DIATREME RESOURCES LIMITED
ABN: 33 061 267 061
Postal Address: P.O Box 10288 Brisbane Adelaide Street QLD 4000
Registered Office: Level 2 87 Wickham Terrace Spring Hill QLD 4000
PH: +61 (0)7 3832 5666
www.diatreme.com.au manager@diatreme.com.au

ASX : DRX

14 December 2015

Company Announcement Office
Australian Securities Exchange
Level 4, 20 Bridge Street
Sydney NSW 2000

Re-release of Company Announcement
14 December 2015 Cyclone Project Ore Reserve Update

Diatreme Resources Limited (ASX: DRX) wishes to notify shareholders of the re-release of the "Cyclone Project Update" announcement released to the market earlier today.

The announcement is being re-released with additional information (on pages 2 and 3) to comply with disclosure requirements under ASX Listing Rule 5.9.1

Tuan Do

Company Secretary

ASX

ANNOUNCEMENT

Diatreme Resources Limited

ABN: 33 061 267 061

ASX:DRX

BOOST FOR CYCLONE PROJECT AS NEW STUDY INCREASES ORE RESERVE, MINE LIFE

14 December 2015

HIGHLIGHTS

*** Cyclone Project Ore Reserve increased by 47% to 140 million tonnes (Mt) at 2.5% heavy minerals (HM) (0.71% zircon) through incorporation of Cyclone Extended mineralisation in mine plan.**

*** Cyclone Project mine life increased to 14 years , from a previous estimate of 10 years based on the planned 10 million tonnes per annum (Mtpa) mining rate.**

*** Final environmental regulatory approvals expected by February 2016 as Diatreme advances high-grade zircon project towards development.**

Diatreme Resources Limited (ASX:DRX) announced today a major boost for its flagship Cyclone Zircon Project in Western Australia's Eucla Basin, with the release of an increased Ore Reserve incorporating Cyclone Extended which also lengthens the estimated mine life.

The revised Ore Reserve represents a 47% increase in contained HM compared to the previous estimate. It now comprises **140 Mt at 2.5% HM, including 0.71% zircon, containing 3.5Mt of HM with 1Mt zircon.** The projected mine life for the project has also risen to 14 years, based on a planned mining rate of 10 Mtpa.

Diatreme Chief Executive, Neil McIntyre said the latest upgrades were a major milestone for the high-grade zircon project.

"Cyclone continues to gain momentum and these upgrades demonstrate the project's potential to become a major producer of valuable heavy minerals. By expanding and de-risking the project, we have put it in the best possible position to attract further investment and progress towards delivering cash flow for shareholders' benefit."

Diatreme Resources Limited is an Australian based diversified mineral explorer with significant projects in WA and QLD.

The Board and senior personnel exhibit wide experience, ranging through the exploration, development and financing phases of resource project management.

Australian Securities Exchange Codes: DRX, DRXO

Board of Directors - Non-Executive:
William Wang - Chairman
Andrew Tsang
Daniel Zhuang

Executive:
Neil McIntyre – Chief Executive
Tuan Do – CFO & Co. Secretary
Ian Reudavey – Chief Geologist

Key Projects:
- Cyclone Zircon Project
- Tick Hill Gold Project
- Cape Bedford Silica/HMS Project
- Clermont Copper Project

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Website: www.diatreme.com.au
Email: manager@diatreme.com.au

Diatreme has also advanced the project's regulatory approvals, with the Public Environmental Review (PER) currently undergoing assessment by the WA Environmental Protection Authority. The EPA's assessment of the PER is the final identified requirement of the de-risking process, which should be completed by February 2016, and has included the securing of a Mining Lease, an agreement with the traditional owners and the identification of water supplies, along with an expanded Mineral Resource following the acquisition of the adjacent Cyclone Extended HM Resource.

ORE RESERVE

In April 2015, Diatreme announced a revised Mineral Resource estimate for the Cyclone Project of 211 million tonnes at 2.3% HM (1% HM cut-off grade), containing 4.8 Mt HM, of which zircon comprised 1.27 Mt. This represented a 53% increase in the contained HM for the Cyclone Project Mineral Resource relative to the previously published Mineral Resource (ASX announcement 9 Jan 2014) through the inclusion of the Cyclone Extended mineralisation which was purchased from Image Resources in March 2015.

Diatreme is pleased to announce a revised Probable Ore Reserve estimate for the Cyclone Project of 140 Mt at 2.5% HM, including 0.71% Zircon, containing 3.5 Mt of HM, including 1 Mt of Zircon. The revised estimate primarily relates to the inclusion of mineralisation from the Cyclone Extended deposit, but also reflects updates to the resource model and mineral resource estimate since the maiden ore reserve was announced back in February 2012. This Ore Reserve estimate represents a 47% increase in contained HM from the previous study (ASX announcement 7 Feb 2012).

The Ore Reserve is based upon mine planning parameters developed for the Cyclone Prefeasibility Study (ASX announcement 20 Mar 2012), with appropriate recognition of subsequent metallurgical testwork and process flowsheet development undertaken by Mineral Technologies.

The design parameters for the open pit were developed based on simultaneous assessment of a number of economic and mining factors:

- A nominal 0.4% Zircon cut-off grade was applied. Lower grade material was included in areas with less overburden and where required to create a practical pit geometry for dozer trap mining.
- Areas with higher stripping ratios required a higher grade ore to be economic.
- The base of induration (within the Quaternary weathering profile) was used as the top of the ore zone to exclude indurated material (with poor quality HM) from mining.
- Low grade interburden material, which was not part of the Mineral Resource, was included in the pit design to allow mining of the Beach and Nearshore mineralisation in a single pass.
- Pit wall design used batter angles of 35° for ore and interburden (both unconsolidated sand) and 45° for overburden (variably indurated sandy loam).

The Ore Reserve has been classified as Probable based on the accuracy of the cost estimate (PFS quality) and additional work required for the marketing of Cyclone HMC in China. However, 90% of the Ore Reserve is derived from Measured Resource, and there is a high level of confidence in the other modifying factors applied.

The mining factors are based on preliminary designs by personnel with extensive experience in mineral sands. Proven techniques with low technical risk have been selected. The mining method comprises overburden removal by truck and shovel, and ore mining by dozer push to in-pit traps and slurry pumping. Infrastructure requirements are minimal and will consist of a network of temporary haul roads, electricity and water reticulation to the mining unit and a mobile slurry pipeline.

Mining dilution was built in to the Ore Reserve by the inclusion of 'waste' material in the mine design, both as roof and floor dilution and internal waste (interburden) which occurs between the beach and nearshore mineralisation. No mining recovery factor has been used as ore loss is negligible when using dozer push methods.

Metallurgical testwork and process flowsheet design has been carried out by Mineral Technologies (MT) in Carrara on representative bulk ore samples (one from the life of mine, the other from initial 2-year path). MT have proposed the use of conventional wet concentrator plant (WCP) for mineral sands, primarily utilising spiral separation with secondary screening and classification to achieve high HMC quality. A recovery factor to HMC of 68% for HM and 95% for Zircon has been utilised. MT has proposed the use of a conventional mineral separation plant (MSP), primarily utilizing magnetic and electrostatic separation with secondary screening and gravity separation to generate mineral products. Hot acid leach of the HM is required to achieve optimal recovery and product quality, due to the presence of coated grains.

The Ore Reserve estimate is based on the Cyclone Mineral Resource estimate, released to ASX on 9 April 2015 and described in the attached JORC 2012 – Table1. The modeling techniques used for the Cyclone Mineral Resource Estimate are considered to align with industry best practice.

The Cyclone Mineral Resource (ASX announcement 9 April 2015) comprises 211 Mt at an average grade of 2.3% HM. The Probable Ore Reserve has been estimated at 140 Mt at an average grade of 2.5% HM, representing a 75% conversion rate for contained HM tonnes. The pit design includes 84 Mbcm of overburden with a strip ratio of 1:1. The strip ratio is considerably lower in the early years of the mine operation.

Supporting Information for the Cyclone Ore Reserve includes:

Table 1: Cyclone Project Resource & Reserve Estimate

Appendix 1: Cyclone Project, Ore Reserve Estimate by Strand

Appendix 2: Cyclone Project, Annualised Ore Reserve

Figure 1: Location map - Cyclone Ore Reserve

Figures 2–6: Drill Hole Sections - Cyclone Ore Reserve

Attachment: JORC Code, 2012 Edition - Table 1

TABLE 1: CYLONE PROJECT RESOURCE & RESERVE ESTIMATE

MINERAL RESOURCE

Resource Category	HM cut-off %	Material Mt	HM %	HM Mt	Slime %	OS %	Head Grade Zircon %	Rutile %	Leuc %	HiTi %	Alt Ilm %	Si TiOx %	Zircon Kt
MEASURED	1.0	156	2.4	3.79	4.2	5.1	0.69	0.08	0.17	0.52	0.26	0.55	1,070
INDICATED	1.0	55	1.8	0.99	4.1	4.5	0.36	0.06	0.06	0.50	0.11	0.31	200
TOTAL	**1.0**	**211**	**2.3**	**4.78**	**4.2**	**4.9**	**0.60**	**0.08**	**0.14**	**0.51**	**0.23**	**0.50**	**1,270**
						Mineral Assemblage	**27%**	**3%**	**6%**	**23%**	**10%**	**22%**	

ORE RESERVE

Reserve Category	Zircon cut-off %	Material Mt	HM %	HM Mt	Slime %	OS %	Head Grade Zircon %	Rutile %	Leuc %	HiTi %	Alt Ilm %	Si TiOx %	Zircon Kt
PROBABLE	0.4	140	2.5	3.54	4.5	5.1	0.71	0.07	0.17	0.58	0.32	0.57	1,000
TOTAL	**0.4**	**140**	**2.5**	**3.54**	**4.5**	**5.1**	**0.71**	**0.07**	**0.17**	**0.58**	**0.32**	**0.57**	**1,000**
						Mineral Assemblage	**28%**	**3%**	**7%**	**23%**	**13%**	**22%**	

Table Notes

- Rounding may generate differences in last decimal place
- A constant SG of 1.7 has been used to derive material tonnes
- Slime refers to material typically <53um
- OS refers to oversize material typically >2mm
- Mineral Assemblage derived from QEMSCAN® analysis
- Leucoxene (Leuc) – Ti-oxides containing 85 – 95% TiO_2, HiTi - Ti-oxides containing 70 - 85% TiO_2, Altered Ilmenite (Alt Ilm) - Ti-oxides containing <70% TiO_2, Si-bearing Ti-Oxide (Si TiOx) – Ti-oxides containing >10% silica rich Ti minerals.
- Resources are inclusive of Reserves

ENVIRONMENTAL APPROVAL

Prior to commencing the Public Environmental Review (PER), a Level 1 environmental assessment and cultural heritage survey of three road route options linking the Cyclone Project to the Trans-Australia Railway line were undertaken to determine the preferred option for a more detailed investigation. The preferred road option from the Level 1 assessment on environmental and cultural heritage grounds was a route through the Great Victoria Desert Nature Reserve to the rail siding at Forrest, near the South Australian border.

In March 2013, the Environmental Protection Authority (EPA) advised that the Level of Assessment for the project was a PER with a five-week public review period. The EPA also advised that it would prepare an Environmental Scoping Document (ESD) for the PER which sets out the details of the studies required for inclusion in the PER documentation. The ESD was received from the EPA in August 2013 and Diatreme subsidiary Lost Sands engaged MWH Environmental Consultants to manage the PER process, undertake and manage the environmental studies, and prepare the PER documentation.

The draft PER documentation was distributed to all relevant WA Government Decision Making Authorities (DMAs) for review before being finalised for public comment. Comments from the DMAs resulted in additional information being included in the PER.

The EPA set the public review period at five weeks and this concluded on 3 July 2015. The EPA provided Lost Sands with a list of public comments that required additional details for use in the EPA assessment of the project proposal. Lost Sands is now engaged in a consultation period with the EPA which will result in preparation of an assessment report for final approvals which is expected by February 2016.

The EPA will provide recommendations for the Minister of Environment based on the assessment report. The Minister will then determine whether the project should be implemented and the environmental conditions that will be applied.

Completion of the PER process is expected to result in a positive recommendation to the Minister of Environment by the EPA for approval of the Cyclone Project. This recommendation will cover the mining operation, support services, and all infrastructure, including the haul road from Cyclone to the Forrest rail siding.

The Cyclone Project has also been referred to the Australian Government Department of the Environment under the Environmental Protection and Biodiversity Conservation (EPBC) Act. The project was assessed as a non-controlled action under the Commonwealth EPBC legislation, making WA's EPA assessment the key project approval process.

Diatreme continues to review opportunities to reduce capital and operating cost estimates for the planned Cyclone mine, which is now targeting the supply of a single heavy mineral concentrate product to Chinese mineral separation plants.

Mr McIntyre said: "Cyclone represents an attractive investment given its relatively low projected capital costs and high zircon component. With the latest forecasts anticipating improved medium to longer-term mineral sands demand from Asia and North America, the project should deliver sustained growth in shareholder value, adding to the benefits from our attractive project pipeline including the Tick Hill Gold Project and other mineral sands assets."

Neil McIntyre
CEO

Competent Person Statement

The information in this report, insofar as it relates to Mineral Resources is based on information compiled by Mr Ian Reudavey, who is a full time employee of Diatreme Resources Limited and a Member of the Australian Institute of Geoscientists. Mr Reudavey has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he has undertaken to qualify as a Competent Person as defined in the 2012 Edition of 'The Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr Reudavey consents to the inclusion in the report of the matters based on the information in the form and context in which it appears.

The information in this report, insofar as it relates to Ore Reserves is based on information compiled by Mr Phil McMurtrie, who is a director of Tisana Pty Ltd (a consultant to Diatreme Resources Limited), and a Member of the Australasian Institute of Mining and Metallurgy. Mr McMurtrie has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he has undertaken to qualify as a Competent Person as defined in the 2012 Edition of 'The Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr McMurtrie consents to the inclusion in the report of the matters based on the information in the form and context in which it appears.

CYCLONE ZIRCON PROJECT BACKGROUND

Discovered in 2007, the Cyclone Zircon deposit is located along the Barton shoreline within the Wanna Lakes area of the northern Eucla Basin, 25 kilometres from Western Australia's state border with South Australia and 220 kilometres north of the transcontinental railway.

Following the acquisition of the Cyclone Extended Heavy Mineral Resource, the Cyclone Project's JORC resource has been estimated at comprising 211 million tonnes at 2.3% heavy minerals (1% cut-off grade) containing 4.8 million tonnes HM (refer ASX announcement 9 April 2015).

In November 2014, Western Australia's Department of Mines and Petroleum granted a Mining Lease (ML69/141) for the project, which followed the signing of a Project Agreement with the traditional owners, the Spinifex People.

A Definitive Feasibility Study is underway along with further project specific commercial and operational enhancement studies, with Cyclone representing potentially the largest undeveloped zircon project in the Eucla Basin.

The PER document is available for viewing on Diatreme's website: www.diatreme.com.au

APPENDIX 1

Cyclone Project - Probable Ore Reserve Estimate by Strand

Strand	Overburden Mm³	Strip Ratio	Ore Mt	HM %	Slimes %	OS %	HM kt
West Strand	46.7	0.9	90.7	2.4	4.7	6.0	2,200
East Strand	25.9	1.2	37.7	2.8	4.0	3.7	1,050
South East Strand	11.1	1.6	11.5	2.5	4.1	1.9	290
TOTAL Probable	**83.8**	**1.0**	**139.9**	**2.5**	**4.5**	**5.1**	**3,540**

Strand	Ore Mt	HM %	Zircon %	Rutile %	Leucox %	HiTi %	Alt Ilm %	Si TiOx %
West Strand	90.7	2.4	0.72	0.08	0.18	0.47	0.30	0.54
	Mineral Assemblage		30%	3%	8%	19%	13%	22%
East Strand	37.7	2.8	0.80	0.07	0.17	0.71	0.29	0.68
	Mineral Assemblage		29%	2%	6%	25%	10%	24%
South East Strand	11.5	2.5	0.41	0.03	0.05	1.03	0.54	0.38
	Mineral Assemblage		16%	1%	2%	41%	22%	15%
TOTAL Probable	**139.9**	**2.5**	**0.71**	**0.07**	**0.17**	**0.58**	**0.32**	**0.57**
	Mineral Assemblage		**28%**	**3%**	**7%**	**23%**	**13%**	**22%**

Strand	Ore Mt	HM %	Zircon kt	Rutile kt	Leucox kt	HiTi kt	Alt Ilm kt	Si TiOx kt
West Strand	90.7	2.4	650	75	165	425	275	495
East Strand	37.7	2.8	300	25	65	265	110	255
South East Strand	11.5	2.5	45	5	5	120	60	45
TOTAL Probable	**139.9**	**2.5**	**1,000**	**105**	**235**	**810**	**445**	**790**

- Rounding may generate differences in totals
- A constant SG of 1.7 has been used to derive material tonnes
- Slime refers to material <53um, OS refers to oversize material >2mm, Trash refers to material >710um & <2mm
- Mineral Assemblage derived from QEMSCAN® analysis
- Leucoxene (Leucox) – Ti-oxides containing 85 – 95% TiO2, HiTi - Ti-oxides containing 70 - 85% TiO2, Altered Ilmenite (Alt Ilm) - Ti-oxides containing <70% TiO2, Si-bearing Ti-Oxide (Si TiOx) – Ti-oxides containing >10% silica rich Ti minerals.

APPENDIX 2

Cyclone Project - Annualised Ore Reserve

Year	Overburden Mm^3	Strip Ratio	Ore Mt	HM %	HM kt	Zircon kt	Rutile kt	Leucox kt	HiTi kt	Alt Ilm kt	Si TiOx kt
1	4.5	0.8	10.0	2.6	255	90	10	20	45	25	55
2	4.4	0.7	10.0	2.7	270	85	10	20	50	35	55
3	5.4	0.9	10.0	2.5	250	85	10	20	45	25	60
4	7.1	1.2	10.0	1.9	190	70	10	15	25	15	45
5	7.7	1.3	10.0	2.3	235	80	10	20	40	20	55
6	6.7	1.1	10.0	3.0	305	85	5	15	80	30	80
7	6.8	1.2	10.0	2.8	280	75	5	15	80	35	60
8	7.0	1.2	10.0	2.7	270	75	5	20	70	30	65
9	3.3	0.6	10.0	2.3	235	80	10	15	45	30	50
10	3.2	0.5	10.0	2.2	220	65	10	15	45	30	45
11	4.4	0.7	10.0	2.3	230	50	10	20	50	35	50
12	6.4	1.1	10.0	2.8	280	65	5	20	65	35	75
13	7.4	1.3	10.0	2.7	270	55	5	15	65	55	60
14	9.5	1.6	9.9	2.5	250	35	5	5	105	55	40
TOTAL	**64.2**	**1.0**	**139.9**	**2.5**	**3540**	**1000**	**105**	**235**	**810**	**445**	**790**

Rounding may generate differences in totals
Overburden material reported as volume
Mineral tonnages reflect contained mineral within mined ore, not product tonnes

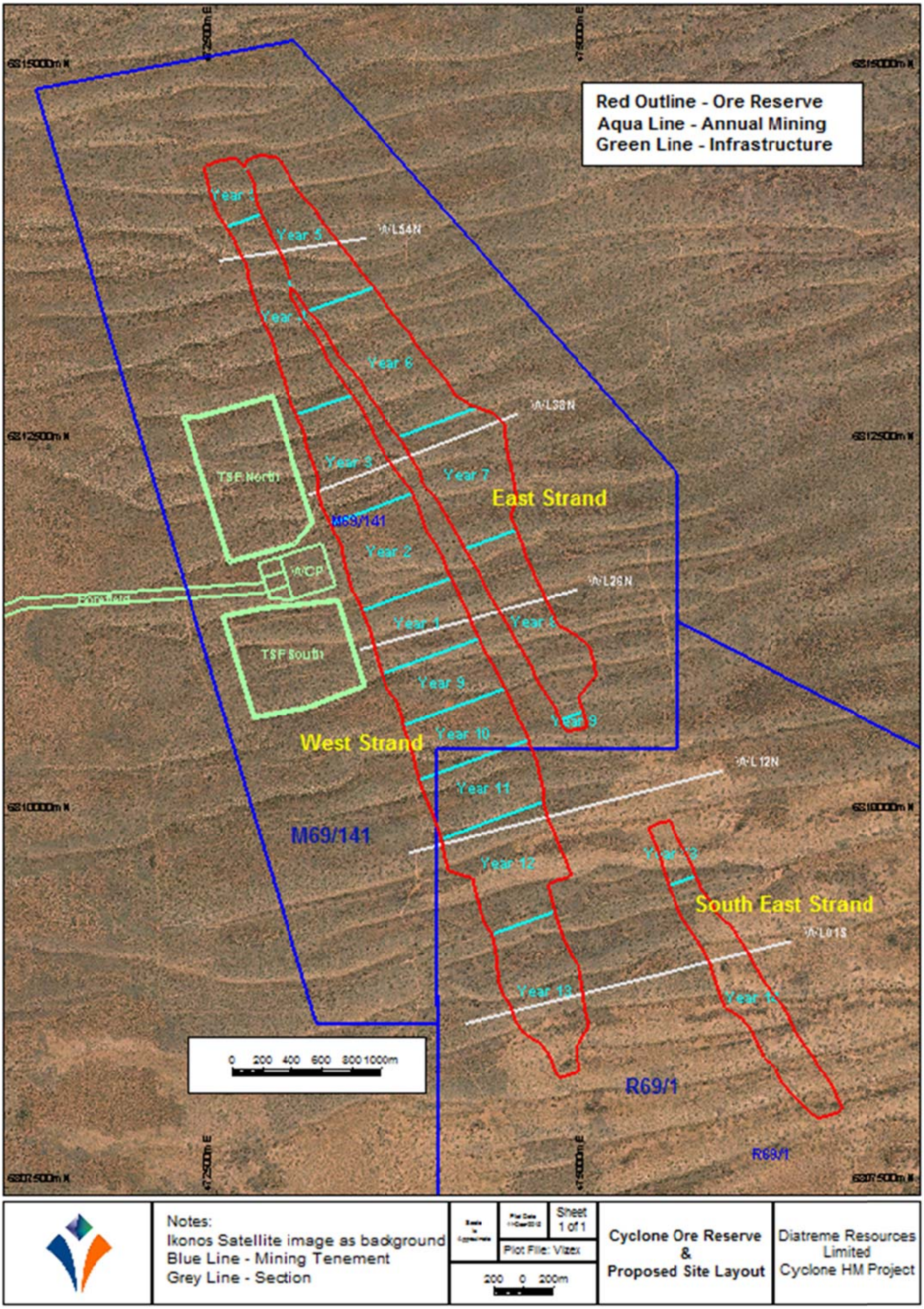

Figure 1: Location Map - Cyclone Ore Reserve

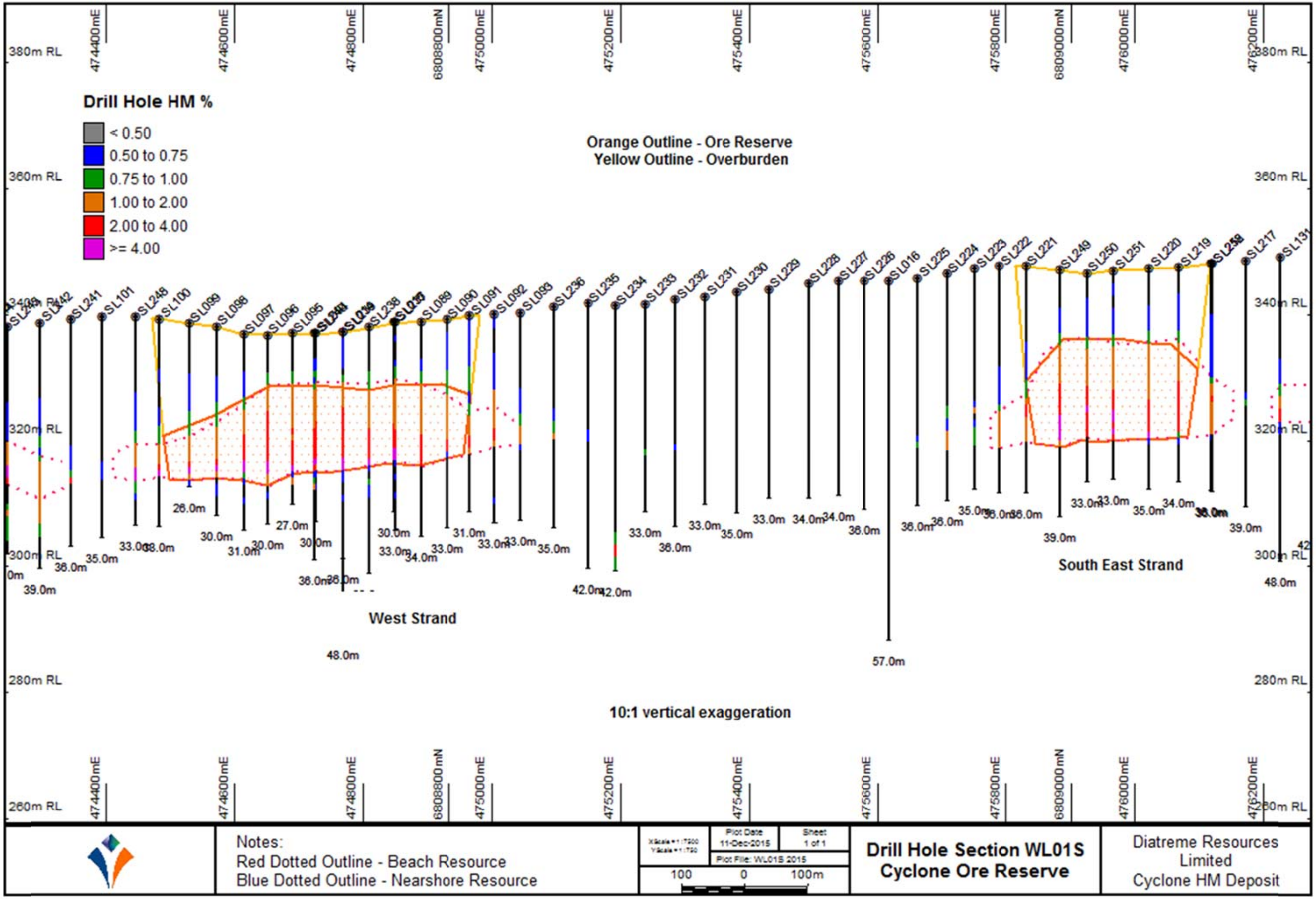

Figure 2: Drill Hole Section WL01S – Cyclone Ore Reserve

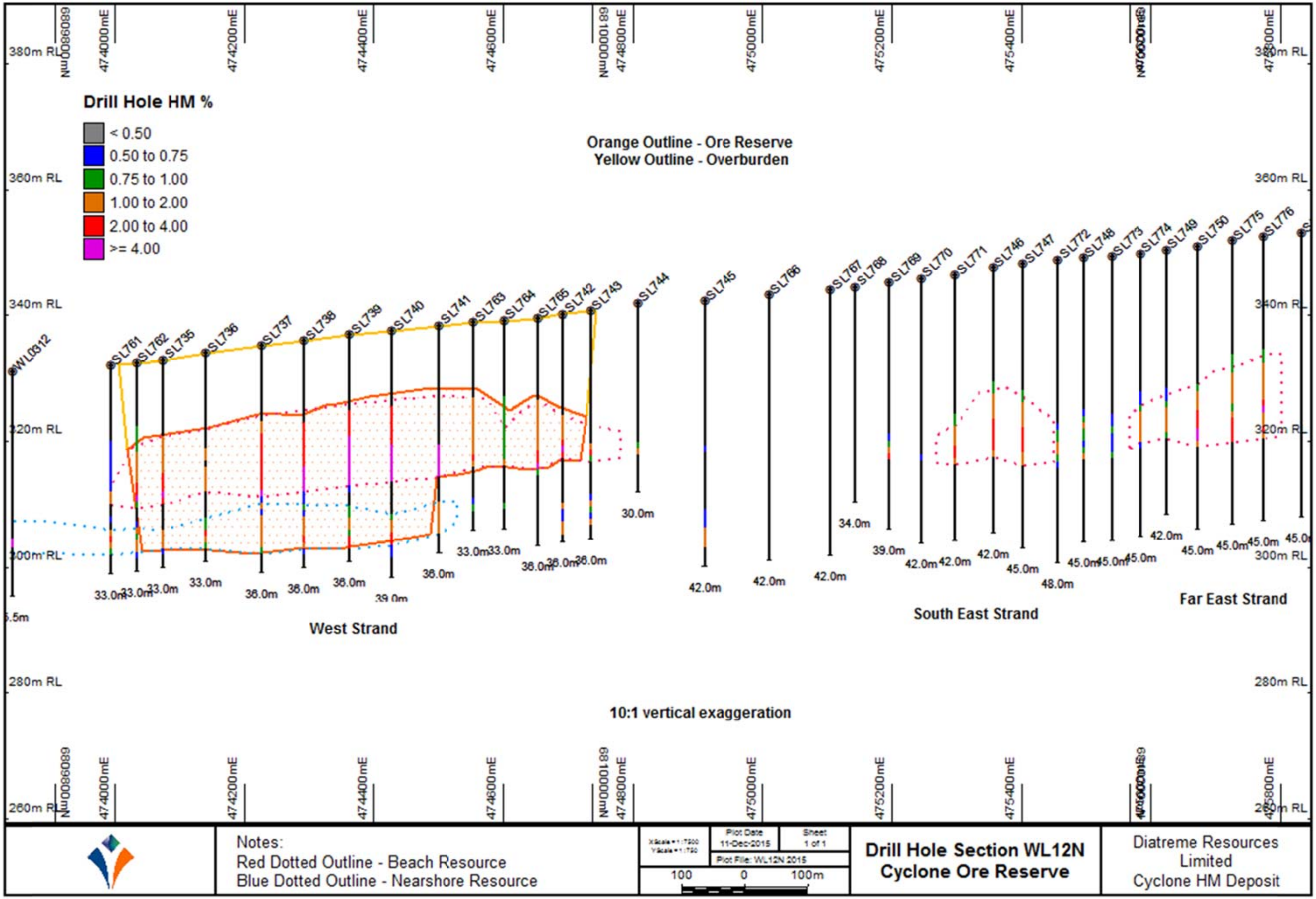

Figure 3: Drill Hole Section WL12N – Cyclone Ore Reserve

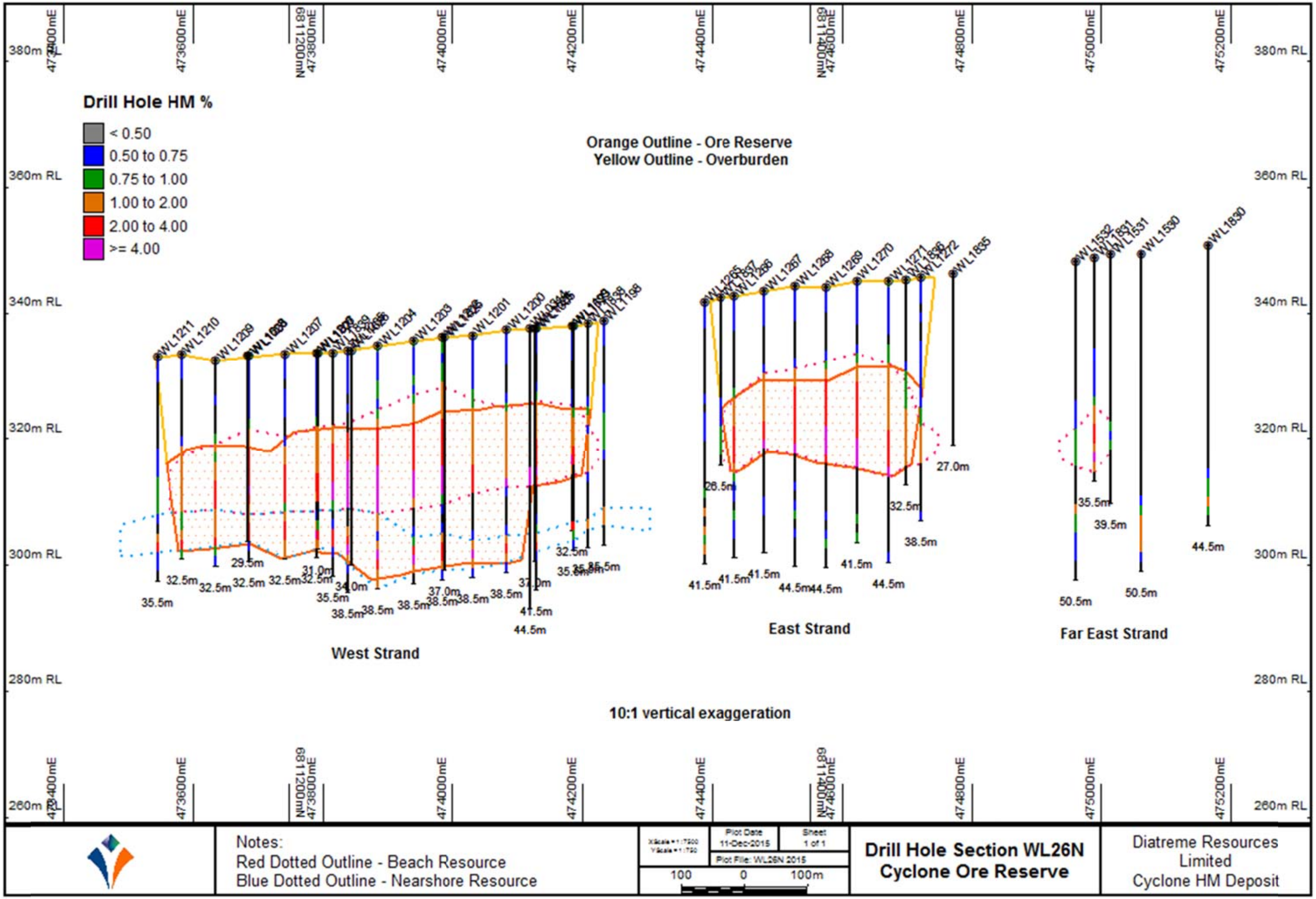

Figure 4: Drill Hole Section WL26N – Cyclone Ore Reserve

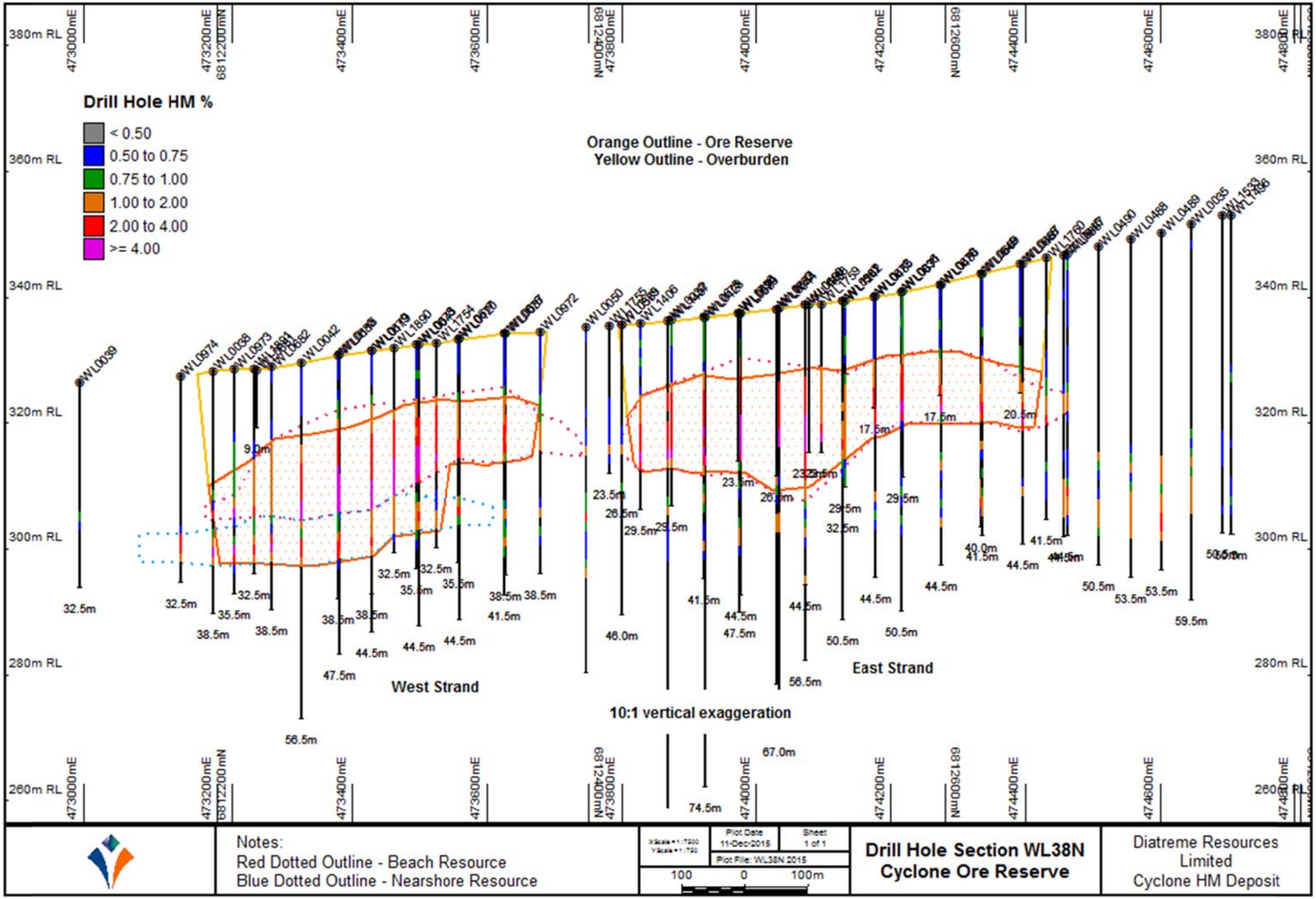

Figure 5: Drill Hole Section WL38N – Cyclone Ore Reserve

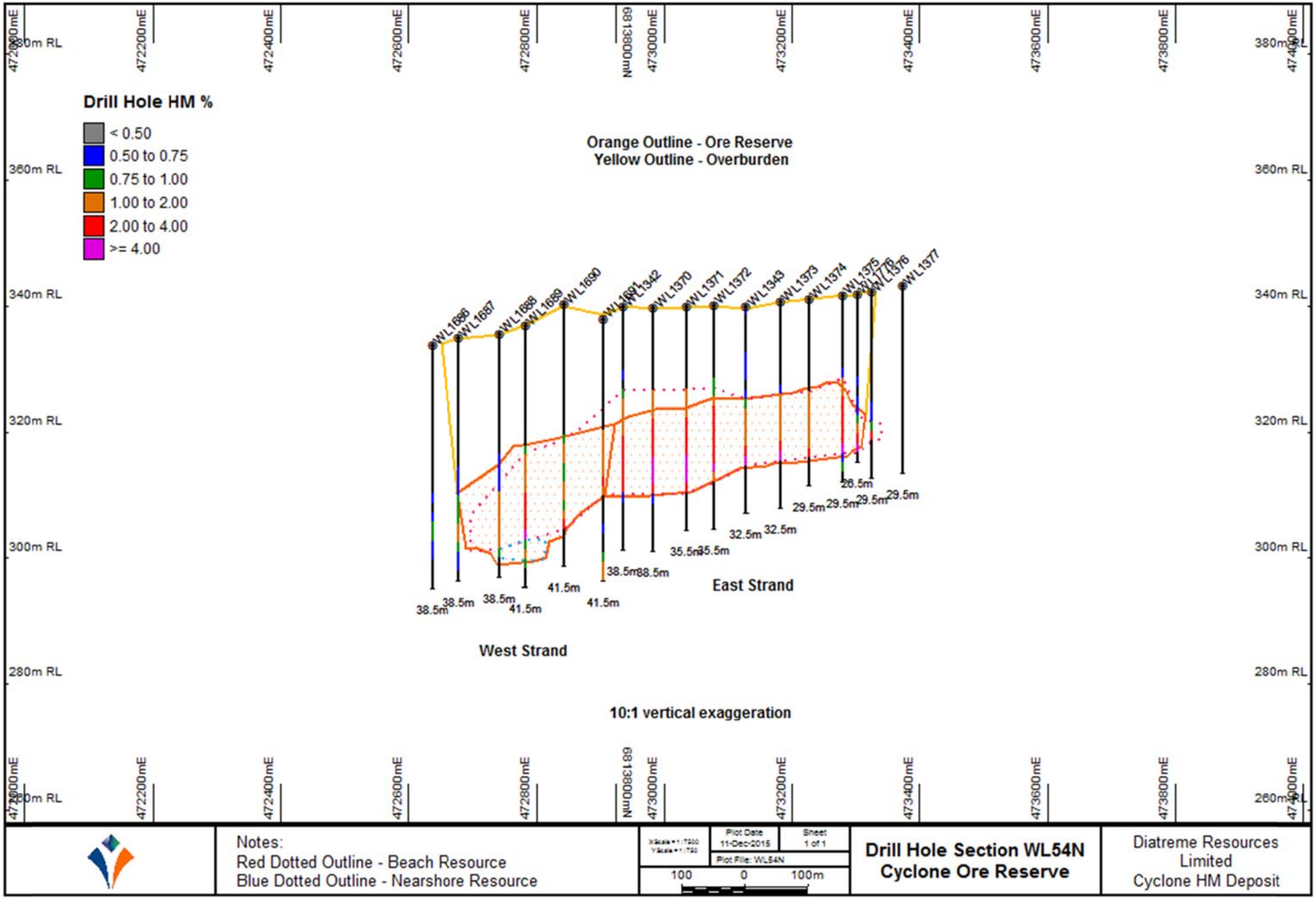

Figure 6: Drill Hole Section WL38N – Cyclone Ore Reserve

JORC Code, 2012 Edition – Table 1

Section 1 Sampling Techniques and Data

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

Criteria	JORC Code explanation	Commentary
Sampling techniques	• *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.* • *Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.* • *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 commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.*	• Sampling techniques are considered to be mineral sands "industry standard' for dry beach sands with low levels of induration and slime. • Samples are down hole intervals of air-core drill cuttings collected from cyclone mounted rotary splitter, approximately 2-3kg (representing ~20%) of drill material is sampled. • Diatreme samples are 1.5m intervals, Image samples are either 2m or 1m intervals, with visibly mineralised zones typically sampled at 1m intervals. • Sample representivity validated by twin drill holes, sample duplicate analysis and bulk sample testwork. • For Diatreme samples Heavy Mineral (HM) is defined as mineral grains within 53 to 710 µm size range with an SG greater than 2.9 • For Image samples Heavy Mineral (HM) is defined as mineral grains within 63 to 1,000 µm size range with an SG greater than 2.9.
Drilling techniques	• *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).*	• Vertical NQ air-core drilling utilizing blade bit, 3m drill runs.
Drill sample recovery	• *Method of recording and assessing core and chip sample recoveries and results assessed.* • *Measures taken to maximise sample recovery and ensure representative nature of the samples.* • *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.*	• Visual assessment and logging of sample recovery and sample quality. • Reaming of hole and clearance of drill string after every 3m drill rod. • Sample chute cleaned between samples and regular cleaning of cyclone to prevent sample contamination. • No relationship is evident between sample recovery and grade.
Logging	• *Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.* • *Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.*	• Geological logging of the total hole by field geologist, with retention of sample in chip trays to allow subsequent re-interpretation of data. • The total hole is logged; logging includes colour, grain size, sorting, induration and estimates of HM, slimes and oversize utilizing panning. • Logging is captured in Micromine data tables, with daily update of field database and regular update of master database.

Criteria	JORC Code explanation	Commentary
	• *The total length and percentage of the relevant intersections logged.*	
Sub-sampling techniques and sample preparation	• *If core, whether cut or sawn and whether quarter, half or all core taken.* • *If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.* • *For all sample types, the nature, quality and appropriateness of the sample preparation technique.* • *Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.* • *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.* • *Whether sample sizes are appropriate to the grain size of the material being sampled.*	• Rotary split on site (approx. 80:20), resulting in approximately 1.5 – 2.0kg of dry sample (as mineralization occurs above the water table). • Diatreme sample is then dried, screened and washed to determine oversize and slimes content in company sample preparation facility. 100g sample for HLS (HM assay) is riffle split from homogenized screened and de-slimed sample. • Diatreme duplicate HLS splits submitted at 1 in 40, results support sample representivity. • Image sample is dried and a 100g split screened and washed to determine oversize and slimes content in contractor sample preparation facility. The remaining sand fraction is then submitted for HLS (HM assay). • Sample size is considered appropriate for the material sampled. • Mineralogy samples are typically down hole composites of HM from the mineralized zone(s) with multiple hole composites across section for some of the thinner mineralized zones.
Quality of assay data and laboratory tests	• *The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.* • *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.* • *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.*	• Diatreme sample preparation laboratory operated by subsidiary company with methods and procedures adopted from industry standards. • Diatreme HM analysis undertaken by recognised independent HM laboratory (Diamantina Labs) utilizing TBE. • Image sample preparation and analysis undertaken by recognised independent HM laboratory (Western Geolabs). • Duplicates and external laboratory checks regularly undertaken for HM analysis, acceptable levels of accuracy and precision have been established. • Mineralogy of the HM fraction determined by QEMScan analysis. • Valuable heavy minerals reported are Zircon, Rutile (Ti-oxides >95% TiO_2), Leucoxene (Ti-oxides 85 – 95% TiO_2, HiTi (Ti-oxides 70 – 85% TiO_2), Altered Ilmenite (Ti-oxides <70% TiO_2) and Si TiOx (siliceous Ti-oxides containing >10% silica rich Ti minerals). • Potentially deleterious minerals are also assayed (e.g. andalusite) as well as proportions of clean, coated and composite grains.
Verification of sampling and assaying	• *The verification of significant intersections by either independent or alternative company personnel.* • *The use of twinned holes.* • *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.* • *Discuss any adjustment to assay data.*	• Significant intersections validated against geological logging and local geology / geological model. • Significant intersections verified by company personnel. • Selected significant intersections independently validated as part of due diligence exercise by BaoTi in 2011. • A number of twinned holes occur across the deposit and these have

Criteria	JORC Code explanation	Commentary
		verified the sampling and assaying results. • All data captured and stored in electronic format, with compilation and storage completed by external contractors.
Location of data points	• *Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.* • *Specification of the grid system used.* • *Quality and adequacy of topographic control.*	• All holes initially located using handheld GPS with an accuracy of 5m. • Subsequent DGPS survey of drill hole collars, accurate to within 1m in X and Y as survey was often taken of rehabilitated drill site (i.e. estimated collar location). • UTM coordinates, Zone 52, GDA94 datum. • Topographic surface generated from processing Ikonos satellite imagery and DGPS control points, collar RL's levelled against this surface to ensure consistency in the database and with the block model.
Data spacing and distribution	• *Data spacing for reporting of Exploration Results.* • *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.* • *Whether sample compositing has been applied.*	• Diatreme drill lines established at 150m to 300m spacing in interdunal swales with holes 50m apart in the beach mineralisation, 50-100m apart in the areas of nearshore only mineralisation and 25-50m apart in the narrower higher grade strand mineralisation. • Image drill lines established at 250m to 500m spacing in interdunal swales with holes 50m apart in the main body of mineralisation and 50-100m apart on the marginal areas of mineralisation. • Drill spacing and distribution is sufficient to allow valid interpretation of geological and grade continuity appropriate to the estimation procedure and classification applied. • Sample compositing (down hole and occasionally across / along section) has been undertaken for determination of mineralogy.
Orientation of data in relation to geological structure	• *Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.* • *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.*	• The mineralisation displays an average strike around 340°, whereas the overlying Quaternary dune field has dune ridges dominantly trending 80° – 260°. Exploration data is therefore well orientated to sample the mineralised feature without bias.
Sample security	• *The measures taken to ensure sample security.*	• Sample collection and transport from the field undertaken by company personnel following company procedures. • Diatreme HLS samples dispatched to laboratory in secure packaging via Australia Post.
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*	• A prospective JV partner (BaoTi) undertook a geological due diligence exercise in 2011 with positive results. • A number of experienced mineral sands geologists have been involved in generation of the exploration methods, procedures and geological database.

Section 2 Reporting of Exploration Results

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

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	• *Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.* • *The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.*	• The Cyclone deposit occurs within adjoining tenements M69/141, R69/1 and E 69/2425 in Western Australia. M69/141 and E69/2425 are held by Lost Sands Pty Ltd, a wholly owned subsidiary of Diatreme Resources, and R69/1 is held by Diatreme Resources. • The tenements are in good standing. • A Project Agreement is in place with the native title party (Pila Ngaru).
Exploration done by other parties	• *Acknowledgment and appraisal of exploration by other parties.*	• Exploration within R69/1 has been undertaken by Image Resources, although exchange of data was first initiated under a MoU in September 2010. • The general drilling, sampling and assaying techniques utilised by Image are consistent with those utilised by Diatreme, and as such the data is considered to be of similar quality to that generated by Diatreme. • Diatreme acquired all data for R69/1 with the tenement purchase in March 2015.
Geology	• *Deposit type, geological setting and style of mineralisation.*	• The Cyclone mineral resource comprises a number of stacked and re-worked beach strandline mineral sand deposits associated with a Tertiary age coastal shoreline feature. • Mineralisation occurs within bimodal near-shore sands, beach / surf zone strandlines, homogenous beach sands, and overlying aeolian dune sands. • Quaternary cover overlies the deposit, and a shallow weathering profile with calcrete and ferruginous induration has developed.
Drill hole Information	• *A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:* o *easting and northing of the drill hole collar* o *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar* o *dip and azimuth of the hole* o *down hole length and interception depth* o *hole length.* • *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.*	• The Cyclone mineral resource has been estimated using data from 1,384 drill holes and it is not considered appropriate to tabulate each drill hole. • Representative cross sections along the strike of the mineralization to illustrate some of the drill data and the nature of the mineralisation were attached to previous announcements (23 Jan 2012, 9 Jan 2014, 9 Apr 2015).
Data	• *In reporting Exploration Results, weighting averaging techniques,*	• Image drill data was composited to 1.5m intervals within corresponding

Criteria	JORC Code explanation	Commentary
aggregation methods	*maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.* • *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.* • *The assumptions used for any reporting of metal equivalent values should be clearly stated.*	geological domains for the purpose of resource estimation.
Relationship between mineralisation widths and intercept lengths	• *These relationships are particularly important in the reporting of Exploration Results.* • *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.* • *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').*	• As the mineralization is associated with marine sands it is essentially horizontal, with a maximum slope of 1°. • All drilling is vertical, hence the drill intersection is essentially equivalent to the true width of mineralization.
Diagrams	• *Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.*	• A map of the drill collar locations and the outline of the Mineral Resource and Ore Reserve is attached.
Balanced reporting	• *Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.*	• Not applicable, resource estimate considers all material within the mineralisation domains. • Resource estimate is presented using variable cut-off grade and by geological domain to allow an understanding of grade distribution.
Other substantive exploration data	• *Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.*	• Geological observations are consistent with beach placer / strandline mineralisation. • Several bulk samples (up to 12t) and subsequent metallurgical tests have characterized the nature of the mineralisation and confirmed that conventional processing techniques can be applied to produce marketable products. Some HM is coated and acid leaching +/- attritioning may be required for efficient separation / processing. • No bulk density measurements have been undertaken. • No groundwater was intersected in the course of drilling. • A Quaternary weathering profile including calcrete and rubbly laterite has developed above and within the upper part of the mineralisation. Minor cementing and silicification of the mineralised sand can occur, but the mineralisation is dominantly (>95%) unconsolidated sand. • Siliceous coatings and intergrowths on some HM grains are the only known deleterious substances. U+Th levels are <500pm for zircon product.

Criteria	JORC Code explanation	Commentary
Further work	• *The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).* • *Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.*	• Not applicable, project is proceeding to feasibility study based on comprehensive exploration program completed to date. • The limits of mineralisation have been established by the comprehensive exploration program completed to date.

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
Database integrity	• *Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.* • *Data validation procedures used.*	• Drill data logged electronically in the field, manual and automatic validation undertaken prior to loading in to master database. • The master database is managed by external consultants. • General database validation using Micromine prior to resource estimation. • Detailed database validation by manual/visual checking using Micromine.
Site visits	• *Comment on any site visits undertaken by the Competent Person and the outcome of those visits.* • *If no site visits have been undertaken indicate why this is the case.*	• Competent Person has undertaken several site visits and supervised numerous exploration drilling campaigns and is familiar with the terrain, mineralization and geological characteristics of the deposit.
Geological interpretation	• *Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.* • *Nature of the data used and of any assumptions made.* • *The effect, if any, of alternative interpretations on Mineral Resource estimation.* • *The use of geology in guiding and controlling Mineral Resource estimation.* • *The factors affecting continuity both of grade and geology.*	• A general geological model for mineralisation has been developed based on exploration data and published models for beach placer development, with minor modification to accommodate locally observed features. This allows high confidence in the geological interpretation of the Cyclone deposit. • The data is of sufficient density that alternative interpretations will not materially affect the Mineral Resource estimate. • The deposit has been split in to three domains, based upon geology and HM grade, for the purposes of resource estimation. • The 'Beach' domain comprises beach sands and minor dune and reworked beach sands, and typically displays transitional upper and lateral boundaries, with a distinct basal contact associated with surf zone grit and gravel. • The 'Strand' domain comprises beach strandline mineralization and typically displays transitional upper and seaward lateral boundaries with a sharp basal contact associated with surf zone grit and gravel, it occurs wholly within the Beach domain (i.e. a subset of the' Beach' domain).

Criteria	JORC Code explanation	Commentary
		• The 'Nearshore' domain comprises bi-modal fine grained marine sands with grit and typically displays transitional contacts. • A nominal 4% HM grade was used to delineate the Strand domain, with lower grade material occasionally included to maintain continuity and smooth shape. • A nominal 0.8% HM grade was used to delineate the Beach and Nearshore domain boundaries, with lower grade material sometimes included to maintain geological continuity and a smooth geometry. • The use of pure geological domains would result in a much larger, but lower grade, mineral resource estimate for Cyclone due to the transitional grade boundaries. • Grade continuity is significantly shorter across strike than along strike due to factors relating to deposition and sorting of material in a beach environment.
Dimensions	• *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.*	• The Beach domain has two primary 'arms' with a strike of around 7.0 and 9.5 km, a width of up to 0.8 km, with the top of ore reaching to 6m below ground surface, and the base of mineralisation typically between 24 to 30m below ground surface. • The Strand domain forms a higher grade core of the Beach domain, with 6 individual strands recognized. Strands range from 2.5 to 7km in length, from 50 to 400m in width, and 2 to 12m in thickness. • The Nearshore domain has a strike of 7.5 km, a width up to 1.1 km, but is typically only 4 – 6m thick. It often abuts the base of the Beach domain, but can be separated by up to 8m of low grade material, or occur without the presence of overlying beach mineralisation.
Estimation and modelling techniques	• *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.* • *The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.* • *The assumptions made regarding recovery of by-products.* • *Estimation of deleterious elements or other non-grade variables of economic significance (eg sulphur for acid mine drainage characterisation).* • *In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.*	• Resource estimation was undertaken using Micromine software, with inverse distance cubed interpolation method used for HM, Slimes and Oversize, and Nearest Neighbour for mineral assemblage. Mineral tonnes are calculated for each block, then total mineral assemblage calculated i.e. mineral assemblage values applied locally (weighted) and not as an unweighted global average. • Parent blocks size of 50m x 20m x 2m with 5 x 4 x 4 sub-blocking to neatly fit wireframes. • Three domains (as discussed above) were modelled separately and then combined to form a single block model for reporting purposes. • A minimum 3m thickness was applied to domain shapes, as this represents a minimum selective mining thickness. • A primary search ellipse of 275m x 55m x 5m oriented at 340° with a 0.8° dip to the west was used, minimum 3 samples and maximum 16 samples.

Criteria	JORC Code explanation	Commentary
	• *Any assumptions behind modelling of selective mining units.* • *Any assumptions about correlation between variables.* • *Description of how the geological interpretation was used to control the resource estimates.* • *Discussion of basis for using or not using grade cutting or capping.* • *The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.*	• The resource estimate shows good correlation with previous estimates and also with wireframe volumes and raw drill assay data. • No top cut was applied as the high grade assays are believed to be a true sample of the grade of well-developed continuous beach strandlines. • The domain boundaries do not extend beyond halfway to the adjoining drill hole or drill line. • The block model was validated visually and statistically against drillhole data. • A hard boundary between the 'Beach' and 'Strand' domains was used to estimate grades for the Strand Domain, to prevent excessive dilution and smoothing of what is interpreted as a distinct high grade strandline. • A soft boundary between the 'Beach' and 'Strand' domains was used to estimate grades for the 'Beach' Domain, to reflect the transitional upper and seaward contacts of the strandline mineralisation.
Moisture	• *Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.*	• Tonnages are estimated on a dry basis.
Cut-off parameters	• *The basis of the adopted cut-off grade(s) or quality parameters applied.*	• A 1% HM cut-off grade was utilized for reporting of the resource as this is believed to represent an appropriate grade considering the mineral assemblage, proposed mining technique and project economics.
Mining factors or assumptions	• *Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.*	• Conventional open pit 'dry' mining for mineral sands, with overburden removal by truck and shovel, and ore mining utilising in-pit dozer traps and slurry pumping. A minimum mining dimension of 100m width and 3m thickness is considered practical. • As the resource estimate has been generated and utilised for feasibility studies the mining assumptions are considered to be rigorous.
Metallurgical factors or assumptions	• *The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential 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.*	• Several programs of metallurgical testwork and process flow development have been undertaken by Mineral Technologies (MT). • Conventional wet concentrator plant for mineral sands, primarily utilising spiral separation with secondary screening and classification to achieve high HMC quality. • Testwork indicates >90% recovery of zircon to HMC, the primary economic driver of the resource. • Conventional mineral separation plant, primarily utilizing magnetic and electrostatic separation with secondary screening, classification and gravity separation to achieve mineral products. • As the resource estimate has been utilised for feasibility studies the

Criteria	JORC Code explanation	Commentary
		metallurgical assumptions are considered to be rigorous.
Environmental factors or assumptions	• *Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.*	• The Cyclone project occurs within a vast vegetated dune field of the Great Victoria Desert in a remote location and does not display any unique environmental characteristics. • Environmental management practices similar to those currently used in the mineral sands industry, but modified for the local environment, will be applied. • Tailings will initially be disposed of in purpose built facilities, before reverting to in-pit tailings backfill.
Bulk density	• *Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.* • *The 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.* • *Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.*	• Assumed bulk density of 1.7 utilised for tonnage estimates, based on both the theoretical density of mature sand deposits with relatively low levels of slime and HM, and similar HM deposits in Australia. • The mineralised material is reasonably homogenous over the extent of the resource and there is not expected to be material changes in the bulk density throughout the resource.
Classification	• *The basis for the classification of the Mineral Resources into varying confidence categories.* • *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).* • *Whether the result appropriately reflects the Competent Person's view of the deposit.*	• The primary factor for resource classification is drill spacing i.e. HM assay data density, as the geological setting and style of mineralisation is well understood and relatively consistent. • Infill drilling during 2011 and 2012 confirmed HM grade continuity and allowed higher confidence in the current drill pattern. • Additional mineral assemblage data is required to achieve similar levels of confidence and continuity as for HM data. • The classification used reflects the Competent Persons understanding of the deposit.
Audits or reviews	• *The results of any audits or reviews of Mineral Resource estimates.*	• The 2015 Mineral Resource estimate has utilised a similar approach to the 2010 estimate which was undertaken by an independent technical expert.
Discussion of relative accuracy/ confidence	• *Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative*	• A high level of confidence is placed on tonnage estimates (for the stated cut-off grade) as the geometry of mineralisation is well understood and the bulk density is considered accurate. • A high level of confidence is placed on HM grade estimates, due to the data density, sample analysis techniques and methods of estimation. However, there is some evidence from bulk sampling that HM grade

Criteria	JORC Code explanation	Commentary
	discussion of the factors that could affect the relative accuracy and confidence of the estimate. • *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.* • *These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.*	may be under-estimated by drilling / modelling, but this is not unusual for air-core drilling of unconsolidated sand deposits. Further investigations will be undertaken. • A high level of confidence is placed on slimes grade estimates, due to the data density, sample analysis techniques and methods of estimation. • A moderate level of confidence is placed on oversize grade estimates, due to the use of mechanised drilling techniques which can grind/pulverise indurated material and hence lead to under-estimation of oversize. Induration can also occur in an irregular manner and therefore be difficult to quantify by drilling alone. • A moderate to high level of confidence is placed on the global mineral assemblage estimate, as there is a reasonable number of QEMScan assays of composite samples from across the full extent of the deposit and the grade interpolation method accounts for variation through the deposit • A moderate level of confidence is placed on the local mineral assemblage estimates, as the use of composites may mask short range changes in mineral assemblage vertically through the mineralisation. Similarly, there exist some significant lateral variations in mineral assemblage, and the current data density is not sufficient to accurately define the boundary of mineral assemblage domains

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
Mineral Resource estimate for conversion to Ore Reserves	• *Description of the Mineral Resource estimate used as a basis for the conversion to an Ore Reserve.* • *Clear statement as to whether the Mineral Resources are reported additional to, or inclusive of, the Ore Reserves.*	• Mineral Resource estimate as described above, released to ASX on 9 Apr 2015. • The modeling techniques used are considered to align with industry best practice. • Mineral Resource is reported inclusive of Ore Reserve.
Site visits	• *Comment on any site visits undertaken by the Competent Person and the outcome of those visits.* • *If no site visits have been undertaken indicate why this is the case.*	• Competent Person visited site in August 2011 to view exploration drilling and test pit excavation, and is familiar with the terrain, geological setting and the nature of mineralisation.
Study status	• *The type and level of study undertaken to enable Mineral Resources to be converted to Ore Reserves.*	• Pre-Feasibility Study was completed by Diatreme Resources in March 2012 (ASX release 20 March 2012). This study developed a practical

Criteria	JORC Code explanation	Commentary
	• *The Code requires that a study to at least Pre-Feasibility Study level has been undertaken to convert Mineral Resources to Ore Reserves. Such studies will have been carried out and will have determined a mine plan that is technically achievable and economically viable, and that material Modifying Factors have been considered.*	mine plan that considered relevant Modifying Factors, and subsequently generated a financial model that confirmed the economic viability of the Cyclone Project. • This Ore Reserve represents the inclusion of additional material from the Mineral Resource within R69/1 (Cyclone Extended), which has been subject to development of a practical mine plan as for the 2012 Pre-Feasibility Study.
Cut-off parameters	• *The basis of the cut-off grade(s) or quality parameters applied.*	• A nominal cut-off grade of 0.4% Zircon was applied, based on estimates of capital and operating costs, mineral recovery and sales price and operating margin. Consideration was given to overburden volume and the development of a practical mining path.
Mining factors or assumptions	• *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).* • *The choice, nature and appropriateness of the selected mining method(s) and other mining parameters including associated design issues such as pre-strip, access, etc.* • *The assumptions made regarding geotechnical parameters (eg pit slopes, stope sizes, etc), grade control and pre-production drilling.* • *The major assumptions made and Mineral Resource model used for pit and stope optimisation (if appropriate).* • *The mining dilution factors used.* • *The mining recovery factors used.* • *Any minimum mining widths used.* • *The manner in which Inferred Mineral Resources are utilised in mining studies and the sensitivity of the outcome to their inclusion.* • *The infrastructure requirements of the selected mining methods.*	• The mining factors are based on preliminary design by experienced personnel. Mining method comprises overburden removal by truck and shovel, and ore mining by dozer push to in-pit traps and slurry pumping. Infrastructure requirements are minimal and will consist of a network of temporary haul roads, electricity and water reticulation to the mining unit and a mobile slurry pipeline. • Ore mining and overburden removal methods selected on the basis of personal experience and consultation with experienced mineral sands mining contractors. • Practical overburden removal, mining and tailings processes and sequence developed by experienced personnel to minimize cost whilst providing access to higher grade ore in the early stages of the mine. Proven techniques with low technical risk have been selected. • Overburden, ore and tailings volumes have been calculated on an annual basis. • A pit slope angle of 45° has been used for overburden material, based on the induration and minor clay present. A pit slope angle of 35° has been used for ore, based on free-flowing sand. An overall slope angle of 25° has been used for tailing material to reflect the use of retention walls. • No groundwater is present within the mine design. • Mining dilution was built in to the Ore Reserve by the inclusion of 'waste' material in the mine design, both as roof and floor dilution and internal waste (interburden) which occurs between the beach and nearshore mineralisation. • No mining recovery factor has been used as ore loss is negligible when using dozer push methods. • Ore Reserve tonnes are inclusive of any dilution and loss. • A minimum mining width was not applied given the nature of the

Criteria	JORC Code explanation	Commentary
		mineralisation and the proposed mining methods. The pit design has a minimum floor width of 80m but averages ~300m, giving ample room for efficient mining. • No Inferred Mineral Resources were considered in the Pre-Feasibility Study, or in this review of the mine plan. • The mining method is based on mobile equipment feeding an in-pit mining unit that requires power and water supply. Power will be supplied via portable cable from the site power station electricity network established alongside the mine path, water will be supplied via a portable pipeline from the mine borefield.
Metallurgical factors or assumptions	• *The metallurgical process proposed and the appropriateness of that process to the style of mineralisation.* • *Whether the metallurgical process is well-tested technology or novel in nature.* • *The nature, amount and representativeness of metallurgical test work undertaken, the nature of the metallurgical domaining applied and the corresponding metallurgical recovery factors applied.* • *Any assumptions or allowances made for deleterious elements.* • *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.* • *For minerals that are defined by a specification, has the ore reserve estimation been based on the appropriate mineralogy to meet the specifications?*	• Metallurgical testwork and process flowsheet design has been carried out by Mineral Technologies (MT) in Carrara on representative bulk ore samples (one from the life of mine, the other from initial 2-year path). All work has been reviewed by experienced personnel. • MT have proposed the use of conventional wet concentrator plant (WCP) for mineral sands, primarily utilising spiral separation with secondary screening and classification to achieve high HMC quality. • MT has proposed the use of a conventional mineral separation plant (MSP), primarily utilizing magnetic and electrostatic separation with secondary screening and gravity separation to generate mineral products. Hot acid leach of the HM is required to achieve optimal recovery and product quality, due to the presence of coated grains. • Three mineral products have been generated, Zircon, HiTi85 (rutile and non-mag leucoxene with +85% TiO_2) and HiTi65 (mag leucoxene with +65% TiO_2). Market reports by TZMI and Ruidow suggest all products will be readily saleable. The current project strategy is to produce HMC for sale and not produce the three final products. • Mineral products have low U+Th levels by global standards. • QEMScan analysis during the metallurgical testwork allowed calculation / correlation of product recovery with ore reserve estimates.
Environmen-tal	• *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.*	• Detailed environmental studies have been completed to produce a Public Environmental Review Report which has is currently in the assessment phase with the EPA. The report has been made available for public comment. • The proposed mining and on-site processing methods are consistent with industry best practice and any environmental impacts can be well managed and mitigated • Two off-path tailing storage facilities will be required to accommodate overburden and tailings during the initial phase of operations, but will revert to pit backfill once space is available. Overburden will be used to

Criteria	JORC Code explanation	Commentary
		construct walls to contain tailings slurry. Overburden will comprise a mix of sandy loam, sand and lateritic gravel, whilst tailings slurry will comprise a mix of sand with minor silt and clay.
Infrastructure	• *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.*	• The project is located in a remote region of WA within dune fields of the Great Victoria Desert and as such no infrastructure exists. The project development plan includes construction of a temporary camp for accommodation, airstrip for personnel movement, installation of diesel gensets for power generation, drilling of deep bores for water supply and construction of a road to the Trans Australia Railway at Forrest for logistics and product transportation. The road is planned to pass through the Great Victoria Desert Nature Reserve, and the environmental approvals process for a road corridor is well advanced.
Costs	• *The derivation of, or assumptions made, regarding projected capital costs in the study.* • *The methodology used to estimate operating costs.* • *Allowances made for the content of deleterious elements.* • *The derivation of assumptions made of metal or commodity price(s), for the principal minerals and co- products.* • *The source of exchange rates used in the study.* • *Derivation of transportation charges.* • *The basis for forecasting or source of treatment and refining charges, penalties for failure to meet specification, etc.* • *The allowances made for royalties payable, both Government and private.*	• A total capital cost of $A146 M has been estimated. This capital estimate is lower than the PFS estimate due to removal of the MSP from the project and reductions in wet processing capital. Use of recently developed processing equipment has resulted in a modified plant arrangement and a more efficient wet concentration process. • The average annual operating cost is estimated to be $A76 M. • Detailed capital cost estimates for project construction have been derived from multiple sources (including independent consultants) and compiled and checked by an experienced mineral sands project manager. • Detailed capital and operating cost estimates for mining and general mine support activities have been provided by experienced mineral sands mining contractors and validated by the study manager. • Detailed capital and operating cost estimates for the WCP have been derived by MT and validated by the study manager. The WCP design and costs include all processing required to generate high grade HMC, and is based on the bulk sample metallurgical testwork. • Detailed capital and operating cost estimates for a MSP suitable for Cyclone HMC have been derived by a Chinese party (BaoTi) based on MT's design and validated by the study manager. The MSP design and costs include all processing required to generate saleable product, as based on the bulk sample metallurgical testwork. This information is required for potential customers of Cyclone HMC. • Estimates of future commodity prices were determined by analysing recent reports from various sources including mineral sand producers and market analysts. The range of final product prices ($US) used in the project evaluation was, zircon $1,100-$1,250, HiTi85 $600-$800, and HiTi65 $200-$400. The prices were then used to estimate the value of

Criteria	JORC Code explanation	Commentary
		Cyclone HMC. • The project has been evaluated with the AUD:USD exchange rate set at 0.70 and 0.75. These rates are based on the generally accepted outlook for the exchange rate. • Transportation charges were derived in consultation with recognized trucking, rail haulage and port logistics companies and consultants • Allowance has been made for Government royalty of 5% of Australian revenue. The mining agreement with the Pila Nguru People includes a royalty and this royalty has also been considered in the study.
Revenue factors	• *The derivation of, or assumptions made regarding revenue factors including head grade, metal or commodity price(s) exchange rates, transportation and treatment charges, penalties, net smelter returns, etc.* • *The derivation of assumptions made of metal or commodity price(s), for the principal metals, minerals and co-products.*	• Project revenue is based on head grade (as determined for resource block model), mining and processing recovery (as determined by MT metallurgical testwork and process flow design) and mineral product prices (as below). • Commodity prices were determined by analyzing recent reports from mineral sand producers and market analysts.
Market assessment	• *The demand, supply and stock situation for the particular commodity, consumption trends and factors likely to affect supply and demand into the future.* • *A customer and competitor analysis along with the identification of likely market windows for the product.* • *Price and volume forecasts and the basis for these forecasts.* • *For industrial minerals the customer specification, testing and acceptance requirements prior to a supply contract.*	• The general downturn in the world economy has suppressed demand and prices for these industrial mineral products. The timing of an upturn is uncertain and new projects will be watching this closely to time their entry into the market. • Market studies by TZMI and Ruidow confirm ready market acceptance of the Cyclone mineral products, with China identified as the primary market. • Zircon is suitable for ceramics, foundry and refractory use. • HiTi85 is suitable for Ti-sponge or as a blend feedstock for chloride pigment plant. • HiTi65 is suitable as a blend feedstock for chloride pigment plant. • No specific customer testing or acceptance requirements / specifications have been undertaken. • Iluka Resources is the dominant producer in the zircon market, however several smaller scale producers also supply the market and a number of HM projects are undergoing assessment and development. Cyclone is well placed to compete due to its simple low cost mining operation and relatively high zircon grade.
Economic	• *The inputs to the economic analysis to produce the net present value (NPV) in the study, the source and confidence of these economic inputs including estimated inflation, discount rate, etc.* • *NPV ranges and sensitivity to variations in the significant assumptions and inputs.*	• Discount rate of 10% was used and is commonly used with this type of project under current economic conditions. The exchange rate range of 0.70 to 0.75 AUD:USD is in line with generally accepted outlook. The evaluation did not use escalation of prices or costs. • NPV ranges were obtained using a range of mineral prices from the current depressed prices to the general outlook for longer term prices.

Criteria	JORC Code explanation	Commentary
		The project is marginally viable at current mineral prices. The project NPV ranges from $75M to $110M for longer term prices of zircon $1,200-$1,250, HiTi85 $800, and HiTi65 $300-$400. AUD:USD exchange rate of 0.70 and 0.75 was used.
Social	• *The status of agreements with key stakeholders and matters leading to social licence to operate.*	• A mining agreement with the Native Title party (Pila Nguru people) was finalised, signed and lodged in November 2014.
Other	• *To the extent relevant, the impact of the following on the project and/or on the estimation and classification of the Ore Reserves:* • *Any identified material naturally occurring risks.* • *The status of material legal agreements and marketing arrangements.* • *The status of governmental agreements and approvals critical to the viability of the project, such as mineral tenement status, and government and statutory approvals. There must be reasonable grounds to expect that all necessary Government approvals will be received within the timeframes anticipated in the Pre-Feasibility or Feasibility study. Highlight and discuss the materiality of any unresolved matter that is dependent on a third party on which extraction of the reserve is contingent.*	• No significant naturally occurring risks have been identified which may impact the estimation of ore reserves • No marketing arrangements have been established for the project • Permitting process for the access and haul road has commenced, no significant impediments have been identified to date and approval to establish a road corridor through the Nature Reserve is anticipated based on progress with relevant authorities to date, • The Cyclone Mine Lease M69/141 was granted in November 2014 • The time frame for project development reported in the Pre-Feasibility Study has been delayed while the Public Environmental Review is proceeding and development work is scheduled to recommence when the EPA approval is obtained.
Classification	• *The basis for the classification of the Ore Reserves into varying confidence categories.* • *Whether the result appropriately reflects the Competent Person's view of the deposit.* • *The proportion of Probable Ore Reserves that have been derived from Measured Mineral Resources (if any).*	• The Ore Reserve has been classified as Probable based on the accuracy of the cost estimate (PFS quality) and additional work required for the marketing of Cyclone HMC in China. • The Probable Ore Reserve appropriately reflects the Competent Persons view of the deposit • Greater than 90% of the Probable Ore Reserve has been derived from Measured Mineral Resources
Audits or reviews	• *The results of any audits or reviews of Ore Reserve estimates.*	• The 2012 Ore Reserve estimate was reviewed by Terence Willstead & Associates and verified as an appropriate estimate. • The 2015 Ore Reserve estimate has not been independently reviewed but utilises the same project development principles
Discussion of relative accuracy/ confidence	• *Where appropriate a statement of the relative accuracy and confidence level in the Ore Reserve estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the reserve within 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.* • *The statement should specify whether it relates to global or local*	• The accuracy and confidence level in the Ore Reserve estimate is considered appropriate for the level of supporting studies undertaken for the Pre-Feasibility Study and subsequent resource, metallurgy, heritage, and environmental studies. • The Mineral Resource, Mining and Metallurgical Factors are well understood and have been developed by experienced mineral sands personnel familiar with this style of heavy mineral deposit. Details of the Mineral Resource modeling technique and parameters are provided earlier in this document. Standard mineral sand mining parameters

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	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. • *Accuracy and confidence discussions should extend to specific discussions of any applied Modifying Factors that may have a material impact on Ore Reserve viability, or for which there are remaining areas of uncertainty at the current study stage.* • *It is recognised that this may not be possible or appropriate in all circumstances. These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.*	have been applied to the Mineral Resource block model to produce the Probable Ore Reserve estimate. • The project is sensitive to mineral product prices and the AUD:USD exchange rate. These are the main external factors impacting on the Ore Reserve estimate.