

Rhyolite Ridge Ore Reserve Increased 280% to 60 million tonnes

HIGHLIGHTS

- Rhyolite Ridge total **Ore Reserve almost quadrupled to 60 million tonnes (mt)**¹
- Ore Reserve now contains a total of 0.6 mt of lithium carbonate and 5.3 mt of boric acid
- Approximately **half of the Ore Reserve is classified as Proved**
- Higher lithium grades in the Proved Ore Reserve to provide higher value ore in the early years of mining
- **Boron grades have increased by 26%** in the total Ore Reserve, significantly lifting boric acid production
- Ore Reserve provides 94% of tonnes in current 26-year mine plan
- Total **Mineral Resource of 146.5 mt containing a total of 1.2 mt of lithium carbonate and 11.9 mt of boric acid**
- Reserve and Resource upgrade is the basis for the Rhyolite Ridge Definitive Feasibility Study, released today

Thursday, 30 April 2020 – ioneer Ltd ('ioneer' or the 'Company') (ASX: INR), an emerging lithium-boron supplier, is pleased to announce a 280% upgrade to the Ore Reserve estimate for its 100%-owned Rhyolite Ridge Lithium-Boron Project ('Rhyolite Ridge' or the 'Project') in Nevada, USA.

Golder Associates Inc. ('Golder') estimated the Mineral Resource and Ore Reserve and provided the mining study for the Rhyolite Ridge Definitive Feasibility Study ('DFS').

The Ore Reserve has increased by 44.2 mt and is now estimated to contain:

- 60.0 mt at 1,800 ppm lithium (equivalent to 1.0% lithium carbonate) and 15,400 ppm boron (equivalent to 8.8% boric acid)
- Containing 0.6 mt of equivalent lithium carbonate and 5.3 mt of equivalent boric acid.

This represents an increase of 0.42 mt of lithium carbonate and 4.3 mt of boric acid compared to the previous (December 2018) Ore Reserve.

¹ All tonnes in this announcement are metric tonnes.

Approximately half of the Ore Reserve is now classified as Proved, the highest confidence category, with lithium and boron grades in the Proved Reserve higher than those in the Probable Reserve category.

Managing Director of Ioneer, Mr Bernard Rowe, commented:

“The 60 million tonne Ore Reserve provides the foundation for a very long mine life at the Rhyolite Ridge Project, with clear potential for expansion and extension underpinned by the 146.5 million tonne Mineral Resource.

Importantly, the planned Stage 1 quarry is exclusively Proved Reserves with higher-than-average lithium grades, which will provide higher cash flow in the early years of the Project.

The lithium-boron mineralisation remains open, particularly to the south where it continues to shallow and is generally higher in grade, and we expect further increases to Resources and Reserves with additional drilling.

With the recent focus by the US Government on ensuring the supply of critical minerals, Ioneer is well placed to become the first major domestic supplier of lithium to the American electric vehicle industry.”

Summary of 2020 Mineral Resource and Ore Reserve Estimates Rhyolite Ridge Lithium-Boron Project

	Metric Tonnes (mt)	Li Grade (ppm)	B Grade (ppm)	Equivalent Grade Li ₂ CO ₃ H ₃ BO ₃ (%) (%)		Equivalent Contained Tonnes Li ₂ CO ₃ H ₃ BO ₃ (kt) (kt)	
Mineral Resource							
Measured Resource	39.0	1,700	14,550	0.9	8.3	360	3,240
Indicated Resource	88.0	1,550	14,150	0.8	8.1	730	7,110
Measured and Indicated Resource	127.0	1,600	14,270	0.8	8.2	1,090	10,350
Inferred Resource	19.5	1,600	13,800	0.9	7.9	170	1,530
Total Mineral Resource	146.5	1,600	14,200	0.9	8.1	1,250	11,890
Ore Reserve							
Proved Reserve	29.0	1,900	16,250	1.0	9.3	290	2,700
Probable Reserve	31.5	1,700	14,650	0.9	8.4	280	2,620
Total Proved and Probable Ore Reserve	60.0	1,800	15,400	1.0	8.8	580	5,310

Note: Totals may differ due to rounding. Mineral Resources include Ore Reserves.

The 2020 Mineral Resource has slightly decreased from 154.0 mt in the 2019 Mineral Resource and is now estimated to contain:

- 146.5 mt at 1,600 ppm lithium (equivalent to 0.9% lithium carbonate) and 14,200 ppm boron (equivalent to 8.1% boric acid)
- 1.2 mt of equivalent lithium carbonate and 11.9 mt of equivalent boric acid.

Lithium grades are highest in the southwest portion of the South Basin, where the planned Stage 1 quarry of the DFS is located. The Stage 1 quarry will source ore exclusively from the Proved Ore Reserve detailed below. The DFS financial analysis shows that these significantly higher than average lithium grades provide stronger cash flows in the early years of the operations.

Background

The previous Ore Reserve estimate for Rhyolite Ridge was released on 21 December 2018² and the previous Mineral Resource estimate for Rhyolite Ridge was released on 26 June 2019³.

The Rhyolite Ridge DFS (released today) has the following key production parameters:

- Two-stage mine development with a starter quarry providing ore in the early years
- Ore processed at a rate of 2.5 mtpa
- Average life-of-mine production of 20,600 tpa of lithium carbonate, converting in year four to 22,000 tpa of battery-grade lithium hydroxide
- Average life-of-mine production of 174 tpa of boric acid.

Contained equivalent tonnes of lithium carbonate and boric acid reported in the Resources and Reserves estimates are the equivalent tonnages of products potentially available assuming 100% recovery. Lithium carbonate and boric acid do not naturally occur in the deposit but are processed products produced from the ore. Equivalent contained tonnes of lithium carbonate and boric acid are estimated using stoichiometric conversion factors derived from the molecular weights of the individual elements which make up lithium carbonate and boric acid. The factors used to convert lithium and boron grades are 5.322 for lithium carbonate and 5.718 for boric acid.

The lithium-boron Mineral Resource is contained in the B5, M5 and L6 geological units. Geological interpretation had a direct role in guiding and controlling the Mineral Resource estimation in that the mineralisation was modelled as a stratigraphically controlled lithium-boron deposit. Grade values were interpolated within the geological units using only samples intersected within those units.

The Resource remains open and has significant potential to expand with further drilling. In particular, the high-grade lithium-boron mineralisation within the B5 remains open to the south and additional drilling is planned to test for extensions. The southern-most drill hole (SBH-82) returned the highest-grade lithium-boron intersection at the Project to date – 18.6m of 2,364 ppm lithium and 13,044 ppm boron (true thickness).

The 2020 Ore Reserve and Mineral Resource estimates do not include:

- the extensive lithium-only clay mineralisation which generally is deposited above and below the lithium-boron (searlesite) mineralisation; and
- known lithium-boron mineralisation in the North Basin at Rhyolite Ridge, also 100% owned by Ioneer.

Further detailed information is provided in:

- Appendix A - Mineral Resource Statement and Parameters
- Appendix B – Ore Reserve Statement and Parameters
- Appendix C – Figures
- Appendix D – JORC Table 1

² Refer to Ioneer announcement titled “Rhyolite Ridge Drilling Update and Maiden Ore Reserve” dated 21 December 2018.

³ Refer to Ioneer announcement titled “Rhyolite Ridge Mineral Resource Upgrade” dated 26 June 2019.

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This ASX release has been authorised by iioneer Managing Director Bernard Rowe.

About iioneer

ioneer Ltd is the 100% owner of the Rhyolite Ridge Lithium-Boron Project located in Nevada, USA, the only known lithium-boron deposit in North America and one of only two known such deposits in the world. Rhyolite Ridge is expected to become a globally significant, long-life, cost-effective source of lithium and boron vital to a sustainable future.

Rhyolite Ridge's unique mineralogy allow lithium and boron to be extracted in a low-cost and environmentally sustainable manner. The Project's commercial viability is made possible by having both lithium and boron revenue streams.

Environmental stewardship is core to iioneer's strategy and mission. The Rhyolite Ridge Project is designed to be a sustainable, environmentally sensitive operation with no grid energy requirements, low water usage, low emissions, and a modest surface footprint. Baseline environmental studies have been completed as part of the April 2020 DFS.

Lithium is vital to enable technologies that combat climate change and reduce carbon emissions. It is a critical component for batteries essential to electric vehicles, and the conversion of intermittent green energy to base load power. The US Department of Interior listed lithium as a critical mineral in Executive Order 13817 (Federal Register, 83 FR 7065). There is only one producing lithium mine in the USA and no new projects are under construction. Rhyolite Ridge will help address the over-reliance on South American and Chinese supply to the lithium-ion battery industry.

Boric acid is also a very important material for clean technologies and sustainability and is only produced in a few locations globally. It is used in over 130 applications, including permanent magnets for electric cars and wind turbines, advanced glass for televisions, computers, handheld devices and solar panels. Over 70% of global boron reserves are located in Turkey with Rhyolite Ridge well positioned to geographically rebalance supply in the USA.

Competent Persons Statement

The information in this report that relates to the 2020 Mineral Resource estimate is based on information compiled by Jerry DeWolfe, a Competent Person who is a Professional Geologist (P.Geo.) with the Association of Professional Engineers and Geoscientists of Alberta (APEGA), a "Recognized Professional Organisation" included in a list promulgated by ASX from time to time. Mr. DeWolfe is a full-time employee of Golder Associates Ltd.

and is independent of Ioneer and its affiliates. Mr DeWolfe has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves' (JORC Code 2012). Mr DeWolfe consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

The information in this report that relates to the 2020 Ore Reserve estimate is based on information compiled by Terry Kremmel, a Competent Person who is a certified Professional Engineer ('PE') in the US and a Registered Member of the Society for Mining, Metallurgy, & Exploration ('SME'), a "Recognized Professional Organisation" included in a list promulgated by ASX from time to time. Mr. Kremmel is a full-time employee of Golder Associates Inc. (Golder) and is independent of Ioneer and its affiliates. Mr Kremmel has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves' (JORC Code 2012). Mr. Kremmel consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

Appendix A Mineral Resource Statement and Parameters

A summary of the 2020 Mineral Resource estimate is provided in the table below. Note that Mineral Resources are reported inclusive of the Ore Reserve described in Appendix B.

2020 Mineral Resource Estimate at 5,000 Boron Cut-off for Rhyolite Ridge South Basin

Group	Classification	Metric Tonnes (mt)	Li Grade (ppm)	B Grade (ppm)	Equivalent Grade		Equivalent Contained Tonnes	
					Li ₂ CO ₃ (%)	H ₃ BO ₃ (%)	Li ₂ CO ₃ (kt)	H ₃ BO ₃ (kt)
Upper Zone B5 Unit	Measured	26.0	1,900	18,050	1.0	10.3	260	2,670
	Indicated	41.0	1,750	17,250	0.9	9.9	380	4,070
	Inferred	8.5	1,950	15,000	1.0	8.6	90	710
	Total	75.5	1,800	17,300	1.0	9.9	720	7,450
Upper Zone M5 Unit	Measured	0.5	2,450	5,450	1.3	3.1	10	20
	Indicated	2.0	1,600	6,550	0.9	3.8	20	70
	Inferred	0.0	0	0	0.0	0.0	0	0
	Total	2.5	1,800	6,300	1.0	3.6	20	80
Upper Zone Total	Measured	26.5	1,900	17,800	1.0	10.2	270	2,680
	Indicated	43.0	1,750	16,850	0.9	9.6	390	4,130
	Inferred	8.5	1,950	15,000	1.0	8.6	90	710
	Total	77.5	1,800	16,950	1.0	9.7	750	7,530
Lower Zone L6 Unit	Measured	12.5	1,350	7,700	0.7	4.4	90	560
	Indicated	45.0	1,400	11,600	0.7	6.6	330	2,980
	Inferred	11.0	1,350	12,900	0.7	7.4	80	820
	Total	68.5	1,350	11,100	0.7	6.3	500	4,360
Total (All Zones)	Measured	39.0	1,700	14,550	0.9	8.3	360	3,240
	Indicated	88.0	1,550	14,150	0.8	8.1	730	7,110
	Inferred	19.5	1,600	13,800	0.9	7.9	170	1,530
	Grand Total	146.5	1,600	14,200	0.9	8.1	1,250	11,890

Notes:

1. mt = million tonnes; Li = lithium; B = boron; ppm = parts per million; Li₂CO₃ = lithium carbonate; H₃BO₃ = boric acid; kt = thousand tonnes.

2. Totals may differ due to rounding, Mineral Resources reported on a dry in-situ basis. Lithium is converted to Equivalent Contained Tonnes of Lithium Carbonate (Li₂CO₃) using a stoichiometric conversion factor of 5.322, and boron is converted to Equivalent Contained Tonnes of Boric Acid (H₃BO₃) using a stoichiometric conversion factor of 5.718. Equivalent stoichiometric conversion factors are derived from the molecular weights of the individual elements which make up Lithium Carbonate (Li₂CO₃) and Boric Acid (H₃BO₃).

3. The statement of estimates of Mineral Resources has been compiled by Mr. Jerry DeWolfe, who is a full-time employee of Golder Associates ('Golder') and a Professional Geologist ('P.Geo.') with the Association of Professional Engineers and Geoscientists of Alberta ('APEGA'), a "Recognized Professional Organization" included in a list promulgated by the ASX from time to time. Mr. DeWolfe has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity that he has undertaken to qualify as a Competent Person as defined in the JORC Code (2012).

4. All Mineral Resource figures reported in the table above represent estimates at 20 January 2020. Mineral Resource estimates are not precise calculations, being dependent on the interpretation of limited information on the location, shape and continuity of the occurrence

and on the available sampling results. The totals contained in the above table have been rounded to reflect the relative uncertainty of the estimate.

5. Mineral Resources are reported in accordance with the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (The Joint Ore Reserves Committee Code – JORC 2012 Edition).

6. The Mineral Resource estimate is the result of determining the mineralized material that has a reasonable prospect of economic extraction. In making this determination, constraints were applied to the geological model based upon a pit optimization analysis that defined a conceptual pit shell limit. The conceptual pit shell was based upon a 5,000ppm boron cut-off grade and was constrained by a conceptual Mineral Resource optimized pit shell for the purpose of establishing reasonable prospects of eventual economic extraction based on potential mining, metallurgical and processing grade parameters identified by mining, metallurgical and processing studies performed to date on the Project. Key inputs in developing the Mineral Resource pit shell included a 5,000ppm boron cut-off grade, Mining cost of US\$2.67/tonne plus \$0.0059/tonne-vertical metre of haulage; plant feed processing and grade control costs of US\$45.45/tonne of plant feed; boron and lithium recovery of 83.5% and 81.8%, respectively; boric acid sales price of US\$700/tonne; lithium carbonate sales price of US\$10,000/tonne; and sales/transport costs of US\$160/tonne of product.

7. The Upper Zone within the 2020 Mineral Resource contains 77.6Mt at 1,800ppm lithium and 16,950ppm boron, which are greater than the average grades of 1,600ppm lithium and 14,200ppm boron in the total Mineral Resource. The planned starter pit (i.e., the Stage 1 Quarry) only contains ore from the Measured Mineral Resource within the Upper Zone.

Comparison with Previous Resource

The table below presents a summary comparison of the 2020 Mineral Resource estimate presented above, against the previous Mineral Resource published by Ioneer in June 2019 (which was also prepared by Golder).

Group	Classification	Metric Tonnes (mt)	Li Grade (ppm)	B Grade (ppm)	Equivalent Grade		Equivalent Contained Tonnes	
					Li ₂ CO ₃ (%)	H ₃ BO ₃ (%)	Li ₂ CO ₃ (kt)	H ₃ BO ₃ (kt)
January 2020 Resource	Measured	39.0	1,700	14,550	0.9	8.3	360	3,240
	Indicated	88.0	1,550	14,150	0.8	8.1	730	7,110
	Inferred	19.5	1,600	13,800	0.9	7.9	170	1,530
	Total	146.5	1,600	14,200	0.9	8.1	1,250	11,890
June 2019 Resource	Measured	41.0	1,700	14,400	0.9	8.2	370	3,380
	Indicated	89.5	1,550	13,950	0.8	8.0	740	7,130
	Inferred	24.0	1,700	13,900	0.9	8.0	220	1,900
	Total	154.0	1,650	14,100	0.9	8.1	1,330	12,420
Variation	Measured	-2.0	0	150	0.0	0.1	-10	-140
	Indicated	-1.5	0	200	0.0	0.1	-10	-20
	Inferred	-4.5	-100	-100	0.0	-0.1	-50	-370
	Total	-7.5	-50	100	0.0	0.0	-80	-530

The 2020 and 2019 Mineral Resource estimates were estimated using a 5,000ppm boron cut-off grade applied to the B5, M5 and L6 geologic units and have been constrained by conceptual pit shells determined from pit optimisations. Key inputs in developing the Mineral Resource pit shell were described above.

The above table details the relatively minor changes between the Mineral Resource estimates. Compared with the June 2019 estimate, the updated January 2020 estimate has:

- An overall 7.5 mt reduction in the global Resource tonnes, representing a 5% reduction from the global Resource estimate tonnes presented in the June 2019 estimate. The majority (60%) of the reduction in Resource tonnes occurs within the Inferred category.
- The overall lithium grade has reduced slightly while the boron grade has increased slightly relative to the June 2019 Mineral Resource estimate.

The small reduction in the global Mineral Resource tonnes is due to the revised structural model completed in January 2020. The reinterpretation of the eastern limb of the basin syncline has resulted in reduced strike length and localized thinning of the beds, resulting in volume loss in the B5, M5, and L6 beds within the eastern limb.

Summary of Resource Estimate Parameters and Reporting Criteria

In accordance with ASX Listing Rules and the JORC Code (2012 Edition), a summary of the material information used to estimate the Mineral Resource is summarised below (for further information please refer to Table 1 in Appendix D).

- The Rhyolite Ridge Mineral Resource area extends over a north-south strike length of 2,450m (from 4,184,000 mN – 4,186,450 mN), has a maximum width of 1,250m (424,150 mE – 425,400 mE) and includes the 420m vertical interval from 1,920mRL to 1,500 mRL.
- The Rhyolite Ridge Project tenements (unpatented mining claims) are owned by Ioneer Minerals Corporation, a company wholly owned by Ioneer Ltd. The patented mining claims are located on US federal land administered by the Bureau of Land Management (BLM).

Geology and Geological Interpretation

- Lithium and boron mineralisation is stratiform in nature and is hosted within Tertiary-age carbonate-rich sedimentary rock, deposited in a lacustrine environment in the Basin and Range terrain of Nevada, USA.

Drilling Techniques and Hole Spacing

- Drill holes used in the Mineral Resource estimate included 42 reverse circulation (RC) holes and 65 core holes for a total of 8,952m within the defined mineralisation. The full database for the South Basin contains records for 109 drill holes for 24,300m of drilling.
- Drill hole spacing is 100m by 100m (or less) over most of the deposit. Spacing increases to approximately 200m by 300m along the eastern margin of the deposit.
- Drill holes were logged for a combination of geological and geotechnical attributes. The core has been photographed and measured for RQD and core recovery.

Sampling and Sub-Sampling Techniques

- Drilling was conducted by American Lithium Minerals Inc., the previous owner of the property between 2010 and 2011 and by Ioneer in 2017 to 2019. For RC drilling, a 12.7-centimetre (cm) hammer was used with sampling conducted on 1.52m intervals and split using a rig mounted rotary splitter. The hammer was replaced with a tri-cone bit in instances of high groundwater flow. For diamond core, HQ core size

diameter with standard tube was used. Core recoveries of 97% were achieved byioneer at the project. The core was sampled as half core at 1.52m intervals using a standard electric core saw.

Sampling Analysis Method

- Samples were submitted to ALS Minerals Laboratory in Reno, Nevada for sample preparation and analysis. The entire sample was oven dried at 105° and crushed to - 2 millimetre (mm). A sub-sample of the crushed material was then pulverised to better than 85% passing -75 microns (µm) using a LM5 pulveriser. The pulverised sample was split with multiple feed in a Jones riffle splitter until a 100-200 gram (g) sub-sample was obtained for analysis.
- Analysis of the samples was conducted using aqua regia 2-acid and 4-acid digest for ICP-MS on a multi-element suite. This method is appropriate for understanding sedimentary lithium deposits and is a total method.
- Standards for lithium, boron, strontium and arsenic and blanks were routinely inserted into sample batches and acceptable levels of accuracy were reportedly obtained. Based on an evaluation of the quality assurance and quality control (QA/QC) results all assay data has been deemed by the Golder Competent Person as suitable and fit for purpose in Mineral Resource estimation.

Cut-off Grades

- The Mineral Resource estimate presented in this Report has been constrained by the application of an optimised Mineral Resource pit shell and a 5,000ppm boron cut-off grade for the purpose of establishing reasonable prospects of eventual economic extraction based on PFS level mining, metallurgical and processing grade parameters identified by mining, metallurgical and processing studies performed to date on the Project. The Mineral Resource pit shell was developed using Maptek's Vulcan Mine Planning software.
- Key input parameters and assumptions for the Mineral Resource pit shell included the following:
 - Boron cut-off grade of 5,000ppm.
 - Overall pit slope angle of 35 degrees in the alluvium, 20 degrees in the M5, and 42 degrees in other rock units (wall angle guidance provided by EnviroMINE, Inc., who developed the geotechnical design).
 - Mining cost of US\$2.67/tonne plus \$0.0059/tonne-vertical metre of haulage.
 - Ore processing and grade control costs of US\$45.45/tonne of ore.
 - Boron and lithium recovery of 83.5% and 81.8%, respectively.
 - Boric acid sales price of US\$700/tonne.
 - Lithium carbonate sales price of US\$10,000/tonne.
 - Sales/transport costs of US\$160/tonne of product.

- The presence of boron associated with lithium is considered favourable as the mineralisation potentially has higher value and, based on studies by Ioneer, has potentially lower processing costs and capital requirements.

Estimation Methodology

- Drill core samples were composited to 1.52m composite lengths prior to interpolation of grade data into the block model. Composite lengths honoured geological contacts (i.e. composites did not span unit contacts). The composite length was selected based on the median sample length from the drill hole assay database.
- Following a statistical review of the grade parameters, restricted interpolation controls were applied to boron grade interpolation for all units other than the primary mineralized units B5, M5 and L6. Restricted interpolation of Boron grade data was applied in place of grade cutting or capping to allow for use of all validated grade values while limiting the potential impact of overestimating spatially isolated high-grade results in the generally unmineralised units. Restricted interpolation controls were not applied to any other grade parameters.
- The geological model used as the basis for estimating Mineral Resources was developed as a stratigraphic gridded surface model using a 7.6m regularized grid. The grade block model was developed using a 15.2m north-south by 15.2m east-west by 1.52m vertical parent block dimension with maximum sub-celling dimensions of 3.8m by 3.8m by 0.4m. The grid cell and block size dimensions represent 25 percent of the nominal drill hole spacing across the model area.
- Inverse Distance Squared ('ID²') grade interpolation was used for the estimate, constrained by stratigraphic unit roof and floor surfaces from the geological model. Up to four passes were used to estimate the blocks in the model and more than 99% of blocks were filled in the first two passes.
- The density values used to convert volumes to tonnages were assigned on a by-geological unit basis using mean values calculated from 249 density samples collected from drill core during the 2010-2011 and drilling programs. The density values ranged from 1.80 grams per cubic centimetre ('g/cm³') to 2.11g/cm³. The density analyses were performed using the Archimedes-principle (water displacement) method for density determination, with values reported in dry basis.

Classification Criteria

- Estimated Mineral Resources were classified as follows:
 - Measured: 152.5m spacing between points of observation, with sample interpolation from a minimum of two drill holes.
 - Indicated: 305m spacing between points of observation, with sample interpolation from a minimum of two drill holes.
 - Inferred: 610m spacing between points of observation, with sample interpolation from a minimum of two drill holes.
- The Mineral Resource classification has included the consideration of data reliability, spatial distribution and abundance of data and continuity of geology and grade parameters.

Mining and Metallurgical Methods and Parameters

- Based on the relatively low angle dips, thicknesses and depths of the mineralised bodies that have been modelled, as well as their estimated grades, the potential extraction method is considered to be open pit mining.
- There are two types of mineralisation present:
 - lithium-boron mineralisation that is low in clay content and low-moderate in carbonate content; and
 - lithium-only mineralisation that has higher clay content and moderate to high carbonate content.
- Ioneer is focussing its evaluation and testwork on the lithium-boron mineralisation as it potentially is of higher value with lower processing and capital costs.
- Based on test work completed for Ioneer by Kemetco Research of Vancouver, Canada, Kappes Cassiday of Nevada, USA, Hazen Research of Colorado, USA and SGS Minerals of Ontario, Canada and reported by Ioneer both the lithium-boron and lithium-only mineralisation have a reasonable expectation of economic extraction.
- Metallurgical test work has been conducted on drill core and outcrop samples and shows that the lithium-boron mineralisation is amenable to acid leaching (sulphuric).

Appendix B

Ore Reserve Statement and Parameters

A summary of the 2020 Ore Reserve estimate is provided in the table below. The Ore Reserve is the economically mineable part of the Measured and Indicated Resource. It includes allowances for mining dilution and ore losses in mining. Appropriate assessments and studies have been carried out and include consideration of and modification by realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social, and governmental factors. These assessments demonstrate at the time of reporting that the extraction could be reasonably justified.

2020 Ore Reserve Estimate at 5,000 Boron Cut-off for Rhyolite Ridge South Basin

Area	Classification	Metric Tonnes (mt)	Li Grade (ppm)	B Grade (ppm)	Equivalent Grade		Equivalent Contained Tonnes	
					Li ₂ CO ₃ (%)	H ₃ BO ₃ (%)	Li ₂ CO ₃ (kt)	H ₃ BO ₃ (kt)
Stage 1 Quarry	Proved	11.0	2,050	14,950	1.1	8.5	120	930
	Probable	0.0	0	0	0.0	0.0	0	0
	Total	11.0	2,050	14,950	1.1	8.5	120	930
Stage 2 Quarry	Proved	18.0	1,800	17,100	1.0	9.8	170	1,760
	Probable	31.5	1,700	14,650	0.9	8.4	280	2,620
	Total	49.5	1,750	15,550	0.9	8.9	460	4,380
Stage 1 + 2 Quarry	Proved	29.0	1,900	16,250	1.0	9.3	290	2,700
	Probable	31.5	1,700	14,650	0.9	8.4	280	2,620
	Total	60.0	1,800	15,400	1.0	8.8	580	5,310

Notes:

1. mt = million tonnes; Li = lithium; B = boron; ppm = parts per million; Li₂CO₃ = lithium carbonate; H₃BO₃ = boric acid; kt = thousand tonnes.

2. Totals may differ due to rounding, Ore Reserves reported on a dry in-situ basis delivered to the processing plant stockpile. Lithium is converted to Equivalent Contained Tonnes of Lithium Carbonate (Li₂CO₃) using a stoichiometric conversion factor of 5.322, and boron is converted to Equivalent Contained Tonnes of Boric Acid (H₃BO₃) using a stoichiometric conversion factor of 5.718. Equivalent stoichiometric conversion factors are derived from the molecular weights of the individual elements which make up Lithium Carbonate (Li₂CO₃) and Boric Acid (H₃BO₃).

3. The statement of estimates of Ore Reserves has been compiled by Mr. Terry Kremmel, who is a full-time employee of Golder Associates Inc. ('Golder') and a certified Professional Engineer ('PE') in the US and a registered member of the Society for Mining, Metallurgy, & Exploration ('SME'), a "Recognised Professional Organisation" included in a list promulgated by the ASX from time to time. Mr. Kremmel has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity that he has undertaken to qualify as a Competent Person as defined in the JORC Code (2012).

4. All Ore Reserve figures reported in the table above represent estimates at 17 March 2020. Ore Reserve estimates are not precise calculations, being dependent on the interpretation of limited information on the location, shape and continuity of the occurrence and on the available sampling results. The totals contained in the above table have been rounded to reflect the relative uncertainty of the estimate. Ore Reserves are reported in accordance with the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (The Joint Ore Reserves Committee Code – JORC 2012 Edition).

5. The reported Ore Reserve estimate was constrained by two designed pits, referred to as the Stage 1 Quarry and Stage 2 Quarry, and includes diluting materials and allowances for losses. All Proved Ore Reserves were derived from the Measured Mineral Resource classification, and all Probable Ore Reserves were derived from the Indicated Mineral Resource classification only. The results of the Ore Reserve estimate are supported by the outcomes of an economic analysis completed in support of the April 2020 DFS. The Competent Person is satisfied that the stated Ore Reserves classification of the deposit appropriately reflects the outcome of the technical and economic studies.

Comparison with Previous Ore Reserve

The table below presents a summary comparison of the 2020 Ore Reserve estimate presented above, against the previous Ore Reserve published by Ioneer in December 2018 (which was prepared by RPM Global).

Group	Classification	Metric Tonnes (mt)	Li Grade (ppm)	B Grade (ppm)	Equivalent Grade		Equivalent Contained Tonnes	
					Li ₂ CO ₃ (%)	H ₃ BO ₃ (%)	Li ₂ CO ₃ (kt)	H ₃ BO ₃ (kt)
March 2020 Reserve	Proved	29.0	1,900	16,250	1.0	9.3	290	2,700
	Probable	31.5	1,700	14,650	0.9	8.4	280	2,620
	Total	60.0	1,800	15,400	1.0	8.8	580	5,310
December 2018 Reserve	Proved	0.0	0	0	0.0	0.0	0	0
	Probable	15.8	1,900	12,200	1.0	7.0	160	1,026
	Total	15.8	1,900	12,200	1.0	7.0	160	1,026
Variation	Proved	29.0	1,900	16,250	1.0	9.3	290	2,700
	Probable	15.7	-200	2,450	-0.1	1.4	120	1,594
	Total	44.2	-100	3,200	0.0	1.8	420	4,284

Compared with the 2018 estimate, the updated 2020 Ore Reserve estimate has been:

- upgraded with 48% of the Reserve now in the Proved category
- increased by 44.2mt to a total of 60.2mt, representing a 281% tonnage increase for the total Ore Reserve
- overall lithium grade has remained the same at 1.0% lithium carbonate while the boron grade has increased by 26% to 8.8% boric acid.

Summary of Reserve Estimate Parameters and Reporting Criteria

In accordance with ASX Listing Rules and the JORC Code (2012 Edition), a summary of the material information used to estimate the Ore Reserve is summarised below (for further information please refer to Table 1 in Appendix D).

Mineral Resource Estimate for Conversion to Ore Reserves

The Ore Reserves are based on an updated 20 January 2020 Mineral Resource by Golder Competent Person Jerry DeWolfe, P.Geo. The Mineral Resource reported for the M5, B5 and L6 domains is outlined in Appendix A, and the Mineral Resources are reported inclusive of the Ore Reserves.

Cut-off Parameters

A cut-off grade of 5,000ppm boron was applied; no cut-off for lithium was used. The 5,000ppm boron limit was set by leaching process test work.

Mining Method and Assumptions

The deposit will be mined by open-pit mining methods with 9.1 metre ('m') bench heights using 17 cubic metre ('m³') hydraulic excavators, a 12-m³ wheel loader, and 136-tonne autonomous haul trucks ('AHTs'). This is the most appropriate mining method for extraction of the resource due to the moderately steep dip of the deposit, moderate stripping ratio, mining equipment access requirements to remove overburden and extract ore, and rock properties of the various stratigraphic units present in the deposit. The modifying factors applied to convert the Mineral Resources to Ore Reserves assume the use of high-precision, Global Positioning System ('GPS') guided excavators and track dozers to minimise dilution and maximise ore recovery. A mining dilution of 0.5m and mining loss of 0.3m were applied at each roof and floor interface of the ore seams on this basis. These modifying factors are equivalent to 9% dilution and 6% mining recovery on a percent weight basis.

Pit optimisations were performed to target the initial 30-year pit. However, the pit and phase designs were further designed due to the presence of the M5a unit to mitigate potential pit slope stability issues that could occur due to the presence of this unit, reducing the life of the pit. The M5a unit is described as a very weak, swelling clay that has low friction angle and cohesion (as tested in the laboratory) and is present throughout the deposit. The resultant 26-year pit design and associated phases were based on geotechnical studies and recommendations prepared by EnviroMINE Inc. ('EnviroMINE') as part of the DFS. Due to the dip and orientation of the M5a unit, the designed pit was smaller than the maximum economic pit limits defined by the pit optimisation exercise. Additional drilling to the north of the Stage 2 Quarry could help to better define the dip and orientation of the M5a unit in this area and could potentially allow for the expansion of the quarry and Ore Reserves.

Based on recommendations provided by EnviroMINE, mining outside of the Stage 1 Quarry extents must begin with a pre-strip operation at the up-dip exposure of the eastern fold limbs with overburden removed down-dip to the west from the eastern extent of the Stage 2 Quarry limits. The Stage 2 Quarry will be incrementally mined from south to north with the advancing face orientated roughly perpendicular to the dip of the M5a unit as mining advances. Based on the current mine plan, the pre-strip of the Stage 2 Quarry will begin in the fourth year of production to facilitate continuous delivery of ore to the processing plant.

The mining schedule was generated to honour environmental and geotechnical requirements while attempting to maximise in-pit backfill opportunities to the extent possible. Due to the pre-stripping requirements and EnviroMINE's recommended mining approach to mitigate potential issues with the M5a unit, sufficient pit floor space is not anticipated to be available for in-pit backfilling until year eight. Overburden and non-ore grade M5 material that cannot be stacked to in-pit backfill will be stored in one of two designed ex-pit Overburden Storage Facilities ('OSFs').

Inferred Resources that represent 6% of the total plant feed were included in the 26-year DFS mine plan that formed the basis of the Ore Reserves estimate. Upon completion of the cost estimates and associated economic analysis, a sensitivity analysis was performed by removing the revenue generated by the Inferred tonnages from the cash flow. The outcome of this sensitivity analysis concluded that the Project viability is not dependent upon the inclusion of the Inferred Resources. Stated Ore Reserves have only been reported from the Measured and Indicated Resource categories with Modifying Factors applied.

Processing Method and Assumptions

The process flowsheet and process plant assumptions developed for the 2020 DFS by Fluor were used for this Ore Reserve estimate. In-depth metallurgical test work and pilot plant programs were performed over the 18-month duration of the DFS on over 27 tonnes of ore to optimise the process flowsheet. Some metallurgical test work is still ongoing to confirm and further reduce risk of specific areas in the process flowsheet. The results from the test work will be incorporated and updated during the detailed engineering phase, over the next year, based on the criticality of the effect on the current design. Ore will be processed by ore sizing, vat acid leaching, impurity removal, evaporation, and crystallisation using a flowsheet developed specifically for the Project to generate technical-grade lithium carbonate and boric acid. Test work has also confirmed that refining the technical-grade lithium carbonate (>99.0% purity) to battery-grade lithium hydroxide (>99.5% purity) is technically and commercially feasible through a limiting route. No impediments have been identified to the technical and commercial feasibility for conversion of the technical-grade lithium carbonate to battery-grade lithium carbonate through the bi-carbonation route.

Environmental

The Project is designed to be a sustainable, environmentally sensitive operation with no grid energy requirements, low water usage, low emissions, and a modest surface footprint. Baseline environmental studies were performed as part of the April 2020 DFS.

The permitting process for 28 separate permits is currently underway for the Stage 1 Quarry, an initial starter pit that supplies ore for the first three years of production. The permits deemed critical to the advance of the overall Project include the Bureau of Land Management ('BLM') Plan of Operations, the State of Nevada Water Pollution Control Permit ('WPCP') required to construct, operate, and close a mining facility, and the Nevada Bureau of Air Pollution Control air quality permit.

The BLM permitting process will require compliance with the National Environmental Policy Act ('NEPA'); Ioneer is actively preparing to meet these requirements. The NEPA requirements include baseline reports for 14 different resource areas of the Project, including air quality, biology, cultural resources, groundwater, recreation, socioeconomics, soils, and rangeland. A Plan of Operations is also required by the BLM and includes measures to prevent unnecessary or undue degradation of public lands by operations authorised under the Mining Act (1872). The Plan of Operations will be submitted to the BLM in 2Q 2020, and this filing will trigger the environmental review process under NEPA that is expected to follow an Environmental Impact Statement ('EIS') pathway. The NEPA process will be guided by recently implemented guidelines specified in Secretarial Order 3355 by the US Department of the Interior which have been enacted to streamline the overall environmental review and permitting process. If the Project is selected for evaluation under an EIS, a draft and then final EIS would be completed by a BLM-approved third-party contractor selected by Ioneer. Public comment periods are required as part of the EIS process, and the Project schedule assumes 12 months of EIS approval cycle.

Preparation of all other permits, including federal, state, and local permits, are also in progress with various applications expected to be submitted in 2020. Development of the larger Stage 2 Quarry, which is effectively an expansion of the Stage 1 Quarry, will begin once the environmental permits for this development have been granted. Based on the current mine plan, these permits will need to be secured by the end of the third year of production, which is currently slated for 2026.

Infrastructure

The Project is currently in the development stage, and no site-specific infrastructure has been built to date. Sufficient land exists to locate all proposed infrastructure required for the Project, including haul roads, Overburden Storage Facilities ('OSFs'), Spent Ore Storage Facility ('SOSF'), Contact Water Ponds ('CWPs'), the processing plant ('which includes processing structures and facilities'), maintenance facilities, warehousing, shipping and receiving, fuel island, Sulphuric Acid Plant ('SAP'), Steam Turbine Generator ('STG') responsible for power generation/transmission, and administrative buildings.

The STG will generate 35.2 mega-Watts ('MW') of electricity using steam generated by the waste heat boiler in the SAP. The STG power generation will exceed the power requirements to run the entire facility and will be separate from the Nevada state power grid. A backup diesel generator will also be available to provide black-start capability and provide power to essential systems should the STG be down.

The Project has been designed to be an environmentally sensitive operation with low water usage and water recycling and reuse where possible. There is sufficient water available to meet processing and dust control requirements.

Revenue Factors

The revenue factors used in the economic analysis were based on work performed for the April 2020 DFS. Annual saleable lithium carbonate, lithium hydroxide, and boric acid tonnages reflect the head grade dictated by the mine plan and anticipated metallurgical recoveries estimated from test work. Based on this test work, fixed lithium recoveries of 84.6% for lithium and 78.7% for boron have been applied. These recoveries have been applied to reflect the cumulative recovery of the unit processes that span from vat leaching to product production. Lithium carbonate and boric acid tonnages have been estimated using stoichiometric conversion factors based on the lithium and boron grades.

Price forecasts for lithium carbonate and lithium hydroxide were obtained from a range of market research companies, investment banks, and other reputable sources. The commodity prices for the first three years of lithium carbonate production were the average of the latest Roskill technical-grade published price forecast (in real terms) and Benchmark Mineral Intelligence ('Benchmark') lithium hydroxide forecast (in real terms) adjusted to reflect the cost to upgrade the technical-grade lithium carbonate as published by Orocobre related to its venture with Toyota Tsusho. Lithium hydroxide, which will be produced from the fourth year of production and on, were the average of the Roskill lithium hydroxide and Benchmark lithium hydroxide forecasts.

The estimated price for boric acid was based on a bottom-up analysis by Ioneer's Sales and Marketing team using 1) Ioneer current contracts, and 2) pricing given boric acid supply and demand based on historical market data and discussions with potential customers.

Costs

The capital and operating cost estimates used as inputs into the economic analysis that formed the basis of the Ore Reserve estimate are based on work completed for the April 2020 DFS. An AACE Class 3 capital cost estimate with an accuracy range of $\pm 15\%$ was produced for the DFS, and engineering design is 30% complete. The estimate reflects the Project's EPCM execution strategy and baseline project schedule. Capital costs for various Work Breakdown Structure (WBS) codes were independently developed by third parties and

consolidated by Fluor. More than 1,500 deliverables were produced during the DFS to support the capital costs estimate.

The capital cost estimate covers the period from DFS completion to commissioning and is reported in First Quarter ('Q1') 2020 real US dollars without allowances for escalation or currency fluctuation. The estimate does not include sunk costs. A contingency of 8% was applied to the capital costs estimate using a Monte Carlo simulation to achieve a P50 (i.e., the probability at the 50th percentile).

Direct mine operating costs are zero-based and developed from first-principles from the mine plan production statistics using methodologies consistent with a DFS. Except for blasting, all production and preventative maintenance tasks are assumed to be self-performed by the owner (ioneer). Blasting is assumed to be performed by a qualified subcontractor. Operating costs for processing, spent ore removal, the SAP, and other indirect operating costs were estimated by Fluor and SNC Lavalin from first-principles using the ore production schedule from the mine plan. These costs were estimated using methodologies consistent with a DFS and included quoted firm pricing from major reagent suppliers, quoted freight costs from transport firms, and workforce costs based on industry norms for salary and wage data within the region consistent with the mine workforce costs. Reasonable scenarios for other requirements such as outsourced services with quoted rates or estimates were also included. Quantities of reagents were established during pilot testing with ore.

Economic

The production schedule derived from the mine plan and associated capital and operating cost estimates was analysed using the financial model developed by Golder. The model was handed over to Fluor for finalisation, and Fluor produced the economic results. Inputs into the economic analysis include the capital and operating costs, saleable lithium carbonate, lithium hydroxide, and boric acid tonnages, commodity price and revenue forecasts, and transportation and management costs. Cost estimates were performed to a relative accuracy and confidence level consistent with a Feasibility Study.

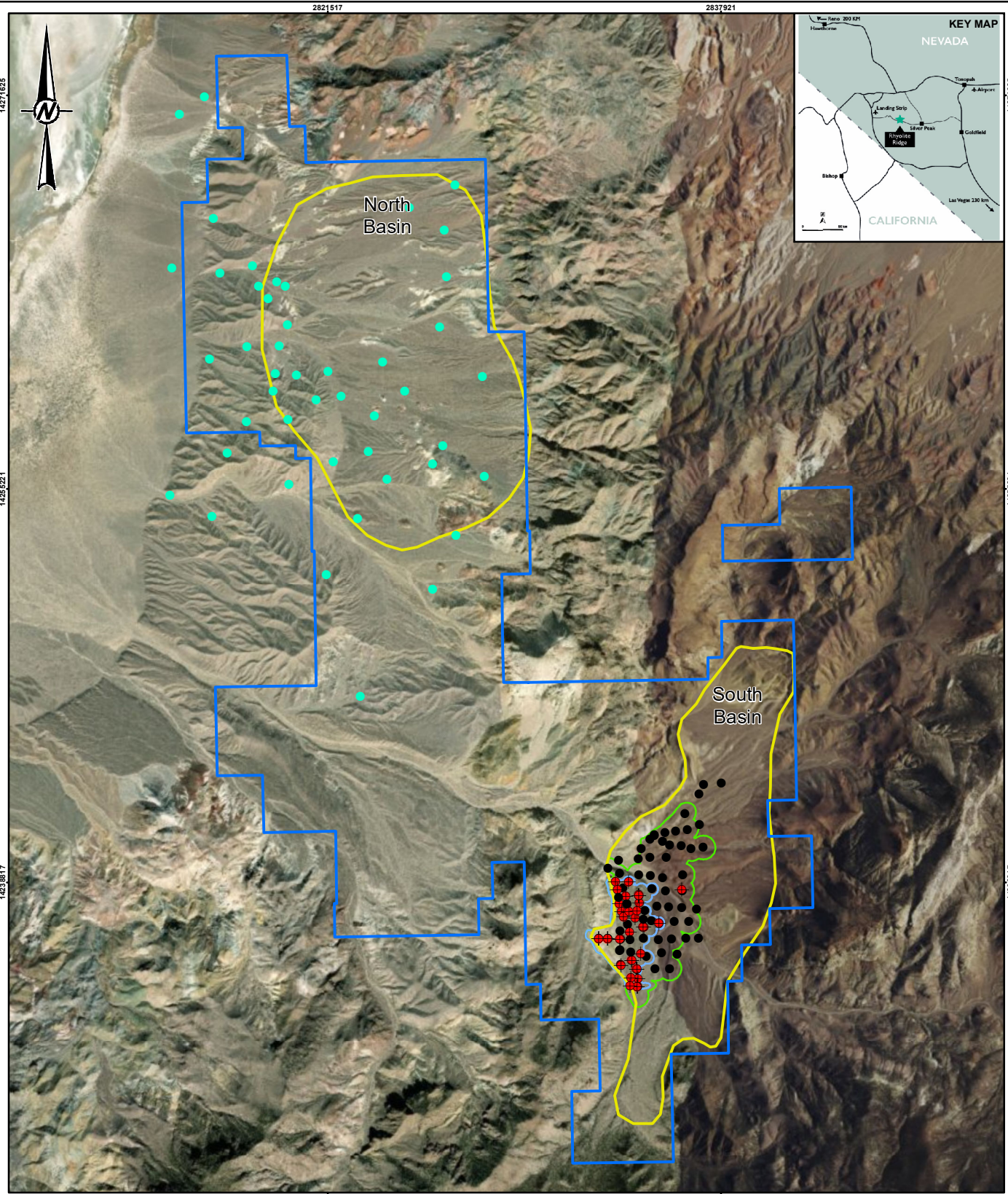
Costs, revenue factors and economics:

- Project operating costs (net of boric acid credit) are forecast to average US\$2,510/tonne LCE.
- Project initial capital expenditure of US\$785 million.
- Average life of mine sale prices of US\$13,000/tonne for LCE and US\$710/tonne for boric acid have been used for DFS mine planning.
- The Project has an NPV of US\$1.265 billion and an unlevered, after tax IRR of 20.8% for the forecast life-of-mine in the DFS.

APPENDIX C – FIGURES

Appendix C contains the following Figures:

1. North and South Basin plan showing the location of drill holes, Resource and tenement boundary.
2. South Basin plan showing outlines of Measured, Indicated and Inferred Mineral Resources
3. South Basin plan showing outlines of Proved and Probable Ore Reserves
4. East-west cross-section XS-06
5. North-south long-section



- LEGEND**
- | | | | |
|--|----------------------|--|--------------------|
| | Tenement Boundary | | Measured Resource |
| | Basin Outline | | Indicated Resource |
| | 2018-2019 Drill Hole | | |
| | Pre-2018 Drill Hole | | |
| | US Borax Drill Holes | | |

0 2,500 5,000

1:70,000 METRES

NOTE(S)
OUTLINE OF IONEER MINING CLAIMS OVER RHYOLITE RIDGE NORTH AND SOUTH BASINS

REFERENCE(S)
DATUM: NAD 83 STATE PLANE NEVADA WEST

CLIENT
IONEER LTD.



PROJECT
RHYOLITE RIDGE PROJECT - SOUTH BASIN
JORC RESOURCE REPORT

CONSULTANT

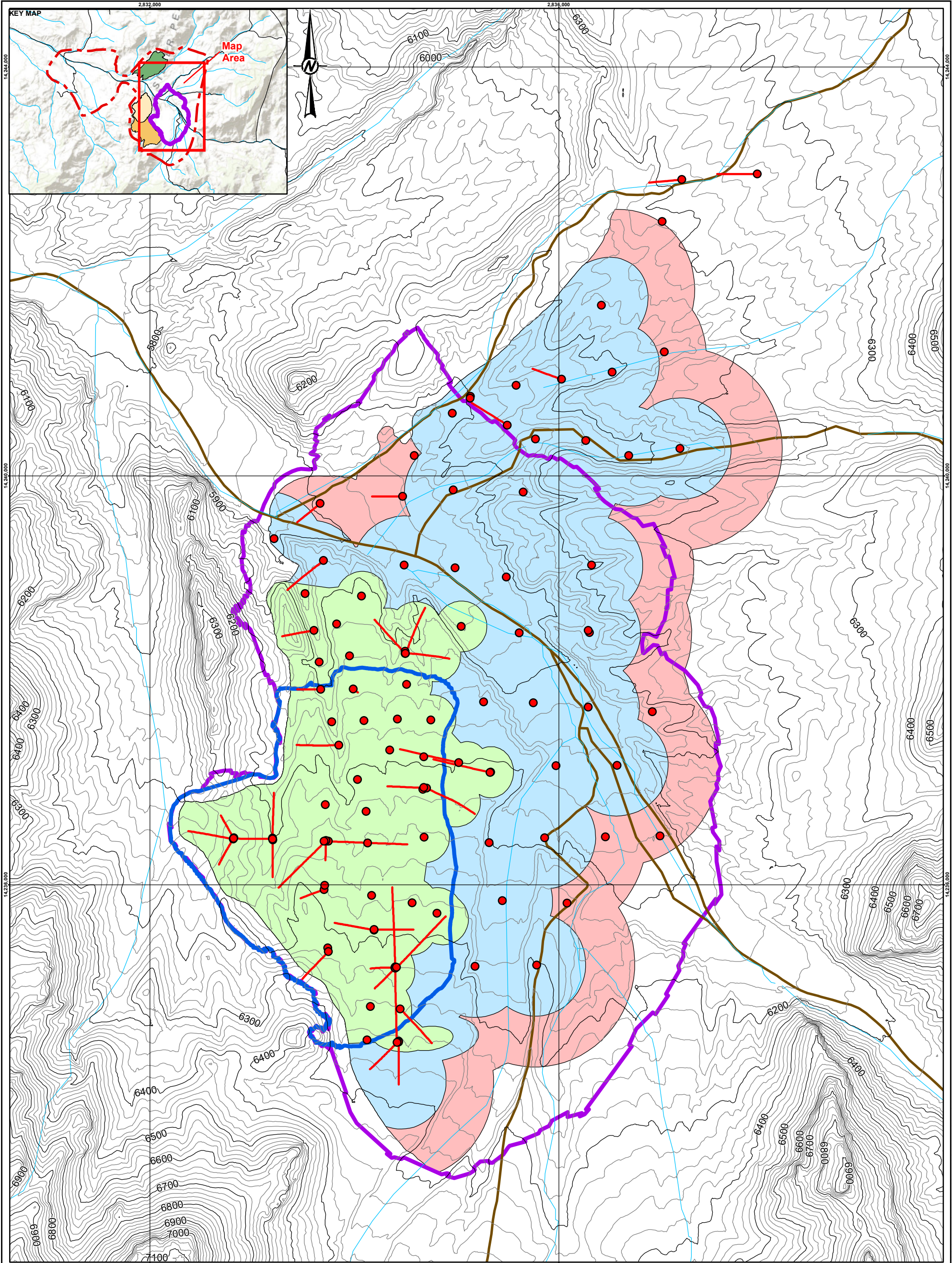
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DESIGNED	JS
PREPARED	JS
REVIEWED	JDW
APPROVED	JDW



TITLE
NORTH & SOUTH BASIN PLAN MAP

PROJECT NO. 18107519 CONTROL NO. RR30-K101-10-MG-REP-00007 0

FIGURE
01



Stage 1 Pit Crest

Stage 2 Pit Crest

Drillholes

Measured Resource

Indicated Resource

Inferred Resource

Roads

River/Stream

Current Topography

Minor Contours (20ft)

Major Contours (100ft)

0

1,000

2,000

1 Inch = 900 Feet

Feet

REFERENCE(S)

1. SITE DATA PROVIDED BY FLUOR

2. NAD 1983 STATE PLANE NEVADA WEST FIPS 2703 FEET

3. "UNLOADING AREA" POLYGONS PROVIDED BY ENVIROMINE IN "RHYOLITE RIDGE LOQ GEOTECHNICAL RECOMMENDATIONS"

CLIENT

IONEER LTD.

PROJECT

RHYOLITE RIDGE FEASIBILITY STUDY

TITLE

MII RESOURCE POLYGONS AND DRILLHOLE TRACES

CONSULTANT

YYYY-MM-DD 2020-04-24

DESIGNED

ARO

PREPARED

ARO

REVIEWED

JW

APPROVED

TK

PROJECT NO.

18107519

CONTROL

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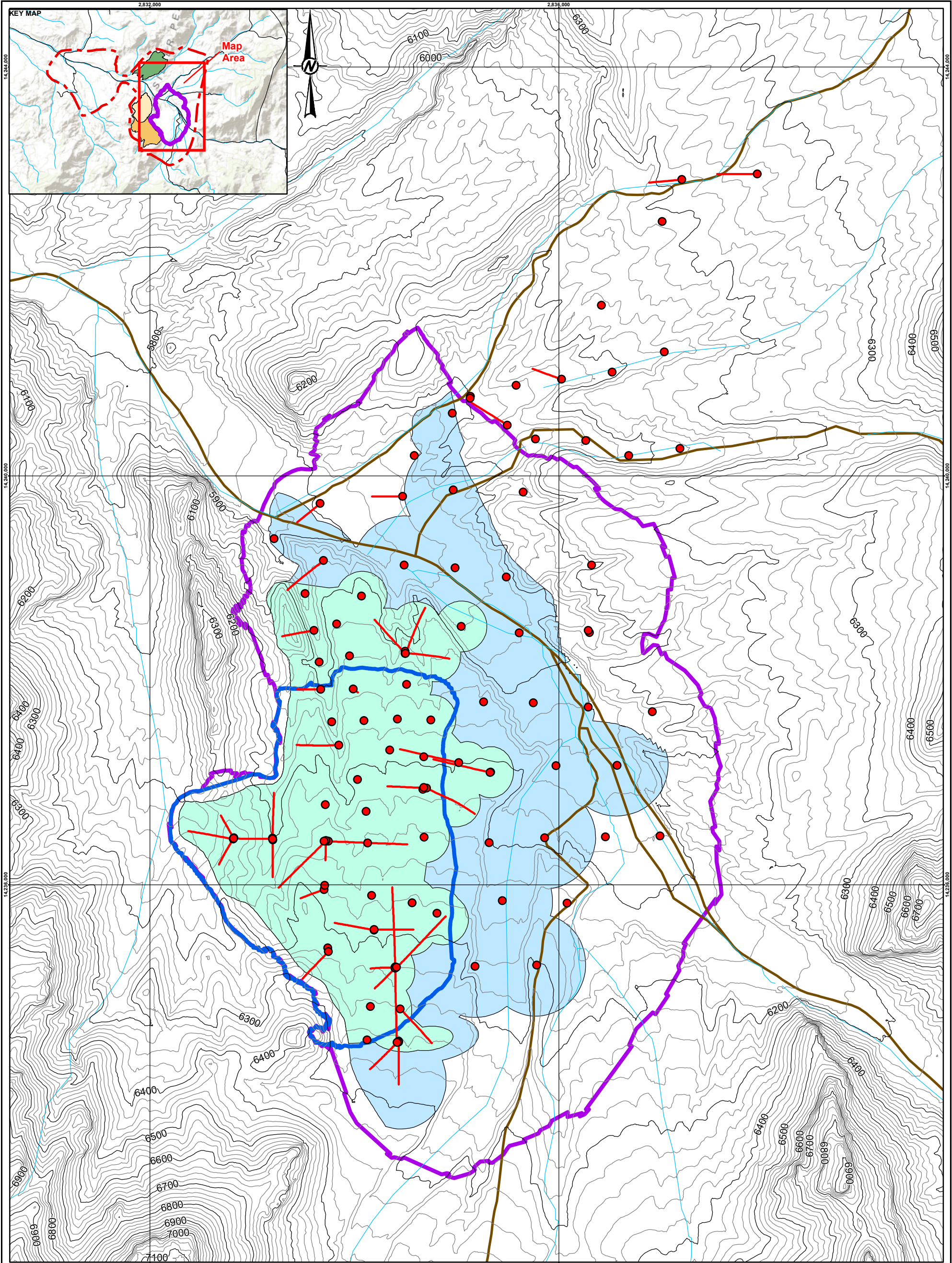
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FIGURE

1



IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSIS 11in



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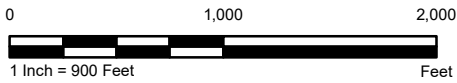
- Stage 1 Pit Crest
- Stage 2 Pit Crest
- Drillholes

Reserve Classification

- Proved Reserves
- Probable Reserves
- Roads
- River/Stream

Current Topography

- Minor Contours (20ft)
- Major Contours (100ft)



REFERENCE(S)

- SITE DATA PROVIDED BY FLUOR
- NAD 1983 STATE PLANE NEVADA WEST FIPS 2703 FEET
- "UNLOADING AREA" POLYGONS PROVIDED BY ENVIROMINE IN "RHYOLITE RIDGE LOQ GEOTECHNICAL RECOMMENDATIONS"

CLIENT
IONEER LTD.

PROJECT
RHYOLITE RIDGE FEASIBILITY STUDY

TITLE
**RESERVE CLASSIFICATION AND
DRILLHOLE TRACES**

CONSULTANT



PROJECT NO.
18107519

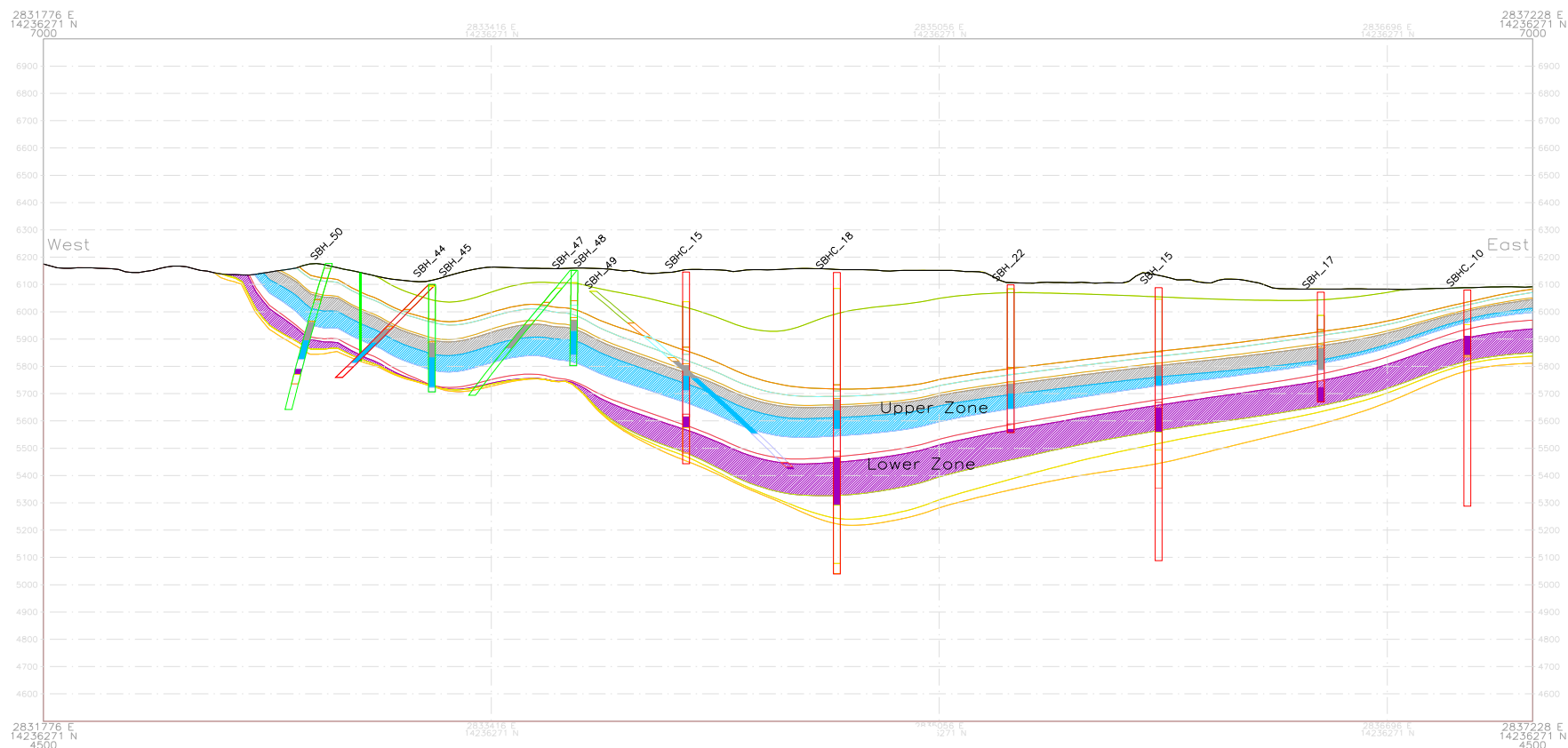
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FIGURE

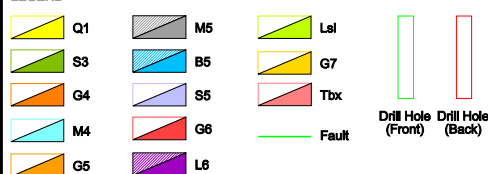
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DESIGNED	ARO
PREPARED	ARO
REVIEWED	JW
APPROVED	TK

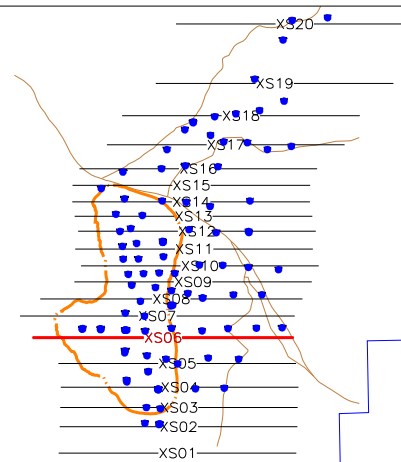
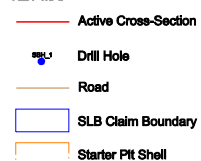


XS06

LEGEND



KEY MAP



CLIENT
IONEER LTD.



PROJECT
RHYOLITE RIDGE PROJECT - SOUTH BASIN
JORC RESOURCE REPORT

TITLE
CROSS-SECTION - LOOKING NORTH
XS06

CONSULTANT



PROJECT No.
18107519

CONTROL No.
RR30-K101-10-MG-REP-00007 0

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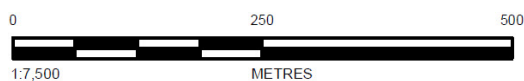
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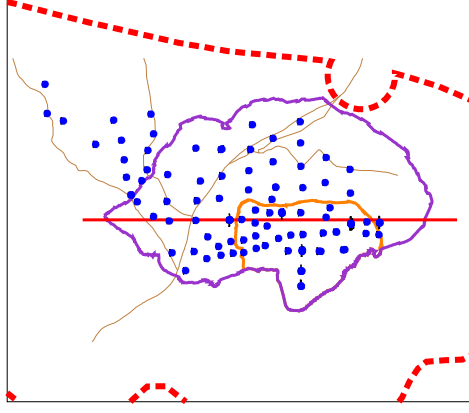
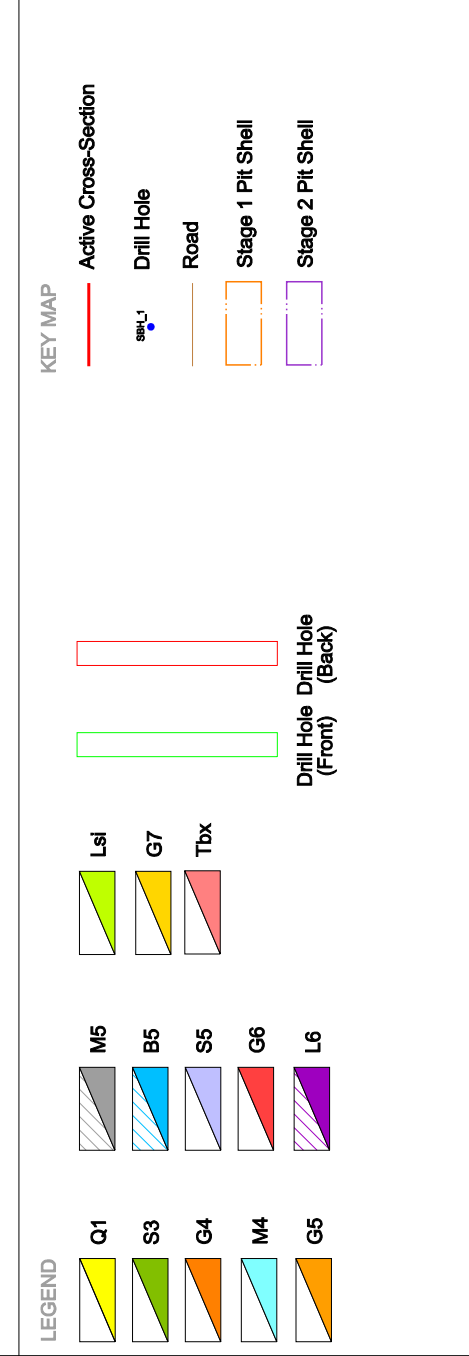
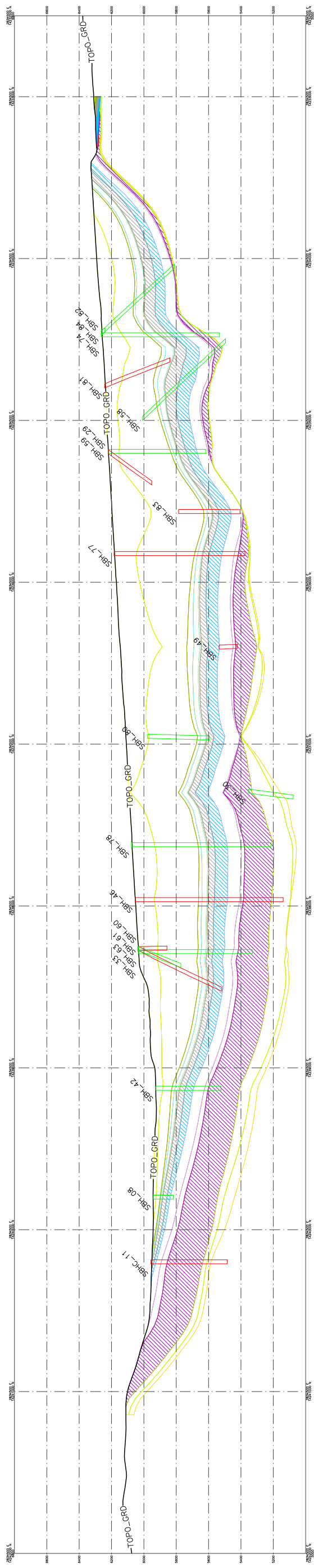
DESIGN
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REVIEW
JDW

APPROVED
JDW

FIGURE
05





CLIENT		IONEER LTD.	
PROJECT		RHYOLITE RIDGE	
TITLE		CROSS-SECTION NS 2,834,500	
CONSULTANT		2020-04-24	
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PROJECT No.		Rev.	
18107519		DRAWING	
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APPENDIX D – JORC TABLE 1

The following table provides a summary of important assessment and reporting criteria used at the Ioneer Ltd. Rhyolite Ridge Project (the Project) for the reporting of exploration results and Lithium-Boron Ore Reserves in accordance with the Table 1 checklist in The Australasian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves (The JORC Code, 2012 Edition). Table 1 is a checklist or reference for use by those preparing Public Reports on Exploration Results, Mineral Resources, and Ore Reserves.

JORC TABLE 1

SECTION 1 SAMPLING TECHNIQUES AND DATA

(Criteria listed in this section apply to all succeeding sections.)

Criteria	JORC Code 2012 Explanation	Commentary
Sampling Techniques	Nature and quality of sampling (e.g. cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc.). These examples should not be taken as limiting the broad meaning of sampling	- The nature and quality of the sampling from the various sampling programs includes the following: - Reverse circulation (RC) Drilling: a sample was collected every 1.52 metre (m) from a 127-millimetre (mm) diameter drill hole and split using a rig-mounted rotary splitter. Samples, with a mean weight of 4.8 kilograms (kg) were submitted to ALS Minerals laboratory in Reno, NV where they were processed for assay. RC samples represent 55% of the total intervals sampled to date. - Core Drilling: Core samples were collected from HQ (63.5 mm core diameter) and PQ (85.0 mm core diameter) drill core, on a mean interval of 1.52 m, and cut using a water-cooled diamond blade core saw. Samples, with a mean weight of 1.8 kg, were submitted to ALS where they were proceeded for assay. - Drill Hole Deviation: Inclined core drill holes were surveyed to obtain downhole deviation by the survey company (Minex Surveying) or drilling company (Idea Drilling) with a downhole Reflex Mems Gyros tool, for all but three of the drill holes. One drill hole could not be surveyed due to tool error (SBH-72), and two were intentionally surveyed using an Acoustic Televiewer (SBH-60, SBH-79). - Trenches: In addition to sampling from drill holes, samples were collected from 19 mechanically excavated trenches in 2010. The trenches were excavated from the outcrop/subcrop using a backhoe and or hand tools. Chip samples were then collected from the floor of the trench. Due to concerns with correlation and reliability of the results from the trenches, Golder has not included

Criteria	JORC Code 2012 Explanation	Commentary
		any of this data in the geological model or Mineral Resource estimate.
	• <i>Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.</i>	• Measures taken to ensure sample representivity include the following: • Due to the nature of RC samples, lithological boundaries are not easily honoured, therefore continuous 1.52 m sample intervals were taken to ensure as representative a sample as possible. Lithological boundaries were adjusted as needed by the senior ioneer geologist once the assay results were received. • Core sample intervals were selected to reflect visually identifiable lithological boundaries wherever possible, to ensure sample representivity. In cases where the lithological boundaries were gradational, the best possible interval was chosen. • All chip and core sampling were completed by or supervised by a senior ioneer geologist. The senior ioneer and Newfields geologists referenced here and throughout this Table 1 have sufficient relevant experience for the exploration methods employed, the type of mineralisation being evaluated and they are registered professional geologists in their jurisdiction; however, they are not Competent Persons according to the definition presented in JORC as they are not members of one of the Recognized Professional Organization" included in the ASX list referenced by JORC. • The Golder Competent Person was not directly involved during the exploration drilling programs and except for observing sampling procedures on two drill holes during the site visit, was not present to observe sample selection. Based on review of the procedures during the site visit and subsequent review of the data, it is the opinion of the Golder Competent Person that the measures taken to ensure sample representivity were reasonable for the purpose of estimating Mineral Resources.
	• <i>Aspects of the determination of mineralisation that are Material to the Public Report. In cases where 'industry standard' work has been done this would be relatively simple (eg 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30</i>	• Aspects of the determination of mineralisation included visual identification of mineralized intervals by a senior ioneer geologist using lithological characteristics including clay and carbonate content, grain size and the presence of key minerals such as Ulexite (hydrated sodium calcium borate hydroxide) and Searlesite (sodium

Criteria	JORC Code 2012 Explanation	Commentary
	<i>g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (e.g. submarine nodules) may warrant disclosure of detailed information</i>	borosilicate). A visual distinction between some units, particularly where geological contacts were gradational was initially made. Final unit contacts were then determined by a senior ioneer geologist once assay data were available. The Golder Competent Person was not directly involved during the exploration drilling programs; however, the visual identification of mineralized zones and the process for updating unit and mineralized contacts was reviewed with the ioneer senior geologist during the site visit. Golder evaluated the identified mineralized intervals against the analytical results and agrees with the methodology used by ioneer to determine material mineralisation.
Drilling techniques	Drill type (e.g. core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc.) and details (e.g. core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc.).	- Both RC and core drilling techniques have been used on the Project. Exploration drilling programs targeting Lithium-Boron (Li-B) mineralisation on the Project have been implemented by American Lithium Minerals Inc. (2010-2011) and ioneer (formerly Global Geoscience) in 2016, 2017, 2018 and 2019. - Prior to 2018, all RC drilling was conducted using a 127 mm hammer. All pre-2018 core drill holes were drilled using HQ sized core with a double-tube core barrel. - For the 2018-2019 drilling program, all core holes (vertical and inclined) were RC drilled through unconsolidated alluvium, then cored through to the end of the drill hole. All but two of the 41 core holes were drilled as PQ sized core, with the remaining two as HQ sized core. Drilling was completed using a triple-tube core barrel (split inner tube) which was preferred to a double-tube core barrel (solid inner tube) as the triple-tube improved core recovery and core integrity during core removal from the core barrel.
Drill sample recovery	Method of recording and assessing core and chip sample recoveries and results assessed.	- Prior to 2017, chip recovery was not recorded for the RC drilling therefore the Golder Competent Person cannot comment on drill sample recovery for this period of drilling. - For the 2017 RC drilling program, the drill holes were geologically logged as they were being drilled, however no estimates of chip recoveries were recorded therefore the Golder Competent Person cannot comment on drill sample recovery for this period of drilling. - For the 2010-2012 and 2016 core drilling programs, both core recovery and rock quality index (RQD) were recorded for each

Criteria	JORC Code 2012 Explanation	Commentary
		cored interval. Core recovery was determined by measuring the recovered linear core length and then calculating the recovered percentage against the total length of the core run from the drill advance. The core recovery for all the drilling ranged from 0% to 100%, with over 65 % of the drill holes having greater than 80% mean core recovery. The core recovery values were recorded by the logging geologist and reviewed by the senior ioneer geologist. The majority of the 2010-2011 and 2016 core drill holes reported greater than 95% recovery in the B5, M5 and L6 mineralized intervals. - For the 2018-2019 drilling program, both core recovery RQD were recorded for each cored interval. Core recovery was determined by measuring the recovered linear core length and then calculating the recovered percentage against the total length of the core run from the drill advance. The core recovery for all the drilling ranged from 41% to 100%, with over 65% of the drill holes having greater than 90% mean core recovery. The core recovery values were recorded by the logging geologist and reviewed by the senior ioneer geologist. In the target mineralized intervals (M5, B5 & L6), the mean core recovery was 86% in the B5, 87% in the M5 and 95% in the L6 units, with most of the drill holes reporting greater than 90% recovery in the mineralized intervals. - The Golder Competent Person considers the core recovery for the 2018-2019, 2016 and 2010-2011 core drilling programs to be acceptable based on statistical analysis which identified no grade bias between sample intervals with high versus low core recoveries. On this basis, the Golder Competent Person has made the reasonable assumption that the sample results are reliable for use in estimating Mineral Resources.
	<i>Measures taken to maximise sample recovery and ensure representative nature of the samples.</i>	- Chip recoveries were not recorded for the 2010-2012 and 2017 RC drilling programs, and there is no indication of measures taken to maximize sample recovery and ensure representative nature of samples. - No specific measures for maximizing sample recovery were documented for the 2010-2012 and 2016 core drilling programs. - During the 2018-2019 drilling program ioneer implemented the use of a triple-tube core barrel to maximize sample recovery and

Criteria	JORC Code 2012 Explanation	Commentary
		ensure representative nature of samples. A triple-tube core barrel generally provides improved core recovery over double-tube core barrels, resulting in more complete and representative intercepts for core logging, sampling and geotechnical evaluation. It also limited any potential sample bias due to preferential loss/gain of material.
	Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.	- Chip recovery was not recorded for the 2010-2012 and 2017 RC drilling program and therefore there is no basis for evaluating the relationship between grade and sample recovery for samples from these programs. - Based on Golder's review of the 2010-2012, 2016 and 2018-2019 drilling recovery and grade data there was no observable relationship between sample recovery and grade.
Logging	Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.	- All core and chip samples have been geologically logged to a level of detail to support appropriate Mineral Resource estimation, such that there are lithological intervals for each drill hole, with a correlatable geological/lithological unit assigned to each interval. - The 2018-2019 drilling was also geotechnically logged to a level of detail to support appropriate Mineral Resource estimation. - Golder has reviewed all unit boundaries in conjunction with the ioneer senior geologist, and where applicable, adjustments have been made by the Golder Competent Person to the mineralized units based on the assay results intervals to limit geological dilution.
	Whether logging is qualitative or quantitative in nature.	The RC and core logging were both qualitative (geological/lithological descriptions and observations) and quantitative (unit lengths, angles of contacts and structural features and fabrics).
	Core (or costean, channel, etc.) photography.	- Core photography was completed on every core drill hole for the 2010-2011, 2016 and 2018-2019 core drilling programs. - All chip trays from the RC holes were also photographed during the various RC drilling programs.
	The total length and percentage of the relevant intersections logged.	Prior to 2018, a total length of 8,900 m of RC drilling and 6,000 m of core drilling was completed for the Project, 100% of which was geologically logged by a logging geologist and reviewed by the

Criteria	JORC Code 2012 Explanation	Commentary
		senior ioneer geologist. - For the 2018-2019 drilling, a total length of 300 m of RC drilling and 8,800 m of core drilling was completed for the Project, 100% of which was geologically logged by a logging geologist and reviewed by the senior ioneer geologist - For the 2018-2019 drilling, 86% of the 8,800 m of core was geotechnically logged by an engineering geologist/ geotechnical engineer and reviewed by the senior ioneer geologist. The Golder Competent Person reviewed the geological core logging and sample selection for two complete drill holes.
Sub-sampling techniques and sample preparation	<i>If core, whether cut or sawn and whether quarter, half or all core taken.</i>	- The following sub-sampling techniques and sample selection procedures apply to drill core samples: - During the 2010-2011 and 2016 program, core samples were collected on a mean 1.52 m down hole interval and cut in two halves using a manual core splitter. The entire sample was submitted for analysis with no sub-sampling prior to submittal. - During the 2018-2019 drilling program, core samples were collected for every 1.52 m down hole interval and cut using a water-cooled diamond blade core saw utilizing the following methodology for the two target units. For the M5 unit, ½ core samples were submitted for assay, while the remaining ½ core was retained for reference. For the B5 unit, ¼ core samples were submitted for assay, while ¼ was reserved for future metallurgical test work and ½ core was retained for reference.
	<i>If non-core, whether riffled, tube sampled, rotary split, etc. and whether sampled wet or dry.</i>	- The following sub-sampling techniques and sample selection procedures apply to RC Chip Samples: - Pre-2017 RC chips samples were collected using a wet rotary splitter approximately every 1.52 m depth interval. Two samples were collected for every interval (one main sample and one duplicate). Only the main sample was submitted for analysis. 2017 RC chip samples were collected using a wet rotary splitter attached to a cyclone. One approximately 10 kg sample was collected every 1.52 m depth interval. All samples were submitted for analysis.
	<i>For all sample types, the nature, quality and</i>	The Golder Competent Person considers the nature, type and

Criteria	JORC Code 2012 Explanation	Commentary
	<i>appropriateness of the sample preparation technique.</i>	quality of the sample preparation techniques to be appropriate based on the general homogeneous nature of the mineralized zones and the drilling methods employed to obtain each sample (i.e. RC and core).
	• <i>Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.</i>	• Quality control procedures adopted for sub-sampling to maximize representivity include the following: • During 2016-2017 and 2018-2019 drilling programs, field duplicate/replicate samples were obtained. For the 2017 RC drilling, a duplicate sample was collected every 20th sample. For the 2016 and 2018-2019 core drilling programs two ¼ core samples were taken at the same time and were analysed in sequence by the laboratory to assess the representivity. • Twin drill holes at the same site were drilled during the 2010-2012 drilling program. The twin drill hole pairing comprises one RC drill hole (SBH-04) and one core drill hole (SBHC-01). The Golder Competent Person recommends twinning additional drill hole pairs as part of any future pre-production or infill drilling programs to allow for a more robust review of sample representivity. • The Golder Competent Person reviewed the results of the duplicate/replicate sampling and twin drill holes. For the duplicate/replicate samples, the R² value is 0.992, which is very good. Visual observation of the lithological intervals and the assays for the twin drill holes show that they are very similar, despite the difference in drilling techniques.
	• <i>Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.</i>	• The Golder Competent Person considers the samples to be representative of the in-situ material as they conform to lithological boundaries determined during core logging. A review of the primary and duplicate sample analyses indicates a high degree of agreement between the two sample sets (R² value of 0.99).
	• <i>Whether sample sizes are appropriate to the grain size of the material being sampled.</i>	• The Golder Competent Person considers the sample sizes to be appropriate given the general homogeneous nature of the mineralized zones. The Li-B mineralisation occurs consistently throughout the B5, M5 and L6 target zones and is not nuggety or confined to discrete high-grade and low-grade bands.

Criteria	JORC Code 2012 Explanation	Commentary
Quality of assay data and laboratory tests	The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.	- The nature and quality of the assaying and laboratory procedures used include the following: - All RC and core samples were processed, crushed, split, and then a sub-sample was pulverized by ALS Minerals in Reno, Nevada. - All sub-samples were analysed by Aqua Regia with ICP mass spectrometry (ICP-MS) finish for 51 elements (including Lithium (Li)) and Boron (B) by NaOH fusion/ICP high grade analysis (>10,000 parts per million (ppm) B). - Additionally, 95% of the 2018-2019 samples were analysed for Inorganic Carbon and 30% were analysed for Fluorine (F). - The laboratory techniques are total. - The Golder Competent Person considers the nature and quality of the laboratory analysis methods and procedures to be appropriate for the type of mineralisation.
	For geophysical tools, spectrometers, handheld XRF instruments, etc., the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc..	Not applicable to this Report, no geophysical tools, spectrometers, handheld XRF instruments were used on the Project.
	Nature of quality control procedures adopted (e.g. standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.	- The following Quality Assurance and Quality Control (QA/QC) procedures were adopted for the various drilling programs: - During the 2010-2011 program, Standard Reference Material (SRM) samples and a small number of field blanks were also inserted regularly into the sample sequence to QA/QC of the laboratory analysis. - For 2016-2017 program, a duplicate sample was collected every 20th primary sample. Field blanks and SRM's were also inserted approximately every 25 samples to assess QA/QC. - During the 2018-2019 program, QA/QC samples comprising 1 field blank and 1 SRM standard were inserted into each sample batch every 25 samples. Submission of field duplicates, laboratory coarse/pulp replicates and umpire assays were submitted in later stages of the 2018-2019 drilling program.

Criteria	JORC Code 2012 Explanation	Commentary
		• Golder reviewed the SRM, field blanks and field duplicates and determined the following: • SRMs: Review of the five SRMs used determined that there was a reasonable variability for Li between the upper and lower control limits (± 2 standard deviation (SD)), however B shows an overall bias towards lower than expected values (i.e. less than the mean) for all sample programs. For each of the 5 SRMs, there were some sample outliers (both low and high), however the majority fell within the control limits. There is a concern with the SRM sample submission protocol in that ioneer leave the SRM standard name on the sample when submitting to the laboratory for analysis. This removes the blind nature from the SRM as the laboratory can readily identify which standard sample is being evaluated and confirm what the expected values are for that SRM. • Field Blanks: Review of the field blanks indicate that there is some variability in both the Li and B results. There are several samples that return higher than expected values, with an increased number being from the 2018-2019 drilling program. Further review is required to determine if this is a result of the material used for field blanks (coarse dolomite) or a problem with the laboratory analysis. • Field Duplicates: No field duplicates were submitted for the pre-2018 drilling programs. Review of the 230 field duplicate sample pairs from the 2018-2019 drilling program determined that there was a strong correlation between each pair, as evidenced by an R^2 value of 0.99 for Li. • Umpire Laboratory Duplicates: 20 assay pulp rejects were sent from ALS to American Assay Laboratories (AAL) in Sparks, NV for umpire laboratory analysis. Review of the 20 umpire duplicate pairs found a strong correlation between each pair, with B returning an R^2 value of 0.98. • The Golder Competent Person reviewed the control charts produced for each SRM, field blank and field duplicate, and determined that there was an acceptable level of accuracy and precision for each for the purpose of estimating Mineral Resources.

Criteria	JORC Code 2012 Explanation	Commentary
Verification of sampling and assaying	The verification of significant intersections by either independent or alternative company personnel.	Significant intersections have been verified by visual inspection of the drill core intervals by at least two ioneer geologists for all drilling programs.
	The use of twinned holes.	- One pair of twin drill holes at the same site were drilled during the 2010-2012 drilling program. The twin drill hole pairing comprises one RC drill hole (SBH-04) and one core drill hole (SBHC-01). - The Golder Competent Person reviewed and assessed two drill holes and the variance for thickness and grade parameters were within acceptable levels.
	Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.	- For the 2018-2019 drilling program, Newfields developed a series of field protocols covering all aspects of the exploration program, including surveying, logging, sampling and data documentation. These protocols were followed throughout the 2018-2019 drilling program. Formal documentation of field protocols does not exist prior to the 2018-2019 program; however, the same senior personnel were involved in the earlier programs and field protocols employed were essentially the same as those documented in the 2018-2019 protocols. - Primary field data was captured on paper logs for the 2010-2012 drilling program, then transcribed into Microsoft (MS) Excel files. For the 2016 through 2019 drilling, all field data was captured directly into formatted MS Excel files by logging geologists. All primary field data was reviewed by the senior ioneer geologist. - Data is stored in digital format in a MS Access database. This database was compiled, updated and maintained by Newfields personnel during the 2018-2019 drilling program. - Golder compiled all relevant information from various tabular data files provided by ioneer and Newfields into a MS Access database, which was reviewed and verified by the Golder Competent Person prior to inclusion in the geological model.
	Discuss any adjustment to assay data.	There has been no adjustment to assay data.
Location of data points	Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.	- Accuracy and quality of surveys used to locate drill holes is as follows: - All inclined core drill holes were surveyed to obtain downhole deviation using a downhole Reflex Mems Gyros tool, except

Criteria	JORC Code 2012 Explanation	Commentary
		for SBH-72, which could not be surveyed due to tool error. Two core drill holes (SBH-60, SBH-79) were surveyed using an Acoustic Televiwer instead of the Gyros tool. • All 2018-2019 drill hole collars were surveyed using a differentially corrected GPS (DGPS). • Locatable pre-2018 drill holes that were previously only surveyed by handheld GPS have been re-surveyed in 2019 using DPGS. Some pre-2018 drill holes could not be located by the surveyor in 2019, and the original locations were assumed to be correct. • Upon completion, drill casing was removed, and drill collars were marked with a permanent concrete monument with the drill hole name and date recorded on a metal tag on the monument.
	• <i>Specification of the grid system used.</i>	• All pre-2018 and 2018-2019 drill holes were originally surveyed using handheld GPS units in UTM Zone 11 North, North American Datum 1983 (NAD83) coordinate system. Pre-2018 drill holes were re-surveyed using DPGS in NAD83 in 2017/2018. • All 2018-2019 drill holes and locatable pre-2018 drill holes were re-surveyed in 2019 using DPGS in NAD83 coordinate system. All surveyed coordinates were subsequently converted to Nevada State Plane Coordinate System of 1983, West Zone (NVSPW 1983) for use in developing the geological model. Those holes that could not be located had the original coordinates converted to NVSPW 1983 and their locations verified against the original locations.
	• <i>Quality and adequacy of topographic control.</i>	• The quality and adequacy of the topographic surface and the topographic control is very good based on comparison against survey monuments, surveyed drill hole collars and other surveyed surface features. • A 2018 satellite survey with an accuracy of ± 0.17 m was produced for the Project by PhotoSat Information Ltd. The final report generated by PhotoSat stated that the difference between the satellite and ioneer provided ground survey control points was less than 0.8 m. • The topographic survey was prepared in NAD83, which was

Criteria	JORC Code 2012 Explanation	Commentary
		converted to NVSPW 1983 by Newfields prior to geological modelling.
Data spacing and distribution	<i>Data spacing for reporting of Exploration Results.</i>	- Drill holes are generally spaced between 90 m and 170 m on east-west cross-section lines spaced approximately 180 m apart. There was no distinction between RC and core holes for the purpose of drill hole spacing. - For the 2018-2019 drilling program, there were multiple occurrences where several inclined drill holes were drilled from the same drill pad and oriented at varying angles away from each other. The collar locations for these inclined drill holes drilled from the same pad varied in distance from 0.3 m to 6.0 m apart; intercept distances on the floors of the target units were typically in excess of 90 m spacing.
	<i>Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.</i>	The spacing is considered sufficient to establish geological and grade continuity appropriate for a Mineral Resource estimation.
	<i>Whether sample compositing has been applied.</i>	Samples were composited to 1.52 m intervals honouring lithological boundaries prior to grade estimation. The 1.52 m sample composite length represents the modal value of the sample length distribution.
Orientation of data in relation to geological structure	<i>Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.</i>	- Drill holes were angled between -45 and -90 degrees from horizontal and at an azimuth of between 0- and 332-degrees. - Inclined drill holes orientated between 220- and 332-degrees azimuth introduced minimal sample bias, as they primarily intercepted the mineralisation at angles near orthogonal (101 drill holes with intercept angles between 70-90 degrees) to the dip of the beds, approximating true-thickness.
	<i>If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.</i>	Inclined drill holes orientated between 0- and 220-degrees azimuth, especially those that were drilled at between 20- and 135-degrees azimuth, generally intercepted the beds down dip (7 drill holes with intercept angles between 20-70 degrees), exaggerating the mineralized zone widths in these drill holes.

Criteria	JORC Code 2012 Explanation	Commentary
Sample security	<i>The measures taken to ensure sample security.</i>	- The measures taken to ensure sample security include the following: - For the 2010-2011 drill holes, samples were securely stored on-site and then collected from site by ALS. Chain of custody forms were maintained by ALS. - For the 2016-2017 drill holes, samples were securely stored on-site and then collected from site by ALS and transported to the laboratory by truck. Chain of custody forms were maintained by ALS. - For the 2018-2019 drill holes, core was transported daily by Ioneer and/or Newfields personnel from the drill site to the Ioneer secure core shed (core storage) facility in Tonopah. Core awaiting logging was stored in the core shed until it was logged and sampled, at which time it was stored in secured sea cans inside a fenced and locked core storage facility on site. Samples were sealed in poly-woven sample bags, labelled with a pre-form numbered and barcoded sample tag, and securely stored until shipped to or dropped off at the ALS laboratory in Reno by Newfields personnel. Chain of custody forms were maintained by Newfields and ALS.
Audits or reviews	<i>The results of any audits or reviews of sampling techniques and data.</i>	- There were no audits performed on the RC sampling or for the pre-2018 drilling programs. - The Golder Competent Person reviewed the core and sampling techniques during a site visit in December 2018. The Competent Person found that the sampling techniques were appropriate for collecting data for the purpose of preparing geological models and Mineral Resource estimates. The following recommendations were submitted to Ioneer for consideration following the site visit: - Update 2018-2019 collar survey locations using high-resolution survey methods such as DGPS as soon as possible following completion of the 2018-2019 drilling. - Include survey pick-up of any pre-2018 drill holes identified in the drill hole database as being surveyed by handheld, non-differential GPS. - Update surface mapping to adjust surficial geological contacts and structures based on revised interpretation and understanding of geology from the current drilling program.

Criteria	JORC Code 2012 Explanation	Commentary
		• Revise QA/QC protocol to include field duplicates, laboratory replicates (coarse and pulp replicates) and check assay analyses at a second independent commercial laboratory. • Change SRM insertion procedure to remove the SRM name/number and identifiers other than the regular sample number prior to submitting the sample to the laboratory for analyses. • Exclude trench data from the modelling process based on visual inspection of the sub-crop trenches and the reliability and representativeness of trench analytical data used in previous model iterations.

SECTION 2 REPORTING OF EXPLORATION RESULTS

(Criteria listed in the preceding section also apply to this section.)

Criteria	JORC Code 2012 Explanation	Commentary
Mineral tenement and land tenure status	Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.	- The mineral tenement and land tenure for the South Basin of Rhyolite Ridge (the Project) comprise 386 unpatented Lode Mining Claims (totalling approximately 3,150 hectare (Ha); claim groups SLB, SLM and RR, spatial extents of which are presented in maps and tables within the body of the Report) held by Ioneer Minerals Corporation, a wholly owned subsidiary of Ioneer. The Golder Competent Person has relied upon information provided by Ioneer regarding mineral tenement and land tenure for the Project; the Competent Person has not performed any independent legal verification of the mineral tenement and land tenure. The Competent Person is not aware of any agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings relating to the 386 Lode Mining Claims for the Project. - The mineral tenement and land tenure referenced above excludes 241 additional unpatented Lode Mining Claims (totalling approximately 2,000 Ha) for the North Basin which are located outside of the current South Basin Project Area presented in this Report. These additional claims are held by Ioneer subsidiaries (NLB claim group; 160 claims) or they hold an option to acquire 100% ownership of the claims (BH claim group; 81 claims).
	The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.	There are no identified concerns regarding the security of tenure nor are there any known impediments to obtaining a license to operate within the limits of the Project. The 386 unpatented Lode Mining Claims for the Project are located on federal land and are administered by the United States Department of the Interior - Bureau of Land Management (BLM).
Exploration done by other parties	Acknowledgment and appraisal of exploration by other parties.	- There have been two previous exploration campaigns targeting Li-B mineralisation at the Project site. - US Borax conducted surface sampling and drilling in the 1980s, targeting B mineralisation, with less emphasis on Li mineralisation. A total of 57 drill holes (totalling approximately 14,900 m) were

Criteria	JORC Code 2012 Explanation	Commentary
		drilled in the North Borate Hills area, with an additional 12 drill holes (unknown total meterage) in the South Basin area. These drill holes were not available for use in the current Study. - American Lithium Minerals Inc and Japan Oil, Gas and Metals National Corporation (JOGMEC) conducted further Li exploration in the South Basin area in 2010-2011. The exploration included at least 465 surface and trench samples and 36 drill holes (totalling approximately 8,800 m), of which 21 were core and 15 were RC. Data collected from this program, including drill core, was made available to ioneer. The Golder Competent Person reviewed the data available from this program and believes this exploration program, except for the trench data, was conducted appropriately and the information generated is of high enough quality to include in preparing the current geological model and Mineral Resource estimate. - Due to concerns regarding the ability to reliably correlate the trenches with specific geological units as well as concerns regarding representivity of samples taken from incomplete exposures of the units in the trenches, the Golder Competent person does not feel the trench sample analytical results are appropriate for use and has excluded them from use in preparing the geological model and Mineral Resource estimate.
Geology	<i>Deposit type, geological setting and style of mineralisation.</i>	- The Li-B mineralisation at Rhyolite Ridge occurs in two separate Miocene sedimentary basins; the North Basin and the South Basin, located within the Silver Peak Range in the Basin and Range terrain of Nevada, USA. The South Basin is the focus of the Study presented in this Report and the following is focused on the geology and mineralisation of the South Basin. - The South Basin stratigraphy comprises lacustrine sedimentary rocks of the Cave Spring Formation overlaying volcanic flows and volcanoclastic rocks of the Rhyolite Ridge Volcanic unit. The Rhyolite Ridge Volcanic unit is dated at approximately 6 mega-annum (Ma) and comprises rhyolite tuffs, tuff breccias and flows. The Rhyolite Ridge Volcanic rocks are underlain by sedimentary rocks of the Silver Peak Formation. - The Cave Spring Formation comprises a series of 11 sedimentary units deposited in a lacustrine environment, as shown in the

Criteria	JORC Code 2012 Explanation	Commentary
		following table. Within the study area the Cave Spring Formation can reach total thickness in excess of 120 m. Age dating of overlying units outside of the area and dates for the underlying Rhyolite Ridge Volcanic unit bracket deposition of the Cave Spring Formation between 4-6 Ma; this relatively young geological age indicates limited time for deep burial and compaction of the units. The Cave Spring Formation units are generally laterally continuous over several miles across the extent of the South Basin; however, thickness of the units can vary due to both primary depositional and secondary structural features. The sedimentary sequence generally fines upwards, from coarse clastic units at the base of the formation, upwards through siltstones, marls and carbonate units towards the top of the sequence. • The key mineralized units are in the Cave Spring Formation and are, from top to bottom, the M5 (high-grade Li, low- to moderate-grade B bearing carbonate-clay rich marl), the B5 (high-grade B, moderate-grade Li marl) and the L6 (broad zone of laterally discontinuous low- to high-grade Li and B mineralized horizons within a larger low-grade to barren sequence of siltstone-claystone). The sequence is marked by a series of four thin (generally on the scale of several metres or less) coarse gritstone layers (G4 through G7); these units are interpreted to be pyroclastic deposits that blanketed the area. The lateral continuity across the South Basin along with the distinctive visual appearance of the gritstone layers relative to the less distinguishable sequence of siltstone-claystone-marl that comprise the bulk of the Cave Spring Formation make the four grit stone units good marker horizons within the stratigraphic sequence. • The Cave Springs Formation is unconformably overlain by a unit of poorly sorted alluvium, ranging from 0 to 40 m (mean of 20 m) within the Study Area. The alluvium is unconsolidated and comprises sand through cobble sized clasts (with isolated occurrences of large boulder sized clasts) of the Rhyolite Ridge Volcanic Rocks and other nearby volcanic units.

Criteria	JORC Code 2012 Explanation	Commentary					
		Formation	Model Unit	Mean Thick (m)	Min. Thick (m)	Max. Thick (m)	Lithology Description
		Alluvium	Q1	20	2	60	Sand through cobble sized clasts, isolated boulder size clasts of Rhyolite Ridge Volcanic Rocks and other nearby volcanic units
		Cave Springs Fm	S3	70	3	230	Mixed lacustrine sediments (claystone, marl, siltstone, and thin sandstone)
			G4	10	1	20	Coarse gritstone (immature volcanoclastic wacke)
			M4	10	6	30	Carbonate rich, with interbedded marl
			G5	0	1	10	Coarse gritstone
			M5	20	3	90	Carbonate-clay rich marl, high-grade Lithium, low - to moderate-grade Boron
			B5	20	6	40	Marl, high-grade Boron, moderate-grade Lithium
			S5	20	3	40	Siltstone-claystone, barren of Lithium and Boron
			G6	10	1	40	Coarse gritstone
			L6	40	3	110	Marl, siltstone-claystone, laterally discontinuous low - to high-grade Lithium and Boron mineralized horizons within a larger low -grade to barren sequence
			Lsi	30	3	60	Silicified siltstone-claystone
			G7	20	2	50	Coarse gritstone, diamictite, grading into tuff
		Rhyolite Ridge Volcanics	Tbx	40	6	170	Quartz-feldspar lithic tuff containing minor biotite, phenocrystic-rich lithic tuff, and massive lithic tuff breccia, volcanic lava flows and welded tuff

Criteria	JORC Code 2012 Explanation	Commentary
		- Structurally, the South Basin is folded into a broad, open syncline with the sub-horizontal fold axis oriented approximately north-south representing the long axis of the basin. The syncline is asymmetric, with moderate to locally steep dips along the western limb, a flat central area, and interpreted steep dips on the eastern edge. The stratigraphy is further folded, including one significant southeast plunging syncline located in the southern part of the study area. The basin is bounded along its western and eastern margins by regional scale high angle faults of unknown displacement, while localized steeply dipping normal, reverse and strike-slip faults transect the Cave Spring formation throughout the basin. Displacement on these faults is generally poorly known but most appear to be on the order of 10s of metres of displacement although several located along the edge of the basin may have displacements greater than 30 m. - Li-B mineralisation is interpreted to have been emplaced by hydrothermal/epithermal fluids travelling up the basin bounding faults; based on Li-B grade distribution and continuity it is believed the primary fluid pathway was along the western bounding fault. Differential mineralogical and permeability characteristics of the various units within the Cave Spring Formation resulted in the preferential emplacement of Li-B bearing minerals in the M5, B5 and L6 units. Li-B mineralisation occurs in isolated locations in some of the other units in the sequence, but with nowhere near the grade and continuity observed in the aforementioned units.
Drill hole Information	- A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes: - easting and northing of the drill hole collar - elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar - dip and azimuth of the hole - down hole length and interception depth - hole length.	- Exploration Results are not being reported. - A summary table providing key details for all identified drill holes for the Project is presented by type and drilling campaign in the following table:

Criteria	JORC Code 2012 Explanation	Commentary							
		Drill Type	Year	Inclined		Vertical		Total Drill Holes	Total Depth (m)
				Count	Total Depth (m)	Count	Total Depth (m)		
		RC Drill Holes	2010-2012	6	1,355	8	2,038	14	3,393
			2016-2017	2	707	25	4,582	27	5,289
			2018-2019			1	299	1	299
		Core Drill Holes	2010-2012	2	531	19	4,608	21	5,139
			2016-2017			3	853	3	853
			2018-2019	28	6,415	14	2,671	42	9,087
		Total		38	9,008	70	15,052	108	24,060
	If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.	Of the 112 drill holes reviewed, 108 (42 RC and 66 core) were included in the geological model and 4 were omitted. One RC twin hole was omitted in favour of the cored hole at the same location. Three water/geotechnical drill holes were omitted due to a lack of lithology and quality data relevant to the geological model.							
Data aggregation methods	In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (e.g. cutting of high grades) and cut-off grades are usually Material and should be stated.	- Exploration Results are not being reported. - All grade parameters presented as part of the Mineral Resource estimates prepared by Golder are presented as mass weighted grades. - Drill core samples were composited to 1.52 m composite lengths prior to interpolation of grade data into the block model. Composite lengths honoured geological contacts (i.e. composites did not span unit contacts). The composite length was selected based on the median sample length from the drill hole assay database. - No minimum bottom cuts or maximum top cuts were applied to the thickness or grade data used to construct the geological models. Restricted interpolation was applied to B grade data for units other than the targeted mineralized units (B5, M5 and L6; discussed further in the Estimation and Modelling Techniques section of this Table 1). - A cut-off grade of 5,000 ppm B was applied during the Mineral Resource estimation process for the purpose of establishing reasonable prospects of eventual economic extraction based on high level mining, metallurgical and processing grade parameters identified by mining, metallurgical and processing studies							

Criteria	JORC Code 2012 Explanation	Commentary
		performed to date on the Project.
	Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.	Not applicable as individual intercepts or Exploration Results are not being reported.
	The assumptions used for any reporting of metal equivalent values should be clearly stated.	Metal equivalents were not used in the Mineral Resource estimates prepared by Golder.
Relationship between mineralisation widths and intercept lengths	These relationships are particularly important in the reporting of Exploration Results.	All drill hole intercepts presented in the Report are down hole thickness not true thickness. As discussed in the Orientation of Data section of this Table 1, most drill hole intercepts are approximately orthogonal to the dip of the beds (intercept angles between 70-90 degrees).
	If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.	Based on the geometry of the mineralisation, it is reasonable to treat all samples collected from inclined drill holes at intercept angles of greater than 70 degrees as representative of the true thickness of the zone sampled.
	If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (e.g. 'down hole length, true width not known').	Not applicable as individual down hole intercepts or Exploration Results are not being reported.
Diagrams	Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported. These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.	Appropriate plan maps and sections are appended to the Report.
Balanced reporting	Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.	Exploration Results are not being reported.
Other substantive exploration data	Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics;	Surficial geological mapping performed by a senior ioneer geologist was used in support of the drill holes to define the outcrops and subcrops as well as bedding dip attitudes in the geological modelling. Mapped geological contacts and faults were imported into the model and used as surface control points for the corresponding beds or structures.

Criteria	JORC Code 2012 Explanation	Commentary
	<i>potential deleterious or contaminating substances.</i>	
Further work	• <i>The nature and scale of planned further work (e.g. tests for lateral extensions or depth extensions or large-scale step-out drilling).</i>	• Additional in-fill drilling and sampling may be performed based on the results of current mining project studies
	• <i>Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.</i>	• No diagrams are applicable as no additional areas within the South Basin are recommended for further exploration at this time.

SECTION 3 ESTIMATION AND REPORTING OF MINERAL RESOURCES

(Criteria listed in section 1, and where relevant in section 2, also apply to this section.)

Criteria	JORC Code 2012 explanation	Commentary
Database integrity	Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.	- Measures taken to ensure the data has not been corrupted by transcription or keying errors or omissions included recording of drill hole data and observations by the logging geologists using formatted logging sheets in Microsoft (MS) Excel. Data and observations entered into the logging sheets were reviewed by senior ioneer and Newfield's geologists prior to importing the data into the MS Access drill hole database. - Golder evaluated the tabular data provided by ioneer for errors or omissions as part of the data validation procedures described in the following section.
	Data validation procedures used.	- Golder performed data validation on the drill hole database records using available underlying data and documentation including but not limited to original drill hole descriptive logs, core photos and laboratory assay certificates. Drill hole data validation checks were performed in MS Access using a series of in-house data checks to evaluate for common drill hole data errors including but not limited to data gaps and omissions, overlapping lithology or sample intervals, miscorrelated units, drill hole deviation errors and other indicators of data corruption including transcription and keying errors. - Database assay values for every sample were visually compared to the laboratory assay certificates to ensure the tabular assay data was free of errors or omissions. - Proposed corrections, additions or revisions to the data set were reviewed with ioneer and Newfield's senior geologists and any updates to the data were incorporated into the geological database
Site visits	Comment on any site visits undertaken by the Competent Person and the outcome of those visits.	- The Golder Competent Person Jerry DeWolfe, P.Geo. made a personal inspection site visit was performed on the Project site from December 3rd to 5th 2018 for the Project. - During the site visit the Golder Competent Person visited the ioneer core shed in Tonopah NV, and the South Basin area of the Rhyolite Ridge Project site, which is the focus of the current exploration and resource evaluation efforts by ioneer.

Criteria	JORC Code 2012 explanation	Commentary
		- The Golder Competent Person observed the active drilling, logging and sampling process and interviewed site personnel regarding exploration drilling, logging, sampling and chain of custody procedures. - The outcome of the site visit was that the Golder Competent Person developed an understanding of the general geology of the Rhyolite Ridge Project. The Golder Competent Person was also able to visually confirm the presence of a selection of monumented drill holes from each of the previous drilling programs as well as to observe drilling, logging and sampling procedures during the current drilling program and to review documentation for the logging, sampling and chain of custody protocols for previous drilling programs.
	<i>If no site visits have been undertaken indicate why this is the case.</i>	Not applicable.
Geological interpretation	<i>Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.</i>	The Golder Competent Person is confident that the geological interpretation of the mineral deposit is reasonable for the purposes of Mineral Resource estimation.
	<i>Nature of the data used and of any assumptions made.</i>	- The data used in the development of the geological interpretation included drill hole data and observations collected from 66 core and 42 RC drill holes, supplemented by surface mapping of outcrops and faults performed by ioneer personnel. Regional scale public domain geological maps and studies were also incorporated into the geological interpretation. - It is assumed that the mineralized zones are continuous between drill holes as well as between drill holes and surface mapping. It is also assumed that grades vary between drill holes based on a distance-weighted interpolator.
	<i>The effect, if any, of alternative interpretations on Mineral Resource estimation.</i>	There are no known alternative interpretations.
	<i>The use of geology in guiding and controlling Mineral Resource estimation.</i>	Geology was used directly in guiding and controlling the Mineral Resource estimation. The mineralized zones were modelled as stratigraphically controlled Li-B deposits. As such, the primary directions of continuity for the mineralisation are horizontally within the preferentially mineralized B5, M5 and L6 geological units.

Criteria	JORC Code 2012 explanation	Commentary
	<i>The factors affecting continuity both of grade and geology.</i>	- The primary factor affecting the continuity of both geology and grade is the lithology of the geological units. Li-B mineralisation is favourably concentrated in marl-claystone of the B5, M5 and L6 units. Mineralogy of the units also has a direct effect on the continuity of the mineralisation, with elevated B grades in the B5 and M5 units associated with a distinct reduction in carbonate and clay content in the units, while higher Li values tend to be associated with elevated carbonate content in these units. - Additional factors affecting the continuity of geology and grade include the spatial distribution and thickness of the host rocks which have been impacted by both syn-depositional and post-depositional geological processes (i.e. localized faulting, erosion and so forth).
Dimensions	<i>The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.</i>	- The Mineral Resource evaluation presented in this Report covers an area of approximately 275 Ha within the South Basin of Rhyolite Ridge. The Mineral Resource plan dimensions, defined by the spatial extent of the B5 unit Inferred classification limits, are approximately 2,900 m North-South by 1,600 m East-West. The upper and lower limits of the Mineral Resource span from surface, where the mineralized units outcrop locally, through to a maximum depth of 400 m below surface for the base of the lower mineralized zone (L6 unit). - Variability of the Mineral Resource is associated primarily with the petrophysical and geochemical properties of the individual geological units in the Cave Spring Formation. These properties played a key role in determining units that were favourable for hosting Li-B mineralisation versus those that weren't. - On a basin scale, proximity/distance relative to the interpreted source pathways for the mineralizing fluids is a key component in grade distribution and variability across the deposit; Li and B grades appear highest in the southwest portion of the South Basin, proximal to the western bounding fault of the basin.
Estimation and modelling techniques	<i>The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted</i>	- Geological modelling and Mineral Resource estimation for the Project was performed under the supervision of the Golder Competent Person. - Based on a statistical analysis, extreme B grade values were identified in some of the units other than the targeted B5, M5 and

Criteria	JORC Code 2012 explanation	Commentary																				
	<i>estimation method was chosen include a description of computer software and parameters used.</i>	L6 units. As a result, restricted interpolation was applied to B grades in units other than the B5, M5 and L6. - The geological model was developed as a gridded surface stratigraphic model and a stratigraphically constrained grade block model using MineScape (v6.1.1) StratModel and BlockModel, which are computer-assisted geological, grade modelling, and estimation software applications. - Domaining in the model was constrained by the roof and floor surfaces of the geological units. The unit boundaries were modelled as hard boundaries, with samples interpolated only within the unit in which they occurred. - Key modelling and estimation parameters included the following: <table><tr><td>Estimation Method</td><td>Inverse Distance Squared</td></tr><tr><td>Search Volume Geometry</td><td>Ellipsoid</td></tr><tr><td>Search Radius (Pass 1/2/3/4)</td><td>152.4/304.8/609.6/6,096 m</td></tr><tr><td>Estimation Block Size (x/y/z)</td><td>15.2/15.2/1.52 m</td></tr><tr><td>Sub-cell Size (x/y/z)</td><td>3.81/3.81/0.38 m</td></tr><tr><td>Discretization (x/y/z)</td><td>2/2/2</td></tr><tr><td>Minimum Number of Samples (Pass 1/2/3/4)</td><td>4/4/4/4</td></tr><tr><td>Maximum Number of Samples (Pass 1/2/3/4)</td><td>16/16/16/16</td></tr><tr><td>Maximum Number of Samples Per Hole (Pass 1/2/3/4)</td><td>2/2/2/2</td></tr><tr><td>Weighting Used</td><td>Density and length</td></tr></table>	Estimation Method	Inverse Distance Squared	Search Volume Geometry	Ellipsoid	Search Radius (Pass 1/2/3/4)	152.4/304.8/609.6/6,096 m	Estimation Block Size (x/y/z)	15.2/15.2/1.52 m	Sub-cell Size (x/y/z)	3.81/3.81/0.38 m	Discretization (x/y/z)	2/2/2	Minimum Number of Samples (Pass 1/2/3/4)	4/4/4/4	Maximum Number of Samples (Pass 1/2/3/4)	16/16/16/16	Maximum Number of Samples Per Hole (Pass 1/2/3/4)	2/2/2/2	Weighting Used	Density and length
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	<i>The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.</i>	A maiden Indicated and Inferred Mineral Resource estimate of 393 million tonnes (Mt) at 0.9% Lithium Carbonate and 2.9% Boric Acid for the Project was completed by RungePincockMinarco Ltd. (RPM) in 2016 (<i>"Maiden Resource for South Basin at Nevada Lithium-Boron Project"</i>, October 10, 2016, Global Geoscience Press Release) and subsequently updated by RPM in 2017 (<i>"Global Geoscience Limited Doubles High-Grade Lithium-Boron Mineral Resource"</i>, October 31, 2017, Global Geoscience Press Release.) and October 2018 (<i>"Updated Rhyolite Ridge Mineral</i>																				

Criteria	JORC Code 2012 explanation	Commentary
		<i>Resource Statement</i>", October 23, 2018, Global Geoscience Press Release) with additional drilling. Golder has reviewed these estimates and a high-level comparison with the 2019 estimate has been completed and is presented in this Report. There has been no Li-B production on the Project to date.
	<i>The assumptions made regarding recovery of by-products.</i>	No by-products are being considered for recovery at present.
	<i>Estimation of deleterious elements or other non-grade variables of economic significance (e.g. sulphur for acid mine drainage characterisation).</i>	In addition to Li and B, the geological model also included 12 additional non-grade elements (Sr, Ca, Mg, Na, K, As, Rb, Cs, Mo, Fe, Al, W) to allow for calculation of acid consumption values for the metallurgical process. No deleterious elements were estimated.
	<i>In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.</i>	- The stratigraphic gridded surface model was developed using a 7.62 m regularized grid. The grade block model was developed from the stratigraphic model using a 15.2 m North-South by 15.2 m East-West by 1.52 m vertical parent block dimension with sub-cell dimensions of 3.81 m by 3.81 m by 0.38 m. The grid cell and block size dimensions represent 25 percent of the nominal drill hole spacing across the model area. - Grade interpolation into the model blocks was performed using an Inverse Distance Squared (ID^2) interpolator with up to four search passes with search distances of 152.4 m, 304.8 m, 609.6 m and 6,096 m.
	<i>Any assumptions behind modelling of selective mining units.</i>	Assumptions relating to selective mining units were based on the interpretation that the Li-B mineralisation encountered is stratigraphically constrained and that mineralized and non-mineralized units can be selectively separated by existing mining and processing methods.
	<i>Any assumptions about correlation between variables.</i>	No assumptions or calculations relating to the correlation between variables were made at this time.
	<i>Description of how the geological interpretation was used to control the resource estimates.</i>	The geological interpretation was used to control the Mineral Resource estimate by developing a contiguous stratigraphic model (all units in the sequence were modelled) of the host rock units deposited within the basin, the roof and floor contacts of which then served as hard contacts for constraining the grade

Criteria	JORC Code 2012 explanation	Commentary
		interpolation. Grade values were interpolated within the geological units using only samples intersected within those units; sub-celling was applied to allow for improved definition of geological contacts relative to the model blocks at the upper and lower contacts of the units.
	• <i>Discussion of basis for using or not using grade cutting or capping.</i>	• Grade capping or cutting was not applied for the targeted mineralized units B5, M5 and L6 as a statistical analysis of the grade data indicated there was no bias or influence by extreme outlier grade values. • Restricted interpolation of Boron grade data was applied in place of grade cutting or capping in the other units on the model besides the targeted mineralized units B5, M5 and L6; to allow for use of all validated grade values while limiting the potential impact of overestimating spatially isolated high-grade results in the generally unmineralized units. Restricted interpolation controls were not applied to any other grade parameters. Mineral Resources were not estimated for the other units however grade was interpolated to allow for potential mining dilution evaluations during later studies.
	• <i>The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.</i>	• The geological model validation and review process involved visual inspection of drill hole data as compared to model geology and grade parameters using plan isopleth maps and 180 m spaced cross-sections through the model. Drill hole and model values were compared statistically as well as via along-strike and down-dip swath plots. • No reconciliation data is available because the property is not in production.
Moisture	• <i>Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.</i>	• The estimated Mineral Resource tonnages are presented on a dry basis. • A moisture content of 5% for the mineralized units has been assumed for mining and other modifying factors studies currently underway but should be evaluated as part of future analytical programs.

Criteria	JORC Code 2012 explanation	Commentary
Cut-off parameters	The basis of the adopted cut-off grade(s) or quality parameters applied.	- The Mineral Resource estimate presented in this Report has been constrained by the application of an optimized Mineral Resource pit shell. The Mineral Resource pit shell was developed using Maptek Vulcan Mine Planning software. - Key input parameters and assumptions for the Mineral Resource pit shell included the following: - B cut-off grade of 5,000 ppm. - Overall pit slope angle of 35 degrees in the alluvium and 42 degrees in other rock units (wall angle guidance provided by EnviroMINE, Inc., who is developing the geotechnical design). - Mining cost of US\$2.67/tonne (t) plus US\$0.0059/t-vertical m of haulage. - Ore processing and grade control costs of US\$45.45/ t of ore. - Boron and Li recovery of 83.5% and 81.8% respectively. - Boric Acid sales price of US\$700/t. - Lithium Carbonate sales price of US\$10,000/t. - Sales/Transport costs of US\$160/t of product.
Mining factors or assumptions	Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.	- The Mineral Resource estimate presented in this Report was developed with the assumption that the Li-B mineralisation within the Mineral Resource pit shell, as described in the preceding section, has a reasonable prospect for eventual economic extraction using current conventional open pit mining methods. - The basis of the mining assumptions made in establishing the reasonable prospects for eventual economic extraction of the Li-B mineralisation are based on preliminary results from mine design and planning work that is in-progress as part of an ongoing Feasibility Study for the Project. - Except for the Mineral Resource pit shell criteria discussed in the preceding section, no other mining factors, assumptions or mining parameters such as mining recovery, mining loss or dilution have been applied to the Mineral Resource estimate presented in this Report.
Metallurgical factors or assumptions	The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential	The basis of the metallurgical assumptions made in establishing the reasonable prospects for eventual economic extraction of the Li-B mineralisation are based on results from metallurgical and material processing work that was developed as part of the

Criteria	JORC Code 2012 explanation	Commentary
	<i>metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.</i>	ongoing Feasibility Study for the Project. This test work was performed using current processing and recovery methods for producing Boric acid and Lithium carbonate products.
Environmental factors or assumptions	Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.	- The project will require waste and process residue disposal. Assumptions have been made that all environmental requirements will be achieved through necessary studies, designs and permits. - Currently, baseline studies and detailed designs have been completed for both waste and process residue disposal facilities.
Bulk density	Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.	- The density values used to convert volumes to tonnages were assigned on a by-geological unit basis using mean values calculated from 249 density samples collected from drill core during the 2010-2011 and 2018-2019 drilling programs. The density analyses were performed using the water displacement method for density determination, with values reported in dry basis. - The application of assigned densities by geological unit assumes that there will be minimal variability in density within each of the units across their spatial extents within the Project area. The use of assigned density with a very low number of samples, as is the case with several waste units, is a factor that increases the uncertainty and represents a risk to the Mineral Resource estimate confidence.
	The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc.), moisture and differences between rock and alteration zones within the deposit.	The Archimedes-principle method for density determination accounts for void spaces, moisture and differences in rock type.
	Discuss assumptions for bulk density estimates used in the	Density values were assigned for all geological units in the model,

Criteria	JORC Code 2012 explanation	Commentary																																		
	<i>evaluation process of the different materials.</i>	including mineralized units as well as overburden, interburden and underburden waste units. By-unit densities were assigned in the grade block model based on the block geological unit code as follows: <table border="1"> <thead> <tr> <th colspan="2">Grade Model Density Parameters:</th><th>Mean of Density g/cm³</th></tr> </thead> <tbody> <tr> <td>Q1</td><td rowspan="5">Overburden</td><td>1.80</td></tr> <tr> <td>S3</td><td>2.01</td></tr> <tr> <td>G4</td><td>2.00</td></tr> <tr> <td>M4</td><td>2.00</td></tr> <tr> <td>G5</td><td>1.98</td></tr> <tr> <td>M5</td><td rowspan="2">Mineralised</td><td>2.09</td></tr> <tr> <td>B5</td><td>1.95</td></tr> <tr> <td>S5</td><td rowspan="2">Interburden</td><td>1.99</td></tr> <tr> <td>G6</td><td>2.00</td></tr> <tr> <td>L6</td><td>Mineralised</td><td>2.11</td></tr> <tr> <td>Lsi</td><td rowspan="3">Underburden</td><td>2.00</td></tr> <tr> <td>G7</td><td>2.00</td></tr> <tr> <td>Tbx</td><td>2.00</td></tr> </tbody> </table>	Grade Model Density Parameters:		Mean of Density g/cm ³	Q1	Overburden	1.80	S3	2.01	G4	2.00	M4	2.00	G5	1.98	M5	Mineralised	2.09	B5	1.95	S5	Interburden	1.99	G6	2.00	L6	Mineralised	2.11	Lsi	Underburden	2.00	G7	2.00	Tbx	2.00
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Classification	<i>The basis for the classification of the Mineral Resources into varying confidence categories.</i>	- The Mineral Resource estimate for the Project is reported here in accordance with the “Australian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves” as prepared by the Joint Ore Reserves Committee (the JORC Code, 2012 Edition). - A Maiden Ore Reserve estimate of 15.8 Mt at 1.0% Lithium Carbonate and 7.0% Boric Acid for the Project was completed by RPMGlobal USA Inc. (RPM Global) and released in December 2018 (“<i>Rhyolite Ridge Drilling Update and Maiden Ore Reserve</i>”, December 21, 2018, Ioneer Press Release). - Golder performed a statistical and geostatistical analysis for the purpose of evaluating the confidence of continuity of the geological units and grade parameters. The results of this analysis were applied to developing the Mineral Resource classification criteria. - Estimated Mineral Resources were classified as follows:																																		

Criteria	JORC Code 2012 explanation	Commentary
		- Measured: 152.5 m spacing between points of observation, with sample interpolation from a minimum of two drill holes. - Indicated: 305 m spacing between points of observation, with sample interpolation from a minimum of two drill holes. - Inferred: 610 m spacing between points of observation, with sample interpolation from a minimum of two drill holes.
	Whether appropriate account has been taken of all relevant factors (i.e. relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).	The Mineral Resource classification has included the consideration of data reliability, spatial distribution and abundance of data and continuity of geology and grade parameters.
	Whether the result appropriately reflects the Competent Person's view of the deposit.	It is the Golder Competent Persons view that the classification criteria applied to the Mineral Resource estimate are appropriate for the reliability and spatial distribution of the base data and reflect the confidence of continuity of the modelled geology and grade parameters.
Audits or reviews	The results of any audits or reviews of Mineral Resource estimates.	Beyond high level review for the purpose of understanding the Project history, no formal audits or reviews of previous or historical Mineral Resource estimates were performed as part of the scope of work; Mineral Resource estimation evaluation is limited to the estimate prepared by Golder and presented in this Report.
Discussion of relative accuracy/confidence	Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.	Golder performed a statistical and geostatistical analysis and applied Mineral Resource classification criteria to reflect the relative confidence level of the estimated Mineral Resource tonnes and grades estimated globally across the model area for the Project.
	The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.	The Mineral Resource tonnes and grade have been estimated globally across the model area for the Project.
	These statements of relative accuracy and confidence of	Reconciliation against production data/results was not possible as

Criteria	JORC Code 2012 explanation	Commentary
	<i>the estimate should be compared with production data, where available.</i>	the Project is currently in the development stage and there has been no production on the Project to date.

SECTION 4 ESTIMATION AND REPORTING OF ORE RESERVES

(Criteria listed in section 1, and where relevant in sections 2 and 3, also apply to this section.)

Criteria	JORC Code 2012 Explanation	Commentary
Mineral Resource estimate for conversion to Ore Reserves	Description of the Mineral Resource estimate used as a basis for the conversion to an Ore Reserve.	The 20 January 2020 Mineral Resources for the Rhyolite Ridge lithium-boron (Li-B) deposit has formed the basis of the 17 March 2020 Ore Reserve estimate. A description of the January 2020 Mineral Resource estimate is provided in Section 3 above. The Mineral Resource statement is signed by Mr Jerry DeWolfe, who is a registered Professional Geologist (P.Geo.) with the Association of Professional Engineers and Geoscientists in Alberta (APEGA), a "Recognized Professional Organisation" included in a list promulgated by ASX. Mr. DeWolfe is a full-time employee of Golder Associates Ltd. (Golder) and is independent of Ioneer and its affiliates. Mr. DeWolfe has sufficient relevant experience to qualify as a Competent Person.
	Clear statement as to whether the Mineral Resources are reported additional to, or inclusive of, the Ore Reserves.	The Mineral Resources are reported inclusive of the Ore Reserves.
Site visits	Comment on any site visits undertaken by the Competent Person and the outcome of those visits.	- The Golder Competent Person Terry Kremmel, PE, is a full-time employee of Golder Associates Inc. (Golder). Mr. Kremmel performed a personal inspection of the Project site from December 3rd to 5th 2018. - During the site visit the Golder Competent Person. Mr. Kremmel visited the Ioneer core shed in Tonopah NV, and the South Basin area of the Rhyolite Ridge Project site, which is the focus of the current Ore Reserve efforts by Ioneer. - The Golder Competent Person observed the active drilling, logging and sampling process and interviewed site personnel regarding exploration drilling, logging, sampling and chain of custody procedures. - The outcome of the site visit was that the Golder Competent Person developed an understanding of the general geology of the Rhyolite Ridge Project (the Project). The Golder Competent Person was also able to visually confirm the presence of a selection of monumented drill holes from each of the previous drilling programs as well as to observe drilling, logging and sampling procedures during the current drilling program and to review documentation for the logging, sampling and chain of custody protocols for previous drilling programs.

Criteria	JORC Code 2012 Explanation	Commentary
		During the site visit, the Competent Person confirmed that the type of data was applicable for Ore Reserve estimation. The Competent Person observed project surface conditions for the purpose of understanding project boundaries, physical characteristics of the resource for determining appropriate extraction methodology, drainage and infrastructure requirements, appropriate locations for overburden storage facilities (OSFs), as well as access from the proposed quarry to the proposed process plant site location.
	<i>If no site visits have been undertaken indicate why this is the case.</i>	Not Applicable
Study status	<i>The type and level of study undertaken to enable Mineral Resources to be converted to Ore Reserves.</i>	- This Ore Reserve estimate is a result of the Definitive Feasibility Study completed in April 2020 (DFS, or the Study). - As part of the 17 March 2020 Ore Reserves estimate, an open-pit mine plan was developed that was technically achievable and economically viable. The mine plan considered material Modifying Factors such as dilution and ore loss, various boundary constraints, processing recoveries and all costs associated with mining, processing, transportation and selling product.
	<i>The Code requires that a study to at least Pre-Feasibility Study level has been undertaken to convert Mineral Resources to Ore Reserves. Such studies will have been carried out and will have determined a mine plan that is technically achievable and economically viable, and that material Modifying Factors have been considered.</i>	- The DFS was undertaken to convert Mineral Resources to Mineral Reserves. The DFS determined a mine plan that is technically achievable and economically viable, and that material Modifying Factors were considered. - The Mineral Resources have been converted to Ore Reserves by means of an open-pit optimisation and 26-year pit design supported by geotechnical studies undertaken by EnviroMINE Inc. (EnviroMINE). Only Measured and Indicated Mineral Resources within the 26-year mine plan have been included in the Ore Reserves. Modifying factors have been applied as stated below.
Cut-off parameters	<i>The basis of the cut-off grade(s) or quality parameters applied.</i>	A cut-off grade of 5,000 parts per million (ppm) boron was applied. No cut-off grade for lithium was used. The 5,000-ppm boron limit was set by leaching process test work.
	<i>The method and assumptions used as reported in the Pre-Feasibility or Feasibility Study to convert the Mineral Resource to an Ore Reserve (i.e. either by application of appropriate factors by optimisation or by preliminary or</i>	This Ore Reserve estimate is based on work completed for the April 2020 DFS. Ore Reserves were estimated from Golder's detailed pit designs that were prepared from the results of Golder's pit optimisations on the June 2019 Mineral Resource model with applied

Criteria	JORC Code 2012 Explanation	Commentary
Mining factors or assumptions	<i>detailed design).</i>	Modifying Factors (listed below) and EnviroMINE's geotechnical recommendations listed below. Golder's pit design was further analysed by EnviroMINE to check for pit slope stability. The analysis found that the pit design is predicted to be in a stable configuration excluding a small and isolated section of the pit (in Design Sector G) which may require some design modifications to correct. Additional drilling in this area will better define the geology along the proposed pit wall that could improve pit slope stability analysis in this area.
	The choice, nature and appropriateness of the selected mining method(s) and other mining parameters including associated design issues such as pre-strip, access, etc.	- The deposit is to be mined by open-pit mining methods with 9.1 metre (m) bench heights using 17 cubic metre (m³) hydraulic excavators, a 12-m³ wheel loader, and 136-tonne autonomous haul trucks (AHTs). This is the most appropriate mining method for extraction of the resource due to the moderately steep dip of the deposit, moderate stripping ratio, mining equipment access requirements to remove overburden and extract ore, and rock properties of the various stratigraphic units present in the deposit. - The M5a unit present throughout the deposit is described as a very weak, swelling clay that has low friction angle and cohesion (as tested in the laboratory). EnviroMINE's geotechnical analysis of numerous pit designs provided by Golder indicated that the resultant factor of safety is very sensitive to the dip and orientation of the M5a dip direction and dip angle anywhere behind the designed walls. Additional drilling data along the critical cross sections could significantly change the geologic interpretation regarding the nature of the folds and faults affecting the weak M5a (or any other weak bedding planes or geologic contacts) and that could materially impact the pit slope stability analysis. Once in operation, on-going wall monitoring will be required for any unexpected changes in the dip and orientation of the M5a unit that may cause pit wall instability or potential failure in advance of mining. - An unload of additional overburden material along the southeast and eastern extents of the Stage 2 Quarry is required to mitigate potential pit slope stability issues due to the dip and orientation of the M5a unit outside of the initial Stage 1 Quarry. Based on recommendations provided by EnviroMINE, this requires that mining outside of the Stage 1 Quarry extents begin at the up-dip exposure of the eastern fold limbs with overburden removed down-dip to the west from the

Criteria	JORC Code 2012 Explanation	Commentary
		eastern extent of the Stage 2 Quarry limits. Additionally, the Stage 2 Quarry will be incrementally mined from south to north with the advancing face orientated roughly perpendicular to the dip of the M5a unit as mining advances. Based on the current mine plan, the unload of the Stage 2 Quarry will begin in the fourth year of production to facilitate continuous delivery of ore to the processing plant.
	<i>The assumptions made regarding geotechnical parameters (e.g. pit slopes, stope sizes, etc), grade control and pre-production drilling.</i>	- Pit slopes were designed based on the results of geotechnical studies performed by EnviroMINE using a 9.1 m bench height with single benching. The values, which assume the use of pre-split drilling to control face angles, vary by rock type (alluvium, lacustrine sediments, and volcanic rock) and average dip direction. A summary of bench face angle (BFA), catch bench width (CBW), and maximum inter-ramp angle (IRA) for single benching are as follows: - Alluvium – BFA = 51°, CBW = 8.44 m, IRA = 30° - Lacustrine Sediments – BFA = 46°, CBW = 6.40 m, IRA = 31° - Volcanic Rock – BFA = 77°, CBW = 7.01 m, IRA = 45° - EnviroMINE's pit slope stability analysis of the Stage 1 Quarry, the initial starter pit that provides the first three years of ore production, was performed to a relative accuracy and confidence level consistent with a Feasibility Study. EnviroMINE's analysis of the Stage 2 Quarry, which is effectively an expansion of the Stage 1 Quarry, was performed to a relative accuracy and confidence level consistent with a Pre-Feasibility Study.
	<i>The major assumptions made and Mineral Resource model used for pit and stope optimisation (if appropriate).</i>	- Pit optimisations were performed on the June 2019 Mineral Resource model after application of Modifying Factors in Maptek's Vulcan software using the above geotechnical parameters and applied recovery, pro-forma mining cost, processing cost, transportation cost and sales price assumptions from the 2018 Pre-feasibility Study (PFS) listed below: - Boron cut-off grade of 5,000 ppm - Boron recovery of 83.5% per the 2018 PFS - Lithium recovery of 81.8% per the 2018 PFS - Mining cost of US\$2.28 per tonne (t) - Additional haulage cost of US\$0.0059/t per vertical metre - Processing cost of US\$73.03/t

Criteria	JORC Code 2012 Explanation	Commentary
		• Transportation cost of US\$159.84/t • Boric Acid sales price of US\$700/t • Lithium Carbonate sales price of US\$10,000/t
	• <i>The mining dilution factors used.</i>	• A mining dilution of 0.5 m was applied at each roof and floor interface of the ore seams based on the dip and orientation of the deposit. Grades of dilution material were determined from the adjacent units. Given the thickness of the ore seams, this equates to 9% dilution by weight within the designed 26-year pit. This mining dilution factor assumes the use of excavators and dozers outfitted with high-precision GPS and integrated Fleet Management Software (FMS) and competent operators.
	• <i>The mining recovery factors used.</i>	• Based on the dip and orientation of the deposit, a mining loss of 0.3 m was applied at each roof and floor contact of the ore seams. Given the thickness of the ore seams, this equates to a 6% mining loss by weight within the designed 26-year pit. This mining recovery factor assumes the use of excavators and dozers outfitted with high-precision GPS and integrated FMS and competent operators.
	• <i>Any minimum mining widths used.</i>	• A 30 m minimum mining width was applied in select areas of the pit where required to provide sufficient equipment operating width. • Due to the continuous thickness of the B5 and L6 seams within the designed pit, no minimum mining thickness was applied in the Ore Reserves estimate.
	• <i>The manner in which Inferred Mineral Resources are utilised in mining studies and the sensitivity of the outcome to their inclusion.</i>	• Inferred Resources that represent 6% of the total plant feed were included in the 26-year DFS mine plan that formed the basis of the Ore Reserves estimate. Upon completion of the cost estimates and associated economic analysis, a sensitivity analysis was performed by removing the revenue generated by the Inferred tonnages from the cash flow. The outcome of this sensitivity analysis concluded that the Project viability is not dependent upon the inclusion of the Inferred Resources. • Stated Ore Reserves have only been reported from the Measured and Indicated Resource categories with Modifying Factors applied.
	• <i>The infrastructure requirements of the selected mining methods.</i>	• The Project is currently in the design stage, and no site-specific infrastructure has been built to date. Infrastructure required for the Project includes haul roads, Overburden Storage Facilities (OSFs),

Criteria	JORC Code 2012 Explanation	Commentary
		Spent Ore Storage Facility (SOSF), Contact Water Ponds (CWPs), the processing plant which includes processing structures and facilities, maintenance facilities, warehousing, shipping and receiving, fuel island, Sulphuric Acid Plant (SAP), Steam Turbine Generator (STG) responsible for power generation/transmission, and administrative buildings.
Metallurgical factors or assumptions	<i>The metallurgical process proposed and the appropriateness of that process to the style of mineralization.</i>	- The Rhyolite Ridge Li-B ore is unique, and no reference installations exist for processing this type of ore. Advanced scientific investigative and confirmatory test work was therefore required to optimise the process flowsheet for the DFS. Bench and pilot plant testing were conducted at Kemetco Research, Inc. (Kemetco) in Richmond, British Columbia, and overseen by Norm Chow and Anca Nacu PhD with Kemetco; Patrick Glynn P.E., Jaegan Mohan and Kyle Marte, PEng with Fluor; and Peter Ehren and Michael Osborne with Ioneer. Kappes Cassiday Associates (KCA) performed baseline metallurgical test work for vat leaching test work, FLSmidth performed crushing and filtration test work, and Veolia performed evaporation and crystallisation test work that formed the basis of the DFS. - Ore will be processed by ore sizing, vat acid leaching, impurity removal, evaporation, and crystallisation using a flowsheet developed specifically for the Project to generate technical-grade lithium carbonate and boric acid. Test work has also confirmed that refining the technical-grade lithium carbonate to battery-grade lithium hydroxide is technically and commercially feasible through a liming route. No impediments have been identified to the technical and commercial feasibility for conversion of the technical-grade lithium carbonate to battery-grade lithium carbonate through the bicarbonation route. - Key process engineering deliverables completed include the block flow diagram (BFD), process flow diagrams (PFDs), process design criteria, piping and instrumentation diagrams (P&IDs), and heat and mass balance (summarized on the PFDs). The heat and mass balance has been compiled using the Metsim process simulation software package and is a fully integrated model comprising all major process unit operations and recycle streams. The model tracks all elements/compounds of interest throughout the process.

Criteria	JORC Code 2012 Explanation	Commentary
		Notably lithium wash losses, which can be significant in lithium brine flowsheets, are estimated through detailed modelling of all dewatering and wash unit operations. An on-site SAP will produce commercial-grade sulphuric acid for vat leaching the ore. The selection of the technology for the large SAP is based on a proven operating design and specialty technology provider. The SAP is a double conversion, double adsorption system that has proven to be reliable and predictable.
	<i>Whether the metallurgical process is well-tested technology or novel in nature.</i>	The Rhyolite Ridge Li-B ore is unique, and no reference installations exist for processing this type of ore. Advanced scientific investigative and confirmatory test work was therefore required to optimise the process flowsheet. Bench and pilot plant testing were performed by Kemetco, KCA performed baseline metallurgical test work for vat leaching test work, FLSmidth performed crushing and filtration test work, and Veolia performed evaporation and crystallisation test work that formed the basis of the DFS. However, the proposed metallurgical process uses known and commercially proven equipment and technology and is ready for commercialisation.
	<i>The nature, amount and representativeness of metallurgical test work undertaken, the nature of the metallurgical domaining applied and the corresponding metallurgical recovery factors applied.</i>	The Rhyolite Ridge Li-B ore is unique, and no reference installations exist for processing this type of ore. Advanced scientific investigative and confirmatory test work was therefore required on bulk samples taken from the outcrop and on core samples. Bench and pilot plant testing were performed by Kemetco, KCA performed baseline metallurgical test work for vat leaching test work, FLSmidth performed crushing and filtration test work, and Veolia performed evaporation and crystallisation test work that formed the basis of the DFS. The metallurgical testing programs were fit for purpose and no standardized test methods were used to govern testing programs. Test work was structured and guided using the general principles and definition of the CIM Best Practice Guidelines for mineral processing. At a finer level each metallurgical laboratory has their own standard operating procedures (SOPs) and use a wide range of standards for individual test procedures and assaying. A list of these procedures has not been compiled. The majority of metallurgical test work has been performed on material from the South Basin, which was the focus of the April 2020 DFS and the proposed location of the quarry, though some test work has also been done on core from the

Criteria	JORC Code 2012 Explanation	Commentary
		North Basin where operations could potentially expand in the future. • In-depth metallurgical test work and pilot plant programs were performed over the 18-month duration of the DFS on over 27 tonnes of material (primarily limited to the B5 unit) to optimise the process flowsheet. Some metallurgical test work is still ongoing to confirm and further reduce risk of specific areas in the process flowsheet. The results from the test work will be incorporated and updated during the detailed engineering phase, over the next year, based on the criticality of the effect on the current design. • The process flowsheet was customised to the metallurgical and chemical characteristics of the unique Rhyolite Ridge ore to reflect each unit operation of the proposed Rhyolite Ridge processing facilities. This extensive effort has resulted in achieving a high level of confidence in the process flowsheet and reducing process risk and uncertainty. The major unit operations of the Rhyolite Ridge flowsheet have been operated at pilot plant scale on over 27 tonnes of material. The metallurgical test work is representative of the process planned for treating the Rhyolite Ridge ore delivered from the mine. • Metallurgical test work was limited to the M5, B5, and L6 lithium bearing domains. Most test work was performed on B5 material as this represents all ore mined for the first 18 years of production, though a single test was performed on the L6 ore that will be mined from Year 19 onwards. A boron cut-off grade of 5,000 ppm has also been applied for metallurgical domaining purposes based on leaching test work. • Based on the metallurgical test work, Fluor reported corresponding recoveries of 84.6% for lithium and 78.7% for boron to be applied to all ore planned to be mined. These figures are cumulative recoveries for the unit processes that span from vat leaching to product production. These recoveries have been fixed over the 26-year mine plan.
	• <i>Any assumptions or allowances made for deleterious elements.</i>	• In addition to lithium and boron, deleterious elements including magnesium, calcium, aluminium, potassium, and iron impact the amount of sulphuric acid consumed by processing plant feed material and annual ore throughputs. The process plant design is based on maximising the sulphuric acid output by the SAP. The ore

Criteria	JORC Code 2012 Explanation	Commentary
		throughput through the processing plant is therefore variable to counter the effect of varying acid consumptions to give a constant annual acid consumption. The ore throughput of the process plant is based on achieving the maximum ore throughput anticipated in the mine plan on a monthly basis.
	<i>The existence of any bulk sample or pilot scale test work and the degree to which such samples are considered representative of the orebody as a whole.</i>	Extensive test work and pilot plant programs were performed as part of the April 2020 DFS on bulk samples taken from the outcrop and on core samples. The majority of metallurgical test work has been performed on material from the proposed quarry location in the South Basin, which was the focus of the April 2020 DFS. Most test work was performed on B5 ore material as this represents all ore mined for the first 18 years of production, though a single test was performed on the L6 ore that will be mined from Year 19 onwards. Test work has been performed on over 27 tonnes of material, and the samples are representative of the ore body as a whole.
	<i>For minerals that are defined by a specification, has the ore reserve estimation been based on the appropriate mineralogy to meet the specifications?</i>	Kemetco, KCA, FLSmidth, and Veolia have performed sufficient bench scale and pilot plant test work to indicate that technical grade lithium carbonate with 99% purity, battery-grade lithium hydroxide with 99.5% purity, and boric acid with 99.9% purity can be produced from the Rhyolite Ridge ore. The Ore Reserves are of the mineralogy that the plant is designed to process and support these specifications based on metallurgical test work.
Environmental	<i>The status of studies of potential environmental impacts of the mining and processing operation. Details of waste rock characterisation and the consideration of potential sites, status of design options considered and, where applicable, the status of approvals for process residue storage and waste dumps should be reported.</i>	- The Project is designed to be a sustainable, environmentally sensitive operation with no grid energy requirements, low water usage, low emissions, and a modest surface footprint. - The BLM permitting process will require compliance with the National Environmental Policy Act (NEPA); Ioneer is actively preparing to meet these requirements. The NEPA requirements include baseline reports for 14 different resource areas of the Project, including air quality, biology, cultural resources, groundwater, recreation, socioeconomics, soils, and rangeland. - Baseline environmental studies were performed as part of the April 2020 DFS. - The permitting process for 28 separate permits is currently underway for the Stage 1 Quarry, an initial starter pit that supplies ore for the first three years of production. The permits and submittals deemed

Criteria	JORC Code 2012 Explanation	Commentary
		critical to the advance of the overall Project include the Bureau of Land Management (BLM) Plan of Operations, the State of Nevada Water Pollution Control Permit (WPCP) required to construct, operate, and close a mining facility, and the Nevada Bureau of Air Pollution Control air quality permit. • The BLM Plan of Operations is scheduled to be submitted in the Second Quarter (Q2) of 2020. • The Nevada Bureau of Air Pollution Air Quality Permit is planned for submission in Q2 2020. • The State of Nevada WPCP is scheduled to be submitted Q2 2020. • The Plan of Operations filing will trigger the environmental review process under the NEPA that is expected to follow an Environmental Impact Statement (EIS) pathway. The NEPA process will be guided by recently implemented guidelines specified in Secretarial Order 3355 by the US Department of the Interior which have been enacted to streamline the overall environmental review and permitting process. If the Project is selected for evaluation under an EIS, a draft and then final EIS would be completed by a BLM-approved third-party contractor selected by Ioneer. Public comment periods are required as part of the EIS process, and the Project schedule assumes 12 months of EIS approval cycle. • Preparation of all other permits, including federal, state, and local permits, are also in progress with various applications expected to be submitted in 2020. • Ioneer has focused its efforts to date on preparing permits for the initial Stage 1 Quarry, and little work has been done to date on preparing permit applications for the larger Stage 2 Quarry, which is effectively an expansion of the Stage 1 Quarry. The permitting process for the Stage 2 Quarry should begin after permits for the Stage 1 Quarry have been submitted in 2020. Based on the current mine plan, the Stage 2 Quarry permits will need to be secured by the end of the third year of production, which is currently slated for 2026. • A geochemistry study was conducted as part of the April 2020 DFS to assess acid rock drainage (ARD), metals leaching (ML), and salinity generation potential of all major lithologic units and residual process materials. The study also aimed to understand mineral composition and geochemical controls on water quality, evaluate potential impacts from the project and associated protection

Criteria	JORC Code 2012 Explanation	Commentary
		measures, and provide information to support geochemical models and evaluations for water quality predictions. Overburden and ore samples were collected from existing exploration drill core and 137 samples representing 15 different units were geochemically analysed to characterise the potential of these materials to generate acidic drainage or to leach metals based on regulatory guidance documents published by the Nevada Division of Environmental Protection (NDEP) and the Nevada BLM. Testing included acid-base accounting (ABA), net acid generation pH, short-term leach testing by meteoric water mobility procedure, bulk elemental content, X-ray diffraction, optical mineralogy, and humidity cell testing (HCT). While most Project materials are non-potentially acid generating (non-PAG), HCTs for all major lithologic units are required because a post-closure quarry lake will develop. In February 2020, NDEP and BLM provided authorizations for termination of 11 HCTs and continuation of 8 HCTs. HydroGeoLogica, Inc. (HGL) is currently preparing explanation and rationale for the termination of the remaining 8 HCTs for submittal to NDEP and BLM. Two ex-pit OSFs have been designed to accommodate the storage of overburden and low-grade M5 material, namely, the West OSF and the North OSF. The West OSF is located to the northwest of the Stage 1 Quarry. This site was selected due to its proximity to the Stage 1 Quarry to minimise haul distances and prevent sterilisation of Mineral Resources. The North OSF is located approximately 1.1 kilometres (km) northwest of the Stage 2 Quarry between the Stage 2 Quarry limits and the processing plant. The North OSF site was selected due to boundary restrictions and the location of the Cave Springs Formation outcroppings. In-pit storage of overburden and low-grade M5 material can commence as soon as sufficient pit floor space is available and the orientation of the advancing mining face becomes conducive to in-pit backfilling. The initial West OSF with an estimated four years of capacity was designed to a relative accuracy and confidence level consistent with a Feasibility Study, whereas the West OSF expansion, North OSF, and In-Pit Overburden Backfill (IOB) designs were performed to a relative accuracy and confidence level consistent with a Pre-Feasibility Study. To date, no issues have been identified that would materially impact the proposed locations of the West and North OSFs.

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		• A tail gas scrubber will be installed on the SAP to remove remaining sulphur dioxide (SO₂) from the gas stream to make certain that environmental emissions requirements are met. • Process residue will be stacked in a Spent Ore Storage Facility (SOSF) located 1.6 km south of the processing plant that has been designed to store a composite consisting of leached ore from the vats plus sulphate salts generated in the evaporation and crystallisation circuits. This material is suitable for dry stacking, so there is no need for a conventional tailings dam. A double-sided, textured high-density polyethylene (HDPE) geomembrane liner will provide containment and will be protected by a granular layer to facilitate long-term drainage. The SOSF engineering has been completed to a detailed design level with drawings issued for construction as this level of engineering completion is required by regulatory authorities and will be submitted as part of the overall permitting process. To date, no issues have been identified that would materially impact the proposed location of the SOSF.
Infrastructure	• <i>The existence of appropriate infrastructure: availability of land for plant development, power, water, transportation (particularly for bulk commodities), labour, accommodation; or the ease with which the infrastructure can be provided, or accessed.</i>	• The Project is currently in the development stage, and no site-specific infrastructure has been built to date. • Sufficient land exists to locate all proposed infrastructure required for the Project, including haul roads, Overburden Storage Facilities (OSFs), Spent Ore Storage Facility (SOSF), Contact Water Ponds (CWPs), the processing plant (which includes processing structures and facilities), maintenance facilities, warehousing, shipping and receiving, fuel island, Sulphuric Acid Plant (SAP), Steam Turbine Generator (STG) responsible for power generation/transmission, and administrative buildings. • The STG is designed to generate 35.2 mega-Watts (MW) of electricity using steam generated by the waste heat boiler in the SAP. The STG power generation exceeds the current power requirements to run the entire facility and will be separate from the Nevada state power grid. A backup diesel generator will also be available to provide black-start capability and provide power to essential systems should the STG be down. • The Project has been designed to be an environmentally sensitive operation with low water usage and water recycling and reuse where possible. There is sufficient water available to meet processing and

Criteria	JORC Code 2012 Explanation	Commentary
		dust control requirements. • The Rhyolite Ridge site is currently accessed from the cities of Reno and Las Vegas, Nevada from Nevada State Highway 264 and the unpaved Hot Ditch and Cave Springs county roads. Ioneer is working with Esmeralda County officials in developing a traffic management plan that will integrate new access roads to the facility with the existing county roads in the area. Consideration will be given to make certain that the safety of all users of county roads is not compromised through development of the Project. • Nevada is considered one of the world's most favourable and stable mining jurisdictions, and there is a high degree of experienced, competent, and skilled personnel available to meet workforce requirements for the Project. • A workforce camp is not foreseen for use in housing Owner personnel. Ioneer staff conducted a study of local housing options, Local housing, apartments, motels, and recreational vehicle (RV) sites were located, evaluated, and quantified. Only a very limited amount of accommodation is available in the nearest residential areas, the small town of Dyer, Nevada, and Bishop, California. The next closest available accommodations are in the city of Tonopah, Nevada, which is roughly 1.5 hours to the Project site. A few inactive RV sites were located near the site, but re-activation potential was not evaluated, and these sites are limited to 25 by regulation due to needs for infrastructure for larger RV areas. Due to the potential need to develop housing, Ioneer may contribute individual housing support, which is included in the operating costs estimate for those employees hired before turnover. In addition, Ioneer may invest over two years in local housing infrastructure under the assumption that roughly 20% of the Ioneer workforce will be local hires and an additional 20% of employees will be drive-in/drive-out. • A project execution plan has been developed based on an Engineering, Procurement, and Construction Management (EPCM) delivery framework. Project execution is based on continuing with the same companies (Fluor, SNC-Lavalin, MECS, Kemetco, KCA, FLSmidth, Veolia, EM Strategies, NewFields, Trinity, EnviroMINE, and Golder) that completed the DFS to maintain continuity and retain project knowledge. Construction of processing plant, SAP, and SOSF facilities is planned to be facilitated by various consultants and

Criteria	JORC Code 2012 Explanation	Commentary
		contractors with ioneer oversight, whereas construction of the mine haul roads and initial box-cut is planned to be performed by ioneer.
Costs	<i>The derivation of, or assumptions made, regarding projected capital costs in the study.</i>	- The capital cost estimate is based on work completed for the April 2020 DFS. An AACEI Class 3 capital cost estimate with an accuracy range of $\pm 15\%$ was produced for the DFS, and engineering design is 30% complete. The estimate reflects the Project's EPCM execution strategy and baseline project schedule. - Capital costs for various Work Breakdown Structure (WBS) codes were independently developed by third parties and consolidated by Fluor. More than 1,500 deliverables were produced during the DFS to support the capital costs estimate. - The capital cost estimate covers the period from DFS completion to commissioning and is reported in First Quarter (Q1) 2020 real US dollars without allowances for escalation or currency fluctuation. The estimate does not include sunk costs. - A contingency of 8% was applied to the capital costs estimate using a Monte Carlo simulation to achieve a P50 (i.e., the probability at the 50th percentile). - The capital schedule for mining equipment includes new equipment required to meet production targets of the 26-year mine plan and replacement equipment based on useful service lives provided by the vendor or based on other industry standards. Rebuilds have also been included in the capital schedule at regular intervals based on rebuild lives provided by the vendor or other industry standards. - Capital costs of mining equipment were derived from quotes received in July 2019 from an equipment vendor with offices in Nevada. Costs for the autonomous haul trucks (AHTs) that were ultimately used in the DFS were not included in the original quote, but additional base costs required to outfit a conventional 136-tonne haul truck with the components necessary to make it capable of autonomous haulage were verbally communicated by the vendor during a subsequent meeting. Taxes for the AHTs were estimated using a tax rate of 6.85%, but freight and assembly costs were assumed to remain unchanged from the conventional haul truck. - The capital cost estimates are not 100% equity based. Capital cost estimates for new and replacement mining equipment assume that 90% of the total equipment cost inclusive of the base cost, taxes,

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		freight, and assembly would be financed and included in the operating costs estimate based on terms provided by the equipment manufacturer. The 10% down payment for equipment was included in the capital costs estimate. Capital costs for the haul roads, OSFs, SOSF, CWP, the processing plant (which includes processing structures and facilities), maintenance facilities, warehousing, shipping and receiving, fuel island, SAP, STG, and administrative buildings were estimated from material take-off (MTO) quantities developed for the DFS by various third parties. Each of the above have an engineering design that is at least 30% complete with some items with a level of design maturity completed to detailed engineering and issued for construction.
	<i>The methodology used to estimate operating costs.</i>	- Operating costs are based on work completed for the April 2020 DFS. - Sustaining capital costs have been included in the operating costs estimate. - Operating cost estimates for the quarry and processing plant were independently developed by Golder and Fluor and consolidated by Fluor for input into the cash flow model. - Direct mine operating costs are zero-based and developed from first-principles from the mine plan production statistics using methodologies consistent with a DFS. Except for blasting, all production and preventative maintenance tasks are assumed to be self-performed by the owner (ioneer). Blasting is assumed to be performed by a qualified subcontractor. - Hourly operating costs for equipment were based on vendor guidelines and supported by budgetary quotes for consumable items from local vendors, including fuel, diesel exhaust fluid, lubricants and greases, rubber tyres, ground-engaging tools, and wear parts. Hourly undercarriage and general repair and replacement parts were estimated from a third-party cost database and escalated to 2019 US dollars. - Annual costs for an integrated Fleet Management System (FMS) have been included based on a budgetary quote provided by a local vendor. - Based on information provided by the equipment vendor, an annual license fee was applied to each AHT required to meet

Criteria	JORC Code 2012 Explanation	Commentary
		production in a given year. - The mine was assumed to operate two-shifts-per-day, 365 days per year with no scheduled off days for the first 19 years of production. The mine was then assumed to transition to a one-shift-per-day basis from Year 20 through the remaining mine life. - Labour costs assume 12-hour shifts with 2,080 straight-time hours and 104 overtime hours worked each year. - Labour wages are fully burdened and were developed based on a survey of local mining wages. - Costs for the five "License Team" personnel required to remotely monitor the AHTs each shift and make sure they are performing to specifications have been included in the mine operating costs. These personnel will likely be contracted through the equipment vendor. - Mining equipment financing costs are included in the operating costs. For the purposes of the estimate, 90% of the total equipment cost inclusive of the base cost, taxes, freight, and assembly are assumed to be financed based on terms provided by the equipment manufacturer. The 10% down payment was included in the capital costs estimate. - Processing costs spent ore removal and SOSF costs, SAP costs, and other indirect operating costs were estimated by Fluor and SNC Lavalin from first principles using the ore production schedule from the mine plan. These costs were estimated using methodologies consistent with a DFS and included quoted firm pricing from major reagent suppliers, quoted freight costs from transport firms, and workforce costs based on industry norms for salary and wage data within the region consistent with the mine workforce costs. Reasonable scenarios for other requirements such as outsourced services with quoted rates or estimates were also included. Quantities of reagents were established during pilot testing with ore.
	<i>Allowances made for the content of deleterious elements.</i>	No penalties for deleterious elements were forecast in the economic analysis.
	<i>The source of exchange rates used in the study.</i>	Exchange rates were obtained digitally from XE.com Inc. on 27 August 2019.

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	Derivation of transportation charges.	Transportation charges for all significant materials were derived from quotes. Historical data were used for some minor charges.
	The basis for forecasting or source of treatment and refining charges, penalties for failure to meet specification, etc.	Not applicable.
	The allowances made for royalties payable, both Government and private.	Net proceeds (in the form of taxes) were included in the economic analysis. No royalties are paid to private organisations or individuals.
Revenue factors	The derivation of, or assumptions made regarding revenue factors including head grade, metal or commodity price(s) exchange rates, transportation and treatment charges, penalties, net smelter returns, etc.	- The revenue factors used in the economic analysis were based on work performed for the April 2020 DFS. - Annual saleable lithium carbonate, lithium hydroxide, and boric acid tonnages reflect the head grade dictated by the mine plan and anticipated metallurgical recoveries estimated from test work. - Consensus price forecasts for lithium carbonate and lithium hydroxide were obtained from a range of market research companies, investment banks, and other reputable sources. The commodity price for the first three years of technical-grade lithium carbonate production were estimated from the mean of the latest Roskill technical-grade published price forecast (in real terms) and Benchmark Mineral Intelligence (Benchmark) lithium hydroxide forecast (in real terms) adjusted to reflect the cost to upgrade the technical-grade lithium carbonate as published by Orocobre related to its venture with Toyota Tsusho. A consensus price forecast for lithium hydroxide, which will be produce from the fourth year of production and on, was estimated using the mean of the Roskill lithium hydroxide and Benchmark lithium hydroxide forecasts. - The estimated price for boric acid was based on an analysis by ioneer's Sales and Marketing team using 1) ioneer current contracts, and 2) pricing given boric acid supply and demand based on historical market data and discussions with potential customers. - No exchange rates were applied to metal or commodity prices. All commodity prices stated in US Dollars. - Transportation charges for all significant materials were derived from quotes. Historical data were used for some minor charges not derived from quotes. - No penalties were forecast in the economic analysis.
	The derivation of assumptions made of metal or	Consensus price forecasts for lithium carbonate and lithium hydroxide

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	<i>commodity price(s), for the principal metals, minerals and co-products.</i>	used in the economic analysis were obtained from a range of market research companies, investment banks, and other reputable sources. The commodity prices for the first three years of technical-grade lithium carbonate production were estimated from the mean of the latest Roskill technical-grade published price forecast (in real terms) and Benchmark Minerals lithium hydroxide forecast (in real terms) adjusted to reflect the cost to upgrade the technical-grade lithium carbonate as published by Orocobre related to its venture with Toyota Tsusho. Consensus price forecasts for battery-grade lithium hydroxide which will be produce from the fourth year of production and on, were estimated using the mean of the Roskill lithium hydroxide and Benchmark Minerals lithium hydroxide forecasts. The estimated price for boric acid used in the economic analysis was based on an analysis by ioneer's Sales and Marketing team using 1) ioneer current contracts, and 2) pricing given boric acid supply and demand based on historical market data and discussions with potential customers.
Market assessment	<i>The demand, supply and stock situation for the particular commodity, consumption trends and factors likely to affect supply and demand into the future.</i>	- Market demand and supply trends for lithium products and borates were completed by ioneer's Sales & Marketing team with assistance from Michael LePage, the former marketing leader for Rio Tinto Industrial Minerals (including US Borax) with 30+ years of experience, as part of a detailed analysis in the April 2020 DFS using data aggregated from a range of market research companies, investment banks, and other reputable sources. - Ioneer's efforts were led by Yoshio Nagai, ioneer's Vice President of Sales & Marketing. Mr. Nagai has more than 20 years of chemical and mining industry sales and marketing experience, most recently as Sales Vice President at the Rio Tinto Group accountable for borates, salt, and talc products in Asia and the USA. - Lithium - Lithium extraction produces lithium carbonate, lithium hydroxide, lithium chloride, butyl lithium, and lithium metal. Metallic lithium is produced in a multi-stage process starting from lithium carbonate. Lithium carbonate is typically produced in several grades – industrial grade (purity > 96%) for glass, fluxing agent, and lubricant; technical grade (purity > 99.0%) for ceramics, lubricants and batteries; and battery grade (purity > 99.5%) for high-end

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		battery cathode use. - Lithium demand is growing rapidly due to the increasing demand for lithium-ion batteries used in electric vehicles (EVs) throughout the world to meet increasingly stringent carbon dioxide (CO₂) emissions regulations. Automakers have been strengthening the electrification strategies to meet these toughening standards as a result, and one automaker is aiming to invest \$60 billion USD into EV content. In 2019, Roskill estimated a compound annual growth rate (CAGR) of 22.9% for lithium carbonate equivalent (LCE) through 2028. Battery-grade lithium hydroxide shows the highest growth rate of all lithium products. Other end uses for lithium (e.g., glass, ceramics, lubricating grease, and metallurgy) are forecasted to have moderate gains. - Lithium carbonate supply forecasts were prepared as part of the DFS using forecasts from Roskill and Benchmark. In each case, the companies are forecasting a doubling of refined supply by 2021/22 and at least tripling by 2024/26. Despite this anticipated growth in supply, both Roskill and Benchmark predict a supply shortfall by 2028. - Boric acid - Large-scale borate commercial production is confined to four main areas of the world, including the southwest US and Mexico, Andes belt of South America, the central area of Asia extending into eastern Europe, and the eastern region of Russia. The borates market is supplied principally by two major players, Eti Mine Works (Eti) and Rio Tinto, though there are other smaller players. The term “borates” describes a commercial source of chemical boric oxide (B₂O₃) in the form of sodium borate compounds, minerals, refined (i.e., boric acid), calcined, or specialty forms of borate. - Borate is typically refined, but some producers sell some of the raw mineral or a concentrated form of the mineral as a substitute for the refined product at a lower price. Borates may be used for more than 300 applications, with 70% used as concentrates, refined borates, or boric acid in glass, ceramics, detergents, and fertilizers. Glass is the largest boric acid market and, according to Maia Research, it grew 4% in 2019 and an average 5% per year over the past 4 years. - Boric acid production growth between 2015 and 2019 has ranged

Criteria	JORC Code 2012 Explanation	Commentary
		between 4% and 6% annually. After 2019, the global supply of boric acid is projected to continue to meet demand as suppliers increase production to meet the market's needs. Based on research by Maia Research and Ioneer analysis, there was an excess of supply in 2019 due to the trade war between the US and China. However, their research also indicates that the market will start to tighten in 2020/21 and the demand will exceed supply by 2024. If Ioneer's boric acid production begins in the second quarter (Q2) of 2023 as planned and expands to full capacity, the market supply could still run short of demand by 2027. This indicates that the market needs additional supply, but no existing producers have formal, publicly announced plans for expansion. However, the underutilised Chinese boric acid supply capacity can ramp up production upon higher boric acid pricing.
	• <i>A customer and competitor analysis along with the identification of likely market windows for the product.</i>	• Customer and competitor analyses were performed as part of the DFS. • Lithium • Two Chilean brine producers have laid foundations for increased extraction rates over the next three to four years, but both producers have encountered technical challenges and delays. The expansions have been delayed due to Chinese production that has threatened to swing the market into excess supply. Of the 10 producers in the region, only a small amount of additional lithium compounds has found its way to market, much of which has only reached technical-grade specifications. This indicates that a large proportion was either reprocessed (adding cost) or converted to hydroxide. • Lithium prices have recently declined, and as a result some existing spodumene producers have temporarily been shut down. However, lithium prices are anticipated to rebound as demand continues to grow. • Ioneer will be targeting 10 different customers in five different technical-grade and battery-grade large market segments spanning five different countries/regions. These market segments have significant growth rates, especially for battery-grade lithium. • A lithium compounds operating cost curve was developed as part of the DFS. If Ioneer can produce as the anticipated all-in cost per

Criteria	JORC Code 2012 Explanation	Commentary
		tonne, it will be in the competitive end of the cost curve. • Boric acid • The borates market is supplied principally by two major players, Eti and Rio Tinto, though there are other smaller players. Eti, a Turkish state-owned mining and chemicals company, is the world's largest borate supplier by market share and Proven Ore Reserves and holds 72% of worldwide borate reserves. Rio Tinto has a large borates product portfolio but has not announced any plans to expand borate production. However, they are building a pilot plant to produce lithium from mine waste with a plan to invest additional money to produce a small amount of borate as a by-product of lithium production if the associated pilot production of boric acid is successful. MCC Russian Bor CJSC (Bor) in south-eastern Russia supplies 10% of boric acid demand and is regarded as the best quality in terms of impurities. However, Bor has historically struggled with production due to financial and employee relationship issues. Bor is reportedly receiving financial assistance from a major Japanese trading company and may be able to increase its boric acid production as a result, though no announcement has been made. • There is a total of five other boron greenfield projects, not including Rhyolite Ridge in varying stages of exploration and engineering development.
	• <i>Price and volume forecasts and the basis for these forecasts.</i>	• Lithium • Consensus price (in real terms) and volume forecasts for lithium carbonate and lithium hydroxide were developed by Ioneer with assistance from an independent consultant after discussion with potential Asian, European, and US customers. Sales forecasts from Benchmark and Roskill were also obtained along with open-source information from investment banks and other reputable sources to develop a consensus price. This effort was led by Ioneer's Vice President of Sales & Marketing, Yoshio Nagai, and independent consultant, Michael LePage. Consensus price forecasts (in real terms) used in the economic analysis for technical-grade lithium carbonate range from 10,443 to 14,334 USD/t with a mean price of 12,388 USD/t for the first four years of sales. Consensus price forecasts (in real terms) used in the

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		economic analysis for battery-grade lithium hydroxide range from 12,286 to 14,229 USD/t with a mean price of 13,382 USD/t after Year 4. The consensus price forecasts for the first three years of lithium carbonate production were the mean of the latest Roskill technical-grade published price forecast (in real terms) and Benchmark Minerals lithium hydroxide forecast (in real terms) adjusted to reflect the cost to upgrade the technical-grade lithium carbonate as published by Orocobre related to its venture with Toyota Tsusho. Consensus price forecasts for lithium hydroxide, which will be produce from the fourth year of production and on, were estimated from the mean of the Roskill lithium hydroxide and Benchmark Minerals lithium hydroxide forecasts. • In 2019, Roskill estimated a CAGR of 22.9% for LCE through 2028. Battery-grade lithium hydroxide shows the highest growth rate of all lithium products. Other end uses for lithium (e.g., glass, ceramics, lubricating grease, and metallurgy) are forecasted to have moderate gains. • Lithium carbonate supply forecasts were prepared as part of the DFS using forecasts from Roskill and Benchmark. In each case, the companies are forecasting a doubling of refined supply by 2021/22 and at least tripling by 2024/26. Despite this anticipated growth in supply, both Roskill and Benchmark predict a supply shortfall by 2028. • Boric acid • The estimated price for boric acid was based on an analysis by Ioneer's Sales and Marketing team using 1) Ioneer current contracts, and 2) pricing given boric acid supply and demand based on historical market data and discussions with key potential customers in the Asia markets. This effort was led by Ioneer's Vice President of Sales & Marketing, Yoshio Nagai, and independent consultant, Michael LePage. Mr. Nagai has more than 20 years of chemical and mining industry sales and marketing experience, most recently as Sales Vice President at the Rio Tinto Group accountable for borates, salt, and talc products in Asia and the USA. Mr. LePage is the former marketing leader for Rio Tinto Industrial Minerals, including US Borax, with 30+ years of experience. Mr. LePage previously developed the market assessments for US Borax and some work on Jadar. Boric acid

Criteria	JORC Code 2012 Explanation	Commentary
		prices used in the economic analysis (in real terms) had a mean price of 710 USD/t. Boric acid production growth between 2015 and 2019 has ranged between 4% and 6% annually. After 2019, the global supply of boric acid is projected to continue to meet demand as suppliers increase production to meet the market's needs. Based on research by Maia Research and Ioneer analysis, there was an excess of supply in 2019 due to the trade war between the US and China. However, their research also indicates that the market will start to tighten in 2020/21 and the demand will exceed supply by 2024. If Ioneer's boric acid production begins in the second quarter (Q2) of 2023 as planned and expands to full capacity, the market supply could still run short of demand by 2027. This indicates that the market needs additional supply, but no existing producers have formal, publicly announced plans for expansion. However, the underutilised Chinese boric acid supply capacity can ramp up production upon higher boric acid pricing.
	For industrial minerals the customer specification, testing and acceptance requirements prior to a supply contract.	Not applicable.
Economic	The inputs to the economic analysis to produce the net present value (NPV) in the study, the source and confidence of these economic inputs including estimated inflation, discount rate, etc.	The production schedule derived from the mine plan and associated capital and operating cost estimates were analysed using an economic model developed by Golder. The model was handed over to Fluor for finalisation, and Fluor produced the economic results. Inputs into the economic analysis include the capital and operating costs, saleable lithium carbonate, lithium hydroxide, and boric acid tonnages, commodity price and revenue forecasts, and transportation and management costs. The cost estimates are based on work completed for the April 2020 DFS. An AACEI Class 3 cost estimate with an accuracy range of $\pm 15\%$ was produced for the DFS, and engineering design is 30% complete. The estimate reflects the Project's EPCM execution strategy and baseline project schedule. An 8% discount rate was applied to estimate Project Net Present Value (NPV).
	NPV ranges and sensitivity to variations in the significant assumptions and inputs.	Sensitivity analyses on fuel costs, labour costs, operating costs, capital costs, discount rate, lithium carbonate price, boric acid price, lithium recovery, and boron recovery were performed in the financial model. Based on $\pm 10\%$ changes in factors, the Project Net Present

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		Value (NPV) in real dollars (with Inferred Resources included in revenue) was calculated at an applied 8% discount rate. The outcomes of this analysis are shown in the table below in order of highest to lowest sensitivity. <table><tr><th>Sensitivity Factor</th><th>NPV with -10% Adjustment Factor (US\$ Millions)</th><th>NPV with +10% Adjustment Factor (US\$ Millions)</th></tr><tr><td>Lithium Carbonate/Hydroxide Price</td><td>1,032</td><td>1,499</td></tr><tr><td>Lithium Recovery</td><td>1,032</td><td>1,499</td></tr><tr><td>Operating Costs</td><td>1,374</td><td>1,156</td></tr><tr><td>Boric Acid Price</td><td>1,173</td><td>1,357</td></tr><tr><td>Boric Acid Recovery</td><td>1,173</td><td>1,357</td></tr><tr><td>Capital Costs</td><td>1,334</td><td>1,196</td></tr><tr><td>Labor</td><td>1,280</td><td>1,249</td></tr><tr><td>Fuel</td><td>1,276</td><td>1,253</td></tr></table> - A sensitivity analysis on the applied discount rate used to estimate Project NPV below was also performed. The results of this analysis are summarised in the table below. <table><tr><th>Discount Rate (%)</th><th>NPV (US\$ Millions)</th></tr><tr><td>12%</td><td>626</td></tr><tr><td>11%</td><td>753</td></tr><tr><td>10%</td><td>899</td></tr><tr><td>9%</td><td>1,068</td></tr><tr><td>8%</td><td>1,265</td></tr></table> - Based on the above sensitivity factors, the Project is most sensitive to increases in discount rate and least sensitive to changes in fuel cost.	Sensitivity Factor	NPV with -10% Adjustment Factor (US\$ Millions)	NPV with +10% Adjustment Factor (US\$ Millions)	Lithium Carbonate/Hydroxide Price	1,032	1,499	Lithium Recovery	1,032	1,499	Operating Costs	1,374	1,156	Boric Acid Price	1,173	1,357	Boric Acid Recovery	1,173	1,357	Capital Costs	1,334	1,196	Labor	1,280	1,249	Fuel	1,276	1,253	Discount Rate (%)	NPV (US\$ Millions)	12%	626	11%	753	10%	899	9%	1,068	8%	1,265
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Social	<i>The status of agreements with key stakeholders and matters leading to social licence to operate.</i>	- If the Project is selected for evaluation under an EIS, a draft and then final EIS would be completed by a BLM-approved third-party contractor selected by Ioneer. Public comment periods are required as part of the EIS process, and the Project schedule assumes 12 months of EIS approval cycle. - Ioneer has entered into three different water rights lease, purchase, and options agreements with a local corporation and LLC (limited liability corporation) along with local landowners that grant rights for water usage, primarily for irrigation.
Other	<i>To the extent relevant, the impact of the following on the project and/or on the estimation and classification of the Ore Reserves:</i>	No Comment
	<i>Any identified material naturally occurring risks.</i>	- See the "Mining factors or assumptions" subsection above for a discussion on the risks associated with the M5a geological unit. - No hydrogeological data was incorporated into the geotechnical analyses of the underlying geology, pit configurations, or pit design parameters. As such, EnviroMINE's geotechnical analyses were completed under the assumption that the underlying geology and pit walls would be dry. Golder's stability analyses of the OSFs also assumed the M5 unit would be stacked dry (unsaturated). If the pit walls cannot be fully dewatered, then the outcomes of EnviroMINE's pit slope stability analyses will change and result in a decrease of the maximum allowable inter-ramp angle used to design the pit walls, thereby increasing strip ratio and associated overburden tonnages. If the M5 material that is stockpiled within the OSFs is above 18% moisture saturation by weight, then the Engineer should be contacted to review and provide recommendations for design or material handling revisions. Actions that can be performed to remedy high moisture M5 are: spreading and drying prior to stockpiling; stacking and sequencing revisions; additional geotechnical testing and analyses to support higher moisture contents; or design revision to achieve geotechnical stability (which may result in reduced storage capacity of the OSFs). - The Project area is in a moderately high seismic zone as determined by the NewFields Seismic Hazard Assessment prepared for the SOSF. - The pit wall slope stability analyses have been performed assuming

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		an earthquake with a peak ground acceleration of 0.25g, resulting from a seismic return period of 475-years as determined by the USGS. However, there is always as risk of larger earthquakes to occur. A 475-year event has a probability of annual exceedance of 2%. As the probability of recurrence is increased (e.g., from 475 years to 2,475 years) the probability decreases while intensity increases. Typically, pit walls are designed to remain stable during the 475-year earthquake. A larger earthquake than the 475-year event could cause pit wall failure in areas of the quarry where there is no in-pit backfill stacked against the pit walls. • The OSF slope stability analysis has been performed assuming an earthquake with a peak ground acceleration of 0.31g, resulting from a seismic return period of 475-years as determined by NewFields. However, there is always as risk of larger earthquakes to occur. A 475-year event has a probability of annual exceedance of 2%. As the probability of recurrence is increased (e.g., from 475 years to 2,475 years) the probability decreases while intensity increases. Dumps are typically designed to remain stable during the 475-year earthquake. • The Project area is in an area with low annual precipitation where most precipitation is obtained through short duration monsoon storms resulting in flash floods. Permanent surface water controls around the OSF, SOSF, and quarry have been designed to convey the 500-year, 24-hour peak design storm event. Haul roads outside of permanent facilities risk being washed out during minor storm events that could cause a short-term disruption in ore delivery to the processing plant.
	• <i>The status of material legal agreements and marketing arrangements.</i>	• loneer currently holds a Water Rights Lease Agreement, an Option and Purchase Agreement, and an Option for Water Rights Lease. These permits are for non-mining and milling purposes. The Water Rights Lease Agreement and the Option and Purchase Agreement allow for permitted use of water for irrigation. The Option for Water Rights Lease grants the rights to lease water for irrigation, stockwater, and commercial use on an annual basis with the option to increase leased water rights. • loneer has signed a binding offtake agreement with an integrated Chinese boron company, Dalian Jinma Boron Technology Group Co.

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		Ltd. (Jinma), for a five-year supply contract for 105,000 tonnes of boric acid per year, commencing in the first quarter of 2023. This offtake agreement secures a key customer for more than 50% of the Project's expected annual boron production. Jinma will also act as Ioneer's exclusive distributor and representative in China and Taiwan, excluding large multinationals with Chinese operations that will be supplied directly by Ioneer.
	<i>The status of governmental agreements and approvals critical to the viability of the project, such as mineral tenement status, and government and statutory approvals. There must be reasonable grounds to expect that all necessary Government approvals will be received within the timeframes anticipated in the Pre-Feasibility or Feasibility study. Highlight and discuss the materiality of any unresolved matter that is dependent on a third party on which extraction of the reserve is contingent.</i>	- Please refer to the "Environmental" subsection for a discussion on the status of government agreements and approvals for permits. - Ioneer has funded a five-year study under a collaboration with the University of Nevada, Reno following successful results from a Tiehm's Buckwheat breeding trial from seed collected at Rhyolite Ridge.
Classification	<i>The basis for the classification of the Ore Reserves into varying confidence categories.</i>	- The Ore Reserves estimate for the Project is reported in accordance with the "Australian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves" as prepared by the Joint Ore Reserves Committee (the JORC Code, 2012 Edition). - Only Measured and Indicated Mineral Resources from the B5 and L6 domains within the final 26-year pit design with the above Modifying Factors applied have been included in the Ore Reserves and classified into Proved and Probable categories. Ore Reserves within the Measured Mineral Resource classification have been categorised as Proved Ore Reserves, whereas Ore Reserves within the Indicated Mineral Resource classification have been categorised as Probable Ore Reserves. - The Ore Reserves are stated as dry tonnes of ore delivered at the processing plant ore stockpile.
	<i>Whether the result appropriately reflects the Competent Person's view of the deposit.</i>	- The Ore Reserves consist of 48% Proved Reserve and 52% Probable Reserve. - The Competent Person is satisfied that the stated Ore Reserves classification of the deposit appropriately reflects the outcome of the technical and economic studies performed as part of the DFS.
	<i>The proportion of Probable Ore Reserves that have been</i>	No Probable Reserves have been derived from Measured Mineral

Criteria	JORC Code 2012 Explanation	Commentary
	<i>derived from Measured Mineral Resources (if any).</i>	Resources.
Audits or reviews	The results of any audits or reviews of Ore Reserve estimates	Not applicable.
Discussion of relative accuracy/ confidence	Where appropriate a statement of the relative accuracy and confidence level in the Ore Reserve estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the reserve within staged confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors which could affect the relative accuracy and confidence of the estimate.	- The economic analysis supporting the Ore Reserve has been completed with a relative accuracy and confidence level consistent with a Feasibility Study. - The key inputs for the Ore Reserve were derived from the April 2020 DFS. An AACEI Class 3 cost estimate with an accuracy range of $\pm 15\%$ was produced for the DFS, and engineering design is 30% complete. - Appropriate assessments and studies have been carried out and include consideration of and modification by realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social, and governmental factors. These assessments demonstrate at the time of reporting that the extraction could be reasonably justified. - Project economics were tested with a suite of sensitivities (described in the "Economics" subsection) which indicate that the Project is economic under reasonable variations in key cost and price parameters.
	The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and procedures used.	The Ore Reserve tonnes and grade have been estimated globally across the model area (i.e., the South Basin) for the Project.
	- Accuracy and confidence discussions should extend to specific discussions of any applied Modifying Factors that may have a material impact on Ore Reserve viability, or for which there are remaining areas of uncertainty at the current study stage. - It is recognised that this may not be possible or appropriate in all circumstances. These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.	- Reconciliation against production data/results was not possible as the Project is currently in the development stage and there has been no production on the Project to date. - Ore head grade, lithium recovery and price have the largest impacts on NPV and Ore Reserve viability.