

SPHERE MINERALS LIMITED

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SPHERE MINERALS LIMITED (ASX:SPH) ANNUAL STATEMENT OF MINERAL RESOURCES AND ORE RESERVES

Sphere Minerals Limited (Sphere) has completed its annual assessment and reconciliation of resources and reserves for its five project areas in Mauritania – Askaf, Lebtheinia, Guelb el Aouj, Tintekrate and Bou Derga. The results are set out in Appendix A.

There have been no changes to the Mineral Resources at Lebtheinia, Guelb el Aouj East, Guelb el Aouj Centre, Bou Derga, Tintekrate, Askaf North, Askaf East and Askaf Centre. Ore Reserves for El Aouj East have been updated as studies and planning for the project have progressed. Askaf North Ore Reserves have been reviewed in recognition of the challenging Iron Ore market conditions and the Ore Reserves have been reduced to zero (232 Mt reported at 31 December 2014).

Mineral Resources and Ore Reserves in this report are reported in accordance with the 2012 Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code), December 2012, unless otherwise stated.

The Mineral Resource and Ore Reserve data in the following tables are as at 31 December 2015. For comparison purposes, data for 2014 has been included.

All data is presented on a 100% asset basis, with Sphere's attributable percentage shown against each asset.

The Measured and Indicated Mineral Resources are reported inclusive of those Mineral Resources modified to produce Ore Reserves.

Appendix A

Sphere Minerals Limited - Mineral Resources (inclusive of Ore Reserves)

Name of operation	Attributable interest	Mining method	Commodity	Measured Mineral Resources		Indicated Mineral Resources		Measured and Indicated Mineral Resources		Inferred Mineral Resources		Sphere Minerals Share		Competent Person
				31.12.15	31.12.14	31.12.15	31.12.14	31.12.15	31.12.14	31.12.15	31.12.14	31.12.15 Total Mineral Resources	(Mt)	
El Aouj Mining Company S.A.	50%													
Guelb el Aouj East		OC	(Mt)	400	400	1,170	1,170	1,570	1,570	300	300	50%	935	AM/SvdM
			Iron (%)	36	36	36	36	36	36	36	36			
			DTC wt (%)	45	45	45	45	45	45	45	45			
			DTC Iron (%)	69.8	69.8	69.2	69.2	69.3	69.3	69.5	69.5			
			Oxidised (Mt)	70	70	80	80	150	150	30	30	50%	90	AM/SvdM
			Iron (%)	34	34	35	35	35	35	35	35			
Guelb el Aouj Centre		OC	(Mt)	-	-	185	185	185	185	615	615	50%	400	AM/SvdM
			Iron (%)	-	-	34	34	34	34	35	35			
			DTC wt (%)	-	-	43	43	43	43	44	44			
			DTC Iron (%)	-	-	69.6	69.6	69.6	69.6	69.8	69.8			
			Oxidised (Mt)	-	-	-	-	-	-	45	45	50%	22.5	AM/SvdM
			Iron (%)	-	-	-	-	-	-	33	33			
Bou Derga		OC	(Mt)	-	-	-	-	-	-	510	510	50%	255	AM/SvdM
			Iron (%)	-	-	-	-	-	-	36	36			
			DTC wt (%)	-	-	-	-	-	-	43	43			
			DTC Iron (%)	-	-	-	-	-	-	69.7	69.7			
			Oxidised (Mt)	-	-	-	-	-	-	130	130	50%	65	AM/SvdM
			Iron (%)	-	-	-	-	-	-	35	35			
Tintekrate		OC	(Mt)	-	-	-	-	-	-	710	710	50%	355	AM/SvdM
			Iron (%)	-	-	-	-	-	-	36	36			
			DTC wt (%)	-	-	-	-	-	-	44	44			
			DTC Iron (%)	-	-	-	-	-	-	69.4	69.4			
			Oxidised (Mt)	-	-	-	-	-	-	180	180	50%	90	AM/SvdM
			Iron (%)	-	-	-	-	-	-	34	34			
Sphere Mauritania S.A.														
Askaf North	90%	OC	(Mt)	200	200	160	160	360	360	45	45	90%	365	AM/SvdM
			Iron (%)	36	36	35	35	36	36	36	36			
			DTC wt (%)	47	47	45	45	46	46	45	45			
			DTC Iron (%)	69.8	69.8	69.4	69.4	69.6	69.6	69.2	69.2			
			Oxidised (Mt)	15	15	30	30	45	45	15	15	90%	54	AM/SvdM
			Iron (%)	35	35	35	35	35	35	35	35			

Sphere Minerals Limited - Mineral Resources (inclusive of Ore Reserves) (continued)

Name of operation	Attributable interest	Mining method	Commodity	Measured Mineral Resources		Indicated Mineral Resources		Measured and Indicated Mineral Resources		Inferred Mineral Resources		Sphere Minerals Share 31.12.15 Total Mineral Resources		Competent Person
				31.12.15	31.12.14	31.12.15	31.12.14	31.12.15	31.12.14	31.12.15	31.12.14	%	(Mt)	
Askaf Centre	90%	OC	(Mt)	-	-	-	-	-	-	95	95	90%	85.5	AM/SvdM
			Iron (%)	-	-	-	-	-	-	36	36			
			DTC wt (%)	-	-	-	-	-	-	42	42			
			DTC Iron (%)	-	-	-	-	-	-	69.9	69.9			
			Oxidised (Mt)	-	-	-	-	-	-	13	13			
			Iron (%)	-	-	-	-	-	-	37	37			
Askaf East	90%	OC	(Mt)	-	-	-	-	-	-	70	70	90%	63	AM/SvdM
			Iron (%)	-	-	-	-	-	-	35	35			
			DTC wt (%)	-	-	-	-	-	-	42	42			
			DTC Iron (%)	-	-	-	-	-	-	70.3	70.3			
			Oxidised (Mt)	-	-	-	-	-	-	13	13			
			Iron (%)	-	-	-	-	-	-	31	31			
Sphere Lebtheinia S.A.														
Lebtheinia Centre	100%	OC	(Mt)	-	-	2,180	2,180	2,180	2,180	350	350	100%	2,530	AM/SvdM
			Iron (%)	-	-	32	32	32	32	32	32			
			DTC wt (%)	-	-	27	27	27	27	27	27			
			DTC Iron (%)	-	-	68.6	68.6	68.6	68.6	68.1	68.1			
			LOZ (Mt)	-	-	-	-	-	-	210	210			
			Iron (%)	-	-	-	-	-	-	31	31			
Sphere Minerals Limited														
Total Mineral Resources			(Mt)	685	685	3,805	3,805	4,490	4,490	3,331	3,331		5,543	
			Iron (%)	36	36	34	34	34	34	35	35		34	

Sphere Minerals Limited - Ore Reserves

Name of operation	Attributable interest	Mining method	Commodity	Proved Ore Reserves		Probable Ore Reserves		Total Ore Reserves		Sphere Minerals Share 31.12.15 Total Ore Reserves		Competent Person
				31.12.15	31.12.14	31.12.15	31.12.14	31.12.15	31.12.14	%	(Mt)	
El Aouj Mining Company S.A.												
Guelb el Aouj East	50%	OC	Ore (Mt)	380	370	551	385	931	755	50%	466	JS
			Iron (%)	35	35	35	35	35	35			
			DTC wt (%)	44	44	43	43	44	43			
			DTC Iron (%)	69.6	69.8	69.0	69.6	69.2	69.7			
Sphere Mauritania S.A.												
Askaf North	90%	OC	Ore (Mt)	-	140	-	50	-	190	90%	-	MC
			Iron (%)	-	36	-	34	-	35			
			DTC wt (%)	-	46	-	44	-	45			
			DTC Iron (%)	-	70	-	70	-	70			
		OC	Oxidised Ore (Mt)	-	-	-	42	-	42	90%	-	MC
			Iron (%)	-	-	-	35	-	35			
			DTC wt (%)	-	-	-	33	-	33			
			DTC Iron (%)	-	-	-	69	-	69			
Sphere Minerals Limited												
Total Ore Reserves			(Mt)	380	510	551	477	931	987		466	
			Iron (%)	35	35	35	35	35	35		35	

Notes:

All Mineral Resources are considered suitable for open-cut extraction.

DTC wt (%) – Davis Tube Concentrate mass recovery.

DTC Iron (%) – Davis Tube Concentrate assay %Fe.

Davis Tube test work has been conducted at a grind size of 95% passing 80 micron.

The rounding used for the values in this report reflects the confidence in the different levels of resource and reserve classifications.

El Aouj Mining Company: Sphere Minerals Limited holds a 50% interest in the El Aouj Mining Company S.A. through a Joint Venture arrangement with SNIM.

Guelb el Aouj East:

The “Guelb” deposits are hosted in Banded Iron Formations (BIF) within the Dorsale Reguibat, an uplifted part of the Archaean West African Craton, which dominates the northern third of Mauritania’s surface geology. Recrystallisation and aggregation of the magnetite grains in BIF has resulted in the partial to total destruction of the original banded (bedding) texture to produce the Guelb el Aouj magnetite-quartzite deposits. The geological sequence is overprinted by a reasonably uniform, approximately 80m thick weathered zone in which much of the magnetite has oxidised to hematite.

This resource uses a cut-off grade of 20% DTC wt% for fresh (unoxidised) mineralisation and a cut-off grade of 20% head Fe for oxidised mineralisation. All reported concentrate grades were weighted by DTC wt%.

The Guelb el Aouj East Ore Reserve Statement is based on a Feasibility Study and uses a 20% DTC wt% cut-off. No oxidised material has been included in the Ore Reserves.

Guelb el Aouj Centre:

The El Aouj Centre magnetite-quartzite (MQ) deposit is a highly metamorphosed banded iron formation (meta-BIF) unit that ranges in true thickness from 50 m to over 200 m. The geometry of the deposit is defined by a tight synformal structure with a sub-vertical axial plane. The synform outcrops over a strike length of about 2.4 km. The thickest accumulation of magnetite-quartzite is found along the western limb of the synform, pinching out towards the east. A series of stacked recumbent isoclinal folds probably controlled the overall geometry of the deposit. The original bedding has been partially to completely obliterated by recrystallisation, resulting in a coarse-grained texture with aggregated magnetite grains. The weathered zone, though variable, has an average vertical thickness of approximately 40 m. In this zone partial to complete oxidation of magnetite to hematite has occurred.

This resource uses a cut-off grade of 20% DTC wt% for fresh (unoxidised) mineralisation and a cut-off grade of 20% head Fe for oxidised mineralisation. All reported concentrate grades were weighted by DTC wt%.

Bou Derga:

The Bou Derga deposit forms part of a larger scale synformal structure defined by an Archean magnetite-quartzite (MQ) unit that ranges in true thickness from approximately 20m to 200m. The thicker parts of the deposit are considered to be a result of isoclinal folding. Drilling was restricted to the western fold closure. The deposit dips towards the north-east at about 60°, and contains a number of internal waste bands (typically 5m to 50m thick) which have been modelled separately and excluded from the mineral resource estimation. A north-west – south-east trending fault displaces the mineralisation in the southeastern part of the deposit.

This resource uses a cut-off grade of 20% DTC wt% for fresh (unoxidised) mineralisation and a cut-off grade of 20% head Fe for oxidised mineralisation. All reported concentrate grades were weighted by DTC wt%.

The Bou Derga Mineral Resource Statement has been prepared in accordance with the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (the JORC Code, 2004 Edition).

Tintekrate:

The Tintekrate deposit is hosted within the Dorsale Reguibat, an uplifted part of the Archaean West African Craton, which dominates the northern third of Mauritania's surface geology. Recrystallisation and aggregation of the magnetite grains in the meta-banded iron formation (BIF) units has resulted in partial to total destruction of the original banded (bedding) texture to produce the Tintekrate and other similar magnetite-quartzite deposits. The Tintekrate deposit is a circular structure defined by a steep dipping MQ unit with dips of 50° to 80° (locally overturned) with true mineralised thicknesses of 100m to 150m on the western side of the structure to 50m to 100m on the eastern side. The weathered zone averages 70m to 75m vertical depth below natural surface and its base tends to mirror the natural surface profile. In this zone, magnetite has been partially to completely oxidised to hematite.

This resource uses a cut-off grade of 20% DTC wt% for fresh (unoxidised) mineralisation and a cut-off grade of 20% head Fe for oxidised mineralisation. All reported concentrate grades were weighted by DTC wt%.

Sphere Mauritania S.A.: Sphere Minerals Limited holds a 90% equity interest in Sphere Mauritania S.A. with the remaining 10% of the equity held by the Islamic Republic of Mauritania.

Askaf North:

The Askaf North Deposit is an east-west striking synformal structure defined by a magnetite-quartzite (MQ) unit that ranges in true thickness from approximately 140m in the western hinge zone to approximately 30m along the eastern part of the southern limb. The synformal axis plunges at between 20° to 30° towards the east in the western part of the synform, and at about 35° to 45° towards the west at the eastern fold closure, producing a double plunging synform. A dolerite dyke has been emplaced along an east-west fault zone that displaces the northern part of the deposit in a dextral shear sense. The disruption and emplacement of the dolerite along the northern limb of the synform has not affected the quality of the mineralisation. 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 (>1mm) MQ is produced as a result, with good Davis Tube liberation characteristics and concentrate grades at a liberation grind size of 95% passing 80 micron.

The Askaf North Mineral Resource Statement uses a cut-off grade of 20% DTC wt% for fresh (unoxidised) mineralisation and a cut-off grade of 20% head Fe for oxidised mineralisation. All reported concentrate grades were weighted by DTC wt%.

The Ore Reserve estimate has been re-stated to reflect long term iron ore price assumptions that have been updated in response to a significant change in the outlook for the long term iron ore market. No other changes have been made to the technical scope or financial elements of the project, as originally outlined in the 2012 Feasibility Study and the 2014 FEED planning as part of the original commencement of the Askaf North project. Prices have been based on International Consensus pricing of iron ore on the international market, benchmarked to the long term IODEX62 price.

Changes from the previous statement are the result of a re-evaluation of the economics of the mine following an update to the international long term price outlook for iron ore. Economics show no viable investment case based on the existing CAPEX and OPEX estimates and hence Ore Reserves have been reduced to zero.

Askaf Centre:

The Askaf Centre deposit 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. The magnetite-quartzite unit ranges in thickness from approximately 50 m in the west to approximately 70 m in the east, with the magnetite-quartzite 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. Magnetite-quartzite 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 magnetite-quartzite unit is embedded within an Archaean granitic/gneiss sequence. 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.

This resource uses a cut-off grade of 20% DTC wt% for fresh (unoxidised) mineralisation and a cut-off grade of 20% head Fe for oxidised mineralisation. All reported concentrate grades were weighted by DTC wt%.

Askaf East:

The Askaf East deposit occupies the southern limb of an apparent east-west striking synformal structure defined by an Archaean magnetite-quartzite 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 Archaean granitic/gneiss sequence. 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.

This resource uses a cut-off grade of 20% DTC wt% for fresh (unoxidised) mineralisation and a cut-off grade of 20% head Fe for oxidised mineralisation. All reported concentrate grades were weighted by DTC wt%.

Sphere Lebtheinia S.A. Sphere Minerals Limited holds a 100% interest in Sphere Lebtheinia S.A.

Lebtheinia:

The magnetite-rich Banded Iron Formations (BIF) at Lebtheinia form part of the Archaean Lebzena Group. The BIF units in EL264 are exposed over a total strike length of approximately 24km, of which Lebtheinia Centre has a strike length of 11.5km. Parts of the main BIF units at Lebtheinia Centre deposit are covered by laterite and colluvium consisting of BIF fragments.

The magnetite-BIF at Lebtheinia Centre averages about 240m thick. The BIF is characterised by a well-defined banding pattern, with individual bands ("mesobands") averaging 5-10mm thick. Drilling shows that mineralisation extends to at least 400m vertically below natural surface and is open at depth. The deposit is intruded by a series of sub-vertical dolerite dykes, striking NE-SW to NNE-SSW. Lebtheinia Centre has a hanging wall of (variously) quartzite, amphibolite, rhyolite, clay/saprolite (altered amphibolite) and a footwall of quartzite or amphibolite.

The depth of weathering (oxidation) of the BIF averages around 50m. In the lower two thirds of the oxidised zone (the Lower Oxidised Zone, "LOZ") the degree of oxidation is less than in the more oxidised upper third.

The Lebtheinia Centre Mineral Resource Statement for Fresh Ore uses 20% DTC wt% cut-off. For the LOZ unit the cut-off is $14 \text{ SI} \times 10^{-3}$ units of magnetic susceptibility.

The Lebtheinia Mineral Resource Statement was prepared in accordance with the 2004 edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (the JORC Code, 2004 Edition).

Competent Persons

AM = Alan Miller, Independent Consultant (MAusIMM (CP)), responsible for the construction of the geological block model, the grade interpolation and the Mineral Resource estimation (tonnage and grade) and classification.

SvdM = Schalk van der Merwe, Independent Consultant (SACNSP), responsible for the geological interpretation for the Mineral Resource estimation (wireframe model), and the drill hole data set used in these resource estimation.

JS = Jean-François St-Onge, Eng. formerly of BBA (OIQ).

MC = Malcolm Cox, Independent Consultant (FAusIMM).
