Escondida Ltda.	Resources	Escondida, Escondida – Chimborazo – sulphide, Pampa Escondida – sulphide[b], Pinta Verde
F B Vargara	AusIMM		Reserves	Escondida
J Marshall	AusIMM	Rio Tinto	Resources	La Granja
J Pocoe	AusIMM	Rio Tinto	Resources	Winu[b] [d]

	Association[a]	Employer	Accountability	Deposits
Diamonds				
S Brennan	AusIMM	Rio Tinto	Resources and Reserves	Argyle Diamonds
M Rayner	AusIMM		Resources and Reserves	
K Pollock	NAPEG	Rio Tinto	Resources and Reserves	Diavik
C Auld	NAPEG		Reserves	
M Kontzamanis	NAPEG		Reserves	
Iron ore				
K Tindale	AusIMM	Rio Tinto	Resources	Simandou
M McDonald	PEGNL	Rio Tinto	Resources	Iron Ore Company of Canada
S Roche	AusIMM		Reserves	
R Way	PEGNL		Resources	
R Williams	PEGNL		Reserves	
P Ziemendorf	AusIMM		Reserves	
N Brajkovich	AusIMM	Rio Tinto	Resources	Rio Tinto Iron Ore – Hamersley, Channar, Eastern Range, Hope Downs, Robe, Rhodes Ridge
P Savory	AusIMM		Resources	
B Sommerville	AusIMM		Resources	
R Bleakey	AusIMM		Reserves	Rio Tinto Iron Ore – Hamersley, Eastern Range, Hope Downs, Robe
L Vilela Couto	AusIMM		Reserves	
R Sarin	AusIMM		Reserves	
R Verma	AusIMM		Reserves	
Lithium				
J Garcia	EFG	Rio Tinto	Resources	Jadar[e]
N Grubin	EFG		Resources	
M Sweeney	AusIMM		Resources	
G Davis	AusIMM		Reserves	
A Earl	AusIMM	Consultant – Snowden Group	Reserves	
Titanium dioxide feedstock				
F A Consuegra	APGO	Rio Tinto	Resources and Reserves	Rio Tinto Fer et Titane (RTFT)
J Dumouchel	OIQ		Resources	
D Gallant	OIQ		Reserves	
T Daling	SAIMM	Rio Tinto	Reserves	Richards Bay Minerals (RBM)[f]
A Louw	SACNASP		Resources	
S Mnunu	SACNASP		Resources	
P De Kock	SAIMM	Rio Tinto	Reserves	QMM Madagascar Minerals[f]
F Hees	AusIMM		Resources	
Uranium				
S Pevely	AusIMM	Rio Tinto	Resources and Reserves	Energy Resources of Australia – Ranger 3, Jabiluka

(a) AusIMM: Australasian Institute of Mining and Metallurgy
APGO: Association of Professional Geoscientists of Ontario
EFG: European Federation of Geologists
NAPEG: Association of Professional Engineers; Geologists and Geophysicists of the Northwest Territories
OIQ: L'Ordre des Ingénieurs du Québec
PEGNL: Professional Engineers and Geoscientists Newfoundland and Labrador
SACNASP: South African Council for Natural Scientific Professions
SAIMM: South African Institute of Mining and Metallurgy
SME: Society of Mining, Metallurgy and Exploration

(b) Includes gold

(c) Includes molybdenum

(d) Includes silver

(e) Includes borates

(f) Includes zircon

Mines and Production Facilities

Group mines as at 31 December 2020

Iron Ore

Property	Ownership	Operator	Location	Access	Title/lease/acreage
Hamersley Iron: Brockman 2 Brockman 4 Marandoo Mount Tom Price Nammuldi Paraburdoo Silvergrass Western Turner Syncline Yandicoogina	100% Rio Tinto	Rio Tinto	Pilbara region, Western Australia	Hamersley Iron/Robe railway and port network operated by Pilbara Iron	Agreements for life of mine with Government of Western Australia, save for the Yandicoogina mining lease, which expires in 2039 with an option to extend for 21 years. Mount Tom Price, Marandoo, Brockman 2, Brockman 4, Nammuldi and Western Turner Syncline Mineral and Mining Lease held under Iron Ore (Hamersley Range) Agreement Act 1963. Area of ML4SA subject to current mining operations approx 15,339 ha. Area of M272SA subject to current mining operations approx 2,059 ha. Paraburdoo and Eastern Range Mineral Lease held under Iron Ore (Hamersley Range) Agreement Act 1968. Area of ML246SA subject to current mining operations approx 1,943 ha Yandicoogina Mining Lease held under Iron Ore (Yandicoogina) Agreement Act 1996. Area of M274SA subject to current mining operations approx 4,584 ha.
Eastern Range	54% Rio Tinto Rio Tinto owns 54% of the Bao-Hi joint venture with the remaining 46% held by China Baowu Group	Rio Tinto	Pilbara region, Western Australia	Hamersley Iron/Robe railway and port network operated by Pilbara Iron	Mineral lease expires in 2028 with successive options to extend by 21 years. Mineral Lease held under Iron Ore (Hamersley Range) Agreement Act 1963. Area of ML4SA subject to current mining operations approx 990 ha.

Key permit conditions	History	Type of mine	Type of mineralisation	Processing plants and other available facilities	Power source
State Agreement conditions are set by the Western Australian Government and broadly comprise environmental compliance and reporting obligations; closure and rehabilitation considerations; local procurement and community initiatives/investment requirements; and payment of taxes and government royalties. The current business also operates under an Indigenous Land Use Agreement (ILUA) which includes commitments for payments made to trust accounts; indigenous employment and business opportunities; and heritage and cultural protections.	Mount Tom Price began operations in 1966, followed by Paraburdoo in 1974. In the 1990s, Channar, Brockman 2, Marandoo and Yandicoogina achieved first ore. Since 2000, Eastern Ranges, Nammuldi, Brockman 4, Western Turner Syncline and Silvergrass have joined the network of Hamersley Iron mines.	Open pit	Brockman 2, Brockman 4, Tom Price, Paraburdoo and Western Turner Syncline: Mineralisation is hematite/ goethite mineralisation hosted within the Brockman Fm banded iron formations. Detrital deposits also occur at these sites. At Tom Price and Western Turner Syncline, some goethite/hematite mineralisation hosted within the Marra Mamba Fm also occurs. Marandoo and Silvergrass: mineralisation occurs as goethite/ haematite within the banded iron formations of the Marra Mamba Fm. Some detrital mineralisation also occurs. Yandicoogina goethite mineralisation occurring as pisolite ores within a paleo-channel; channel iron formations.	Process plants are largely dry crush and screen plants producing a lump and fines product. For the Silvergrass & Nammuldi mines, wet processing of the ore using cyclones also occurs at the Nammuldi plant. At Marandoo cyclones are used for processing the fines at Marandoo plant. At Tom Price and Western Turner Syncline processing is through the Tom Price plant; low grade fines are upgraded using heavy media cyclones and spirals while a heavy media separation is used to upgrade lumps. Paraburdoo is processed through the Paraburdoo process plant. Processing is via a dry crush and screen plants producing a lump and fines product with fines further processed by a 2 stage cyclone plant. Yandicoogina is dry crush and screen to fines only, with low grade being processed via wet scrubbing and calcification.	Supplied through the integrated Hamersley and Robe power network operated by Pilbara Iron
State Agreement conditions are set by the Western Australian Government and broadly comprise environmental compliance and reporting obligations; closure and rehabilitation considerations; local procurement and community initiatives/ investment requirements; and payment of taxes and government royalties. The current business also operates under an Indigenous Land Use Agreement (ILUA) which includes commitments for payments made to trust accounts; indigenous employment and business opportunities; and heritage and cultural protections.	The Bao-Hi joint venture was established in 2002 and has delivered sales of more than 200 million tonnes of iron ore to China.	Open pit	Mineralisation is hematite/ goethite mineralisation hosted within the Brockman Fm banded iron formations.	Eastern Range is processed through the Paraburdoo process plant. Processing is via a dry crush and screen plants producing a lump and fines product with fines further processed by a 2 stage cyclone plant.	Supplied through the integrated Hamersley and Robe power network operated by Pilbara Iron

Mines and Production Facilities
continued

Group mines as at 31 December 2020

Iron Ore continued

Property	Ownership	Operator	Location	Access	Title/lease/acreage
Channar	60% Rio Tinto The Channar Mining Joint Venture is 60% owned by Rio Tinto (through Channar Mining Pty Ltd) and 40% by Sinosteel Corporation (Sinosteel Channar Pty Ltd)	Rio Tinto	Pilbara region, Western Australia	Hamersley Iron/Robe railway and port network operated by Pilbara Iron	Mining lease expires in 2028 with an option to extend by up to five years. Mining Lease held under Iron Ore (Channar Joint Venture) Agreement Act 1987. Area of M265SA subject to current mining operations approx 1,876 ha.
Hope Downs 1	50% Rio Tinto. 50% Hancock Prospecting Pty Ltd	Rio Tinto	Pilbara region, Western Australia	Hamersley Iron/Robe railway and port network operated by Pilbara Iron	Mining lease expires in 2027 with two options to extend of 21 years each. Mining Lease held under Iron Ore (Hope Downs) Agreement Act 1992. Area of M282SA subject to current mining operations approx 3,912 ha.

Key permit conditions	History	Type of mine	Type of mineralisation	Processing plants and other available facilities	Power source
State Agreement conditions are set by the Western Australian Government and broadly comprise environmental compliance and reporting obligations; closure and rehabilitation considerations; local procurement and community initiatives/investment requirements; and payment of taxes and government royalties. The current business also operates under an Indigenous Land Use Agreement (ILUA) which includes commitments for payments made to trust accounts; indigenous employment and business opportunities; and heritage and cultural protections.	The Channar Mining Joint Venture, established in 1987, was the first large-scale mining joint venture between Chinese and Australian companies. The joint venture was 60% owned by Rio Tinto and 40% by Sinosteel Corporation. It delivered sales of 290 million tonnes of iron ore to China. The Channar Mining Joint Venture came to a natural conclusion in quarter four 2020, at which time mining operations reverted to 100% Rio Tinto (Channar Mining Pty Ltd).	Open pit	Channar Mineralisation is hematite/goethite mineralisation hosted within the Brockman Fm banded iron formations.	Channar is processed through the Paraburdoo process plant. Processing is via a dry crush and screen plants producing a lump and fines product with fines further processed by a 2 stage cyclone plant.	Supplied through the integrated Hamersley and Robe power network operated by Pilbara Iron
State Agreement conditions are set by the Western Australian Government and broadly comprise environmental compliance and reporting obligations; closure and rehabilitation considerations; local procurement and community initiatives/investment requirements; and payment of taxes and government royalties. The current business also operates under an Indigenous Land Use Agreement (ILUA) which includes commitments for payments made to trust accounts; indigenous employment and business opportunities; and heritage and cultural protections.	Joint venture between Rio Tinto and Hancock Prospecting. Construction of Stage 1 to 22 million tonnes per annum commenced 2006 and first production occurred 2007. Stage 2 to 30 million tonnes per annum completed 2009.	Open pit	Hope Downs 1 mineralisation occurs as goethite/ haematite within the banded iron formations of the Marra Mamba Fm. Some detrital mineralisation also occurs.	Hope Downs 1 is processed at the Hope Downs 1 process plant which is dry crush and screen plant producing a lump and fines product.	Supplied through the integrated Hamersley and Robe power network operated by Pilbara Iron

Mines and Production Facilities
continued

Group mines as at 31 December 2020

Iron Ore continued

Property	Ownership	Operator	Location	Access	Title/lease/acreage
Hope Downs 4	50% Rio Tinto. 50% Hancock Prospecting Pty Ltd	Rio Tinto	Pilbara region, Western Australia	Hamersley Iron/Robe railway and port network operated by Pilbara Iron	Mining lease expires in 2027 with two options to extend of 21 years each. Mining Lease held under Iron Ore (Hope Downs) Agreement Act 1992. Area of M282SA subject to current mining operations approx 3,138 ha.
Robe River Iron Associates: Robe Valley (Mesa A and Mesa J) West Angelas	53% Rio Tinto Robe River is a joint venture between Rio Tinto (53%), Mitsui Iron Ore Development (33%), and Nippon Steel Corporation (14%)	Rio Tinto	Pilbara region, Western Australia	Hamersley Iron/Robe railway and port network operated by Pilbara Iron	Agreements for life of mine with Government of Western Australia. Mineral Lease held under Iron Ore (Robe River) Agreement Act 1964. Area of ML248SA subject to current mining operations approx 10,598 ha.
Dampier Salt Port Hedland, Dampier and Lake Macleod	68.4% Rio Tinto Dampier Salt is a joint venture between Rio Tinto (68%), Marubeni Corporation (22%) and Sojitz (10%).	Rio Tinto (Dampier Salt Limited)	Gascoyne and Pilbara regions, Western Australia	Road and port	Mining and mineral leases expiring in 2034 at Dampier; 2029 at Port Hedland and 2031 at Lake MacLeod. Mineral Leases are held under Dampier Solar Salt Industry Agreement Act 1967, Leslie Solar Salt Industry Agreement Act 1966 and Evaporites (Lake MacLeod) Agreement Act 1967 respectively.

Key permit conditions	History	Type of mine	Type of mineralisation	Processing plants and other available facilities	Power source
State Agreement conditions are set by the Western Australian Government and broadly comprise environmental compliance and reporting obligations; closure and rehabilitation considerations; local procurement and community initiatives/investment requirements; and payment of taxes and government royalties. The current business also operates under an Indigenous Land Use Agreement (ILUA) which includes commitments for payments made to trust accounts; indigenous employment and business opportunities; and heritage and cultural protections.	Joint venture between Rio Tinto and Hancock Prospecting. Construction of wet plant processing to 15 million tonnes per annum commenced 2011 and first production occurred 2013.	Open pit	Mineralisation at Hope Downs 4 is hematite/goethite mineralisation hosted within the Brockman Fm banded iron formations.	Hope Downs 4 ore is processed through the HD 4 plant. Process uses dry crushing followed by wet scrubbing and a 2 stage cyclone plant.	Supplied through the integrated Hamersley and Robe power network operated by Pilbara Iron
State Agreement conditions are set by the Western Australian Government and broadly comprise environmental compliance and reporting obligations; closure and rehabilitation considerations; local procurement and community initiatives/investment requirements; and payment of taxes and government royalties. The current business also operates under an Indigenous Land Use Agreement (ILUA) which includes commitments for payments made to trust accounts; indigenous employment and business opportunities; and heritage and cultural protections.	First shipment in 1972 from Robe Valley. Interest acquired in 2000 through North Limited acquisition. First ore was shipped from West Angelas in 2002.	Open pit	At West Angelas, mineralisation occurs as goethite/ haematite within the banded iron formations of the Marra Mamba Fm. Some detrital mineralisation also occurs. Robe valley deposits are comprised of goethite mineralisation occurring as pisolite ores within a paleo-channel; channel iron formations.	At West Angelas, ore processing is via dry crush and screen plants. In the Robe Valley, dry crush and screen plants, as well as wet processing plants (wet scrubbing and screening) are used to improve iron grades for some ores.	Supplied through the integrated Hamersley and Robe power network operated by Pilbara Iron
State Agreement conditions are set by the Western Australian Government and broadly comprise environmental compliance and reporting obligations; closure and rehabilitation considerations; local procurement and community initiatives/investment requirements; and payment of taxes and government royalties.	Construction of the Dampier field started in 1969; first shipment in 1972. Lake MacLeod was acquired in 1978 as an operating field. Port Hedland was acquired in 2001 as an operating field.	Solar evaporation of seawater at Dampier and Port Hedland; underground brine at Lake MacLeod; extraction of gypsum at Lake MacLeod.	Salt is grown every year through solar evaporation in permanent crystallising pans. Gypsum is present in the top layer covering most of the Lake Macleod.	Salt is processed through a washing plant, consisting of screening washbelts at Lake MacLeod, Screwbowl classifiers and static screens at Port Hedland and sizing screens, counter-current classifiers with dewatering screens and centrifuges at Dampier. Dampier produces shipping-ready product for immediate shiploading. Washed salt at Lake MacLeod and Port Hedland is dewatered on stockpiles. Lake Macleod also mines and processes gypsum in leaching heaps.	Long-term contracts with Hamersley Iron and Horizon Power and on-site generation

Mines and Production Facilities
continued

Group mines as at 31 December 2020

Copper and Diamonds

Property	Ownership	Operator	Location	Access	Title/lease/acreage
Escondida	30% Rio Tinto – 57.5% BHP, 10% JECO Corporation consortium comprising Mitsubishi, JX Nippon Mining and Metals (10%), 2.5% JECO 2 Ltd	BHP	Atacama Desert, Chile	Pipeline and road to deep sea port at Coloso; road and rail	Rights conferred by Government under Chilean Mining Code. Thirteen mineral rights leases with a total 57,047 ha.
Rio Tinto Kennecott Bingham Canyon	100% Rio Tinto	Rio Tinto Kennecott Copper	Near Salt Lake City, Utah, US	Pipeline, road and rail	Wholly owned – approximately 95,000 acres in total.
Oyu Tolgoi	Oyu Tolgoi is TRQ's principal and only material mineral resource property and is held through a 66% interest in Oyu Tolgoi LLC; the remaining 34% interest is held by the Government of Mongolia through Erdenes Oyu Tolgoi LLC. Rio Tinto, with other Rio Tinto affiliates, holds a 50.8% majority interest in TRQ, and is responsible for the day-to-day operational management and development of the Project.	Rio Tinto	Khanbogd soum, Umnugovi province, Mongolia	Air and road	Three mining licences are 100% held by Oyu Tolgoi LLC: MV-006708 (the Manakht licence: 4,533 ha), MV-006709 (the Oyu Tolgoi licence: 8,490 ha), and MV-006710 (the Khukh Khad licence: 1,763 ha). Two further licences are held in joint venture with Entrée Gold LLCMV-015226 (the Shivee Tolgoi Licence) and MV-015225 (the Javkhlant Licence). The licence term under the Minerals Law of Mongolia is 30 years with two 20-year extensions. First renewals are due in 2033 and 2039 for the Oyu Tolgoi and Entrée Gold licences respectively.

Key permit conditions	History	Type of mine	Type of mineralisation	Processing plants and other available facilities	Power source
Annual tenement payments (during March per year)	Production started in 1990 and since then capacity has been expanded numerous times. In 1998 first cathode was produced from the oxide leach plant, and during 2006 the sulphide leach plant was inaugurated, a year after the start of Escondida Norte pit production. During 2016, the third concentrator plant was commissioned.	Open pit	Consists of a series of porphyry deposits containing copper, gold, silver, and molybdenum.	Los Colorados, Laguna Seca Line 1, and Laguna Seca Line 2 Concentrators. OLAP – oxide leach facility, SL Rom leach facility and SX/EW facility.	Supplied from grid under various contracts with local generating companies
Permit conditions are established by Utah and US Government agencies and comprise: – Environmental compliance and reporting – Closure and reclamation requirements	Interest acquired in 1989. In 2012, the pushback of the south wall commenced, extending the mine life from 2018 to 2032.	Open pit	Porphyry and associated skarn deposits containing copper, gold, silver, and molybdenum.	Copperton concentrator, Garfield smelter, refinery, and precious metals plant, assay lab and tailings storage facilities.	Supply contract with Rocky Mountain Power
Investment Agreement dated 6 October 2009, between the Government of Mongolia, Oyu Tolgoi LLC, TRQ, and Rio Tinto in respect of Oyu Tolgoi (Investment Agreement). Amended and Restated Shareholders Agreement dated 8 June 2011 among Oyu Tolgoi LLC, THR Oyu Tolgoi Ltd. (formerly Ivanhoe Oyu Tolgoi (BVI) Ltd.), Oyu Tolgoi Netherlands B.V. and Erdenes MGL LLC (ARSHA). Erdenes MGL LLC has since transferred its shares in Oyu Tolgoi LLC and its rights and obligations under the ARSHA to its subsidiary, Erdenes Oyu Tolgoi LLC. Underground Mine Development and Financing Plan (Underground Development Plan) dated 18 May 2015, between TRQ, the Government of Mongolia, Erdenes Oyu Tolgoi LLC, THR Oyu Tolgoi Ltd., Oyu Tolgoi Netherlands B.V., Rio Tinto and Oyu Tolgoi LLC. Power Source Framework Agreement dated 31 December 2018, between the Government of Mongolia and Oyu Tolgoi LLC, including the amendment to the PSFA dated 26 June 2020. This requires obtaining numerous permits and authorisations from Mongolian regulatory authorities. In terms of key government permits, Oyu Tolgoi LLC secured a land use permit until 2035 and water use permit until 2039 as well as the mineral rights.	Oyu Tolgoi was first discovered in 1996. Construction began in late 2009 after signing of an Investment Agreement with the Government of Mongolia, and first concentrate was produced in 2012. First sales of concentrate were made to Chinese customers in 2013. In 2015, Underground Development Plan was signed with Government of Mongolia.	Ore Reserves have been reported at the Oyut and Hugo North deposits. The Oyut deposit is currently mined as an open pit using a conventional drill, blast, load, and haul method. The Hugo North deposit is currently being developed as an underground mine.	Consists of a series of porphyry deposits containing copper, gold, silver, and molybdenum.	One copper concentrator with a nominal feed capacity of 100ktpd comprising currently of 2 SAG mills, 4 ball mills, rougher and cleaner flotation circuits and up to 1Mtpa copper concentrate capacity. Other major facilities that support the isolated operations include Maintenance workshops, heating plant, sealed airstrip and terminal, and camp facilities with up to 6000 person capacity to accommodate current operations and the UG construction project. UG infrastructure in place includes several shafts for ore haulage, man haulage and ventilation plus a conveyor decline to surface and associated surface infrastructure.	Currently sources its power under an agreement with the Inner Mongolia Power International Cooperation Company Ltd. (IMPIC), via the Mongolian National Power Transmission Grid (NPTG) authority, with Grid power from China and supplementary diesel power generation at site. Signed Tavan Tolgoi Power Plant Power Source Framework agreement in December 2018.

Mines and Production Facilities
continued

Group mines as at 31 December 2020

Copper and Diamonds continued

Property	Ownership	Operator	Location	Access	Title/lease/acreage
Argyle Diamonds	100% Rio Tinto	Rio Tinto	East Kimberley, Western Australia	Road and air	Mining tenement held under Diamond (Argyle Diamond Mines Joint Venture) Agreement Act 1981; M259SA: 60,690 ha
Diavik	60% Rio Tinto – 40% Dominion Diamond Mines ULC, a Calgary-based Canadian asset of U.S. conglomerate The Washington Companies	Diavik Diamond Mines (2012) Inc. is a Yellowknife-based Canadian subsidiary of Rio Tinto plc in London, UK	Northwest Territories (NWT), Canada	Air, ice road in winter	Three mineral rights leases with a total average of 8,016 (3,244 ha). Mining leases are issued by the NWT Government. One lease was renewed in 2017 and two leases were renewed in February 2018. The new leases will expire after 21 years.

Energy and Minerals

Property	Ownership	Operator	Location	Access	Title/lease/acreage
Rio Tinto Borates – Boron	100% Rio Tinto	Rio Tinto	California, United States	Road and rail	Land holdings include 13,493 acres (owned including mineral rights) for the mining operation, plant infrastructure, and tailings storage facility.
Rio Tinto Fer et Titane Lac Tio	100% Rio Tinto	Rio Tinto	Havre-Saint-Pierre, Province of Quebec, Canada	Rail and port (St Lawrence River)	A total of 6,534 hectares of licences including two mining concessions of total 609ha, granted by Province of Quebec in 1949 and 1951 which, subject to certain Mining Act restrictions, confer rights and obligations of an owner.
QIT Madagascar Minerals (80%)	QIT Madagascar Minerals is 80% owned by Rio Tinto and 20% owned by the Government of Madagascar.	Rio Tinto	Fort-Dauphin, Madagascar	Road and port	Mining lease covering 56,200 hectares, granted by central government.

Key permit conditions	History	Type of mine	Type of mineralisation	Processing plants and other available facilities	Power source
Permit conditions are set by the Western Australia State Government and comprise environmental compliance and reporting; environmental security and closure and rehabilitation planning; and payment of taxes and government royalties. The current business also operates under an Indigenous Land Use Agreement (ILUA) which includes commitments for payments made to trust accounts; indigenous employment and business opportunities; and heritage and cultural protections.	Mining commenced in 1982 with alluvial operations. Open pit extraction of the primary diamond pipe was carried out from 1985 to 2013. Interest increased from 59.7% following purchase of Ashton Mining in 2000. Underground mine project approved in 2005 and operational from 2013 to 2020.	Underground block cave (previously open pit).	Diamondiferous Lamproite deposit.	On-site process plant comprised of crushing and screening operations, heavy media concentration, x-ray diamond recovery, and tailings deposition.	Long-term contract with Ord Hydro Consortium (Pacific Hydro) coupled with on-site backup diesel generation.
Our key permit conditions are local employment, procurement and benefit sharing commitments; environmental compliance and reporting; environmental security and closure and rehabilitation planning; and payment of taxes and government royalties.	Deposits discovered in 1994-95. Construction approved in 2000. Diamond production started in 2003. Fourth pipe commenced production in 2018. Mine life through 2023-25.	Open pit and underground operations (Blast-hole stoping and Sub-level Retreat methods).	Diamondiferous, Kimberlite deposit.	Includes processing plant and accommodation facilities onsite.	On-site diesel generators; installed capacity 44MW and 9.2MW of wind capacity.

Key permit conditions	History	Type of mine	Type of mineralisation	Processing plants and other available facilities	Power source
Boron Operation currently has all State and Federal environmental and operational permits in place to continue the mining and processing operation. Regular updates to permits are ongoing.	Deposit discovered in 1925 and acquired by Rio Tinto in 1967.	Open pit	Sedimentary sequence of tincal and kernite containing interbedded claystone enveloped by facies consisting of ulexite and colemanite bearing claystone, and barren claystone.	Boron Operation consists of the open pit mine, an ore crushing and conveying system, 2 process plants (Primary Process and Boric Acid Plant), Shipping facility, and tailings storage facilities.	On-site co-generation units and local power grid
The property is held under Quebec provincial government mining concession permits (Concession minière No 368 and 381). Each is of one year duration renewable as long as the mine is in operation. RTFT has also a number of claims (exclusive exploration permits) covering ilmenite occurrences in the region of the mine. These claims are renewable every 2 years.	Production started 1950; interest acquired in 1989.	Open pit	Magmatic intrusion.	Lac Tio has a crushing facility, dedicated railway, stockpile at the train terminal, ship loader, office buildings at the mine and at the terminal and waste dumps.	Supplied by Hydro Quebec at regulated tariff
The permit has a validity of 30 years as of 12th December 1996. Additional renewal for 10-years each period are granted at QMM's request. An annual fee is payable to government authorities following notification at the beginning of January.	Exploration project started in 1986; construction approved 2005. Ilmenite and zirsil production started 2008. QMM intends to extract ilmenite and zirsil from heavy mineral sands over an area of about 6,000 hectares along the coast over the next 40 years.	Mineral sand dredging	Coastal mineralised sands.	QMM has an operating Dredge, Dry Mine Unit, Heavy Mineral Concentrator, Mineral Separation Plant, Port and bulk loading facilities.	On-site heavy fuel oil generators

Mines and Production Facilities
continued

Group mines as at 31 December 2020

Energy and Minerals continued

Property	Ownership	Operator	Location	Access	Title/lease/acreage
Richards Bay Minerals	RBM is a joint venture between Rio Tinto (74%) and Blue Horizon – a consortium of investors and our Host Communities Mbonambi, Sokhulu, Mkhwanazi and Dube – which own 24%. The remaining shares are held in an employee trust.	Rio Tinto	Richards Bay, KwaZulu-Natal, South Africa	Rail, road and port	Mineral rights for Reserve 4 and Reserve 10 issued by South African State and converted to new order mining rights from 9 May 2012. Mining rights run until 8 May 2041 and covers 11,645 hectares including mined Tisand area.
Iron Ore Company of Canada (IOC)	IOC is a joint venture between Rio Tinto (58.7%), Mitsubishi (26.2%) and the Labrador Iron Ore Royalty Income Corporation (15.1%).	Rio Tinto	Labrador City, Province of Newfoundland and Labrador, Canada	Railway and port facilities in Sept-Îles, Quebec (owned and operated by IOC)	Mining leases, surface rights and a tailings disposal license are held by the Labrador Iron Ore Royalty Company (LIORC) under the Labrador Mining and Exploration Act. LIORC subleases these rights to IOC. The mining leases cover 10,356 hectares, the surface rights cover 8,805 hectares and the tailings license covers 2,784 hectares. These subleased rights are valid until 2050. In addition to the above rights, IOC also holds a number of mineral licenses, either directly or under sublease from LIORC.
Energy Resources of Australia – Ranger	86.3% Rio Tinto with the remaining 13.7% held by minority shareholders	Energy Resources of Australia	Northern Territory, Australia	Road, rail and port	ERA Mining Tenure comprises two leases; the Ranger Project Area (RPA, 79 km^2) which hosts the now mined out Ranger 1 and 3 uranium deposits, and MLN1 (73 km^2), which hosts the undeveloped Tier 1 Jabiluka uranium deposit. Mining tenure granted by Federal Government as per Section 41 of the Atomic Energy Act. The Authority to mine and process at Ranger is due to expire on 8 January 2021, when "ERA shall cease or suspend, as the case may be, all mining operations permitted under this Authority by 8 January 2021".

Key permit conditions	History	Type of mine	Type of mineralisation	Processing plants and other available facilities	Power source
RBM operates in three lease areas, Tisand, Zulti North and Zulti South by means of a notarial deed. Tisand (which contains the stockpiled tails) and Zulti North leases are held by Tisand (Pty) Ltd. In September 2012, Rio Tinto completed the acquisition of BHP Billiton's entire interests in RBM. The acquisition resulted in Rio Tinto effectively doubling its holding (74%) in RBM. The remaining 26% of RBM is owned by a consortium of local communities and businesses (24%) and RBM employees (2%), in line with South Africa's Broad-Based Black Economic Empowerment legislation.	Production started 1977; initial interest acquired 1989. Fifth mining plant commissioned in 2000. One mining plant decommissioned in 2008. In September 2012, Rio Tinto doubled its holding in Richards Bay Minerals to 74% following the acquisition of BHP Billiton's entire interests.	Dune sand dredging	Coastal mineralised sands.	RBM manages and operates several dredges, dry mining units, heavy mineral concentrators and mineral separation plant. RBM has also a smelter with furnaces to produce titania slag, pig iron in addition to rutile and zircon.	Contract with ESKOM
Several existing and valid Newfoundland and Labrador permits such as TMP Release, Tailings Disposal Licence, Approval for Asbestos Disposal Site at Main landfill Facility, Mill licence, PCB Storage Facility, Landfill, Water withdrawal and use of bodies of water, Dewatering & Excavation of Maggie Lake, Infilling of Carol Lake Lagoon and unnamed water body, Sewage System/Water Supply for Crusher Building. IOC holds also Federal Permits (Fish Habitat Compensation Agreement, Tailings Management Plan and dewatering.	Interest acquired in 2000 through North. Current operation began in 1962 and has processed over one billion tonnes of crude ore since. Annual capacity 23 million tonnes of concentrate of which 12.5 million tonnes can be pelletised.	Open pit	Oxide iron (specular hematite and magnetite).	Concentrator (gravity and magnetic separation circuits), Pellet plant, Warehouses, Workshops, Heating plant, Ore delivery system (crusher/conveyor and automated train system) Explosives plant, Train loadout facilities, Rail line (Labrador City to Sept-Îles), Stockyards, Shiploaders.	Supplied by Newfoundland and Labrador Hydro
RPA – Granted under s41 of the Atomic Energy Act – Authority to process uranium expires 8 Jan 2021. Lease expires 8 Jan 2026, allowing for 5 years of rehabilitation and closure activities. MLN1 – Northern Territory Mineral Lease granted in 1982 under the NT Mining Act for an initial period of 42 years – Expires in 2024, which can be renewed by the Minister for a further period not exceeding 10 years provided ERA has complied with the NT Mining Act and the conditions of MLN1.	Mining commenced 1981. Interest acquired through acquisition of North 2000. Open pit mining ended 2012, since then ERA has been processing ore stockpiles. Processing of uranium ore is legislated to finish on 8 January 2021.	Stockpile	Paleo-Proterozoic, structurally-hosted "unconformity-type" uraninite.	Crushing (primary, secondary and tertiary crushing circuits); Grinding plant; Leaching circuit; Counter Current Decant circuit; solvent extraction circuit; precipitation, drying and packing circuit; Neutralisation and tailings disposal system.	On-site diesel generation

Mines and Production Facilities
continued

Group mines as at 31 December 2020

Aluminium

Property	Ownership	Operator	Location	Access	Title/lease/acreage
CBG Sangaredi	Rio Tinto Group 22.95%, Guinean Government 49%, Alcoa 22.95%, Dadco Investments Limited 5.1%	La Compagnie des Bauxites de Guinée	Sangaredi, Guinea	Road, air and port	Mining concession expires in 2040. Leases comprise 2,939 km².
Gove	100% Rio Tinto	Rio Tinto through Rio Tinto Alumina Gove P/L	Gove, Northern Territory, Australia	Road, air and port	All leases were renewed in 2011 for a further period of 42 years. The residue disposal area is leased from the Arnhem Land Aboriginal Land Trust. The Northern Territory government is the lessor of the balance of the leases; however, on expiry of the 42-year renewed term, the land subject to the balances of the leases will all vest to the Arnhem Land Aboriginal Land Trust. Leases comprise 233.5 km².
MRN Porto Trombetas	MRN's shareholders are: Rio Tinto (12%), Vale (40%), Hydro (5%), South 32 (14.8%), CBA (Companhia Brasileira de Alumínio 10%) and Alcoa (18.2%). *Alcoa's 18.2% is comprised of Alcoa Alumínio (8.58%), AWA Brasil (4.62%) and AWA LLC (5%), each a subsidiary of Alcoa (10%).	MRN is a non-managed JV. All decisions are approved by shareholders Board of Directors	Porto Trombetas, Para, Brazil	Air or port	Mining concession granted by Brazilian Mining Agency (ANM), following the Brazilian mining code with no expiration date. The current 44 MRN mining leases cover 22 major plateaus, which spread across 143,000 hectares and all of them have the status of a mining concession.
Weipa/Ely	100% Rio Tinto	Rio Tinto through Rio Tinto Alumina Weipa P/L	Weipa, Queensland, Australia	Road, air and port	The Queensland Government Comalco (ML7024) lease expires in 2042 with an option of a 21-year extension, then two years' notice of termination; the Queensland Government Alcan lease (ML7031) expires in 2048 with a 21-year right of renewal with a two-year notice period. Leases comprise 2,716.9 km² [ML7024 = 1340.8 km²; ML7031 = 1376.1 km²].

Key permit conditions	History	Type of mine	Type of mineralisation	Processing plants and other available facilities	Power source
The obligations of CBG relative to health and safety of workers and to the environment and to the rehabilitation of mined out areas are subject to the Mining Code (2011) and Environmental Code of the Republic of Guinea.	Bauxite mining commenced in 1973. Shareholders are 51% Halco and 49% Government of Guinea. Rio Tinto holds a 45% interest in Halco. Expansion of the CBG bauxite mine, processing plant, port facility and associated infrastructure is currently near completion with ramp up to 18.5 million tonnes per annum underway.	Open cut	Bauxite	Drill, blast and crushing plant only to reduce oversize material – no screening required.	On-site generation (fuel oil)
Key permit conditions are prescribed by the Northern Territory Government in the form of a Mine Management Plan (MMP). The current MMP runs for a period of 12 years, until 2031, and authorises all activities at the operation. Lease payments are prescribed by the terms of the relevant leases.	Bauxite mining commenced in 1970, feeding both the Gove refinery, and export market capped at two million tonnes per annum. Bauxite export ceased in 2006 with feed intended for the expanded Gove refinery. Bauxite exports recommenced in 2008, increasing progressively following the curtailment of the refinery production in 2014 and the permanent shut decision made by the Board of Rio Tinto in October 2017. Current annual production capacity is 12.5 million tonnes on a dry basis.	Open cut	Bauxite	Crushing plant only to reduce oversize material – no screening required.	On-site diesel fired power station
With the exception of concessions from Amazonas State, the MRN mining leases are within the Saracá-Taquera National Forest, a preservation environmental area. However, the right of mining is preserved initially by the Federal law which created the National Forest (that is subsequent to mining concessions), as well as by the management plan, which acknowledges a formal mining zone within the confines of the National Forest. Environmental licensing is granted by Brazilian Environmental Agency (IBAMA) up to 2026 for East Zone. For West Zone it will require new licensing from 2027 to 2048.	Mineral extraction commenced in 1979. Initial production capacity 3.4 million tonnes annually. From 2003, production capacity up to 16.3 million tonnes per year on a dry basis.	Open cut	Consists of a series of bauxite tabular deposits with 2 mining plan sequencing: East Zone (1979 – 2025) and West Zone (2026-2048).	The beneficiation process is formed by a primary crusher, conveyors, scrubbers, secondary crushers, screenings, hydrocyclones and vacuum filters. The superfines tailings are pumped to a tailing system facility.	On-site generation fuel oil + diesel)
The respective leases are subject to the Comalco Agreement Act (Comalco Agreement) and Alcan Agreement Act (Alcan Agreement); the relevant State Agreements for the Weipa operations. Key permit conditions are prescribed by the Queensland Government in the relevant Environmental Authority applicable to each lease (ML7024 and ML7031, respectively). Lease payments are subject to the terms of the leases and the respective State Agreements.	Bauxite mining commenced in 1961 at Weipa. Major upgrade completed in 1998. Rio Tinto interest increased from 72.4% to 100% in 2000. In 1997, Ely Bauxite Mining Project Agreement signed with local Aboriginal land owners. Bauxite Mining and Exchange Agreement signed in 1998 with Comalco to allow for extraction of ore at Ely. The Western Cape Communities Co-Existence Agreement, an Indigenous Land Use Agreement, was signed in 2001. Following the ramp up to full production of Amrun the current annual production of the Weipa mines is 35.5 million tonnes.	Open cut	Bauxite	Andoom, East Weipa and Amrun – wet crushing and screening plants to remove ultra fine proportion.	On-site generation (diesel) supplemented by a solar generation facility

Mines and Production Facilities
continued

Group smelters and refineries (Rio Tinto's interest 100% unless otherwise shown)

Smelter/refinery	Location	Title/lease	Plant type / Product	Capacity (based on 100% ownership)
Aluminium				
Alma	Alma, Quebec, Canada	100% freehold	Aluminium smelter producing aluminium rod, t-foundry, molten metal, high purity, remelt	473,000 tonnes per year aluminium
Alouette (40%)	Sept-Îles, Quebec, Canada	100% freehold	Aluminium smelter producing aluminium high purity, remelt	622,000 tonnes per year aluminium
Arvida	Saguenay, Quebec, Canada	100% freehold	Aluminium smelter producing aluminium billet, molten metal, remelt	174,000 tonnes per year aluminium
Arvida AP60	Saguenay, Quebec, Canada	100% freehold	Aluminium smelter producing aluminium high purity, remelt	60,000 tonnes per year aluminium
Bécancour (25.1%)	Bécancour, Quebec, Canada	100% freehold	Aluminium smelter producing aluminium slab, billet, t-foundry, remelt, molten metal	454,000 tonnes per year aluminium
Bell Bay	Bell Bay, Northern Tasmania, Australia	100% freehold	Aluminium smelter producing aluminium slab, molten metal, small form and t-foundry, remelt	192,000 tonnes per year aluminium
Boyne Smelters (59.4%)	Boyne Island, Queensland, Australia	100% freehold	Aluminium smelter producing aluminium billet, EC grade, small form and t-foundry, remelt	510,000 tonnes per year aluminium
ELYSIS (48.24%)	Saguenay, Quebec, Canada	100% freehold	Aluminium zero-carbon smelting pilot cell producing aluminium high purity	275 tonnes per year aluminium
Grande-Baie	Saguenay, Quebec, Canada	100% freehold	Aluminium smelter producing aluminium slab, molten metal, high purity, remelt	233,000 tonnes per year aluminium
ISAL	Reykjavik, Iceland	100% freehold	Aluminium smelter producing aluminium remelt, billet	212,000 tonnes per year aluminium
Jonquière (Vaudreuil)	Jonquière, Quebec, Canada	100% freehold	Refinery producing smelter grade alumina	1,560,000 tonnes per year alumina
Kitimat	Kitimat, British Columbia, Canada	100% freehold	Aluminium smelter producing aluminium slab, remelt, high purity	432,000 tonnes per year aluminium
Laterrière	Saguenay, Quebec, Canada	100% freehold	Aluminium smelter producing aluminium slab, remelt, molten metal	257,000 tonnes per year aluminium
Queensland Alumina (80%)	Gladstone, Queensland, Australia	73.3% freehold; 26.7% leasehold (of which more than 80% expires in 2026 and after)	Refinery producing smelter grade alumina	3,950,000 tonnes per year alumina
São Luis (Alumar) (10%)	São Luis, Maranhão, Brazil	100% freehold	Refinery producing smelter grade alumina	3,830,000 tonnes per year alumina
Sohar (20%)	Sohar, Oman	100% leasehold (expiring 2039)	Aluminium smelter producing aluminium, high purity, remelt	395,000 tonnes per year aluminium
Tiwai Point (New Zealand Aluminium Smelters) (79.4%)	Invercargill, Southland, New Zealand	19.6% freehold; 80.4% leasehold (expiring in 2029 and use of certain Crown land)	Aluminium smelter producing aluminium billet, slab, small form foundry, high purity, remelt	373,000 tonnes per year aluminium
Tomago (51.6%)	Tomago, New South Wales, Australia	100% freehold	Aluminium smelter producing aluminium billet, slab, remelt	590,000 tonnes per year aluminium
Yarwun	Gladstone, Queensland, Australia	97% freehold; 3% leasehold (expiring 2101 and after)	Refinery producing smelter grade alumina	3,200,000 tonnes per year alumina
Copper and Diamonds				
Rio Tinto Kennecott	Magna, Salt Lake City, Utah, US	100% freehold	Flash smelting furnace/Flash convertor furnace copper refinery and precious metals plant	335,000 tonnes per year refined copper

Group smelters and refineries (Rio Tinto's interest 100% unless otherwise shown)

Smelter/refinery	Location	Title/lease	Plant type / Product	Capacity (based on 100% ownership)
Energy and Minerals				
Boron	California, United States	100% freehold	Borates refinery	576,000 tonnes per year boric oxide
IOC Pellet plant (58.7%)	Labrador City, Province of Newfoundland and Labrador, Canada	100% freehold (asset), 100% leasehold (land) under sublease with Labrador Iron Ore Royalty Corporation for life of mine.	Pellet induration furnaces producing multiple iron ore pellet types	12.5 million tonnes per year pellet
Richards Bay Minerals (74%)	Richards Bay, South Africa	100% freehold	Ilmenite smelter	1,050,000 tonnes per year titanium dioxide slag, 565,000 tonnes per year iron
Rio Tinto Fer et Titane Sorel Plant	Sorel-Tracy, Quebec, Canada	100% freehold	Ilmenite smelter	1,300,000 tonnes per year titanium dioxide slag, 1,000,000 tonnes per year iron

Mines and Production Facilities
continued

Information on Group power plants (Rio Tinto's interest 100% unless otherwise shown)

Power plant	Location	Title/lease	Plant type / Product	Capacity (based on 100% ownership)
Iron Ore				
Cape Lambert power station (67%)	Cape Lambert, Western Australia, Australia	Lease	Two LM6000PS gas-fired turbines	80MW
Paraburdoo power station	Paraburdoo, Western Australia, Australia	Lease	Three LM6000PC gas-fired turbines One Frame5 dual-fuel turbine	138MW
West Angelas power station (67%)	West Angelas, Western Australia, Australia	Miscellaneous licence	Two LM6000PF dual-fuel turbines	80MW
Yurralyi Maya power station (84.2%)	Dampier, Western Australia, Australia	Miscellaneous licence	Four LM6000PD gas-fired turbines One LM6000PF gas-fired turbine (dual-fuel potential)	200MW
Aluminium				
Amrun power station	Amrun, Australia	100% leasehold	Diesel generation	24MW
Gladstone power station (42%)	Gladstone, Queensland, Australia	100% freehold	Thermal power station	1,680MW
Gove power station	Nhulunbuy, Northern Territory, Australia	100% leasehold	Diesel generation	24MW
Kemano power station	Kemano, British Columbia, Canada	100% freehold	Hydroelectric power	896MW
Quebec power stations	Saguenay, Quebec, Canada (Chute-à-Caron, Chute-à-la-Savane, Chute-des-Passes, Chute-du-Diable, Isle-Maligne, Shipshaw)	100% freehold (certain facilities leased from Quebec Government until 2058 pursuant to Peribonka Lease)	Hydroelectric power	3,147MW
Weipa power stations and solar generation facility	Lorim Point, Andoom, and Weipa, Australia	100% leasehold	Diesel generation supplemented by solar generation facility	38MW
Yarwun alumina refinery co-generation plant	Gladstone, Queensland, Australia	100% freehold	Gas turbine and heat recovery steam generator	160MW

Information on Group power plants (Rio Tinto's interest 100% unless otherwise shown)

Power plant	Location	Title/lease	Plant type / Product	Capacity (based on 100% ownership)
Copper and Diamonds				
Rio Tinto Kennecott power stations	Salt Lake City, Utah, US	100% freehold	Thermal power station	75MW
			Steam turbine running off waste heat boilers at the copper smelter	31.8MW
			Combined heat and power plant supplying steam to the copper refinery	6.2MW
Energy and Minerals				
Boron co-generation plant	Boron, California, US	100% freehold	Co-generation uses natural gas to generate steam and electricity, used to run Boron's refining operations	48MW
Energy Resources of Australia (Rio Tinto: 86.3%)	Ranger Mine, Jabiru, Northern Territory, Australia	Lease	Five diesel generator sets rated at 5.17MW; one diesel generator set rated at 2MW; four additional diesel generator sets rated at 2MW	35.8MW
IOC power station	Sept-Îles, Quebec, Canada	Statutory grant	Hydroelectric power	22MW
QMM power plant	Fort Dauphin, Madagascar	100% freehold	Diesel generation	24MW

Additional Information

An employee at our Pilbara Iron Ore operations. Steel, made from iron ore, has shaped the skylines of cities the world over.

Aiming to strengthen
our sustainability performance

26.1%

of senior leadership roles are held by women.

Additional Information

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Independent Limited Assurance Report

of KPMG (KPMG Australia) to the Directors of Rio Tinto plc and Rio Tinto Limited

CONCLUSION

Based on the evidence we obtained from the procedures performed, we are not aware of any material misstatements in the Information Subject to Assurance presented in the Sustainability sections of the Rio Tinto Annual Report 2020 and the Rio Tinto Sustainability Fact Book 2020 for the year ended 31 December 2020, which has been prepared by Rio Tinto plc and Rio Tinto Limited (together Rio Tinto) in accordance with the Reporting Criteria.

Information Subject to Assurance

The Information Subject to Assurance is summarised below:

- Rio Tinto's assertion that it has incorporated the requirements of the International Council on Mining and Metals (ICMM) 10 Principles for sustainable development, and the mandatory requirements set out in the ICMM Position Statements, into its own policies, strategies and standards.
- Rio Tinto's assertions regarding the approach that it has adopted to identify and prioritise its material sustainable development risks and opportunities set out in the Sustainability sections of the Rio Tinto Annual Report 2020.
- Rio Tinto's assertions regarding the existence and status of implementation of systems and approaches used to manage the following selected sustainable development risk areas:
  - Safety
  - Business Integrity
  - Health
  - Greenhouse gas emissions and energy use
- The following Rio Tinto performance data related to the selected sustainable development risk areas:
  - Fatalities at managed operations
  - All-injury frequency rate
  - Lost time injury frequency rate
  - Number of lost time injuries
  - New cases of occupational illness
  - Community investment (discretionary)
  - Number of business integrity cases
  - Total managed greenhouse gas emissions (Scope 1 & 2)
  - Greenhouse gas emissions intensity index
  - Total managed energy
  - Tier 1 Water Target performance

Our assurance does not extend to information in respect of earlier periods or to any other information included in the Sustainability sections of the Rio Tinto Annual Report 2020 and the Rio Tinto Sustainability Fact Book 2020 for the year ended 31 December 2020.

Reporting Criteria

The Reporting Criteria used for the reporting of the Information Subject to Assurance are the ICMM Sustainable Development Framework: ICMM Principles (Revised 2015) and the definitions and approaches within the basis of reporting glossary presented on Rio Tinto's website at www.riotinto.com.

Basis for Conclusion

We conducted our work in accordance with International Standard on Assurance Engagements ISAE 3000 (Revised) Assurance Engagements other than Audits and Reviews of Historical Financial Information and in respect of greenhouse gas emissions, International Standard on Assurance Engagements ISAE 3410 Assurance Engagements on Greenhouse Gas Statements issued by the International Auditing and Assurance Standards Board (Standards). In accordance with the Standards we have:

- used our professional judgment to plan and perform the engagement to obtain limited assurance that we are not aware of any material misstatements in the Information Subject to Assurance, whether due to fraud or error;
- considered relevant internal controls when designing our assurance procedures, however we do not express a conclusion on their effectiveness; and
- ensured that the engagement team possess the appropriate knowledge, skills and professional competencies.

Independent Limited Assurance Report

of KPMG (KPMG Australia) to the Directors of Rio Tinto plc and Rio Tinto Limited

Summary of Procedures Performed

- Our limited assurance conclusion is based on the evidence obtained from performing the following procedures:
- enquiries with relevant Rio Tinto personnel to understand and evaluate the design and implementation of the key systems, processes and internal controls relevant to the Information Subject to Assurance;
- analytical procedures over the Information Subject to Assurance;
- risk analysis to validate the completeness of Rio Tinto's materiality assessment;
- substantively tested performance data within the Information Subject to Assurance, on a sample basis at a corporate and operational level, which included testing a selection of six operations such as Kennecott Copper, Yarwun Refinery, Brockman Region, Richards Bay Minerals, QIT Madagascar Minerals and the Gudai-Darri Project;
- evaluated the design and effectiveness of controls implemented by the Rio Tinto Health, Safety and Environment (HSE) Services reporting function over the Information Subject to Assurance;
- assessed Rio Tinto's incorporation of the requirements of the ICMM 10 Principles for sustainable development, and the mandatory requirements set out in the ICMM Position Statements, into its own policies, strategies and standards; and
- reviewed the Rio Tinto Annual Report 2020 and Rio Tinto Sustainability Fact Book 2020 in its entirety to ensure they are consistent with our overall knowledge of Rio Tinto.

How the Standard Defines Limited Assurance and Material Misstatement

The procedures performed in a limited assurance engagement vary in nature and timing from, and are less in extent than for a reasonable assurance engagement. Consequently, the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed.

Misstatements, including omissions, are considered material if, individually or in the aggregate, they could reasonably be expected to influence relevant decisions of the Directors of Rio Tinto.

Use of this Assurance Report

This report has been prepared for the Directors of Rio Tinto for the purpose of providing an assurance conclusion on the Information Subject to Assurance and may not be suitable for another purpose. We disclaim any assumption of responsibility for any reliance on this report, to any person other than the Directors of Rio Tinto, or for any other purpose than that for which it was prepared.

Management's responsibility

Management are responsible for:

- determining that the Reporting Criteria is appropriate to meet their needs;
- preparing and presenting the Information Subject to Assurance in accordance with the Reporting Criteria; and
- establishing internal controls that enable the preparation and presentation of the Information Subject to Assurance that is free from material misstatement, whether due to fraud or error.

Our Responsibility

Our responsibility is to perform a limited assurance engagement in relation to the Information Subject to Assurance for 31 December 2020, and to issue an assurance report that includes our conclusion.

Our Independence and Quality Control

We have complied with our independence and other relevant ethical requirements of the Code of Ethics for Professional Accountants (including Independence Standards) issued by the IFAC Ethical Standards Board, and complied with the applicable requirements of International Standard on Quality Control 1 to maintain a comprehensive system of quality control.

KPMG

Adrian King

KPMG

22 February 2021

Adrian King

Partner
Melbourne, Australia

Shareholder Information

Organisational structure

The Rio Tinto Group consists of Rio Tinto plc (registered in England and Wales as company number 719885 under the UK Companies Act 2006 and listed on the London Stock Exchange), and Rio Tinto Limited (registered in Australia as ABN 96 004 458 404 under the Australian Corporations Act 2001 and listed on the Australian Securities Exchange).

Rio Tinto is headquartered in London with a corporate office in Melbourne.

Rio Tinto plc has a sponsored American depositary receipts (ADR) facility, with underlying shares registered with the US Securities and Exchange Commission and listed on the New York Stock Exchange.

Nomenclature and financial data

Rio Tinto plc and Rio Tinto Limited operate together and are referred to in this report as Rio Tinto, the Rio Tinto Group or the Group. These expressions are used for convenience, since both companies, and other companies in which they directly or indirectly own investments, are separate and distinct legal entities. Likewise, the words "we", "us", "our" and "ourselves" are used in some places to refer to the companies of the Rio Tinto Group in general. These expressions are also used where no useful purpose is served by identifying any particular company or companies. We usually omit "Limited", "plc", "Pty", "Inc.", "Limitada", "L.L.C.", "A.S." or "SA" from Group company names, except to distinguish between Rio Tinto plc and Rio Tinto Limited. Financial data in US dollars ($) is derived from, and should be read in conjunction with, the 2020 financial statements. In general, where we have provided financial data in pounds sterling (£) and Australian dollars (A$), it has been translated from the consolidated financial statements, and is provided solely for convenience; exceptions arise where data has been extracted directly from source records. Certain key information has been provided in US dollars, pounds sterling and Australian dollars in the 2019 financial statements.

History

Rio Tinto plc was incorporated on 30 March 1962 (then called The Rio Tinto-Zinc Corporation Limited (RTZ)) and was formed by the merger of The Rio Tinto Company Limited and The Consolidated Zinc Corporation Limited. The Rio Tinto Company was incorporated in 1873 to reopen ancient copper workings in Spain. The Consolidated Zinc Corporation Limited began operations in the early twentieth century as part of the Australian mining industry. Based at Broken Hill in New South Wales, it began mining silver, lead and zinc deposits and later expanded into lead and zinc smelting.

Rio Tinto Limited was incorporated on 17 December 1959 (then called The Rio Tinto Mining Company of Australia Pty Limited). In 1962 the Australian interests of The Consolidated Zinc Corporation Limited and The Rio Tinto Company Limited were merged to form Conzinc Riotinto of Australia Limited, a limited liability company under the laws of the State of Victoria, Australia. In 1980, Conzinc Riotinto of Australia Limited changed its name to CRA Limited.

Between 1962 and 1995, both RTZ and CRA discovered important mineral deposits, developed major mining projects and grew through acquisition.

RTZ and CRA began operating in 1995 through a dual listed companies structure. In 1997, RTZ became Rio Tinto plc and CRA became Rio Tinto Limited.

Dual listed companies structure

In 1995, Rio Tinto shareholders approved the terms of the dual listed companies' merger (the DLC structure). The aim was to put shareholders of both companies in substantially the same position they would be in if they held shares in a single entity owning all assets of both companies.

Following the approval of the DLC structure, both companies entered into a DLC Merger Sharing Agreement (the Sharing Agreement). As part of this both companies agreed to be managed in a unified way, to share the same Board of Directors, and to put in place arrangements to provide shareholders of both companies with a common economic interest in the DLC structure.

To achieve this third objective, the Sharing Agreement fixed the ratio of dividend, voting and capital distribution rights attached to each Rio Tinto plc share and each Rio Tinto Limited share at an Equalisation Ratio of 1:1. This has remained unchanged ever since, although the Sharing Agreement makes clear this can be revised in special circumstances, for example where certain modifications are made to the share capital of one company (such as rights issues, bonus issues, share splits and share consolidations) but not to the other.

Outside the circumstances specified in the Sharing Agreement, the Equalisation Ratio can only be altered with the approval of shareholders under the class rights action approval procedure, described in the Voting arrangements section below. Any adjustments must be confirmed by the Group's external auditors.

Consistent with the DLC structure, the directors of both companies aim to act in the best interests of Rio Tinto as a whole. The class rights action approval procedure exists to deal with instances where there may be a conflict of interest between the shareholders of the two companies.

To ensure that the Boards of both companies are identical, resolutions to appoint or remove directors must be put to shareholders of both companies as Joint Decisions, described in the Voting arrangements section below. The Articles of Association of Rio Tinto plc and the Constitution of Rio Tinto Limited make clear that a person can only be a director of one company if he or she is also a director of the other. This means that if a person were removed as a director of Rio Tinto plc, he or she would also cease to be a director of Rio Tinto Limited.

One consequence of the DLC merger is that Rio Tinto is subject to a wide range of laws, rules and regulatory reviews across multiple jurisdictions. Where these rules differ, Rio Tinto will comply with the requirements in each jurisdiction at a minimum.

Dividend arrangements

The Sharing Agreement ensures that dividends paid on Rio Tinto plc and Rio Tinto Limited shares are equalised on a net cash basis without taking into account any associated tax credits. Dividends are determined in US dollars and (with the exception of ADR holders, paid in sterling and Australian dollars) both companies are required to announce and pay dividends and other distributions at the same time or as close to this as possible.

The payment of dividends between companies and their subsidiaries, including the payment of dividends on the DLC dividend shares, provides the Group with flexibility to manage internal funds and distributable reserves to enable the payment of equalised dividend or equalised capital distributions.

If the payment of an equalised dividend would contravene the law applicable to one of the companies, they can depart from the Equalisation Ratio. In that situation, the relevant company must put aside reserves for payment on the relevant shares at a later date.

Rio Tinto shareholders have no direct rights to enforce the dividend equalisation provisions of the Sharing Agreement.

Voting arrangements

In principle, the Sharing Agreement enables the shareholders of Rio Tinto plc and Rio Tinto Limited to vote as a joint electorate on any matters that affect them in similar ways. These are referred to as Joint Decisions, and include the creation of new classes of share capital, the appointment or removal of directors and auditors, and the receiving of annual financial statements. All shareholder resolutions that include Joint Decisions are voted on a poll.

Shareholder Information continued

The Sharing Agreement also protects shareholders of both companies by requiring joint approval for decisions that do not affect the shareholders of both companies equally. These are known as class rights actions, and are voted on a poll. For example, fundamental elements of the DLC structure cannot be changed unless approved separately by the shareholders of both companies.

Exceptions to these principles can arise in situations such as where legislation requires the separate approval of a decision by the appropriate majority of shareholders in one company, and where approval of the matter by shareholders of the other company is not required.

Where a matter has been expressly categorised as either a Joint Decision or a class rights action, the directors cannot change that categorisation. If a matter falls within both categories, it is treated as a class rights action. In addition, if an issue is not expressly listed in either category, directors can decide how it should be put to shareholders for approval.

To support joint voting arrangements, both companies have entered into shareholder voting agreements, where a Special Voting Share is issued to a special purpose company (SVC) and held in trust for shareholders by a common trustee. Rio Tinto plc (RTP) has issued its Special Voting Share (RTP Special Voting Share) to Rio Tinto Limited (RTL) Shareholder SVC, while Rio Tinto Limited has issued its Special Voting Share (RTL Special Voting Share) to RTP Shareholder SVC. The total number of votes cast on Joint Decisions by the shareholders of one company are decided at a parallel meeting of the other company. The exact role of these SVCs is described below.

In exceptional circumstances, certain shareholders can be excluded from voting at their respective company's general meetings. For example, they may have acquired shares in the other company in excess of a given threshold without making an offer for all the shares in the other company. In this situation, votes cast by these excluded shareholders are disregarded.

Following the companies' general meetings, the overall results of the voting are announced to relevant stock exchanges and the media, and published on the Rio Tinto website.

At a Rio Tinto plc shareholders' meeting during which a Joint Decision is considered, each Rio Tinto plc share carries one vote. The holder of the Special Voting Share has one vote for each vote cast by the public shareholders of Rio Tinto Limited in their parallel meeting. The holder of the Special Voting Share must vote in accordance with the votes cast by public shareholders for and against the equivalent resolution at the parallel Rio Tinto Limited shareholders' meeting. The holders of Rio Tinto Limited ordinary shares do not hold voting shares in Rio Tinto plc by virtue of their holding in Rio Tinto Limited, and cannot enforce the voting arrangements relating to the Special Voting Share.

Similarly, at a Rio Tinto Limited shareholders' meeting during which a Joint Decision is considered, each Rio Tinto Limited share carries one vote and the holder of its Special Voting Share will have one vote for each vote cast by the public shareholders of Rio Tinto plc in their parallel meeting. The holder of the Special Voting Share must vote in accordance with the votes cast for and against the equivalent resolution at the parallel Rio Tinto plc shareholders' meeting. The holders of Rio Tinto plc ordinary shares do not hold any voting shares in Rio Tinto Limited by virtue of their holding in Rio Tinto plc, and cannot enforce the voting arrangements relating to the Special Voting Share.

Capital distribution arrangements

If either company goes into liquidation, the Sharing Agreement ensures a valuation is made of the surplus assets of both companies. If the surplus assets available for distribution by one company on each of the shares held by its shareholders exceed the surplus assets available for distribution by the other company on each of the shares held by its shareholders, then an equalising payment must be made – to the extent permitted by applicable law – such that the amount available for distribution on each share held by shareholders of both companies reflects the Equalisation Ratio.

The aim is to ensure the shareholders of both companies have equivalent entitlements to the assets of the combined Group on a per share basis, taking account of the equalisation ratio.

The Sharing Agreement does not grant any enforceable rights to the shareholders of either company upon liquidation of either company.

Limitations on ownership of shares and merger obligations

The laws and regulations of the UK and Australia impose restrictions and obligations on persons who control interests in publicly listed companies in excess of defined thresholds. These can include an obligation to make a public offer for all outstanding issued shares of the relevant company. The threshold applicable to Rio Tinto plc under UK law and regulations is 30% and to Rio Tinto Limited under Australian law and regulations is 20% on both a standalone and Joint Decision basis.

As part of the DLC merger, the Articles of Association of Rio Tinto plc and the Constitution of Rio Tinto Limited were amended with the aim of extending these laws and regulations to the combined enterprise. This amendment also ensures that a person cannot exercise control over one company without having made offers to the public shareholders of both companies.

This guarantees the equal treatment of both sets of shareholders, and that the two companies are considered as a single economic entity. The Articles of Association of Rio Tinto plc and the Constitution of Rio Tinto Limited impose restrictions on any person who controls, directly or indirectly, 20% or more of the votes on a Joint Decision. If, however, such a person has an interest in either Rio Tinto Limited or Rio Tinto plc only, then the restrictions only apply if they control, directly or indirectly, 30% or more of the votes at that company's general meetings.

If one of these thresholds is exceeded, the person cannot attend or vote at general meetings of the relevant company, cannot receive dividends or other distributions from the relevant company, and may be divested of their interest by the directors of the relevant company (subject to certain limited exceptions and notification by the relevant company). These restrictions continue to apply until that person has either made a public offer for all the publicly held shares of the other company, has reduced their controlling interest below the thresholds specified, or has acquired through a permitted means at least 50% of the publicly held shares of each company.

This arrangement ensures that offers for the publicly held shares of both companies would be required to avoid the restrictions set out above, even if the interests which breach the thresholds are held in just one of the companies. The directors do not have the discretion to exempt a person from the operation of these rules.

Under the Sharing Agreement, the companies agree to co-operate to enforce the above restrictions contained in their Articles of Association and Constitution.

Guarantees

In 1995, each company entered into a deed poll guarantee in favour of creditors of the other company. In addition, each company guaranteed the contractual obligations of the other and the obligations of other persons guaranteed by the other company, subject to certain limited exceptions.

Beneficiaries under deed poll guarantees can make demands on the relevant guarantor without first having recourse to the company or persons whose obligations are being guaranteed. The obligations of the guarantor under each deed poll guarantee expire upon termination of the Sharing Agreement and under other limited circumstances, but only in respect of obligations arising after such termination and, in the case of other limited circumstances, the publication and expiry of due notice.

Markets

Rio Tinto plc

The principal market for Rio Tinto plc shares is the London Stock Exchange, with shares trading through the Stock Exchange Electronic Trading Service (SETS) system.

Rio Tinto plc American depositary receipts (ADRs) are listed on the New York Stock Exchange.

Further details relating to Rio Tinto plc ADRs are available in Rio Tinto's Annual Report on Form 20-F.

Rio Tinto Limited

Rio Tinto Limited shares are listed on the Australian Securities Exchange (ASX).

The ASX is the principal trading market for Rio Tinto Limited shares. The ASX is a national stock exchange with an automated trading system.

Share ownership

Substantial shareholders

Under the UK Disclosure and Transparency Rules and the Australian Corporations Act 2001, any shareholder of Rio Tinto plc with voting rights of 3% or more, or any person with voting power of 5% or more in Rio Tinto Limited, is required to provide the relevant company with notice.

The shareholders who have provided this notice or an equivalent as of 5 February 2021, being the last practicable date, are:

Rio Tinto Plc	Date of notice	Number of shares	Percentage of capital[a]
BlackRock, Inc.[b]	4 Dec 2009	127,744,871	8.38
Shining Prospect Pte. Ltd	7 Dec 2018	182,550,329	14.02[c]
The Capital Group Companies, Inc.	21 May 2020	62,352,014	5.00
Rio Tinto Limited			
BlackRock, Inc.	13 Apr 2015	See footnote[d]	See footnote[d]
BlackRock, Inc.[e]	13 Feb 2019	22,870,305	6.16
Shining Prospect Pte. Ltd	9 Feb 2018	See footnote[f]	See footnote[f]
The Vanguard Group, Inc.[g]	18 Mar 2020	22,304,083	6.01

(a) The percentage of voting rights detailed above was as disclosed in the notice received by the Company, calculated at the time of the relevant disclosures.

(b) On 1 February 2021, BlackRock, Inc. filed an Amendment to Schedule 13G with the SEC and disclosed beneficial ownership of 107,935,590 ordinary shares of Rio Tinto Plc as of 31 December 2021, representing 8.7% of that class of shares.

(c) In its notification of major holdings filed on 7 December 2018, Shining Prospect Pte. Ltd, a Singapore-based entity owned by Chinalco (Aluminium Corporation of China) disclosed that its percentage of voting rights in Rio Tinto plc had increased to 14.02% on 18 October 2018. This increase in voting rights is due to the ongoing on-market share buy-back programme of Rio Tinto plc shares and the number of shares held by Shining Prospect Pte. Ltd has remained unchanged.

(d) In its substantial holding notice filed on 13 April 2015, BlackRock, Inc. and its associates disclosed a holding of 120,174,604 shares in Rio Tinto plc and 22,330,443 shares in Rio Tinto Limited, which gave BlackRock, Inc. and its associates voting power of 7.7% in the Rio Tinto Group on a Joint Decision matter. Accordingly, in addition to being substantial shareholders of Rio Tinto plc, through the operation of the Australian Corporations Act 2001 as modified and the DLC structure, these entities are substantial shareholders of Rio Tinto Limited.

(e) On 1 February 2021, BlackRock, Inc. filed an Amendment to Schedule 13G with the SEC and disclosed beneficial ownership of 23,271,914 ordinary shares in Rio Tinto Limited as of 31 December 2020, representing 6.3% of that class of shares.

(f) In its notice of change of interests of substantial holder filed on 9 February 2018, Shining Prospect Pte. Ltd disclosed a holding of 182,550,329 shares in Rio Tinto plc which, as at 28 November 2017, accordingly, in addition to being substantial shareholders of Rio Tinto plc, through the DLC structure, these entities are substantial shareholders of Rio Tinto Limited.

(g) On 10 February 2021, The Vanguard Group, Inc. filed an Amendment to Schedule 13G with the SEC and disclosed beneficial ownership of 22,604,578 ordinary shares in Rio Tinto Limited as of 31 December 2020, representing 6.09% of that class of shares.

As far as is known, Rio Tinto plc and Rio Tinto Limited are not directly or indirectly owned or controlled by another corporation or by any government or natural person. Rio Tinto is not aware of any arrangement that may result in a change in control of Rio Tinto plc or Rio Tinto Limited. No shareholder possesses voting rights that differ from those attaching to Rio Tinto plc's and Rio Tinto Limited's securities.

As of 5 February 2021 the total amount of the Group's voting securities owned by the directors and executives in Rio Tinto plc was 207,472 ordinary shares of 10p each or ADRs, and in Rio Tinto Limited was 82,364 ordinary shares, in aggregate representing less than 1% of the Group's total number of ordinary shares in issue.

Unquoted equity securities in Rio Tinto Limited

As at 5 February 2021, there were Rio Tinto Limited unquoted equity securities on issue, comprising 80,050 unvested Bonus Deferral Awards held by 34 holders, 1,260,224 unvested Management Share Awards held by 857 holders and 1,368,850 unvested Performance Share Awards held by 235 holders, all of which granted under the Rio Tinto Limited Equity Incentive Plan, and 892,228 unvested matching share rights granted under the Rio Tinto Limited Global Employee Share Plan held by 9,940 holders. This information is provided in compliance with ASX Listing Rule 4.10.16.

Shareholder Information continued

Shareholder information

Analysis of ordinary shareholders

	Rio Tinto plc				Rio Tinto Limited			
As at 5 February 2021 (last practicable date)	No. of accounts	%	Shares	%	No. of accounts	%	Shares	%
1 to 1,000 shares	23,812	75.82	7,224,838	0.57	136,264	85.33	37,118,379	10.00
1,001 to 5,000 shares	5,460	17.38	11,005,909	0.87	21,043	13.18	41,656,853	11.22
5,001 to 10,000 shares	608	1.94	4,224,633	0.34	1,631	1.02	11,218,126	3.02
10,001 to 25,000 shares	439	1.40	7,081,940	0.56	578	0.36	8,472,307	2.28
25,001 to 125,000 shares	554	1.77	33,137,006	2.64	128	0.08	5,655,612	1.52
125,001 to 250,000 shares	185	0.59	32,991,032	2.63	14	0.01	2,621,392	0.71
250,001 to 1,250,000 shares	223	0.71	124,973,363	9.96	22	0.01	11,095,787	2.99
1,250,001 to 2,500,000 shares	59	0.18	102,873,970	8.19	3	0.00	5,328,244	1.44
2,500,001 shares and over[a]	65	0.21	932,251,748[b]	74.24	9	0.01	248,049,514	66.82
			1,255,764,439[c]	100.00			371,216,214[d]	100
Number of holdings less than marketable parcel of A$500					2,574			

(a) Excludes shares held in Treasury.
(b) This includes 115,544,129 shares held in the name of a nominee on the share register. The shares are listed on the NYSE in the form of American Depositary Receipts (ADRs).
(c) The total issued share capital is made up of 1,255,764,439 publicly held shares: 8,777,566 shares held in Treasury.
(d) Publicly held shares in Rio Tinto Limited.

Twenty largest registered shareholders

The following table lists the 20 largest registered holders of Rio Tinto Limited shares in accordance with the ASX listing rules, together with the number of shares and the percentage of issued capital each holds, as of 5 February 2021, being the last practicable date.

Rio Tinto Limited	Number of shares	Percentage of issued share capital
HSBC Custody Nominees (Australia) Limited	121,359,077	32.69
J. P. Morgan Nominees Australia Limited	71,444,513	19.25
Citicorp Nominees Pty Ltd	23,611,425	6.36
National Nominees Limited	9,778,987	2.63
BNP Paribas Nominees Pty Ltd (Agency Lending DRP A/C)	9,288,068	2.50
BNP Paribas Noms Pty Ltd (DRP)	5,561,696	1.50
HSBC Custody Nominees (Australia) Limited (NT-Comnwlth Super Corp A/C)	2,828,519	0.76
Computershare Trustees Jey Ltd (RE 3000086 A/C)	2,533,643	0.68
Citicorp Nominees Pty Limited (Colonial First State Inv A/C)	2,516,616	0.68
Argo Investments Limited	2,097,139	0.56
Australian Foundation Investment Company Limited	2,073,431	0.56
Computershare Comp Noms Ltd (VS4 A/C)	1,285,589	0.35
Custodial Services Limited	907,695	0.24
Netwealth Investments Limited	899,013	0.24
BNP Paribas Nominees Pty Ltd (Hub24 Custodial Serv Ltd DRP)	725,960	0.20
CS Third Nominees Pty Limited (HSBC Cust Nom AU Ltd 13 A/c)	709,211	0.19
Computershare Trustees Jey Ltd (RE 3000091 A/C)	675,282	0.18
Milton Corporation Limited	669,120	0.18
Australian United Investment Co Ltd	604,874	0.16
National Nominees Limited (N A/C)	556,661	0.15

Material contracts

Articles of Association, Constitution, and DLC Sharing Agreement

As explained on pages 375-376, under the terms of the DLC structure shareholders of Rio Tinto plc and of Rio Tinto Limited entered into certain contractual arrangements designed to place the shareholders of both companies in substantially the same position as if they held shares in a single entity which owned all the assets of both companies. As far as is permitted by the UK Companies Act 2006, the Australian Corporations Act 2001 and ASX Listing Rules, this principle is reflected in the Articles of Association of Rio Tinto plc and in the Constitution of Rio Tinto Limited. The following summaries describe the material rights of shareholders of both Rio Tinto plc and Rio Tinto Limited.

Objects

At the 2009 AGMs, shareholders of Rio Tinto plc and Rio Tinto Limited approved amendments to their Articles of Association and Constitution whereby the object clauses were removed to allow the companies to have the widest possible scope of activities.

Directors' interests

Under Rio Tinto plc's Articles of Association, a director may not vote in respect of any proposal in which he or she, or any other person connected with him or her, has any interest, other than by virtue of his or her interests in shares or debentures or other securities of, in or through the company, except in certain circumstances, including in respect of resolutions:

- indemnifying him or her or a third party in respect of obligations incurred by the director on behalf of, or for the benefit of, the company, or in respect of obligations of the company, for which the director has assumed responsibility under an indemnity, security or guarantee;
- relating to an offer of securities in which he or she may be interested as a holder of securities or as an underwriter;
- concerning another body corporate in which the director is beneficially interested in less than 1% of the issued shares of any class of shares of such a body corporate;
- relating to an employee benefit in which the director will share equally with other employees;
- relating to liability insurance that the company is empowered to purchase for the benefit of directors of the company in respect of actions undertaken as directors (or officers) of the company; and
- concerning the giving of indemnities in favour of directors or the funding of expenditure by directors to defend criminal, civil or regulatory proceedings or actions against a director.

Under Rio Tinto Limited's Constitution, a director may be present at a meeting of the Board while a matter in which the director has a material personal interest is being considered and may vote in respect of that matter, except where a director is constrained by Australian law.

The directors are empowered to exercise all the powers of the companies to borrow money, to charge any property or business of the companies or all, or any, of their uncalled capital, and to issue debentures or give any other security for a debt, liability or obligation of the companies or of any other person. The directors shall restrict the borrowings of Rio Tinto plc to the limitation that the aggregate amount of all monies borrowed by the company and its subsidiaries shall not exceed an amount equal to 1½ times the companies' share capital plus aggregate reserves unless sanctioned by an ordinary resolution of the company.

Directors are not required to hold any shares of either company by way of qualification. The Remuneration Report on pages 140-185 provides information on shareholding policies relating to executive and non-executive directors. Please refer to the Directors' Report for information on the appointment of directors.

Rights attaching to shares

Under UK law, dividends on shares may only be paid out of profits available for distribution, as determined in accordance with generally accepted accounting principles and by the relevant law. Shareholders are entitled to receive such dividends as may be declared by the directors. Directors may also pay shareholders interim dividends as justified by the financial position of the Group.

Under the Australian Corporations Act 2001, dividends on shares may only be paid if the company's assets exceed its liabilities immediately before the dividend is declared, the excess is sufficient for the payment of the dividend, the payment is fair and reasonable to the company's shareholders as a whole, and the payment does not materially prejudice the company's ability to pay its creditors. Any Rio Tinto plc dividend unclaimed after 12 years from the date the dividend was declared, or became due for payment, will be forfeited and returned to the company. Any Rio Tinto Limited dividend unclaimed may be invested or otherwise used by the Board for the benefit of the company until claimed or otherwise disposed of according to Australian law. Rio Tinto Limited is governed by the State of Victoria's unclaimed monies legislation, which requires the company to pay to the state revenue office any unclaimed dividend payments of A$20 or more that on 1 March each year have remained unclaimed for over 12 months.

Voting

Voting at any general meeting of shareholders on a resolution on which the holder of the Special Voting Share is entitled to vote shall be decided by a poll, and any other resolution shall be decided by a show of hands unless a poll has been duly demanded. On a show of hands, every shareholder who is present in person or by proxy (or other duly authorised representative) and is entitled to vote, has one vote regardless of the number of shares held. The holder of the Special Voting Share is not entitled to vote in a show of hands. On a poll, every shareholder who is present in person or by proxy (or other duly authorised representative) and is entitled to vote, has one vote for every ordinary share for which he or she is the holder. In the case of Joint Decisions, the holder of the Special Voting Share has one vote for each vote cast in respect of the publicly held shares of the other company.

A poll may be demanded by any of the following:

- the chairman of the meeting;
- at least five shareholders entitled to vote on the resolution;
- any shareholder(s) representing in the aggregate not less than one tenth (Rio Tinto plc) or one 20th (Rio Tinto Limited) of the total voting rights of all shareholders entitled to vote on the resolution;
- any shareholder(s) holding Rio Tinto plc shares conferring a right to vote at the meeting on which there have been paid-up sums in the aggregate equal to not less than one tenth of the total sum paid up on all the shares conferring that right; or
- the holder of the Special Voting Share of either company.

A proxy form gives the proxy the authority to demand a poll, or to join others in demanding one.

The necessary quorum for a Rio Tinto plc general meeting is three members present (in person or by proxy or other duly authorised representative) and entitled to vote. For a Rio Tinto Limited general meeting it is two members present (in person or by proxy or other duly authorised representative).

Matters are transacted at general meetings by the proposing and passing of resolutions as:

- ordinary resolutions (for example the election of directors), which require the affirmative vote of a majority of persons voting at a meeting for which there is a quorum; and
- special resolutions (for example amending the Articles of Association of Rio Tinto plc or the Constitution of Rio Tinto Limited), which require the affirmative vote of not less than three-quarters of the persons voting at a meeting at which there is a quorum.

Shareholder Information continued

The Sharing Agreement further classifies resolutions as Joint Decisions and class rights actions as explained on pages 375-376.

Annual general meetings must be convened with 21 days' written notice for Rio Tinto plc and with 28 days' notice for Rio Tinto Limited. In accordance with the authority granted by shareholders at the Rio Tinto plc AGM in 2020, other meetings of Rio Tinto plc may be convened with 14 days' written notice for the passing of a special resolution, and with 14 days' notice for any other resolution, depending on the nature of the business to be transacted. All meetings of Rio Tinto Limited require 28 days' notice. In calculating the period of notice, any time taken to deliver the notice and the day of the meeting itself are not included. The notice must specify the nature of the business to be transacted.

Variation of rights

If, at any time, the share capital is divided into different classes of shares, the rights attached to each class may be varied, subject to the provisions of the relevant legislation, the written consent of holders of three-quarters in value of the shares of that class, or upon the adoption of a special resolution passed at a separate meeting of the holders of the shares of that class. At every such meeting, all of the provisions of the Articles of Association and Constitution relating to proceedings at a general meeting apply, except that the quorum for Rio Tinto plc should be two or more persons who hold or represent by proxy not less than one-third in nominal value of the issued shares of the class.

Rights upon a winding-up

Except as the shareholders have agreed or may otherwise agree, upon a winding-up, the balance of assets available for distribution after the payment of all creditors (including certain preferential creditors, whether statutorily preferred creditors or normal creditors) and subject to any special rights attaching to any class of shares, is to be distributed among the holders of ordinary shares according to the amounts paid-up on the shares held by them. This distribution should generally be made in cash. A liquidator may, however, upon the adoption of a special resolution of the shareholders, divide among the shareholders the whole or any part of the assets in specie or kind.

The Sharing Agreement describes the distribution of assets of each of the companies in the event of a liquidation, as explained on pages 375-376.

Facility agreement

Details of the Group's $7.5 billion multi-currency committed revolving credit facilities are set out in note 29 to the 2020 financial statements.

Exchange controls and foreign investment

Rio Tinto plc

There are no UK foreign exchange controls or other restrictions on the import or export of capital by, or on the payment of dividends to, non-resident holders of Rio Tinto plc shares, or that materially affect the conduct of Rio Tinto plc's operations. It should be noted, however, that various sanctions, laws, regulations or conventions may restrict the import or export of capital by, or the payment of dividends to, non-resident holders of Rio Tinto plc shares. There are no restrictions under Rio Tinto plc's Articles of Association or under UK law that limit the right of non-resident owners to hold or vote Rio Tinto plc shares. However, certain of the provisions of the Australian Foreign Acquisitions and Takeovers Act 1975 (the Takeovers Act) described below also apply to the acquisition by non-Australian persons of interests in securities of Rio Tinto plc.

Rio Tinto Limited

Under current Australian legislation, Australia does not impose general exchange or foreign currency controls. Subject to some specific requirements and restrictions, Australian and foreign currency may be freely brought into and sent out of Australia. There are requirements to report cash transfers in or out of Australia of A$10,000 or more. There is a prohibition on (or in some cases the specific prior approval of the Department of Foreign Affairs and Trade or Minister for Foreign Affairs must be obtained for) certain payments or other dealings connected with countries or parties identified with terrorism, or to whom United Nations or autonomous Australian sanctions apply. Sanction, anti-money laundering and counterterrorism laws may restrict or prohibit payments, transactions and dealings or require reporting of certain transactions.

Rio Tinto Limited may be required to deduct withholding tax from foreign remittances of dividends, to the extent that they are unfranked, and from payments of interest.

Acquisitions of interests in shares, and certain other equity instruments in Australian companies by non-Australian ("foreign") persons are subject to review and approval by the Treasurer of the Commonwealth of Australia under the Takeovers Act.

In broad terms, the Takeovers Act applies to acquisitions of interests in securities in an Australian entity by a foreign person where, as a result, a single foreign person (and any associate) would control 20% or more of the voting power or potential voting power in the entity, or several foreign persons (and any associates) would control 40% or more of the voting power or the potential voting power in the entity. The potential voting power in an entity is determined having regard to the voting shares in the entity that would be issued if all rights (whether or not presently exercisable) in the entity were exercised.

The Takeovers Act also applies to direct investments by foreign government investors, in certain circumstances regardless of the size of the investment. Persons who are proposing relevant acquisitions or transactions may be required to provide notice to the Treasurer before proceeding with the acquisition or transaction.

The Treasurer has the power to order divestment in cases where relevant acquisitions or transactions have already occurred, including where prior notice to the Treasurer was not required. The Takeovers Act does not affect the rights of owners whose interests are held in compliance with the legislation.

Limitations on voting and shareholding

Except for the provisions of the Takeovers Act, there are no limitations imposed by law, Rio Tinto plc's Articles of Association or Rio Tinto Limited's Constitution, on the rights of non-residents or foreigners to hold the Group's ordinary shares or ADRs, or to vote that would not apply generally to all shareholders.

Directors

Appointment and removal of directors

The appointment and replacement of directors is governed by Rio Tinto plc's Articles of Association and Rio Tinto Limited's Constitution, relevant UK and Australian legislation, and the UK Corporate Governance Code. The Board may appoint a director either to fill a casual vacancy or as an addition to the Board, so long as the total number of directors does not exceed the limit prescribed in these constitutional documents. An appointed director must retire and seek election to office at the next AGM of each company. In addition to any powers of removal conferred by the UK Companies Act 2006 and the Australian Corporations Act 2001, the company may by ordinary resolution remove any director before the expiry of his or her period of office and may, subject to these constitutional documents, by ordinary resolution appoint another person who is willing to act as a director in their place. In line with the UK Corporate Governance Code, all directors are required to stand for re-election at each AGM.

Directors' powers

The Board manages the business of Rio Tinto under the powers set out in these constitutional documents. These powers include the directors' ability to issue or buy-back shares. Shareholders' authority to empower the directors to purchase its own ordinary shares is sought at the AGM each year. The constitutional documents can only be amended, or replaced, by a special resolution passed in general meeting by at least 75% of the votes cast.

UK listing rules cross reference table

The following table contains only those sections of UK listing rule 9.8.4 C which are relevant. The remaining sections of listing rule 9.8.4 C are not applicable.

Listing rule	Description of listing rule	Reference in report
9.8.4 (1)	A statement of any interest capitalised by the Group during the year	Note 8 Finance income and finance costs and note 17 Deferred taxation
9.8.4 (12)	Details of any arrangement under which a shareholder has waived or agreed to waive any dividends	Note 11 Dividends

Shareholder security

Shareholders tell us that they sometimes receive unsolicited approaches, usually by telephone, inviting them to undertake a transaction in shares they own.

If a shareholder does not know the source of the call, they should check the details against the Financial Conduct Authority (FCA) website below and, if they have specific information, report it to the FCA using the consumer helpline or the online reporting form.

If a shareholder is worried that they are a victim of fraud and is resident in the UK, they should report the facts immediately using the Action Fraud helpline on 0300 123 2040. More information about potential scams and other investment-based fraud can be found at **actionfraud.police.uk** or **fca.org.uk/scamsmart**.

Metal prices and exchange rates

Metal prices – average for the year		2020	2019	increase/ (decrease)
Copper	– US cents/lb	281	273	2.93%
Aluminium	– US$/tonne	1,702	1,791	-4.97%
Gold	– US$/troy oz	1,770	1,393	27.06%

Average exchange rates against the US dollar			
Sterling	1.28	1.28	0.00%
Australian dollar	0.69	0.70	-1.43%
Canadian dollar	0.75	0.75	0.00%
Euro	1.14	1.12	1.79%
South African rand	0.06	0.07	-11.59%

Year-end exchange rates against the US dollar			
Sterling	1.36	1.31	3.82%
Australian dollar	0.77	0.70	10.00%
Canadian dollar	0.78	0.77	1.30%
Euro	1.23	1.12	9.82%
South African rand	0.07	0.07	-4.23%

Shareholder Information continued

Financial calendar

2021		
19	January	Fourth quarter 2020 operations review
17	February	Announcement of results for 2020
4	March	Rio Tinto plc and Rio Tinto Limited ordinary shares and Rio Tinto plc ADRs quoted "ex-dividend" for the 2020 final dividend
5	March	Record date for the 2020 final dividend for Rio Tinto plc and Rio Tinto Limited ordinary shares and Rio Tinto plc ADRs
23	March	Final date for elections under the Rio Tinto plc and Rio Tinto Limited dividend reinvestment plans and under facilities for dividends to be paid in alternative currency for the 2020 final dividend
8	April	Dividend currency conversion date (Rio Tinto plc holders electing to receive Australian dollars and Rio Tinto Limited holders electing to receive pounds sterling)
9	April	Annual general meeting for Rio Tinto plc, UK
15	April	Payment date for the 2020 final dividend to holders of ordinary shares and ADRs
20	April	First quarter 2021 operations review
6	May	Annual general meeting for Rio Tinto Limited, Australia
16	July	Second quarter operations review 2021
28	July	Announcement of half-year results for 2021
12	August	Rio Tinto plc and Rio Tinto Limited ordinary shares and Rio Tinto plc ADRs quoted "ex-dividend" for the 2021 interim dividend
13	August	Record date for the 2021 interim dividend for Rio Tinto plc and Rio Tinto Limited ordinary shares and Rio Tinto plc ADRs
2	September	Final date for elections under the Rio Tinto plc and Rio Tinto Limited dividend reinvestment plans and under facilities for dividends to be paid in alternative currency for the 2021 interim dividend
16	September	Dividend currency conversion date (Rio Tinto plc holders electing to receive Australian dollars and Rio Tinto Limited holders electing to receive pounds sterling)
23	September	Payment date for the 2021 interim dividend to holders of ordinary shares and ADRs
15	October	Third quarter 2021 operations review

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Rio Tinto's agent in the US is Cheree Finan, who may be contacted at
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US

Shareholders

Please refer queries about shareholdings to the investor centre of the respective registrar.

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Website: computershare.com

Holders of Rio Tinto American depositary receipts (ADRs)
Please contact the ADR administrator if you have any queries about your ADRs.

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New Zealand residents only, toll free:
0800 450 740
Website: computershare.com

Former Alcan Inc. shareholders
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100 University Avenue
Toronto, ON
Canada
M5J 2Y1
Telephone: +1 514-982-7555
North American residents only, toll free: +1 (800) 564-6253
Website: computershare.com

Shareholder Information continued

Investor Centre

Investor Centre is Computershare's free, secure, self-service website, where shareholders can manage their holdings online. The website enables shareholders to:

- View share balances
- Change address details
- View payment and tax information
- Update payment instructions

In addition, shareholders who register their email address can be notified electronically of events such as annual general meetings, and can receive shareholder communications such as the Annual Report or notice of meeting electronically online.

Rio Tinto plc shareholders

Website: www.investorcentre.co.uk

Rio Tinto Limited shareholders

Website: www-au.computershare.com/Investor

Forward-looking statements

This report includes "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995. All statements other than statements of historical facts included in this report, including, without limitation, those regarding Rio Tinto's financial position, business strategy, plans and objectives of management for future operations (including development plans and objectives relating to Rio Tinto's products, production forecasts and reserve and resource positions), are forward-looking statements. The words "intend", "aim", "project", "anticipate", "estimate", "plan", "believes", "expects", "may", "should", "will", "target", "set to" or similar expressions, commonly identify such forward-looking statements.

Such forward-looking statements involve known and unknown risks, uncertainties and other factors which may cause the actual results, performance or achievements of Rio Tinto, or industry results, to be materially different from any future results, performance or achievements expressed or implied by such forward-looking statements. Such forward-looking statements are based on numerous assumptions regarding Rio Tinto's present and future business strategies and the environment in which Rio Tinto will operate in the future. Among the important factors that could cause Rio Tinto's actual results, performance or achievements to differ materially from those in the forward-looking statements include, but are not limited to: an inability to live up to Rio Tinto's values and any resultant damage to its reputation; the impacts of geopolitics on trade and investment; the impacts of climate change and the transition to a low-carbon future; an inability to successfully execute and/or realise value from acquisitions and divestments; the level of new ore resources, including the results of exploration programmes and/or acquisitions; disruption to strategic partnerships that play a material role in delivering growth, production, cash or market positioning; damage to Rio Tinto's relationships with communities and governments; an inability to attract and retain requisite skilled people; declines in commodity prices and adverse exchange rate movements; an inability to raise sufficient funds for capital investment; inadequate estimates of ore resources and reserves; delays or overruns of large and complex projects; changes in tax regulation; safety incidents or major hazard events; cyber breaches; physical impacts from climate change; the impacts of water scarcity; natural disasters; an inability to successfully manage the closure, reclamation and rehabilitation of sites; the impacts of civil unrest; the impacts of the COVID-19 pandemic; breaches of Rio Tinto's policies, standard and procedures, laws or regulations; trade tensions between the world's major economies; increasing societal and investor expectations, in particular with regard to environmental, social and governance considerations; the impacts of technological advancements; and such other risks identified in Rio Tinto's most recent Annual Report and accounts in Australia and the United Kingdom and the most recent Annual Report on Form 20-F filed with the United States Securities and Exchange Commission (the "SEC") or Form 6-Ks furnished to, or filed with, the SEC. Forward-looking statements should, therefore, be construed in light of such risk factors and undue reliance should not be placed on forward-looking statements. These forward-looking statements speak only as of the date of this report. Rio Tinto expressly disclaims any obligation or undertaking (except as required by applicable law, the UK Listing Rules, the Disclosure Guidance and Transparency Rules of the Financial Conduct Authority and the Listing Rules of the Australian Securities Exchange) to release publicly any updates or revisions to any forward-looking statement contained herein to reflect any change in Rio Tinto's expectations with regard thereto or any change in events, conditions or circumstances on which any such statement is based.

Nothing in this report should be interpreted to mean that future earnings per share of Rio Tinto plc or Rio Tinto Limited will necessarily match or exceed its historical published earnings per share.

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