TNG LIMITED

8 July 2020

# TNG EXPANDS STRATEGIC RESOURCE GROWTH AFTER SECURING LARGE TITANIUM-VANADIUM RESOURCE AT KULGERA PROJECT, NT

***The Arrakis Deposit contains at least 346Mt JORC Heavy Mineral Resource dominated by ilmenite; Highly prospective large land holding; Detailed FEED work continues to advance the company's Mount Peake project.***

## Key Points

- **TNG has secured Exploration Licence applications in the Northern Territory along the South Australian border, known as the Kulgera Project containing the Arrakis Prospect.**
- **The Arrakis deposit contains a maiden Mineral Resource Estimate (MRE) estimated by CSA Global of a Total Indicated and Inferred Mineral Resource of 346Mt at 6.3% Heavy Mineral (see Table 1).**
- **The deposit is hosted in dune sands with 10km of strike extent, and the heavy mineral (HM) fraction is dominated by ilmenite, with minor zircon content (55% valuable HM).**
- **TNG will focus on determining if the vanadiferous titanium-iron oxide heavy mineral concentrate can be treated using TNG's proprietary 100%-owned TIVAN® process to separate saleable vanadium, titanium and iron products and preliminary indications suggest up to 70% of the HM may be valuable TIVAN® feed.**
- **TNG is well placed to undertake the exploration and metallurgical test work.**
- **The Company believes that the Kulgera Project could, in the medium to long term, supplement the planned mining and processing of the large Mount Peake Vanadium-Titanium-Iron deposit, north of Alice Springs and add significantly to the Companies resources.**
- **The large tenement area on the Northern edge of the highly prospective Musgrave Province is also highly prospective for Nickel and Copper mineralisation.**

Australian resource and mineral processing technology company TNG Limited (ASX: TNG) ("TNG" or the "Company") is pleased to announce that it has secured a significant strategic addition to its resource development and growth pipeline through the acquisition of a 1,231km$^2$ vanadium and titanium exploration project at **Kulgera**, located along the South Australian border in the Northern Territory (see Figure 1).

The Kulgera Project tenure includes a maiden Mineral Resource, independently estimated by consultants CSA Global, for the Arrakis Deposit, which contains a combined JORC 2012 compliant Indicated and Inferred Resource of **346 million tonnes of dune sand with a heavy mineral fraction of 6.3% Heavy Mineral** that is dominated by ilmenite (an iron titanium oxide mineral), and could add substantially to the Mount Peake resource base.

TNG intends to focus any planned work programs at Kulgera on defining concentrate that could be treated using the Company's proprietary 100%-owned TIVAN® process and conducting concentrate flowsheet refinement and TIVAN™ testwork to determine the economics of extraction which could add to the Mount Peake project.

**The Company's primary focus continues to be on completion of the FEED and associated work streams for the development of its 100%-owned Mount Peake Vanadium-Titanium-Iron Project in the Northern Territory (Figure 1), however the opportunity for expansion of its tenure to include this strategic resource could potentially supplement the planned mining and processing of the Mount Peake deposit in the medium to long term,**

**enhancing its longer-term resource development and growth pipeline and provide additional vanadium and Titanium feedstock for production, significantly enhancing its resource base.**

## KULGERA PROJECT

The Kulgera Project tenements are located adjacent to the South Australian border in the Northern Territory, to the south-east of Uluru and around 120km west of the Stuart Highway (Figure 1).

The tenements cover 1,231km$^2$ of sand plain immediately on the northern boundary of the ranges of the Musgrave Province which is highly prospective for Nickel, Copper and Gold. The surficial aeolian dune sand cropping out over the tenements has significant Fe-Ti oxide content, derived from weathering of the prospective Musgrave mafic intrusive rocks to the south.

In 2012 and 2013 Globe Mineral Resources International ("GMRI"), outlined significant accumulations of heavy mineral sands within the dune sands but carried out no other surveys. The heavy mineral assemblage comprised both the original igneous sourced magnetite and its weathering products: ilmenite and hematite.

The elevated vanadium and titanium content of magnetite-bearing mafic intrusives from the Musgrave Province, south and west of the Kulgera Project, is well documented[1]. Across the border in South Australia and in far eastern Western Australia, there are large outcropping gabbroic intrusives with high magnetite contents. The intrusive mineral is vanadiferous titanomagnetite, having several thousand parts per million vanadium and several percent titanium. The magnetite/ilmenite-bearing sands identified within the project area are derived from erosion of one of these mafic intrusive bodies (the Woodroffe intrusive), some 25-40km to the south, and water and wind transport.

Interestingly, the Musgrave mafic and associated ultramafic rocks are part of the same igneous event (the 1.06 Ga Warakurna Supersuite or LIP) that formed the Mount Peake gabbro[2], which hosts TNG's flagship Mount Peake V-Ti-Fe deposit.

In 2012-13, GMRI drilled 1,749 shallow (average 8 metres depth) holes to outline the accumulation of the black Ti-Fe-V rich heavy minerals within unconsolidated dune sand in the Arrakis deposit. CSA Global completed a Mineral Resource estimate for GMRI on this area and has recently updated the work for TNG. No significant work has been undertaken at Kulgera by GMRI since 2014.

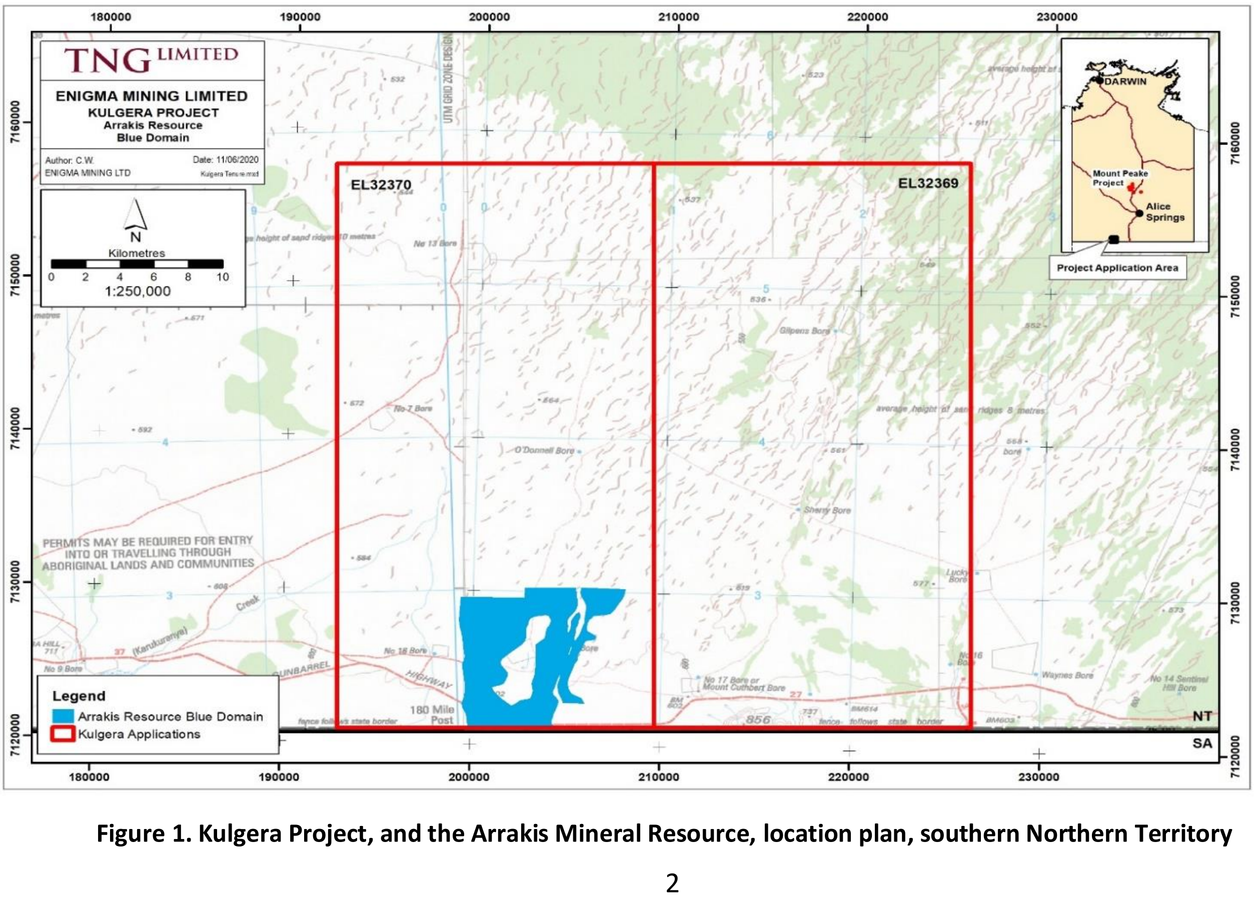


**Figure 1. Kulgera Project, and the Arrakis Mineral Resource, location plan, southern Northern Territory**

## MINERAL RESOURCE ESTIMATE

The maiden Mineral Resource estimate at the Arrakis Prospect has been completed by independent resource specialists CSA Global. Table 1 below outlines the tonnage and grade of the dune sand deposit at Arrakis. The estimate has been prepared in accordance with the JORC (2012) Code. 61% of this total is Indicated Resource Classification, with the remainder being Inferred Resource.

| Resource Classification | Tonnes (Mt) | HM % | Slimes % | Over Size % |
|---|---|---|---|---|
| Measured | - | - | - | |
| Indicated | 210.7 | 6.5 | 10.4 | 8.8 |
| Sub-total | 210.7 | 6.5 | 10.4 | 8.8 |
| Inferred | 135.2 | 6.0 | 11.6 | 10.6 |
| Total | 346.0 | 6.3 | 10.9 | 9.5 |

**Table 1. Arrakis Mineral Resource.**

**Note: Cut-off grade 4.0% Heavy Mineral content**

**Tonnages and grades have been rounded to reflect the relative uncertainty of the estimate.**

The Mineral Resource is briefly summarised below, while more details, to comply with ASX Listing Rule 5.8.1, can be found in the TECHNICAL DESCRIPTION section further down and in Appendix One, where the JORC Table 1 Sections 1, 2 and 3 information is provided.

The Mineral Resource estimate for Arrakis was originally prepared in 2013 by CSA Global for GMRI. The estimate was classified at the time in accordance with the 2012 JORC Code, but was never publicly reported. No further work of any material nature with respect to the Mineral Resource has been carried out at the project since early 2014, and the current Mineral Resource statement is therefore considered to be current according to Mineral Resource classification, estimated tonnes and grade, and mineralogy.

The Arrakis Mineral Resource is an aeolian dune accumulation of unconsolidated sand containing a heavy mineral fraction of over 6% content. Dunes are NNE/WSW oriented, generally 8-12m high and 300-400m wide, and stabilised by vegetation. The deposit is spread over a strike length of some 10km and is up to 2.5km wide, being a dune field rather than individual dunes. Figure 1 shows the extent of the Mineral Resource, while Figure 2 shows a cross- section, highlighting the deposit spanning several dunes.

The sand contains less than 10% oversize (>0.6mm) and less than 11% Slimes content (fine fraction material <0.053 mm), which indicates the material would be readily mined and separated into a clean heavy fraction with conventional equipment: cyclones, spirals and tabling.

GMRI mineralogical work indicates the heavy fraction is dominated by magnetic material with ilmenite dominating. Using various strength magnetic separations gives initial highly magnetic magnetite/ilmenite fraction with moderate $TiO_2$ grade (500 Gauss), and a high $TiO_2$ ilmenite fraction with a higher Gauss (4300) applied. GMRI were looking to produce a Fe-Ti concentrate to sell into the Fe Slag market.

As such, the concentrate contained 55% valuable heavy minerals, with much of the remainder being magnetic and a mix of hematite/ilmenite/geothite. The heavy fraction contains a consistent but small (ca. 1.5%) zircon content, which is likely to be able to be recovered and made into a saleable product.

A total of 1,749 shallow air-core holes for a total of 13,614m were used to define the deposit. 1m samples were analysed by screening (0.6mm and 0.053mm) and then TBE heavy liquid separation to report %HM, %OS and %Slimes into the block model. Drilling at 50m and 100m spacing along E/W lines spaced 250m or 500m apart allowed for the Indicated Resource classification. A 4% HM cut-off grade was applied, coinciding with a sharp population change – effectively all the aeolian dune sand above a clay basal layer is Resource.

## TNG DISCUSSION AND PLANNED WORK

TNG will assess the deposit with a view to establishing if its TIVAN® process is able to economically treat a Kulgera V-Ti heavy mineral magnetic concentrate. A review for potential other mineralisation will also be assessed.

TNG is well advanced in developing the Mount Peake V-Ti-Fe deposit, located 235km north of Alice Springs, where the hard-rock magnetite-bearing gabbro ore will be ground to 0.15mm and a magnetite concentrate generated. This is to be treated using TNG's own TIVAN® hydrometallurgical process to produce $V_2O_5$ flake, titanium pigment and iron oxide saleable products.

GMRI did not assess the vanadium content of the concentrate, as in slag iron feed it is a deleterious element. Assays of the various heavy magnetic fractions suggest grades up to 0.36% $V_2O_5$ in the early split magnetic fractions (500 Gauss) and lower values for vanadium corresponding to the higher $TiO_2$ values in the ilmenite fractions. As such, it is possible in excess of 70% of the heavy mineral fraction may be valuable TIVAN feed.

TNG will undertake low cost test work to verify if the concentrate can be treated by the TIVAN® process, which will treat the Mount Peake concentrate material. If so then Kulgera could add to the feed to the planned TNG Darwin processing plant.

## TECHNICAL DESCRIPTION

The following information is a summary of the JORC Table 1 information detailed in Appendix 1, and provided to comply with the ASX Listing Rule 5.8.1, where a Mineral Resource estimate is included in an ASX market announcement for the first time.

### Geology and Geological Interpretation

The mineralisation is hosted within NNE-SSW aligned Quaternary sand dunes. The dunes in each of these domains are about 8 m to 12m high, 300 m to 400m wide and extend over distances of between 10 to 15km and with an alignment of 0° to 10° magnetic north. The bulk of the heavy mineralisation is present in this domain. Ilmenite (FeTiO3) is the only HM species present in the project of any quantity that may demonstrate economic value. The only other HM species to occur in minor quantities, is zircon. Gangue mineralogy is dominated by quartz.

The dunes are compacted with vegetation cover and are not free running as is typical of wind-blown dune systems in parts of Australia and elsewhere in the world. This implies the Mineral Resource will not appreciably shift due to wind within the foreseeable future.

The geological interpretation is wholly constrained within the sand dunes and although a grade envelope is utilised, the geological domains typically capture most of the upper parts of the dunes. The geological interpretations were constrained by aircore drill samples and by the high resolution topographic digital terrain model (DTM). The geology of the deposit strongly controls the Mineral Resource estimation. Estimates for the Heavy Mineral (HM) grades were not extended into the basal clays. 3 provides a cross section through the Arrakis deposit.

### Drilling Techniques

Two Air-Core (AC) drilling programs were conducted in 2012 and 2013. In 2012 a total of 622 holes, for 5,102 metres, were drilled at a spacing of approximately 250m along 8 east – west oriented lines spaced notionally at 4,000m.

In 2013 a total of 1,127 holes, for 8,512 metres, were completed on east-west orientated lines spaced at either 250m, 500m or 1000m intervals. Vertical holes were drilled along the lines spaced at 50 to 200m with the spacing controlled by the distribution of sand dunes.

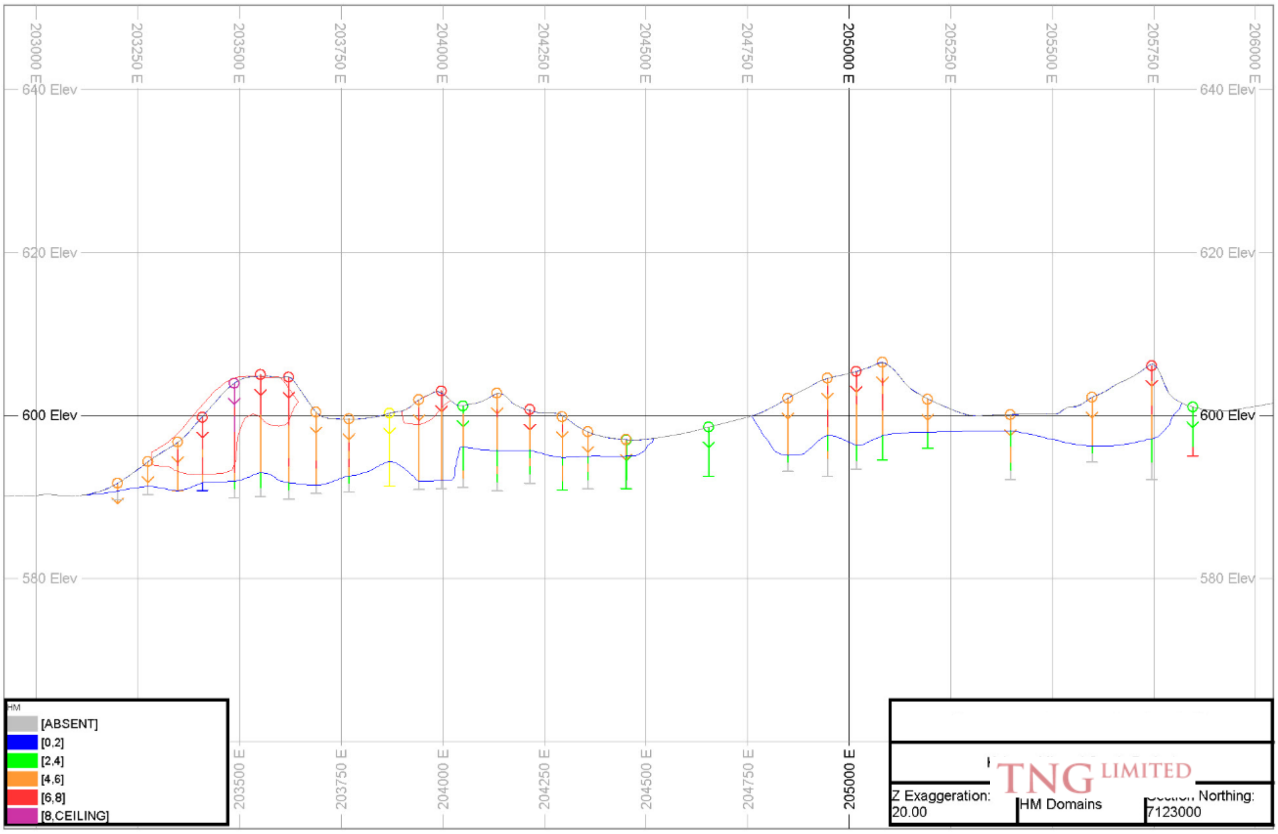


**Figure 2 Cross Section, 7123000N, showing drilling (HM%), mineralisation domain and topographic profile. Vertical exaggeration of 20%.**

## Sampling and Sub-sampling Techniques

Each air core hole was sampled at one metre intervals with the drill cuttings collected either from the diverter or cyclone into standard green plastic sample bags. From each hole the interval for sampling was identified and 1 metre samples prepared using a 50:50 splitter. About three passes through the splitter was required to reduce the sample down to between 1 and 1.5kg. The samples for tetrabromoethane (TBE) separation were placed in pre-numbered calico bags and then stored in polyweave sacks for transport to the sample laboratory.

## Sample Analysis Method

Samples were sent to Diamantina laboratories in Perth where the samples were organised by number and dried for 24 hours. The samples were weighed and initially an approximately 200g split taken. The 200g split was wet sieved at 0.6 mm and 0.053 mm to produce an oversize, middling and slimes product. The over size and middlings were dried and weighed and the amount of slimes (<0.053mm) calculated. The oversize material was discarded.

The middling product (-0.6mm to +0.053mm) was separated using TBE, a heavy liquid with a density of 2.85g/ml. The weight of the sinks was measured after washing and drying, following which the percent of heavy mineral in the middling and total sample was calculated.

## Mineralogy

An estimate of the heavy mineral assemblages was determined from mineralogical analyses from 10 samples, each sample being a composite of samples from multiple drill holes along 10 lines of drilling, which were separated by 1,500 m to 3,000 m. This has provided an appreciation of the variability in valuable HMC (VHM) along the northerly strike of the deposit, with VHM ranging from 44% to 72%, averaging 55%. The majority of VHM is ilmenite, with lesser zircon.

The oversize component (grain size > 0.6mm) accounts for 9.5% of the total material and slimes (grain size < 0.053 mm) accounts for 10.9 % of the total. Both the slimes and oversize do not contain any VHM.

### Estimation Methodology

The geological domain hosting mineralisation was based upon a lower HM percentage of 4%. This interpretation was supported by the lithological logs, with domains dominated by sand, with some sand plus gravel intervals included. Heavy Mineral content was based on the results of the TBE separations.

The geological interpretations were digitised and wireframes solids constructed.

Traditional semi variograms were calculated and modelled for HM, Slimes (grain size > 0.6 mm) and Oversize (grain size < 0.053 mm). Each of the grade variables demonstrates low relative nuggets and long ranges, as expected in heavy mineral sands deposits. No top cuts were applied to the HM, Slimes or Oversize populations.

A block model with cell dimensions 50 m (easting) by 250 m (northing) by 5 m (vertical) was constructed using Datamine software, with cells appropriately sub-blocked to allow sufficient resolution at the domain and topographic surfaces.

Grade (HM%, slimes % and oversize %) were interpolated from 1m drill samples using ordinary kriging. The search ellipses were aligned along strike of the dune ridges (010°). A minimum of 6 and maximum of 14 samples were used in any one block estimate. If a block was informed by insufficient number of samples with the search ellipse, then the ellipse radii was increased by 50%, and then doubled until the block was estimated. A maximum of 4 composited samples per drill hole were used in any one block estimate. Cell discretisation of 5 x 5 x 5 (X Y Z) was employed.

Model validation was carried out graphically and statistically to ensure that block model grades reflect the tenor of grade from adjacent drill hole data. Drill hole cross sections were examined to ensure that model grades honour the local composite drill hole grades. Trend plots were used to compare the trend of average grades of the model and input sample data, along a specified direction.

### Mineral Resource Classification

The Mineral Resource was classified as Indicated and Inferred in accordance with the JORC Code. Classification of the Mineral Resource estimate considered the geological understanding of the deposits, QAQC of the samples, density data and drill hole spacing. An Indicated classification outline was digitised in plan view, and all blocks located within the mineralisation domain and within this perimeter were classified as Indicated. All other blocks were classified as Inferred.

No further work of any material nature with respect to the Mineral Resource has been carried out at the project since early 2014, and the current Mineral Resource statement is therefore considered to be current according to Mineral Resource classification, estimated tonnes and grade, and mineralogy.

### Cut-Off Grades

The heavy mineral domains were interpreted where HM% >4%, and this value is clearly demonstrated in histograms of HM % where a sharp population change is noted at 4% HM. The Mineral Resource is reported above an HM% of 0%, therefore there is no grade sub-domaining of the Mineral Resource domains.

### Modifying Factors

No modifying factors were included in the preparation and reporting of the Mineral Resource. It is assumed that any mining will be by surface mining methods. The multi-element geochemistry has indicated that the heavy mineral concentrate (HMC) is very clean. It is mostly oxidised and contains very little sulphur. As such, it is not anticipated that there will be any impediments to mining, concentrating, storing, transporting and processing the HMC.

### Reasonable Prospects Hurdle

The Competent Person believes there are reasonable prospects for eventual economic extraction of the Mineral Resource. The mineralisation sits within sand dunes at surface, and the project is 150 km west of the Stuart Highway and accessible for road haulage.

## MANAGEMENT COMMENT

TNG's Managing Director and CEO, Mr Paul Burton, said:

*"Our focus remains on completion of the FEED and associated work streams for our Mount Peake deposit, which is progressing on schedule, but in keeping with the Compqny's long term asset profile, the Kulgera Project represents a low-cost opportunity and potentially significant strategic addition to our existing vanadium and titanium resource inventory at the Mount Peake Project, with excellent potential to enhance our longer-term resource development pipeline.*

*"We are looking forward to determine if the material can be treated using TNG's 100%-owned TIVAN® process to separate saleable vanadium, titanium and iron products. If confirmed, this means that the very large resource at Kulgera could potentially be processed at the world-class facility we are planning to develop for Mount Peake – further increasing the scale of our operations in to one of the largest globally and providing an opportunity to utilise our world-class, proprietary TIVAN® technology.*

*"The expansion of TNG's tenements is consistent with the Company's long-term growth strategy, which is to become a vertically integrated global producer of three high value, high purity products – vanadium pentoxide, titanium dioxide and iron oxide - and we remain vigilant in assessing other opportunities."*

Authorised by:

**Paul E Burton**
Managing Director and CEO

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**References**

1 Maier, W. D., 2014; Mafic-ultramafic intrusions of the Giles Event, Western Australia: Petrogenesis and prospectivity for magmatic ore deposits. GSWA Report 134. 88p.

2 Beyer, E. E., 2016; Summary of Results. NTGS laser ablation ICP-MS in situ zircon and badelleyite geochronology project: Mount Peake Gabbro, Arunta Region. NTGS Record 2016-002.

**Competent Person Statement**

The information in this report that relates to Mineral Resources is based on, and fairly reflects, information compiled by David Williams, a Competent Person, who is employed by CSA Global Pty Ltd and who is a Member of the Australian Institute of Geoscientists (#4176). Mr Williams has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves' (JORC Code). Mr Williams consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

**About TNG**

TNG is a Perth based resource and mineral processing technology company focussing on building a world-scale strategic metals business based on its flagship 100%-owned Mount Peake Vanadium-Titanium-Iron Project in the Northern Territory. Located 235km north of Alice Springs, Mount Peake will be a long-life project producing a suite of high-quality, high-purity strategic products for global markets including vanadium pentoxide, titanium dioxide pigment and iron ore fines. The project, which is expected to be a top-10 global producer, has received Major Project Facilitation status from the Northern Territory Government.

**Forward-Looking Statements**

This announcement has been prepared by TNG Limited. This announcement is in summary form and does not purport to be all inclusive or complete. Recipients should conduct their own investigations and perform their own analysis in order to satisfy themselves as to the accuracy and completeness of the information, statements and opinions contained.

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## Appendix 1: JORC Table 1

### Section 1 Sampling Techniques and Data

| Criteria | JORC Code Explanation | Commentary |
|---|---|---|
| *Sampling techniques* | • *Nature and quality of sampling (e.g. cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.*<br>• *Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.*<br>• *Aspects of the determination of mineralisation that are Material to the Public Report.*<br>• *In cases where 'industry standard' work has been done this would be relatively simple (e.g. '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 (e.g. submarine nodules) may warrant disclosure of detailed information.* | • Each air core hole was sampled at one metre intervals with the drill cuttings collected either from the diverter or cyclone into standard green plastic sample bags.<br>• Splitting crews normally operated about two holes behind the rig in a safe and dust free environment. From each hole the interval for sampling was identified and 1 metre samples prepared using a 50:50 splitter. About three passes through the splitter was required to reduce the sample down to between 1 and 1.5kg. The samples for Tetrabromoethane (TBE) separation were placed in pre-numbered calico bags and then stored in polyweave sacks for transport.<br>• The sacks are sealed tightly with cable ties. The sample numbers were recorded on the geologist's log and on the polyweave sack. The laboratories address was also written on each polyweave sack.<br>• Prior to dispatch to Diamantina Laboratories in Perth the polyweave sacks containing the samples were laid out in order to verify all of the samples were accounted for. The polyweave sacks were then placed into bulker bags which were labelled with the contents list and the Laboratories address. The samples were then delivered directly to the freight company. |
| *Drilling techniques* | • *Drill type (e.g. core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (e.g. core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).* | • Two Air-Core drilling programs were conducted in 2012 and 2013.<br>• In 2012 two drilling contractors (Geo Drilling and Cheyne Drilling) were used to drill 622 AC holes (5,102m) at a spacing of approximately 250m along 8 east – west oriented lines spaced notionally at 4,000m.<br>• Geo Drilling used a Schram with an on-board compressor (350/700cfm) and a separate rod truck. A 4.5 inch Air-core bit was used to drill a total of 142 holes for a total of 925m. Due to repeated mechanical failures, Geo Drilling was replaced by Cheyne Drilling, a Darwin based contractor using the air-core technique.<br>• The drilling undertaken in 2013 was completed entirely by Cheyne Drilling. A total of 1127 holes for 8512 metres were completed on east-west orientated lines spaced at either 250m, 500m or 1000m intervals. Vertical holes were drilled along the lines spaced |

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| | | at 50 to 200m with the spacing controlled by the distribution of sand dunes.<br>• To do the work Cheyne Drilling provided two Desco 600 tracked platforms. The drilling rig and rods were contained on one machine whilst the compressor and fuel tanks were on the second. The drilling rods were 3.25 inches and the bit 3.5-inch diameter. Air was supplied by a hired Cat / Sullair 175 / 725 compressor. |
| *Drill sample recovery* | • *Method of recording and assessing core and chip sample recoveries and results assessed.*<br>• *Measures taken to maximise sample recovery and ensure representative nature of the samples.*<br>• *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.* | • Each air-core hole was achieved in two parts designed to maximise the sample recovery. To recover the first metre, which was typically very sandy, a green plastic sample bag was placed directly over the diverter pipe. Once the first metre was collected the mast was raised and a small amount of water was poured into the hole which was immediately collapsed. The mast was then lowered and drilling resumed. The water mixed with sand at the top of each hole formed a seal which forced the subsequent drill cuttings up the centre tube and into the cyclone. Using the two part drilling process ensured that recovery of the first metre was normally above 90% and the recovery for the second and following metres was above 80%. On rare occasions where the recovery was deemed to be insufficient by the site geologist the hole was re-drilled. As part of the geological log an estimate of the sample recovery was made for each metre drilled. |
| *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.*<br>• *Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.*<br>• *The total length and percentage of the relevant intersections logged.* | • Drilling of each hole was supervised and logged by the site geologist and continued until calcrete was intersected or the geologist's estimated the heavy mineral content was low. The geologists logged each 1m sample interval, noting the drill hole ID, sample interval, primary and secondary lithologies and sample colour.<br>• The site geologist used a magnet on each sample and from the amount of material adhering estimated the amount of heavy mineral present.<br>• Logging is qualitative in nature. |
| *Sub-sampling techniques and sample preparation* | • *If core, whether cut or sawn and whether quarter, half or all core taken.*<br>• *If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.*<br>• *For all sample types, the nature, quality and appropriateness of the sample preparation technique.*<br>• *Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.*<br>• *Measures taken to ensure that the sampling is representative of the* | • Each air core hole was sampled at one metre intervals with the drill cuttings collected either from the diverter or cyclone into standard green plastic sample bags.<br>• Splitting crews normally operated about two holes behind the rig in a safe and dust free environment. From each hole the interval for sampling was identified and 1 metre samples prepared using a 50:50 splitter. About three passes through the splitter was required to reduce the sample down to between 1 and 1.5kg. The samples for Tetrabromoethane (TBE) separation were placed in pre-numbered calico bags and then stored in polyweave sacks for transport.<br>• Field duplicates taken every 1 in 20.<br>• Sample sizes are considered to be appropriate to the grain size of the mineral sands sample. |

| | | |
|---|---|---|
| | *in-situ material collected, including for instance results for field duplicate/second-half sampling.*<br>• *Whether sample sizes are appropriate to the grain size of the material being sampled.* | |
| *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.*<br>• *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.*<br>• *Nature of quality control procedures adopted (e.g. standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.* | • At Diamantina laboratories in Perth the samples were organised by number and dried for 24 hours. The samples were weighed and initially an approximately 200 gram split taken. The ~200g split was wet sieved at 0.6mm and 0.053mm to produce an oversize, middling and slimes product. The over size and middlings were dried and weighed and the amount of slimes (<0.053mm) calculated. The oversize material was discarded.<br>• The middling product (-0.6mm to +0.053mm) was separated using Tetrabromoethane (TBE), a heavy liquid with a density of 2.85g/ml. The weight of the sinks were measured after washing and drying, following which the percent of heavy mineral in the middling and total sample was calculated.<br>• A QAQC programme was used during the drilling programmes in the form of duplicate samples, umpire analyses and twinned drilling. Certified reference materials (standards) were not used. CSA Global note the effectiveness in using and routinely monitoring a well maintained QAQC programme, which has resulted in the avoidance of a major under-call of the HM% results from the 2013 drilling programme samples by the independent laboratory.<br>• Field duplicate samples were taken at a rate of 1:20 at the same time as the primary samples were taken. The duplicate samples were dispatched to the assay laboratory (Diamantina Laboratories, Perth) for analyses. The results derived from the duplicate samples have demonstrated that the field sampling procedure is adequate and capable of producing reproducible results.<br>• Upon receipt of the initial analytical TBE results from the 2013 drilling programme an anomaly was detected in the results of the HM content following a review of the field duplicate results. It was noted that the results for HM% from the primary samples were lower than expected, especially when compared against the results from the 2012 drilling programme. The Project Manager submitted to Diamantina scatter plots of the field duplicate results for HM%, one from the 2012 programme which demonstrated very good correlation between original and duplicate, and the other from an early batch from 2013.<br>• An investigation was initiated with Diamantina with the result being:<br>  ○ Split 100g of sample for separation rather than the 200g formerly used.<br>  ○ Changes to Diamantina's laboratory supervision protocols, staff training and the purchase and maintenance of new laboratory equipment. |

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| | | • The 100g split was chosen because the Diamantina management believed the larger split was overloading the volume of TBE used. All analyses conducted prior to the changes in the laboratory were repeated, with the repeated results used in the Mineral Resource. |
| *Verification of sampling and assaying* | • *The verification of significant intersections by either independent or alternative company personnel.*<br>• *The use of twinned holes.*<br>• *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.*<br>• *Discuss any adjustment to assay data.* | • To provide a measure of the reproducibility and the continuity of mineralisation as well as the sampling and analysis procedures, 10 holes from the 2012 program were redrilled or twinned.<br>• Notwithstanding the limitations imposed by the small size of the data sets the twinned-hole drilling indicated reasonable correlation exists between the 2012 and 2013 drilling and between the start and end of the 2013 program.<br>• Significant intersections were verified at the time of drilling, or soon after, by the Exploration Manager, and later by CSA Global during the 2013 site inspection. |
| *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.*<br>• *Specification of the grid system used.*<br>• *Quality and adequacy of topographic control.* | • Grid Systems: MGA94_53 and MGA94_52<br>• All drill holes from the 2012 field season were surveyed by licensed surveyors using DGPS, with results provided to the project manager.<br>• The drill hole collars from the 2013 field season were similarly surveyed, however the results were not provided to the project manager prior to the cut-off date for the resource database. Instead the collars were registered to a high resolution DTM.<br>• The DTM satellite grid of the land surface was provided by Scantherma using the Geoeye-1 satellite. This was able to give elevation resolution in the project area of <1m. Elevation resolution was improved by the project manager clearly marking the 2012 drill collars so that they could be detected in the satellite imagery.<br>• To assess the quality of the DTM, the surveyed elevations for numerous points were compared to the elevations assigned by the DTM. Initially there were some obvious problems in the DTM elevations but by reworking the data these were resolved.<br>• By the end of the processing the maximum difference between the surveyed and DTM derived elevations was approximately 1m with most site within 20cm.<br>• It was planned to further test the DTM by comparing the DTM elevation with the surveyed results from 2013 but this has not been possible as they weren't made available in time. |
| *Data spacing and distribution* | • *Data spacing for reporting of Exploration Results.*<br>• *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.*<br>• *Whether sample compositing has been applied.* | • Each air-core hole was sampled in one metre intervals.<br>• A total of 1,748 air-core (AC) drill holes for 13,615m have been drilled at the project in 2012 and 2013. Not all of these holes were used in the Mineral Resource. Drill hole spacing ranges from 50m x 250m to 250m x 1000m.<br>• In 2012, two drilling contractors were used to drill 622 holes (5,102m) at a spacing of approximately 250m along 8 lines spaced notionally at 4,000m. A total of 4,683 individual 1m samples (plus duplicates @ 1 in 20) were collected.<br>• In 2013, 1,127 holes were drilled for 8,512 metres on east-west orientated lines spaced at either 250m, 500m or 1,000m intervals. Vertical holes were drilled along the lines spaced at 50 |

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| | | to 200m with the spacing controlled by the distribution of sand dunes.<br>• The data spacing and distribution is considered sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource estimation and classification. |
| *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.*<br>• *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.* | • All drill holes are vertical and of relatively shallow depth (Avg depth ~8m), therefore down hole surveys were not required.<br>• The orientation of the sampling has achieved an unbiased sampling outcome.<br>• The geological information available in conjunction with assay results suggests that, at the Arrakis Prospect (resource area) the distribution of heavy minerals is controlled by sand dunes and palaeochannels. Typically, the east side is fairly steep and the west side more gently sloped. |
| *Sample security* | • *The measures taken to ensure sample security.* | • All holes were sampled on the same day as they were drilled. Following treatment at the laboratory the remaining unused portion of each sample was retained in a dedicated storage facility. The samples for TBE separation were placed in pre-numbered calico bags and then stored in polyweave sacks for transport. No samples were lost in transit nor has any evidence of sample tampering been reported.<br>• The sacks were sealed tightly with cable ties. The sample numbers were recorded on the geologist's log and on the polyweave sack. The laboratories address was also written on each polyweave sack.<br>• Prior to dispatch to Diamantina Laboratories in Perth the polyweave sacks containing the samples were laid out in order to verify all of the samples were accounted for. The polyweave sacks were then placed into bulker bags which were labelled with the contents list and the Laboratories address. The samples were then delivered directly to the freight company who assumed security of the samples until they were delivered to the analytical laboratory. |
| *Audits or reviews* | • *The results of any audits or reviews of sampling techniques and data.* | • At the end of May 2013, whilst drilling and sampling operations were in progress Mr Graham Muggeridge (BSc Hons (Geology), FAusIMM (CP Geology), MGSA) (CSA Global Principal Geologist) attended the site to conduct a review and audit of the exploration procedures.<br>• Several of the recommendations made have been incorporated in the 2013 exploration program. In particular, Cr2O5 has been added to the standard assay list, several holes drilled in 2012 and 2013 have been twinned and discussions with metallurgical laboratories have been held and a bulk sample test regime determined. The SG of the mineralised sand has been measured in various ways and the relationship between heavy mineral content and SG examined. |

<table>
<tr><td></td><td></td><td><ul><li>Notwithstanding the recommendations and suggestions made to improve the field procedures, Mr Muggeridge concludes:</li><li>“The review and audit has not identified any major material deficiencies with the current field practises.”</li></ul></td></tr>
</table>

## Section 2. Reporting of Exploration Results

<table>
<tr><th>Criteria</th><th>JORC Code Explanation</th><th>Commentary</th></tr>
<tr><td>Mineral tenement and land tenure status</td><td><ul><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></td><td><ul><li>The Kulgera Project consists of two Exploration Licence applications, held 100% by Enigma Mining Limited, a fully owned subsidiary of TNG Limited, applied for in May 2020.</li></ul>
<table>
<tr><td>Licence Number</td><td>Area (Blocks)</td><td>Area (km²)</td><td>Application Date</td></tr>
<tr><td>ELA 32369</td><td>200</td><td>615.68</td><td>13/02/2020</td></tr>
<tr><td>ELA 32370</td><td>200</td><td>615.68</td><td>13/02/2020</td></tr>
</table>
<ul><li>The tenement area is 1,231.36 km² and located along the South Australian border, to the SE of Uluru and 150km WSW of the Kulgera roadhouse on the Stuart Highway.</li><li>There are no third parties, agreements, or other interested parties to the tenure.</li><li>The tenements fall on Pastoral Leases – Victory Downs, Mulga Park and Lyndavale station properties.</li><li>While the project tenure is currently under application, there are no known impediments to the granting of tenure proceeding by year end.</li><li>The ground was previously held by Globe Mineral Resources Investments Pty Ltd (GMRI) within ELs 27417, 27418 and 27419. This tenure was granted on 14/01/2010 and fully relinquished on 13/01/2020. GMRI conducted drilling and contracted CSA Global to estimate Mineral Resources for the project in 2013.</li></ul></td></tr>
<tr><td>Exploration done by other parties</td><td><ul><li>Acknowledgment and appraisal of exploration by other parties.</li></ul></td><td><ul><li>Historical exploration work done was by Mithril Resources, Northern Mining and Universal Splendid Investments. Mithril Resources completed extensive surface sampling whilst exploring for Nickel. Both Northern Mining and Universal Splendid Investments collected a limited number of soil samples and processed these for their heavy mineral content. Despite some encouraging results neither company pursued the opportunity.</li><li>Globe Mineral Resource Investments Pty Ltd (GRMI) acquired the project in 2011, and undertook some soil sampling (50 samples) in 2011, from which they conducted mineralogical and metallurgical assessments. The mineralogical work showed that the light fraction is mostly quartz and feldspar, the non-magnetic heavy mineral is zircon, the electromagnetic heavy fraction is ilmenite with some garnet and the magnetic heavy fraction is dominated by magnetite.</li><li>GMRI conducted drilling during 2012 and 2013 to test the continuity of mineralisation, and to develop enough data at an appropriate spacing to allow a Mineral Resource to be estimated and reported.</li></ul></td></tr>
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| | | • No further exploration activities have been carried out at the project since 2013. |
| *Geology* | • *Deposit type, geological setting and style of mineralisation.* | • GMRI identified three stratigraphic domains within the Kulgera project area:<br>  ○ The most common domain consists of Quaternary dune sand and calcrete where drill holes typically penetrate red/orange dune sand ranging in thickness between a few centimetres and a maximum of about 10 metres overlying white to pink calcrete. Heavy minerals are distributed through the dune sand and commonly with a distinctly higher enrichment immediately above the calcrete layer. Concentrations of black heavy minerals are frequently seen on the surface of the sand dunes.<br>  ○ The next most common stratigraphic domain is Quaternary dune sand overlying one or more series of gravel, sand and clay layers. These zones are interpreted to be palaeo-channels. Heavy minerals are present in the dune sand in addition to the clastic sediments.<br>  ○ The least common stratigraphic domain consists of variably thick Quaternary dune sand overlying light coloured clay. The clay persists to some depth and then gives way to highly weathered bedrock most commonly diorite or gneiss.<br>  ○ The dunes in each of these domains are about 8 m to 12 m high, 300 m to 400m wide and extend over distances of between 10 to 15km and with an alignment of 0° to 10° magnetic north. The bulk of the heavy mineralisation is present in this domain.<br>  ○ The Precambrian Musgrave Metamorphic Terrain outcrops as the Musgrave Ranges along the southern boundary of the license area.<br>• The dunes are compacted with vegetation cover, and are not free running as is typical of wind-blown dune systems in parts of Australia and elsewhere in the world. This implies the Mineral Resource will not appreciably shift due to wind within the foreseeable future.<br>• In the 2012 drilling program it was recognised that the thickest sand with the highest HM content occurred in a zone surrounding an exposed calcrete sheet.<br>• The principal controls on the thickened portions on the heavy mineral concentrations are the NNE-SSW aligned Quaternary sand dunes.<br>• Ilmenite ($FeTiO_3$) is the only HM species present in the project of any quantity that may demonstrate economic value. The only other HM species to occur in minor quantities, is zircon. Gangue mineralogy is dominated by quartz. |
| *Drill hole Information* | • *A summary of all information material to the understanding of the exploration results including a* | • All drill hole data was loaded into Datamine software and was used to support the Mineral Resource estimate, although many |

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*tabulation of the following information for all Material drill holes:*

- *easting and northing of the drill hole collar*
- *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar*
- *dip and azimuth of the hole*
- *down hole length and interception depth*
- *hole length.*
- *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.*

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holes were excluded from the Mineral Resource domains due to the sample analyses being sub-grade (heavy mineral content).

- All holes are vertical and relatively shallow, each terminating at or before the basal clay pan.
- The following table presents drilling statistics by year.

| Drill type | Year | Quantity | Metres drilled |
|---|---|---|---|
| Air Core | 2012 | 622 | 5,102 |
| Air Core | 2013 | 1,126 | 8,512 |
| Total | All | 1,748 | 13,614 |

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*Data aggregation methods*

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- *In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (e.g. cutting of high grades) and cut-off grades are usually Material and should be stated.*
- *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.*

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- Exploration results are not being reported here.

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*Relationship between mineralization widths and intercept lengths*

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- *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 (e.g. 'down hole length, true width not known').*

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- Exploration results are not being reported here.
- All drill holes are vertical and of relatively shallow depth and intersect the zones of mineralisation at a close to orthogonal angle.

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| *Diagrams* | • *Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.* | • Appropriate diagrams are included in the body of this report. |
| *Balanced reporting* | • *Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.* | • Exploration results are not being reported here. All samples were used to support the geological interpretations and / or the grade interpolation. |
| *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.* | • A 300kg bulk sample was prepared from the unused portion of the drill hole samples. The sample was used to examine a fairly standard commercial HM separation technique and then qualify the various product flows generated. The metallurgical work has demonstrated that the HM can be separated without any major complications. Several concentrate flows can be produced via electrostatic and magnetic refinement. The assaying and mineral identification of the various flows indicate the most likely use for the HM concentrate is the production of $TiO_2$ via a slag iron-titanium process.<br>• The metallurgical test work completed has confirmed the results previously achieved via TBE separation, magnetic test work done in 2012 and the mineral identification studies. That is the Arrakis HM is most suitable for treatment as a slag iron- titanium product. It is apparent that there is a considerable amount of iron minerals mixed in with the ilmenite and whilst it may be possible to separate the ilmenite out it will be difficult and expensive. The presence of zircon in the ENC stream was noted by GMRI and more work needs to be conducted to determine if it can be recovered and if so at what rate and grade. |
| *Further work* | • *The nature and scale of planned further work (e.g. tests for lateral extensions or depth extensions or large-scale step-out drilling).*<br>• *Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.* | • TNG intends to assess the existing Arrakis Mineral Resource to determine if it can be treated using TNG's TIVAN processing technology. GMRI assessed the project to generate concentrate to sell into the iron (Fe-Ti) slag market in China. Previous assessments did not include or assess the vanadium content of the Arrakis concentrates, nor their potential revenue. TIVAN generates a Ti oxide product that can feed into a titanium pigment plant, which would generate more revenue than the slag market.<br>• TNG is advancing the Mount Peake project north of Alice Springs and intends to build a TIVAN and pigment plant near Darwin that will process magnetite concentrate from Mount Peake to produce: vanadium pentoxide, titanium pigment and hematite saleable products.<br>• Initial Kulgera assessment would entail obtaining a number of bulk samples, and performing heavy mineral separation to generate magnetite/ilmenite concentrates for TIVAN testwork. |

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| | | • If the Kulgera concentrates are amenable to treatment then TNG would conduct a preliminary economic assessment and then sufficient drilling to define Measured and Indicated Mineral Resources. |

## 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** |
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| Database integrity | • *Measures taken to ensure that data has not been corrupted by, e.g. transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.*<br>• *Data validation procedures used.* | • CSA Global was commissioned by GMRI in 2013 to maintain a drill hole database, populating it regularly with drill hole data as supplied by GMRI and / or their nominated assay laboratory (Diamantina). The database was "frozen" on 12th November 2013, after which no additional information was added to the database provided for the completion of the Mineral Resource.<br>• All field data was recorded in hardcopy by experienced geologists. The data was checked by the Geological Technical Advisor (GTA) and transcribed to excel spreadsheets and loaded into a DataShed Database (Proprietary database from Maxwell GeoServices) by a CSA Global Database Geologist (DG). GMRI office geologists would also load data under direct supervision of the DG. DataShed has in-built validation controls so errors are reported during loading. All errors were reported back to the GTA for review and correction.<br>• Assays loads were either performed or supervised by the DG. The GTA did all the Assay QC work. |
| Site visits | • *Comment on any site visits undertaken by the Competent Person and the outcome of those visits.*<br>• *If no site visits have been undertaken indicate why this is the case.* | • A CSA Global representative visited the project site in May 2013, whilst drilling and sampling operations were in progress. The following items were reviewed:<br>  ○ Drilling practices including cleanliness and condition of drill rig and sampling equipment.<br>  ○ Sampling procedures, including QAQC and sample security.<br>  ○ Geological logging procedures.<br>  ○ Inspection of drill samples hosting mineralisation.<br>  ○ Density sampling test pits.<br>• The geologist also walked along some of the dunes to acquire an appreciation for the strike extent of the dunes and their width and depth to basal clay pan.<br>• Discussions were held with the GMRI representative regarding the above aspects, and regarding the 'reasonable prospects for eventual economic extraction'.<br>• The Competent Person has relied upon the findings of the CSA Global site inspection for signing off on the reporting of the Mineral Resource estimate. |
| Geological interpretation | • *Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.* | • The mineralisation is hosted within sand dunes, which sit upon basal clay pans and can be dug by hand. The geological interpretation is wholly constrained within the sand dunes and although a grade envelope is utilised, the geological domains typically capture most of the upper parts of the dunes. |

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| | • *Nature of the data used and of any assumptions made.*<br>• *The effect, if any, of alternative interpretations on Mineral Resource estimation.*<br>• *The use of geology in guiding and controlling Mineral Resource estimation.*<br>• *The factors affecting continuity both of grade and geology.* | • Consequently there is a high level of confidence in the geological interpretations.<br>• The geological interpretations were constrained by aircore drill samples and by the high resolution topographic digital terrain model (DTM).<br>• No other geological interpretations were used.<br>• The geology of the deposit strongly controls the Mineral Resource estimation. Estimates for the Heavy Mineral (HM) grades were not extended into the basal clays. |
| 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 dunes in each of these domains are about 8 m to 12 m high, 300 m to 400m wide and extend over distances of between 10 to 15km and with an alignment of 0° to 10° magnetic north.<br>• The Mineral Resource has a N-S extent of 9,200 m, and E-W extent of 7,000 m and a depth of <20 m below surface. |
| 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.*<br>• *The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.*<br>• *The assumptions made regarding recovery of by-products.*<br>• *Estimation of deleterious elements or other non-grade variables of economic significance (e.g. sulphur for acid mine drainage characterisation).*<br>• *In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.*<br>• *Any assumptions behind modelling of selective mining units.*<br>• *Any assumptions about correlation between variables.* | • The geological domain hosting mineralisation was based upon a lower heavy mineral (HM) percentage of 4%. This interpretation was supported by the lithological logs, with domains dominated by sand, with some sand + gravel intervals included. Sample intervals logged with calcrete, or sand + calcrete intervals were excluded. Clay intervals were excluded if they were recorded at the bottom of the hole.<br>• Heavy Mineral content was based on the results of the TBE separations. As the separation results were received each hole was examined and the average grade of the HM content down hole calculated. In all cases the mineralisation starts at surface and continues down hole until the grade criteria were exhausted.<br>• The geological interpretations were provided by GMRI in paper format. CSA digitised the interpretations and constructed the 3D wireframes. GMRI vetted the digitised files of the interpretations.<br>• Traditional semi variograms were calculated and modelled for HM, Slimes (grain size > 0.6 mm) and Oversize (grain size < 0.053 mm). Each of the grade variables demonstrates low relative nuggets and long ranges, as expected in heavy mineral sands deposits. Of note is the short range for HM%, of approximately 500m.<br>• No top cuts were applied to the HM, Slimes or oversize populations.<br>• A block model with cell dimensions 50 m (easting) by 250 m (northing) by 5 m (vertical) was constructed using Datamine software, with cells appropriately sub-blocked to allow sufficient resolution at the domain and topographic surfaces.<br>• Grade (HM%, slimes % and oversize %) were interpolated from 1m drill samples using ordinary kriging. The search ellipses were aligned along strike of the dune ridges (010°). The low relative nugget effects require only small population supports to estimate any block, with samples closest to the block centroids likely to carry higher weight than samples further away. A minimum of 6 and maximum of 14 samples were used in any one block estimate. If a block was informed by insufficient number of samples with the |

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| | • *Description of how the geological interpretation was used to control the resource estimates.*<br>• *Discussion of basis for using or not using grade cutting or capping.*<br>• *The process of validation, the checking process used, the comparison of model data to drillhole data, and use of reconciliation data if available.* | search ellipse, then the ellipse radii was increased by 50%, and then doubled until the block was estimated. An interrogation of the block model has shown most blocks were estimated in the first search volume. A maximum of 4 composited samples per drill hole were used in any one block estimate. Cell discretisation of 5 x 5 x 5 (X Y Z) was employed.<br>• Model validation was carried out graphically and statistically to ensure that block model grades reflect the tenor of grade from adjacent drill hole data. Drill hole cross sections were examined to ensure that model grades honour the local composite drill hole grades. Trend plots were used to compare the trend of average grades of the model and input sample data, along a specified direction. |
| 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.* | • The HM domains were interpreted where HM% >4%, and this value is clearly demonstrated in histograms of HM % where a sharp population change is noted at 4% HM. The Mineral Resource is reported above an HM% of 0%, therefore there is no grade sub-domaining of the Mineral Resource domains, and the Competent Person considers this to be appropriate. |
| 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.* | • It is assumed that any mining will be by surface mining methods. The dunes are free-dig.<br>• The multi-element geochemistry has indicated that the heavy mineral concentrate (HMC) is very clean. It is mostly oxidised and contains very little sulphur. As such, it is not anticipated that there will be any impediments to mining, concentrating, storing, transporting and processing the HMC.<br>• The work completed by GRMI demonstrated that the Kulgera Heavy Mineral project shows the following:<br>o The Continuous zones of high-grade mineralisation can easily be defined.<br>o The mineralisation starts at the surface and no pre-stripping is required.<br>o The mineralisation has a very low slimes and over-size component.<br>o The mineralisation is just semi-consolidated sand in sand-dunes. These can be easily and inexpensively mined.<br>o The mineralisation can be easily processed on site using ‘off the shelf equipment’.<br>o The project has a very large exploration up-side with several mineralised areas yet to be explored.<br>o There is more zircon present than first recognised. Whilst only a low percent of the total HMC the prospects are good that this will be a valuable addition to the project. |

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| | | ○ The HMC is ideally suitable for the bulk production of Titanium and Iron via a slag Fe/Ti recovery process.<br>○ The north to south rail corridor is only 100km to the east of the project area. |
| 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.* | • Ilmenite ($FeTiO_3$) is the only HM species present in the project of any quantity that may demonstrate economic value. The only other HM species to occur in minor quantities is zircon. Gangue mineralogy is dominated by quartz.<br>• An estimate of the heavy mineral assemblages was determined from mineralogical analyses from 10 samples, each sample being a composite of samples from multiple drill holes along 10 lines of drilling, which were separated by 1,500 m to 3,000 m. This has provided an appreciation of the variability in valuable HMC (VHM) along the northerly strike of the deposit, with VHM ranging from 44% to 72%, averaging 55%. The majority of VHM is ilmenite, with lesser Zircon.<br>• A 300kg bulk sample was prepared from the unused portion of the drill hole samples. The sample was used to examine a fairly standard commercial HM separation technique and then qualify the various product flows generated. The metallurgical work has demonstrated that the HM can be separated without any major complications. Several concentrate flows can be produced via electrostatic and magnetic refinement. The assaying and mineral identification of the various flows indicate the most likely use for the HMC is the production of $TiO_2$ via a slag iron-titanium process.<br>• The metallurgical test work completed has confirmed the results previously achieved via TBE separation, magnetic test work done in 2012 and the mineral identification studies. That is the Arrakis HM is most suitable for treatment as a slag iron- titanium product. It is apparent that there is a considerable amount of iron minerals mixed in with the ilmenite and whilst it may be possible to separate the ilmenite out it will be difficult and expensive. The presence of zircon in the ENC stream is interesting and more work needs to be conducted to determine if it can be recovered and if so at what rate and grade. |
| 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* | • As at 2013, there were known aboriginal traditional owner or environmental factors affecting the development of the project.<br>• No environmental baseline studies are known to have been carried out to date. |

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| | *reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.* | |
| 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.*<br>• *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.*<br>• *Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.* | • A steel pipe of known volume was hammered into the undisturbed ground adjacent to a selected drill hole. The pipe was carefully extracted from the ground so as to prevent any sample loss. The sample weights were recorded on an accurate balance and the density back calculated. A total of 376 samples were collected in this manner during the 2013 field season. GMRI noted that there was no correlation between HM% content (taken from the 1st sample in the adjacent drill hole) and the in-situ density value.<br>• An in-situ dry density value of 1.7t/m3 was determined from the measurements. This density value was assigned to the block model.<br>• Additional work on the estimation of the SG of the mineralised sand is recommended for future Mineral Resource estimates. |
| Classification | • *The basis for the classification of the Mineral Resources into varying confidence categories.*<br>• *Whether appropriate account has been taken of all relevant factors (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).*<br>• *Whether the result appropriately reflects the Competent Person's view of the deposit.* | • The Mineral Resource was classified as Indicated and Inferred according to the JORC Code (2012 Edition). Classification of the Mineral Resource estimate considered the geological understanding of the deposits, QAQC of the samples, density data and drill hole spacing.<br>• An Indicated classification outline was digitised in plan view, and all blocks located within the mineralisation domain and within this perimeter were classified as Indicated. All other blocks were classified as Inferred.<br>• The classification of the Mineral Resource reflects the Competent Person's view of the deposit.<br>• No further work of any material nature with respect to the Mineral Resource has been carried out at the project since early 2014, and the current Mineral Resource statement is therefore considered to be current according to Mineral Resource classification, estimated tonnes and grade, and mineralogy. |
| Audits or reviews | • *The results of any audits or reviews of Mineral Resource estimates.* | • Upon receipt of the initial analytical results from the 2013 drilling programme, GMRI detected an anomaly in the results of the HM content following a review of the field duplicate results.<br>• GMRI initially noticed the results for HM% from the primary samples were lower than expected, especially when compared against the results from the 2012 drilling programme. Umpires samples sent to two different laboratories, Bureau Veritas (Adelaide) and Robbins Metallurgical (Brisbane) supported GMRI's assertion that Diamantina were under-calling their results, leading to an internal review and Diamantina repeating the analyses of the earlier samples. |

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| | | • They submitted to Diamantina scatter plots of the field duplicate results for HM%, one from the 2012 programme which demonstrated very good correlation between original and duplicate, and the other from an early batch from 2013.<br>• GMRI initiated an investigation with Diamantina with the result being:<br>• Split 100g of sample for separation rather than the 200g formerly used.<br>• Changes to Diamantina's laboratory supervision protocols, staff training and the purchase and maintenance of new laboratory equipment.<br>• The 100g split was chosen because the Diamantina management believed the larger split was overloading the volume of TBE used. All analyses conducted prior to the changes in the laboratory were repeated, with the repeated results used in the Mineral Resource.<br>• The Mineral Resource estimate was reviewed by a CSA Global resource geologist, as part of the CSA Global procedures, and no issues were noted that would prevent the Mineral Resource being released to the property owner and ultimately to the market. |
| Discussion of relative accuracy/ confidence | • *Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.*<br>• *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.*<br>• *These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.* | • Tonnages and grade (HM%) above a cutoff grade of 0% HM are provided in this report. Tonnages were calculated by filtering all blocks above the cut-off grade and sub-setting the resultant data into bins by mineralisation domain. The volumes of all the collated blocks were multiplied by the dry density value to derive the tonnages.<br>• The Mineral Resource is a local estimate, whereby the drill hole data was geologically domained above nominated cut-off grades. |