

# JORC Code, 2012 Edition – Table 1: Pilivili Deposit

## Indicated Resource/Probable Reserve & Measured Resource/Proved Reserve

31 December 2019

### Section 1 Sampling Techniques and Data

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

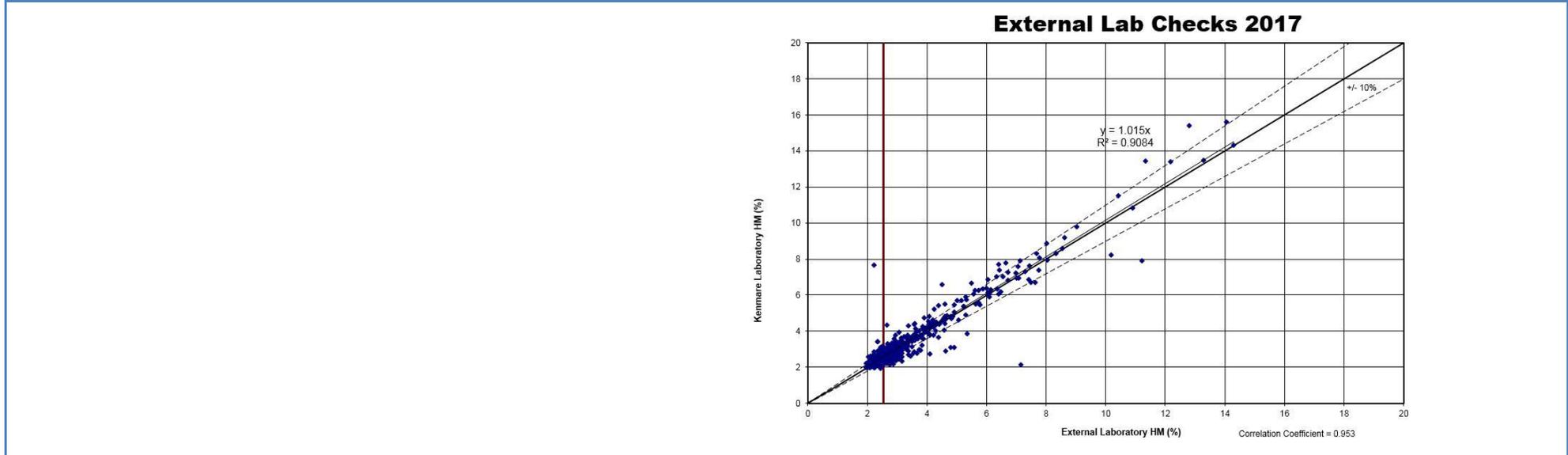
Criteria	JORC Code explanation	Commentary
<b>Sampling techniques</b>	<ul style="list-style-type: none"> <li>Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.</li> </ul>	<ul style="list-style-type: none"> <li>Sampled exclusively by vertical drill holes. The majority of the holes (404 for 6,446 metres) were sampled using Wallis RCD Air-Core drill rig that commenced in 1999, with sampling at 3m interval except where changes in lithology occurred.</li> <li>Between 2015 to 2019, air-core drill samples were taken at 1m intervals from 1,362 holes and 21,603 holes respectively, drilled using Kenmare's EVH 2100 air-core drill rig. Total samples, typically 7 kg, were collected from a cyclone and submitted whole to Kenmare laboratory to be analysed for oversize (+1mm), slimes (-45 micron), and heavy minerals (+2.8 SG). Heavy mineral (HM) mineralogy determined by compositing HM fractions from the drilling samples by geology unit, then analysing magnetic and non-magnetic fractions using XRF.</li> </ul>
	<ul style="list-style-type: none"> <li>Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.</li> </ul>	<ul style="list-style-type: none"> <li>Air-Core Drilling is conducted on a regular grid using air-core drilling technology, an industry standard drilling technique for HM deposits. Drilling rods are 3m long and 3 samples are taken for each rod at 1m intervals with operators taking care to only sample when drilling is progressing to avoid contamination.</li> <li>Cyclone is regularly cleaned during drilling and at the end of hole. Bit and starter rod cleaned by water and air venting at end of each hole.</li> <li>Collar Survey. Collar positions are surveyed using GPS RTK equipment, accurate to within 0.1m in the z direction.</li> </ul>
	<ul style="list-style-type: none"> <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 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual</li> </ul>	<ul style="list-style-type: none"> <li>Heavy mineral mineralisation occurs as disseminated zones within sedimentary units. At Pilivili, the units are deposited as strandlines. Mineralisation is hosted in coastal low line areas and within the frontal dunes. Mineralised zones extend approximately 13.7 kilometres northeast-south-western direction, with minor local variability.</li> <li>The total sample is bagged at the air core rig and transported to the laboratory for splitting and HM determination. This eliminates the risk of inaccuracies caused in field splitting.</li> <li>Downhole sampling is conducted at 1m intervals principally to delineate the edges of the layers for mine planning purposes. This leads to an excess of grade information -</li> </ul>

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	<i>commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.</i>	above what is strictly required for grade estimation for the geological model.
<b>Drilling techniques</b>	<ul style="list-style-type: none"> <li>• <i>Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, 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).</i></li> </ul>	<ul style="list-style-type: none"> <li>• 1999 Wallis drilling and 2015 to 2019 EVH drilling used NQ air-core drilling with hole diameter approx 75mm, all holes are vertical. Air-core drilling is a form of reverse circulation drilling requiring twin tubes, and where the sample is collected from the open face drilling bit and blown up the inner tube. It is well suited to drilling unconsolidated sediments and is one of the few drilling techniques to give good sample quality below the water table. It is the most common method used for mineral sands deposit definition.</li> </ul>
<b>Drill sample recovery</b>	<ul style="list-style-type: none"> <li>• <i>Method of recording and assessing core and chip sample recoveries and results assessed.</i></li> </ul>	<ul style="list-style-type: none"> <li>• For aircore drilling recovery is based on field assessment of sample volume. Samples with good recovery weigh 7-8kg for each metre (7.7 kg theoretical). With aircore method, there is normally lower than average sample recovery at the very top of the drillhole due to air and sample losses into the surrounding soil. Sample recovery below the water table can be greater than 100% as water flowing into the hole causes the hole to have a greater diameter than the drilling bit. With careful management, though, sampling below the water table still gives uncontaminated samples provided the sample stream is only sampled when the bit is cutting new material.</li> <li>• With the disseminated style of mineralisation typical of heavy mineral deposits, it is preferable to have samples of lower volume that are free of contamination, rather than samples of correct sample weight that may be contaminated. Therefore, while drilling the sampling team focuses on ensuring that the sample stream coming from the drilling rig is only sampled when the bit is drilling into new, uncontaminated material. Contamination is most often a problem during rod changes and where there is a high flow of groundwater into the drillhole.</li> </ul>
	<ul style="list-style-type: none"> <li>• <i>Measures taken to maximise sample recovery and ensure representative nature of the samples.</i></li> </ul>	<ul style="list-style-type: none"> <li>• The entire drill sample is delivered to the laboratory for further analysis, thereby eliminating the possibility of sample bias caused by splitting the sample in the field.</li> <li>• Samples are collected in calico bags and allowed to drain and partially dry in the field or in the exploration yard prior to delivery to the laboratory. With very wet samples there can be a slight loss of the slimes fraction through the weave of the cloth of the bag as the sample drains, but this is only a very small fraction of the total slimes in the sample.</li> </ul>
	<ul style="list-style-type: none"> <li>• <i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>• Materials sampled by the air-core drilling rig can be dry, moist or wet. Dry samples may lose some of their slimes fraction due to blowing out of the sampling equipment, but HM and oversize are not affected. Moist drill samples are the most representative as the whole sample is returned as “clumps” of material from the bit face. There is no chance for HM or slimes to segregate in the moist samples, because all of the material</li> </ul>

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		<p>stays stuck together. Wet samples taken from permeable sands and gravels underneath the water table where there is a high flow of water into the drillhole may segregate at the bit face and in the drill string and there is potential for slimes to be washed out of the sample, and for HM to segregate from the quartz sand and to preferentially be flushed out of the system with the other drill spoils at rod changes</p> <ul style="list-style-type: none"> <li>No bias is observed.</li> </ul>
<b>Logging</b>	<ul style="list-style-type: none"> <li><i>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.</i></li> <li><i>Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.</i></li> <li><i>The total length and percentage of the relevant intersections logged.</i></li> </ul>	<ul style="list-style-type: none"> <li>Drillholes are logged in the field. All samples are qualitatively logged for lithology, grainsize, colour, clay content, sorting and a description of any unusual features such as hardness. Sand samples are panned to estimate HM content which is useful as a check on the laboratory analysis, and to determine non-mineralised lithological units in the field. The laboratory also records the colour of the dried samples.</li> <li>Virtually all of the drill samples are sand or sandy clay. Drillhole logs are useful in separating geology units and for checking the laboratory results, but do not provide any information additional to the laboratory data that is fundamentally required for the resource estimation.</li> <li>Information obtained is sufficient to support the level of resource classification</li> </ul>
<b>Sub-sampling techniques and sample preparation</b>	<ul style="list-style-type: none"> <li><i>If core, whether cut or sawn and whether quarter, half or all core taken.</i></li> <li><i>If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.</i></li> </ul>	<ul style="list-style-type: none"> <li>All of the aircore field samples are delivered to the laboratory for analysis. This eliminates the need for field splitting and the possibility of bias from this source.</li> <li>At the laboratory the sample is oven dried then “gently pulverised” by hitting the cloth sample bag with a rubber mallet. The resulting sample is then coarsely sieved at 1 mm and any aggregate lumps broken down so that they pass through the screen. Any genuine oversize (+1mm grains) are weighed at this stage and the oversize% is then calculated on the entire sample. The sample is then dry riffle-split down to a nominal 100g sample size for further analysis.</li> </ul>
	<ul style="list-style-type: none"> <li><i>For all sample types, the nature, quality and appropriateness of the sample preparation technique.</i></li> </ul>	<ul style="list-style-type: none"> <li>Virtually all drill samples consist of sand, clayey sand or sandy clay. For these samples the sample preparation method is appropriate. Very rarely, samples are taken of weathered bedrock, where the sample consists of rock fragments and clay with little sand fraction, and while these samples are slower to analyse, the method still gives relevant results.</li> </ul>
	<ul style="list-style-type: none"> <li><i>Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.</i></li> </ul>	<ul style="list-style-type: none"> <li>All sample preparation stages are documented in standard operating procedures.</li> <li>Employees conducting the work are constantly monitored by their supervisor to ensure standard procedures are being followed.</li> <li>Work is also monitored by geology staff, who work in an adjacent office.</li> <li>Laboratory duplicates are taken as part of Laboratory internal quality control at an approximate rate of 1:20.</li> <li>Geology staff takes blind duplicates at a rate of about 1:20.</li> </ul>

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		<ul style="list-style-type: none"> <li>Details of historic laboratory procedures are not documented, but reference is made to quality checks giving good correlation.</li> </ul>
	<ul style="list-style-type: none"> <li><i>Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.</i></li> </ul>	<ul style="list-style-type: none"> <li>The entire sample is delivered to the lab, so it is representative. Care is taken with the sample collection and handling to ensure that the sample delivered to the laboratory is representative of the interval drilled.</li> </ul>
	<ul style="list-style-type: none"> <li><i>Whether sample sizes are appropriate to the grain size of the material being sampled.</i></li> </ul>	<ul style="list-style-type: none"> <li>The one-metre drill sample of 7kg nominal size is certainly large enough to reliably capture the HM, slimes and oversize characteristics of the in-situ material. Smaller diameter drilling systems have been tested in the past, which gave smaller sample volume; the sample quality was not as good as with NQ system.</li> <li>The portion split at the laboratory is nominally 100g. This is sufficiently large to consistently estimate HM%, but is too small to consistently measure the generally very low percentage of oversize. However, it is sufficient for the level of resource estimate.</li> </ul>
<b>Quality of assay data and laboratory tests</b>	<ul style="list-style-type: none"> <li><i>The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.</i></li> </ul>	<ul style="list-style-type: none"> <li>Sieving to determine +1mm (oversize) and -45micron (slimes).</li> <li>Heavy mineral separation using LST heavy liquid to separate HM from other minerals (predominantly quartz).</li> <li>Control procedures include laboratory duplicates and blind duplicates. LST density is monitored and kept above 2.8 (it is water-soluble).</li> </ul>
	<ul style="list-style-type: none"> <li><i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>Geophysical tools and handheld XRF, etc. are not used. Panning and laboratory analysis are seen as the most appropriate assessment techniques.</li> </ul>
	<ul style="list-style-type: none"> <li><i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>Duplicates (both lab internal, and blind geology duplicates) and external laboratories are used to ensure accuracy and precision.</li> <li>XRF analysis is used to estimate mineralogy. The XRF is calibrated using standards and known samples.</li> <li>Round-robin inter-lab checking.</li> <li>QAQC systems return acceptable results. For HM, 90% of the blind duplicates completed in 2019 were within 16% margin of error for HM, with extremely good correlation (Correlation coefficient of 0.901 for HM) and no bias apparent.</li> <li>Duplicate samples analysed by an external lab in 2017 returned the following comparison, 90% of the samples were within 11% of the assay average value (data limited to assays greater than 2%). The correlation coefficient was 0.95 and there was no significant bias.</li> </ul>

Criteria	JORC Code explanation	Commentary
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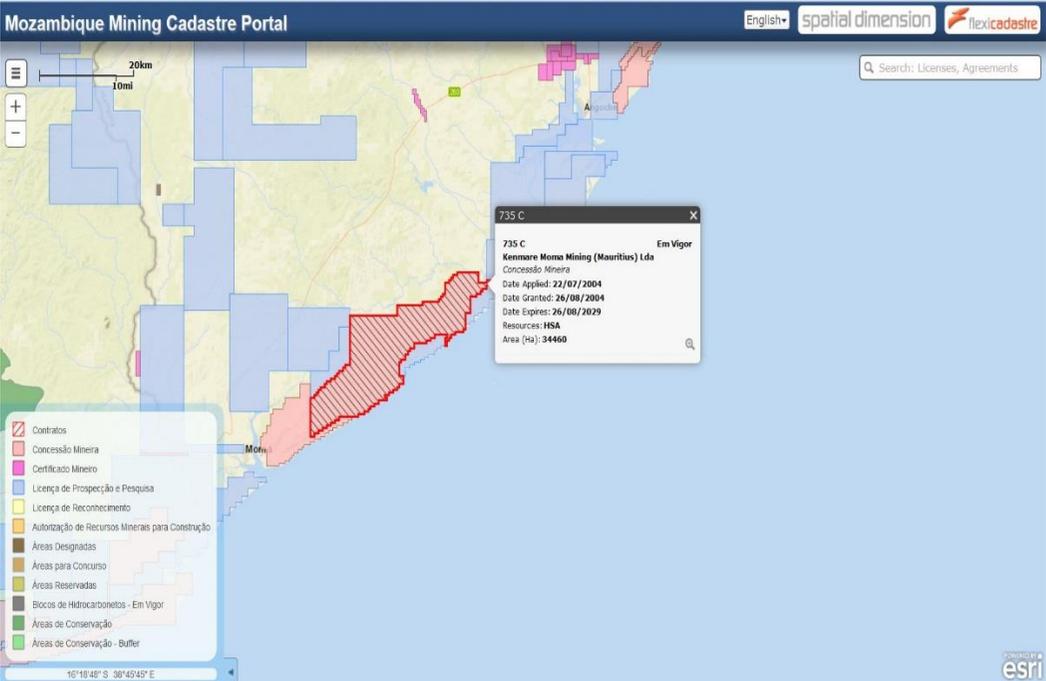
<p><b>Verification of sampling and assaying</b></p>	<ul style="list-style-type: none"> <li>• The verification of significant intersections by either independent or alternative company personnel.</li> <li>•</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Mineral sands drilling involves hundreds or thousands of drillholes with moderate grade intersections. Although high-grade intersections are a relatively insignificant part of the overall mineralisation, high grade results are often checked by examining the HM “sinks” from the analysis (the HM resulting from the analysis process is stored for further testing). Sometimes, especially near weathered bedrock, iron-rich sediments and concretions can give false positive HM values. False positives are excluded or re-assayed.</li> </ul>
	<ul style="list-style-type: none"> <li>• The use of twinned holes.</li> </ul>	<ul style="list-style-type: none"> <li>• A total of 17 twin holes were drilled in the 2015 program to check the pre-existing drilling. HM correlation for all samples is 0.41. Slimes correlation coefficient is 0.32. However, the 2015 to 2019 drilling programs have redrilled historic Wallis holes.</li> </ul>
	<ul style="list-style-type: none"> <li>• Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.</li> </ul>	<ul style="list-style-type: none"> <li>• The primary data storage is in a Microsoft Access database. Collar data, assay data and mineralogy data are loaded from separate sources and verified with queries designed to detect common errors. Data is then loaded into mining software (Datamine Studio RM) and geologists check the resulting cross sections to ensure drillholes are correctly positioned and assays are appropriate for the geology unit and location.</li> </ul>
	<ul style="list-style-type: none"> <li>• Discuss any adjustment to assay data.</li> </ul>	<ul style="list-style-type: none"> <li>• No adjustment is made to the assay data for the purposes of public reporting.</li> </ul>

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<b>Location of data points</b>	<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>• A RTK GPS system was used to survey the drillholes.</li> <li>• The grid is UTM37S (WGS84)</li> <li>• The grid is tied into the national Mozambican topographic controls via a number of beacons setup around site. However, these are rarely used as the satellite-based GPS system is primarily used for drillhole surveys. The base station for this has been levelled using a nearby beacon. A difference of +/- a few metres relative to the national grid is not a concern because the regional topographic data is never used in any case.</li> </ul>
<b>Data spacing and distribution</b>	<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>• No Exploration Results are reported.</li> <li>• Variograms in the main mineralised units show X range of 193m and Y range of 500m</li> <li>• Drill spacings are nominally 500m x 50m. However, 50m x 50m drill spacing commenced in 2018 and continued in 2019, to increase the level of confidence in determining the mining floor.</li> <li>• Measured Resource is THM &gt;2% at 100 x 50m spacing and with mineralogical data; Indicated Resource is THM &gt;2% at 500 x 50m spacing and with mineralogical data; and Inferred Resources have THM &gt;2% at 500 x 50m spacing and with or without mineralogical data – but also has within the classification polygon higher proportion of resource blocks with THM &lt; 2%.</li> <li>• In view of the variogram ranges, the 193m x 500m spacing is appropriate for Measured and Indicated Resource status.</li> <li>• There is a moderate degree of confidence in the continuity of mineralisation in areas tested at drill spacing of 500m x 50m and an Inferred Resource classification is appropriate.</li> <li>• Sample compositing has not been used in the modelling process for HM, Slimes and Oversize components of the ore.</li> <li>• Compositing is used to determine mineralogy, but this is far less variable than the HM content, and is appropriate.</li> </ul>
<b>Orientation of data in relation to geological structure</b>	<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>• The mineralisation has a general NE – SW elongate trend with the main mineralisation 13.7km long by 2.6km wide</li> <li>• Most of the drilling is aligned with the UTM grid with the 50m spacing across strike and 500m spacing along strike. The grid spacing is suitable for the orebody shape.</li> </ul>
<b>Sample security</b>	<ul style="list-style-type: none"> <li>• The measures taken to ensure sample security.</li> </ul>	<ul style="list-style-type: none"> <li>• Samples are sun dried in calico bags and then stored in weather-proof shelters.</li> <li>• HM recovered from the analysis of samples is stored and retrieved as required for mineralogical analysis.</li> </ul>

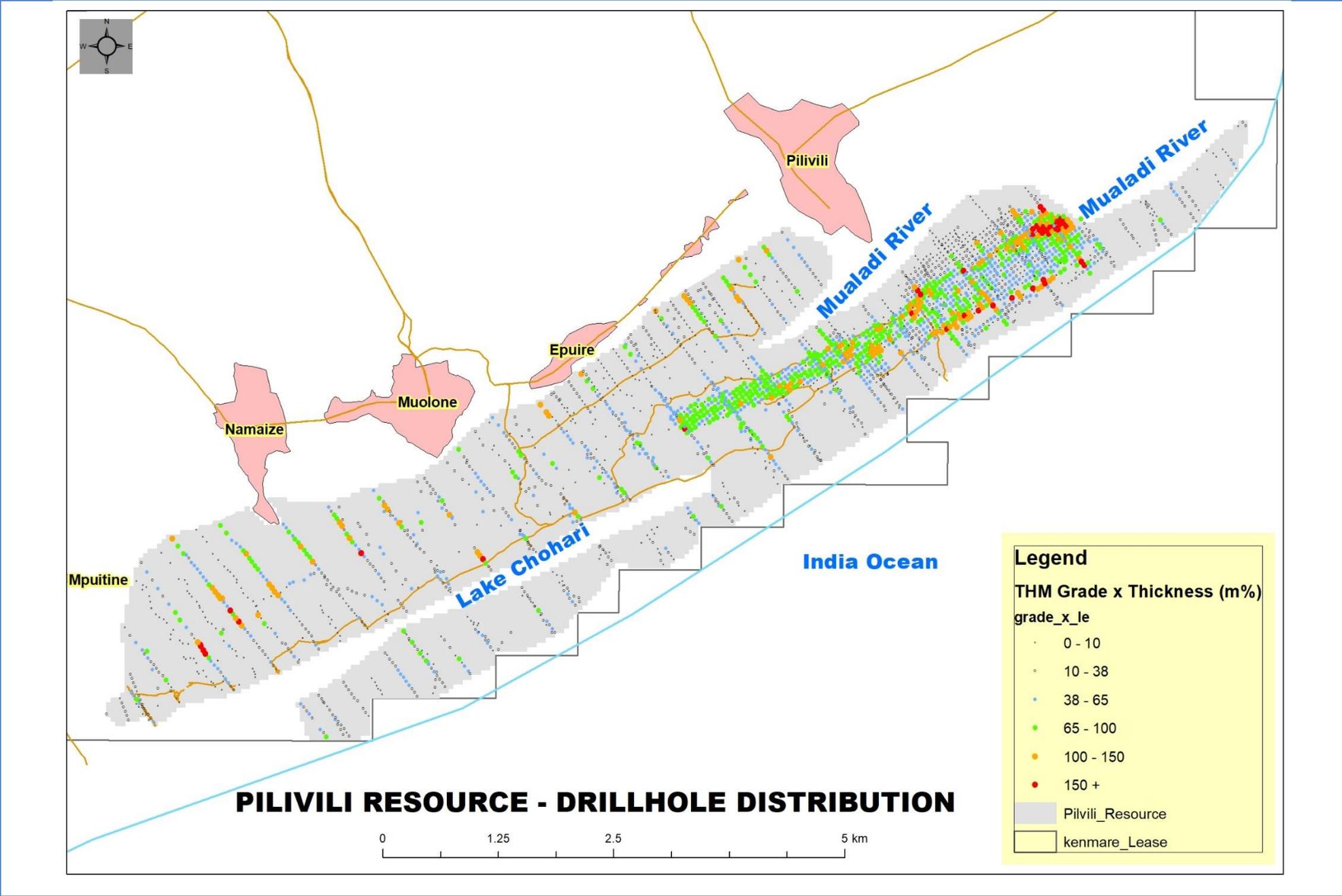
Criteria	JORC Code explanation	Commentary
		<ul style="list-style-type: none"> <li>Sample bags remain in Kenmare custody from drill rig to laboratory.</li> </ul>
<b>Audits or reviews</b>	<ul style="list-style-type: none"> <li>The results of any audits or reviews of sampling techniques and data.</li> </ul>	<ul style="list-style-type: none"> <li>No audits conducted specifically for sampling.</li> </ul>

## Section 2 Reporting of Exploration Results

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

Criteria	JORC Code explanation	Commentary
<b>Mineral tenement and land tenure status</b>	<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 park 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>Concessão mineira (Mining Concession) No. 735C held by Kenmare resources subsidiary Kenmare Moma Mining, as shown below:</li> </ul>  <ul style="list-style-type: none"> <li>The Mining Concession is valid until 28 August 2029.</li> </ul>

Criteria	JORC Code explanation	Commentary
<b>Exploration done by other parties</b>	<ul style="list-style-type: none"> <li><i>Acknowledgment and appraisal of exploration by other parties.</i></li> </ul>	<ul style="list-style-type: none"> <li>In 1997 BHP carried out hand auger exploration program in the Pilivilili area. However, in 1998, Kenmare took over from BHP and also carried out extensive hand auger program.</li> </ul>
<b>Geology</b>	<ul style="list-style-type: none"> <li><i>Deposit type, geological setting and style of mineralisation.</i></li> </ul>	<p>Pilivilili resource is a strand line deposit within the progradational sediments between the Old Red Dune in the North Northwest, and the current coast. Mineralisation is hosted in low lying swampy sands, and within the frontal coastal dunes. The mineralised sands are tan to yellow in colour, well sorted, fine grained, with moderate to low slimes content. The Old Red Dune forms the North North-western ridge of the edge of the deposit, and there is a pronounced escarpment in this unit on its seaward SE-facing side. At the base of the escarpment is a well-defined strandline containing the highest grades of the deposit. Underlying the base of the ore there is weathered basalt/andesite with thin layers of intermittent grits and clays at the interface.</p>
<b>Drill hole Information</b>	<ul style="list-style-type: none"> <li><i>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:</i> <ul style="list-style-type: none"> <li><i>easting and northing of the drill hole collar</i></li> <li><i>elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar</i></li> <li><i>dip and azimuth of the hole</i></li> <li><i>down hole length and interception depth</i></li> <li><i>hole length.</i></li> </ul> </li> <li><i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>Delineation of heavy mineral deposits requires numerous shallow drillholes, most of them with moderate or low-grade intercepts. A total of 28,049m have been drilled at Pilivilili with 766 holes. The information is best presented in plan view, where all the relevant information can be presented in a more concise form - see drill plan below. The plan summarises the grade information as a “metal factor”, classified by grade x thickness. The grade is HM%, with a threshold at 2% HM (values below this are not included and would give a “0” value). The thickness value is the total aggregate intercept in the drillhole exceeding the 2% threshold. Only those depth intervals exceeding 2% HM are included in the thickness value.</li> </ul>



Criteria	JORC Code explanation	Commentary
<b>Data aggregation methods</b>	<ul style="list-style-type: none"> <li><i>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.</i></li> <li><i>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.</i></li> <li><i>The assumptions used for any reporting of metal equivalent values should be clearly stated.</i></li> </ul>	<ul style="list-style-type: none"> <li>No exploration results are being reported for this deposit.</li> </ul>
<b>Relationship between mineralisation widths and intercept lengths</b>	<ul style="list-style-type: none"> <li><i>These relationships are particularly important in the reporting of Exploration Results.</i></li> <li><i>If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.</i></li> <li><i>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').</i></li> </ul>	<ul style="list-style-type: none"> <li>The drillholes are vertical and the mineralisation is generally sub-horizontal.</li> </ul>
<b>Diagrams</b>	<ul style="list-style-type: none"> <li><i>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.</i></li> </ul>	See drillhole plan above.
<b>Balanced reporting</b>	<ul style="list-style-type: none"> <li><i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>Exploration data is not being reported. Only Inferred and Indicated Resources are the subject of this report.</li> </ul>
<b>Other substantive exploration data</b>	<ul style="list-style-type: none"> <li><i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>There is no other relevant exploration data for this area.</li> </ul>

Criteria	JORC Code explanation	Commentary
<b>Further work</b>	<ul style="list-style-type: none"> <li>• <i>The nature and scale of planned further work (e.g. tests for lateral extensions or depth extensions or large-scale step-out drilling).</i></li> <li>• <i>Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.</i></li> </ul>	<ul style="list-style-type: none"> <li>• Detailed close space drilling (50m x 50m) will continue to ascertain trend of mineralisation within the deposit and for grade control to determine mineability properties.</li> <li>• The resource is limited in lateral extent to the north northwest because the mineralised geological units do not occur further in these directions. Mineralisation does extend south southwest and north northeast. The southern limit is bounded by the Indian Ocean coastline. Furthermore, drilling will be undertaken on Lake Chohari and Mualadi River beds to determine grade of mineralisation.</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>• <i>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.</i></li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• The primary measure to avoid data corruption is the input and storage of all sample data in a relational database. Checks are made on all data input into the database to ensure data integrity. The final check is the visual presentation of the new data in cross section, where geologists confirm that the information matches the expected results for the unit and location, the logged data, and is consistent with previously generated information for that area.</li> </ul>
	<ul style="list-style-type: none"> <li>• <i>Data validation procedures used.</i></li> </ul>	<ul style="list-style-type: none"> <li>• Database integrity rules for all input data &amp; visual checking of new data in cross section.</li> </ul>
<b>Site visits</b>	<ul style="list-style-type: none"> <li>• <i>Comment on any site visits undertaken by the Competent Person and the outcome of those visits.</i></li> <li>• <i>If no site visits have been undertaken indicate why this is the case.</i></li> </ul>	<ul style="list-style-type: none"> <li>• The Competent Person is currently a full-time employee of Kenmare Resources and works at the site. He has had sufficient exposure to the drilling and sampling practices to be satisfied as to the suitability for this data to be used in resource estimation.</li> </ul>
<b>Geological interpretation</b>	<ul style="list-style-type: none"> <li>• <i>Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.</i></li> </ul>	<ul style="list-style-type: none"> <li>• The resource model is fundamentally based on the geology interpretation. The units making up the geological model are modelled separately.</li> <li>• The geology consists of two units that are easy to distinguish from basement units on their position in the profile.</li> </ul>
	<ul style="list-style-type: none"> <li>• <i>Nature of the data used and of any assumptions made.</i></li> </ul>	<ul style="list-style-type: none"> <li>• The geology data is used, including elevation, lithology, clay content, colour, HM content and oversize content.</li> <li>• Variogram data is used to set the parameters for HM estimation in the different units.</li> </ul>
	<ul style="list-style-type: none"> <li>• <i>The effect, if any, of alternative interpretations on Mineral Resource estimation.</i></li> </ul>	<ul style="list-style-type: none"> <li>• The drill data is relatively closely spaced and so alternative interpretations have little effect on the model.</li> </ul>
	<ul style="list-style-type: none"> <li>• <i>The use of geology in guiding and controlling</i></li> </ul>	<ul style="list-style-type: none"> <li>• The geology model is used as the over-riding control in the resource estimation. The</li> </ul>

Criteria	JORC Code explanation	Commentary																								
	<i>Mineral Resource estimation.</i>	geology units are modelled separately.																								
	<ul style="list-style-type: none"> <li><i>The factors affecting continuity both of grade and geology.</i></li> </ul>	<ul style="list-style-type: none"> <li>The mineralisation was deposited in sand dunes formed parallel to the coastline and a strand at the base of the dunes. In the dunes the grade is disseminated with general trends following the direction of the dunes. At a smaller scale there is some local variation related to individual dune formation. However, grade trends are generally elongate and tabular.</li> <li>The strands are more elongated, but tend to be similar in shape to the dunal mineralisation.</li> </ul>																								
<b>Dimensions</b>	<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>Mineralisation has been defined over 13.7 km strike length in a NE-SW direction and varies between 2.6km and 0.5km wide. The Base of Mineralisation extends from about -1 mASL up to 65 mASL.</li> </ul>																								
<b>Estimation and modelling techniques</b>	<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> </ul>	<ul style="list-style-type: none"> <li>The current resource model is a block model where the block estimates have been calculated using Simple Kriging algorithm.</li> <li>The key assumptions are that the grade is continuous within the ellipsoid used to select samples. Ranges for the x, y and z directions are determined using Variography.</li> <li>The SK model estimates grades in blocks using variances, weighted distances and nugget effect calculated from variogram analysis.</li> <li>Extreme values are not cut in this model.</li> <li>Simple Kriging Interpolation Factors for Pilivilil geology block model.</li> </ul> <table border="1"> <thead> <tr> <th>UNIT</th> <th>VARIABLE</th> <th>EST. METHOD</th> <th>SEARCH DIST. X-DIRECTION</th> <th>SEARCH DIST. Y-DIRECTION</th> <th>SEARCH DIST. Z-DIRECTION</th> <th>MIN NUMBER OF POINTS</th> <th>MAX NUMBER OF POINTS</th> </tr> </thead> <tbody> <tr> <td>2</td> <td>HMIN</td> <td>SK</td> <td>385.5</td> <td>500</td> <td>7</td> <td>1</td> <td>20</td> </tr> <tr> <td>6</td> <td>HMIN</td> <td>SK</td> <td>193.1</td> <td>400</td> <td>7</td> <td>1</td> <td>20</td> </tr> </tbody> </table>	UNIT	VARIABLE	EST. METHOD	SEARCH DIST. X-DIRECTION	SEARCH DIST. Y-DIRECTION	SEARCH DIST. Z-DIRECTION	MIN NUMBER OF POINTS	MAX NUMBER OF POINTS	2	HMIN	SK	385.5	500	7	1	20	6	HMIN	SK	193.1	400	7	1	20
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	<ul style="list-style-type: none"> <li><i>The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.</i></li> </ul>	<ul style="list-style-type: none"> <li>Two previous estimates have been undertaken for Pilivilil orebody. The first was a manual polygonal estimate undertaken in 2004, and the second a block model estimated in 2009 using ID<sup>3</sup> interpolation. Both estimates did not match each other as the manual estimate's ore boundary covered hand auger drilled hole locations (though the hand auger grades were not included in the estimate), while the ID<sup>3</sup> ore boundary was confined to the Wallis aircore drilled hole locations.</li> <li>Since 2015 there is yearly update of the Pilivilil resource estimate based on new data from EVH aircore drilling program (within and outside the lateral area covered by the manual estimate), and also based on the 2001 Wallis aircore drilled samples. Additionally, the current updated block model for 2019 used the latest 2018 LiDAR</li> </ul>																								

Criteria	JORC Code explanation	Commentary
		topographic survey data together with additional 50x50m infill drilling data
	<ul style="list-style-type: none"> <li><i>The assumptions made regarding recovery of by-products.</i></li> </ul>	<ul style="list-style-type: none"> <li>The main products are ilmenite, zircon and rutile. None of these are regarded as “by-products”. No other minerals are considered as potential by-products in this estimate.</li> </ul>
	<ul style="list-style-type: none"> <li><i>Estimation of deleterious elements or other non-grade variables of economic significance (eg sulphur for acid mine drainage characterisation).</i></li> </ul>	<ul style="list-style-type: none"> <li>Ilmenite TiO<sub>2</sub> quality is estimated during the mineralogy determination. Problematic trash minerals such as kyanite, chromite, and monazite are estimated using stoichiometric chemical analysis.</li> <li>The Piliivil orebody is well oxidised and no sign of potentially acid sulphate soils have been observed. This accords with the experience at the Namalope mine which is located in similarly oxidised sediments.</li> </ul>
	<ul style="list-style-type: none"> <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></li> </ul>	<ul style="list-style-type: none"> <li>The block model uses 25m x 25m x 1m parent block size. Sub-celling has been allowed to allow good fit to the wireframes.</li> <li>The Piliivil deposit will be mined by both dredging and dry mining methods. The proposed dredge for Piliivil typically sweeps a channel 75m wide at the base. The drill spacing and block sizes are appropriate for evaluating both types of mining.</li> </ul>
	<ul style="list-style-type: none"> <li><i>Any assumptions about correlation between variables.</i></li> </ul>	<ul style="list-style-type: none"> <li>The mineralogy is determined on a HM basis (e.g. an ilmenite content of 80% of the HM), and then multiplied by the HM content to obtain the in-situ estimate for each of the minerals. The mineralogy is much less variable than the HM content and so this is an appropriate way of determining in-situ estimates for each of the different minerals.</li> </ul>
	<ul style="list-style-type: none"> <li><i>Description of how the geological interpretation was used to control the resource estimates.</i></li> </ul>	<ul style="list-style-type: none"> <li>Block modelling is constrained within the geology units – including using only the sample values from that unit, and the variogram range parameters specific to that unit.</li> </ul>
	<ul style="list-style-type: none"> <li><i>Discussion of basis for using or not using grade cutting or capping.</i></li> </ul>	<ul style="list-style-type: none"> <li>The samples are not capped in order to have all mineralogical grades influencing the estimation process. In general capping is not necessary for this type of deposit as grades are not significantly variable and volume-variance is low.</li> </ul>
	<ul style="list-style-type: none"> <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>	<ul style="list-style-type: none"> <li>The block model is aggregated vertically into a two-dimensional display and the results compared with the previous version of the model.</li> <li>The block model is aggregated vertically into a two-dimensional display and the resulting grades are compared to the drill samples.</li> <li>SWATH analysis comparing drill hole data and resource model data is undertaken for all lithological units</li> </ul>
<b>Moisture</b>	<ul style="list-style-type: none"> <li><i>Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.</i></li> </ul>	<ul style="list-style-type: none"> <li>Tonnages are estimated dry.</li> </ul>

Criteria	JORC Code explanation	Commentary
<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>All drill values within the mineralized zone were included in the model, and only those zones that averaged 2% HM or above were included in the resource estimate.</li> <li>Cut-off grades are calculated using applicable contract prices under KMPL's existing contracts and current operating costs. The marginal economic cut-off grade is actually 1.4% HM, but within the mineralised units, there is very little material which is below 2% and this is used to balance with MSP production.</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>The resource is considered as probable dredge feed. For dredge mining, the ore must be greater than 5m thick and typically be wider than 180m. Dredge mining must proceed continuously so all of the ore zones must be connected, unless a channel is to be constructed. In general dredge feed should have less than 14% average slimes content, making Pilivilili very amenable to this mining method. However, other options such as "Dozer Trap" or other dry mining methods have not been eliminated.</li> <li>Previous economic evaluation of the Indicated and Measured Resource areas, based on current Kenmare operational data and first principal estimates has shown that either method may reasonably assume to produce an economic project.</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>During the PFS conducted by Hatch, metallurgical test work was undertaken by Mineral Technologies for design of a 1000tph spiral concentrator. A three-stage circuit was shown to be capable of producing HMC at the same levels recoveries and concentrations achieved by Kenmare's current WCPs.</li> <li>No detailed metallurgical recovery assessment has been undertaken on the HMC produced above. However, Kenmare Resources operates an active mine on its Namalope deposit and the natural variability of the Pilivilili HM falls within the range of the Namalope ores. Thus, Kenmare is sufficiently familiar with the nature and type of minerals present to be confident that the Pilivilili mineralogy will be recoverable in the current MSP with the same efficiency as currently obtained.</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 Greenfields project, may not always be well advanced, the status of early consideration of these potential</li> </ul>	<ul style="list-style-type: none"> <li>Tailings sand from the Wet Concentrator plant are deposited immediately behind the dredges in separate paddocks. Slimes which may build up at times in the paddocks will be pumped to drying cells within the tailing's areas. Mineral Separation Plant tailings are mixed in with the mine sand tailings within Namalope tails management area.</li> <li>The local vegetation environment generally consists of bare dune sparsely vegetated dune and minor scrubby coastal heathland. Where available, topsoil stripped from in front of the mining operations will be placed on the dry tailings sand behind the mine and then regrowth encouraged from the natural seed bank in the soil. Running across Pilivilili deposit is River Mualadi and Lake Chohari. DFS level studies have identified the</li> </ul>

Criteria	JORC Code explanation	Commentary
	<i>environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.</i>	environmental impacts of mining to the river and Lake; the study also provided mitigation measures as approved in the Pilivilil EIA.
<b>Bulk density</b>	<ul style="list-style-type: none"> <li>• <i>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.</i></li> <li>• <i>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.</i></li> <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>• An assumed bulk density of 1.7 t/m<sup>3</sup> is used for the block model. In 1989 two samples were tested that gave average density values of about 1.6 t/m<sup>3</sup>. However, these samples were generally taken from the top few metres of the profile. In 2017, 28 undisturbed samples were collected from pits for bulk density analysis with results varying between 1,418.67kg/m<sup>3</sup> to 1,777.78 kg/m<sup>3</sup>, which is typically loose to very loose sand. A similar result was obtained for the Namalope deposit.</li> <li>• During the first year of production at Namalope, the tonnes mined by the dredges were reconciled to early geology models that used a density of 1.6. Both the measured feed tonnage and the HM production levels indicated that the ore density was higher than 1.6, and close to 1.7. Therefore, since that time the models have used an assumed density of 1.7 and there have been no further problems with tonnage estimation of the model. By analogy a similar result is expected when the full profile at Pilivilil is mined, therefore the standard density has been maintained.</li> </ul>
<b>Classification</b>	<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 (ie 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 Pilivilil deposit is divided into Measured, Indicated and Inferred resources on the basis of the drilling spacing, %HM (&gt;2%) and HM mineralogy percentage. Measured Resource is THM &gt;2% at 100 x 50m spacing and with mineralogical data; Indicated Resource is THM &gt;2% at 500 x 50m spacing and with mineralogical data; and Inferred Resources have THM &gt;2% at 500 x 50m spacing and with or without mineralogical data – but also has within the classification polygon higher proportion of resource blocks with THM &lt; 2%.</li> <li>• In the view of the Competent Person, all of the relevant factors have been considered in making the classification.</li> <li>• The current classification reflects the view of the Competent Person.</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>• SRK of Cardiff has audited Resources at Kenmare (including Pilivilil) and found no substantive issues with the techniques applied.</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</i></li> </ul>	<ul style="list-style-type: none"> <li>• Overall accuracy is expected to be good at the global level as there is generally very little variability in the grades. Overall the model is similar, but conservative, in average HM grade estimation when compared to drill data mean (3.69% v 5.27%) respectively.</li> <li>• Mineralogy data is likewise very constant in terms of the mineral species contents and is not likely to change significantly. Ilmenite quality is also reasonably consistent.</li> <li>• The Company's experience of mining Unit 6 and 2 material at the Namalope orebody since 2013 has shown that the actual grade determined from feed samples is on</li> </ul>

Criteria	JORC Code explanation	Commentary
	<p><i>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></p> <ul style="list-style-type: none"> <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>	<p>average within +/- 1% of the predicted grade. No direct production data is available for the Pilivilil deposit, but this is seen as reasonable confirmation of the estimation techniques.</p>

## Section 4 Estimation and Reporting of Ore Reserves

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

Criteria	JORC Code explanation	Commentary
<i>Mineral Resource estimate for conversion to Ore Reserves</i>	<ul style="list-style-type: none"> <li><i>Description of the Mineral Resource estimate used as a basis for the conversion to an Ore Reserve.</i></li> <li><i>Clear statement as to whether the Mineral Resources are reported additional to, or inclusive of, the Ore Reserves.</i></li> </ul>	<ul style="list-style-type: none"> <li>The Pilivilil resource model is used as the basis for the Pilivilil Reserves. This model has been generated in Datamine Studio RM software and mining designs applied using Datamine 5D Planner software. A series of schedule blocks have been overlain on the model, along the mining path. The material above the mining design is subjected to mining factors and the resulting reserves are scheduled into monthly advance blocks.</li> </ul>
<i>Site visits</i>	<ul style="list-style-type: none"> <li><i>Comment on any site visits undertaken by the Competent Person and the outcome of those visits.</i></li> <li><i>If no site visits have been undertaken indicate why this is the case.</i></li> </ul>	<ul style="list-style-type: none"> <li>The competent person is a full-time employee of Kenmare Resources and is based at the Moma mine site.</li> </ul>
<i>Study status</i>	<ul style="list-style-type: none"> <li><i>The type and level of study undertaken to enable Mineral Resources to be converted to Ore Reserves.</i></li> <li><i>The Code requires that a study to at least Pre-Feasibility Study level has been undertaken to convert Mineral Resources to Ore Reserves. Such studies will have been carried out and will have determined a mine plan that is technically achievable and economically viable, and that</i></li> </ul>	<ul style="list-style-type: none"> <li>In 2017 a Pre-Feasibility Study (PFS) followed by a DFS (in 2018) were carried out by Hatch Africa (Proprietary) Limited (Hatch) in conjunction with Kenmare and specialist third party consultants.</li> <li>In 2017 Environmental Consultants Coastal and Environmental Services Lda (CES) were commissioned to conduct environmental studies aimed at producing an Environmental, Social and Health Impact Assessment (EHSIA) for submission to Mozambican Authorities to obtain mining approval.</li> </ul>

Criteria	JORC Code explanation	Commentary
	<i>material Modifying Factors have been considered.</i>	
<i>Cut-off parameters</i>	<ul style="list-style-type: none"> <li><i>The basis of the cut-off grade(s) or quality parameters applied.</i></li> </ul>	<ul style="list-style-type: none"> <li>The marginal economic cut-off grade for dredging is 1.4% HM, however the resource model uses 2% HM as this is a “natural” cut-off and it provides an optimum balance between mine output and MSP consumption.</li> </ul>
<i>Mining factors or assumptions</i>	<ul style="list-style-type: none"> <li><i>The method and assumptions used as reported in the Pre-Feasibility or Feasibility Study to convert the Mineral Resource to an Ore Reserve (i.e. either by application of appropriate factors by optimisation or by preliminary or detailed design).</i></li> <li><i>The choice, nature and appropriateness of the selected mining method(s) and other mining parameters including associated design issues such as pre-strip, access, etc.</i></li> <li><i>The assumptions made regarding geotechnical parameters (eg pit slopes, stope sizes, etc), grade control and pre-production drilling.</i></li> <li><i>The major assumptions made and Mineral Resource model used for pit and stope optimisation (if appropriate).</i></li> <li><i>The mining dilution factors used.</i></li> <li><i>The mining recovery factors used.</i></li> <li><i>Any minimum mining widths used.</i></li> <li><i>The manner in which Inferred Mineral Resources are utilised in mining studies and the sensitivity of the outcome to their inclusion.</i></li> <li><i>The infrastructure requirements of the selected mining methods.</i></li> </ul>	<ul style="list-style-type: none"> <li>Most of the ore in the reserves will be dredge mined. For this mining method, the dredge floor level is taken as the base of the geological unit hosting mineralisation. This is appropriate because the rose-wheel cutter on the mining dredges is easily able to cut to the low slope angles found on these horizons. The dredge path is planned to maximize ore recovery, although in-situ bunds are left between mining strips to ensure geotechnical stability of the operation. Ore faces are planned at 30 degrees to the horizontal, and from experience in these materials, this has been found to be a stable angle. The top of the in-situ bund is planned to reach the same level as the natural surface, and where the dredging strip turns on itself, a top width of 100m is planned on the berm in order to place infrastructure and have secure dredge anchor positions during the turn.</li> <li>A small portion of the reserves will be Dry Mined. The equipment used for Dry Mining at Moma works best with ore of low slimes (less than 15%) and dry or moist ore from above the water table.</li> <li>Topsoil losses are planned according to 100mm topsoil stripping depth. Total remaining mining losses (dredge spillage, excavation losses, berm losses) are planned to be 10%.</li> <li>No dilution factors used in the production schedule or the reserves.</li> <li>For dredging, the mining path must be at least 300m wide on the dredge floor. The minimum dredging depth is 5m, dredge pond freeboard is 1m.</li> <li>No Inferred Resources are included in the Pilivilil Reserves.</li> <li>Dredge and Dry Mining both require electricity and water infrastructure. Electricity will be provided from 22 KV overhead powerlines, which will be erected along the mining path and connect the mining operations with the main substation at the Kenmare MSP. Water will be provided from a borefield and pumped to the mining site via HDPE piping and regularly spaced booster pumps</li> </ul>
<i>Metallurgical factors or assumptions</i>	<ul style="list-style-type: none"> <li><i>The metallurgical process proposed and the appropriateness of that process to the style of mineralisation.</i></li> <li><i>Whether the metallurgical process is well-tested technology or novel in nature.</i></li> <li><i>The nature, amount and representativeness of metallurgical test work undertaken, the nature of the metallurgical domaining applied and the</i></li> </ul>	<ul style="list-style-type: none"> <li>The ore sand will be treated initially in the Wet Concentrator Plant (WCP). The ore slurry will be initially screened to remove any cemented or clay-rich lumps, then pumped over spirals to concentrate heavy minerals. After five stages of spiral concentration, the heavy mineral concentrate will be pumped 20km to the Mineral Separation Plant (MSP).</li> <li>Pilivilil ore has not been mined yet. However, the nearby Namalope Reserves is treated within the MSP as follows and the Pilivilil ore is expected to be amenable to this treatment.</li> </ul>

Criteria	JORC Code explanation	Commentary
	<p><i>corresponding metallurgical recovery factors applied.</i></p> <ul style="list-style-type: none"> <li>• <i>Any assumptions or allowances made for deleterious elements.</i></li> <li>• <i>The existence of any bulk sample or pilot scale test work and the degree to which such samples are considered representative of the orebody as a whole.</i></li> <li>• <i>For minerals that are defined by a specification, has the ore reserve estimation been based on the appropriate mineralogy to meet the specifications?</i></li> </ul>	<ul style="list-style-type: none"> <li>• At the MSP, the magnetic minerals are separated from the non-magnetic, and then various electrostatic and gravity separation techniques are used to produce saleable mineral products: ilmenite, zircon and rutile. Ilmenite is magnetic and conductive, rutile is non-magnetic and conductive and zircon is non-magnetic and non-conductive.</li> <li>• Ilmenite, zircon and rutile recovery is typically 86% - 92% through the WCP.</li> <li>• Ilmenite recovery is typically 88% through the MSP; zircon recovery is 61.4% and Rutile 30%.</li> <li>• The Namalope reserves are part of an on-going operation and recoveries used are based on recent plant performance. Metallurgical studies conducted during the DFS and subsequent expansion studies accurately predicted product quality and recoveries.</li> <li>• Ilmenite contaminants (mostly chromite, monazite &amp; staurolite) are managed with grade control processes in the MSP.</li> <li>• Zircon contaminants (Kyanite, rutile) and rutile contaminants (zircon, monazite) are also closely monitored and controlled.</li> <li>• Planned recoveries of ilmenite, zircon and rutile are based on achieving marketable levels of contaminants.</li> </ul>
<i>Environmental</i>	<ul style="list-style-type: none"> <li>• <i>The status of studies of potential environmental impacts of the mining and processing operation. Details of waste rock characterisation and the consideration of potential sites, status of design options considered and, where applicable, the status of approvals for process residue storage and waste dumps should be reported.</i></li> </ul>	<p>The EHSIA conducted by CES has been finalised and has highlighted several impacts both on social and environmental grounds, but has not identified any impacts that would prevent the project from proceeding.</p>
<i>Infrastructure</i>	<ul style="list-style-type: none"> <li>• <i>The existence of appropriate infrastructure: availability of land for plant development, power, water, transportation (particularly for bulk commodities), labour, accommodation; or the ease with which the infrastructure can be provided, or accessed.</i></li> </ul>	<p>Pilivilil deposit is located close to the existing Namalope mine site. Operations at Pilivilil will require extension of existing power lines and establishment of access suitable for heavy equipment access. Kenmare has a policy of employing and training local labour wherever possible and an adequate labour pool is available either from the local communities or within the wider area. Kenmare is well versed in training of unskilled and semi-skilled personnel and has over 10 years' experience.</p>
<i>Costs</i>	<ul style="list-style-type: none"> <li>• <i>The derivation of, or assumptions made, regarding projected capital costs in the study.</i></li> </ul>	<p>Capital costs were estimated on the basis of DFS level engineering studies conducted by Hatch and sub-contractors.</p>
	<ul style="list-style-type: none"> <li>• <i>The methodology used to estimate operating costs.</i></li> </ul>	<p>Operating costs were estimated from Kenmare's existing operations using current (2019) Financial information and manning rosters drawn up by Kenmare.</p>
	<ul style="list-style-type: none"> <li>• <i>Allowances made for the content of deleterious elements.</i></li> </ul>	<p>Product pricing for zircon and ilmenite will depend on the content of deleterious elements. These prices have been built into the business model using Kenmare's internal marketing knowledge and forecasts from respected industry consultants.</p>

Criteria	JORC Code explanation	Commentary
	<ul style="list-style-type: none"> <li>The source of exchange rates used in the study.</li> </ul>	For the current economic model: Bloomberg forward FX Rates
	<ul style="list-style-type: none"> <li>Derivation of transportation charges.</li> </ul>	Assumed pumping of HMC to MSP using known power prices and power factors.
	<ul style="list-style-type: none"> <li>The basis for forecasting or source of treatment and refining charges, penalties for failure to meet specification, etc.</li> </ul>	Treatment costs based on known costs from current MSP operation. Lower prices for products with higher levels of contaminants have been forecast based on current contracts.
	<ul style="list-style-type: none"> <li>The allowances made for royalties payable, both Government and private.</li> </ul>	Government royalties will be payable, charged at 3% of the operating costs of the mine inflated by 15%.
Revenue factors	<ul style="list-style-type: none"> <li>The derivation of, or assumptions made regarding revenue factors including head grade, metal or commodity price(s) exchange rates, transportation and treatment charges, penalties, net smelter returns, etc.</li> <li></li> </ul>	Commodity prices from Kenmare internal database and respected industry forecasters. Transportation and other charges are based on current Kenmare shipping costs and quality penalties.
	<ul style="list-style-type: none"> <li>The derivation of assumptions made of metal or commodity price(s), for the principal metals, minerals and co-products.</li> </ul>	Mineral prices were based on existing contracts, historic price trends and guidance from independent industry consultants.
Market assessment	<ul style="list-style-type: none"> <li>The demand, supply and stock situation for the particular commodity, consumption trends and factors likely to affect supply and demand into the future.</li> <li>A customer and competitor analysis along with the identification of likely market windows for the product.</li> <li>Price and volume forecasts and the basis for these forecasts.</li> <li>For industrial minerals the customer specification, testing and acceptance requirements prior to a supply contract.</li> </ul>	<p>The following marketing update is taken from Kenmare Regulatory Announcement: Q4 and FY 2019 Production Report and FY 2020 Guidance, 9 January 2020:</p> <p><i>Kenmare achieved higher average prices for titanium feedstocks (ilmenite and rutile) during FY 2019 than in FY 2018, but lower average prices for zircon.</i></p> <p><i>After a subdued first quarter, the ilmenite market improved continuously for the rest of the year. Despite lower global pigment production in FY 2019, strong ilmenite market conditions were supported by continuing supply constraints. These include government restrictions in India and Vietnam and reducing production from major producing countries, such as Australia and Kenya, due to declining orebodies. Conversely, domestic Chinese ilmenite production increased by approximately 10% in 2019, partially offsetting decreasing production elsewhere.</i></p> <p><i>Ilmenite imports to China reduced by approximately 24% (550,000 tonnes) for the 12 months to the end of November 2019, compared to the same period in 2018, driven largely by a shortage of available supply. Kenmare experienced strong demand growth for ilmenite to be upgraded into high grade chloride feedstocks, for which Chinese domestic ilmenite is also unsuitable. Kenmare believes the high-grade titanium feedstocks market is likely to continue to grow in coming years, both in China and the rest of the world, and the Company is well-positioned to benefit from this trend.</i></p>

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		<p>Kenmare achieved increased ilmenite prices in FY 2019, with H2 received prices up more than 10% on H1 2019, and prices have continued to increase in 2020.</p> <p>The zircon market weakened in FY 2019 due primarily to slower global growth leading to lower demand, coincident with increased supply. This resulted in softer pricing, particularly in the Chinese market. Kenmare believes that FY 2020 is likely to be a challenging year for the zircon industry as the market remains in oversupply and producer inventories are high. However, global zircon production is forecast to decline in the coming years, with mine closures and orebody depletion at a number of operations, supporting higher long-term prices.</p> <p>In FY 2019 Kenmare successfully introduced a mineral sands concentrate product to the market, completing two shipments in 2019.</p>
Economic	<ul style="list-style-type: none"> <li>The inputs to the economic analysis to produce the net present value (NPV) in the study, the source and confidence of these economic inputs including estimated inflation, discount rate, etc.</li> </ul>	The discount rate used for the NPV calculation is 11%. This discount rate is in line with that used for impairment testing of property plant & equipment for annual report and accounts preparation.
	<ul style="list-style-type: none"> <li>NPV ranges and sensitivity to variations in the significant assumptions and inputs.</li> </ul>	The base case NPV calculations returned an NPV of \$656M.
Social	<ul style="list-style-type: none"> <li>The status of agreements with key stakeholders and matters leading to social licence to operate.</li> </ul>	Being an on-going operation, it is aimed that all approvals would be granted. A major part of the on-going social licence to operate is Kenmare's participation and sponsorship of KMAD – an organisation aimed at developing local communities through sponsoring initiatives in health, education, local business and sport.
Other	<ul style="list-style-type: none"> <li>To the extent relevant, the impact of the following on the project and/or on the estimation and classification of the Ore Reserves:</li> <li>Any identified material naturally occurring risks.</li> <li>The status of material legal agreements and marketing arrangements.</li> <li>The status of governmental agreements and approvals critical to the viability of the project, such as mineral tenement status, and government and statutory approvals. There must be reasonable grounds to expect that all necessary Government approvals will be received within the timeframes anticipated in the Pre-Feasibility or Feasibility study. Highlight and discuss the materiality of any unresolved matter that is dependent on a third party</li> </ul>	<p>The major natural occurring risk in this area is the risk of cyclones. The risk is not high, with the local people maintaining that destructive cyclones hit the area every 40 years on average. Much of the equipment and infrastructure built for the Kenmare project has been built with this risk in mind.</p> <p>Mining is currently scheduled to start in Pilivilil area in 2020. An ESHIA has been completed and approved</p>

Criteria	JORC Code explanation	Commentary
	<i>on which extraction of the reserve is contingent.</i>	
Classification	<ul style="list-style-type: none"> <li>• <i>The basis for the classification of the Ore Reserves into varying confidence categories.</i></li> <li>• <i>Whether the result appropriately reflects the Competent Person's view of the deposit.</i></li> <li>• <i>The proportion of Probable Ore Reserves that have been derived from Measured Mineral Resources (if any).</i></li> </ul>	In general, the classification of Measured and Indicated Resources to "Probable Reserve" reflect the confidence in the underlying resource model (Measured and Indicated Resources), which in turn is based on drilling spacing and mineral assemblage availability.
Audits or reviews	<ul style="list-style-type: none"> <li>• <i>The results of any audits or reviews of Ore Reserve estimates.</i></li> </ul>	Pilivili reserves was audited by SRK of Cardiff by mid-2019. Feedback from SRK was used to improve the reserves estimation process in 2019 model update.
Discussion of relative accuracy/ confidence	<ul style="list-style-type: none"> <li>• <i>Where appropriate a statement of the relative accuracy and confidence level in the Ore Reserve estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the reserve within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors which could affect the relative accuracy and confidence of the estimate.</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>Accuracy and confidence discussions should extend to specific discussions of any applied Modifying Factors that may have a material impact on Ore Reserve viability, or for which there are remaining areas of uncertainty at the current study stage.</i></li> <li>• <i>It is recognised that this may not be possible or appropriate in all circumstances. These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.</i></li> </ul>	The classification is based solely on the Measured and Indicated Resource portion of the Pilivili Resource for which a mine path has been established. Therefore, taking into consideration the various economic and modifying factors it is reasonable to declare a Probable Reserve for the Pilivili Deposit. This classification also matches the degree of certainty in other areas such as mine planning, environmental and social issues determined from DFS level study.