

## TORMIN NORTHERN BEACH DELIVERS HIGH GRADE MAIDEN RESOURCE

### High-grade resource of 2.5 Million tonnes at 23.5% Total Heavy Minerals ("THM")

- Resource based on drilling from only three (Beaches 5, 7 and 10) of the ten "placer deposit style" Northern Beaches adjoining existing Tormin Mine.
- Prospecting and drill program targeting remaining Northern Beaches and maiden Ore Reserve estimate to continue.
- Mining to commence on granting of Section 102 Expanded Mining Right application.

Mineral Commodities Ltd ("MRC" or "the Company") and its empowerment partners, Blue Bantry Investments 255 (Pty) Ltd, are pleased to announce a maiden JORC resource at the Northern Beaches (WC 30/5/1/1/2/10261PR) of the Tormin Mineral Sands Operation located on the west coast of South Africa.

The Mineral Resource was prepared in accordance with the Australian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves, ("JORC Code (2012)") and is estimated at **2.5 Million tonnes at 23.5% THM** in the category of Measured, Indicated and Inferred using a 2% cut-off. Pursuant to ASX Listing Rule 5.8.1, and in addition to the information contained in the body of this release, please refer to the JORC Table 1 appendix for additional information material to understanding the estimates of mineral resources.

Category	Tonnes (t)	THM (%)	Zircon (%HM)	Garnet (%HM)	Ilmenite (%HM)	Rutile (%HM)	Anatase (%HM)	Magnetite (%HM)
Measured	1,776,000	24.01	3.29	51.60	9.28	1.05	0.20	0.45
Indicated	680,000	22.16	5.09	44.94	8.25	0.94	0.18	0.81
Inferred	50,000	27.50	4.69	25.52	5.05	0.58	0.10	0.54
<b>Total</b>	<b>2,507,000</b>	<b>23.58</b>	<b>3.77</b>	<b>49.27</b>	<b>8.90</b>	<b>1.06</b>	<b>0.16</b>	<b>0.55</b>

Table 1-Total Mineral Resources for the Northern Beaches HM Deposit (2% cut-off grade)

Executive Chairman Mark Caruso said, "This represents yet another important milestone for our Company. The delivery of a maiden JORC Resource at the Northern Beaches effectively doubles the beach resource tonnes of this very high-grade placer style beach system and its unique historical replenishment characteristics. To date, we've mined over 12.3 million tonnes from adjoining Tormin Beaches which had an original mineral resource estimate of 2.7 million tonnes. The timing of this resource aligns perfectly with our strategy to commence mining the Northern Beaches as soon as our pending Section 102 Expanded Mining Right application is granted".

The Mineral Resource (Table 1) demonstrates the high-grade nature of the deposit, with over 70% of the total Resource reporting in the category of Measured at 24% THM. The Measured Resource categorisation is also higher than any of the historical resource estimates at Tormin, which have only ever been reported as high as Indicated.

Development of the Northern Beaches after the grant of the Expanded Mining Right will be relatively straightforward, commencing with the relocation of one of the current PBC-TSP primary beach concentrators to Beach 10. This represents a low capital cost option for Northern Beaches development. Project engineering and planning is already underway for bringing the Northern Beaches into production once the Section 102 application is granted.

## Background

The project site is located approximately 370km north of Cape Town and around 30km from the township of Lutzville in the Republic of South Africa.

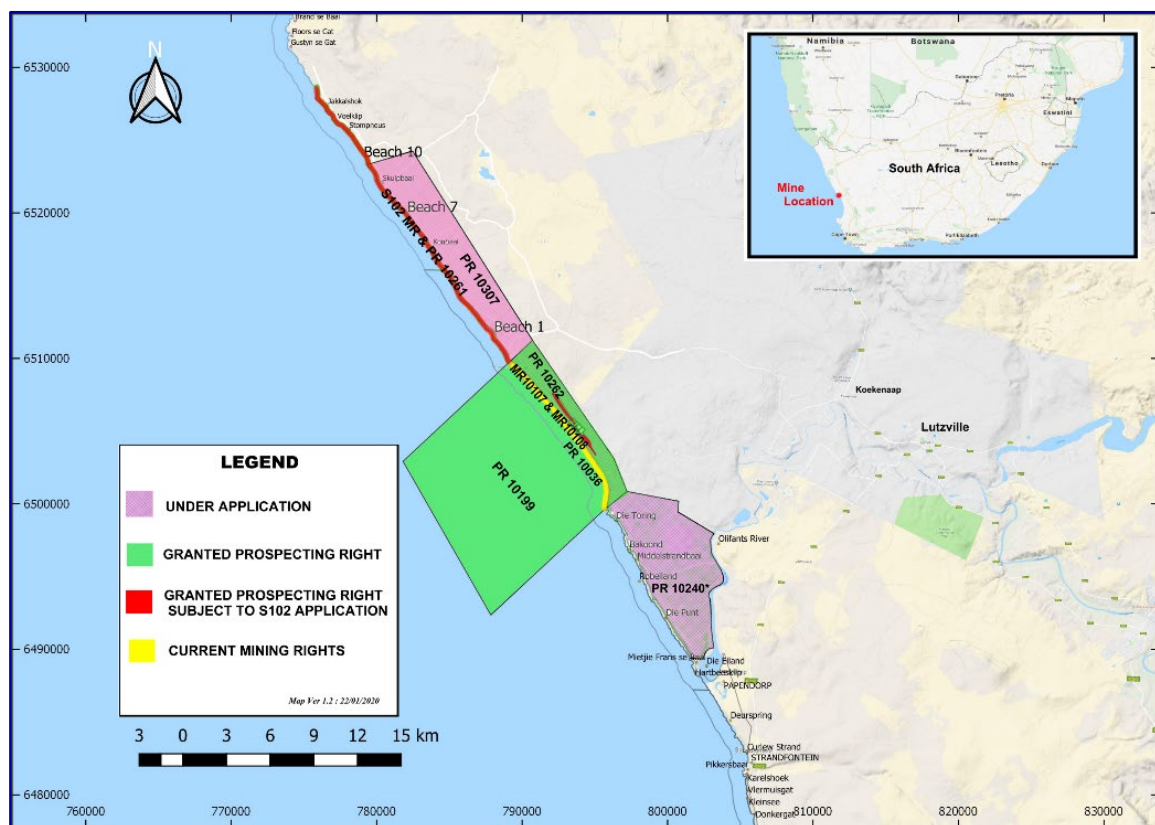


Figure 1 – Tenements under application and granted in South Africa

The Northern Beaches incorporate ten beaches directly north of, and adjoining the current beaches ("Current Beaches") mining area at Tormin. The Northern Beaches prospecting areas incorporate a semi-continuous tenement approximately 23km in length, covering an area of 398 hectares of beach sands prospective for zircon, rutile, ilmenite, garnet, leucoxene and magnetite. Like the Current Beaches mining area at Tormin, the Northern Beaches share similar placer style characteristics of deposition and replenishment. The heavy minerals in the beach are constantly replenished by the transport of new sediment from deeper waters, much of which has been derived from the erosion of deposits accumulated in the elevated historic beach terraces onto the present beach. The beaches



have previously been drilled by Trans Hex for diamonds and heavy mineral sands and the occurrence of heavy mineral sands has been confirmed.



Figure 2 - Northern Beaches area

In February 2020, MRC commenced a drilling program to try to verify the above historical foreign estimates and delineate a JORC Code (2012) compliant Mineral Resource Estimate. This exploration program has to date been carried out in Beaches 5, 7 and 10 of the resources for the Northern Beaches.

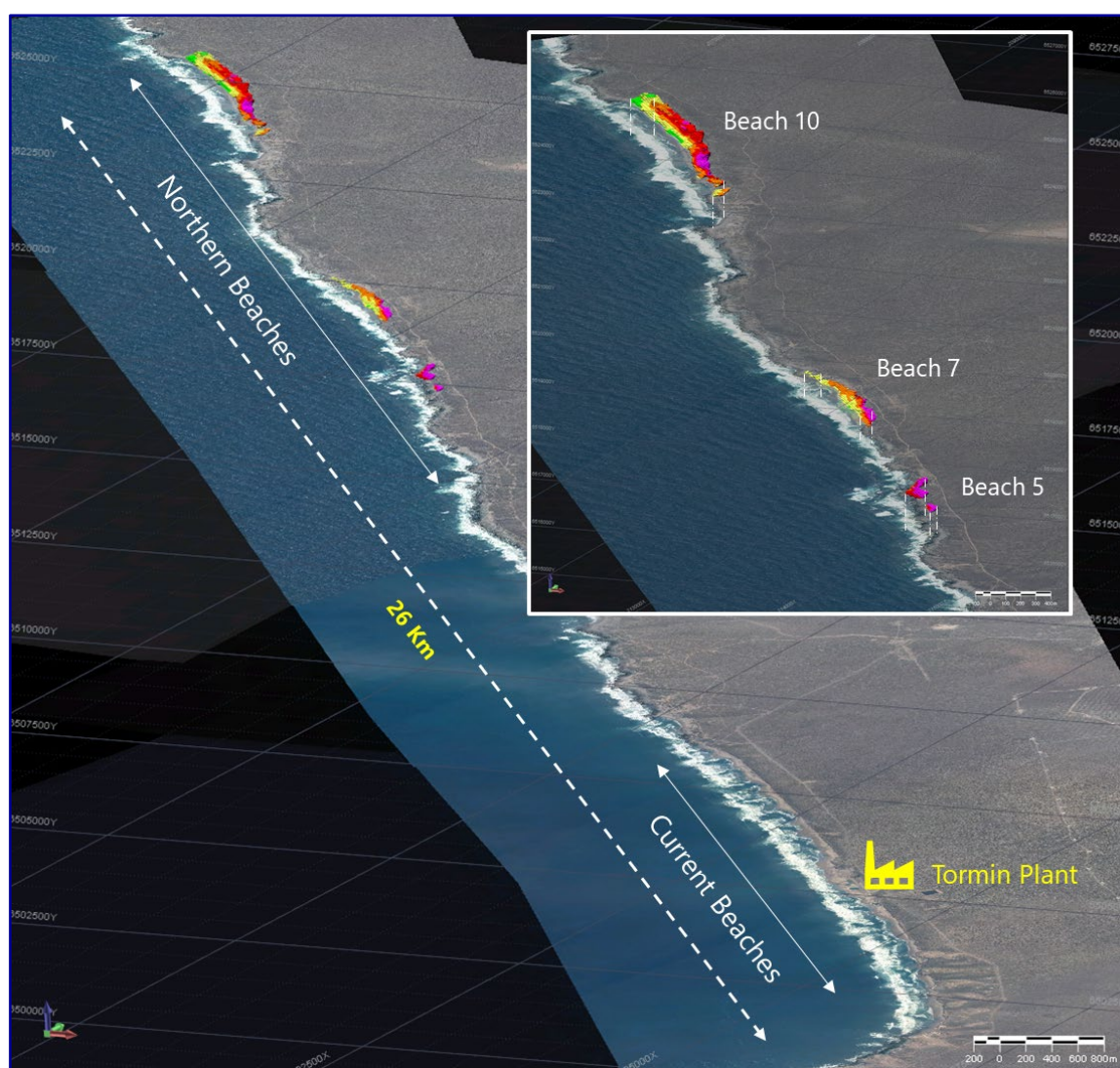


Figure 3 - Location of the Northern Beaches 10, 7 and 5 deposits

## Geology and geological interpretation

The western coastal plain of South Africa embraces a significant resource of detrital heavy minerals by world standards. This deposit is a heavy mineral sand deposit located on an active placer beach strandline undergoing continuous erosion, deposition and replenishment from oceanic storm and wave activity. The heavy mineral sand deposits occur in a current active beach environment (eg Tormin mine) as well as in older palaeo-beach raised strandlines found inland. Apart from the mid-Jurassic, Cretaceous and Tertiary (Paleogene) sediments along the coast, numerous small fossiliferous, marine, and terrestrial deposits of Neogene age outcrop along the coastal zone. The Neogene deposits are host to the commercially important diamondiferous and heavy mineral sands.

## Drilling techniques and hole spacing

The drilling program was designed on a 50m x 25m grid to delineate a JORC Code (2012) compliant Mineral Resource Estimate for the Northern Beaches. Sonic drilling has been conducted on Beaches 5, 7 and 10 and pit excavation only on Beach 7. A total of 314 vertical sonic holes (1187m) have been drilled and 51 test pits dug by an excavator. Areas with sonic drilling spaced at; 50x25m has been classified Measured, 100x25m has been classified Indicated. There is no drillhole spacing in the mineralised beaches greater than 100x25m.

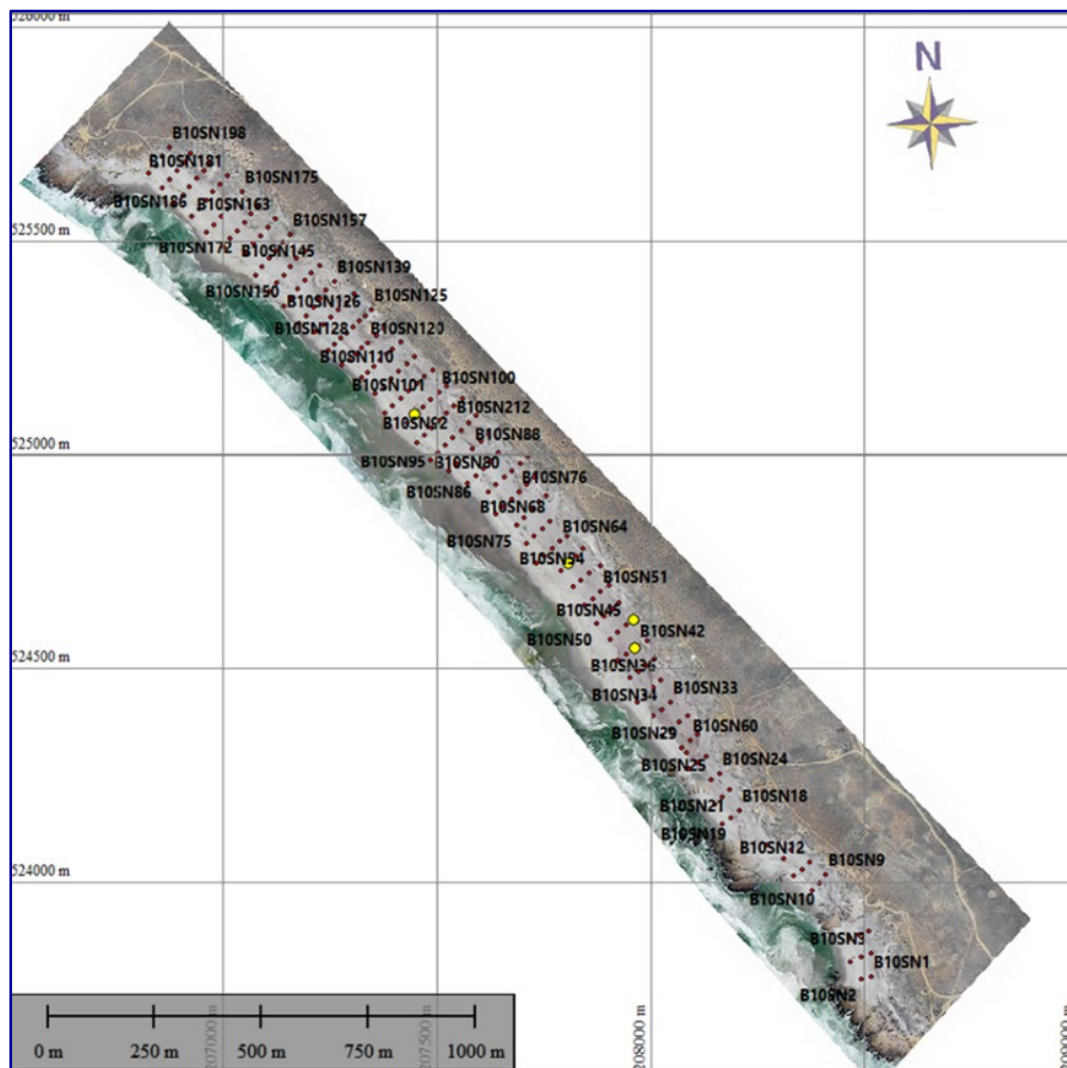


Figure 4 - Beach 10 sonic drillholes shown by red and blue dots. Yellow dots depict twinned holes

## Sampling and sub-sampling techniques

One-metre sonic core drill samples were collected and samples delivered/extruded in a plastic sleeve at an average of 6kg. Sample lengths were labelled with a permanent marker with the hole identification and depth recorded on the first and last metre samples. The sample length was measured and the ratio split over the total length of flight into 1m lengths.

Vertical channel composite sampling has been conducted within exploration pits; samples were collected by carving a channel from the bottom to the top of the entire pit walls using an aluminium scoop. Each sample was taken to ensure sample representativity with a minimum 3kg of sample material collected into each plastic bag.

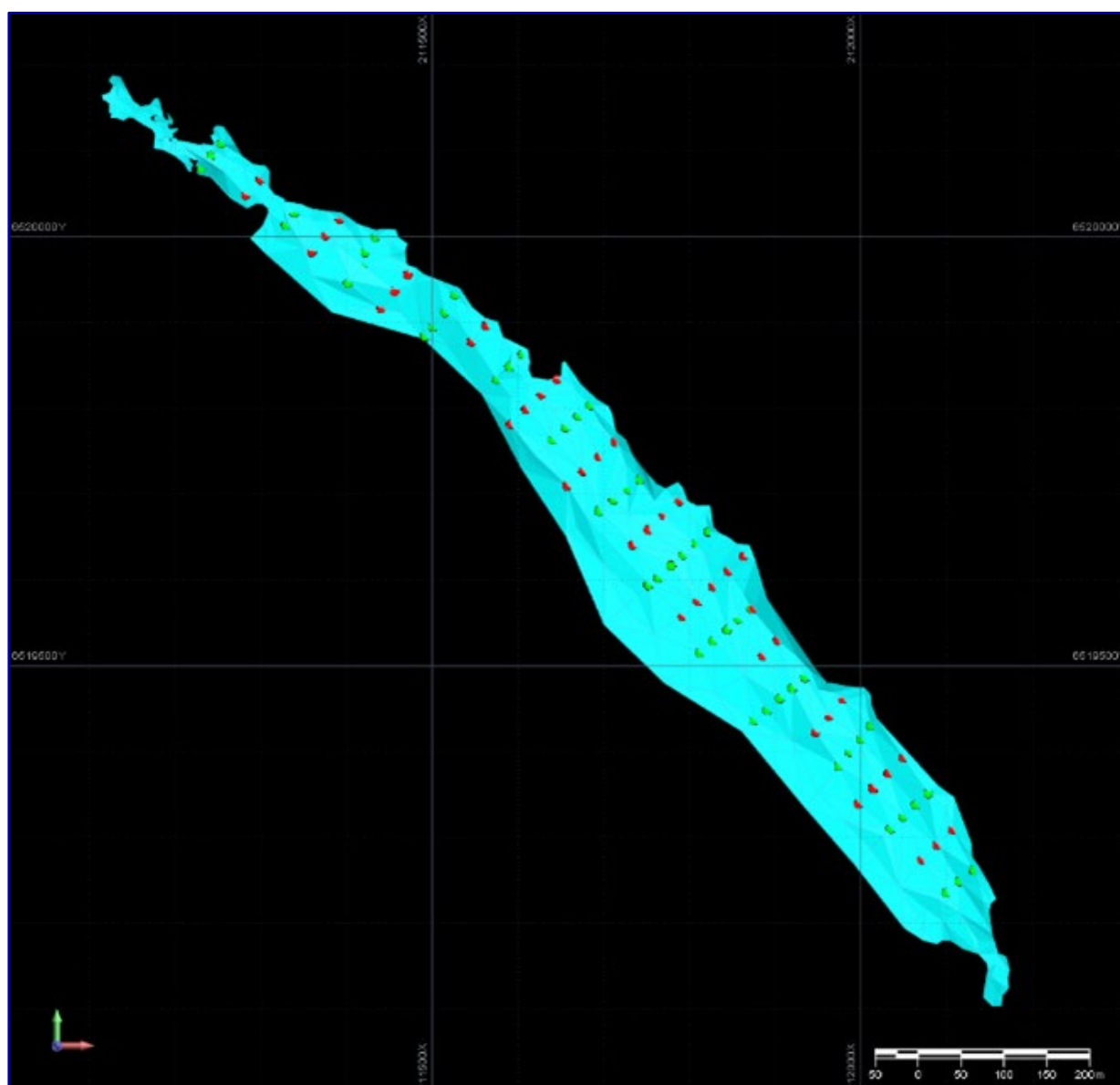


Figure 5 - Beach 7 mineralisation, showing drillhole collars (red) and sample pits (green)



## Sample analysis method

A total of 1201 samples were assayed. All samples have been analysed by the on-site laboratory at the Tormin processing plant. The mine owns and operates a heavy liquid separation lab ("HLS") using tetrabromoethane ("TBE") with Panalytical Aeris XRD machines (the Rietveld method after HLS) in an automated mode setup for mineral assays, and industrial laboratory XRF (Panalytical Epsilon 3 ED) for zircon content. 53 samples were sent to external laboratories in Pretoria (XRD Analytical and Consulting and UIS analytical services) for QA/QC purposes. QEMSCAN test work by SGS was used for determination of the heavy mineral assemblage. The mineral assemblage was determined using a similar method to that developed for the current Tormin beaches deposit.

## Estimation Methodology

The Mineral Resource estimation involved the use of drillhole, test pit data and geology/topography to construct three-dimensional wireframes to define mineralised domains. Micromine software was used to domain and estimate each of the Valuable Heavy Minerals ("VHM"). Domains were snapped to the nearest true intersection from sampling and assays were composited to 1m, within domains, with composite lengths redistributed to avoid residuals. Data is extrapolated between data points and approximately half of the drill spacing beyond. Ordinary Kriging was used as the primary estimator for THM and VHM values. Where slope is greater than 0.9, and previous categories have been met, the final resource has been classified as Measured and blocks with Slope between 0.7 and 0.9, even if other criteria have been met for higher classification, the resource has been classified as Indicated. Slope less than 0.7, even if other criteria have been met for higher classification, the resource has been classified as Inferred. Three separate block models were created, all with the same attributes, one for each of Beaches 5, 7 and 10. A block size of 25 x 25 x 1m reflects the geometry of the mineralised domains.

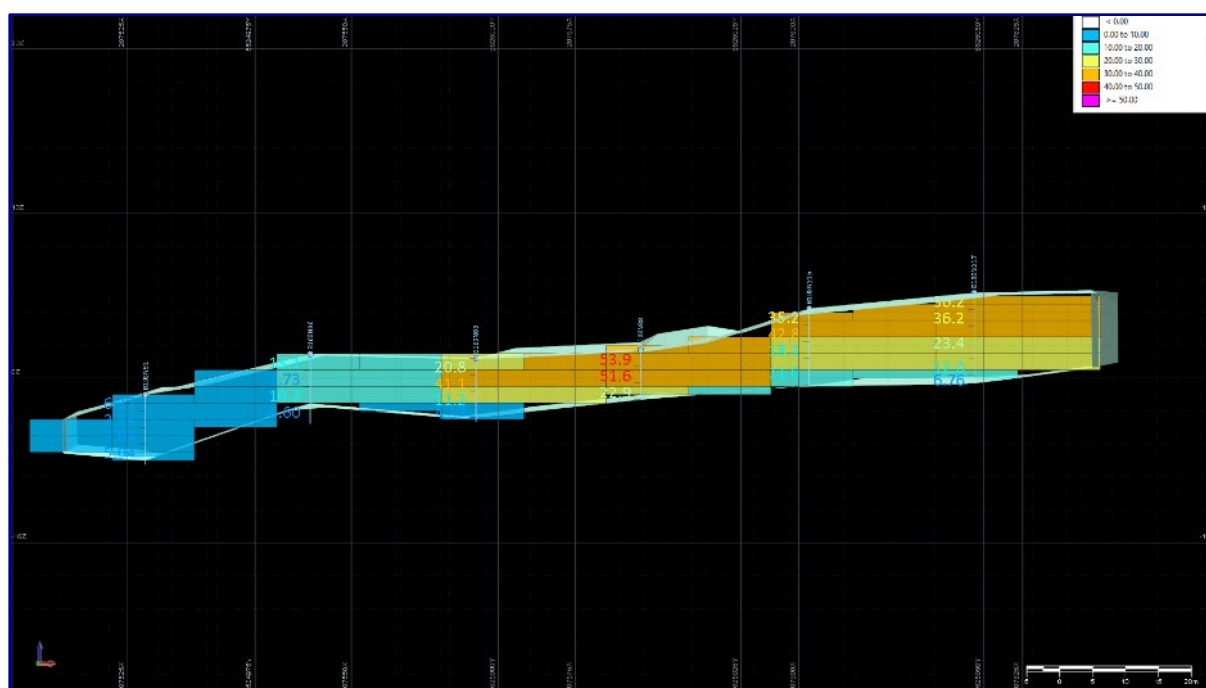


Figure 6 - Example SW – NE cross-section at 652500mN, looking northwest comparing composite sample and kriged block THM grades in Beach 10

A summary of the Mineral Resource statement is shown in Table 1 as defined by the JORC Code (2012).

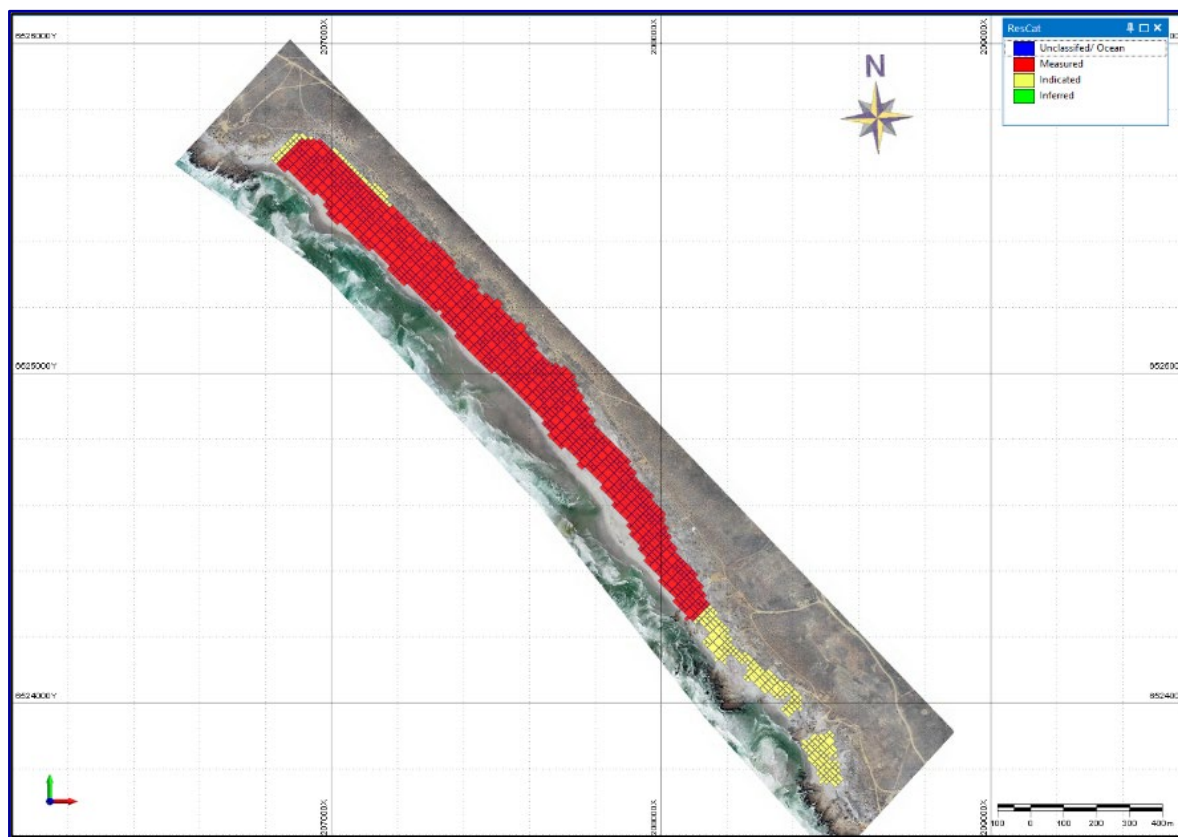


Figure 7: Resource Classifications on Beach 10

### Cut-off grades

A 2% THM cut-off grade was applied for any mineralised exploration intersections and for final Resource Reporting, as this is the current minimum grade where there is reasonable expectation for eventual extraction.

### Mining and metallurgical methods and parameters

Typical open-pit mining is practised with excavators and articulated dump trucks being utilised. 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 for the Northern Beaches are expected to be similar to those for the Tormin Beaches currently being mined by the Company.

There is no stripping as mining of mineralisation starts from surface and natural replenishment of the resource takes place as the open pits are filled with HMS material generated from tidal action and wave energy dynamics. Metallurgical factors are derived from the current processing data generated from over six years of mining the Tormin Beaches. The metallurgical processing characteristics of the Northern Beaches material are similar to the current Tormin Beach deposit. It is intended to mine the Northern and existing Tormin Beaches progressively year on, year off, to maximise replenishment characteristics during the alternating periods of non-mining.

The Company intends to continue exploration on the remaining Northern Beaches that fall outside of the current resource areas with a view to commencing a drilling program in Q3-2020, which will target delivery of Ore Reserve estimates after the drilling campaign.

**END**

**Issued by** Mineral Commodities Ltd ACN 008 478 653 [www.mineralcommodities.com](http://www.mineralcommodities.com).

**Authorised by** the Executive Chairman and Company Secretary, Mineral Commodities Ltd.

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#### **About Mineral Commodities Ltd**

Mineral Commodities Ltd (ASX: MRC) is a global mining and development company with a primary focus on the development of high-grade mineral deposits within the mineral sands and battery minerals sectors.

The Company is a leading producer of zircon, rutile, garnet and ilmenite concentrates through its Tormin Mineral Sands Operation, located on the Western Cape of South Africa. In October 2019, the Company completed the acquisition of Skaland Graphite AS, the owner of the world's highest-grade operating flake graphite mine and one of the only producers in Europe. The planned development of the Munglinup Graphite Project, located in Western Australia, builds on the Skaland acquisition and is a further step toward an integrated, downstream value-adding strategy which aims to capitalise on the fast-growing demand for sustainably manufactured lithium-ion batteries.

#### **Cautionary Statement**

This report may contain forward-looking statements. Any forward-looking statements reflect management's current beliefs based on information currently available to management and are based on what management believes to be reasonable assumptions. It should be noted that several factors could cause actual results or expectations to differ materially from the results expressed or implied in the forward-looking statements.



## Competent Persons Statement

The information in this Announcement related to Mineral Resources is based on information compiled and has been approved for release by Mr Bahman Rashidi, who is a member of the Australian Institute of Mining and Metallurgy (AusIMM) and the Australian Institute of Geoscientists (AIG). Mr Rashidi is Exploration Manager and a full-time employee of the Company and has over 22 years of exploration and mining experience in a variety of mineral deposits and styles. Mr Rashidi has sufficient experience which is relevant to the style of mineralisation and types of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person in accordance with the JORC Code 2012.

The information from Mr Bahman Rashidi was prepared under the JORC Code (2012). Mr Rashidi consents to the inclusion in the report of the matters based on this information in the form and context in which it appears.

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**JORC TABLE 1**  
**Section 1 Sampling Techniques and Data**  
 (Criteria in this section apply to all succeeding sections)

Criteria	JORC Code Explanation	Commentary
<ul style="list-style-type: none"> <li><b>Sampling techniques</b></li> </ul>	<ul style="list-style-type: none"> <li>Nature and quality of sampling (eg 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.</li> <li>Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.</li> <li>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 1m samples from which 3 kg was pulverised to produce a 30g 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 (eg submarine nodules) may warrant disclosure of detailed information.</li> </ul>	<ul style="list-style-type: none"> <li>The current resource database consists of 314 sonic holes, representing 1187m of vertical drilling and 51 pit holes, and 1201 analysed samples.</li> <li>Sample taken from surface to bedrock.</li> <li>Mineralisation and grade testwork done according to mine control standards within Tormin mine site laboratory. XRF, heavy liquid separation and XRD.</li> <li>Vertical channel composite sampling within exploration pits</li> <li>One-metre sonic drill samples from core were collected in 6kg plastic bags.</li> <li>The sample length measured, and ratio split over total length of flight into 1m lengths and was riffle split into two bags of ~3kg each.</li> <li>3kg samples were submitted directly to the Tormin mine laboratory to be analysed for heavy minerals.</li> <li>The laboratory sample was dried and screened.</li> <li>200g of sample split to use for heavy liquid separation using TBE with density range between 2.92 and 2.96g/ml to define THM content.</li> </ul>
<ul style="list-style-type: none"> <li><b>Drilling techniques</b></li> </ul>	<ul style="list-style-type: none"> <li>Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Banka, sonic, etc) and details (eg 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).</li> </ul>	<ul style="list-style-type: none"> <li>Sonic drilling and test pits by excavator.</li> <li>Sonic drilling is considered a standard industry drilling method for HMS beach mineralisation.</li> <li>78mm drill bits and rods were used.</li> <li>All holes were drilled vertically.</li> </ul>
<ul style="list-style-type: none"> <li><b>Drill sample recovery</b></li> </ul>	<ul style="list-style-type: none"> <li>Method of recording and assessing core and chip sample recoveries and results assessed.</li> <li>Measures taken to maximise sample recovery and ensure representative nature of the samples.</li> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>Metric samples from sonic drill cores were taken and riffled down to a representative sample for XRF, heavy liquid separation and XRD.</li> <li>Large composite channel samples were taken from exploration pits</li> <li>No sample loss or cavitation were experienced.</li> <li>Sample recovery was very good.</li> <li>The sonic drilling provides high quality samples from the face of the drill hole.</li> </ul>
<ul style="list-style-type: none"> <li><b>Logging</b></li> </ul>	<ul style="list-style-type: none"> <li>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.</li> <li>Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.</li> <li>The total length and percentage of the relevant intersections logged.</li> </ul>	<ul style="list-style-type: none"> <li>Each hole was logged by a geologist on pre-printed log sheets.</li> <li>Geological and lithological observations per depth were recorded together with field sections and hand drawn down-the-hole logs.</li> <li>Special attention was given to visual heavy minerals as a guide to potential marine deposits</li> <li>Marine gravels and contact with basement bedrock recorded as maximum depth of mineralisation.</li> </ul>
<ul style="list-style-type: none"> <li><b>Sub-sampling techniques and sample preparation</b></li> </ul>	<ul style="list-style-type: none"> <li>If core was either cut or sawn and whether quarter, half or all core taken.</li> <li>If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.</li> <li>For all sample types, the nature, quality and appropriateness of the sample preparation technique.</li> <li>Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.</li> <li>Measures taken to ensure the sampling is representative of the in-situ material collected, including for instance, results for field duplicate/second-half sampling.</li> <li>Whether sample sizes are appropriate to the grain size of the material being sampled.</li> </ul>	<ul style="list-style-type: none"> <li>Samples were riffled.</li> <li>Samples were mostly wet from sea ingress/seepage.</li> <li>Field duplicates were submitted to the laboratory in the form of the remaining half of the core for every 20<sup>th</sup> sample.</li> <li>Sampling over 1m down-the-hole intervals as determined by 1m marks on the rig mast.</li> <li>Lab duplicate samples were split for the Tormin mine laboratory for external QA/QC checks.</li> </ul>
<ul style="list-style-type: none"> <li><b>Quality of assay data and</b></li> </ul>	<ul style="list-style-type: none"> <li>The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.</li> </ul>	<ul style="list-style-type: none"> <li>All sample analyses were undertaken by the Tormin mine laboratory.</li> <li>The mine owns and operates a heavy liquid separation lab ("HLS") with Panalytical Aeris XRD machines (the Rietveld method</li> </ul>

Criteria	JORC Code Explanation	Commentary
<b>laboratory tests</b>	<ul style="list-style-type: none"> <li>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.</li> <li>Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.</li> </ul>	<p>after HLS) in an automated mode setup and industrial laboratory XRF (Panalytical Epsilon 3 ED) for zircon content.</p> <ul style="list-style-type: none"> <li>The Tormin mine laboratory completes its own internal QA/QC using certified reference material ("CRM") at the rate of approximately 1 in 50 and sending every 20th sample to the external labs.</li> <li>External sampling checks for XRD have been done in XRD Analytical and Consulting (42 samples) and 10 samples for XRF in UIS analytical services (accredited laboratory), both in Pretoria.</li> <li>The CRMs, blank and duplicate sample results are within accepted limits.</li> <li>QEMSCAN test work by SGS was used for determination of the mineral assemblage. The mineral assemblage was determined using a similar method to that developed for the current Tormin beach deposit.</li> </ul>
<ul style="list-style-type: none"> <li><b>Verification of sampling and assaying</b></li> </ul>	<ul style="list-style-type: none"> <li>The verification of significant intersections by either independent or alternative company personnel.</li> <li>The use of twinned holes.</li> <li>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.</li> <li>Discuss any adjustment to assay data.</li> </ul>	<ul style="list-style-type: none"> <li>All sampling was done by mine site personnel overseen by a qualified and experienced mine geologist.</li> <li>All sample preparation was done by qualified staff, supervised by chemists and the laboratory manager.</li> <li>The lab results and logging have been reviewed by external consultants to MSR as well as internally by MRC's exploration manager.</li> <li>11 twinned holes drilled - 5 holes in beach 10 and 3 holes each in beaches 5 and 7.</li> <li>The drillhole logs have been converted to electronically stored formats and stored in a database provided by Maxwell Geoservices (Webshed). This database is hosted on an offsite server supplied by Maxwell Geoservices and managed by their trained database staff.</li> <li>No adjustment to assay data results were done outside the standard XRD and XRF calibration software being used.</li> </ul>
<ul style="list-style-type: none"> <li><b>Location of data points</b></li> </ul>	<ul style="list-style-type: none"> <li>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.</li> <li>Specification of the grid system used.</li> <li>Quality and adequacy of topographic control.</li> </ul>	<ul style="list-style-type: none"> <li>Hole collars and pit sample locations were determined with DGPS, accurate to within centimetres.</li> <li>Down hole surveys for shallow vertical sonic holes are not required.</li> <li>WGS 84 datum and UTM/ zone 34S coordinate system is used.</li> <li>Topographical control is highly problematic due to constant changes in surface levels after daily high tides and monthly storm events, which average 10 events per month.</li> </ul>
<ul style="list-style-type: none"> <li><b>Data spacing and distribution</b></li> </ul>	<ul style="list-style-type: none"> <li>Data spacing for reporting of Exploration Results.</li> <li>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.</li> <li>Whether sample compositing has been applied.</li> </ul>	<ul style="list-style-type: none"> <li>Target sampling point is on a 50mx25m average spacing, subject to beach access due to tides.</li> <li>50 x 25m drilling is sufficient to be classified the beach HMS as Measured Resources due to the nature of mineralisation.</li> </ul>
<ul style="list-style-type: none"> <li><b>Orientation of data in relation to geological structure</b></li> </ul>	<ul style="list-style-type: none"> <li>Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.</li> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>Geological structure not relevant or applicable to an active placer beach sand deposit.</li> <li>Vertical drilling to intersect sub-horizontal strata.</li> <li>Orientation of the drill holes will not result in sampling bias.</li> </ul>
<ul style="list-style-type: none"> <li><b>Sample security</b></li> </ul>	<ul style="list-style-type: none"> <li>The measures taken to ensure sample security.</li> </ul>	<ul style="list-style-type: none"> <li>All sample bag numbers were logged against the drill hole by the site geologist.</li> <li>Two samples per metre drilled were produced, one for external QA/QC use or back-up and one sent directly to the mine lab at the end of each day's drilling in a secure area.</li> <li>The Tormin mine laboratory inspected the submitted samples and did not report any missing nor error of the samples against the sample lists.</li> </ul>
<ul style="list-style-type: none"> <li><b>Audits or reviews</b></li> </ul>	<ul style="list-style-type: none"> <li>The results of any audits or reviews of sampling techniques and data.</li> </ul>	<ul style="list-style-type: none"> <li>The lab results and logging have been reviewed by external consultants to MSR and internally as part of normal validation processes by MRC.</li> </ul>



## Section 2 Reporting of Exploration Results

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

Criteria	Explanation	Commentary
<ul style="list-style-type: none"> <li><b>Mineral tenement and land tenure status</b></li> </ul>	<ul style="list-style-type: none"> <li>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 parks and environmental settings.</li> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>The area has a granted prospecting right (WC 30/5/1/1/2/10261PR) owned by Mineral Sands Resources (Pty) Ltd, a subsidiary of ASX listed Mineral Commodities Ltd (ASX: MRC).</li> <li>This Prospecting Right incorporates a semi-continuous tenement approximately 23km in length, covering an area of 398 hectares of beach sands, between the high water mark and the low water mark of the coastal beaches areas adjacent to neighbouring farms (Graauwduinen 152, remainder of Waterbak and portions of farm Klipvley Karookop 153).</li> <li>The Prospecting Right was granted, executed, and registered with the South African Department of Mineral Resources and Energy ("DMRE") in January 2020.</li> </ul>
<ul style="list-style-type: none"> <li><b>Exploration done by other parties</b></li> </ul>	<ul style="list-style-type: none"> <li>Acknowledgment and appraisal of exploration by other parties.</li> </ul>	<ul style="list-style-type: none"> <li>The general area has been investigated and mined for heavy mineral deposits as far back as the 1930s (Haughton, 1931). Subsequent geological surveys and exploration programs investigated the distribution, mineralogy, and economic potential of the heavy mineral sands along the coastline of Geelwal Karoo (Toerien &amp; Groeneveld 1957, Abele 1989, Swart 1990, Barnes 1998) and Trans Hex 1989-1991).</li> <li>The feasibility study produced by Trans Hex in June 1992 included a defined Inferred mineral resource (non JORC).</li> </ul>
<ul style="list-style-type: none"> <li><b>Geology</b></li> </ul>	<ul style="list-style-type: none"> <li>Deposit type, geological setting and style of mineralisation.</li> </ul>	<ul style="list-style-type: none"> <li>Deposit is a heavy mineral sand deposit located on an active placer beach strandline undergoing continues erosion, deposition and replenishment from oceanic storm and wave activity.</li> <li>The heavy mineral sand deposits occur in a current active beach environment (eg Tormin mine) as well as in older paeleo-beach raised strandlines found inland.</li> <li>Apart from the mid-Jurassic, Cretaceous and Tertiary (Paleogene) sediments along the coast, numerous small fossiliferous, marine, and terrestrial deposits of Neogene age outcrop along the coastal zone.</li> <li>The Neogene deposits are host to the commercially important diamondiferous and heavy mineral sands.</li> </ul>
<ul style="list-style-type: none"> <li><b>Drill hole information</b></li> </ul>	<ul style="list-style-type: none"> <li>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:</li> <li>Easting and northing of the drill hole collar;</li> <li>Elevation or "RL" (Reduced Level – elevation above sea level in metres) of the drill hole collar;</li> <li>Dip and azimuth of the hole;</li> <li>Down hole length and interception depth; and</li> <li>Hole length.</li> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>A summary of the 314 sonic drilling and 51 pit holes and samples is reflected under Appendix A.</li> <li>The minimum hole length is 1m, maximum 6.3m and average depth of drilling is 3.1 metres.</li> <li>East collar ranges – 206,820mE to 213,580mE.</li> <li>North collar ranges – 6,517,400mN to 6,525,720mN.</li> <li>Azimuth ranges/dip ranges – vertical drilling.</li> </ul>
<ul style="list-style-type: none"> <li><b>Data aggregation methods</b></li> </ul>	<ul style="list-style-type: none"> <li>In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.</li> <li>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.</li> <li>The assumptions used for any reporting of metal equivalent values should be clearly stated.</li> </ul>	<ul style="list-style-type: none"> <li>The total percentage Valuable Heavy Mineral ("VHM") content was determined from the individual mineral components and modelled. A 2% cut-off grade was applied for any mineralised exploration intersections.</li> <li>No cutting of HM values for exploration intercept reporting.</li> <li>Length weighting was used for all mineralised exploration intercepts.</li> </ul>
<ul style="list-style-type: none"> <li><b>Relationship between mineralisation widths and</b></li> </ul>	<ul style="list-style-type: none"> <li>These relationships are particularly important in the reporting of Exploration Results.</li> <li>If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.</li> </ul>	<ul style="list-style-type: none"> <li>Composite grade over total depth sample was determined as the resource is mined and processed from surface to bedrock contact, where all grades were above the 2% aggregation cut-off.</li> </ul>

Criteria	Explanation	Commentary
<b>intercept lengths</b>	<ul style="list-style-type: none"><li>If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').</li></ul>	<ul style="list-style-type: none"><li>Mineralisation is enriched sedimentary layers semi-parallel to the bedrock contact and beach slope angle.</li><li>Mineralisation is essentially flat laying, and as such, vertical drill holes represent true width.</li></ul>
<ul style="list-style-type: none"><li><b>Diagrams</b></li></ul>	<ul style="list-style-type: none"><li>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.</li></ul>	<ul style="list-style-type: none"><li>Maps, sections, and plan view are provided in this report.</li></ul>
<ul style="list-style-type: none"><li><b>Balanced reporting</b></li></ul>	<ul style="list-style-type: none"><li>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.</li></ul>	<ul style="list-style-type: none"><li>Statistics of drillhole grades used during the Mineral Resource estimate are contained in the main body of the report.</li><li>This report provides the total information available to date and is considered to represent a balanced report.</li></ul>
<ul style="list-style-type: none"><li><b>Other substantive exploration data</b></li></ul>	<ul style="list-style-type: none"><li>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; potential deleterious or contaminating substances.</li></ul>	<ul style="list-style-type: none"><li>Historical drill data is not reported as it is classified as historical foreign estimates that are non-JORC compliant.</li></ul>
<ul style="list-style-type: none"><li><b>Further work</b></li></ul>	<ul style="list-style-type: none"><li>The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).</li><li>Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.</li></ul>	<ul style="list-style-type: none"><li>Further drilling is planned to produce resource over the beaches 1, 2 ,3, 4, 6, 8 and 9.</li><li>Offshore sampling to determine the source of grade replenishment is planned.</li><li>The drilling activities in the Inland Strandline are ongoing, targeting Measured and Indicated Resource.</li></ul>

**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 explanation	Commentary
<b>Database integrity</b>	<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>The data was plotted and plots were expected with no mis-plots or extraneous data found. Maximum and minimum values and average values were all within the norm. Duplicate values were confirmed as such. The coordinates were confirmed as being WGS84 UTM zone 34S.</li> </ul>
<b>Site visits</b>	<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>No site visits were undertaken for this resource estimate although the Competent Person did visit the project in December 2019 and he is familiar with the site and resource conditions.</li> </ul>
<b>Geological interpretation</b>	<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>The deposit is a classic active mineral sands deposit with no doubt as to its genesis.</li> <li>Samples were collected for resource calculation purposes.</li> <li>The geology/topography of the deposit has been used to constrain the resource envelope. The data was partitioned into areas (subsets) based on geology/topography. The base of the deposit is defined by the underlying bedrock, the landward side by barren land and sand dunes. To seaward, the deposit is open.</li> <li>Grade continuity is influenced by wave action and hence is best parallel to the beachfront. Replenishment and re-working of resources limits continuity and reliability of localised mining blocks.</li> </ul>
<b>Dimensions</b>	<ul style="list-style-type: none"> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>The deposit has a strike length along the coastline of approximately 10,850m and an average width from the dunes to within the surf zone of 150m. It is developed from surface to a maximum depth of 6.3m and the average resource thickness is approximately 3.5m. The deposit occurs from the surface down.</li> </ul>
<b>Estimation and modelling techniques</b>	<ul style="list-style-type: none"> <li>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.</li> <li>The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.</li> <li>The assumptions made regarding recovery of by-products.</li> <li>Estimation of deleterious elements or other non-grade variables of economic significance (eg sulphur for acid mine drainage characterisation).</li> <li>In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.</li> <li>Any assumptions behind modelling of selective mining units.</li> <li>Any assumptions about correlation between variables.</li> <li>Description of how the geological interpretation was used to control the resource estimates.</li> <li>Discussion of basis for using or not using grade cutting or capping.</li> <li>The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.</li> </ul>	<ul style="list-style-type: none"> <li>Micromine software was used to domain and estimate each of the valuable heavy minerals. Domains were snapped to the nearest true intersection from sampling.</li> <li>Assays were composited to 1m, within domains, with composite lengths redistributed to avoid residuals. No composite was less than 0.5m or greater than 1.5m.</li> <li>Outlier values are cut based on local analysis for each beach and each variable. There is a nugget effect of between 40 and 50%, calculated for each variable separately: <ul style="list-style-type: none"> <li>Beach 5: Top cut: garnet at 36%, magnetite at 1.4%</li> <li>Beach 7: Top cut: THM at 56%, garnet at 22% and zircon at 3%</li> <li>Beach 10: Top cut: THM at 75%</li> </ul> </li> <li>Data is extrapolated between data points and approximately half of the drill spacing beyond. Data points are nominally 50 x 25m. There are between 2-6 drill holes per line.</li> <li>Ordinary kriging was used as the primary estimator. Each variable was estimated separately, using variograms created for Beach 10 only. Data on Beach 5 and Beach 7 is insufficient to create meaningful variography.</li> <li>An anisotropic search was used, with the ratios of direction of greatest continuity (along the beach). Across the continuity: depth of 3: 0.4: 0.03. A maximum search distance of 400m was used, based on the ranges of the variograms. Quadrant searching was used, with a maximum points per sector of 15. Minimum points to estimate a block were 3.</li> <li>All products mentioned in the text are being actively mined and separated in the plant. No deleterious minerals are known.</li> <li>This is a resource estimate and mining parameters are not used beyond normal global parameters of grades, dimensions, and accessibility.</li> <li>Geology/topography was used to constrain the model. On the landward side the sand dunes, where present, were used to limit the model to the beach area. Otherwise the limit was placed at approximately half of the drill hole spacing. The model was truncated by the seaward edge of dry beach between low and high tides.</li> <li>The THM standard deviation in the block model is as follows: <ul style="list-style-type: none"> <li>Beach 5: 4.9% with a coefficient of variation of 0.1%.</li> <li>Beach 7: 11.2% with a coefficient of variation of 0.6%.</li> </ul> </li> </ul>



Criteria	JORC Code explanation	Commentary
		<ul style="list-style-type: none"> <li>- Beach 10: 11.6% with a coefficient of variation of 0.5%.</li> <li>• These values are acceptable as they indicate the modelling algorithm produces realistic values within the range of the dataset. In addition, an in-depth validation process was used to test robustness of the modelled data, including visual checks, check estimates (IDW and NN), swath plots and detailed statistical comparisons</li> </ul>
<b>Moisture</b>	<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 estimated on a dry basis. Mined material is wet and fully saturated when mined out, but it is free draining when stockpiled.</li> </ul>
<b>Cut-off parameters</b>	<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>• Minimum mining parameters are 1m thickness and 2% THM, as such a 2% cut off was used during domaining.</li> <li>• Final report was based on a 2% cut off grade, as this is the current minimum grade where there is a reasonable expectation for eventual extraction.</li> </ul>
<b>Mining factors or assumptions</b>	<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 feasibility study on the deposit was done in June 1992 by Trans Hex.</li> <li>• The dynamic beach environment results in a cyclic process of deposition on 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>• Opencast mining uses 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 those being used for beach diamond mining along the west coast of South Africa.</li> <li>• There is no stripping as mining starts at the surface.</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.</li> </ul>
<b>Metallurgical factors or assumptions</b>	<ul style="list-style-type: none"> <li>• 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.</li> </ul>	<ul style="list-style-type: none"> <li>• Metallurgical factors have been taken from the current processing plant.</li> <li>• After six years of mining, the Tormin mine is an ongoing profitable concern. There are no doubts about the metallurgical suitability of the Northern Beaches material.</li> <li>• Any changes that MRC undertake have not been quantified or assumed to change the product specifications.</li> </ul>
<b>Environmental factors or assumptions</b>	<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 greenfield 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>• The sample environmental factors for the current Tormin beach will be used for the mining in the Northern Beaches</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>
<b>Bulk density</b>	<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 adequately account for void spaces (vugs, porosity, etc), moisture and differences between rock and alteration zones within the deposit.</li> <li>• Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.</li> </ul>	<ul style="list-style-type: none"> <li>• The bulk density is based on a calculation of the specific gravity of the silica and heavy mineral content fractions of each sample. It is therefore not fixed and fluctuates between 1.6 and 2.1 as per the formula: <math>SG = 1.544 + (0.009 \times THM)</math>.</li> <li>• Bulk density measurements (compacted and uncompacted) conducted for approximately every 10th sample and moisture content analysed for all samples. Density measurements were taken on 118 samples and give an overall measured Bulk Density of 1.752t/m<sup>3</sup>.</li> </ul>
<b>Classification</b>	<ul style="list-style-type: none"> <li>• The basis for the classification of the Mineral Resources into varying confidence categories.</li> <li>• Whether appropriate account has been taken of all relevant factors (ie relative confidence in tonnage/grade estimations, reliability of input data, confidence in</li> </ul>	<ul style="list-style-type: none"> <li>• The Mineral Resources have been classified as the Measured, Indicated, and Inferred Categories, in accordance with the 2012 Australasian Code for Reporting of Mineral Resources and Ore Reserves (JORC Code).</li> </ul>

Criteria	JORC Code explanation	Commentary
	<p><i>continuity of geology and metal values, quality, quantity and distribution of the data).</i></p> <ul style="list-style-type: none"> <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>A range of criteria has been considered in determining this classification including: <ul style="list-style-type: none"> <li>Geological continuity: <ul style="list-style-type: none"> <li>Areas where bedrock outcrops locally and breaks up the beach sands have been downgraded in classification.</li> </ul> </li> <li>Data quality: <ul style="list-style-type: none"> <li>Where sonic drilling is the sole source of data, higher classification has been applied than areas of mixed sonic and test pits, as the test pits are composite samples of the entire mineralised width.</li> </ul> </li> <li>Drillhole spacing: <ul style="list-style-type: none"> <li>Areas with sonic drilling spaced at 50x25m have been classified Measured</li> <li>Areas with sonic drilling spaced at 100x25m have been classified Indicated.</li> <li>There is no drill hole spacing in the mineralised beaches greater than 100x25m.</li> </ul> </li> <li>Slope of regression of the kriging estimate – this is a measure of the robustness of the estimate: <ul style="list-style-type: none"> <li>Where slope is greater than 0.9, and previous categories have been met, the final resource has been classified as Measured.</li> <li>Where there is a cluster of blocks with slope between 0.7 and 0.9, even if other criteria have been met for higher classification, the resource has been classified as Indicated.</li> <li>Where there is a cluster of blocks where slope is less than 0.7, even if other criteria have been met for higher classification, the resource has been classified as Inferred.</li> </ul> </li> </ul> </li> <li>The results of the validation of the block model shows acceptable correlation of the input data to the estimated grades.</li> <li>The author is confident that all relevant factors have been considered and the results reflect his views.</li> </ul>
<b>Audits or reviews</b>	<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 Mineral Resource has been reviewed internally as part of normal validation processes by MRC.</li> <li>Mr Adriaan du Toit (AEMCO) undertook an independent technical review of the Mineral Resource.</li> <li>This is considered to be a maiden Mineral Resource Estimate under the guidelines of the JORC Code (2012).</li> </ul>
<b>Discussion of relative accuracy / confidence</b>	<ul style="list-style-type: none"> <li><i>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.</i></li> <li><i>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.</i></li> <li><i>These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.</i></li> </ul>	<ul style="list-style-type: none"> <li>The global resource is made of 3 local resources distributed along the beach front (Beaches 5, 7 and 10). Each of the 3 local resources can be mined separately.</li> <li>An in-depth geostatistical study has been completed on this resource, which has allowed for robust estimation and high levels of confidence in the resource.</li> </ul>