ASX ANNOUNCEMENT

11 April 2014

SPHERE INCREASES MINERAL RESOURCES AT ASKAF, MAURITANIA

Sphere Minerals Limited (Sphere) (ASX Code SPH) is pleased to announce maiden Inferred Mineral Resources for its Askaf Centre and Askaf East magnetite deposits in Mauritania, following the completion of resource definition drilling programs and associated drill sample assaying and Davis Tube testwork. The combined fresh (unweathered) Inferred Resources for these deposits is 165 Mt at 35% Fe (Table 1).

The combined Davis Tube (DT) mass recovery (DT80 wt%) for the fresh Mineral Resources is 42% at a concentrate grade of 70.1% Fe (Table 2).

In addition, the combined weathered magnetite-quartzite resource is 26 Mt at 34% Fe (Table 3).

The Mineral Resource estimates for Askaf Centre and East were prepared and classified by Golder Associates (Golder) in accordance with the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code, 2012 Edition) based on drill hole data and a 3-dimensional wireframe interpretation supplied by Sphere. The Mineral Resources are interpolated using Ordinary Kriging (OK). The classification of the deposits as Inferred Resources is based principally on the drill hole data density, geological confidence criteria and the representativeness of the drill hole sampling.

Further details of the resource modelling and estimation process and results are provided in the attached Golder Resource Statements for Askaf Centre and Askaf East. The results are summarised in Table 1 to Table 3, and a recap of Askaf North (as at December 2012) is shown in Table 4 and Table 5.

Table 1: Askaf Centre and Askaf East deposits – Summary of Inferred Mineral Resources, Fresh Mineralisation

At 20% DT80 wt% cut-off grade[1], Dry Head Basis as at January 2014 (East) and February 2014 (Centre)

Deposit	Mt	Fe %	SiO_2 %	Al_2O_3 %	P %	MgO %	S %	K_2O %	LOI %
Askaf Centre	95	36	43	1.8	0.08	2.1	0.10	0.6	-0.8
Askaf East	70	35	44	1.7	0.09	2.2	0.07	0.8	-1.0
Total	**165**	**35**	**44**	**1.7**	**0.08**	**2.2**	**0.09**	**0.7**	**-0.9**

[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 2: Askaf Centre and Askaf East deposits – Summary of Inferred Mineral Resources, Fresh Mineralisation

At 20% DT80 wt% cut-off grade, Dry DT80 Concentrate Basis, as at January 2014 (East) and February 2014 (Centre)

Deposit	DT80 Wt%	Fe %	SiO_2 %	Al_2O_3 %	P %	MgO %	S %	K_2O %	LOI %
Askaf Centre	42	69.9	2.1	0.4	0.006	0.3	0.04	0.02	-3.1
Askaf East	42	70.3	1.8	0.3	0.007	0.3	0.06	0.02	-3.1
Total	**42**	**70.1**	**1.9**	**0.4**	**0.006**	**0.3**	**0.05**	**0.02**	**-3.1**

Table 3: Askaf Centre and Askaf East deposits – Summary of Maiden Inferred Resources, Weathered Mineralisation At 20% Fe cut-off grade, Dry Head Basis as at January 2014 (East) and February 2014 (Centre)

Deposit	Mt	Fe %	SiO_2 %	Al_2O_3 %	P %	MgO %	S %	K_2O %	LOI %
Askaf Centre	13	37	38	2.9	0.07	2.0	0.009	0.6	1.9
Askaf East	13	31	47	2.4	0.1	1.3	0.02	1.2	1.9
Total	**26**	**34**	**43**	**2.6**	**0.08**	**1.7**	**0.01**	**0.9**	**1.9**

Sphere considers the maiden Mineral Resources for Askaf Centre and Askaf East to be important supplements to the existing fresh Measured, Indicated and Inferred Mineral Resources at the nearby Askaf North deposit, which (inclusive of Ore Reserves) total 404 Mt at 36% Fe, DT80 wt% of 44% and concentrate Fe of 70.1%, as re-capped and summarised in Table 4 and Table 5 from the previous resource update release in January 2013 (see endnote).

Table 4: Askaf North Deposit – Recap Summary of Mineral Resources, Fresh Mineralisation At 20% DT80 wt% cut-off grade, Dry Head Basis, as at December 2012[i]

Classification	Mt	Fe %	SiO_2 %	Al_2O_3 %	P %	MgO %	S %	K_2O %	LOI %
Measured	202	36	44	1.0	0.059	2.3	0.047	0.45	-1.2
Indicated	158	35	45	1.3	0.063	2.3	0.056	0.52	-1.0
Inferred	44	36	44	1.1	0.06	2.4	0.06	0.5	-1.2
Total	**404**	**36**	**44**	**1.1**	**0.061**	**2.3**	**0.052**	**0.48**	**-1.2**

Table 5: Askaf North Deposit – Recap Summary of Mineral Resources, Fresh Mineralisation At 20% DT80 wt% cut-off grade, Dry DT80 Concentrate Basis, as at December 2012

Classification	DT80 wt%	Fe %	SiO_2 %	Al_2O_3 %	P %	MgO %	S %	K_2O %	LOI %
Measured	47	69.8	2.3	0.28	0.006	0.39	0.027	0.011	-3.1
Indicated	45	69.4	2.8	0.31	0.007	0.39	0.027	0.015	-3.1
Inferred	45	69.2	3.0	0.3	0.008	0.4	0.04	0.02	-3.1
Total	**46**	**69.6**	**2.6**	**0.30**	**0.007**	**0.39**	**0.028**	**0.013**	**-3.1**

Laboratory-scale metallurgical testwork

In addition to the standard DT80 test (where the 3m drill samples crushed to -1mm are subjected to a standard grind time of 3 minutes), Sphere has conducted Davis Tube Liberation (DTLib) testwork at its site laboratory in Zouerate. With the DTLib test, the grind time is allowed to vary until a fixed target concentrate grade is achieved. This determines the liberation grind size, which is the d90 (90% passing) grind size that will produce a 65% Fe DT concentrate (± 1.3% Fe). As with the DT80 test, the DTLib test also produces a mass recovery at the achieved concentrate grade. The liberation grind sizes of the DTLib concentrates from fresh mineralisation for Askaf Centre and Askaf East performed well in the DTLib test and gave a reasonable average liberation grind size of 320 µm for Askaf Centre at a high 49% mass recovery and a very good 380 µm for Askaf East, also at 49% mass recovery. Although early stage, these results are encouraging in the context of a possible sinter fines product (approximately 1.6 mm topsize) similar to that Sphere has studied at its Askaf Project at the Askaf North deposit. The DT80 testwork results were excellent for both deposits, with high mass recoveries and concentrate grades and an average Fe yield of 84%.

Photographs of Askaf Centre and Askaf East are shown in Figure 1 and Figure 2 respectively.

Figure 1: Askaf Centre Deposit (part) looking northeast from southwest.

Figure 2: Askaf East Deposit (part) looking east from west end of deposit.

Competent Persons' Statement

The geological interpretation, wireframe model and the drill hole dataset used in the resource estimation of the Askaf Centre and Askaf East magnetite deposits is based on, and fairly represents information and supporting documentation prepared by Dr Schalk van der Merwe, Consultant Geologist to 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 Australasian Code for reporting of Exploration Results, Mineral Resources and Ore Reserves (2012 Edition). Dr van der Merwe consents to the inclusion in this report of the geological interpretation and the drill hole dataset and the supporting information in the form and context in which it appears.

The Mineral Resource estimation and classification of the Askaf Centre and Askaf East magnetite deposits is based on, and fairly represents, information and documentation prepared by Mr Alan Miller. Mr Miller is a full-time employee of Golder Associates Pty Ltd and a Member and Chartered Professional of the Australasian Institute of Mining and Metallurgy (AusIMM). 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 Australasian Code for reporting of Exploration Results, Mineral Resources and Ore Reserves (2012 Edition). Mr Miller consents to the inclusion in this report of the Mineral Resource estimation and classification and the supporting information in the form and context in which it appears.

Mineral Resource Statement Update for Askaf North Magnetite Deposit, Mauritania, 22 January 2013. In Appendix 1, Sphere Minerals Limited Quarterly Activities and Cashflow Report, 31 January 2013.[i]

Golder Associates

9 April 2014 Reference No. 147641004-001-L-Rev0

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MINERAL RESOURCE STATEMENT FOR ASKAF CENTRE IRON ORE DEPOSIT, MAURITANIA

Dear Dr van der Merwe

Golder Associates Pty Ltd (Golder) has completed a resource model of Askaf Centre iron ore deposit, Mauritania (Figure 1), using all available assay data as of 11 February 2014. The Mineral Resources were classified in accordance with "*The Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves* (JORC Code, 2012 Edition)".

The Mineral Resource is based on a block model interpolated using Ordinary Kriging (OK) and is reported for fresh mineralisation on a head basis (Table 1) and recoverable fresh concentrate basis (Table 2). It is also reported on a head basis (Table 3) for weathered (oxidised) mineralisation.

The classification of the Mineral Resources was based principally on data density, geological confidence criteria and representativeness of sampling.

The location of all drill holes used in the estimation is shown in Figure 2 and the interpreted domains are shown in the cross-sections in Figure 3 to Figure 5. The higher degree of uncertainty in the Inferred Resource estimates is reflected by rounding some values to a smaller number of significant digits.

Table 1: Askaf Centre Inferred Mineral Resource, Fresh Mineralisation at 20% DT80 wt% Cut-Off Grade, Dry Head Basis

Tonnage (Mt)	Fe%	SiO_2%	Al_2O_3%	P%	MgO%	S%	K_2O%	LOI%
95	36	43	1.8	0.08	2.1	0.1	0.6	-0.8

Table 2: Askaf Centre Inferred Mineral Resource, Fresh Mineralisation at 20% DT80 wt% Cut-Off Grade, Dry DT80 Concentrate Basis

DT80 wt%[1]	Fe%	SiO_2%	Al_2O_3%	P%	MgO%	S%	K_2O%	LOI%
42	69.9	2.1	0.4	0.006	0.3	0.04	0.02	-3.1

[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: Askaf Centre Inferred Mineral Resource, Weathered Mineralisation at 20% Head Fe Cut-Off Grade, Dry Head Basis

Tonnage (Mt)	Fe%	SiO_2%	Al_2O_3%	P%	MgO%	S%	K_2O%	LOI%
13	37	38	2.9	0.07	2.0	0.009	0.6	1.9

GEOLOGICAL INTERPRETATION

The Askaf project is situated on Exploitation Permit 1620, granted on 12 July 2012 by the Mauritanian Government Council of Ministers. Prior to this the same ground was held 100% by Sphere as Exploration Permit 172. The permit area contains six coarse grained magnetite-quartzite (MQ) deposits, including Askaf East, Askaf North, Askaf Centre and the three small deposits in the Askaf West group (Tellia, Gueblia and Guelb el Askaf), as shown in Figure 1. The Exploitation Permit is not constrained by any native title interests, historical sites, wilderness or national parks.

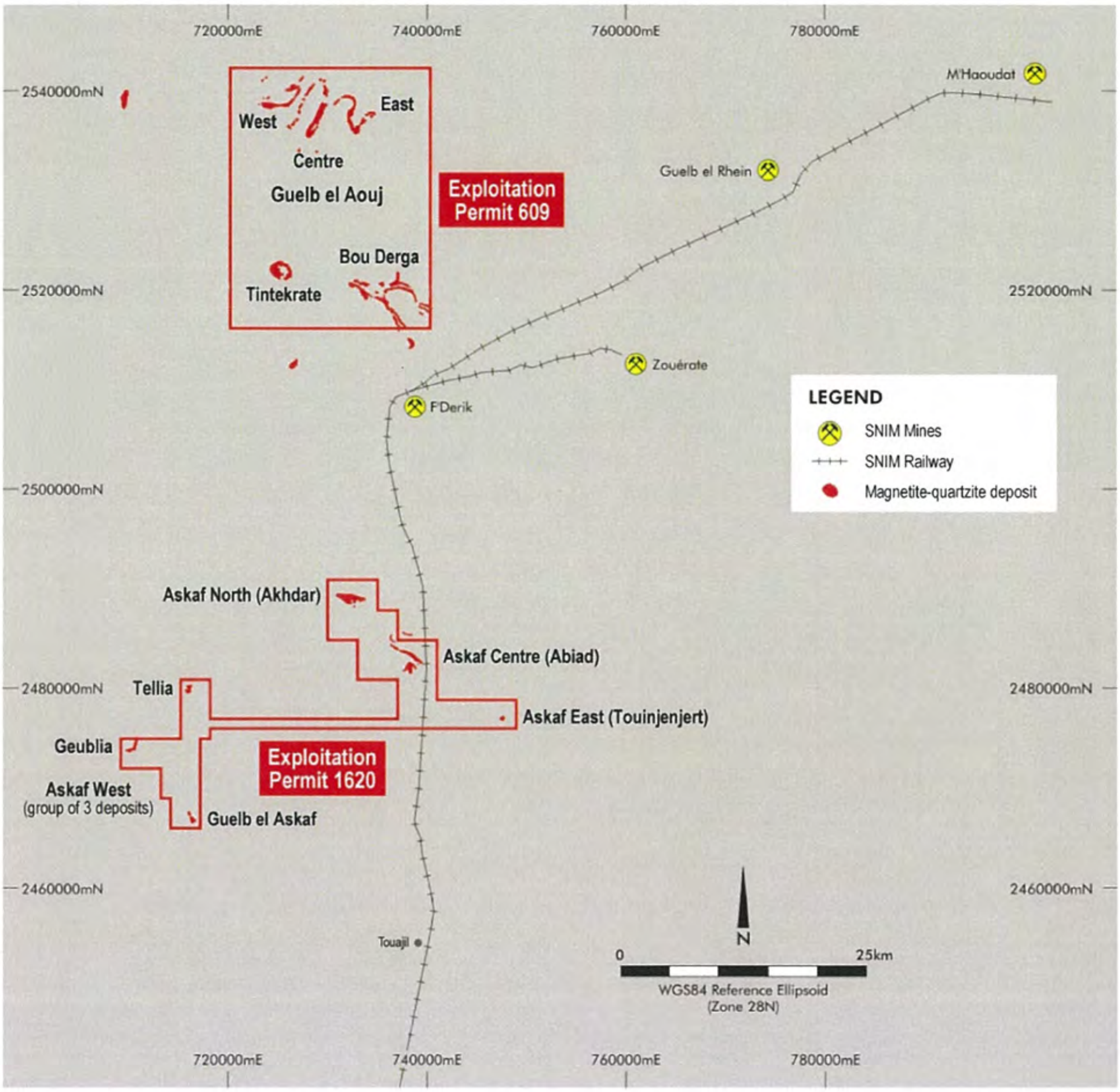

Figure 1: Location of Sphere's Magnetite-Quartzite Deposits

The deposit was mapped geologically by Sphere in 2004 at a scale of 1:10 000. Drilling on the Askaf Centre deposit started with reconnaissance drilling in 2009 and continued on a low key until 2012 with completion of the resource definition drilling program.

The Askaf Centre deposit is located about 10 km southeast and along strike of the Askaf North deposit. It comprises a northern body that is exposed over a strike length of 3.5 km and a southern body that is exposed over a strike length of 1.7 km. Both bodies form part of a regional scale antiformal structure and each body is also duplicated within itself by outcrop-scale tight isoclinal folding. The northern and southern bodies are separated and displaced in a dextral shear sense by a regional scale fault/fracture system.

The northern body is generally sub-vertical striking roughly northwest-southeast. At the western and eastern ends however, shallower north-easterly dips have been reported. The MQ unit ranges in thickness from approximately 50 m (Figure 5) in the west to approximately 70 m in the east (Figure 4), with the MQ mineralisation being thinnest in the steep dipping middle portion (±10 m). The multiple layers reported is the result of tight isoclinal folding.

The southern body comprises an open synformal structure with an undulating sub-horizontal fold axis that plunges at approximately 25° towards the southwest at the southern part of the deposit. At this locality the mineralisation is still open-ended at depth. The two limbs of the synform are exposed over a strike length of approximately 1 km. The northern part of the synform is tighter than is the case in the south, with the eastern limb almost being overturned in some places (Figure 3). MQ ranges in thickness from approximately 30 m to 35 m in the limbs to approximately 45 m to 55 m in the synformal keel as a result of structural thickening with thicknesses of up to 90 m reported.

The MQ unit is embedded within an Archaen granitic/gneiss sequence. The hangingwall sequence comprises barren quartzite and quartz-garnet gneiss, frequently intruded by post-tectonic leuco-cratic granites. The footwall sequence comprises leucocratic gneiss (locally referred to as leptinite) with an amphibolite unit and sometimes barren quartzite at the contact.

The MQ unit represents a metamorphosed banded iron-formation (BIF). The precursor BIF was subjected to high-grade metamorphic conditions during the Archaean, which resulted in complete recrystallisation of the original fine-grained BIF. In most cases the primary textures have been destroyed by the recrystallisation. Coarse-grained (generally >1 mm) MQ is produced as a result, with good Davis Tube liberation characteristics and concentrate grades at a relatively coarse liberation grain size (95% passing 80 µm).

Askaf Centre outcrops over a strike length of approximately 2.5 km and the deposit remains open towards the west, the south and at depth below the current interpretation.

Figure 3 to Figure 5 show cross sections of the geology across the deposit. The positions of the cross sections are marked on Figure 2. The MQ mineralisation is subdivided into three domains along the northern part of the deposit and two domains on the southern part with internal waste bands of barren quartzite.

The weathered zone which, though variable, has an average vertical thickness of approximately 40 m and in this zone partial to complete oxidation of magnetite to hematite has occurred. Oxidation significantly reduces the Davis Tube mass recovery (wt%) in mineralised drill samples.

The geological interpretation for Askaf Centre is based on lithology, head grades and Davis Tube separation testwork and was completed by Sphere geologists on cross sections using Surpac® modelling software. Three dimensional wireframe geological modelling was carried out by Sphere and reviewed by Golder prior to its use to construct the block model.

The Mineral Resource estimate is constrained by the mineralisation domain boundaries. Resource estimates for extrapolations greater than 100 m from drilling are unclassified and therefore not included in this resource statement.

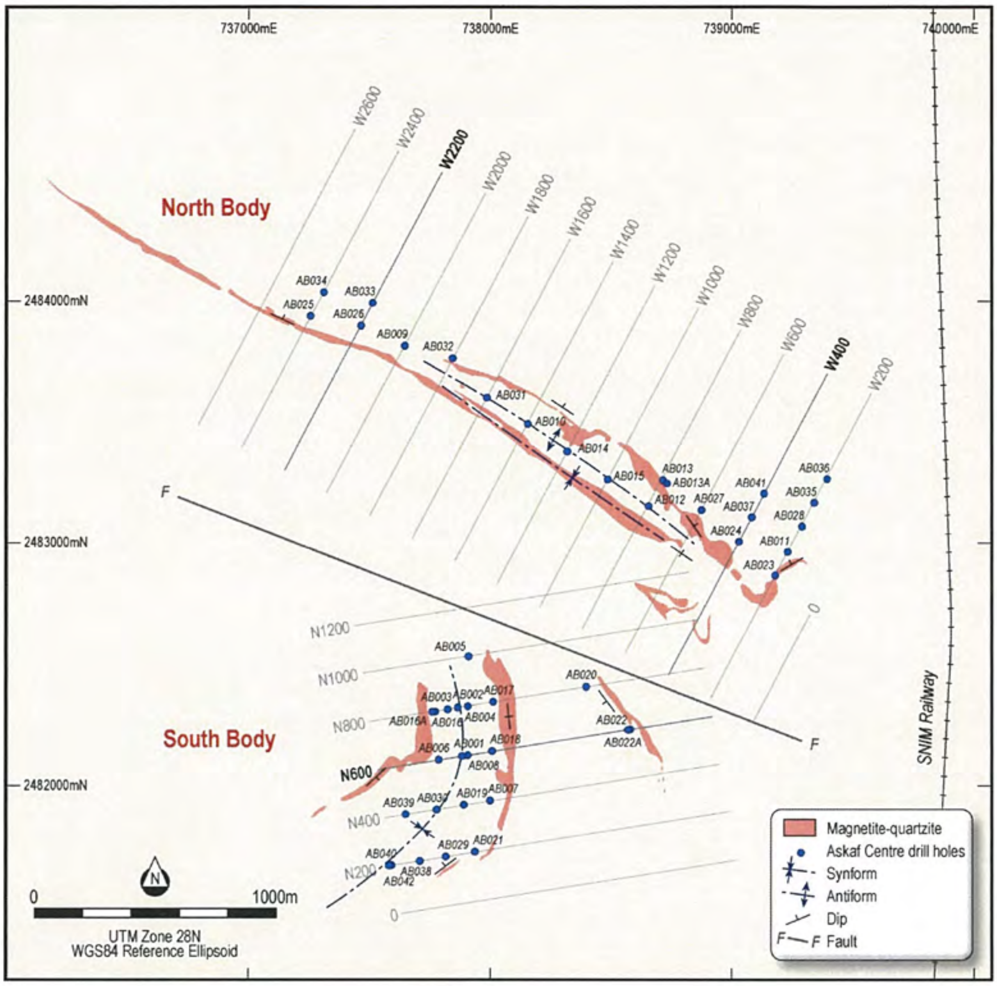

Figure 2: Askaf Centre Drill Hole Location Plan and Magnetite-Quartzite Outcrop

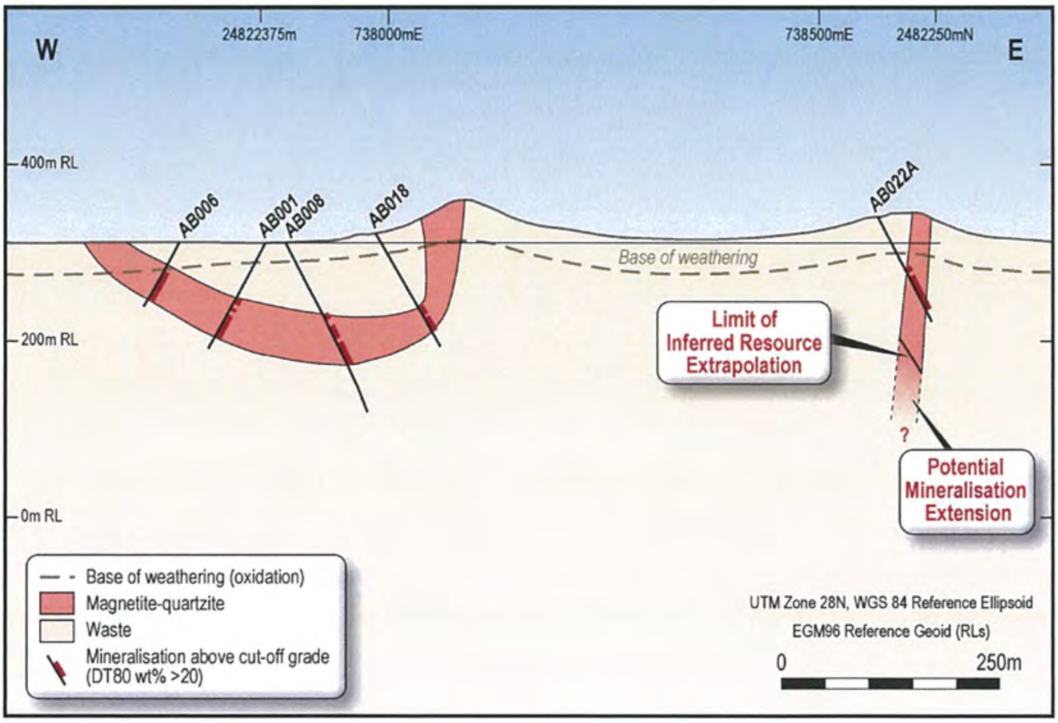

Figure 3: Geological Cross-Section (Section No. N600)

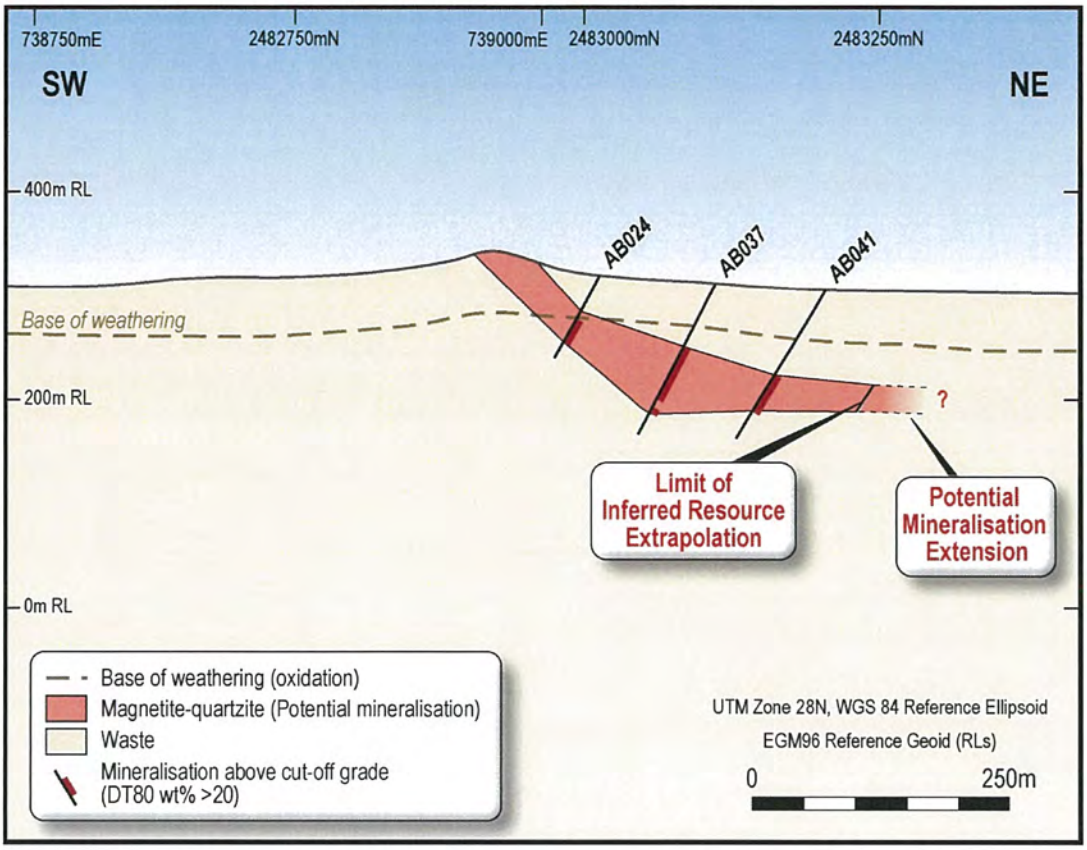

Figure 4: Geological Cross-Section (Section No. W400)

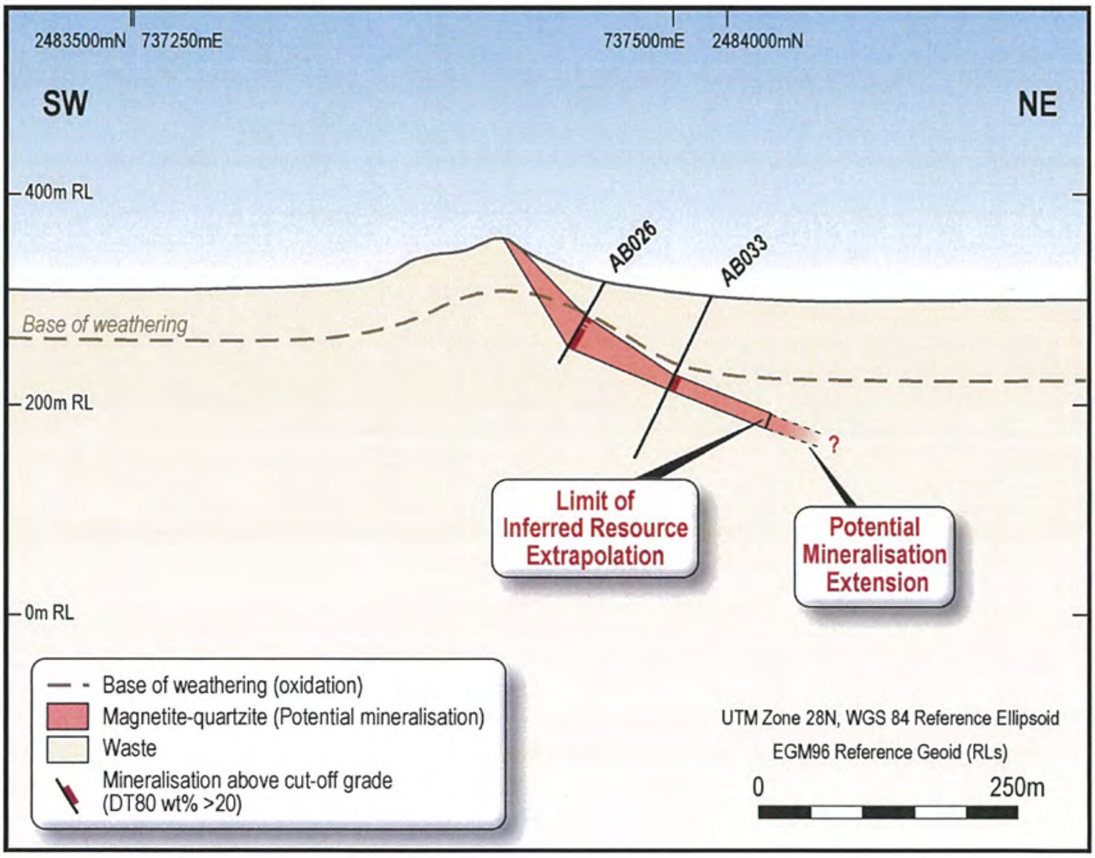

Figure 5: Geological Cross-Section (Section No. W2200)

DRILLING TECHNIQUES

The total quantity of drilling used in the resource estimation is 42 drill holes (plus three re-drills that failed to reach target depth) with a total drilled length of 6 932.6 m, as shown in Table 4.

Table 4: Askaf Centre Drill Hole Summary

Year	Drilling Method	No. of Holes	RC Metres	DC Metres	Total Metres
2009	RC	10	1292.0		1292.0
	RD	2	131.8	163.5	295.3
	Diamond	1		150.3	150.3
2011	RC	6	652.0		652.0
	RD	9	791.1	676.1	1467.2
	Diamond	7		831.8	831.8
2012	RC	10	2244.0		2244.0
	Total	**45**	**5110.9**	**1821.7**	**6932.6**

All samples used in the resource estimate were collected from reverse circulation (RC), diamond drilling (DC) or drill holes with a RC precollar and a DC tail (RD).

Core diameters used included HQ (63.5 mm diameter) and NQ2 (50.6 mm). HQ sizes were generally limited to less than 200 m downhole depth. 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 Askaf Centre deposit has two parts with different orientations, this involved two different grid orientations to provide the optimal drilling direction for both parts. All drill holes in the northern part are drilled to an azimuth of 208° and the drill holes in the southern part are drilled to an azimuth of either 81° or 261° (Figure 2). The inclination used for all drill holes was 60° to the horizontal except for two vertical drill holes.

All drill hole collar positions were located and surveyed 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 ± 0.4 m and a height accuracy of ± 0.8 m.

A total of 22 drill holes have been downhole 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 standalone 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. It exceeds 97% for fresh rock and averages about 78% 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 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 average 4 kg to 5 kg and are considered appropriate in relation to the inherent grain size of the mineralised samples.

Core samples are crushed to -6 mm size in a jaw crusher. Core and RC samples are then dried at 105°C for 2 to 4 hours and are 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 micron (0.08 mm) size.

DT testwork is undertaken in Sphere's site laboratory on the resulting sample pulps. Head pulps and DT concentrates are sent, together with the field duplicates and four separate matrix-matched standards, to Bureau Veritas (Ultra Trace) laboratory in Perth, Western Australia. The samples are assayed by X-ray diffraction (XRF) using fusion beads for Fe, P, SiO_2, Al_2O_3, CaO, MgO, MnO, Na_2O, TiO_2, S, K_2O,BaO, and V_2O_5; 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.

A review of the QAQC data was completed. The QAQC program included company standards and field duplicates submitted at a rate of 8% to 10% of all assayed samples. 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. There are no RC drill holes that have been twinned with diamond drill holes. No apparent discrepancies were identified in the QAQC data. Golder considers the accuracy and precision of all the QAQC results to be acceptable.

RESOURCE 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 dataset.

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 testwork 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 the sample mineralogy and Fe grade. DTC Fe is the Davis Tube concentrate iron grade, etc.

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 about one half of the minimum drill hole spacing of 100 m by 100 m. The sub-block size, which provides higher resolution at domain boundaries, is 5 m (x) by 5 m (y) by 3 m (z).

Statistical and geostatistical analysis was carried out on drilling data composited to 3 m downhole. This included variography to model spatial continuity in the geological domains.

The OK interpolation method was used for resource estimation of the following variables; Head: Fe, SiO_2, Al_2O_3, CaO, MgO, P, S, Na_2O, K_2O, LOI; and DT80: DT80 wt%, DTC Fe, DTC SiO_2, DTC Al_2O_3, DTC CaO, DTC MgO, DTC P, DTC S, DTC Na_2O, DTC K_2O and DTC LOI, using variogram parameters defined from the geostatistical analysis. Variograms were modelled for the largest domain in the southern area (Domain4). Variograms from Domain 4 were applied to the other mineralised domains and for internal and external waste domains.

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 233 fresh rock specimens and 29 weathered rock specimens of mineralised and waste rock and their matching head Fe assays. A 2% 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 0.98*(Head Fe × 0.0236 + 2.6824)
- Weathered mineralised and waste 0.95*(Head Fe × 0.0288 + 2.3758)

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.

CUT-OFF GRADES AND CLASSIFICATION CRITERIA

The resource estimates were classified in accordance with The Australasian Code for Reporting of Identified Mineral Resources and Ore Reserves (JORC Code, 2012 Edition). The 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, 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. Continuous zones (domains) meeting the following criteria were used to define the resource classification.

Golder classified all of the Askaf Centre Mineral Resource as Inferred on the basis of the limited drilling (mostly 100 and 200 m between drill lines, and the low number of samples available for the estimation.

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 Askaf Centre. Intersections of internal waste exceeding 6 m 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 Askaf Centre 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 2009 to 2011 drilling. This is the first stage of assessing the potential of the Askaf Centre 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 d90 size (90 % passing) is determined. This is known as the liberation grind size (DTLib d90 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 d90 sizes. The DTLib d90 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 Askaf Centre 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 320 µm DT liberation grind size at a high (48.6%) mass recovery (wt%). These results are sufficiently encouraging to justify further metallurgical testwork in due course.

Table 5: Askaf Centre Metallurgical Davis Tube Liberation Grind Size Data Tabulation

	Inferred
% of Resource	100
DTLib d90 µm	320
DTLib wt%	48.6
DTLib Fe %	65.3
DTLib SiO_2 %	8.0
DTLib Al_2O_3 %	0.45
DTLib S %	0.054
DTLib CaO %	0.29
DT Lib P %	0.014
DT Lib K_2O %	0.03
DT Lib MgO %	0.48
DT Lib Na_2O %	0.03
DTLib LOI (1000°C) %	-2.9

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.

JORC Code Assessment Criteria	Comments
Section 1: Sampling Techniques and Data	
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.* *Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.*	RC, DC and RD 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. Downhole geophysical logging used – gamma, conductivity and magnetic susceptibility (MS). Primary (1 m) RC chip samples were riffle split and composited to 3 m samples for chemical analysis. 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.

JORC Code Assessment Criteria	Comments
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.	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). All drill samples were logged using hand held magnetic susceptibility meters for which calibration standards were prepared and available.
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 26 drill holes. DC drilling was used for eight drill holes and 11 drill holes had RC precollars and DC tails. RC hole diameters were 5¼"-5½" (133-140 mm). Face-sampling hammers were used. DC diameters included HQ (63.5 mm) and NQ2 (50.8 mm). Most was NQ2 size, with the HQ sizes generally limited to less than 200 m downhole depth. Core was orientated using an ACE® orientation tool.
Drilling Recovery *Method of recording and assessing core and chip sample recoveries and results assessed.* *Measures taken to maximise sample recovery and ensure representative nature of the samples.* *Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.*	Recovery was recorded for RC drilling by weighing primary 1 m samples, however the data was lost due to computer breakdown. Average recovery recorded for nearby magnetite projects using the same equipment and personnel across a 6 m rod is about 95%. For DC holes, recovery of fresh rock is about 95% and recovery of weathered material is about 86%. There is no evidence of bias between sample recovery and grade.
Logging *Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.* *Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc.), photography.* *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 on a dry basis prior to core being sampled.

JORC Code Assessment Criteria	Comments
	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 kg to 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 laboratory. In-house matrix-matched standards (4 separate grades) together representing 4% of samples submitted to the laboratory and blanks (2%) 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.

JORC Code Assessment Criteria	Comments
	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 laboratory 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 13 elements by XRF: Fe, P, SiO_2, Al_2O_3, CaO, MgO, MnO, Na_2O TiO_2, S, K_2O, BaO, V_2O_5; and TGA for LOI371°C, LOI538°C and LOI1000°C. The methods used produced total assay results. Of the total regular 796 head samples from the drilling campaigns, 30 head sample pulps (3.8%) in total were sent to an external laboratory in Western Australia (SGS) for repeat analysis. 14 DT samples from the drilling campaign had repeat DT testwork performed in an independent (SNIM) laboratory in Zouerate, Mauritania. 24 DT samples from the 2011 drilling campaign had in-house repeats performed on each of at least five Davis Tube separators to monitor repeatability of DT results in the site laboratory. A Niton Model XL3t GOLDD+ hand-held XRF is used in the site laboratory 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.

JORC Code Assessment Criteria	Comments
	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 80% of drill holes have been downhole surveyed for deviation using a gyroscopic tool: Contractor Terratec surveyed the drill holes. Single shot downhole camera drill 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 surveyed with a gyroscope 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 gyroscopic downhole surveys. There are no drill holes deeper than 300 m that do not have gyroscopic 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 100 m apart, with some sections spaced 200 m apart in the western part of the deposit. Drill holes are spaced approximately 100 m apart on the drill lines. 45 drill holes (26 RC, 8 DC and 11 RD) have been drilled up to 11 February 2014 for 6 932.6 m, with an average depth of 154 m and varying from 14 m to 339 m depth. This includes three redrills that failed to reach target depth.

JORC Code Assessment Criteria	Comments
	The drill hole spacing is considered sufficient to broadly delimit the mineralisation limits and grade continuity. The mineralisation is open at depth and further infill drilling will better define the MQ domain boundary. Drill samples have been composited to 3 m lengths (from raw samples not exceeding 3 m length) to provide a standard sample support for geostatistical analysis. Variograms were modelled for Domain 4 (largest MQ domain). Variograms from Domain 4 were used for the other MQ domains and internal and external waste domains.
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.*	As the Askaf Centre deposit has two parts with different orientations, this involved two different grid orientations to provide the optimal drilling direction for both parts. All drill holes in the northern part are drilled to an azimuth of 208° and the drill holes in the southern part are drilled to an azimuth of either 81° or 261°. The inclination used for all drill holes was 60° (from the horizontal) for most holes to achieve close to normal (true thickness) intersections of the mineralised units and to prevent sampling bias. Two vertical drill holes were completed.
Sample Security *The measures taken to ensure sample security.*	All drill samples are labelled using sample ticket books with identification numbers randomly pre-allocated to regular laboratory and various QAQC sample types (field duplicates and standards). The hole name 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 Askaf Centre and are incorporated into the Standards & Procedures Manual (QuickGuide). Golder also conducted a site visit in July 2013.

JORC Code Assessment Criteria	Comments
Section 2: Reporting of Exploration Results	
Mineral Tenement and Land Tenure Status *Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.* *The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.*	The Askaf Centre magnetite deposit is situated on Exploitation Permit EL1620, granted on 12 July 2012 by the Mauritanian Government Council of Ministers. Prior to this it was held on Exploration Permit EL172 which was held 100% by Sphere. 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.*	All exploration work has been conducted by Sphere commencing in 2009.
Geology *Deposit type, geological setting and style of mineralisation.*	The Askaf Centre deposit is located about 10 km southeast and along strike of the Askaf North deposit. It comprises a northern body that is exposed over a strike length of 3.5 km and a southern body that is exposed over a strike length of 1.7 km. Both bodies form part of a regional scale antiformal structure and both bodies are also duplicated within itself by outcrop-scale tight isoclinal folding. The northern and southern bodies are separated and displaced in a dextral shear sense by a regional scale fault/fracture system. The northern body is generally sub-vertical striking roughly northwest-southeast. At the western and eastern ends however, shallower north-easterly dips have been reported. The MQ unit ranges in thickness from approximately 50 in the west to approximately 70 m in the east, with the MQ mineralisation being thinnest in the steep dipping middle portion (±10 m). The multiple layers reported is the result of tight isoclinal folding. The southern body comprises an open synformal structure with an undulating sub-horizontal fold axis that plunges at approximately 25° towards the southwest at the southern part of the deposit. At this locality the mineralisation is still open-ended at depth. The two limbs of the synform are exposed over a strike length of approximately 1 km. The northern part of the synform is tighter than is the case in the south, with the eastern limb almost being overturned in some places. MQ ranges in thickness from approximately 30 m to 35 m in the limbs to approximately 45 m to 55 m in the synformal keel as a result of structural thickening with thicknesses of up to 90 m reported. The weathered zone which, though variable, has an average vertical thickness of approximately 40 m and in this zone partial to complete oxidation of magnetite to hematite has occurred. Oxidation significantly reduces the Davis Tube mass recovery (wt%) in mineralised drill samples.

JORC Code Assessment Criteria	Comments
Drill Hole Information	No new Exploration Results have been reported.
Data Aggregation Methods	No new Exploration Results have been reported.
Relationship Between Mineralisation Widths and Intercept Lengths	No new Exploration Results have been reported.
Diagrams	No new Exploration Results have been reported.
Balance Reporting	No new Exploration Results have been reported.
Other Substantive Exploration Data	No new Exploration Results have been reported.
Further work	No further exploration work is planned at this stage
Section 3: Estimation and Reporting of Mineral Resources	
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 Askaf Centre Standards & Procedures Manual (QuickGuide) Data is captured on site mostly using FieldMarshal® software installed on ruggedised ToughBook® PCs and loaded into an Access® database in Perth, WA under the control of a data base 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 relogging, 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 Askaf Centre in 2013. A good understanding of the extent and structure of the deposit was obtained by inspection of outcrops and drill holes. The visit included reviewing the core logging, sampling and laboratory procedures. Golder reported the facilities as well managed, with good quality control checks to ensure the correct procedures are followed, and validations to ensure the results are accurate.
Geological Interpretation *Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.* *Nature of the data used and of any assumptions made.* *The effect, if any, of alternative interpretations on Mineral Resource estimation. The use of geology in guiding and controlling Mineral Resource estimation.* *The factors affecting continuity both of grade and geology.*	Geological interpretation based on lithology and DT data was completed by Sphere geologists on cross sections using Surpac® software. 3D (wireframe) geological modelling was carried out by Sphere and reviewed by Golder. All available valid data was used in the interpretation, primarily including lithology, magnetic susceptibility, head assays, DT assays and location data (collar positions and downhole surveys). The current drill hole spacing provides an acceptable degree of confidence in the interpretation and continuity of grade and geology and the definition of the boundary between weathered and fresh mineralisation.

JORC Code Assessment Criteria	Comments
	This is essentially a stratiform deposit whose physical continuity is determined by the hanging wall, footwall and internal waste boundaries of the mineralised domains. The grade continuity is also determined by the bounds of the deposit and internal variability probably related to varying composition and degree of recrystallisation due to high-grade metamorphism.
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 Askaf Centre mineral resources have the following maximum extents: Easting = 2 500 m at the widest section; Northing = 2 500 m; RL (height) = The natural topographic surface varies from RL 300 m to RL 420 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 300 m.
Estimation and Modelling Techniques *The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters, and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used.* *The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.* *The assumptions made regarding recovery of by-products.* *Estimation of deleterious elements or other non-grade variables of economic significance (e.g. sulfur for acid mine drainage characterisation).* *In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.* *Any assumptions behind modelling of selective mining units.* *Any assumptions about correlation between variables.* *Description of how the geological interpretation was used to control the resource estimates.* *Discussion of basis for using or not using grade cutting or capping.*	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 ½ to 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 3 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 a quarter 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. The maximum extrapolation distance from data points was 100 m. 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 with slightly higher variability for the kriged density. No significant levels of deleterious elements are present in the resource and sulfur levels in the assayed waste rocks are low (0.3%), suggesting that acid mine drainage is unlikely to be an issue.

Golder Associates

JORC Code Assessment Criteria	Comments
The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.	The 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 (DTC) grades were weighted appropriately by DT80 wt% to reflect the relationship between DT80 wt% and DTC assays. Weighting was completed using the accumulation (DT80 wt% × DTC assay) and then back calculating DTC assays by dividing by the relevant estimated DT80 wt% values. The accumulated grades were represented by Acc* where * is the concentrate element. Using parameters derived from modelled variograms, OK was used to estimate average block grades for Fe, SiO_2, Al_2O_3, CaO, P, MgO, S, TiO_2, Na_2O, K_2O, LOI, DTLib, DTLib2, 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, DT80 wt%, 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. 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%. 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 *Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.*	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 2% for fresh rock and 5% for weathered rock.
Cut-off Parameters *The basis of the adopted cut-off grade(s) or quality parameters applied.*	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-off grades 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.

JORC Code Assessment Criteria	Comments
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 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). DTLib testwork conducted on mineralised drill samples 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 SFB product with a grade of 65-66% Fe can be obtained from Askaf Centre 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 Askaf Centre deposit.

JORC Code Assessment Criteria	Comments
Bulk Density *Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.* *The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc.), moisture and differences between rock and alteration zones within the deposit.* *Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.*	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. Separate regressions were derived specifically for Askaf Centre from measurements on 233 fresh rock DC specimens and 29 weathered rock specimens and their associated head Fe %. A 2% void factor is applied to the fresh rock predictions and a 5% void factor is applied to the weathered rock predictions.
Classification *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.*	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 number of samples and drill hole distances, the resources are totally classified as Inferred Resources.
Audits or Reviews *The results of any audits or reviews of Mineral Resource estimates.*	No independent reviews of the Mineral Resource estimate have been conducted to date.
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.*	Further drilling would be required to better define the boundaries 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 Mineral Resource estimate is a global estimate, with no production data.

JORC Code Assessment Criteria	Comments
These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.	

COMPETENT PERSONS' STATEMENT

The geological interpretation (wireframe model, and the drill hole dataset used in the resource estimation of the Askaf Centre Magnetite Deposit is based on, and fairly represents, information and supporting documentation prepared by Dr Schalk van der Merwe, Consultant Geologist to 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 Australasian Code for Reporting of Exploration Results , Mineral Resources and Ore Reserves (2012 Edition). Dr van der Merwe consents to the inclusion in this report of the geological interpretation and the drill hole dataset and the supporting information in the form and context in which it appears.

The Mineral Resource estimation and classification of the Askaf Centre Magnetite Deposit is based on, and fairly represents, information and supporting documentation prepared by Mr Alan Miller. Mr Miller is a full-time employee of Golder Associates Pty Ltd and a Member and Chartered Professional of the Australasian Institute of Mining and Metallurgy (AusIMM). 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 Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (2012 Edition). Mr Miller consents to the inclusion in this report of the Mineral Resource estimation and classification and the supporting information in the form and context in which it appears.

Yours faithfully

GOLDER ASSOCIATES PTY LTD

Alan Miller
Associate, Principal Resource Geologist

ADM/JNF/hsl

9 April 2014 Reference No. 147641002-001-L-Rev0

Dr Schalk van der Merwe
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SYDNEY NSW 2000

MINERAL RESOURCE STATEMENT FOR ASKAF EAST IRON ORE DEPOSIT, MAURITANIA

Dear Dr van der Merwe

Golder Associates Pty Ltd (Golder) has completed a resource model of Askaf East iron ore deposit, Mauritania (Figure 1), using all available assay data as of 16 January 2014. The Mineral Resources were classified in accordance with "*The Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves* (JORC Code, 2012 Edition)".

The Mineral Resource is based on a block model interpolated using Ordinary Kriging (OK) and is reported for fresh mineralisation on a head basis (Table 1) and recoverable fresh concentrate basis (Table 2). It is also reported on a head basis (Table 3) for weathered (oxidised) mineralisation.

The classification of the Mineral Resource was based principally on data density, geological confidence criteria and representativeness of sampling.

The location of all drill holes used in the estimation is shown in Figure 2 and the interpreted domains are shown in the cross-sections in Figure 3 to Figure 5. The higher degree of uncertainty in the Inferred Resource estimates is reflected by rounding some values to a smaller number of significant digits.

Table 1: Askaf East Inferred Mineral Resource, Fresh Mineralisation at 20% DT80 wt% Cut-Off Grade, Dry Head Basis

Tonnage (Mt)	Fe%	SiO_2%	Al_2O_3%	P%	MgO%	S%	K_2O%	LOI%
70	35	44	1.7	0.09	2.2	0.07	0.8	-1.0

Table 2: Askaf East Inferred Mineral Resource, Fresh Mineralisation at 20% DT80 wt% Cut-Off Grade, Dry DT80 Concentrate Basis

DT80 wt%[1]	Fe%	SiO_2%	Al_2O_3%	P%	MgO%	S%	K_2O%	LOI%
42	70.3	1.8	0.3	0.007	0.3	0.06	0.02	-3.1

[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: Askaf East Inferred Mineral Resource, Weathered Mineralisation at 20% Head Fe Cut-Off Grade, Dry Head Basis

Tonnage (Mt)	Fe%	SiO_2%	Al_2O_3%	P%	MgO%	S%	K_2O%	LOI%
13	31	47	2.4	0.1	1.3	0.02	1.2	1.9

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GEOLOGICAL INTERPRETATION

The Askaf project is situated on Exploitation Permit 1620, granted on 12 July 2012 by the Mauritanian Government Council of Ministers. Prior to this the same ground was held 100% by Sphere as Exploration Permit 172. The permit area contains six coarse grained magnetite-quartzite (MQ) deposits, including Askaf East, Askaf North, Askaf Centre and the three small deposits in the Askaf West group (Tellia, Gueblia and Guelb el Askaf), as shown in Figure 1. The Exploitation Permit is not constrained by any native title interests, historical sites, wilderness or national parks.

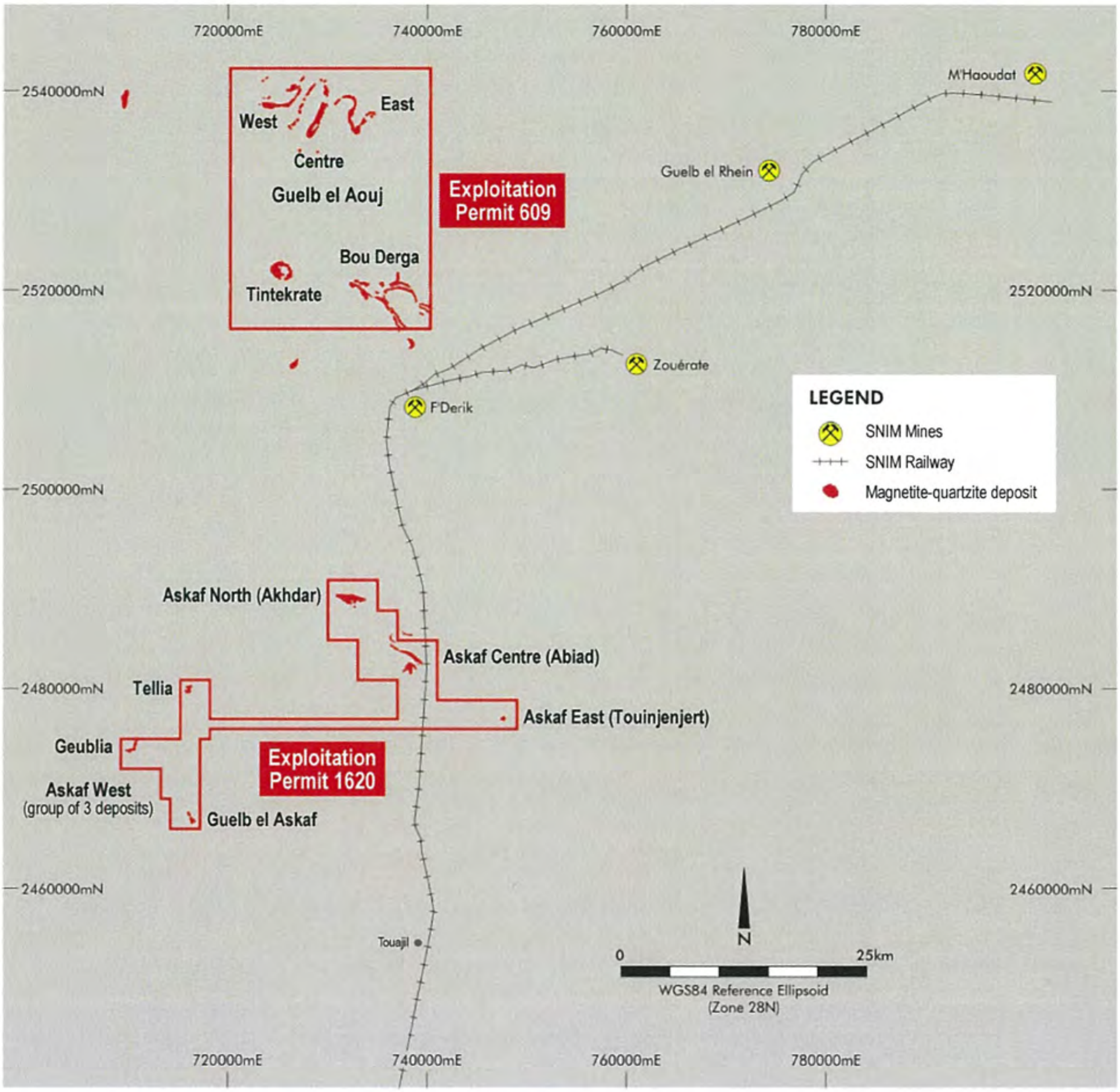

Figure 1: Location of Sphere's Magnetite-Quartzite Deposits

The deposit was mapped geologically by Sphere in 2004 at a scale of 1:10 000. Three reconnaissance drill holes were completed by Sphere in 2009 and a further 11 drill holes were completed during 2011 as part of a resource definition program.

The Askaf East deposit occupies the southern limb of an apparent east-west striking synformal structure defined by an Archaean MQ unit that ranges in true thickness from approximately 20 m at the western end of the limb to approximately 140 m in the central part of the limb. The hinge zone is at the eastern end of the deposit. The synformal axis plunges about 40° towards the west in the eastern part of the synform. The thickening of the sequence in the eastern part of the deposit is probably as a result of isoclinal folding within the sequence.

The MQ unit is embedded within an Archaen granitic/gneiss sequence. The hanging wall sequence comprises amphibolite, barren quartzite and quartz-garnet gneiss, frequently intruded by post-tectonic leucocratic granites. The footwall sequence comprises leucocratic gneiss (locally referred to as leptinite) with or without amphibolite and sometimes barren quartzite at the contact. Minor dolerite was intersected in some boreholes but more information is needed to define the extent thereof.

The MQ unit represents a metamorphosed banded iron-formation (BIF). The precursor BIF was subjected to high-grade metamorphic conditions during the Archaean, which resulted in complete recrystallisation of the original fine-grained BIF. In most cases the primary textures have been destroyed by the recrystallisation. Coarse-grained (generally >1 mm) MQ is produced as a result, with good Davis Tube liberation characteristics and concentrate grades at a relatively coarse liberation grain size (95% passing 80 µm).

Askaf East outcrops over a strike length of approximately 1.5 km and the deposit remains open towards the west and at depth below the current interpretation.

Figure 3 to Figure 5 show the mineralisation on west-looking cross sections. The positions of the cross sections are marked on Figure 2 which shows the geological outcrop mapping. The MQ mineralisation is subdivided into one large domain and one smaller domain with internal waste bands of barren quartzite.

The weathered zone, though variable, has an average vertical thickness of approximately 40 m. Partial to complete oxidation of magnetite to hematite has occurred in this zone and this significantly reduces the Davis Tube mass recovery (wt%) in mineralised drill samples.

The geological interpretation for Askaf East is based on lithology, head grades and Davis Tube separation testwork and was completed by Sphere geologists on cross sections using Surpac® modelling software. Three dimensional wireframe geological modelling was carried out by Sphere and reviewed by Golder prior to its use to construct the block model.

The Mineral Resource estimate is constrained by the mineralisation domain boundaries. Resource estimates for extrapolations greater than 100 m from drilling are unclassified and therefore not included in this resource statement.

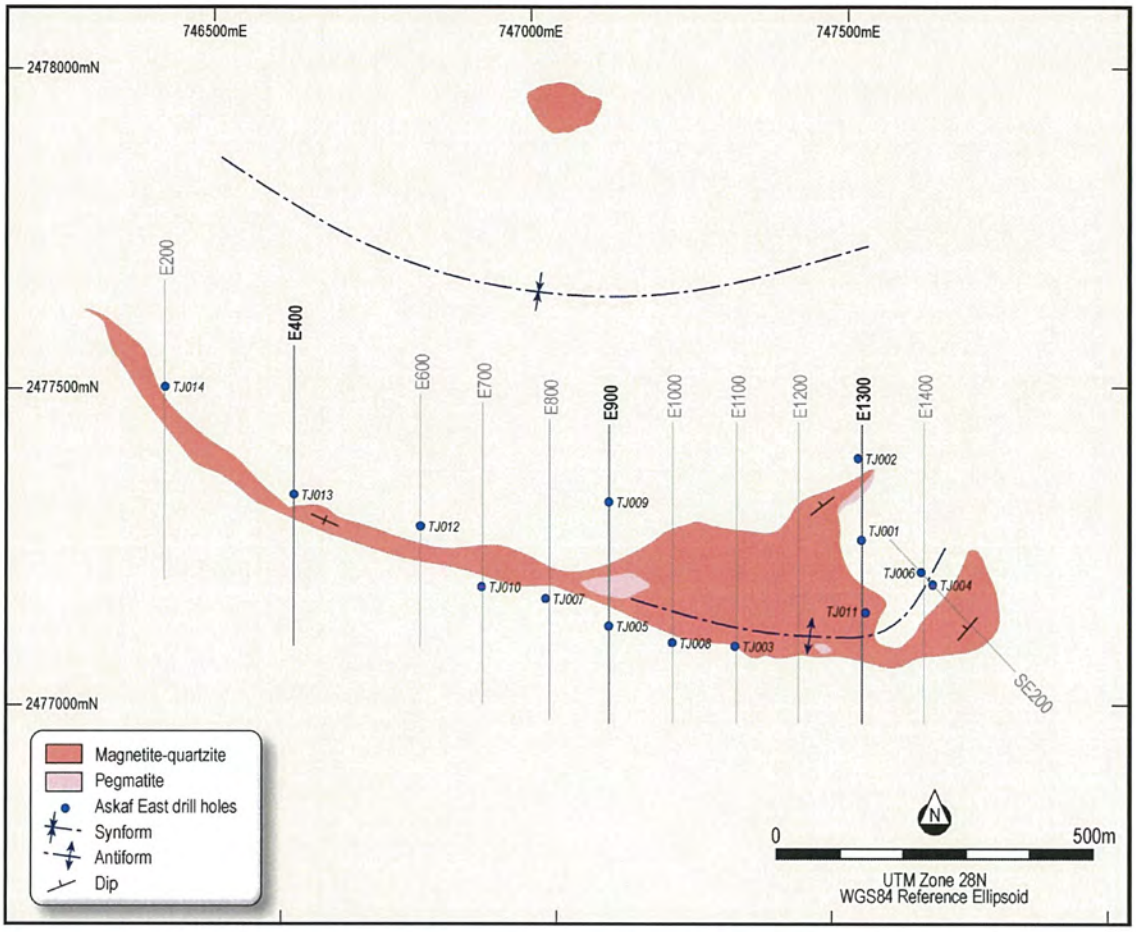

Figure 2: Askaf East Drill Hole Location Plan and Magnetite-Quartzite Outcrop

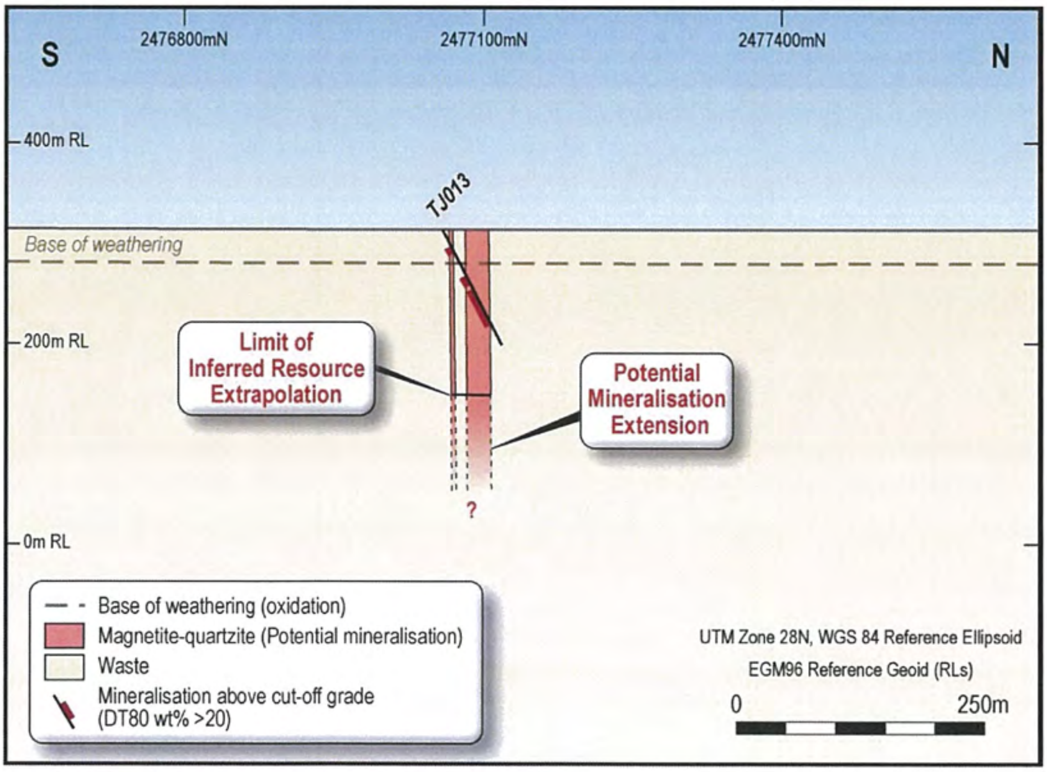

Figure 3: Geological Cross-Section (Section No. E400)

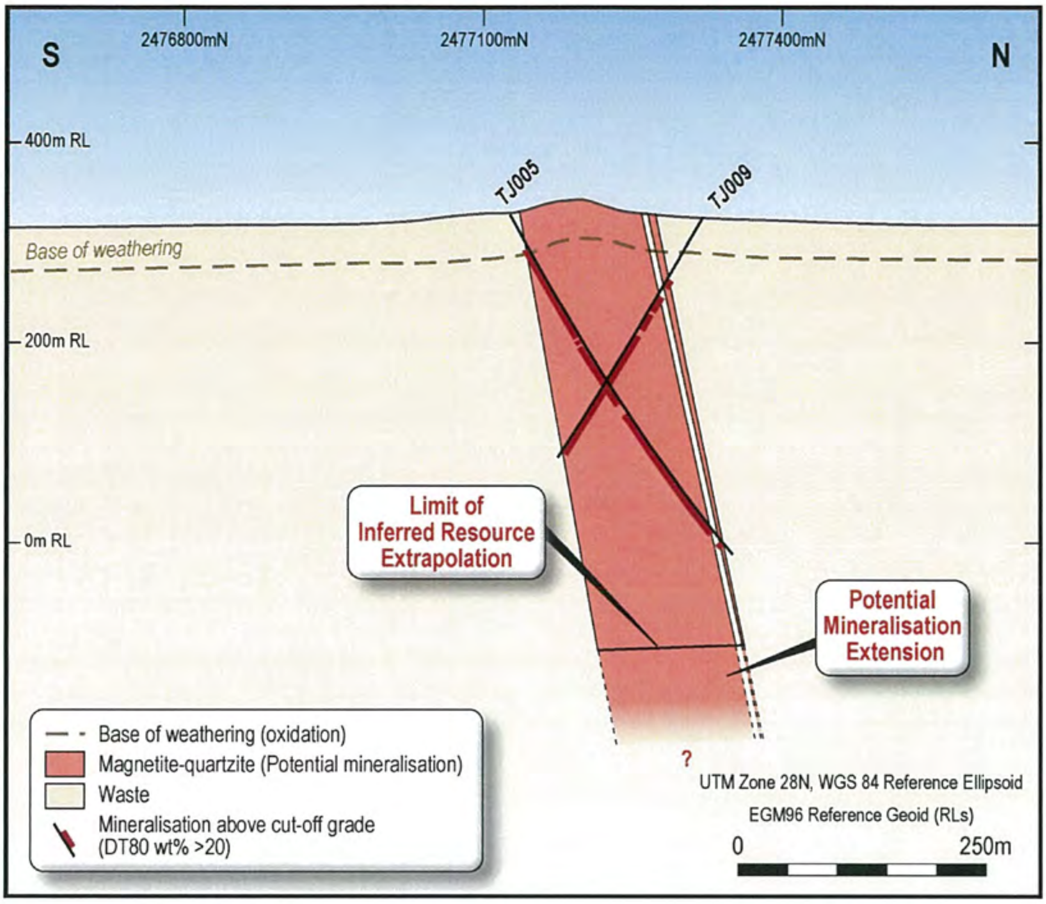

Figure 4: Geological Cross-Section (Section No. E900)

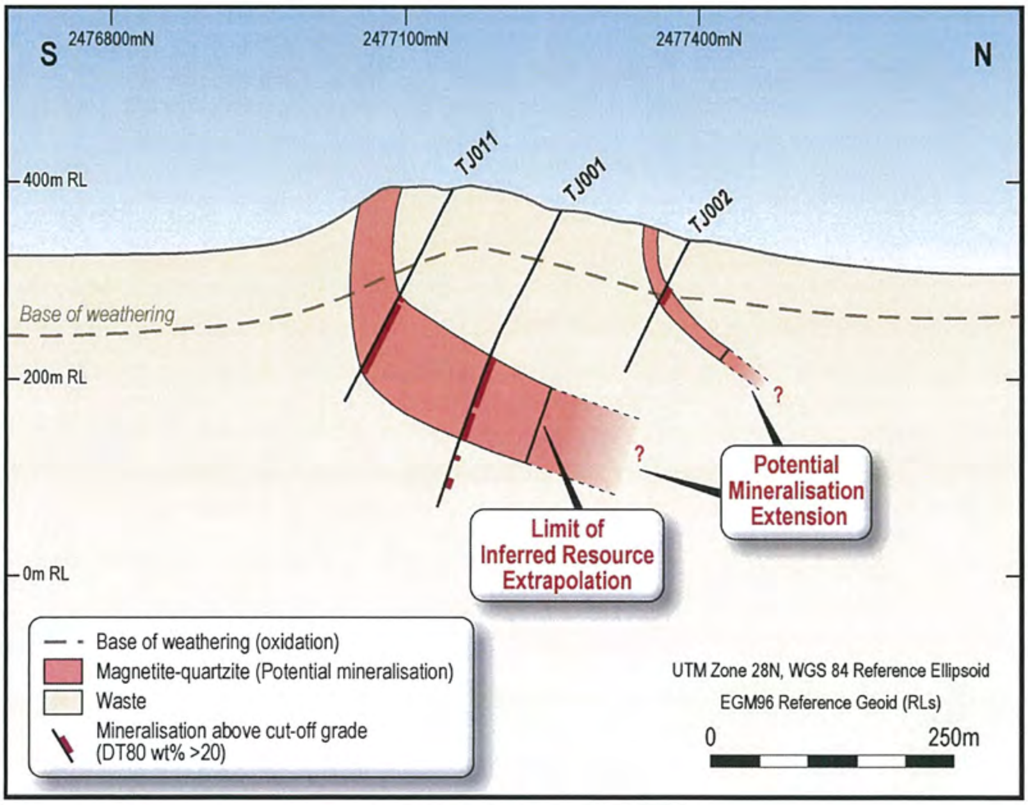

Figure 5: Geological Cross-Section (Section No. E1300)

DRILLING TECHNIQUES

The total quantity of drilling used in the resource estimation is 14 drill holes with a total drilled length of 3 283.1 m, as shown in Table 4.

Table 4: Askaf East Drill Hole Summary

Year	Drilling Method	No. of Holes	RC Metres	DC Metres	Total Metres
2009	RC	3	726.0		726.0
2011	Diamond	11		2557.1	2557.1
	Total	**14**	**726.0**	**2557.1**	**3283.1**

All samples used in the resource estimate were collected from reverse circulation (RC) and diamond drilling (DC).

Core diameters used included HQ (63.5 mm diameter) and NQ2 (50.6 mm). HQ sizes were generally limited to less than 200 m downhole depth. 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 Askaf East deposit is mostly sub-vertical, this involved azimuths of 0° and 180° when drilling the main synform limb, with a vertical hole and one with a 136° azimuth in the hinge zone of the synform (Figure 2). The inclination used when drilling the limb was 60° to the horizontal.

All drill hole collar positions were located and surveyed 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 ± 0.4 m and a height accuracy of ± 0.8 m.

Eleven of the drill holes have been downhole 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 standalone 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. It exceeds 97% for fresh rock and averages about 78% 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 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 average 4 kg to 5 kg and are considered appropriate in relation to the inherent grain size of the mineralised samples.

Core samples are crushed to -6 mm size in a jaw crusher. Core and RC samples are then dried at 105ºC for 2 to 4 hours and are 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 is undertaken in Sphere's site laboratory on the resulting sample pulps. Head pulps and DT concentrates are sent, together with the field duplicates and four separate matrix-matched standards, to Bureau Veritas (Ultra Trace) laboratory in Perth, Western Australia. The samples are assayed by X-ray diffraction (XRF) using fusion beads for Fe, P, SiO_2, Al_2O_3, CaO, MgO, MnO, Na_2O, TiO_2, S, K_2O,BaO, and V_2O_5; and by Thermal Gravitational Analysis (TGA) for loss-on-ignition (LOI) at 371ºC, 538ºC and 1000ºC. 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.

A review of the QAQC data was completed. The QAQC program included company standards and field duplicates submitted at a rate of 8% to 10% of all assayed samples. 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. There are no RC drill holes that have been twinned with diamond drill holes. No apparent discrepancies were identified in the QAQC data. Golder considers the accuracy and precision of all the QAQC results to be acceptable.

RESOURCE 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 dataset.

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 testwork 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 the sample mineralogy and Fe grade. DTC Fe is the Davis Tube concentrate iron grade, etc.

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 about one half of the minimum drill hole spacing of 100 m by 100 m. The sub-block size, which provides higher resolution at domain boundaries, is 5 m (x) by 5 m (y) by 3 m (z).

Statistical and geostatistical analysis was carried out on drilling data composited to 3 m downhole. This included variography to model spatial continuity in the geological domains.

The OK interpolation method was used for resource estimation of the following variables; Head: Fe, SiO_2, Al_2O_3, CaO, MgO, P, S, Na_2O, K_2O, LOI; and DT80: DT80 wt%, DTC Fe, DTC SiO_2, DTC Al_2O_3, DTC CaO, DTC MgO, DTC P, DTC S, DTC Na_2O, DTC K_2O and DTC LOI, using variogram parameters defined from the geostatistical analysis. Variograms were modelled for the main mineralised domain (Domain1). Variograms from Domain 1 were used for internal and external waste domains.

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 618 fresh rock specimens and 51 weathered rock specimens of mineralised and waste rock and their matching head Fe assays. A 2% 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 0.98*(Head Fe × 0.0252 + 2.6297)
- Weathered mineralised and waste 0.95*(Head Fe × 0.0317 + 2.2436)

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.

CUT-OFF GRADES AND CLASSIFICATION CRITERIA

The resource estimates were classified in accordance with The Australasian Code for Reporting of Identified Mineral Resources and Ore Reserves (JORC Code, 2012 Edition). The 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, 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. Continuous zones (domains) meeting the following criteria were used to define the resource classification.

Golder classified all of the Askaf East Mineral Resource as Inferred on the basis of the limited drilling (mostly 100 and 200 m between drill lines, and the low number of samples available for the estimation.

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 Askaf East. Intersections of internal waste exceeding 6 m 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 Askaf East 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 2009 to 2011 drilling. This is the first stage of assessing the potential of the Askaf East 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 d90 size (90 % passing) is determined. This is known as the liberation grind size (DTLib d90 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 d90 sizes. The DTLib d90 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 Askaf East 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 380 µm DT liberation grind size at a high (48.6%) mass recovery (wt%). These results are sufficiently encouraging to justify further metallurgical testwork in due course.

Table 5: Askaf East Metallurgical Davis Tube Liberation Grind Size Data Tabulation

	Inferred
% of Resource	100
DTLib d90 µm	380
DTLib wt%	48.6
DTLib Fe %	65.2
DTLib SiO_2 %	8.2
DTLib Al_2O_3 %	0.35
DTLib S %	0.065
DTLib CaO %	0.32
DT Lib P %	0.016
DT Lib K_2O %	0.048
DT Lib MgO %	0.61
DT Lib Na_2O %	0.035
DTLib LOI (1000°C) %	-2.9

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.

JORC Code Assessment Criteria	Comments
Section 1: Sampling Techniques and Data	
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.* *Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.* *Aspects of the determination of mineralisation that are Material to the Public Report. In cases where 'industry standard' work has been done this would be relatively simple (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.*	RC drilling and 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. Downhole geophysical logging used – gamma, conductivity and magnetic susceptibility (MS). Primary (1 m) RC chip samples were riffle split and composited to 3 m samples for chemical analysis. 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. 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). All drill samples were logged using hand held magnetic susceptibility meters for which calibration standards were prepared and available.
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 three drill holes completed in 2009 to a maximum depth of about 320 m. RC hole diameters were 5¼"- 5½" (133-140 mm). Face-sampling hammers were used. DC drilling was used for drill holes completed in 2011. DC diameters included HQ (63.5 mm) and NQ2 (50.8 mm). Most was NQ2 size, with the HQ size generally limited to depths of less than 70 m. Core was orientated using an ACE® orientation tool.
Drilling Recovery *Method of recording and assessing core and chip sample recoveries and results assessed.* *Measures taken to maximise sample recovery and ensure representative nature of the samples.* *Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.*	Recovery was recorded for RC drilling by weighing primary 1 m samples, however the data was lost due to computer breakdown. Average recovery recorded for nearby magnetite projects using the same equipment and personnel across a 6 m rod is about 95%. For DC holes, recovery of fresh rock is about 97% and recovery of weathered material is about 78%. There is no evidence of bias between sample recovery and grade.
Logging *Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.*	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.

JORC Code Assessment Criteria	Comments
Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc), photography. *The total length and percentage of the relevant intersections logged*	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 on a 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 kg to 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.

Golder Associates

JORC Code Assessment Criteria	Comments
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 laboratory. In-house matrix-matched standards (4 separate grades) together representing 4% of samples submitted to the laboratory and blanks (2%) 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 laboratory 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 13 elements by XRF: Fe, P, SiO_2, Al_2O_3, CaO, MgO, MnO, Na_2O TiO_2, S, K_2O, BaO, V_2O_5; and TGA for LOI371°C, LOI538°C and LOI1000°C. The methods used produced total assay results. Of the total regular 896 head samples from 2009 and 2011 drilling campaigns 33 head sample pulps (3.7%) in total were sent to an external laboratory in Western Australia (SGS) for repeat assay. 15 DT samples from the drilling campaign had repeat DT testwork performed in an independent (SNIM) laboratory in Zouerate, Mauritania. 24 DT samples from the 2011 drilling campaign had in-house repeats performed on each of at least five Davis Tube separators to monitor repeatability of DT results in the site laboratory.

JORC Code Assessment Criteria	Comments
	A Niton Model XL3t GOLDD+ hand-held XRF is used in the site laboratory 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 80% of drill holes have been downhole surveyed for deviation using a gyroscopic tool: Contractor Terratec surveyed the drill holes. Single shot downhole camera drill 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 surveyed with a gyroscope 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 gyroscopic downhole surveys. There are no drill holes deeper than 300 m that do not have gyroscopic downhole surveys.

JORC Code Assessment Criteria	Comments
	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 100 m apart, with some sections spaced 200 m apart in the western part of the deposit. Drill holes are spaced approximately 100 m apart on the drill lines. 14 drill holes (3 RC and 11 DC) have been drilled up to 16 January 2014 for 3 283.1 m, with an average depth of 235 m and varying from 131 m to 416 m depth. The drill hole spacing is considered sufficient to broadly delimit the mineralisation limits and grade continuity. The mineralisation is open at depth and further infill drilling will better define the MQ domain boundary. Drill samples have been composited to 3 m lengths (from raw samples not exceeding 3 m length) to provide a standard sample support for geostatistical analysis. Variograms were modelled for Domain 1 (MQ domain). Variograms from Domain 1 were used for internal and external waste domains.
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.*	Most of the holes were drilled along lines normal to the (approximate) west-east strike of the axial plane of the Askaf East synform. The drill hole azimuths were towards either 0° or 180° with one drill hole having an azimuth of 136°. Drill hole inclinations were about 60° (from the horizontal) for most holes to achieve close to normal (true thickness) intersections of the mineralised units and to prevent sampling bias. One vertical drill hole was completed.
Sample Security *The measures taken to ensure sample security.*	All drill samples are labelled using sample ticket books with sample identification numbers randomly pre-allocated to regular laboratory and various QAQC sample types (field duplicates and standards). The hole name 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.

JORC Code Assessment Criteria	Comments
	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 Askaf East and are incorporated into the Standards & Procedures Manual (QuickGuide). Golder also conducted a site visit in July 2013.
Section 2: Reporting of Exploration Results	
Mineral Tenement and Land Tenure Status *Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.* *The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.*	The Askaf East magnetite deposit is situated on Exploitation Permit EL1620, granted on 12 July 2012 by the Mauritanian Government Council of Ministers. Prior to this it was held on Exploration Permit EL172 which was held 100% by Sphere. 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.*	All exploration work has been conducted by Sphere commencing in 2009.
Geology *Deposit type, geological setting and style of mineralisation.*	The Askaf East deposit is the southern limb of an apparent east-west striking synformal structure defined by a Magnetite-Quartzite (MQ) unit that ranges in true thickness from approximately 20 m at the western end of the limb to approximately 140 m in the central part of the limb. The hinge zone is at the eastern end of the deposit. The synformal axis plunges about 40° towards the west in the eastern part of the synform. Askaf East outcrops over a strike length of approximately 1.5 km and the deposit remains open towards the west and at depth below the current interpretation. The weathered zone which, though variable, has an average vertical thickness of approximately 40 m and in this zone partial to complete oxidation of magnetite to hematite has occurred. Oxidation significantly reduces the Davis Tube mass recovery (wt%) in mineralised drill samples.
Drill Hole Information	No new Exploration Results have been reported.
Data Aggregation Methods	No new Exploration Results have been reported.
Relationship Between Mineralisation Widths and Intercept Lengths	No new Exploration Results have been reported.
Diagrams	No new Exploration Results have been reported.
Balance Reporting	No new Exploration Results have been reported.

JORC Code Assessment Criteria	Comments
Other Substantive Exploration Data	No new Exploration Results have been reported.
Further work	No further exploration work is planned at this stage
Section 3: Estimation and Reporting of Mineral Resources	
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 Askaf East Standards & Procedures Manual (QuickGuide) Data is captured on site mostly using FieldMarshal® software installed on ruggedised ToughBook® PCs and loaded into an Access® database in Perth, WA under the control of a data base 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 relogging, 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 Askaf East in 2013. A good understanding of the extent and structure of the deposit was obtained by inspection of outcrops and drill holes. The visit included reviewing the core logging, sampling and laboratory procedures. Golder reported the facilities as well managed, with good quality control checks to ensure the correct procedures are followed, and validations to ensure the results are accurate.
Geological Interpretation *Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.* *Nature of the data used and of any assumptions made.* *The effect, if any, of alternative interpretations on Mineral Resource estimation. The use of geology in guiding and controlling Mineral Resource estimation.* *The factors affecting continuity both of grade and geology.*	Geological interpretation based on lithology and DT data was completed by Sphere geologists on cross sections using Surpac® software. 3D (wireframe) geological modelling was carried out by Sphere and reviewed by Golder. All available valid data was used in the interpretation, primarily including lithology, magnetic susceptibility, head assays, DT assays and location data (collar positions and downhole surveys). The current drill hole spacing provides an acceptable degree of confidence in the interpretation and continuity of grade and geology and the definition of the boundary between weathered and fresh mineralisation. This is essentially a stratiform deposit whose physical continuity is determined by the hanging wall, footwall and internal waste boundaries of the mineralised domains. The grade continuity is also determined by the bounds of the deposit and internal variability probably related to varying composition and degree of recrystallisation due to high-grade metamorphism.

JORC Code Assessment Criteria	Comments
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 Askaf East mineral resources have the following maximum extents: Easting = 1 400 m at the widest section; Northing = 600 m; RL (height) = The natural topographic surface varies from RL 310 m to RL 430 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 450 m.
Estimation and Modelling Techniques *The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters, and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used.* *The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.* *The assumptions made regarding recovery of by-products.* *Estimation of deleterious elements or other non-grade variables of economic significance (e.g. sulfur for acid mine drainage characterisation).* *In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.* *Any assumptions behind modelling of selective mining units.* *Any assumptions about correlation between variables.* *Description of how the geological interpretation was used to control the resource estimates.* *Discussion of basis for using or not using grade cutting or capping.* *The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.*	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 ½ to 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 3 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 a quarter 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. The maximum extrapolation distance from data points was 100 m. 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 with slightly higher variability for the kriged density. No significant levels of deleterious elements are present in the resource and sulfur levels in the assayed waste rocks are low (0.3%), 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.

JORC Code Assessment Criteria	Comments
	Estimations for DT concentrate (DTC) grades were weighted appropriately by DT80 wt% to reflect the relationship between DT80 wt% and DTC assays. Weighting was completed using the accumulation (DT80 wt% × DTC assay) and then back calculating DTC assays by dividing by the relevant estimated DT80 wt% values. The accumulated grades were represented by Acc* where * is the concentrate element. Using parameters derived from modelled variograms, OK was used to estimate average block grades for Fe, SiO_2, Al_2O_3, CaO, P, MgO, S, TiO_2, Na_2O, K_2O, LOI, DTLib, DTLib2, 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, DT80 wt%, 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. 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%. 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 *Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.*	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 2% for fresh rock and 5% for weathered rock.
Cut-off Parameters *The basis of the adopted cut-off grade(s) or quality parameters applied.*	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-off grades 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.
Mining Factors or Assumptions *Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution.*	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.

JORC Code Assessment Criteria	Comments
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.*	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 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). DTLib testwork conducted on mineralised drill samples 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 SFB product with a grade of 65-66% Fe can be obtained from Askaf East 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 Askaf East deposit.
Bulk Density *Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.*	The 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. Separate regressions were derived specifically for Askaf East from measurements on 618 fresh rock DC specimens and 51 weathered rock specimens and their associated head Fe %.

Golder Associates

JORC Code Assessment Criteria	Comments
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.*	A 2% void factor is applied to the fresh rock predictions and a 5% void factor is applied to the weathered rock predictions.
Classification *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.*	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 number of samples and drill hole distances, the resources are totally classified as Inferred Resources.
Audits or Reviews *The results of any audits or reviews of Mineral Resource estimates.*	No independent reviews of the Mineral Resource estimate have been conducted to date.
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.*	Further drilling would be required to better define the boundaries 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 Mineral Resource estimate is a global estimate, with no production data.

COMPETENT PERSONS' STATEMENT

The geological interpretation, wireframe model, and the drill hole dataset used in the resource estimation of the Askaf East Magnetite Deposit is based on, and fairly represents, information and supporting documentation prepared by Dr Schalk van der Merwe, Consultant Geologist to 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 Australasian Code for Reporting of Exploration Results , Mineral Resources and Ore Reserves (2012 Edition). Dr van der Merwe consents to the inclusion in this report of the geological interpretation and the drill hole dataset and the supporting information in the form and context in which it appears.

The Mineral Resource estimation and classification of the Askaf East Magnetite Deposit is based on, and fairly represents, information and supporting documentation prepared by Mr Alan Miller. Mr Miller is a full-time employee of Golder Associates Pty Ltd and a Member and Chartered Professional of the Australasian Institute of Mining and Metallurgy (AusIMM). 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 Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (2012 Edition). Mr Miller consents to the inclusion in this report of the Mineral Resource estimation and classification and the supporting information in the form and context in which it appears.

Yours faithfully

GOLDER ASSOCIATES PTY LTD

Alan Miller
Associate, Principal Resource Geologist

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