ASX ANNOUNCEMENT

Maiden Inferred Mineral Resource Estimate for Tintekrate magnetite deposit, Mauritania.

4 October 2013

Sphere Minerals Limited (Sphere) (ASX Code SPH) is pleased to announce a maiden Inferred Mineral Resource estimate for its 50% owned Tintekrate magnetite deposit, Mauritania (Figures 1, 2). This comprises 710 Mt of fresh magnetite-quartzite at 36% Fe and 180 Mt of weathered magnetite-quartzite at 34% Fe (Tables 2-4).

Sphere and SNIM (Société Nationale Industrielle et Minière) have conducted an exploration drilling program of 21,566 m in 66 drill holes at Tintekrate. The drilling was conducted in three campaigns between 2006 and 2013 (Table 1). The exploration program was managed by the holder of the El Aouj mining tenement, El Aouj Mining Company, a Mauritanian company owned by Sphere (50%), and SNIM (50%). Sphere is a subsidiary company of Glencore.

Sphere supplied Golder Associates Pty Ltd (Golder) with all available geological and assay data as of 12 June 2013 and a wireframe interpretation. Golder used this to construct a block model of the Tintekrate resource. All samples used in the resource estimate were collected using reverse circulation (RC) and diamond core (DC) drilling techniques.

Grades were interpolated into model blocks using ordinary kriging (OK). The model was the basis for the resource estimation and classification, which Golder performed in accordance with “The Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code, 2012 Edition)”.

The Mineral Resource is reported for fresh mineralisation on a head basis (Table 2) and recoverable fresh on a concentrate basis (Table 3). Weathered (oxidised) mineralisation it is reported on a head basis (Table 4).

Figure 1: Location of Tintekrate deposit in EMC Joint Venture Project Area
Figure 2: Tintekrate deposit looking eastwards from the western side of the circular deposit structure with Bou Derga deposit in background

Table 1: Tintekrate Inferred Mineral Resource, Fresh Mineralisation
At 20% DT80 wt%\(^1\) cut-off grade, dry head basis

<table>
<thead>
<tr>
<th>Tonnage (Mt)</th>
<th>Fe%</th>
<th>SiO(_2)%</th>
<th>Al(_2)O(_3)%</th>
<th>P%</th>
<th>MgO%</th>
<th>S%</th>
<th>K(_2)O%</th>
<th>LOI%</th>
</tr>
</thead>
<tbody>
<tr>
<td>710</td>
<td>36</td>
<td>44</td>
<td>1.3</td>
<td>0.08</td>
<td>2.3</td>
<td>0.05</td>
<td>0.6</td>
<td>-1.0</td>
</tr>
</tbody>
</table>

Table 2: Tintekrate Inferred Mineral Resource, Fresh Mineralisation
At 20% DT80 wt%\(^1\) cut-off grade, dry DT80 concentrate basis,

<table>
<thead>
<tr>
<th>DT80 wt%(^1)</th>
<th>Fe%</th>
<th>SiO(_2)%</th>
<th>Al(_2)O(_3)%</th>
<th>P%</th>
<th>MgO%</th>
<th>S%</th>
<th>K(_2)O%</th>
<th>LOI%</th>
</tr>
</thead>
<tbody>
<tr>
<td>44</td>
<td>69.4</td>
<td>2.8</td>
<td>0.2</td>
<td>0.008</td>
<td>0.4</td>
<td>0.03</td>
<td>0.02</td>
<td>-3.0</td>
</tr>
</tbody>
</table>

\(^1\) DT80 wt% is the mass recovery of Davis Tube testwork conducted on mineralised drill samples pulverised to a size of 95% passing 80 µm. This is a standard setting characterisation test that enables the variability of the mineralisation to be assessed within and between deposits.

Table 3: Tintekrate Inferred Mineral Resource, Weathered Mineralisation
At 20% head Fe cut-off grade, dry basis

<table>
<thead>
<tr>
<th>Tonnage (Mt)</th>
<th>Fe%</th>
<th>SiO(_2)%</th>
<th>Al(_2)O(_3)%</th>
<th>P%</th>
<th>MgO%</th>
<th>S%</th>
<th>K(_2)O%</th>
<th>LOI%</th>
</tr>
</thead>
<tbody>
<tr>
<td>180</td>
<td>34</td>
<td>45</td>
<td>1.6</td>
<td>0.08</td>
<td>1.2</td>
<td>0.02</td>
<td>0.8</td>
<td>1.0</td>
</tr>
</tbody>
</table>
Geological Interpretation

The Tintekrate magnetite deposit is located on Exploitation Permit 609 (Figure 1) which was granted for a 30-year period on 27 April 2008 by the Mauritanian Council of Ministers. The permit is securely held by EMC. This Permit is not constrained by any native title interests, historical sites, wilderness or national parks.

The deposit was mapped geologically by Sphere in 2004 at a scale of 1:10,000. Historical drilling comprises 13 reconnaissance holes drilled by SNIM in the 1970s. These were of value, together with the mapping, in establishing the exploration potential of Tintekrate but have not been used in this resource estimation.

Tintekrate is located close to SNIM’s iron ore railway (Figure 1) and is 635 km from SNIM’s Atlantic deep water port at Nouadhibou.

The Tintekrate deposit is hosted within the Dorsale Reguibat, an uplifted part of the Archaean West African Craton, which dominates the northern third of Mauritania’s surface geology. This Craton hosts a significant iron ore province in the Tiris Zemmour region, and contains highly deformed and metamorphosed iron formation rocks and volcanics of the Tiris Group. Recrystallisation and aggregation of the magnetite grains in the meta-banded iron formation (BIF) units has resulted in partial to total destruction of the original banded (bedding) texture to produce the Tintekrate and other similar magnetite-quartzite deposits. Outcrop expressions of the deposit are strongly represented by prominent ridges of erosion-resistant magnetite-quartzite (MQ) mineralisation.

The Tintekrate deposit is a circular structure defined by a steep dipping MQ unit with dips of 50° to 80° (locally overturned) with true mineralised thicknesses of 100 m to 150 m on the western side of the structure to 50 m to 100 m on the eastern side. The mineralisation outcrops over a circular area of about 1.5 km by 2.0 km with a total strike length around the structure of approximately 5.2 km. (Figures 2, 3).

The mineralised unit has been sub-divided into four main structural domains: West, Centre, East, and East-Centre, as shown in Figure 9. The deposit is split by a dolerite intrusion in the northern sector and main fault zone in the centre and south region. Internal waste is present in isolated areas of the mineralisation.

Higher and lower phosphorus (P) zones in the mineralised sectors were identified from the drill sample head assays. Higher P values (<0.09%) occur in the northern and eastern parts of the East domain (mainly to the east of the main fault). Lower P (<0.065%) zones occur in the southern part of the East domain and the West, Centre and East-Centre domains mainly to the west of the main fault. Phosphorus concentrations in the DT80 (-80 µm) Davis Tube concentrate are generally low (<0.01% P).

The weathered zone averages 70 m to 75 m vertical depth below natural surface and its base tends to mirror the natural surface profile. In this zone, magnetite has been partially to completely oxidised to hematite, resulting in lowered magnetic susceptibility and Davis Tube mass recoveries compared to fresh mineralisation.

Figure 3 also shows (bolded) the position of five cross sections N600, E600, SE600, SW600 and NW400 (Figures 4-8 respectively) of the total 24 cross sections that have been drilled on a radial pattern. These figures are included to illustrate features of the deposit. The geological interpretation is based on lithology, head grades and Davis Tube separation testwork results and was completed by Sphere geologists on cross sections using Surpac® modelling software. 3D wireframe geological modelling was carried out by Sphere and reviewed by Golder prior to its use to construct the block model.
The Inferred Mineral Resource estimate is constrained by the mineralisation domain boundaries and a maximum extrapolation distance of 100 m from the nearest drill hole at depth, as shown in Figures 4-8. These sections show that the deposit remains open at depths beyond the influence of the current drilling.
Figure 4: Tintekrate Cross Section Line N600, looking East

Figure 5: Tintekrate Cross Section Line E600, looking North
Figure 6: Tintekrate Cross Section Line SE600, looking North East

Figure 7: Tintekrate Cross Section Line SW600, looking South East
Drilling Techniques

The total quantity of drilling at Tintekrate and the number of drill samples collected for use in the resource estimation are shown in Table 4.

Table 4: Tintekrate Drill Hole and Drill Sample Summary

<table>
<thead>
<tr>
<th>Hole ID</th>
<th>Drilling Campaign</th>
<th>Drill Holes</th>
<th>RC Samples</th>
<th>DD Samples</th>
<th>Av. Depth (m)</th>
<th>Total (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TT001-TT003</td>
<td>Aug- Nov 2006</td>
<td>3</td>
<td>202</td>
<td>117</td>
<td>365</td>
<td>1,094.50</td>
</tr>
<tr>
<td>TT004-TT066</td>
<td>Sep 2011- Jun 2012</td>
<td>59</td>
<td>1676</td>
<td>1625</td>
<td>639</td>
<td>19,002.45</td>
</tr>
<tr>
<td>TT049, TT053, TT054, TT063</td>
<td>Apr 2013</td>
<td>4</td>
<td>72</td>
<td>183</td>
<td>367</td>
<td>1,468.95</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>66</strong></td>
<td><strong>1,950</strong></td>
<td><strong>1,925</strong></td>
<td><strong>327</strong></td>
<td><strong>21,565.9</strong></td>
</tr>
</tbody>
</table>

All samples used in the resource estimate were collected from RC and DC drilling. With most of the deep drilling, holes were pre-collared with RC and then completed with diamond core tails, to overcome the depth limitations of the RC drilling (approximately 300 m) and/or because core samples were required for metallurgical testwork as well as resource definition. Diamond core tails generally extended from 300 m or less downhole depth to as much as 603 m downhole depth (equivalent to vertical depth below surface of over 500 m).
Core diameters used were HQ (63.5 mm diameter), HQ3 (triple tube, 61.1 mm), NQ2 (50.6 mm) and NQ (47.6 mm). HQ sizes were generally limited to the base of weathering (where the drill hole was not pre-collared) or to a maximum depth of about 100 m. NQ sizes were used for the deeper core drilling. Drill core was oriented using an ACE® core orientation tool. RC hole diameters varied from 5¼” to 5½” (133 mm-140 mm) and face sampling hammers were used.

Drill holes were orientated on azimuths within the plane of each cross section and inclined to provide intersections normal or close-to-normal to the bedding. As the Tintekrate deposit has a circular structure this required setting out drill lines on a radial basis, as shown in Figure 3. The inclinations used when drilling the limbs ranged between 50º and 70º to the horizontal, with most at 60º.

All drill hole collar positions were located and picked up by Sphere using its differential GPS (DGPS)-based survey control (coordinates and RLs) and this is considered adequate for the purposes of this study as it provides a coordinate accuracy of ± 40 cm and a height accuracy of ± 80 cm.

Approximately 82% of the drill holes have been down hole surveyed by a contractor (Terratac) for deviation using a gyroscopic tool.

**Sampling/sub sampling Techniques**

Primary 1 m RC samples are collected from an air cyclone at the drill rig. Three successive primary samples are collected at the drill site, split to 25% of primary volume using stand-alone rifflers and these are combined to produce a bulk 3 m composite sample. This composite is then riffle split to 12.5% of the volume to provide a regular laboratory sample and a field duplicate quality assurance and quality control (QAQC) sample, each typically 4 kg to 5 kg. The field duplicates are submitted to the laboratory at the rate of one per 25 regular samples. Grade-by-size analysis was also conducted on selected RC chips as a QAQC procedure and did not identify any significant sample bias.

Drill core was logged at the drill site for core run details such as core recovery and rock quality designation (RQD). Core recovery was recorded by measuring the length of recovered core and comparing this with the drilled interval and is 98% for fresh rock and 79% for weathered rock. The core was logged, marked for sampling based on lithology and with a minimum sample length of 0.5 m and maximum 3.0 m. It was then photographed whole. Core for sampling was cut in half lengthways with a diamond saw, with one half sawn again (quartered). One quarter core was then taken as the laboratory sample and the remainder archived/ reserved for use for metallurgical testwork.

Downhole geophysical logging has been completed on most of the drill holes. This includes natural gamma, conductivity and magnetic susceptibility. All drill samples are also measured for magnetic susceptibility using hand held instruments.

**Sample Analysis Methodology**

Sample preparation and Davis Tube (DT) separation testwork were conducted at the Sphere sample preparation and DT testwork laboratory in Zouerate, Mauritania.

The RC and core laboratory samples averaged 4 kg to 5 kg and were considered appropriate in relation to the inherent grain size of the mineralised samples.

Core samples were crushed to -6 mm size in a jaw crusher. Core and RC samples were then dried at 105º C for 2 to 4 hours and crushed successively in 3 mm and 1 mm rolls crushers and then milled for 3 minutes in a LM2000 pulveriser to produce a pulp with a minimum 95% passing 80 µm (0.08 mm) size.
DT testwork was undertaken in Sphere’s site laboratory on the resulting sample pulps. Head pulps and DT concentrates were sent, together with the field duplicates and four separate matrix-matched standards, to Bureau Veritas (Ultra Trace) laboratory in Perth, Western Australia. The samples were assayed by X-ray diffraction (XRF) using fusion beads for Fe, P, SiO₂, Al₂O₃, CaO, MgO, MnO, Na₂O, TiO₂, S, K₂O, BaO, and V₂O₅; and by Thermal Gravitational Analysis (TGA) for loss-on-ignition (LOI) at 371°C, 538°C and 1000°C. The methods used produced total assay results reported on a % basis. Negative LOIs result from weight gain during the TGA as a result of oxidation of magnetite to hematite.

Check head pulp analyses were performed at an independent laboratory (SGS, Perth, WA) at the rate of 2% of all head assays. Repeat DT testwork was also performed in house and in the SNIM laboratory in Zouerate, Mauritania. Golder considers the accuracy and precision of all the QAQC results to be acceptable.

**Estimation Methodology**

All drilling data was validated by Sphere. A small proportion of the data had unresolved validation issues and this was marked to Golder for exclusion from the estimation. Golder performed additional checks of the internal validity of the data set.

The standard DT test used in this resource estimation is referred to as the “DT80” test. DT80 wt% is the mass recovery produced from DT test work at a magnetic field strength of 3000 gauss, conducted on (~3 m) mineralised drill samples pulverised to a liberation grind size of at least 95% passing 80 µm. As all the DT80 test settings are fixed the concentrate grade and mass recovery (wt%) vary with sample mineralogy and Fe grade.

Golder composited the drill samples to standard 3 m support. No grade top-cuts were applied.

Stratigraphic horizons were modelled by Sphere as a wireframe in three dimensions to define the geological domains that were used to flag the sample data for statistical analysis and estimation. This wireframe was transferred to Golder and validated. A digital terrain model (DTM), based on a LIDAR survey conducted by Fugro under contract to Sphere in 2011, was produced by AAM Limited by filtering the LIDAR data to ensure a data point at least every 20 m or when heights changed by more than 0.15 m. The drill hole collar elevations converted from WGS84 reference ellipsoid to EGM96 reference geoid were found to closely match the DTM.

Golder generated a three dimensional block model using Vulcan® software. The primary (parent) block size used is 50 m in y (N-S) by 50 m in x (E-W) by 12 m in z (height), which is not less than one quarter of the drill hole spacing. The sub-block size, which provides higher resolution at domain boundaries, is 5 m (x) by 5 m (y) by 1 m (z).

To reflect the geological domains and overcome the geometric issues for modelling presented by the circular structure, the deposit was divided into four geological domains and five geometric sectors, as shown in Figure 9. This allowed the deposit to be unfolded for variography and grade interpolation.
Statistical and geostatistical analysis was carried out on drilling data composited to 3 m (downhole following application of a Golder unfolding technique. This included variography to model spatial continuity in the geological domains.

The Ordinary Kriging (OK) interpolation method was used for resource estimation of the following variables; Head: Fe, SiO$_2$, Al$_2$O$_3$, CaO, MgO, TiO$_2$, P, S, Na$_2$O, K$_2$O, LOI; and DT80: DTC wt%, DTC Fe, DTC SiO$_2$, DTC Al$_2$O$_3$, DTC CaO, DTC MgO, DTC TiO$_2$, DTC P, DTC S, DTC Na$_2$O, DTC K$_2$O and DTC LOI, using variogram parameters defined from the geostatistical analysis.

All variables were estimated using variogram parameters derived from the statistical analysis. Estimations of concentrate grades were weighted by DT80 wt%, to appropriately reflect the relationship between DT80 wt% and the DT80 concentrate assays. Weighting was completed by calculating the accumulation (DT80 wt% × DT80 assay) and subsequently back calculating the DT80 assay estimates by dividing by relevant estimated DT80 wt% values.

A review of the QAQC data was completed. The QAQC program included company standards, blanks and field duplicates submitted at a rate of 8% to 10% of all assayed samples. Pulps have been assayed at one independent laboratory (SGS). Independent DT repeats have been completed and three RC holes have been twinned with diamond holes. No apparent discrepancies were identified in the QAQC data.
In situ density values (dry t/m$^3$ basis) were assigned to the mineralised domains to convert block volumes to tonnages, using the following separate regressions for fresh and weathered rock. The regressions were derived by Sphere based on density measurements on 1632 fresh rock specimens and 61 weathered rock specimens of mineralised and waste rock and their matching head Fe assays. A 3% rock void factor is applied to the fresh rock density regression and 5% void factor to the weathered rock density regression, as follows:

- Fresh mineralisation and waste ($R^2 = 0.8252$) \[0.97 \times \text{Head Fe} 	imes 0.0274 + 2.6012\]
- Weathered mineralisation and waste ($R^2 = 0.7937$) \[0.95 \times \text{Head Fe} 	imes 0.0304 + 2.3841\]

**Cut-off Grades and Classification Criteria**

The resource estimates were classified by Golder in accordance with The Australasian Code for Reporting of Identified Mineral Resources and Ore Reserves (JORC Code, 2012 Edition). This classification was considered appropriate on the basis of drill hole spacing, sample interval, geological interpretation and representativeness of all available assay data.

This Mineral Resource has been defined using geological boundaries and a cut-off grade of 20% DT80 wt% for fresh (un-oxidised) mineralisation and a cut-off grade of 20% head Fe for weathered (oxidised) mineralisation. All reported concentrate grades were weighted by DT80 wt%.

The Mineral Resource classification was performed by Golder based on the geological complexity (including folding and faulting), number of drill samples, drill hole spacing and sample distribution, data quality and estimation quality for grades and DT80 wt%. The Competent Person responsible for the estimation and classification is satisfied that the result appropriately reflects his view of the deposit. Golder classified all of the Tintekrate Mineral Resource as Inferred on the basis of the limited drilling (mostly 200 m between drill lines, the complex folded structures and the fault zone.

**Mining and Metallurgical Methods**

No mining selectivity or other economic assumptions have been made in the block model other than the choice of a 12 m model block height ($z$) that would be a suitable large-scale open pit bench height for a deposit such as Tintekrate. Intersections of internal waste exceeding 6 m and extending across several drill holes have locally been separated from the mineralisation. Initial evaluation of open pit mining selectivity that may be achieved would be a logical component of an early-stage mining study.

The DT80 is a standard process mineralisation characterisation test that enables cross-comparison within and between deposits due to the variability of the DT80 concentrate grades and mass recovery results, depending on the sample characteristics. As the DT80 test requires fine grinding, it also provides a useful mimic for a pellet feed product. The DT80 results to date show that the Tintekrate resource has the potential to produce high grade pellet feed concentrates.

Sphere has also conducted a separate set of DT separation testwork on mineralised drill core samples from the 2011 to 2013 drilling. This is the first stage of assessing the potential of the Tintekrate mineralisation to produce a coarse grained concentrate for a sinter fines blend (SFB) product. This metallurgical test is known as the Davis Tube Liberation Grind Size test (“DTLib”), and is in addition to the standard DT80 test.

With the DTLib test (unlike the DT80 test) the sample grind time is varied until a fixed target concentrate grade of 65% ±1.3% Fe is achieved, which occurs with most samples. The sample is then sized and the $d_{90}$ size (90% passing) is determined. This is known as the liberation grind size (DTLib $d_{90}$ µm) and varies from sample to sample. The mass recovery is also determined from this testwork. The coarse grained magnetite-quartzite liberates readily even at -1 mm size whereas the finer grained magnetite-quartzite requires additional grinding, and hence reports with lower $d_{90}$ sizes. The DTLib $d_{90}$ size has been included in the geological model but does not form a direct part of the Mineral Resource estimation.
The DTLib metallurgical data for Tintekrate has been included in the geological model to enable estimations of DTLib wt% (mass recovery) and DTLib d90 size distribution in the geological model and hence in the mining model/mine planning schedules. For the fresh mineralisation, the DTLib d90 grind size averages a high 363 µm DT liberation grind size at a high (49%) mass recovery (wt%). These results are encouraging, and justify proceeding to bench and pilot plant scale testwork on bulk samples of fresh Tintekrate mineralisation in due course.
JORC CODE (2012 EDITION) ASSESSMENT CRITERIA (“TABLE 1”)  

The JORC Code (2012) describes a number of criteria, which must be addressed in the Public Report of Mineral Resource estimates for significant projects. These criteria provide a means of assessing whether or not parts of or the entire data inventory used in the estimate are adequate for that purpose. The resource estimate stated in this document was based on the criteria set out in Table 1 of that Code. These criteria are discussed as follows.

<table>
<thead>
<tr>
<th>JORC Code Assessment Criteria</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sampling Techniques</strong></td>
<td>Reverse circulation (RC) drilling and diamond core (DC) drilling were used to obtain samples for geological logging. Davis Tube (DT) testwork and assaying at Bureau Veritas (Ultra Trace) laboratories in Canning Vale, WA.</td>
</tr>
<tr>
<td>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 downhole gamma sondes, or handheld XRF instruments, etc.). These examples should not be taken as limiting the broad meaning of sampling.</td>
<td>Downhole geophysical logging used – gamma, conductivity and magnetic susceptibility (MS).</td>
</tr>
<tr>
<td>Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.</td>
<td>Primary (1 m) RC chip samples were riffle split and composited to 3 m samples for chemical analysis.</td>
</tr>
<tr>
<td>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 (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.</td>
<td>DC drilling used to obtain core samples. For sampling, these were quartered at intervals determined by lithology to a maximum sample length of 3 m.</td>
</tr>
<tr>
<td>For both RC and DC the 3 m composite samples were pulverised to 95% passing 80 µm size for head assays using XRF and TGA. Concentrates from DT testwork were also DT concentrates were also assayed by X-ray Fluorescence (XRF) using fusion beads and Thermogravimetric Analysis TGA (TGA).</td>
<td>All drill samples were logged using hand held magnetic susceptibility meters (KT-9 or KT-10 instruments) for which calibration standards were prepared and available. At least three readings are taken on RC samples to achieve accuracy and reproducibility.</td>
</tr>
</tbody>
</table>
### 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.).

RC drilling was used for many of the shallower targets and as pre-collars for DC tails, mostly to a downhole limit of the depth of weathering or the depth limit of the RC rig.

The average drill hole depth is 326 m downhole. The average RC hole depth 190 m downhole and the deepest RC hole is 303 m downhole). RC hole diameters were 5¼" - 5¾" (133-146 mm). Face-sampling hammers were used.

DC tails extended from varying depths to as much as 603 m downhole. DC core diameters used were HQ (nominal 63.5 mm) and HQ3 (61.1 mm), NQ2 (50.6 mm) and NQ (47.6 mm). Most core drilling was NQ2 size (and minor NQ), with HQ (and minor HQ3) limited to the depth of weathering and not generally exceeding 100 m downhole.

Eight DC holes were drilled from surface.

Core was orientated using an ACE® orientation tool.

### Drill Sample Recovery

**Method of recording and assessing core and chip sample recoveries and results assessed.**

Recovery has been recorded for RC drilling by weighing primary 1 m samples. Average recovery across a 6 m rod is about 95%. For DD holes, recovery of fresh rock is about 98% and recovery of weathered material is about 79%.

**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.
### 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.

The total length and percentage of the relevant intersections logged

The entire lengths of all RC and DC holes have been logged for lithology, weathering, and colour using a standard set of in-house logging codes. Descriptive geotechnical logging is performed on all core as an integral part of the logging. The logging method is quantitative with provision for supplementary qualitative comments.

RC and DC samples were logged for magnetic susceptibility (MS) using hand-held MS meters.

For DC holes, mineralised zones were logged for grain size and banding type. Summary geotechnical information was recorded for all DC holes and detailed geotechnical information was recorded on orientated core.

All core trays were photographed dry basis prior to core being sampled.

The geological model is supported by visual grade trends and variography (preferred axes of continuity) and is the basis for defining the geostatistical domains. The geological logging, assays and DT data have been used to develop the geological interpretation.

### 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.

For RC samples a 3-stage multi-tier riffle was used to split the primary 1 m samples (collected at the cyclone) which were normally dry or only slightly moist as collected, as a result of limited groundwater and the high air volumes/pressures used. Three successive primary sample (25%) splits were combined to produce bulk 3 m composites that were further split to 2 × 12.5% sub-samples. Field Duplicate samples (QAQC) were collected from a second sample chute at the base of the splitter that also produced the regular laboratory sample.

DC sample intervals were physically marked on the core, which was sawn in half lengthways with a diamond core-cutting saw, with one half sawn again. The resulting quarter core was taken for the laboratory sample and the remaining ¾ core was archived.

The laboratory sample sizes, typically 4-5 kg for RC and DC samples, are considered appropriate to the grain and particle sizes for representative sampling in respect of fundamental sampling error considerations (Gy’s equation).

The field duplicates and laboratory repeats were assayed and found acceptable in comparison with regular laboratory samples, with no major issues identified.

A comprehensive Standards & Procedures Manual (“QuickGuide”) defines the field procedures including field sample splitting, laboratory sample preparation and QAQC procedures.
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 (e.g. standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.

For RC chips, QAQC field duplicates were taken from the 3-stage multi-tier riffle splitters during compositing (to 3 m samples) at the rate of 4% of all samples submitted to the lab.

In-house matrix-matched standards (4 separate grades) together representing 4% of samples submitted to the lab were submitted with each assay batch of head samples. The four standards were prepared in-house and the standard grades defined by “round robin” analysis at four separate laboratories (SGS, Amdel, Ultra Trace and ALS). They have grades that cover the typical range of mineralised or near mineralised grades experienced, i.e. 17.4% Fe; 22.4% Fe; 35.6% Fe; and 43.4% Fe.

Primary (1 m) sample weights and 3 m composite sample weights were recorded as part of the sample recovery checks.

Samples were prepared and DT testwork performed in Sphere’s Zouerate laboratory in Mauritania.

Core samples were crushed to -6 mm in a jaw crusher. Core and RC samples were dried for 2-4 hours at 105°C, crushed in 3 mm then 1 mm rolls crushers and milled for 3 minutes in an LM2000 pulveriser to 95% passing 80 µm size. DT80 testwork was performed in the site lab on aliquots of these pulps.

DTLib testwork was performed on the -1 mm crushings and on progressively milled samples until the liberation target grade of 65% Fe ± 1.3% Fe was achieved.

Head pulps, DT80 and DTLib concentrates were assayed at Bureau Veritas (Ultra Trace) laboratories in Canning Vale, Western Australia, for 11 elements by XRF: Fe, P, SiO₂, Al₂O₃, CaO, MgO, Na₂O TiO₂, S, K₂O, and TGA for LOI 371°C, LOI 538°C and LOI1000°C. The methods used produced total assay results.

73 head sample pulps (1.9% of all regular head assays) in total were sent to an external laboratory in Western Australia (SGS) for repeat assay.

24 DT samples from the drilling campaign had repeat DT testwork performed in an independent (SNIM) lab in Zouerate, Mauritania.

49 DT samples from the drilling campaign had in-house repeats performed on each of at least three Davis Tube separators to monitor repeatability of DT results in the site lab.

A Niton Model XL3t GOLDD+ hand-held XRF is used in the site lab as a preliminary check on total Fe grade for head and Davis Tube concentrate Fe grades ahead of full iron ore assay at Ultra Trace, using in-house calibrations.

The accuracy and precision for all the QAQC results is considered acceptable.
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.

Mineralisation intersection data is inspected and verified independently by consultants, including the Database Manager, Consultant Geologist and Golder. The Consultant Geologist and Golder geological and mining staff visited the deposit in 2013 and undertook a site inspection of the deposit, logging, sampling and laboratory procedures and concluded that good quality control checks and validations ensure the data is accurate.

No twin holes (RC and DC close together) have been drilled at this stage of the project.

Documentation includes a Standards & Procedures Manual (“QuickGuide”) and data loading and other records and procedural documents maintained by the Perth-based Database Manager of the Access© Drill hole Database.

Data is stored in an Access® database with good management protocols (including back-up) and good documentation of updates and changes to the database.

Location of Data Points

Accuracy and quality of surveys used to locate drill holes (collar and downhole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.

Specification of the grid system used.

Quality and adequacy of topographic control.

The exploration database includes surveyed drill hole collar coordinates (x, y) referenced to UTM (Zone 28N) using the WGS84 reference ellipsoid, and quoted within a precision of centimetres.

An Orion® DGPS with error correction from OmniStar® satellite was used to set out and pick up all drill hole collar positions. This provides an accuracy of ±0.4 m in x, y and ±0.8 m in z. The DGPS elevation (z) reference is the WGS84 ellipsoid.

Approximately 82% of drill holes have been downhole surveyed for deviation using a gyroscopic tool: Contractor Terratec surveyed the drill holes. Single shot downhole camera hole inclination surveys were also run through the rods for all drill holes. Model deviation curves were derived for those holes that could not be gyro surveyed due to blockages, based on the single shot data and neighbouring gyro surveyed holes.

Some minor inaccuracies in drill hole direction is possible in deeper holes that do not have gyro downhole surveys. There are 7 drill holes deeper than 300 m that do not have gyro downhole surveys.

Downhole geophysical logging has been conducted on most holes. This includes natural gamma, magnetic susceptibility and conductivity.

A digital terrain model (DTM) was constructed based on topographic mapping using LIDAR that was performed by Fugro in 2011. The drill hole collar elevations (converted to EGM96 geoid reference were found to closely match the DTM elevations at the collar coordinates for each drill hole.
### 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.**

Drilling has been mostly been conducted on drill lines (sections) spaced 200 m apart. Due to the circular geometry of the deposit, drilling azimuths has been adjusted around the mineralized area roughly perpendicular to the strike of the mineralization. Drill holes are spaced approximately 100 m or 50 m apart on the drill lines.

66 drill holes (32 RC, 26 RD and 8 DC) have been drilled up to July 2013 for 21,837.85 m, with an average depth of 326 m and varying from 96 m to 603.1 m depth.

The drill hole spacing is considered sufficient to delimit the mineralization limits and grade continuity. Structural discontinuities have been identified and drill holes were executed to map their influence zones. Areas with folding were drilled to define influence; a dolerite dyke cross cut the northern sector of the deposit; internal waste zones were identified in within the mineralisation.

Drill samples have been composit to 3 m lengths (from raw samples not exceeding 3 m length) to provide a standard sample support for geostatistical analysis.

Exploratory data analysis identified two different main ore zones: high Phos in the northeast sector and low Phos in south and west areas. Variography was applied separately in these areas.

### 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.**

Due to the circular geometry of the deposit, drill holes have been drilled along lines in seven sectors. Each sector has an azimuth (azi) designed to provide intersections approximately normal to the local strike (North: azi 5°, Northeast: azi 56°, East: azi 81°, Southeast: azi 150°, Southwest: azi 220°, Northwest: azi 295° and Northwest: azi 333°)

Drill hole inclinations varied from 46° to 82° (from the horizontal) to achieve close to normal (true thickness) intersections of the mineralised units and to prevent sampling bias.
### Sample Security

The measures taken to ensure sample security.

All drill samples are labelled using sample ticket books with SampleIDs randomly pre-allocated to Regular laboratory and various QAQC sample types (Field Duplicates and Standards). The HoleID and drilled (From-To) interval for each Regular and Field Duplicate sample is recorded on the sample ticket book stub and in the Sample Allocation Table.

Sample preparation and Davis Tube testwork is performed in Sphere’s Zouerate laboratory. Davis Tube concentrate SampleIDs are suffixed “C” for DT80 concentrates, and “L” for DTLib concentrates to avoid any misidentifications.

Drill head sample pulps and Davis Tube concentrates were securely packaged on site in kraft sample bags, boxed, securely packaged and freighted to Ultra Trace laboratories in Western Australia for assay by an express airfreight courier with “chain of custody” documentation between site, the assaying laboratory and the Perth-based drill hole database manager.

### Audits and Reviews

The results of any audits or reviews of sampling techniques and data.

Golder conducted an audit of the drilling, sampling and database at Lebtheinia, Mauritania in June 2008. These same procedures and recommendations from the audit have been applied to Tintekrate and are incorporated into the Standards & Procedures Manual (QuickGuide). Golder also conducted a site visit in July 2013.

### 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.

Tintekrate magnetite project is located on the southwest portion of the Exploitation Permit 609, granted for a 30 year period on 27 April 2008.

This Permit is securely held by the El Aouj Mining Company SA, a Mauritanian company owned by Société Nationale Industrielle et Minière (SNIM, 50%) and Sphere Minerals Ltd (50%). Sphere Minerals Ltd, is a subsidiary company of Glencore. The Permit is not constrained by any native title interests, historical sites, wilderness or national parks.

### Exploration Done by Other Parties

Acknowledgment and appraisal of exploration by other parties.

The deposit was mapped by Sphere in 2003 at a scale of 1:10 000. This mapping, together with 13 historical reconnaissance holes (1742 m) drilled by SNIM identified the potential of the deposit and enabled an initial exploration target to be set.

All drilling exploration results used in this resource estimation were produced by Sphere from its reconnaissance drilling campaign in 2006 and resource definition drilling campaigns in 2011-13.
**Geology**

Deposit type, geological setting and style of mineralisation.

Tintekrate deposit is a circular structure dipping at around 50 to 80 degrees. It is an Archaean magnetite-quartzite (MQ) unit that ranges in true thickness from approximately 150 m to over 200 m. The total strike length of mineralised magnetite-quartzite around the structure is approximately 5.2 km.

The mineralised unit has been sub-divided into four main sub-units (domains): West (Domain 11), Centre (Domain 12), East (Domain 13) and East-Centre (Domain 14). The area is split by a dolerite intrusion (Domain 25) in the northern sector and fault zone (fault) in the centre and south region. Internal waste (Domain 26) is present in isolated areas of the mineralisation.

High and low phosphorus (P) sectors were identified from the head assays: higher P is associated with the northern and eastern parts of the East domain. Lower P is associated with the southern part of the East domain and the West, Centre and East-Centre domains.

The Weathered zone averages 70-75 m thick. In this zone magnetite has partially to completely oxidised to hematite, resulting in lowered magnetic susceptibility and DT mass recoveries compared to fresh mineralisation.

**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.

Data collection procedures are standardised in Sphere’s Bou Derga & Tintekrate Program Standards & Procedures Manual (QuickGuide) Data is captured on site mostly using FieldMarshal® software installed on ruggedized ToughBook® PCs and loaded into an Access® database in Perth, WA under the control of a database manager.

The loading procedures and other validation steps include numerous validation checks on the data. These include value range checks and contextual cross-checks between lithology and degree of weathering logged, magnetic susceptibility, head grades, DT concentrate grades and DT mass recoveries. All validation issues are referred to the site exploration team for resolution, which may include reclogging, resampling, repeated DT tests and/or re-assay.

On loading the original data for modelling, Golder performed additional checks that validated the internal integrity of the data set provided by Sphere.

**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.

Golder conducted a site visit to Tintekrate project in 2013. A good understanding of the extent and structure of the deposit was obtained by inspection of outcrops and drill holes.
**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 factors affecting continuity both of grade and geology.

---

**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 Tintekrate mineral resources have the following maximum extents:

- Easting = 3 000 m to cover the circumference in X
- Northing = 2 500 m to cover the circumference in Y
- RL (height) = The natural topographic surface varies from RL 549 m to RL 348 m (EGM96).

Due to the steep dip of the mineralisation, the depth below surface varies from the upper limit of 0 m (outcropping weathered mineralisation) to 575 m (HoleID TT015).
**Estimation and Modelling Techniques**

Mineralisation is defined by zones identified from downhole lithological and geochemical data. Fresh mineralised material is identified as having >20% DT80 wt% (DT mass recovery) and Weathered as >20% head Fe. All other material is identified as waste.

Vulcan® software was used for the block modelling. The parent block size used is 50 m (x) by 50 m (y) by 12 m (z), i.e. not less than ¼ of the drill hole spacing in the x (east) and y (north) directions. The sub-block size used to improve resolution at mineralisation boundaries is 5 m (x) by 5 m (y) by 1 m (z).

No specific assumptions are made regarding selective mining units (SMU) except to say that the 12 m block height is a likely actual mining bench height and that SMU size for mining could reasonably be the resource block size or half of it (say 25 m by 25 m by 12 m).

No high-grade restraining or cutting was applied as there were no significant grade outliers identified.

Check estimates: the resource estimate grades were validated globally comparing statistics by domains between blocks and samples. Visual inspection and swath plots were used for local validations. The overall results are considered acceptable and adequate to the first stage of estimation of the deposit; bulk density was estimated by kriging and compared with the regressions derived from Sphere’s studies. The results are fairly similar.

No significant levels of deleterious elements are present in the resource and sulphur levels in the assayed waste rocks are low (average of 0.09% S), suggesting that acid mine drainage is unlikely to be an issue.

The wireframe model embodying the cut-off grades mentioned above was validated by Golder and any changes discussed and agreed with Sphere. The empty block model was derived from the wireframe using Vulcan® modelling software.

Estimations for DT concentrate grades were weighted appropriately by DTR to reflect the relationship between DTR and DT concentrate assays. Weighting was completed using the accumulation (DTR × DT concentrate assay) and then back calculating DT concentrate assays by dividing by the relevant estimated DTR values. The accumulated grades were represented by Acc* where * is the concentrate element.

Using parameters derived from modelled variograms, Ordinary Kriging (OK) was used to estimate average block grades for Fe, SiO₂, Al₂O₃, CaO, P, MgO, S, TiO₂, Na₂O, K₂O, LOI, DTLib, DTLib2, etc.
The correlation between variables was considered during variography and estimation. Although the variograms are modelled individually for each variable, the ranges of the structures are kept similar so as to preserve metal balance and block grade assays total close to 100%.

Due to the circular structure, unfolding was used during variography and estimation to enable correlation of samples around the fold structure.

The estimation was conducted in three passes with the search size increasing for each pass.

The model was validated visually and statistically using swath plots and comparison to sample statistics. The validation was acceptable using all these methods.

| Moisture | All resource tonnages are assumed dry basis and were converted from volumes using dry bulk density factors derived for fresh and weathered rock (mineralised and waste) by regressions relationships of rock density against head Fe, with assumed void factors applied of 3% for fresh rock and 5% for weathered rock. |
| Cut-off Parameters | The resource model is constrained by assumptions about economic cut-off grades. The Fresh mineralisation is confined by a 20% DT80 wt% cut-off and tabulated resources are based on cut-off grades of 20% DT80 wt%. Weathered (oxidised) mineralisation is confined and tabulated by a head grade cut-off of 20% Fe. The reason for the different cut-offs is that the fresh mineralisation has the potential to be processed exclusively by magnetic separation processes whereas the weathered mineralisation, due to extensive oxidation of magnetite to hematite, would require an alternative, gravity-based non-magnetic process. |

| Libsize, AccFe_lib, AccSi_lib, AccAl_lib, AccCa_lib, AccP_lib, AccMg_lib, Acc_S_lib, Acc_Ti_lib, AccNa_lib, AccK_lib and AccLOI_lib, DTR, AccFe_conc, AccSi_conc, AccAl_conc, AccCa_conc, AccP_conc, AccMg_conc, Acc_S_conc, Acc_Ti_conc, AccNa_conc, AccK_conc and AccLOI_conc. |
### 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.

The block model has been built using a parent cell size of 50 m (x) by 50 m (y) by 12 m (z), primarily determined by data availability. No other mining selectivity or other economic assumptions have been made in the block model, except that intersections of internal waste exceeding 6 m and extending across several drill holes have locally been separately determined as internal waste. It is considered at this stage that the open pit mining bench height is likely to be 12 m or close, as per the model primary block height. Evaluation of the expected open pit mining selectivity that may be achieved will be possible (e.g. using conditional simulation modelling) once the grade control, blasting, mining, stockpiling and blending systems have been defined.

### 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 made 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.

It is assumed that the metallurgical domains are primarily governed by the stratigraphic position of the mineralisation and waste boundaries.

It is assumed that the expected metallurgical recovery and concentrate grades for a pellet feed product can be inferred from DT80 test results (conducted on drill samples milled to liberation size of 95% passing 80 µm). Davis Tube Liberation (DTLib) testwork conducted on mineralised drill samples drilled in 2011-13 shows that the liberation grind size varies from less than 100 µm to about 800 µm, averaging around 350 µm. These results provide confidence that a sinter fines (SFB) product with a grade of 65-66% Fe can be obtained from Tintekrate project.

No batch or pilot plant testwork on bulk samples has been undertaken at this early stage.

### 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.

No specific engineering design or environmental studies have been conducted at this early stage to establish the potential environmental impacts of a potential mining and processing operation.

However, based on environmental studies conducted for the Guelb El Aouj East Project (which has a similar style of mineralisation) it is assumed that here are not likely to be any significant environmental issues with respect to disposal of mining waste or process residue (tailings) that would affect prospects for eventual economic extraction of the Tintekrate deposit.
<table>
<thead>
<tr>
<th><strong>Bulk Density</strong></th>
<th>The dry bulk density values used in the resource model were assigned using separate linear regressions (of bulk density vs. head Fe %) for Fresh and Weathered rocks. A 3% void factor is applied to the Fresh rock predictions and a 5% void factor for Weathered rock to Weathered rock predictions.</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Classification</strong></th>
<th>Resources were classified in accordance with the Australasian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code, 2012 Edition). The classification of Mineral Resources was completed by Golder based on the geological complexity, number of drill samples, drill hole spacing and sample distribution, data quality and estimation quality for grades and DT80 wt%. The Competent Person is satisfied that the result appropriately reflects his view of the deposit. Due to the stage of the project, the complex structural geology and drill hole distances, the resources are totally classified as Inferred Resources.</th>
</tr>
</thead>
<tbody>
<tr>
<td>The basis for the classification of the Mineral Resources into varying confidence categories. Whether appropriate account has been taken of all relevant factors, i.e. relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data. Whether the result appropriately reflects the Competent Person(s)’ view of the deposit.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Audits or Reviews</strong></th>
<th>No independent reviews of the Mineral Resource estimate have been conducted to date.</th>
</tr>
</thead>
<tbody>
<tr>
<td>The results of any audits or reviews of Mineral Resource estimates.</td>
<td></td>
</tr>
</tbody>
</table>
## 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.

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.

The drill hole spacing and the number of samples available for each individual mineralised domain are not sufficient to provide independent variograms. So, for the variography study, geologically similar domains were combined. This approach is considered acceptable for the current early stage of the project.

Further drilling would be required to better define the complexity of the structure of the deposit and increase confidence in resource estimation by upgrading the resource classification from Inferred to Indicated/Measured.

The relative accuracy is reflected in the resource classification discussed above that is in line with industry acceptable standards.

This updated Mineral Resource estimate is a global estimate, with no production data.
COMPETENT PERSON’S STATEMENT

The Competent Person responsible for the geological interpretation (wireframe model), and the drill hole dataset used in the resource estimation of the Tintekrate Magnetite Deposit is Dr Schalk van der Merwe, the fulltime Exploration Manager of Sphere Minerals Limited. Dr van der Merwe is a member of a Recognised Overseas Professional Organisation (ROPO), the South African Council for Natural Scientific Professionals (SACNASP). Dr van der Merwe 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’. Dr van der Merwe consents to the inclusion in this report of the matters based on his information in the form and context in which it appears.

The Competent Person responsible for the Mineral Resource estimation and classification of the Tintekrate Magnetite Deposit is Mr Alan Miller, who is a full-time employee of Golder Associates Pty Ltd and a member and Chartered Professional of the Australasian Institute of Mining and Metallurgy. Mr Miller 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’. Mr Miller consents to the inclusion in this report of the matters based on his information in the form and context in which it appears.