25 July 2016

ASX Code:
SFX

Directors:

Mr Will Burbury
Non-Executive Chairman

Mr Bruce McFadzean
Managing Director

Mr Bruce McQuitty
Non-Executive Director

Mr David Archer
Technical Director

Registered Office:

Level 2, 41-47 Colin Street
West Perth WA 6005

Share Registry:

Link Market Services
Level 4, Central Park
152 St Georges Terrace
Perth WA 6000

Capital Structure:
As at 25 July 2016
Ordinary Shares: 147.6M
Unlisted Options: 8.7M

Market Capitalisation:
A$89 million

Cash Reserves:
A$5.0 million

Investor Relations:

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Sheffield Resources LIMITED

QUARTERLY ACTIVITIES REPORT FOR THE PERIOD ENDED 30 JUNE 2016

HIGHLIGHTS

Thunderbird Mineral Sands Project

- Hatch progressing the Bankable Feasibility Study (BFS), with engineering design now underway, along with pilot scale test work on the low temperature roast ilmenite
- Positive batch tests delivering quality improvements in low temperature roast ilmenite product specifications
- Measured component of Thunderbird Mineral Resource doubled to 220Mt @ 14.5% HM (at a 7.5% HM cut-off)
- Positive initial metallurgical test work results from the Night Train deposit (located 20km from Thunderbird) indicating potential to produce a premium zircon product
- Project Environmental Scoping Document (ESD) approved by the Western Australian Environmental Protection Authority

Corporate Activities

- Cash position of A$5.0 million as at 30 June 2016
- Continued focus on securing a pathway through to project development, via partnering options and product off-take arrangements
- Mr Neil Patten-Williams appointed as Marketing Manager during the quarter

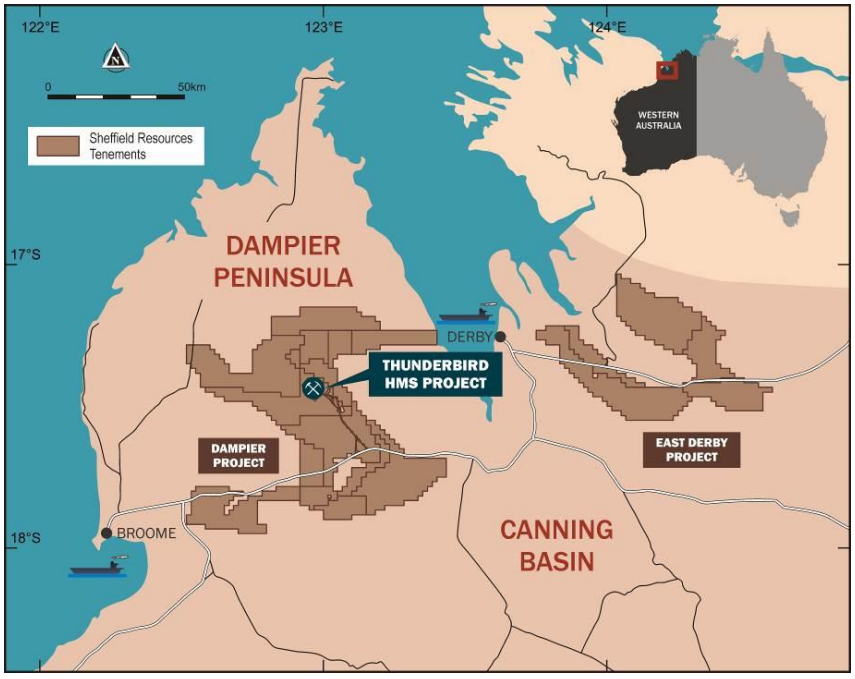

Figure 1: Location of Thunderbird Mineral Sands Project

OPERATIONAL SUMMARY

During the quarter, Sheffield Resources Limited ("Sheffield" or "the Company") continued its operational focus on its world class Thunderbird Heavy Mineral Sands Project (Thunderbird), located in the Canning Basin in northern Western Australia (Figure 1).

The Thunderbird deposit is one of the largest and highest grade zircon rich mineral sands discoveries in the past 30 years. Following completion of the Thunderbird Pre-Feasibility Study (PFS) in October 2015, work commenced on a Bankable Feasibility Study (BFS), with the appointment of lead engineering group Hatch in March 2016.

The BFS remains on schedule for completion by the end of 2016. A large volume of work is currently in progress, during the Quarter metallurgical test work and flow sheets for the Mining Unit Plants, Wet Concentrator Plant, Concentrate Upgrade Plant, Ilmenite Processing Plant and the Primary High Tension portion of the Mineral Separation Plant were completed. Pilot scale test work on the Low Temperature Roast (LTR) ilmenite commenced at Hazen Laboratories in Colorado, USA.

Native Title negotiations and the environmental approvals process continue to progress to schedule.

An updated Mineral Resource for Thunderbird was announced on 5 July 2016, comprising 1.05 billion tonnes @ 12.2% heavy minerals (HM) at a 7.5%HM cut-off (Measured, Indicated and Inferred). Significantly, the Measured category of the Mineral Resource has been doubled to 220Mt @ 14.5% HM (at a 7.5% HM cut-off) with minimal change in the high in-situ zircon and ilmenite grades of 1.07% and 3.9% respectively. This Measured component of the Mineral Resource alone places Thunderbird in the top tier of mineral sands deposits globally, including those currently in production.

An updated Mineral Resource for the McCalls project, located 110km north of Perth in Western Australia, was also completed subsequent to the end of the Quarter. The update is part of an ongoing process to review those of Sheffield's Mineral Resources which were first reported under JORC (2004). The updated Mineral Resource comprises 3.65 billion tonnes @ 1.4% HM at a 1.1% HM cut-off (Indicated and Inferred), with over 60% of the Mineral Resource now in the Indicated category.

Exploration and evaluation expenditure including BFS activities totalled A$1.6m for the quarter, cash reserves of A$5.0 million (unaudited) remain as at 30 June 2016.

THUNDERBIRD MINERAL SANDS PROJECT

Located in the Canning Basin in northern Western Australia, the Thunderbird Mineral Sands Project, wholly owned by ASX-listed Sheffield Resources Limited, is situated midway between the port towns of Derby and Broome. Thunderbird, by virtue of its location, size[1] and quality of product[2] has the potential to become a globally significant mineral sands operation. The significance of the Project is supported by the "Lead Agency" project status afforded to Thunderbird by the Department of Mines and Petroleum in Western Australia.

Zircon is the key value driver of the Project making up almost 60% of forecast revenue, with the remainder generated from substantial amounts of high grade sulphate ilmenite and "HiTi" leucoxene. The high proportion of zircon sets Thunderbird apart from many of the world's operating and undeveloped mineral sands projects which are dominated by lower value ilmenite.

[1] The PFS was based on the Thunderbird Mineral Resource announced on 31 July 2015 comprising 3.240Bt @ 6.9% HM (at 3% HM cut off), including a coherent high grade zone of 1.09Bt @ 11.9% HM (at 7.5% cut off) (Measured, Indicated and Inferred). The high grade component contains 9.9Mt of zircon, 3.0Mt of high-titanium leucoxene, 2.8Mt of leucoxene and 36Mt of ilmenite. The Maiden Ore Reserve announced to the ASX 22 January 2016 supports 40 year mine life operation outlined in the PFS.

[2] Leading global mineral sands consulting group TZMI has confirmed that Sheffield's primary zircon and LTR ilmenite are high quality products that are likely to receive strong market support. Collectively these products represent 81% of the total projected revenue. Significant interest has been registered in these products by leading marketing specialists and industry groups.

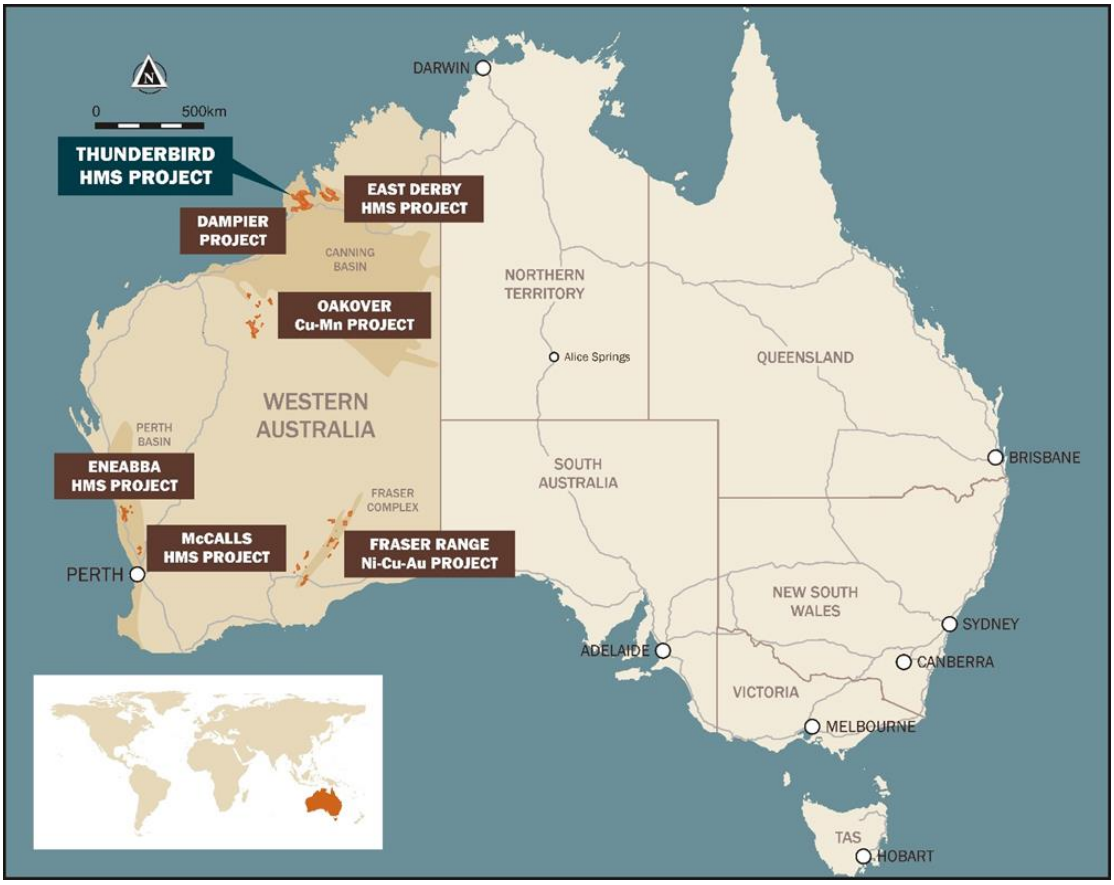

Figure 2: Location of Sheffield Resources Projects in Western Australia

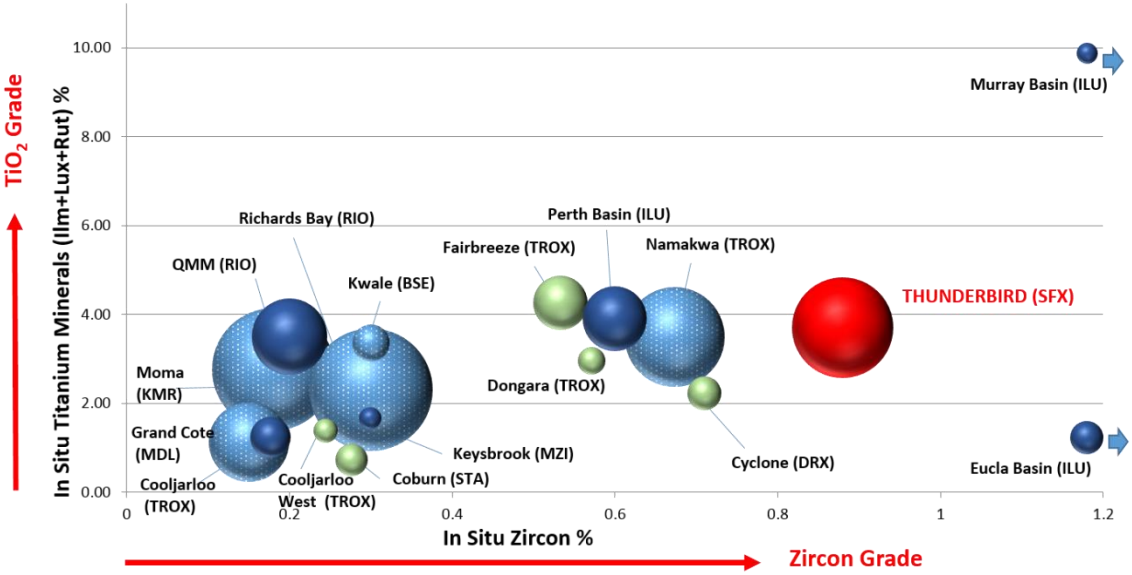

Figure 3: Thunderbird Ore Reserves ranked against Ore Reserves of current mineral sands operations and projects under investigation globally[3]

[3] Blue bubbles are operating mines, green bubbles are Ore Reserves reported but project is not operating. Blue hatched bubbles represent operating African mines' Ore Reserves. Bubble size proportional to tonnes of contained VHM. Only Ore Reserves > 4Mt contained VHM shown. Data compiled by Sheffield from public sources.

Thunderbird Bankable Feasibility Study ("BFS")

The Thunderbird BFS activity is focused on confirmatory fieldwork and metallurgical test work, preliminary engineering, supply quotation and cost estimation. The BFS is designed to deliver reliable estimates of quantities and prices of plant, equipment, buildings and civil structures. The key deliverables of the BFS are detailed estimates of capital and operating costs (generally defined as a Class 3 estimate, typically ± 10 to 15%), accompanied by related risk and opportunities associated with the project. Other deliverables include a preliminary project construction plan, legal, commercial and other factors.

Hatch remains on schedule for delivery of the BFS by the end of 2016.

IHC Robbins, responsible for providing confirmatory metallurgical test work for the BFS, have now completed work on the Feed Preparation Plant, Wet Concentration Plant, Concentrate Upgrade Plant, and Ilmenite Processing Plant circuits and have commenced work on the Mineral Separation Plant (HiTi and Zircon Circuits). The test work is being carried out an a 40-tonne bulk sample derived from large diameter (700mm) Bauer drill hole samples (refer to ASX announcement 17 September 2015) completed in 2015. Based on the utilisation of full-scale or scalable equipment, this test work aims to confirm the PFS flowsheet using a sample representative of the projected initial 6-7 years of feed. The metallurgical work completed to date shows significant improvements in metallurgical performance including increased heavy mineral concentrate (HMC) grades and increased stage recoveries, compared to those achieved in PFS test work (refer to ASX announcement 29 June 2016).

Hatch are using the metallurgical test work results to generate engineering process drawings and equipment specifications. The test work information received to date is consistent with, and has not resulted in any significant changes to, the proposed metallurgical flowsheet design as published in the October 2015 pre-feasibility study (PFS).

Sheffield has recently optimised roast conditions and completed related bench-scale batch tests in Australia to produce a high grade 57.9% TiO_2 LTR ilmenite from the BFS bulk sample, with outstanding improvements in the $FeO:Fe_2O_3$ ratio to >1.0 (refer to ASX announcement 29 June 2016).. Under the management of Hatch and Sheffield, Hazen Laboratories in Colorado, USA has commenced final BFS pilot-scale LTR batch and continuous flow test work on a 1.5 tonne sample of ilmenite from the BFS metallurgical program. Test work at Hazen aims to replicate these improved product specification results on a continuous basis, and to provide LTR ilmenite for customer testing.

Hatch has also commenced engineering design on the LTR ilmenite process in conjunction with the pilot program.

Also during the quarter, three trenches were excavated through near surface ore and waste in the "up-dip" region of the Thunderbird deposit. The three trenches of up to nine metres depth were designed to evaluate the shallow up-dip portion of the deposit proposed for mining during the anticipated initial six years and to obtain further ore samples for materials handling studies and process test work. The trenches were excavated with a D10 dozer achieving good productivity rates. The work has confirmed dozer-trap mining as the preferred mining method at Thunderbird.

The exposed orebody comprised highly weathered sandstone, compacted sands and minor discontinuous iron cemented bands. The near surface material encountered classifies as medium digging to easy ripping and the observed productivity indicates that targeted BFS production rates will be readily achieved with D11 sized dozers. Excavation of a pit to evaluate potential dozer-trap production rates through the entire orebody thickness is planned following the grant of the Mining Lease.

Thunderbird Mineral Resource Update

Subsequent to the end of the quarter, the Company announced an updated Mineral Resource of 3.23 billion tonnes @ 6.9% heavy minerals (HM) at a 3% HM cut-off (Measured, Indicated and Inferred) (Table 1).

The new Mineral Resource, which was updated to include 110 infill holes drilled in the "up-dip" region of the deposit (see ASX announcement dated 10 December 2015), includes a coherent high grade zone of 1.05Bt @ 12.2% HM at a 7.5%HM cut-off (Measured, Indicated and Inferred). This high grade zone contains 9.7Mt of zircon, 3.0Mt of high-titanium leucoxene and 35Mt of ilmenite.

Table 1: Thunderbird Deposit Mineral Resource[4] Summary

		Mineral Resources		Valuable HM Grade (In-situ)[5]				
Resource Category	Cut-off HM%	Material Million Tonnes[6]	HM %	Zircon %	HiTi Leucoxene %	Leucoxene %	Ilmenite %	Total VHM %
Measured	3.0	510	8.9	0.71	0.20	0.19	2.4	3.5
Indicated	3.0	2,120	6.6	0.55	0.18	0.20	1.8	2.8
Inferred	3.0	600	6.3	0.53	0.17	0.20	1.7	2.6
Total	**3.0**	**3,230**	**6.9**	**0.57**	**0.18**	**0.20**	**1.9**	**2.9**
Measured	**7.5**	**220**	**14.5**	**1.07**	**0.31**	**0.27**	**3.9**	**5.5**
Indicated	7.5	640	11.8	0.90	0.28	0.25	3.3	4.7
Inferred	7.5	180	10.8	0.87	0.27	0.26	3.0	4.4
Total	**7.5**	**1,050**	**12.2**	**0.93**	**0.28**	**0.26**	**3.3**	**4.8**

Significantly, the Measured category of the Thunderbird Mineral Resource has been doubled to 220Mt @ 14.5% HM (at a 7.5% HM cut-off) with minimal change in the high in-situ zircon and ilmenite grades of 1.07% and 3.9% respectively (Table 1, Figure 4 and Figure 5). The Measured component of the Mineral Resource alone places Thunderbird in the top tier of mineral sands deposits globally, including those currently in production. Refer to Sheffield's ASX announcement of 5 July, 2016 for further information.

A maiden Ore Reserve for Thunderbird, based on the July 2015 Mineral Resource and calculated in conjunction with the October 2015 Pre-Feasibility Study (PFS), was announced in January this year comprising 683Mt @ 11.3% HM (total Proved and Probable Reserves). The PFS supported a 40-year mine life for the Project with a life-of-mine strip ratio (waste:ore) of 0.67:1 (see ASX announcements dated 22 January, 2016 and 14 October, 2015). An updated Ore Reserve based on the new mineral Resource will follow from BFS work currently underway.

[4] Refer to Appendix 2 and ASX release dated 5 July 2016 for further information.
[5] The in-situ grade is determined by multiplying the percentage of HM by the percentage of each valuable heavy mineral within the heavy mineral assemblage at the resource block model scale.
[6] Tonnes and grades have been rounded to reflect the relative accuracy and confidence level of the estimate, thus the sum of columns may not equal.

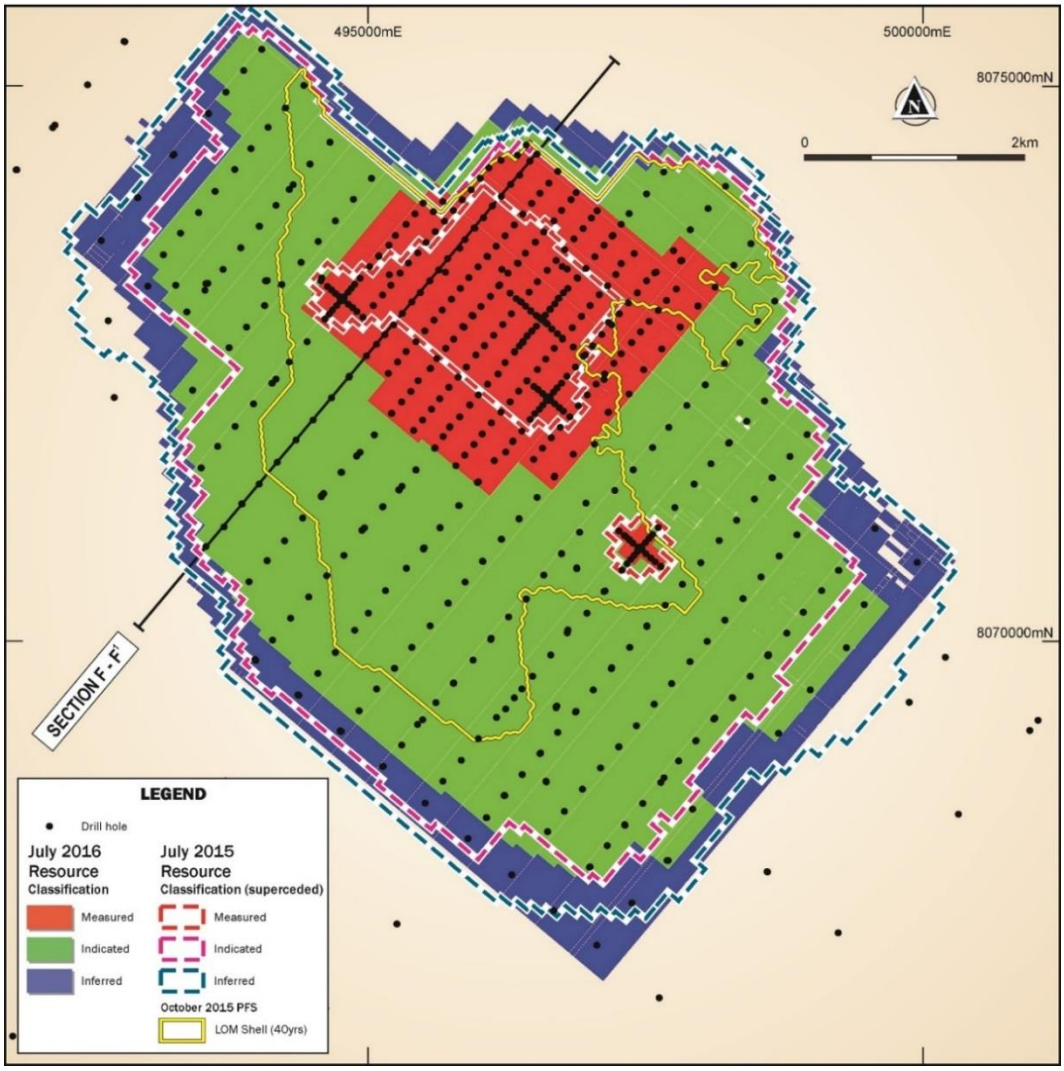

Figure 4: Thunderbird Mineral Resource block model resource category plan, and comparison with July 2015 resource category boundaries and October 2015 PFS pit shell, note the significant increase in Measured Resources

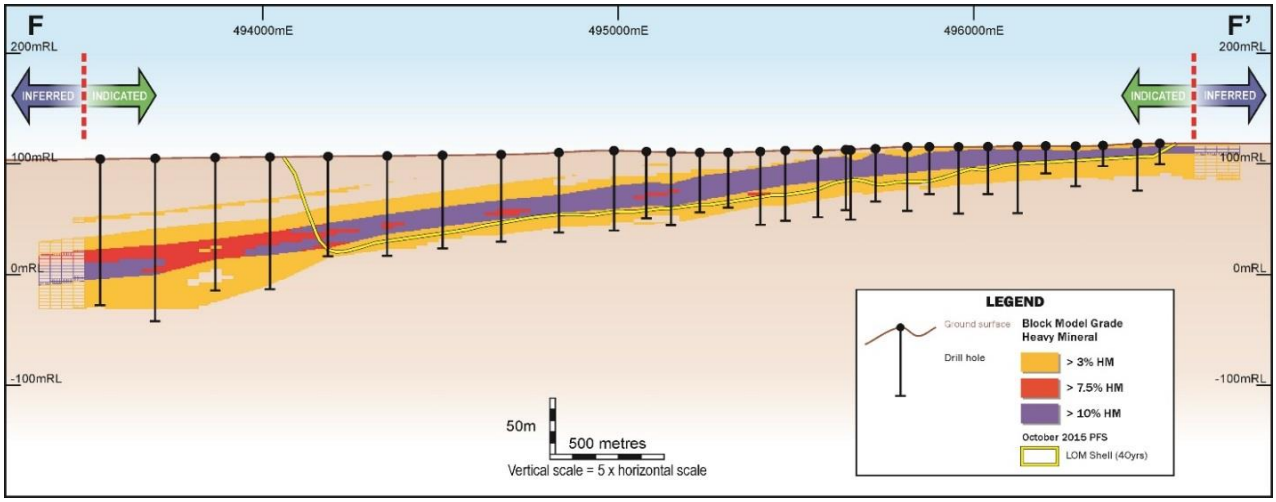

Figure 5: Cross-section F-F' through the Thunderbird resource block model showing the current Resource HM grade and October 2015 PFS pit shell outline

Environmental Approvals

The Thunderbird Mineral Sands Project Environmental Scoping Document ("ESD") was approved by the Western Australian Environmental Protection Authority on 4 July 2016. The ESD defines the content and detail required for the preparation of the Project's Public Environment Review ("PER") which remains on target for release for public comment in the latter part of 2016.

Native Title

Native Title negotiations with respect to the Thunderbird Mining Lease continued during the period and remain on target for completion before the end of 2016. Activity during the quarter focused upon heritage clearance with the collaboration of Traditional Owners.

DAMPIER REGIONAL MINERAL SANDS

Preparatory work for drilling the Night Train mineral sands prospect commenced subsequent to the end of the quarter. Exploration drilling is scheduled to commence in the second half of 2016, and will include a program to collect additional samples for detailed metallurgical test work.

Night Train is located approximately 20km to the southeast of Thunderbird and is within 2km of the proposed Thunderbird haul road (Figure 6). Results of initial metallurgical test work reported during the last quarter show high quality zircon that meets ceramic grade specifications can be produced from Night Train using conventional mineral sands processing techniques (see ASX announcement dated 14 April 2016 for details).

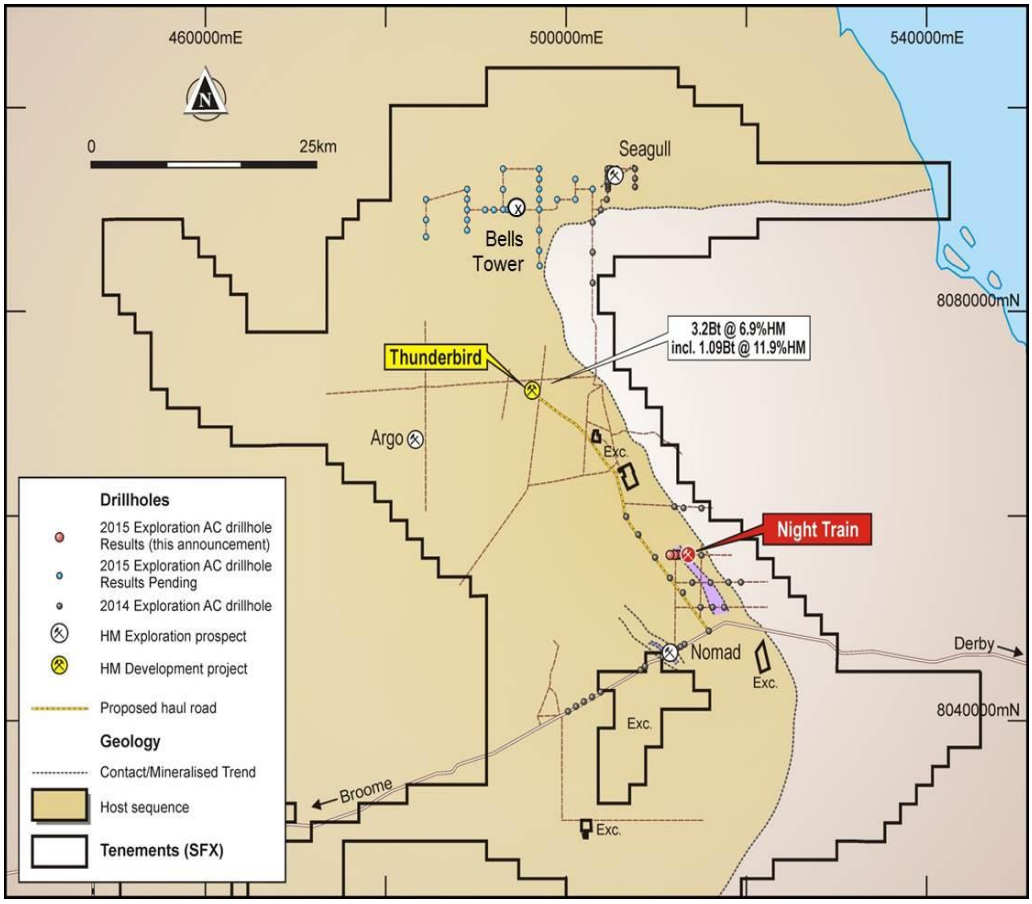

Figure 6: Dampier Project regional plan showing location of Night Train

DERBY EAST MINERAL SANDS

The Derby East project comprises 4 granted tenements E04/2391, E04/2392, E04/2393 and E04/2394 and one tenement application with a total area of 1,831km^2. The tenements cover prospective mineral sands ground to the east of Derby (Figure 1). A review of historic drilling was completed and areas prioritised for first-pass exploratory drilling.

FRASER RANGE NICKEL

During the quarter Sheffield relinquished a number of its tenements in the Fraser Range region, concentrating its land holding on those areas considered most prospective for nickel and gold deposits (Figure 7). As reported last quarter, work to date at Red Bull, located 21km to the south of Independence Group's Nova nickel-copper deposit, has demonstrated the presence of host rocks and a geological setting highly prospective for the formation of magmatic-hosted nickel sulphide deposits.

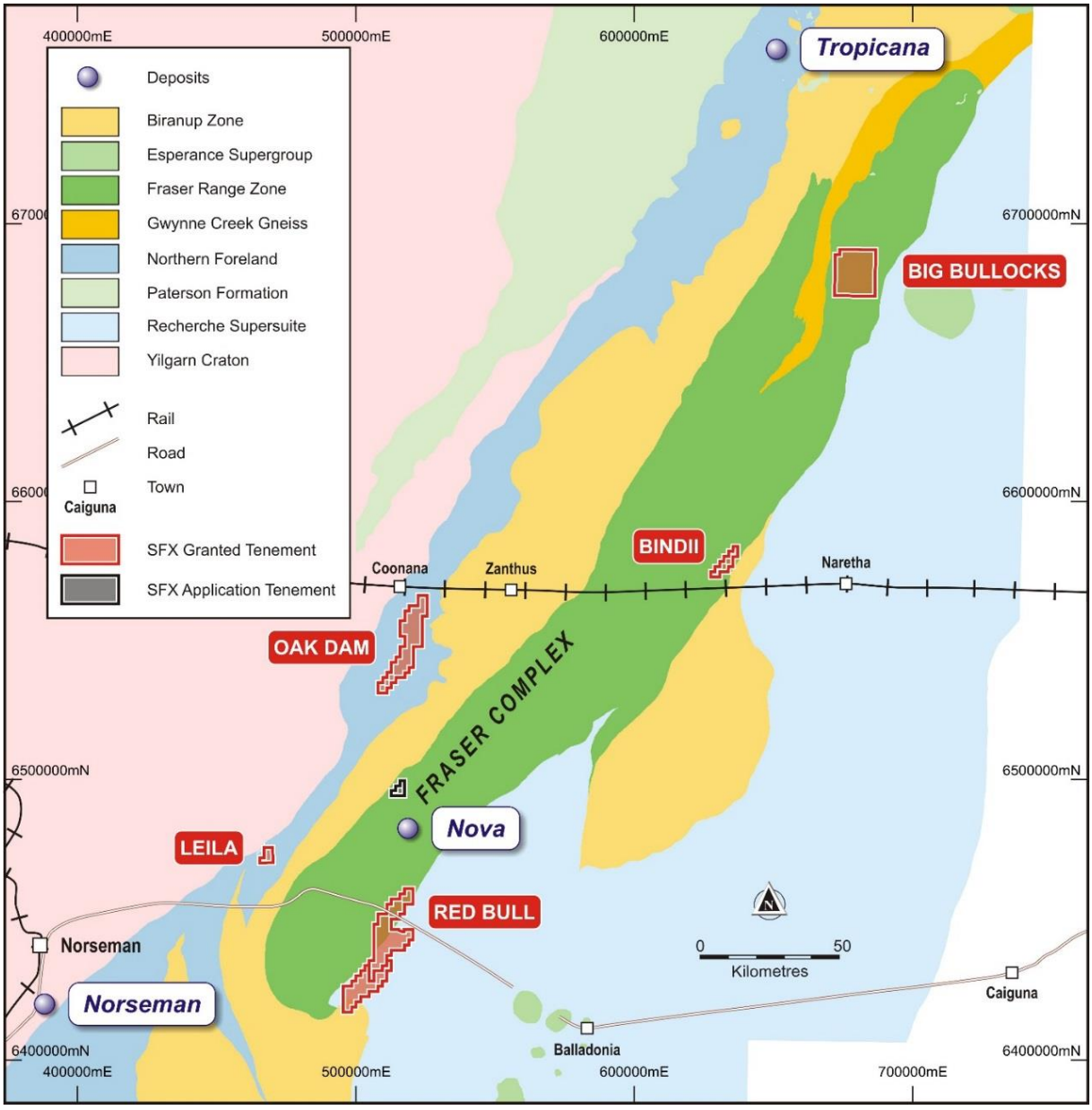

Figure 7: Location of Sheffield's Fraser Range tenements

ENEABBA & McCALLS HEAVY MINERAL SANDS

An updated Mineral Resource for the McCalls project 110km north of Perth in Western Australia was completed subsequent to the end of the Quarter. The update is part of an ongoing process to review Sheffield's Mineral Resources which were first reported under JORC (2004).

The updated Mineral Resource comprises 3.65 billion tonnes @ 1.4% heavy mineral (HM) at a 1.1% HM cut-off (Indicated and Inferred) containing 50.4Mt of HM, and includes an additional 71 holes drilled by Sheffield in 2012 (see ASX Quarterly Report dated 31 July, 2013). The additional drill holes, and associated mineral assemblage data have contributed to an increase in the confidence of the Mineral Resource, with over 60% now in the Indicated category.

The updated Mineral Resource contains a total 45 Mt of valuable heavy minerals (VHM), comprising 2.5 Mt of Zircon, 1.6 Mt of Rutile, 1.5 Mt of Leucoxene and; significantly, 39 Mt of chloride grade Ilmenite (59% to 66% TiO_2), ranking McCalls as one of the largest undeveloped chloride ilmenite deposits in the world.

Table 2: McCalls Deposit Mineral Resource[7] Summary (1.1% HM cut-off)

	Mineral Resources				Valuable HM Grade (In-situ)[8]				
Resource Category	Material Mt[9]	HM %	SL %	OS %	Zircon %	Rutile %	Leucoxene %	Ilmenite %	Total VHM %
Indicated	2,214	1.4	21.7	1.3	0.07	0.05	0.04	1.10	1.26
Inferred	1,436	1.3	25.5	1.1	0.06	0.04	0.04	1.05	1.19
Total	**3,650**	**1.4**	**23.2**	**1.2**	**0.07**	**0.04**	**0.04**	**1.08**	**1.23**

The McCalls Mineral Resource occurs near surface and is laterally extensive at 16km east-west x 13km north-south and is open at depth. The main mineralised domains are up to 60m thick, with an average thicknesses of 20m to 30m. Overburden thickness ranges from 0m to about 27m with an average of 6m. Its large size and mineralisation characteristics suggest an estuarine-lagoonal depositional environment.

Additional details of the Mineral Resource, including Resource tables and JORC (2012) Table 1 are included in Appendix 1 and Appendix 2 respectively.

No work was completed on the Eneabba project during the quarter.

OAKOVER COPPER-MANGANESE PROJECT

Sheffield has 2,737 km^2 of tenements under application for copper and manganese in the eastern Pilbara. Two tenements, E46/1044 and E46/1041, were granted last quarter and a program comprising a review of historical exploration data and target generation is in progress.

[7] Refer to Appendix 2 and Appendix 3 for further information.
[8] The in-situ grade is determined by multiplying the percentage of HM by the percentage of each valuable heavy mineral within the heavy mineral assemblage at the resource block model scale.
[9] Tonnes and grades have been rounded to reflect the relative accuracy and confidence level of the estimate, thus the sum of columns may not equal.

CASH POSITION AND CORPORATE ACTIVITIES

As at 30 June 2016, Sheffield had cash reserves of approximately $5.0 million (unaudited).

In conjunction with the significant and positive results arising from the Thunderbird BFS process, Sheffield's corporate activities continue to focus on securing a pathway through to project development, which may include potential partnering and product off-take arrangements.

To facilitate the Company in securing commercial off-take arrangements for Thunderbird, Mr Neil Patten-Williams joined the Company as Marketing Manager with effect from 23 May 2016. Final products for market appraisal and off-take discussions will be available during the second half of 2016.

Mr Bruce McFadzean
Managing Director
25 July 2016

Schedule 1: Interests in Mining Tenements at the end of the quarter as required under ASX Listing Rule 5.3.3

Project	Tenement	Holder	Interest	Location[3]	Status
Mineral Sands	E04/2081	Sheffield Resources Ltd	100%	Canning Basin	Granted
Mineral Sands	E04/2083	Sheffield Resources Ltd	100%	Canning Basin	Granted
Mineral Sands	E04/2084	Sheffield Resources Ltd	100%	Canning Basin	Granted
Mineral Sands	E04/2159	Sheffield Resources Ltd	100%	Canning Basin	Granted
Mineral Sands	E04/2171	Sheffield Resources Ltd	100%	Canning Basin	Granted
Mineral Sands	E04/2192	Sheffield Resources Ltd	100%	Canning Basin	Granted
Mineral Sands	E04/2193	Sheffield Resources Ltd	100%	Canning Basin	Granted
Mineral Sands	E04/2194	Sheffield Resources Ltd	100%	Canning Basin	Granted
Mineral Sands	E04/2348	Sheffield Resources Ltd	100%	Canning Basin	Granted
Mineral Sands	E04/2349	Sheffield Resources Ltd	100%	Canning Basin	Granted
Mineral Sands	E04/2350	Sheffield Resources Ltd	100%	Canning Basin	Granted
Mineral Sands	E04/2386	Sheffield Resources Ltd	100%	Canning Basin	Pending
Mineral Sands	E04/2390	Sheffield Resources Ltd	100%	Canning Basin	Pending
Mineral Sands	E04/2391	Sheffield Resources Ltd	100%	Canning Basin	Granted
Mineral Sands	E04/2392	Sheffield Resources Ltd	100%	Canning Basin	Granted
Mineral Sands	E04/2393	Sheffield Resources Ltd	100%	Canning Basin	Granted
Mineral Sands	E04/2394	Sheffield Resources Ltd	100%	Canning Basin	Granted
Mineral Sands	E04/2399	Sheffield Resources Ltd	100%	Canning Basin	Pending
Mineral Sands	E04/2400	Sheffield Resources Ltd	100%	Canning Basin	Pending
Mineral Sands	E04/2401	Sheffield Resources Ltd	100%	Canning Basin	Pending
Mineral Sands	M04/459	Sheffield Resources Ltd	100%	Canning Basin	Pending
Mineral Sands	L04/82	Sheffield Resources Ltd	100%	Canning Basin	Pending
Mineral Sands	L04/83	Sheffield Resources Ltd	100%	Canning Basin	Pending
Mineral Sands	L04/84	Sheffield Resources Ltd	100%	Canning Basin	Granted
Mineral Sands	L04/85	Sheffield Resources Ltd	100%	Canning Basin	Granted
Mineral Sands	L04/86	Sheffield Resources Ltd	100%	Canning Basin	Granted
Mineral Sands	L04/92	Sheffield Resources Ltd	100%	Canning Basin	Granted
Mineral Sands	L04/93	Sheffield Resources Ltd	100%	Canning Basin	Granted
Mineral Sands	E70/3762	Sheffield Resources Ltd	100%	Perth Basin	Granted
Mineral Sands	E70/3813	Sheffield Resources Ltd	100%	Perth Basin	Granted
Mineral Sands	E70/3814	Sheffield Resources Ltd	100%	Perth Basin	Granted
Mineral Sands	E70/3929	Sheffield Resources Ltd	100%	Perth Basin	Granted
Mineral Sands	E70/3931	Sheffield Resources Ltd	100%	Perth Basin	Granted
Mineral Sands	E70/3967	Sheffield Resources Ltd	100%	Perth Basin	Granted
Mineral Sands	E70/4190	Sheffield Resources Ltd	100%	Perth Basin	Granted
Mineral Sands	E70/4292	Sheffield Resources Ltd	100%	Perth Basin	Granted
Mineral Sands	E70/4313	Sheffield Resources Ltd	100%	Perth Basin	Granted
Mineral Sands	E70/4584	Sheffield Resources Ltd	100%	Perth Basin	Granted
Mineral Sands	M70/872[1]	Sheffield Resources Ltd	100%	Perth Basin	Granted
Mineral Sands	M70/965[1]	Sheffield Resources Ltd	100%	Perth Basin	Granted
Mineral Sands	M70/1153[1]	Sheffield Resources Ltd	100%	Perth Basin	Granted
Mineral Sands	R70/35[1]	Sheffield Resources Ltd	100%	Perth Basin	Granted

Project	Tenement	Holder	Interest	Location	Status
Mineral Sands	E70/3859	Sheffield Resources Ltd	100%	Perth Basin	Pending
Mineral Sands	L70/150	Sheffield Resources Ltd	100%	Perth Basin	Granted
Mineral Sands	E70/4719	Sheffield Resources Ltd	100%	Perth Basin	Pending
Mineral Sands	E70/4747	Sheffield Resources Ltd	100%	Perth Basin	Pending
Nickel	E69/3033	Sheffield Resources Ltd	100%	Fraser Range	Granted
Nickel	E69/3052	Sheffield Resources Ltd	100%	Fraser Range	Granted
Nickel	E39/1733	Sheffield Resources Ltd	100%	Fraser Range	Granted
Nickel	E28/2374-I	Sheffield Resources Ltd	100%	Fraser Range	Granted
Nickel	E28/2563	Sheffield Resources Ltd	100%	Fraser Range	Pending
Gold	E63/1696	Sheffield Resources Ltd	100%	Tropicana Belt	Granted
Nickel/Gold	E28/2481	Sheffield Resources Ltd	100%	Tropicana Belt	Granted
Copper/Manganese	E46/1041	Sheffield Resources Ltd	100%	Pilbara	Granted
Copper/Manganese	E46/1042	Sheffield Resources Ltd	100%	Pilbara	Pending
Copper/Manganese	E46/1044	Sheffield Resources Ltd	100%	Pilbara	Granted
Copper/Manganese	E45/4558	Sheffield Resources Ltd	100%	Pilbara	Pending
Copper/Manganese	E45/4573	Sheffield Resources Ltd	100%	Pilbara	Pending
Copper/Manganese	E45/4574	Sheffield Resources Ltd	100%	Pilbara	Pending
Copper/Manganese	E46/1069	Sheffield Resources Ltd	100%	Pilbara	Pending
Copper/Manganese	E46/1070	Sheffield Resources Ltd	100%	Pilbara	Pending
Copper/Manganese	E46/1099	Sheffield Resources Ltd	100%	Pilbara	Pending
Copper/Manganese	E45/4600	Sheffield Resources Ltd	100%	Pilbara	Pending
Copper/Manganese	E46/1116	Sheffield Resources Ltd	100%	Pilbara	Pending
Copper/Manganese	E46/1119	Sheffield Resources Ltd	100%	Pilbara	Pending
Copper/Manganese	E45/4717	Sheffield Resources Ltd	100%	Pilbara	Pending
Copper/Manganese	E45/4719	Sheffield Resources Ltd	100%	Pilbara	Pending
Copper/Manganese	E46/1123	Sheffield Resources Ltd	100%	Pilbara	Pending
Copper/Manganese	E46/1124	Sheffield Resources Ltd	100%	Pilbara	Pending

Notes:
[1]Iluka Resources Ltd (ASX: ILU) retains a gross sales royalty of 1.5% in respect to tenements R70/35, M70/872, M70/965 & M70/1153.
[2]All tenements are located in the state of Western Australia.

Details of tenements and/or beneficial interests acquired/disposed of during the quarter are provided in Section 6 of the Company's Appendix 5B notice for the June 2016 quarter.

COMPLIANCE STATEMENTS

EXPLORATION RESULTS

The information in this report that relates to Exploration Results and the McCalls Mineral Resource is based on information compiled by Mr David Boyd, a Competent Person who is a Member of Australian Institute of Geoscientists (AIG). Mr Boyd is a full-time employee of Sheffield Resources Ltd and has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr Boyd consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

The information in this report that relates to the estimation of the McCalls Mineral Resource is based on information compiled by Mr Tim Journeaux MSC (Geology, Mineral Economics) who is a Member of the Australasian Institute of Mining and Metallurgy. Mr. Journeaux has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person, as defined in the 2012 edition of the JORC Code. Tim Journeaux is a contract employee of QG Australia Pty Ltd and consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

PREVIOUSLY REPORTED INFORMATION

This report includes information that relates to Exploration Results, Exploration Targets, Mineral Resources, Ore Reserves, a Pre-feasibility Study and Technical Studies which were prepared and first disclosed under the JORC Code 2012. The information was extracted from the Company's previous ASX announcements as follows:

- Thunderbird Mineral Resource Update: *"SHEFFIELD DOUBLES MEASURED MINERAL RESOURCE AT THUNDERBIRD"* 5 July, 2016
- Thunderbird BFS update: *"THUNDERBIRD MINERAL SANDS PROJECT - BFS UPDATE"* 29 June, 2016
- March 2016 Quarterly report: *"QUARTERLY ACTIVITIES REPORT FOR THE PERIOD ENDED 31 MARCH 2016"* 20 April, 2016
- Night Train metallurgical scoping results: *"PREMIUM ZIRCON AT NIGHT TRAIN",* 14 April, 2016
- Thunderbird Ore Reserve: "MAIDEN ORE RESERVE – THUNDERBIRD PROJECT", 22 January, 2016
- Thunderbird infill drilling: *"NEW HIGH-GRADE RESULTS FROM INFILL DRILLING AT THUNDERBIRD"*, 10 December 2015.
- Thunderbird Pre-feasibility Study Update: *"PRE-FEASIBILITY STUDY UPDATE CONFIRMS THUNDERBIRD AS THE WORLD'S BEST UNDEVELOPED MINERAL SANDS PROJECT,"* 14 October 2015

This report also includes information that relates to Exploration Results and Mineral Resources which were prepared and first disclosed under the JORC Code 2004. The information has not been updated since to comply with the JORC Code 2012 on the basis that the information has not materially changed since it was last reported. The information was extracted from the Company's previous ASX announcements as follows:

- Drummond Crossing Mineral Resource and Sampling Results from Dunal-Style HM Targets, Eneabba Project: *"1Mt HEAVY MINERAL RESOURCE ADDED TO ENEABBA PROJECT"*, 30 October 2013.
- McCalls 2012 drilling results: *"QUARTERLY REPORT FOR PERIOD ENDING 30 JUNE 2013"* 31 July, 2013.
- Yandanooka Mineral Resource: *"YANDANOOKA RESOURCE UPGRADE AND METALLURGICAL RESULTS"*, 30 January 2013.
- Durack Mineral Resource: *"ENEABBA PROJECT RESOURCE INVENTORY EXCEEDS 5MT HEAVY MINERAL"*, 28 August 2012.
- McCalls Mineral Resource (superceded): "4.4 BILLION TONNE MAIDEN RESOURCE AT MCCALLS HMS PROJECT", 20 February 2012.
- West Mine North Mineral Resource: *"WEST MINE NORTH MINERAL RESOURCE ESTIMATE EXCEEDS EXPECTATIONS"*, 7 November 2011.
- Ellengail Mineral Resource: *"1MT CONTAINED HM INFERRED RESOURCE AT ELLENGAIL"*, 25 October 2011.

These announcements are available to view on Sheffield Resources Ltd's web site www.sheffieldresources.com.au

The Company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcements and, in the case of estimates of Mineral Resources, Ore Reserves, Pre-feasibility Study and Technical Study results, that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed. The Company confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the original market announcement.

FORWARD LOOKING AND CAUTIONARY STATEMENTS

Some statements in this report regarding estimates or future events are forward-looking statements. They involve risk and uncertainties that could cause actual results to differ from estimated results. Forward-looking statements include, but are not limited to, statements concerning the Company's exploration programme, outlook, target sizes and mineralised material estimates. They include statements preceded by words such as "anticipated", "expected", "target", "scheduled", "intends", "potential", "prospective" and similar expressions.

APPENDIX 1: Ore Reserves and Mineral Resources

Sheffield announced a maiden Ore Reserve totalling 682.7 million tonnes @ 11.3% HM for the Thunderbird heavy mineral sands deposit, in the Kimberley Region of Western Australia, on 22 January 2016, and is currently completing a Bankable Feasibility Study for development of the deposit (the Thunderbird Mineral Sands Project). The Proved and Probable Ore Reserve estimate is based on that portion of the (previous) July, 2015 Thunderbird deposit Measured and Indicated Mineral Resources within mine designs and optimisation shells that may be economically extracted, considering all "Modifying Factors" in accordance with the JORC Code 2012.

Sheffield also has a number of Mineral Resource estimates for heavy mineral sands deposits within its Eneabba and McCalls Projects located in the Mid-West Region of Western Australia.

Ore Reserves

Dampier Project Ore Reserves [1,4]

Deposit	Ore Reserve Category	Ore Tonnes (millions)	In-situ HM Tonnes (millions)	HM Grade (%)	Valuable HM Grade (In-situ)[2]				Slimes (%)	Osize (%)
					Zircon %	HiTi Leuc %	Leuc %	Ilmenite %		
Thunderbird	Proved	115.1	15.8	13.7	1.01	0.29	0.28	3.67	17.3	12.7
	Probable	567.6	61.9	10.9	0.85	0.27	0.29	3.03	16.1	10.2
	Total	**682.7**	77.1	**11.3**	**0.88**	**0.27**	**0.29**	**3.14**	**16.3**	**10.6**

Deposit	Ore Reserve Category	Ore Tonnes (millions)	In-situ HM Tonnes (millions)	HM Grade (%)	Mineral Assemblage[3]				Slimes (%)	Osize (%)
					Zircon (%)	HiTi Leuc (%)	Leuc (%)	Ilmenite (%)		
Thunderbird	Proved	115.1	15.8	13.7	7.4	2.1	2.1	26.8	17.3	12.7
	Probable	567.6	61.9	10.9	7.8	2.5	2.6	27.9	16.1	10.2
	Total	**682.7**	77.1	**11.3**	**7.7**	**2.4**	**2.5**	**27.7**	**16.3**	**10.6**

1) Ore Reserves are presented both in terms of in-situ VHM grade, and HM assemblage. Calculations have been rounded to the nearest 100,000 t, 0.1 % grade. Differences may occur due to rounding. Ore Reserve is reported by economic cut-off with appropriate consideration of modifying factors, costs, mineral assemblage, process recoveries and product pricing.
2) The in-situ grade is determined by multiplying the HM Grade by the percentage of each valuable heavy mineral within the heavy mineral assemblage.
3) Mineral Assemblage is reported as a percentage of HM Grade, it is derived by dividing the in-situ grade by the HM grade.
4) Ore Reserves reported for the Dampier Project were prepared and first disclosed under the JORC Code 2012

Mineral Resources

Dampier Project Mineral Resources [1,2,5]

Deposit (cut-off)	Mineral Resource Category	Material Tonnes (millions)	In-situ HM Tonnes (millions)	HM Grade (%)	Mineral Assemblage[3]				Slimes (%)	Osize (%)
					Zircon (%)	HiTi Leuc (%)	Leuc (%)	Ilmenite (%)		
Thunderbird (> 3% HM)	Measured	510	45	8.9	8.0	2.3	2.2	27	18	12
	Indicated	2,120	140	6.6	8.4	2.7	3.1	28	16	9
	Inferred	600	38	6.3	8.4	2.6	3.2	28	15	8
	Total	3,230	223	6.9	8.3	2.6	2.9	28	16	9
Thunderbird (>7.5% HM)	Measured	220	32	14.5	7.4	2.1	1.9	27	16	15
	Indicated	640	76	11.8	7.6	2.4	2.1	28	14	11
	Inferred	180	20	10.8	8.0	2.5	2.4	28	13	9
	Total	1,050	127	12.2	7.6	2.3	2.1	27	15	11

Eneabba Project Mineral Resources [2,4,6]

Deposit (cut-off)	Mineral Resource Category	Material Tonnes (millions)	In-situ HM Tonnes (millions)	HM Grade (%)	Mineral Assemblage[3]				Slimes (%)	Osize (%)
					Zircon (%)	Rutile (%)	Leuc (%)	Ilmenite (%)		
Yandanooka (> 0.9% HM)	Measured	3	0.1	4.1	10	1.9	2.2	72	15	14
	Indicated	90	2.1	2.3	12	3.7	3.7	69	16	15
	Inferred	3	0.03	1.2	11	3.9	4.6	68	18	21
	Total	96	2.2	2.3	12	3.6	3.7	69	16	15
Durack (>0.9% HM)	Indicated	50	1.0	2.0	14	2.8	4.6	70	15	21
	Inferred	15	0.2	1.2	14	2.4	6.7	67	14	17
	Total	65	1.2	1.8	14	2.8	4.9	70	15	20
Drummond Crossing (>1.1% HM)	Indicated	49	1.0	2.1	14	10	3.6	53	16	9
	Inferred	3	0.05	1.5	13	9.9	2.8	55	16	8
	Total	52	1.1	2.1	14	10	3.6	53	16	9
Ellengail (>0.9% HM)	Inferred	46	1.0	2.2	9	8.7	1.9	64	16	2
	Total	46	1.0	2.2	9	8.7	1.9	64	16	2
West Mine North (>0.9% HM)	Measured	6	0.4	5.6	4	9.6	9.5	54	15	1
	Indicated	36	0.8	2.3	7	9.6	5.4	60	13	3
	Total	43	1.2	2.8	6	9.6	6.6	58	13	3
All Eneabba (various)	Measured	9	0.5	5.2	6	7.7	7.7	59	15	5
	Indicated	225	5.0	2.2	12	5.8	4.2	64	15	13
	Inferred	68	1.3	1.9	10	7.7	2.7	64	15	6
	Total	**302**	6.8	**2.2**	**11**	**6.3**	**4.1**	**64**	**15**	**11**

McCalls Project Mineral Resources [2,4,6]

Deposit (cut-off)	Mineral Resource Category	Material Tonnes (millions)	In-situ HM Tonnes (millions)	HM Grade (%)	Mineral Assemblage[3]				Slimes (%)	Osize (%)
					Zircon (%)	Rutile (%)	Leuc (%)	Ilmenite (%)		
McCalls (>1.1% HM)	Indicated	2,214	31.7	1.4	5.1	3.2	2.7	76.8	21.7	1.3
	Inferred	1,436	18.7	1.3	5.0	3.2	3.1	80.3	25.5	1.1
	Total	**3,650**	**50.4**	**1.4**	**5.1**	**3.2**	**2.9**	**78.5**	**23.2**	**1.2**

1) The Dampier Project Mineral Resources are reported inclusive of (not additional to) Ore Reserves. The Mineral Resource reported above 3% HM cut-off is inclusive of (not additional to) the Mineral Resource reported above 7.5% HM cut-off.
2) All tonnages and grades have been rounded to reflect the relative accuracy and confidence level of each estimate and to maintain consistency throughout the table, therefore the sum of columns may not equal.
3) The Mineral Assemblage is represented as the percentage of HM grade. For Dampier the mineral assemblage was determined by screening and magnetic separation. Magnetic fractions were analysed by QEMSCAN for mineral determination as follows: >90% liberation and; Ilmenite 40-70% TiO2; Leucoxene 70-94% TiO2; High Titanium Leucoxene (HiTi Leucoxene) >94% TiO2 and Zircon 66.7% ZrO2+HfO2. The non-magnetic fraction was analysed by XRF and minerals determined as follows: Zircon ZrO2+HfO2/0.667 and HiTi Leucoxene TiO2/0.94. For Eneabba & McCalls determination was by QEMSCAN, with TiO2 minerals defined according to the following ranges: Rutile >95% TiO2; Leucoxene 85-95% TiO2; Ilmenite <55-85% TiO2
4) West Mine North, Durack, Drummond Crossing and McCalls are reported below a 35% Slimes upper cutoff.
5) Mineral Resources for the Dampier Project were prepared and first disclosed under the JORC Code 2012.
6) Mineral Resources reported for the Eneabba Project were prepared and first disclosed under the JORC Code 2004. These have not been updated since to comply with the JORC Code 2012 on the basis that the information on which the Resource estimates are based has not materially changed since it was last reported.

The Company's Ore Reserves and Mineral Resources Statement is based on information first reported in previous ASX announcements by the Company. These announcements are listed below and are available to view on Sheffield Resources Limited's web site www.sheffieldresources.com.au . Mineral Resources and Ore Reserves reported for the Dampier Project and Mineral Resources reported for the McCalls Projects were prepared and first disclosed under the JORC Code 2012. Mineral Resources reported for the Eneabba Project were prepared and first disclosed under the JORC Code 2004, these have not been updated since to comply with the JORC Code 2012 on the basis that the information on which the Resource estimates are based has not materially changed since it was last reported.

The Company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcements and that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed.

The Competent Persons for reporting of Mineral Resources and Ore Reserves in the original market announcements are listed below. The Company confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the original market announcement.

Item	Name	Company	Professional Affiliation
Mineral Resources Reporting	Mr Mark Teakle Mr David Boyd	Sheffield Resources Sheffield Resources	MAIG, MAusIMM MAIG
Mineral Resources Estimation	Mrs Christine Standing Mr Tim Journeaux Mr Trent Strickland	Optiro QG QG	MAusIMM MAusIMM MAusIMM
Ore Reserves	Mr Per Scrimshaw	Entech	MAusIMM

Ore Reserves and Mineral Resources prepared and first disclosed under the JORC Code 2012:

Item	Report Title	Report Date	Competent Person(s)
Thunderbird Ore Reserve	Maiden Ore Reserve – Thunderbird Project	22 January 2016	P. Scrimshaw
Thunderbird Mineral Resources	Sheffield Doubles Measured Mineral Resource At Thunderbird	5 July 2016	M. Teakle C. Standing
McCalls Mineral Resources	Quarterly Activities Report For The Period Ended 30 June 2016	20 July 2016	D. Boyd T. Journeaux

Mineral Resources prepared and first disclosed under the JORC Code 2004:

Item	Report Title	Report Date	Competent Person(s)
Ellengail Mineral Resource	1Mt Contained HM Inferred Resource at Ellengail	25 October 2011	M. Teakle T. Strickland
West Mine North Mineral Resource	West Mine North Mineral Resource Estimate Exceeds Expectations	7 November 2011	M. Teakle T. Strickland
Durack Mineral Resource	Eneabba Project Resource Inventory Exceeds 5Mt Heavy Mineral	28 August 2012	M. Teakle T. Strickland
Yandanooka Mineral Resource	Yandanooka Resource Upgrade and Metallurgical Results	30 January 2013	M. Teakle T. Strickland
Drummond Crossing Mineral Resource	1Mt Heavy Mineral Resource Added to Eneabba Project	30 October 2013	M. Teakle T. Strickland

Appendix 2: McCalls Mineral Resource JORC (2012) Table 1 Report

Section 1 Sampling Techniques and Data

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

Criteria	JORC Code explanation	Commentary
Sampling techniques	• *Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.* • *Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.* • *Aspects of the determination of mineralisation that are Material to the Public Report.* • *In cases where 'industry standard' work has been done this would be relatively simple (eg 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.*	• NQ (70mm) diameter aircore drilling used to collect 1-3kg samples at 1.5m intervals down-hole. • Mineral sands industry-standard drilling technique. • See below for sample and assay QAQC procedures and analysis. • Note of the 349 holes used in the Mineral Resource estimate, 248 (71%) were drilled by previous explorer BHP (1989-1995) and 101 (29%) were drilled by Sheffield (2011-2012). The same drilling and sampling techniques have been employed by both Companies.
Drilling techniques	• *Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).*	• Aircore system using a blade (face sampling) drill bit, NQ size. • System used as an industry standard for HMS deposits.
Drill sample recovery	• *Method of recording and assessing core and chip sample recoveries and results assessed.* • *Measures taken to maximise sample recovery and ensure representative nature of the samples.* • *Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.*	• Rotary splitter beneath the splitter is used to collect a 1-3kg sub-sample from 1.5m intervals. • Sample weight is recorded at the laboratory • Duplicate samples for Sheffield holes are collected at the drill site (see below) to enable analysis of data precision. • Sample condition of Sheffield holes (wet to dry and good to poor qualitative recovery) is logged at the drill site. Analysis shows no material bias in the differing sample conditions logged. • Information on sample recovery was not reported by BHP, it is reasonably assumed that the information collected and interpreted by Sheffield is applicable across the deposit. • The sample quality is considered appropriate for the Mineral Resource estimation procedure and classification applied.
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.*	• Every drill sample is washed and panned, then geologically logged on-site in 1.5m intervals. • Sheffield record primary, secondary and oversize lithology, qualitative hardness, grainsize, rounding, sorting, and washability, visual estimates of HM%, SL% and OS%, and depth to water table. • BHP logged colour, grainsize and a geological

Criteria	JORC Code explanation	Commentary
	• *The total length and percentage of the relevant intersections logged.*	description. • The entire length of the drill hole is logged; minimum (nominal) interval length is 1.5m. • Logging is suitable such that interpretations of grade and deposit geology can be used to support the Mineral Resource estimation procedure and classification applied.
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.*	<u>HM%, SL% OS% Determination</u> Drill Site • A 1-3kg sample is collected at 1.5m intervals in numbered bags at the drill site via rotary splitter at the cyclone discharge point. Sheffield Holes: • Duplicate samples (field duplicates) collected at drill site for holes 1 in every 40 samples. • Reference standard and blank material samples inserted 1 each in every 40 samples. • Samples submitted to an external laboratory for heavy liquid separation (HLS) determination of weight per cent heavy mineral (HM%), Slimes (SL%) and Oversize (OS%). BHP Holes: • Duplicate samples collected as 3m composites throughout the hole. • Samples submitted to internal BHP (Belmont) laboratory for heavy liquid separation (HLS) determination of weight per cent heavy mineral (HM%), Slimes (SL%) and Oversize (OS%). Sheffield (external) Laboratory • The 2-3kg drill sample is sub-sampled via a rotary splitter to approx. 200g for analysis. • The 200g sub-sample is soaked overnight in water then screened and weighed. • HM%, SL% and OS% calculated as percentage of total sample weight (see below). Laboratory repeats are conducted 1 in every 20 samples (for 97% of the assay database) or 1 in every 15 samples (for 3% of the assay database). • Laboratory internal standard inserted (nominally) 1 in every 25 samples (2011) and 1 in every 11 samples. • Laboratory provides a sachet containing the Heavy Mineral Concentrate (HMC) for each sample – this is used in HM assemblage determination (see below). BHP (Belmont) Laboratory • The 1-3kg drill sample is sub-sampled via a rotary splitter to approx. 500g for analysis, dried and weighed and then screened. A 200g split of the sand fraction is then centrifuged in TBE to determine weight of heavy minerals (>2.9g/cc). • HM%, SL% and OS% calculated as percentage of total sample weight (see below). All • Visual estimates of HM%, SL% and OS% logged at the drill site are compared against laboratory results to identify significant errors. • Spacing of duplicate, standard, blank and lab repeat samples for Sheffield holes are designed to identify sample misplacement or misallocation during sample collection and laboratory analysis. • Analysis of field duplicate samples and laboratory repeats for Sheffield data, and subsequent

Criteria	JORC Code explanation	Commentary
		interpretation and excellent correlation with BHP data, are sufficient to show the data has acceptable precision, indicating the sub-sampling and sample preparation techniques are appropriate for the deposit style and the Mineral Resource estimation procedure and classification applied. **HM Assemblage Determination** • Only HM assemblage determination from Sheffield holes is used in the Resource. • Heavy Mineral Concentrate (HMC) from individual samples is combined according to HM grade and weight into (nominal) >20g composite samples for HM assemblage determination. • Weighed HMC is split via a micro-riffle to ensure HM%, SL% and OS% of the final composite sample can be correctly calculated. • HM assemblage determination was by QEMSCAN™ to determine the component mineralogy. This method has rigorous (laboratory) internal quality control measures, and this in comparison with visual observations of HM concentrate is considered sufficient to show the data has acceptable precision, indicating the sub-sampling and sample preparation techniques are appropriate for the deposit style and the Mineral Resource estimation procedure and classification applied.
Quality of assay data and laboratory tests	• *The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.* • *For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.* • *Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.*	**HM%, SL% OS% Determination** • Assay and laboratory procedures are industry standard, although method specifics and heavy liquid composition can vary. • Sheffield drill holes contributed 44% of the assay database, BHP the remaining 56%. • SL% was determined using a 45µm screen. • OS% was determined using a +1mm screen. • HM% was determined using heavy liquid TBE (2.96g/ml), for BHP samples the sand fraction (-1mm/+45 µm) was centrifuged in TBE to separate the heavy minerals. • The method produces a total grade as weight per cent of the primary sample. • Method does not determine the relative amounts of valuable (saleable or marketable) and non-valuable heavy mineral species. See below for details of HM assemblage determination. • Reference standard and blank material samples inserted at the drill site 1 each in every 40 samples (Sheffield). • The HM reference samples used are field-homogenised bulk samples with expected values and ranges determined by the Company from assay results. Blank material used is commercially available builder's sand. • Reference standards and blanks are examined for performance over time and within laboratory batches. Batches or sub-batches are re-analysed if unacceptable QAQC data are returned. • In total QAQC samples represent 15% of the total assay database. • Analysis of reference standards, blanks and laboratory repeats show the data to be of

Criteria	JORC Code explanation	Commentary
		acceptable accuracy and precision for the Mineral Resource estimation procedure and classification applied. <u>HM Assemblage Determination</u> • Only HM assemblage determination from Sheffield holes is used in the Resource. • Heavy Mineral Concentrate (HMC) from individual samples is combined according to HM grade and weight into (nominal) >20g composite samples for HM assemblage determination. • Weighed HMC is split via a micro-riffle to ensure HM%, SL% and OS% of the final composite sample can be correctly calculated. • HM assemblage determination was by the QEMSCAN™ process which uses observed mass and chemistry to classify particles according to their average chemistry, and then report mineral abundance by % mass. • For the TiO_2 minerals specific breakpoints are used to distinguish between rutile (>95% TiO2), leucoxene (85-95% TiO2) and ilmenite (<55-85% TiO2). • Reference material is not used, other measures of accuracy and the method design are considered sufficient to establish acceptable accuracy of the data for the Mineral Resource estimation procedure and classification applied.
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.*	• BHP data was digitised from historic reports with rigorous data entry validation practices used to ensure accurate capture of information. • Sheffield data was logged electronically using "validation at point of entry" systems prior to storage in the Company's drill hole database, which is managed by Company personnel and an external consultancy. • Documentation related to data custody and validation is maintained by the Company. • A copy ("snapshot") of the Mineral Resource database is retained separately from the primary drill hole database. • 28 drill holes of those available were excluded from the drill database due to poor location or lack of assay data. • The verification and treatment of the data is considered sufficient for the Mineral Resource estimation procedure and classification applied.
Location of data points	• *Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.* • *Specification of the grid system used.* • *Quality and adequacy of topographic control.*	• For 100 (Sheffield) drill holes collar locations were surveyed by licenced surveyors using a RTK GPS system with expected accuracy of +/- 0.02m horizontal and +/- 0.03m vertical. • The remaining 249 drill holes (71%) in the estimate database were not surveyed, for these holes the planned coordinates have been used. • Coordinates are referenced to the Map Grid of Australia (MGA) zone 51 on the Geographic Datum of Australia (GDA94). • Vertical datum geoid model is AUSGEOID09 (Australia). • Drill hole RL for Resource estimation is determined by projection of surveyed drill hole collars to a regional (Landgate) DTM model.

Criteria	JORC Code explanation	Commentary
		• The Mineral Resource estimate uses this model as surface topography. The average difference between surveyed and modelled RL is 0.4m which is considered negligible given the nature of the mineralisation, and the size of the deposit. • The quality and accuracy of the topographic control is considered sufficient for the Mineral Resource estimation procedure and classification applied.
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.*	• Drill holes are concentrated in E70/3929 and E70/3967 at spacing of 800m x 400m (east x north), down to 400m x 200m and 100m x 200m. • The drill database used in the Resource estimate comprises 349 holes, totalling 13,953.5m, with 4,764 samples assayed. • Samples for HM assemblage determination are composited on intervals according to a combination of grade and geology appropriate to reflect resource estimation domains. • 30 composites from 30 holes are used in the resource estimate. • The data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource estimation procedure and classification applied.
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.*	• All drilling is vertical making it normal to the horizontal orientation of geology and mineralisation.
Sample security	• *The measures taken to ensure sample security.*	• Sample security is not considered a significant risk given the location of the deposit and bulk-nature of mineralisation. • Nevertheless, the use of recognised transport providers, sample dispatch procedures directly from the field to the laboratory, and the large number of samples are considered sufficient to ensure appropriate sample security.
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*	• All data has been validated by at least 2 Company geologists, and reviewed by Resource consultancy QG.

Section 2 Reporting of Exploration Results

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

Criteria	Statement	Commentary
Mineral tenement and land tenure status	• *Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.* • *The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.*	• The Mineral Resources reported are entirely within Exploration Licences E70/3929 and E70/3967, located 110km north of Perth near Gingin in Western Australia • E70/3929 was granted on 26/10/2011 and is due to expire on 25/10/2016, Sheffield will apply for an extension of the term of the tenement prior to its expiry. E70/3967 was granted on 10/11/2010 and is due to expire on 09/11/2020. Both tenements are held 100% by Sheffield Resources Ltd. • The Mogumber Aboriginal Reserve covers part of the southern extents of the deposit, no Mineral

Criteria	Statement	Commentary
		Resources have been reported from within the Reserve. • There are no known or experienced impediments to obtaining a licence to operate in the area. • Sheffield has been operating successfully in the region for more than 5 years to date.
Exploration done by other parties	• *Acknowledgment and appraisal of exploration by other parties.*	• BHP explored the McCalls region from 1989 to 1995, completing 304 aircore drill holes totalling 8,409.5m on an approximate 800m x 400m spaced grid over the central portion of the deposit and wider in peripheral areas. BHP's drilling discovered the McCalls mineralisation over an area of 30km^2 extending from near-surface to the depth limit of their drill holes (typically 30-57m). • Sheffield has incorporated the results of BHP's work in estimating this Mineral Resource.
Geology	• *Deposit type, geological setting and style of mineralisation.*	• The McCalls heavy mineral sands project is hosted within unconsolidated Cainozoic sediments covering Cretaceous sedimentary rocks of the Dandaragan Trough. The Dandaragan Trough is a half-graben formed within the Proterozoic siliciclastic sedimentary rocks of the North Perth Basin. The Perth Basin is a major sedimentary basin bounded to the east by the Darling Fault which separates the Archaean cratonic rocks of the Yilgarn Block from the sediments of the Perth Basin. The Phanerozoic section of the Perth Basin is separated from the Yilgarn Block by the Darling Fault expressing as the Darling Scarp. The Dandaragan Trough contains as much as 15km of Phanerozoic sedimentary rocks and is one of the deepest parts of the Perth Basin. It is fault-bound on the west by numerous faults but namely the Beagle Fault. The Cretaceous units within the trough dip gently back toward the Darling Fault. Outcrop in and near the area of tenure is restricted to small pockets of Cretaceous Osborne Formation and Poison Hill Greensand (source: Playford, P. E., Cockbain, A. E. and Low, G. H., 1976: Geology of the Perth Basin Western Australia. Geological Survey of Western Australia Bulletin 124). • Surficial geology is predominantly undifferentiated Cainozoic laterite, lateritic sands and sands of alluvial, colluvial and aeolian nature, with patchy Holocene lagoonal and swamp deposits. • Mineralisation occurs as broad, flat and extensive concentration of heavy minerals within fine sands and a relatively high clay (slimes) component. HM grades throughout the deposit display a degree of stratification, and this feature together with the consistent fine grainsize, good rounding and good sorting throughout; suggests an estuarine-lagoonal origin to the deposit. • Four key domains were defined for use in the estimate as follows: ○ An upper, extensive but discontinuous loose pisolite domain with logged lateritic material and/or a high OS component (>10% within 6m of the surface); ○ An upper clayey-sand HM domain, lighter in colour, based on a nominal cut-off of 0.7% HM with a minimum width of 3m and an increase in valuable HM (VHM) minerals relative to the lower HM domain;

Criteria	Statement	Commentary
		○ A lower sandy-clay HM domain, significantly less extensive than the upper HM domain and often darker in colour due to carbonaceous and sulphide material and higher clay content; and ○ A 'rock' domain of limited extent occurring predominantly in the near surface pisolite domain representing more indurated material based on logged high hardness and below drill holes forced to be abandoned by hard ground. • The depositional environment of both the Upper and Lower domains is interpreted as estuarine-lagoonal. The difference in environment between the Upper and Lower zones may be a factor of oxidation and reduction above and below a palaeo-water table, or it may represent the preservation of an organic-rich sediment unit (Lower domain) by a rapid influx of sediment into an estuarine environment. The Upper and Lower domains are also reflected in the heavy mineral assemblage, with a relative increase in Valuable Heavy Minerals (VHM) Zircon, Rutile, Leucoxene and Ilmenite in the Upper Zone. This difference is due to an increase in non-VHM in the Lower zone (pyrite), with the proportions of each VHM to total VHM similar in both domains.
Drill hole Information	• *A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:* ○ *easting and northing of the drill hole collar* ○ *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar* ○ *dip and azimuth of the hole* ○ *down hole length and interception depth* ○ *hole length.* • *If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.*	• Results relating to the drill holes used in the resource have been publicly released in previous Company announcements and reports referring to the McCalls Deposit. • Information relating to the number of drill holes, assayed samples, location accuracy, orientation etc. is included in this table. • Diagrams show the location of and distribution of drill holes in relation to the Mineral Resource.
Data aggregation methods	• *In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.* • *Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.* • *The assumptions used for any reporting of metal equivalent values should be clearly stated.*	• Samples were composited to 3m lengths for the purposes of estimation.
Relationship between mineralisation widths and	• *These relationships are particularly important in the reporting of Exploration Results.* • *If the geometry of the mineralisation with*	• All drilling is vertical making it normal to the horizontal orientation of geology and mineralisation.

Criteria	Statement	Commentary
intercept lengths	*respect to the drill hole angle is known, its nature should be reported.* • *If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').*	
Diagrams	• *Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.*	• No new exploration data is announced within this report.
Balanced reporting	• *Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.*	• All information considered material to the reader's understanding of the database, estimation procedure and classification of the Mineral Resource has been reported. • This is the second Mineral Resource estimate reported for the McCalls deposit. The maiden resource (now superseded) was announced by Sheffield on 20 February, 2012 and was prepared and reported under the JORC (2004) Code (refer to the announcement entitled *"4.4 BILLION TONNE MAIDEN RESOURCE AT McCALLS HMS PROJECT"* available on Sheffield's website: www.sheffieldresources.com.au). At a 0.9% HM cut-off the previous Mineral Resource was 4.4Bt @ 1.2% HM (Inferred) for 53Mt of contained HM (compared with the current Mineral Resource, Indicated and Inferred, containing 50Mt HM). The current Mineral Resource includes an additional 71 holes drilled by Sheffield and 26 additional mineral assemblage composite samples. This has improved confidence in the estimate such that Indicated material can now be categorised. The increase in cut-off grade has influenced the change in contained HM (a 0.9% HM cut-off would have resulted in 67.6Mt contained HM in the current Mineral Resource).
Other substantive exploration data	• *Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.*	• Where relevant this information has been included or referred to elsewhere in this Table.
Further work	• *The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).* • *Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.*	• At this stage no additional exploration work is planned.

Section 3 Estimation and Reporting of Mineral Resources

(Criteria listed in section 1, and where relevant in section 2, also apply to this section)

Criteria	JORC Code explanation	Commentary
Database integrity	• *Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.* • *Data validation procedures used.*	• Drill hole data was extracted directly from the Company's drill hole database which includes internal data validation protocols. • Note historic BHP data was digitised from historic reports with rigorous data entry validation practices used to ensure accurate capture of information. • Where necessary, original drill hole log files are consulted to rectify any errors identified. • Validation of the exported data was confirmed using mining software (Micromine) validation protocols, and visually in plan and section views. • Compilation of data external to the drill database (eg. HM assemblage source data) is cross-checked manually, and through statistical comparison. • A copy ("snapshot") of the Mineral Resource database is retained separately to the primary drill hole database. • Data was further validated by QG upon receipt, and prior to use in the estimation.
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.*	• Mr Boyd has visited the site and the primary assay laboratory on numerous occasions from 2011 onwards. • Mr. Journeaux has not visited the site. • Where material, information relating to observations from these visits has been included in this announcement.
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.*	• Domains were interpreted on a cross-sectional basis by Sheffield using Micromine software based on the logging and grade information according to the deposit geology described above. • The HM domains were interpreted at a nominal >0.7% HM cut-off with a minimum width of 3m. • The domain wireframes were cut against each other in a logical sequence to eliminate any overlap.
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.*	• Mineralisation is interpreted over a lateral extent of 16km east-west x 13km north-south and is open at depth in places. • The key HM domains are up to 60m thick but with an average thickness of 20m to 30m. • Overburden thickness ranges from 0m to about 27m with an average of 6m.
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.*	• The Mineral Resource was estimated by external consultants QG Australia Pty Ltd. • The Mineral Resource model is estimated using the geostatistical technique of Ordinary Block Kriging in Datamine software. • The estimated block size is 200m Easting x 200m Northing x 6m RL with sub-cells used for volume precision. • (Geo)statistical analysis and estimation were completed using Isatis and Datamine software. • Grade caps were applied based on examination of the histogram and spatial context of outlier values. • Estimation parameters were selected taking into account kriging estimation statistics, variogram models and domain geometry.

Criteria	JORC Code explanation	Commentary
	• *Estimation of deleterious elements or other non-grade variables of economic significance (eg sulphur for acid mine drainage characterisation).* • *In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.* • *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.*	• Estimates were validated in 3D using Datamine and by comparison of model and sample grades, both globally and semi-spatially in swath plots.
Moisture	• *Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.*	• Tonnages are estimated on a dry basis
Cut-off parameters	• *The basis of the adopted cut-off grade(s) or quality parameters applied.*	• The Mineral Resource estimate for the McCalls deposit has been reported above a 1.1% HM and below 35% slimes cut-off, and only within tenements E70/3929 and E70/3967. • These parameters have been selected by Sheffield in consultation with QG based on current experience and preliminary economic assessments carried out by Sheffield for HM deposits elsewhere in Western Australia. They represent that proportion of the deposit considered to have reasonable prospects of eventual economic extraction. • Mineralisation within the Mogumber Aboriginal Reserve is excluded from the Mineral Resource.
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.*	• In determining the criteria for reasonable prospects for eventual economic extraction, potential mining methods considered are wet, dredge mining or dry dozer-trap operations, similar to those commonly and currently in use in HM mining operations both in Australia and globally. • The thickness, areal extent, and continuous nature of the mineralisation at McCalls are such that non-selective bulk mining methods can be appropriately considered. • These assumptions were also considered when determining resource block sizes, and resource classification. • On the basis of these assumptions, the Company considers there are no mining factors which are likely to affect the assumption that the deposit has reasonable prospects for eventual economic extraction.
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*	• Sheffield has conducted scoping-level mineral characterisation test work on samples from McCalls. • These studies have identified Ilmenite characterisation studies conducted on a single sample composited from Sheffield's drilling produced concentrates containing between 59% and 66% TiO_2, indicating potential suitability for chloride-

Criteria	JORC Code explanation	Commentary
	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.	route or synthetic rutile processing. The work also demonstrated the heavy mineral has properties well suited to conventional mineral processing methods. • On the basis of these studies, the Company considers there are no metallurgical factors which are likely to significantly affect the assumption that the deposit has reasonable prospects for eventual economic extraction.
Environmental factors or assumptions	• *Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.*	• The Company has completed a scoping-level environmental review of the McCalls project area. • On the basis of these studies, the Company considers there are no environmental factors which are likely to affect the assumption that the deposit has reasonable prospects for eventual economic extraction.
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.*	• No direct measurements of bulk density have been taken. • Bulk density is assumed from an industry-standard formula which accounts for the HM and slimes content of sand deposits. The resultant values are considered to be consistent with observations of the material compared with other similar HM deposits with known bulk density values. • A recommendation for further work is that confirmatory bulk density information is acquired.
Classification	• *The basis for the classification of the Mineral Resources into varying confidence categories.* • *Whether appropriate account has been taken of all relevant factors (ie relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).* • *Whether the result appropriately reflects the Competent Person's view of the deposit.*	• The resource has been classified as Indicated and Inferred Resources according to the JORC 2012 code, taking into account data quality, data density, geological and grade continuity and estimation confidence. • All other things being considered the Lower HM domain Indicated Resources are on the basis of a 'slope of regression' metric > 0.5. • All other things being considered the Upper HM domain Indicated Resources are defined on the basis of a 'slope of regression' metric > 0.5 and blocks informed in the first search pass of the mineral assemblage estimate. • Inferred Resources in the HM domains are defined as that material not meeting the Indicated criteria.
Audits or reviews	• *The results of any audits or reviews of Mineral Resource estimates.*	• The estimate has been internally peer reviewed. • No external audits or reviews have been undertaken.
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*	• No mining has yet been undertaken at McCalls. • While the data density is sufficient at a larger scale to give confidence in the estimate, at a more local scale the estimated grades are relatively smoothed and, with the wide spaced data, would work against mining at a highly selective scale. • The estimate is suitable for input into long term planning studies.

Criteria	JORC Code explanation	Commentary
	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.*	

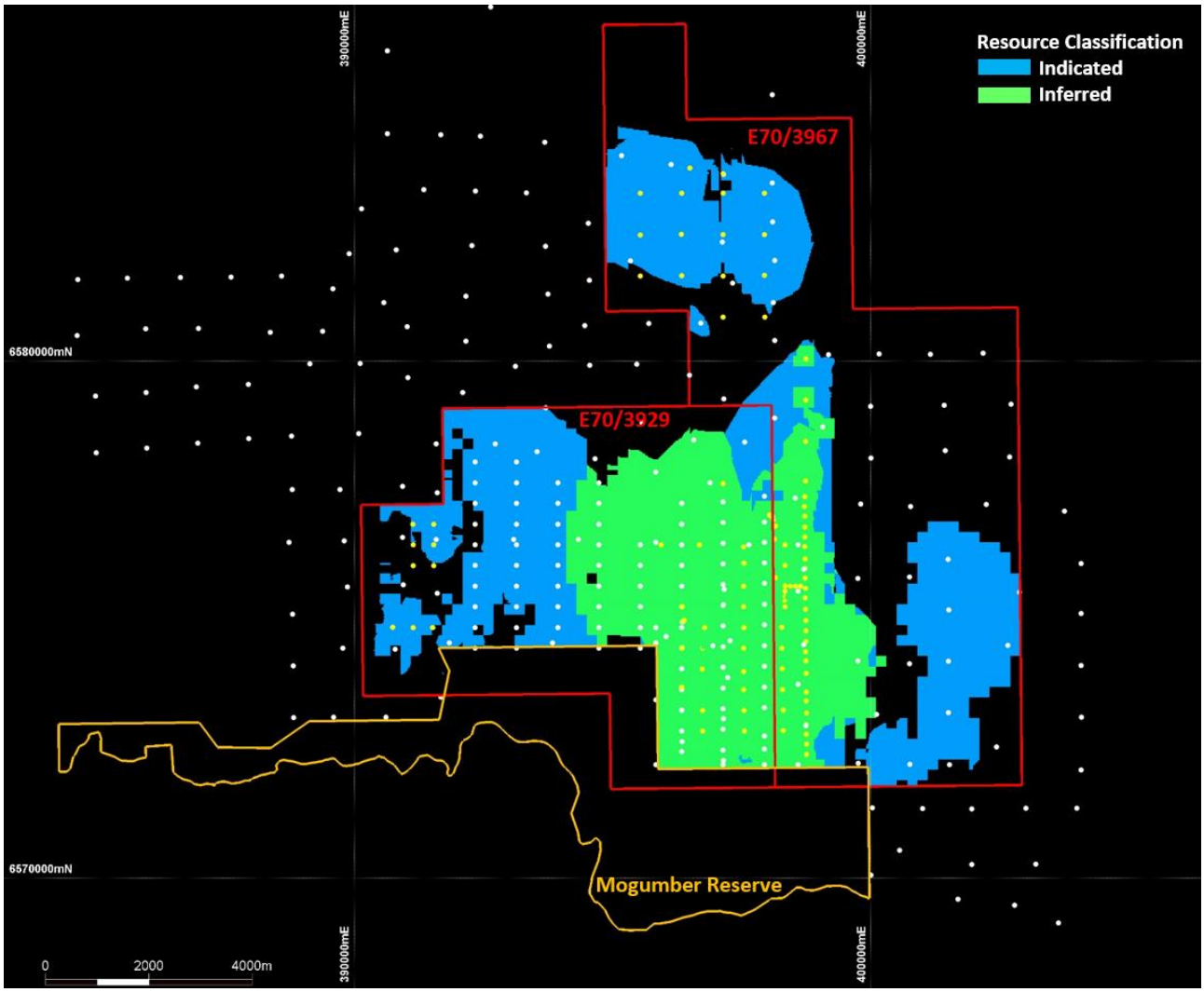

Figure A2.1 Plan view of McCalls Mineral Resource classification with tenements, the Mogumber Aboriginal Reserve, and drill hole collars (white=BHP; yellow=Sheffield).