

# Mineral Commodities Ltd

ACN 008 478 653  
ABN 39 008 478 653

## Quarterly Activities Report for the Period Ended 31 March 2016

40 Murray Road North  
Welshpool WA 6106, Australia  
PO Box 235, Welshpool DC WA 6986,  
Australia  
Telephone: 61 8 6253 1100  
Facsimile: 61 8 9258 3601  
Email: info@mineralcommodities.com  
Web: www.mineralcommodities.com



Production Summary	Quarter ended 31-Mar-16	Quarter ended 31-Dec-15	Quarter ended 31-Mar-15	Year to Date 31-Mar-16	Year to Date 31-Mar-15
<b>Mining</b>					
Tonnes	444,888	438,775	362,197	444,888	362,197
Grade	51.28%	52.32%	46.24%	51.28%	46.24%
- Garnet	31.81%	30.90%	25.79%	31.81%	25.79%
- Ilmenite	15.05%	16.99%	15.82%	15.05%	15.82%
- Zircon	3.42%	3.77%	4.06%	3.42%	4.06%
- Rutile	0.64%	0.66%	0.57%	0.64%	0.57%
- Leucoxene	0.36%	0.27%	0.12%	0.36%	0.12%
<b>SCP Production &amp; Processing</b>					
Tonnes processed	139,424	140,488	147,913	139,424	147,913
Tonnes produced					
- Garnet concentrate	73,353	67,629	75,125	73,353	75,125
- Ilmenite concentrate	24,415	23,573	32,121	24,415	32,121
- Zircon/Rutile concentrate	10,170	10,225	11,723	10,170	11,723
zircon in concentrate	71.76%	72.86%	72.78%	71.76%	72.78%
rutile in concentrate	13.75%	13.80%	12.83%	13.75%	12.83%
<b>Sales (wmt)</b>					
- Zircon/Rutile concentrate	11,908	10,504	12,792	11,908	12,792
- Ilmenite concentrate	0	0	0	0	0
- Garnet concentrate	0	63,513	162,466	0	162,466
<b>Highlights</b>	<b>Corporate &amp; Cash</b>				
<ul style="list-style-type: none"> <li>US\$4.5 million debt facility obtained from GMA Garnet Group ("GMA") to finance the Garnet Stripping Plant ("GSP").</li> <li>Declaration of AU\$0.01 maiden dividend.</li> <li>Exploration to commence on offshore prospecting area.</li> <li>Updated Tormin Resource Statement completed.</li> </ul>	<p><b>Securities:</b> 405 million shares and 6 million options.</p> <p><b>Cash:</b> Cash as at 31 March 2016 of US\$7.8 million, plus US\$8.0 million in trade and other receivables.</p> <p><b>Debt:</b> US\$1.3 million in Shareholder Loans repayable September 2016. US\$4.5 million GSP facility, drawn down by US\$3.7 million as at 31 March 2016, funding GSP capital expenditure commitments.</p>				

For enquiries regarding this report please contact:  
Mark Caruso +61 8 6253 1100



## Mining

Run of Mine (“ROM”) production of 444,888 tonnes during the March quarter versus budget of 442,000 was slightly ahead for the quarter. ROM ore grading 51.28% Valuable Heavy Mineral (“VHM”) was mined for the quarter, consisting of a garnet grade 31.81%, ilmenite grade 15.05%, zircon grade 3.42% and rutile grade 0.64%, and was consistent with budget estimates of 51.31% VHM. The replenishment of the beach is still occurring, however management of the variable deposition of the ROM resource on the beach mining area requires ongoing monitoring to optimise the correct consistent constituent mix of VHM delivered.

## Processing

Quarterly processing of Heavy Mineral Concentrate (“HMC”) production through the two Primary Beach Concentrators (“PBCs”) produced 140,416 tonnes for the March quarter. The result was 14.9% below budget of 165,017 tonnes. HMC production was affected by seasonal low tides and unseasonal rough seas which affected the supply of process water. This issue has been addressed with the extension of the seawater intake piping by an additional 100 metres into deep water. Zircon recovery and overall HMC contained zircon were in line with budget. Ongoing monitoring and blending will be required to ensure consistent PBC feed grade and adjustment for variability in the ROM mine feed from the beach.

Initiatives are being taken to commission the recently completed Tailings Scavenger Plant (“TSP”) prior to the completion of the GSP, in an attempt to optimise zircon recovery from the PBC spiral circuits.

The Secondary Concentrator Plant (“SCP”) processed throughput of 139,424 tonnes in the March quarter, which was 14.13% below budget. SCP throughput was directly affected by a premature failure of the secondary SLON magnet main rotor drive shaft due to substandard manufacturing material from the supplier. This was further impacted by the failure occurring over the Easter Public Holiday period and the unavailability of a 120 tonne crane to remove and install the SLON magnet for repair. The resulting down time for ongoing failure of the SLON magnet over the quarter was in the order of 1 week.

Overall concentrate production for the quarter was down on budget due to the SCP plant downtime caused by the SLON magnet failure.

SCP recoveries were above budget for zircon and garnet and below for rutile and ilmenite.

Zircon/rutile concentrate production for the quarter was 10,170 tonnes versus budget of 12,007 tonnes. Contained zircon in the concentrate of 71.76% was below budget of 73.19% zircon, whilst rutile was above budget at 13.75% contained rutile in concentrate.

For the March quarter, ilmenite concentrate production was 24,415 tonnes versus budget of 31,045 tonnes, and garnet concentrate production was 73,353 tonnes versus budget of 82,442 tonnes.

In February 2016, the Company was pleased to advise that its subsidiary, Mineral Sands Resources (Pty) Ltd (“MSR”), had secured US\$4.5 million via a loan facility from the GMA Group (“GMA”) to fund the completion of the GSP.

The GSP is being installed at the front of the existing Secondary Concentrate Plant (“SCP”). The installation of the GSP will increase the non-magnetic zircon/rutile feed grade to the SCP by removing the Garnet fraction from the Heavy Mineral Concentrate (“HMC”) prior to the SCP. This, in turn, will allow a higher grade non-magnetic concentrate to be fed to the existing magnetic circuit, and thereby increase overall final zircon/rutile concentrate production.

Operating the to-be-installed GSP in-conjunction with the recently installed TSPs is expected to:

- Increase the overall GSP/SCP HMC feed rate from the current SCP design feed rate of 61.6tphr (current operating throughput is circa 77tphr) of HMC feed to a combined GSP/SCP HMC feed rate of

100tphr of HMC feed;

- Increase overall zircon recoveries from circa 68% in the current SCP to 85% in the GSP/SCP;
- Increase combined zircon recovery from the PBCs and TSPs, expected to be 92%;
- Produce a higher quality zircon/rutile concentrate product, increasing from circa 72% contained zircon from the current SCP to 80% contained zircon in the GSP/SCP;
- Increase overall GSP / SCP processing garnet and ilmenite recoveries;
- Produce a higher quality garnet concentrate product from the current circa 60% to +80% contained garnet;
- Increase the production on zircon/rutile concentrates by approximately 25%; and
- Increase ilmenite concentrate production by circa 180%.

Completion of the GSP is still expected on or around 30 June 2016, with commissioning and tie-in to the existing plant completed in early July 2016.

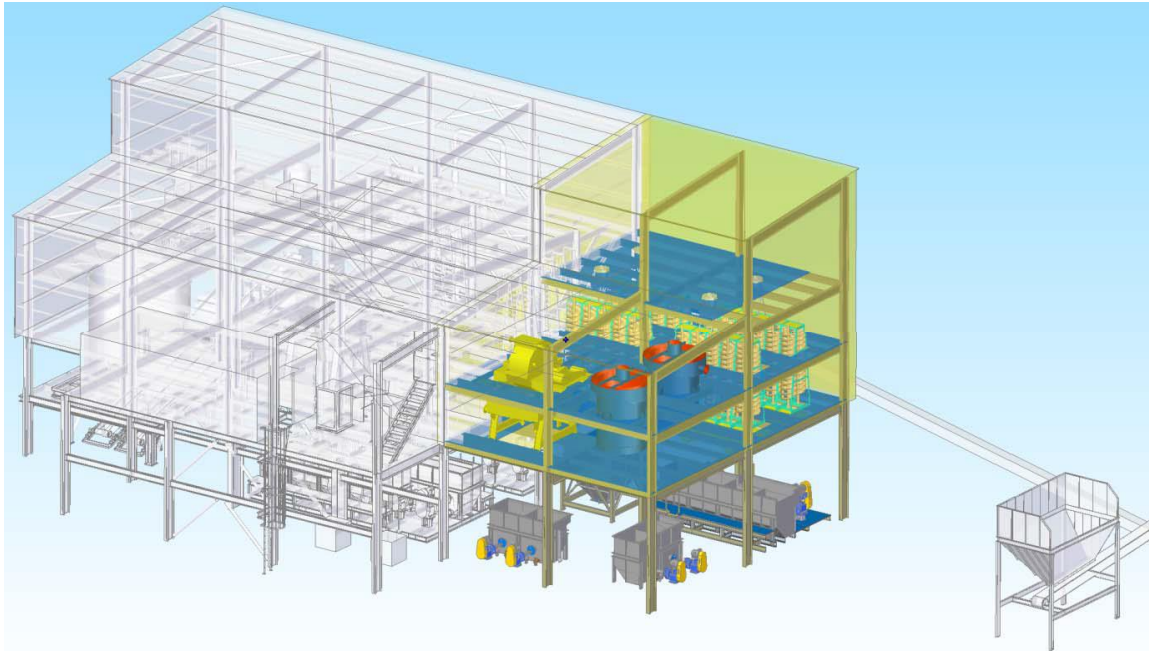
The loan agreement entered into with GMA provides for US\$4.5 million funding with a 3 year repayment term commencing on the re-start of shipping of garnet concentrate product to GMA (planned for January 2017). Currently MSR stockpiles garnet concentrate, on behalf of GMA, at the Tormin mine site.

The offtake agreement previously entered into with GMA has also been amended to increase the term of the agreement to be a life of mine agreement, with an increase in the annual offtake tonnage to 210,000 tonnes, up from 150,000 tonnes, and an option to take all other remaining garnet concentrate production.

The Company produced approximately 285,000 tonnes of garnet concentrate for the year ended 31 December 2015.



**Image 1 - Existing SCP Showing Proposed Location for GSP**



**Image 2 - Schematic of Proposed Location for GSP**

### **Cash Costs**

Total ex-works mining, processing and site administrative unit cash cost per tonne of zircon/rutile concentrate for the quarter was US\$299/t zircon/rutile concentrate produced, being below budget of US\$306/t zircon/rutile concentrate.

### **Tormin Sales and Marketing**

Sales revenue for the March quarter was US\$7.0 million, below the budget of US\$9.4 million primarily due to budgeted ilmenite sales of 30,000 tonnes not being achieved.

Tormin shipments / sales for the March quarter were 11,908 tonnes of zircon/rutile concentrate.

Garnet sales for the quarter ceased due to the Company delivering its maximum committed annual off-take production of 210,000 tonnes under the GMA off-take agreement. The Company continues to stockpile material and sales to GMA will recommence in July 2016.

Whilst the zircon market remained firm in the first quarter of 2016, aggressive marketing strategies by major competitors will put downward pressure on pricing in the coming quarter. Notwithstanding this, the Company's non-magnetic zircon/rutile concentrate product remains in strong demand with all Q2 production committed.

The sales enquiries for ilmenite concentrate produced at Tormin increased substantially in the March quarter, and several containerized shipments have been sent to various downstream finishing processing plants in China for testing. The Company is confident that this will initiate ongoing sales commitments for its ilmenite concentrate in the forthcoming quarter.

### **Tormin Resource and Offshore/Onshore Prospecting Activities**

MSR entered into a service agreement with Engulftek, to commence exploration over an initial 12 month period on its offshore prospecting area.

The activities to be undertaken over the initial period are indicative of the long term plans of MSR to extend the heavy mineral sand resource of its Tormin mining operation and underpin future mining operations.

The offshore prospecting areas is to be investigated for its offshore heavy mineral sand potential that is currently the source of replenishment taking place on the beach held under mining rights.

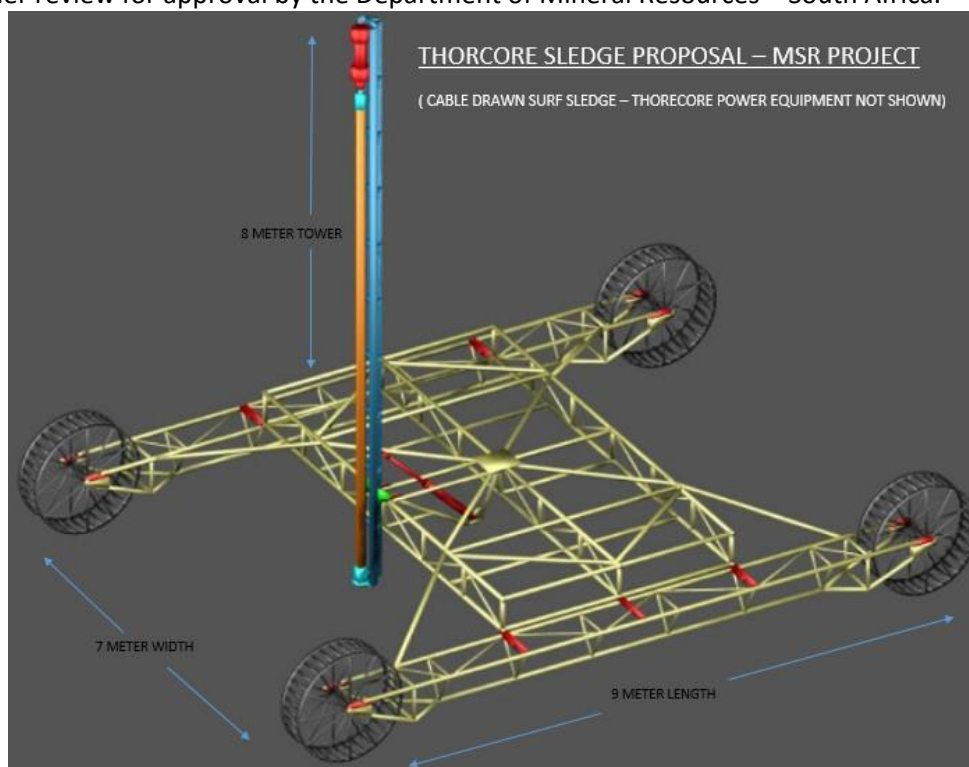
As announced in November 2015, the awarded prospecting right represents an area approximately 10,500ha in size seaward from its current mining (Tormin mine) and prospecting areas.

The programme will include the exploration and sampling of the ultra-shallow water section of the Tormin offshore prospecting area using a diving sea sledge (see following Image 3). The Engulftek diving sea sledge is to be mobilized and exploration to commence in June 2016 and follows MSR being awarded the offshore prospecting right in September 2015. The diving sledge and undersea drill tower is currently being constructed in South Africa.

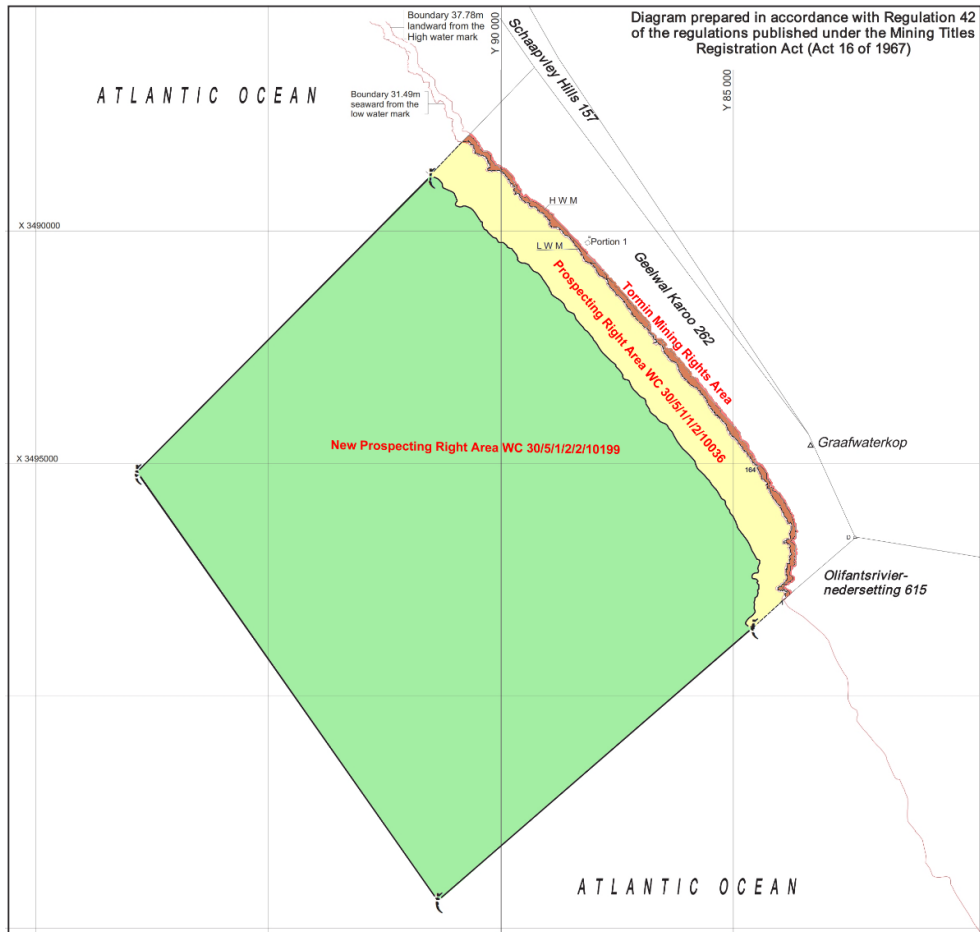
The planned sampling programme will include core sampling on a 10m x 500m or 10m x 200m grid in the surf zone up to 300m from the beach. Depending upon the success of the core sampling equipment, the programme could result in up to 2,100 holes being drilled across the surf zone exploration area.

This scope of work follows a bathymetric and sub-bottom sea floor profiling geophysical survey over the surf zone area. The survey, conducted by an independent firm WSP, provided detailed information that was used to plan the underwater exploration drill sampling campaign.

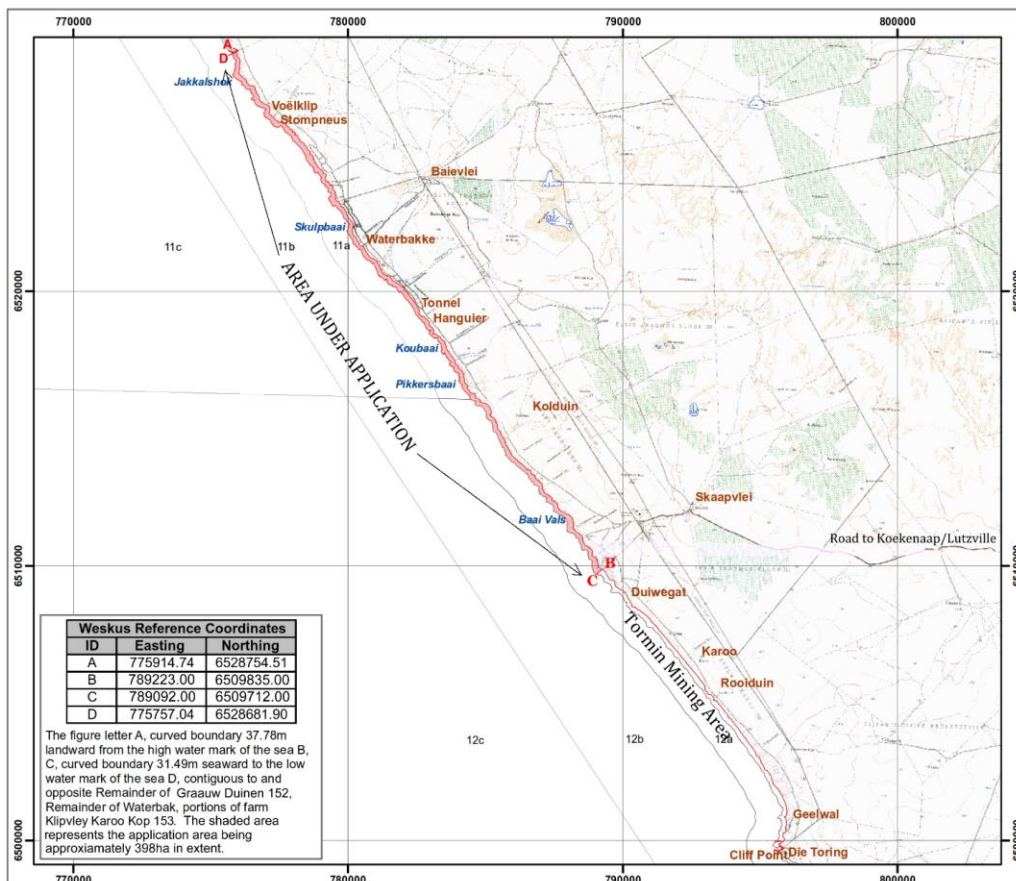
In addition to the awarded rights, MSR has lodged a new prospecting and bulk sampling application along the beach and surf zone north of its current mining operations (see following Image 5). This application represents a target area of approximately 24km along the coastline. Historical exploration work by non-related parties have indicated the area to be prospective for heavy mineral sand deposits. This application is currently under review for approval by the Department of Mineral Resources – South Africa.



**Image 3 – Engulftek diving sledge and undersea drill tower currently under construction**



**Image 4 – Newly awarded prospecting area in green**



**Image 5: Area subject to a new prospecting application**

Work was completed during the quarter on the Tomin Mineral Sands Project Resource Statement.

A reconciliation of the Tormin Resource is as follows:

Category	Resource (Million Tonnes)	Total Heavy Mineral (%)	Ilmenite (% in Resource)	Zircon (% in Resource)	Rutile (% in Resource)	Garnet (% in Resource)
<b>Indicated Resource – Dec 2013</b>	<b>2.70</b>	<b>49.4%</b>	<b>10.6%</b>	<b>3.4%</b>	<b>0.7%</b>	<b>25.3%</b>
Tonnes Mined - 2014	1.07	53.83%	17.26%	4.76%	0.65%	31.16%
<b>Inferred Resource – Dec 2014</b>	<b>2.70</b>	<b>38.14%</b>	<b>10.05%</b>	<b>2.21%</b>	<b>0.46%</b>	<b>25.22%</b>
Tonnes Mined – 2015	1.62	49.57%	16.15%	3.88%	0.60%	28.94%
<b>Inferred Resource – Dec 2015</b>	<b>2.70</b>	<b>28.01%</b>	<b>6.97%</b>	<b>1.56%</b>	<b>0.55%</b>	<b>18.54%</b>

Note: individual minerals reported as percentage of the total resource.

The remaining grade is based on 80 pit samples taken at the end of 2015 from mined areas that has undergone replenishment, representing 83% of the resource blocks.

This inferred resource is based on the reasonable prospect for the economic extraction of the material, as has occurred during the past year. Re-mining of the area that has undergone replenishment has been successfully done on the Tormin mine site up to ten times, but remains untested outside this operation. The current replenishment dataset is of insufficient size and timeframe to allow this potential replenished resource to be classified and is therefore not JORC compliant.

Whilst initial exploration work has been undertaken on the replenished areas, the fact remains that the beach constantly changes with both tidal movement and mining.

As previously advised, the established geology of the region confirms that the source of the Tormin beach deposit is eroded paleo strandlines and Heavy Mineral-rich offshore zones. The dynamic tides and wave action serves to replenish the beaches by transporting sediment from deeper waters and concentrating the Heavy Mineral Sands (“HMS”) below the high water mark.

As previously noted, to date 99% of the beach mined has replenished through normal tidal movements.

The Company commissioned the Tormin Mineral Sands Project in January 2014. Approximately 2.7m tonnes has been mined at the Tormin Mineral Sands Project to 31 December 2015, although included in those tonnages are areas which have been mined up to ten times or more.

The nature of the resource replenishment is typical of modern day beach placer deposits found along the West Coast of South Africa and the Southeastern Tamil Nadu coast of India. The Company is unable to report a replenishment grade or quantity under the 2012 JORC code. Resource replenishment is occurring as evident by mining of the same areas, but further data is needed to predict the long term trend of replenishment.

The Company continues to conduct grade reconciliation and sample grading on a daily basis as part of the mining operation to correlate between stated resource and actual resource in terms of quantity, grade and replenishment.

The Company has previously reported that a prospecting right for the offshore area immediately adjacent to Tormin was awarded towards the end of 2012. The offshore prospecting area covers an area of 12km<sup>2</sup>, extends 1km out to sea from the low-water mark and covers the full length of the existing 12km Tormin

tenement. A new offshore prospecting right (1-10km offshore) was awarded on 11 September 2015 (PR 10119). Exploration drilling on the nearshore area is planned to start in June 2016.

Two new onshore prospecting rights were lodged during 2015 (PR 10226 & 10229). These areas have historical drilled resources of heavy mineral sands and will complement the existing long term plans for the Tormin mine.

The Tormin and Xolobeni Mineral Resources based on mined material reconciliation as at 31 December 2015 for the Tormin Resource is as follows – note individual minerals reported as a percentage of the total heavy mineral concentration.

PROJECT	Category	Resource (Million Tonnes)	Total Heavy Mineral (%)	Ilmenite (% in Heavy Mineral)	Zircon (% in Heavy Mineral)	Rutile (% in Heavy Mineral)	Garnet (% in Heavy Mineral)
<b>Tormin</b>	<b>Inferred</b>	<b>2.7</b>	<b>28.01%</b>	<b>24.89%</b>	<b>5.56%</b>	<b>1.97%</b>	<b>66.19%</b>
Xolobeni	Measured	224	5.7%	54.5%			
	Indicated	104	4.1%	53.7%			
	Inferred	18	2.3%	69.6%			
<b>Total Xolobeni</b>		<b>346.0</b>	<b>5.0%</b>	<b>54.0%</b>			
<b>Total MRC</b>		<b>348.7</b>	<b>5.3%</b>	<b>53.8%</b>			

## **CORPORATE**

During the quarter, the Company was pleased to be able to declare a maiden dividend of 1 Australian cent per share. The declaration was underpinned by a solid operating performance throughout the 2015 year, with the Company reporting a FY2015 Profit Before Income Tax of US\$12.9 million and a FY2015 Profit After Income Tax of US\$10.6 million.

In addition to US\$6.1 million capital expenditure throughout the 2015 year, the profit results provided for the repayment of approximately US\$5.1 million of debt in 2015.

The Board expects its capital management strategy, which includes ongoing dividend returns to shareholders, to continue in the coming periods as it rolls out the existing expansion initiatives which will further optimize the operating performance of the Company.

As noted in the Processing section above, MSR entered into a loan agreement with GMA which provides for US\$4.5 million funding with a 3-year repayment term commencing on the re-start of shipping of garnet concentrate product to GMA (planned for January 2017).

The Company also completed the purchase of the Geelwal Karoo farm from Tronox. The Tormin operation was formally under a Land Use Agreement with Tronox which gave the Company access and use to 2.7 hectares of the Geelwal Karoo farm. The now acquired Geelwal Karoo farm includes a total freehold land area of 1741.35 hectares. The purchase is significant in allowing the Company to unfettered use of the farm under the granted EMP and regulatory approvals for the Tormin project.

The Company is also reviewing further synergistic land and tenement acquisitions in the areas adjacent to its current operations.

## **Cash and Debt**

At 31 March 2016, the Company had US\$7.8 million in cash, an increase of US\$3.6 million from the December 2015 US\$4.2 million cash balance.

Trade and other receivables at 31 March 2016 were US\$8.0 million, an increase of US\$1.0 million from the December 2015 US\$7.0 million trade and other receivables balance.

Shareholder loans at 31 March 2016 were US\$1.3 million, repayable September 2016.

The US\$4.5 million GSP facility was drawn down by US\$3.7 million as at 31 March 2016, funding GSP capital expenditure commitments.

## **Xolobeni**

During the quarter, the death of the Amadiba Crisis Committee Chairman, Mr 'Bazooka' Rhadebe occurred. This incident has elicited wide interest, particularly from vocal opponents to the Company's Xolobeni project, who have used this unfortunate occurrence as a means to attack the Company and cast allegations in the press alleging the Company's involvement in the matter. Needless to state that the allegations are spurious, defamatory and without any factual basis.

It is disappointing to the Company and the Board that certain individuals would use such a tragedy as nothing other than a means to support their cause. The public and media sensitivity around the project is likely to cause delays in the Department of Mineral Resources assessment of applications currently in process.

The Company has not and will not engage in any further activity that could lead to or incite further violence in a highly charged environment. To this end, the completion of the EIA studies has been put on hold due to the inability of consultants to complete requisite based on studies.

In the context of ongoing controversy and resistance of the Xolobeni project, management is conducting strategic review of the asset and its development profile in the context of the Company's overall business development initiatives in South Africa.

## **Outlook**

Sales guidance for the coming quarter is in the order of 11,000 to 13,000 tonnes of zircon/rutile concentrate.

## **Securities on Issue**

Issued securities at quarter-end comprise:

- 404,941,571 fully paid ordinary shares listed on the ASX.
- 5,000,000 Unlisted Options exercisable at A\$0.20 on or before 30 May 2018 and subject to the following vesting conditions:
  - (i) 1,666,668 vested;
  - (ii) 1,666,666 vesting on 8 June 2016; and
  - (iii) 1,666,666 vesting on 8 June 2017.
- 1,000,000 Unlisted Options exercisable at A\$0.20 on or before 31 March 2018 and subject to the following vesting conditions:
  - (i) 333,334 vested;
  - (ii) 333,333 vesting 31 March 2016; and
  - (iii) 333,333 vesting in 31 March 2017.

## **Terms and Explanations**

<b>ASX</b>	Australian Stock Exchange
<b>EIA</b>	Environmental Impact Assessment
<b>EMP</b>	Environmental Management Program
<b>DMR</b>	Department of Mineral Resources
<b>GMA</b>	GMA Garnet Group
<b>GSP</b>	Garnet Stripping Plant
<b>HM</b>	Heavy Mineral
<b>HMC</b>	Heavy Mineral Concentrate
<b>JORC</b>	Joint Ore Reserves Committee
<b>LTI</b>	Lost Time Injury
<b>MRA</b>	Mining Right Application
<b>NEMA</b>	National Environmental Management Authority
<b>MSP</b>	Mineral Separation Plant
<b>MSR</b>	Mineral Sands Resources (Pty) Ltd
<b>NUM</b>	National Union of Mine Workers
<b>PBC</b>	Primary Beach Concentrator
<b>ROM</b>	Run of Mine
<b>SCP</b>	Secondary Concentrator Plant
<b>SLP</b>	Social Labour Plan
<b>TRIFR</b>	Total Recordable Injury Frequency Rate
<b>TSP</b>	Tailings Scavenger Plant
<b>VHM</b>	Valuable Heavy Mineral
<b>WMT</b>	Wet Metric Tonnes

## APPENDIX 1 - RESOURCE STATEMENT

The Tormin and Xolobeni Mineral Resources based on mined material reconciliation as at 31 December 2015 for the Tormin Resource is as follows:

The Mineral Resource estimations previously reported under JORC 2004 for the Tormin Resource, are re-presented with updated disclosure of Table 1 from JORC 2012.

PROJECT	Category	Resource (Million Tonnes)	Total Heavy Mineral (%)	Ilmenite (% in Heavy Mineral)	Zircon (% in Heavy Mineral)	Rutile (% in Heavy Mineral)	Garnet (% in Heavy Mineral)
<b>Tormin</b>	<b>Inferred</b>	<b>2.7</b>	<b>28.01%</b>	<b>24.89%</b>	<b>5.56%</b>	<b>1.97%</b>	<b>66.19%</b>
Xolobeni	Measured	224	5.7%	54.5%			
	Indicated	104	4.1%	53.7%			
	Inferred	18	2.3%	69.6%			
<b>Total Xolobeni</b>		<b>346.0</b>	<b>5.0%</b>	<b>54.0%</b>			
<b>Total MRC</b>		<b>348.7</b>	<b>5.3%</b>	<b>53.8%</b>			

Note: individual minerals reported as a percentage of the total heavy mineral concentration.

## APPENDIX 2 – LISTING OF TENEMENTS

The following information is provided pursuant to ASX Listing Rules 5.3.3:

Country	Location	Number	Type of Right	Status	Change since last Quarter	Beneficial Interest
South Africa	Tormin	(WC)30/5/1/2/2/163 MR	Mining	Approved	N/A	100%
	Tormin	(WC)30/5/1/2/2/162 MR	Mining	Approved	N/A	100%
	Tormin	(WC)30/5/1/1/2/10036 PR	Prospecting	Approved	N/A	100%
	Tormin	(WC)30/5/1/1/2/10199 PR	Prospecting	Approved	N/A	100%
	Tormin	(WC)30/5/1/1/2/10226 PR	Prospecting	Under Application	100%	100%
	Xolobeni	EC30/5/1/1/2/6 PR	Prospecting	Approved	N/A	100%
	Kwanyana	EC30/5/1/1/2/10025 PR	Prospecting	Under Application	N/A	100%
	Xolobeni	EC 10025 MR	Mining	Under Application	100%	100%

The Company has no interests held in any farm-in or farm-out agreements.

### Competent Persons Statement

The information in this announcement which relates to Exploration Results, Mineral Resources or Ore Reserves for **Xolobeni** is based on information compiled by Mr Allen Maynard, who is a Member of the Australian Institute of Geosciences (“AIG”), a Corporate Member of the Australasian Institute of Mining & Metallurgy (“AusIMM”) and independent consultant to the Company. Mr Maynard is the Director and principal geologist of Al Maynard & Associates Pty Ltd and has over 35 years’ of exploration and mining experience in a variety of mineral deposit styles. Mr Maynard has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2004 Edition of the “Australasian Code for reporting of Exploration Results, Exploration Targets, Mineral Resources and Ore Reserves” (JORC Code). This information was prepared and first disclosed under the JORC Code 2004. It has not been updated since to comply with the JORC Code 2012 on the basis that the information has not materially changed since it was last reported. Mr Maynard consents to inclusion in the report of the matters based on this information in the form and context in which it appears.

The information in this announcement which relates to Exploration Results, Mineral Resources or Ore Reserves for **Tormin** is based on information compiled by Mr Adriaan du Toit, who is a Member of the AusIMM and an independent consultant to the Company. Mr du Toit is the Director and principal geologist of AEMCO PTY LTD and has over 23 years’ of exploration and mining experience in a variety of mineral deposits and styles. Mr du Toit has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the JORC Code. The information from Mr du Toit was prepared under the JORC Code 2012 Edition. Mr du Toit consents to inclusion in the report of the matters based on this information.

## JORC CODE – 2012 EDITION Table 1 : Section 3 Estimation and Reporting of Mineral Resources

Criteria	JORC Code explanation	Commentary
Database integrity	<ul style="list-style-type: none"> <li>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.</li> <li>Data validation procedures used.</li> </ul>	<ul style="list-style-type: none"> <li>All field and lab results obtained and entered into the onsite database is verified by a supervisor. All results are double checked and verified. A standard is made on the site and sent to the laboratory with each batch of samples as a quality check. External calibration is done every 6 months.</li> <li>The current mine grade database for 2015 consist of 322 volume and grades analyses suites for each mined blocks and 228 grade control sample suites taken to verify remaining grades over the resource area.</li> </ul>
Site visits	<ul style="list-style-type: none"> <li>Comment on any site visits undertaken by the Competent Person and the outcome of those visits.</li> <li>If no site visits have been undertaken indicate why this is the case.</li> </ul>	<ul style="list-style-type: none"> <li>A site visit was undertaken by the competent person to the mine, geology department, mine laboratory and head office during October 2015. Open pits, in situ samples, ROM and product were reviewed during the site visits.</li> </ul>
Geological interpretation	<ul style="list-style-type: none"> <li>Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.</li> <li>Nature of the data used and of any assumptions made.</li> <li>The effect, if any, of alternative interpretations on Mineral Resource estimation.</li> <li>The use of geology in guiding and controlling Mineral Resource estimation.</li> <li>The factors affecting continuity both of grade and geology.</li> </ul>	<ul style="list-style-type: none"> <li>Resource volume reconciliation from 2015 production data compare favourable with earlier resource estimates by Steemson, 2006 &amp; 2007 and work done by the Trans Hex Group.</li> <li>RC drilling data undertaken by Trans Hex was used and compared with 21 bulk samples to produce the 2007 resource statement.</li> <li>Mine production grade data from 2014 was compared with resource data and a regression analysis done on the XY plots. A very low correlation was found</li> </ul>

Criteria	JORC Code explanation	Commentary
		<p>(R2=0.006).</p> <ul style="list-style-type: none"> <li>The average total HMS mined grade during 2015 was 30% higher than that of the December 2014 inferred resource statement (49.81% mined against 38.14% inferred).</li> <li>The average Zircon grade mined during 2015 was 75% higher than that of the December 2014 inferred resource statement (3.88% mined against 2.21% inferred).</li> <li>Continuity of grade outside the block model is not proven and has therefore not been included in the resource model.</li> <li>The bottom of the resource (being a placer deposit) is limited by the bedrock contact and coastal cliffs. The resource is open towards the ocean surf zone.</li> </ul>
<i>Dimensions</i>	<ul style="list-style-type: none"> <li><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></li> </ul>	<ul style="list-style-type: none"> <li>The deposit has a strike length along the coastline within the mining lease of ~9000m and an average width from the cliff to within the surf zone of 123m. It is developed from surface to a maximum depth of 6.25m. The average resource thickness is 3.5m.</li> </ul>
<i>Estimation and modelling techniques</i>	<ul style="list-style-type: none"> <li><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 estimation method was chosen include a description of computer software and parameters used.</i></li> <li><i>The availability of check estimates, previous estimates and/or mine production</i></li> </ul>	<ul style="list-style-type: none"> <li>The 2007 Steemson resource was interpreted using the data and results from 236 hand auger holes (402.3m) and 336 reverse circulation holes (1049.35m) drilled during 1989 to 1991 by Trans Hex. The current resource was signed off on 31 October 2011 by Mr Allen Maynard as the competent person. Mr Maynard is the director and principle geologist of Al Maynard &amp; Associates Pty Ltd (Perth, WA).</li> <li>All original analyses were conducted by MINTEK using microscopic point counting-</li> </ul>

Criteria	JORC Code explanation	Commentary
	<p><i>records and whether the Mineral Resource estimate takes appropriate account of such data.</i></p> <ul style="list-style-type: none"> <li>• <i>The assumptions made regarding recovery of by-products.</i></li> <li>• <i>Estimation of deleterious elements or other non-grade variables of economic significance (e.g. sulphur for acid mine drainage characterisation).</i></li> <li>• <i>In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.</i></li> <li>• <i>Any assumptions behind modelling of selective mining units.</i></li> <li>• <i>Any assumptions about correlation between variables.</i></li> <li>• <i>Description of how the geological interpretation was used to control the resource estimates.</i></li> <li>• <i>Discussion of basis for using or not using grade cutting or capping.</i></li> <li>• <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></li> </ul>	<p>x-ray and scanning electron microprobe techniques.</p> <ul style="list-style-type: none"> <li>• Bulk sampling done by MSR in 2005 were sent to SGS Johannesburg for grain counting. Bulk sampling was used to confirm the historical Trans Hex drill data and results. The bulk sample results were generally the same or better than the Trans Hex drilling results.</li> <li>• An analysis cut off of 0.1% zircon (MINTEK) was used and a resource cutoff grade of 0.3% zircon (Steemson, 2007).</li> <li>• Resource modeling was done using only RC drilling results using a polygonal method. Resource blocks were constructed in the southern mining area so that they were orthogonal to the drill traverses. In the northern area, resource block are trapezoidal in plan view. Resource blocks were extended half way between drill lines and 10m from the drill holes in section.</li> <li>• Recovery studies (three stage spiral circuit) by Multotec and Mintek in 2012 showed that an overall circuit can produce a concentrate of 11.66% Zircon into 60.8% of the feed mass with a Zircon recovery of 86.6%. Metallurgical sizing work was done in 2005 by Bateman Minerals Ltd.</li> <li>• Mine production during 2015 achieved a 62-67% Zircon recovery (32,422 tonnes from a head feed containing ~52,458 tonnes).</li> <li>• Reconciliation of 2015 mine production data (January to December 2015) with the 2014 resource model data indicate a 30% higher HMS concentrate (49.57%) than the average 38.14% HMS grade predicted.</li> </ul>

Criteria	JORC Code explanation	Commentary
Moisture	<ul style="list-style-type: none"> <li>Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.</li> </ul>	<ul style="list-style-type: none"> <li>The resource tonnages are based on a dry basis. Most of the material is fully saturated when mined but are free draining.</li> </ul>
Cut-off parameters	<ul style="list-style-type: none"> <li>The basis of the adopted cut-off grade(s) or quality parameters applied.</li> </ul>	<ul style="list-style-type: none"> <li>The original Steemson resource 0.3% zircon cut-off grade was based on a 70% zircon recovery and a zircon price of U\$ 700/tonne.</li> </ul>
Mining factors or assumptions	<ul style="list-style-type: none"> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>A definitive feasibility study on the deposit was done in 2006 by K'Enyuka and a BFS study review by HBH consultants</li> <li>The dynamic beach environment results in a cyclic depositional and erosion of the beach surface. Historical studies by Trans Hex have found a weighted average change over 9 months of up to ~9% loss or up to ~7% increase. This variability is also evident in the replenishment rate and grade of material observed.</li> <li>Mining is opencast using coffer type dams constructed with excavators. The pits generally only remain open during low tide, except where beach conditions allow larger more stable protection bunding to be constructed. Construction and mining methods are similar to that being used for beach diamond mining along the west coast of South Africa and Namibia.</li> <li>There is no stripping ratio as material is from surface onto bedrock.</li> <li>Natural replenishment of the resource is taking place as the open pits are filled with HMS material from the surf zone during the next high tide. Current data indicates no correlation (<math>R^2=0.04</math>) between the original resource grade and the replenishment grade for the same mine block area.</li> </ul>

Criteria	JORC Code explanation	Commentary
		<ul style="list-style-type: none"> <li>In general it appears that replenishment is erratic and unpredictable. In some areas zircon grade replenishment may only be 35%, while in other areas there are a 34% increase over and above the original zircon concentration. Replenishment appear to be mainly a function of time and the number of sea storm events. Given enough time between mining events the resources is currently still replenishing although the long term trend is a lowering in grade.</li> <li>Over the past 2 years some mining blocks have now been mined up to 10 times or more.</li> <li>During 2015 there was a 0.29% difference between mined zircon grade and processed material grade. This is insignificant over a long period as the zircon variance is below 0.5% on an annual basis.</li> </ul>
<p><i>Metallurgical factors or assumptions</i></p>	<ul style="list-style-type: none"> <li><i>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 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></li> </ul>	<ul style="list-style-type: none"> <li>Extensive metallurgical testing has been done before the current processing plant that is now in operation were designed. These include the following studies:</li> <li>2002 -2003 Spiral test work and trials by Multotec Process Equipment (Pty) Ltd and Mintek – Johannesburg.</li> <li>2003 Grain analysis by SGS Lakefield including THM, Magnetic Separation and XRF analyses. Also ilmenite fraction analyses for smelter feedstock.</li> <li>2003 Magnetic separation work by Diamantina laboratory in Perth</li> <li>2005 Bateman Minerals (Pty) Ltd electrostatic separation study</li> <li>2007 Processing and recovery tests by Titanatek Pty Ltd - Queensland</li> <li>2007 &amp; 2009 Metallurgical test work by AMMTEC Ltd – Australia</li> </ul>

Criteria	JORC Code explanation	Commentary
<i>Environmental factors or assumptions</i>	<ul style="list-style-type: none"> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>2007 Metallurgical upgrade test work by Multotec Process Equipment Pty Ltd – Kempton Park, RSA.</li> <li>The mine has an approved environmental management programme and has been subject to an environmental impact assessment. There are no environmental directives in place against the mining operation.</li> <li>There is a 10m stability buffer zone between the coastal cliffs and the beach where no mining is allowed. It would appear that the original resource model allowed for at least a 5m buffer zone.</li> <li>Two conservation areas have been proposed in the mining area where no mining is allowed. This has not resulted in any part of the current indicated resource being sterilized.</li> <li>All mining voids get naturally filled with beach sand material during high tide and there is therefore no rehabilitation liability in this regard.</li> <li>Tailings get dumped onto the beach where it is distributed and settled along the coastline under natural wave and sea current action. There are no pollutants introduced with the tailings and the material is inert.</li> </ul>
<i>Bulk density</i>	<ul style="list-style-type: none"> <li>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.</li> <li>The bulk density for bulk material must have been measured by methods that</li> </ul>	<ul style="list-style-type: none"> <li>The bulk density is based on an accurate calculation of the specific gravity of the silica and heavy mineral sand content fraction of each sample. It is therefore not a fixed density and appears to fluctuate between 1.9 and 2.4 as per the formula below:</li> </ul>

Criteria	JORC Code explanation	Commentary
	<p><i>adequately account for void spaces (vugs, porosity, etc), moisture and differences between rock and alteration zones within the deposit.</i></p> <ul style="list-style-type: none"> <li><i>Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.</i></li> </ul>	<ul style="list-style-type: none"> <li>SG=1.5+ (0.009 x HM).</li> </ul>
Classification	<ul style="list-style-type: none"> <li><i>The basis for the classification of the Mineral Resources into varying confidence categories.</i></li> <li><i>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).</i></li> <li><i>Whether the result appropriately reflects the Competent Person's view of the deposit.</i></li> </ul>	<ul style="list-style-type: none"> <li>The original resource classification was an indicated resource.</li> <li>It was based on historical drilling and bulk sampling.</li> <li>The original resource were signed off in 2011 by Mr Allen Maynard of Al Maynard &amp; Associates Pty Ltd as the competent person on the resource statement.</li> <li>A review of the resource during 2014 by du Toit of AEMCO resulted in the resource being downgraded into an inferred category due to the impact from mining and replenishment.</li> </ul>
Audits or reviews	<ul style="list-style-type: none"> <li><i>The results of any audits or reviews of Mineral Resource estimates.</i></li> </ul>	<ul style="list-style-type: none"> <li>The current inferred JORC resource of 2.7 million tonnes compares very favourably with the June 1992 Historical Foreign Estimate (HFE) by A van den Westhuizen and PD Danchin that classified the Geelwal (Steenvas) and Karoo (Geelwal) area into 3,003,881 tonnes proven, 221,088 tonnes indicated and 891,528 tonnes inferred. A total HFE resource of 4.1 million tonnes @ 30% HM.</li> <li>Another HFE in 1998 by Trans Hex (Barnex – RBM) reported an estimated resource of 6 million tonnes @ 2.78% zircon.</li> <li>Anglovaal reported in 1983 a resource of 11.8 million tonnes @ 8.4% zircon over 5m depth over the same area.</li> <li>The latest resource statement by du Toit in December 2014 has been reviewed and</li> </ul>

Criteria	JORC Code explanation	Commentary
		<p>the resource will remain in the inferred category with the same resource tonnage but the grades have been adjusted as per the resource table.</p> <ul style="list-style-type: none"> <li>Over the past two years 2.70 million tonnes of material have been mined. This material has been replaced through beach replenishment.</li> <li>The current inferred zircon resource grade of 1.56% HM is lower than the 2014 grade of 2.21% and the 2013 grade of 3.4%.</li> </ul>
<p><i>Discussion of relative accuracy/confidence</i></p>	<ul style="list-style-type: none"> <li>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.</li> <li>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.</li> <li>These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.</li> </ul>	<ul style="list-style-type: none"> <li>The Geelwal Karoo HMS deposit have been known and investigated over the past 57 years with the earliest detailed investigation by Trans Hex in 1989. The deposit was first documented in 1931 by Haughton.</li> <li>The deposit is well understood but due to the dynamic nature of the environment and movement of the upper part of the deposit (due to erosion and wave action deposition) and variable nature of the deposit, grade different resource estimates have been produced e.g. Geological Survey Bulletin #25 of 1957.</li> <li>The current JORC resource statement represent the lowest tonnage reported in comparison to HFE and appear to be conservative. Estimated resource grades also appear to be conservative as production grades of HMS during 2015 is 30% higher than the 2014 resource grade (49.57% against 38.14%).</li> </ul>