QUARTERLY ACTIVITIES REPORT
FOR THE PERIOD ENDED 31 DECEMBER 2020

21 January 2021

ASX Code:
SFX

Directors:

Mr John Richards
Non-Executive Chairman

Mr Bruce McFadzean
Managing Director

Mr Bruce Griffin
Commercial Director

Mr David Archer
Non-Executive Director

Mr Will Burbury
Non-Executive Director

Mr Ian Macliver
Non-Executive Director

Registered Office:

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

Share Registry:

Link Market Services
Level 12, QV1 Building
250 St Georges Terrace
Perth WA 6000

Capital Structure:

Ordinary Shares:	346.1M
Unlisted Options:	2.3M
Unlisted Rights:	8.6M

Market Capitalisation:
A$152 million

Cash Reserves:
A$12.9 million
(as at 31 Dec 2020)

Investor Relations:

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HIGHLIGHTS

Thunderbird Mineral Sands Project

- The FIRB advised no objections to the proposed Joint Venture, enabling $130m investment by Yansteel in Thunderbird Project
- Binding 50:50 joint venture agreements were executed between Sheffield and Yansteel on 6 January 2021
- Trial mining work program executed during the quarter. Full thickness of high grade T2 ore zone exposed confirming:
  - Dozer push mining assumptions;
  - Mining productivity assumptions;
- A 25 tonne bulk ore sample was collected for ore feed preparation and metallurgical test work
- Bankable Feasibility Study metallurgical test work conducted on proposed joint venture process flowsheet to produce a zircon rich non-magnetic concentrate and LTR ilmenite

Corporate Activities

- $12.9m in cash at quarter end (unaudited) with forecast expenditure of $2.4m in the forthcoming quarter.

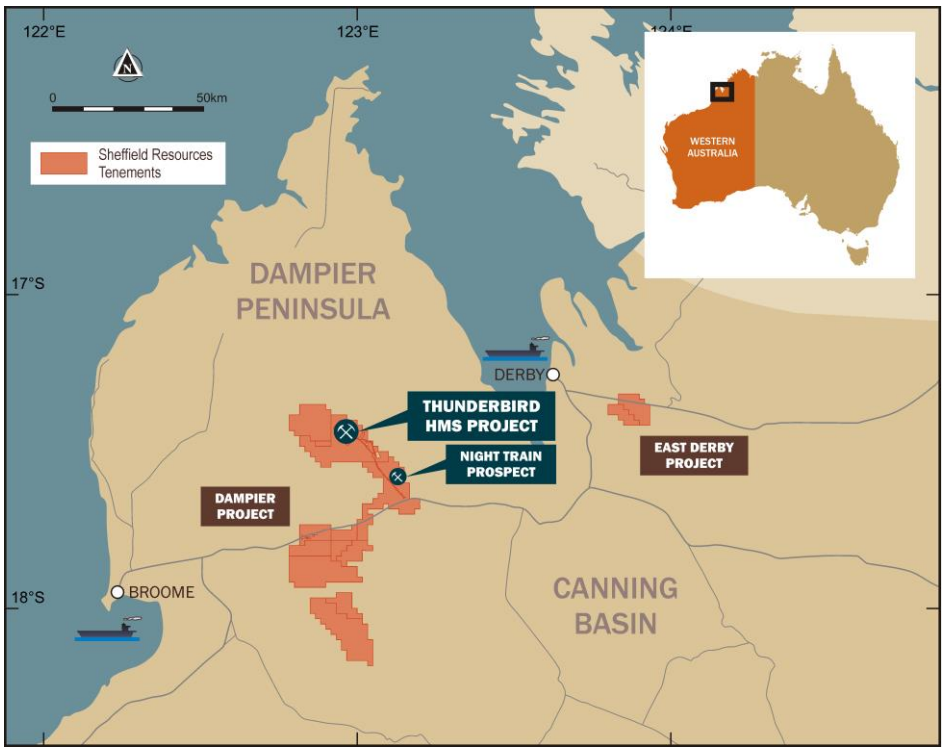

Figure 1: Location of Sheffield's Dampier Mineral Sands Projects

THUNDERBIRD MINERAL SANDS PROJECT

Sheffield Resources Limited ("Sheffield" or "the Company") continued to advance definitive Joint Venture documentation with YGH Investment Australia Pty Ltd ("Yansteel") for the development of the world-class Thunderbird Mineral Sands Project ("Thunderbird" or "Project") throughout the quarter.

Yansteel submitted its Foreign Investment Review Board ("FIRB") application in August 2020, with the Company and Yansteel collaboratively responding to FIRB enquiries. This process concluded on 15 December 2020 (refer ASX announcement dated 15 December 2020) with FIRB advising that the Commonwealth did not object to Yansteel's planned $130m investment to subscribe for a 50% of the Thunderbird Mineral Sands Project.

In parallel with the FIRB process, the Company and Yansteel progressed definitive binding documentation. This documentation was executed subsequent to the end of the December 2020 quarter on 6 January 2021 (refer ASX announcement dated 6 January 2021). Steps are underway to satisfy the remaining conditions precedent to finalise the formation of the joint venture and complete the BFS, targeting a Final Investment Decision ("FID") in 2021.

A trial mining pit was excavated to a depth of 30 metres to observe full scale ore mining utilising the dozer push method through the full thickness of the high grade "T2" ore zone. The trial mining pit confirmed that dozer push ore mining method is viable and practical over a range of ground and weather conditions confirming mining and haulage productivity assumptions in waste and ore materials.

A 25 tonne bulk sample from dozer pushed ore material was collected to inform final design criteria for ore feed preparation plant and additional metallurgical test work.

The Company undertook field mapping and geotechnical test work from the trial mining pit to address final pit wall slope design angles. Ongoing monitoring of the exposed pit wall slopes is scheduled over the wet season. A gravel test program was undertaken on the Thunderbird Mining Lease (M04/459) to identify construction materials for road construction and project development infrastructure requirements.

Sheffield progressed work programs to advance the preferred Joint Venture flowsheet design and define project development opportunities for finalisation with Yansteel following Joint Venture formation.

Project Development

Project development work programs benefited from detailed engineering work completed during the 2017 Bankable Feasibility Study (BFS) and the 2019 Bankable Feasibility Study Update (BFSU) with additional BFS standard metallurgical test work has also been conducted on the preferred flowsheet to produce a zircon rich non-magnetic concentrate and LTR ilmenite. Several project development opportunities have been identified during this process. Upon formation of the Joint Venture, an agreed project development strategy will be determined by the joint venture partners, Sheffield and Yansteel. The quality of the work programs should enable the prompt completion of a Bankable Feasibility Study and the project financing process.

Engineering Studies

The current flowsheet reintroduces the Low Temperature Roast ("LTR") and simplifies the ilmenite circuit from the 2017 BFS, as well as removing the zircon-related Mineral Separation Plant ("MSP") components included in both the 2017 BFS and 2019 BFS Update. Metallurgical test work has been completed on the current flowsheet to a standard to support the 2021 BFS and the project financing process. The detailed engineering work has also advanced, with revised procurement and construction schedules to assist the Joint Venture ahead of finalising the BFS development strategy.

Trial Mining and Variability Sample Collection

A full-scale trial mining program was completed safely and on schedule by local contractor Kimberley Quarry Pty Ltd. The trial mining pit was designed to:

- expose the full thickness of the high grade "T2" ore zone
- enable full scale ore mining via dozer push method through the orebody
- enable a bulk sample from dozer push ore material to be collected
- confirm mine digging and traffic rates of waste and ore material in various conditions
- enable the collection of geotechnical and pit slope information assisting final pit design parameters.

The trial mining program excavated a c. 220kt pit containing 120kt of ore and 100kt of waste material. Figures 2 and 3 below show a design plan and cross section of the trial mining pit.

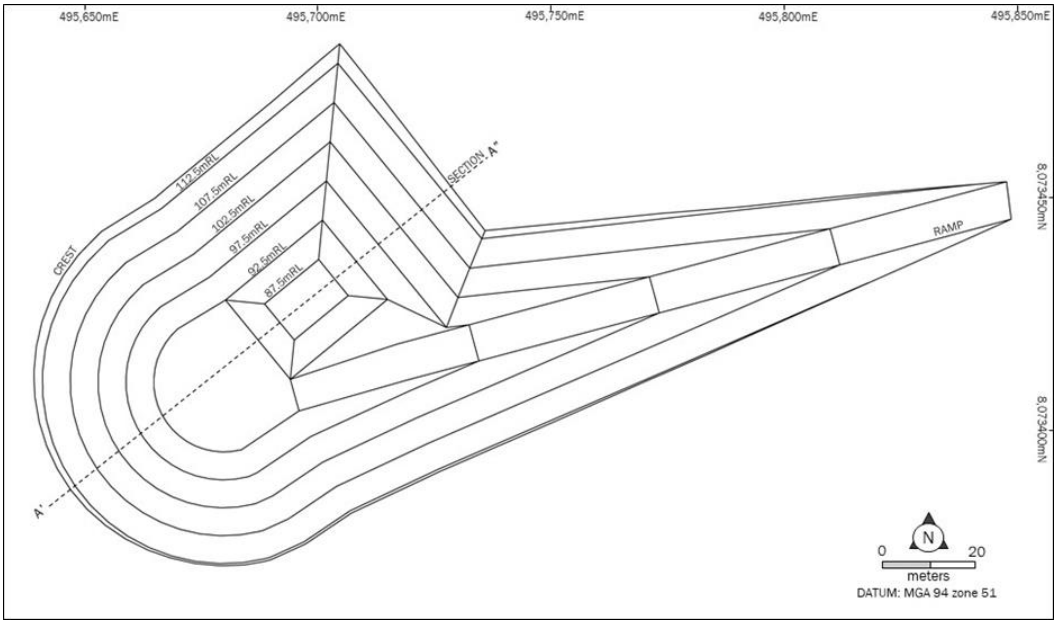

Figure 2: Plan view trial mining pit

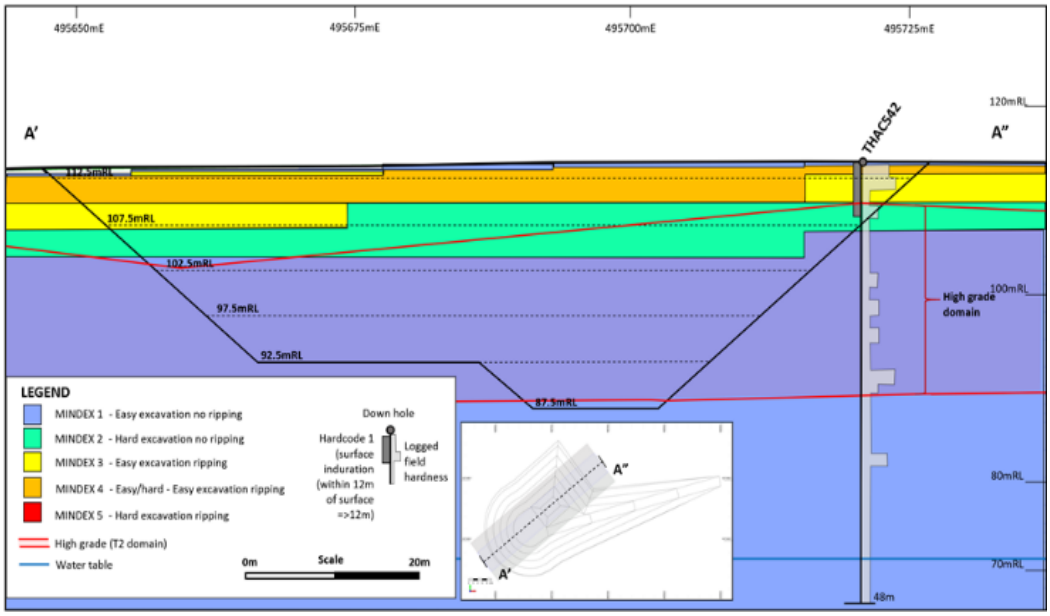

Figure 3: Cross section of trial mining pit

Waste material was removed by excavator and truck operations with some zones of harder and competent waste materials requiring ripping by dozer to enable excavation. Regular zones of ore material on each mining flitch were marked up and dozer pushed towards a mined slot where the excavator loaded the ore material into trucks, simulating the fixed location of a future mining unit plant (MUP). Collation of equipment hours, along with obtained waste and ore material conditions, shall be utilised within future studies and cost estimates.

Figure 4: Waste mining by excavator and truck

Figure 5: Ore mining by dozer push to fixed excavator location

The trial mining program confirmed that ore mining via a dozer push method is a viable and practical mining method over a range of ground and weather conditions. The mining operations experienced a range of ground and weather conditions, including rain events of up 50mm during a 24-hour period. Mining operations were able to continue throughout this period with good heavy vehicle trafficability in waste and ore materials.

A 25 tonne bulk sample collected from dozer pushed ore material shall enable final design criteria to be determined for the ore feed preparation plant and additional metallurgical test work. Excavated and dozer push bulk samples were collected from regular flitches through the orebody. The figures below indicate the setup of the regular excavated and dozer push bulk samples.

Figure 6: Selection of dozer push bulk samples

Figure 7: Aerial view of stockpiled ore & waste

The Company undertook field mapping and geotechnical test work from the trial mining pit to inform final pit wall slope design angles. Ongoing monitoring of the pit wall slopes is scheduled over the wet season.

Trial mining has been situated to intersect stratigraphy for all materials expected to be encountered during the life of mine (LOM). These materials include recent cover, Melligo sandstone, Broome sands lower grade (T1) domain and the Broome sands high grade domain (T2). The trial mining pit successfully terminated beneath the high-grade (T2) domain. This pit was designed in a location that favours commencement of full scale mining (Figure 8). The trail mining pit was designed from the 112.5mRL to the 87.5mRL and approximately 100m long and 80m wide at the crest, with 40° walls exhibiting good stability.

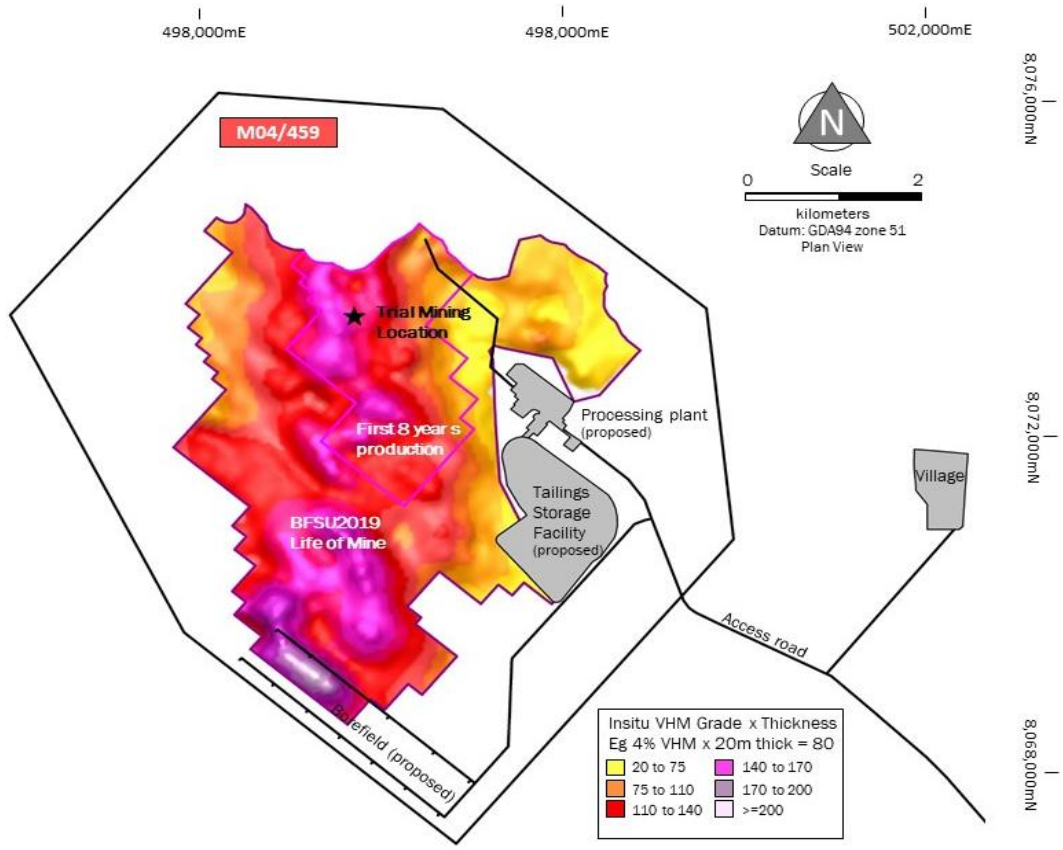

Figure 8: Trial Mining pit location against thickness (m) times VHM grade (%) at Thunderbird

Figure 9: Dozer push sample collection

During the trial mining exercise, Sheffield produced a bulk sample between the 105.0mRL and 88.0mRL, representative of the 2019 BFSU Proven Ore Reserve high grade domain (T2) material (refer to ASX announcement dated 31 July 2019). Each flitch was tine-ripped and pushed to a depth of up to half a metre by a D9 dozer for a total distance of 30m; allowing attrition prior to collecting at a trap-site. Ore material totalling between 40 to 50 tonnes was loaded into a truck utilising an excavator to mimic the mining unit plant (MUP). This material was transported to a high-grade sheeted area for screen analysis and homogenisation to create the bulk sample for metallurgical test work.

Screening of dozer pushed material from each flitch was carried out to determine oversize variability within the high-grade domain ore. Samples from each flitch were separately fed into a screening plant. Each fraction was weighed in a loader by load-rite and output material described. Results are to be analysed in conjunction with planned process outcomes.

Figure 10: Screening to analyse variance in fraction size per flitch

Upon completion of screening each flitch sample was homogenised on a high grade ore pad. Sub-splits were produced and processed through a jaw-crusher to 90mm, producing a 25-tonne bulk sample. Analysis is expected to be complete during Q2 2021.

A gravel exploration test pit program was also undertaken to assist with future mine infrastructure requirements.

Flowsheet Confirmation and Non-Magnetic Concentrate Product Samples

Existing raw ore and partly processed samples were used to complete test work based on the current flowsheet to support a the 2021 BFS and project financing due diligence. Existing Heavy Mineral Concentrate (HMC) samples were used to complete zircon rich non-magnetic concentrate flowsheet design parameters and produce samples for existing and new offtake partners. Magnetic products were processed through the Yansteel ilmenite process circuit, which no longer includes the 2017 BFS ilmenite dry plant, and then processed to produce LTR ilmenite to support the 2021 BFS and project finance due diligence process. The results of the test work where in line with assumptions made for the Yansteel flowsheet and in line with expectations from previous BFS-standard test work.

Enabling Early Works

Access to site and accommodation was established to support trial mining and other activities. A fire management program and general village maintenance was conducted during the quarter. At the completion of the trial mining program, the accommodation village and site were locked down in preparation for the 2020/2021 Kimberley wet season.

Environmental Compliance Reporting

Thunderbird Operations submitted the State and Federal annual compliance reporting related to environmental project approvals. The operation remains in compliance with approved project conditions.

Aboriginal and Community Engagement

Prior to the commencement of trial mining, Traditional Owners' heritage monitors and Company rangers conducted pre and post land clearing artefact checks and Greater Bilby surveys of the area. No artefacts or evidence of Greater Bilby presence or activity was found in the trial mining area.

Senior Traditional Owners were invited to site to share artefact knowledge with heritage monitors and rangers. Areas where final artefact checks had occurred since 2018 were revisited by heritage monitors, rangers and Senior Traditional Owners.

Heritage monitors and rangers continued final artefact checks and Greater Bilby surveys over land where Project infrastructure will be constructed. Evidence of Greater Bilby activity was found in some of the surveyed areas. The Greater Bilby Disturbance Protocols outlined in Thunderbird's Terrestrial Fauna Environmental Management Plan, approved by the Federal Government, is followed prior to land clearing.

Figure 11: Site knowledge share between Heritage Monitors and Elders

Markets

As the world has adapted to dealing with the global pandemic the mineral sands and associated industries have continued to push ahead and perform relatively well. Markets in China have been buoyant, and the Americas has continued to perform reasonably well. Both Europe and India are indicating signs of recovery although not as buoyant as China and the Americas. Zircon and titanium industries have outperformed subdued 2020 forecasts, particularly the titanium industry which has performed exceptionally well.

As reported in the previous quarter, the titanium feedstock market remains tight. This trend has continued during the current quarter with further tightening in the market, particularly in China where pricing for material has increased, especially for sulfate ilmenite feedstocks. The US has also performed relatively well during this period with Europe showing signs of modest improvement from the previous quarter. The expectations for the first half of 2021 in the titanium feedstock market is for similar tight market conditions to be maintained with buoyant pricing.

During 2020, the zircon market saw prices starting to fall following a modest contraction in consumer demand for stock. The current quarter evidenced a slight tightening in the market, preventing further

price erosion. Prices have stabilised at US$1330 – US$1420 per tonne dependent on product quality and the supplier. For the first half of 2021, zircon supply is expected to tighten slightly which should see stable pricing. Within the titanium feedstock markets, similar conditions are expected for the early part of 2021 with stable pricing and tight supply, especially for sulfate ilmenite, expected to continue.

Mid to long-range forecasts for both zircon and ilmenite markets remain unchanged and it is still expected significant supply constraints shall continue in the coming years. Thunderbird is well placed to supply products into what is expected to be a tightening market.

Offtake Partners

Discussions have continued with existing and potential new offtake groups for the possible supply of a zircon-rich concentrate. Strong interest has been received from a wide range of offtake groups. Feedback from existing offtake groups has been positive following receipt and assessment of samples supplied by the Company.

Exploration

Eneabba & McCalls Projects

Sheffield's 100% owned Eneabba Project is located approximately 230km north of Perth in Western Australia's Midwest region. The Eneabba Project has a Mineral Resource inventory totalling 193.3 million tonnes @ 3.0% HM containing 4.8 million tonnes of Valuable Heavy Mineral above various HM cut-offs (Measured, Indicated and Inferred) (refer to ASX announcement 3 October 2018 and 24 September 2019). The mineralisation is across seven Mineral Resources including Yandanooka, Durack, Drummond Crossing, Robbs Cross, Thomson, West Mine North and Ellengail.

The McCalls Mineral Sands Project (McCalls) is located 110km to the north of Perth near the town of Gingin. Across two deposits (McCalls and Mindarra Springs) the Project has a Mineral Resource of 5,800 million tonnes @ 1.4% HM above a 1.1% HM cut-off (Indicated and Inferred). The McCalls Project contains 67 million tonnes of chloride ilmenite grading 59-66% TiO_2 and is considered a longer-term strategic asset (refer to ASX announcement 03 October 2018 and 24 September 2019).

Technical reports were produced during the quarter.

Derby East Project

The Derby East Project comprises of a large occurrence of construction quality sand, located 24km east of the Port of Derby. A review of all project data and a technical report for the Derby East Project was completed during the quarter.

CORPORATE ACTIVITIES

During the quarter, a total sum of $210,097 was paid to related parties and their associates for Director fees and superannuation.

As at 31 December 2020, Sheffield held cash reserves of approximately A$12.9 million (unaudited).

This announcement is authorised by the Board of Sheffield Resources Limited.

Mr Bruce McFadzean
Managing Director
21 January 2021

THUNDERBIRD JOINT VENTURE

In August 2020 Sheffield and Yansteel executed a Non-Binding Term Sheet for the formation of a 50:50 Joint Venture to own and develop the Thunderbird Mineral Sands Project and adjacent tenements on the Dampier Peninsula. The parties have agreed that the development concept for Stage 1 of the Project will be a 10.4mt per annum mine and process plant producing a zircon-rich non-magnetic concentrate and LTR ilmenite.

Yansteel will subscribe for a 50% interest in the Joint Venture and provide A$130.1m in project equity funding. Sheffield will fund any project equity shortfall between A$130.1m and A$143m from the A$12.9m funding provided by the Yansteel Share Placement completed on 12 August 2020, less Project costs incurred prior to a Final Investment Decision ("FID"). The Joint Venture will secure project finance and, if required, project equity in excess of A$143m will be funded 50:50 by Yansteel and Sheffield.

The Yansteel A$130.1m project equity investment via the Joint Venture transaction, together with the A$12.9m placement funding and combined with project financing, is expected to deliver a fully funded project.

The Joint Venture will be governed by a four person Board of Directors with Sheffield and Yansteel each nominating two directors. Key Joint Venture decisions will require unanimous approval of both shareholders. The Joint Venture will be operated as a standalone entity with its own management and employees, with selected Sheffield personnel to be appointed as part of the key management persons upon the formation of the Joint Venture.

The Joint Venture agreements include customary dispute resolution, default, dilution and pre-emption terms.

The FIRB process was completed on 15 December 2020 and no other regulatory approvals are required. Subsequent to the end of the December 2020 quarter the formal Joint Venture agreements were signed on 6 January 2021.

The formation of the Joint Venture is subject to completion of various steps defined in the formal Joint Venture agreements including payment of the $130.1m in project equity by Yansteel.

YANSTEEL OFFTAKE AGREEMENT

Yansteel and Sheffield have entered into a binding life of mine take or pay offtake agreement for 100% of the LTR ilmenite from Stage 1 at market price. Yansteel has a first right of refusal to purchase ilmenite from later stages.

In the unlikely event that the Joint Venture cannot be formed for any reason, the offtake will convert automatically to a minimum 7 + 3 year take or pay offtake agreement for 100% of the ilmenite produced from Stage 1 of the Project.

ABOUT YANSTEEL

Yansteel is a wholly-owned subsidiary of Tangshan Yanshan Iron & Steel Co., Ltd, a privately owned steel manufacturer headquartered in Hebei, China producing approximately 10mt per annum of steel products and has annual revenues of ~A$6bn.

Construction of a 500ktpa integrated titanium dioxide processing facility including a titanium slag smelter has commenced by the company. This complex will consume the Low Temperature Roast ("LTR") ilmenite offtake from Stage 1 of the Thunderbird Mineral Sands Project.

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	Status
Mineral Sands	E04/2081[2]	Thunderbird Operations Pty Ltd	100%	Canning Basin	Granted
Mineral Sands	E04/2083[2]	Thunderbird Operations Pty Ltd	100%	Canning Basin	Granted
Mineral Sands	E04/2084[2]	Thunderbird Operations Pty Ltd	100%	Canning Basin	Granted
Mineral Sands	E04/2171[2]	Thunderbird Operations Pty Ltd	100%	Canning Basin	Granted
Mineral Sands	E04/2349[2]	Thunderbird Operations Pty Ltd	100%	Canning Basin	Granted
Mineral Sands	E04/2390[2]	Thunderbird Operations Pty Ltd	100%	Canning Basin	Granted
Mineral Sands	E04/2456[2]	Thunderbird Operations Pty Ltd	100%	Canning Basin	Granted
Mineral Sands	E04/2478[2]	Thunderbird Operations Pty Ltd	100%	Canning Basin	Granted
Mineral Sands	E04/2494[2]	Thunderbird Operations Pty Ltd	100%	Canning Basin	Granted
Mineral Sands	E04/2509[2]	Thunderbird Operations Pty Ltd	100%	Canning Basin	Granted
Mineral Sands	E04/2540[2]	Thunderbird Operations Pty Ltd	100%	Canning Basin	Granted
Mineral Sands	E04/2554[2]	Thunderbird Operations Pty Ltd	100%	Canning Basin	Granted
Mineral Sands	E04/2571[2]	Thunderbird Operations Pty Ltd	100%	Canning Basin	Granted
Mineral Sands	E04/2597[2]	Thunderbird Operations Pty Ltd	100%	Canning Basin	Granted
Mineral Sands	L04/82[2]	Thunderbird Operations Pty Ltd	100%	Canning Basin	Granted
Mineral Sands	L04/83[2]	Thunderbird Operations Pty Ltd	100%	Canning Basin	Granted
Mineral Sands	L04/84[2]	Thunderbird Operations Pty Ltd	100%	Canning Basin	Granted
Mineral Sands	L04/85[2]	Thunderbird Operations Pty Ltd	100%	Canning Basin	Granted
Mineral Sands	L04/86[2]	Thunderbird Operations Pty Ltd	100%	Canning Basin	Granted
Mineral Sands	L04/92[2]	Thunderbird Operations Pty Ltd	100%	Canning Basin	Granted
Mineral Sands	L04/93[2]	Thunderbird Operations Pty Ltd	100%	Canning Basin	Granted
Mineral Sands	M04/459[2]	Thunderbird Operations Pty 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	E70/3859	Sheffield Resources Ltd	100%	Perth Basin	Pending
Mineral Sands	E70/3929	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	E70/4584	Sheffield Resources Ltd	100%	Perth Basin	Granted
Mineral Sands	E70/4719	Sheffield Resources Ltd	100%	Perth Basin	Granted
Mineral Sands	E70/4747	Sheffield Resources Ltd	100%	Perth Basin	Granted
Mineral Sands	E70/4922	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

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]Thunderbird Operations Pty Ltd and [3]Moora Talc Pty Ltd are wholly owned subsidiaries of Sheffield Resources Ltd.

Appendix 1

ORE RESERVES AND MINERAL RESOURCES

SHEFFIELD ORE RESERVE AS OF 31 DECEMBER 2020

DAMPIER PROJECT ORE RESERVES

SHEFFIELD ORE RESERVE FOR DAMPIER PROJECT AT 31 DECEMBER 2020 (in-situ assemblage)

Summary of Ore Reserve[1,2,3,4]					Valuable HM Assemblage (in-situ)[5]					
Deposit	Ore Reserve Category	Material (Million Tonnes)	In-situ Total HM[7] (Million Tonnes)	Total HM Grade (%)	Zircon (%)	HiTi Leuc (%)	Leuco -xene (%)	Ilmenite (%)	Oversize (%)	Slimes (%)
Thunderbird	Proved	219	30.0	13.7	1.02	0.30	0.28	3.68	14.0	16.1
	Probable	529	53.4	10.1	0.79	0.26	0.27	2.87	10.5	14.5
	Total	**748**	83.8	**11.2**	**0.86**	**0.27**	**0.27**	**3.11**	**11.6**	**15.0**

SHEFFIELD ORE RESERVE FOR DAMPIER PROJECT AT 31 DECEMBER 2020 (HM assemblage)

Summary of Ore Reserve[1,2,3,4]					Valuable HM Assemblage[6]					
Deposit	Ore Reserve Category	Material (Million Tonnes)	In-situ Total HM[7] (Million Tonnes)	Total HM Grade (%)	Zircon (%)	HiTi Leuc (%)	Leuco -xene (%)	Ilmenite (%)	Oversize (%)	Slimes (%)
Thunderbird	Proved	219	30.0	13.7	7.4	2.2	2.0	26.9	14.0	16.1
	Probable	529	53.4	10.1	7.8	2.6	2.7	28.4	10.5	14.5
	Total	**748**	**83.8**	**11.2**	**7.7**	**2.4**	**2.4**	**27.8**	**11.6**	**15.0**

[1]The Ore Reserves are presented with in-situ HM grade, and mineral assemblage. 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. This Ore Reserve reported for the Dampier Project was prepared and first disclosed under the JORC Code (2012) in the announcement 31 July 2019 Titled "Thunderbird 10% Ore Reserve Increase". The Ore Reserve is reported to a design overburden surface with appropriate consideration for modifying factors, costs, mineral assemblage, process recoveries and product pricing
[2].Ore Reserve is a sub-set of Mineral Resource
[3]Total HM is within the 38µm to 1mm size fraction and reported as a percentage of the total material, slimes is the -38µm fraction and oversize is the +1mm fraction.
[4]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.
[5]The in-situ assemblage 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]Mineral Assemblage is reported as a percentage of HM Grade, it is derived by dividing the in-situ grade by the HM grade.
[7] The contained in-situ tonnes derived from HM and material tonnes from information in the Mineral Resource tables

The Ore Reserve estimate was prepared by Entech Pty Ltd, an experienced and prominent mining engineering consultancy with appropriate mineral sands experience in accordance with the JORC Code (2012 Edition). The Ore Reserve was estimated using all available geological and relevant drill hole and assay data, including mineralogical sampling and test work on mineral recoveries and final product qualities. The Company is not aware of any new information or data that materially affects the information included in the Ore Reserve estimate and confirms that all material assumptions and technical parameters underpinning the estimate continue to apply and have not materially changed. The Ore Reserve estimate is based on the current, July 2016 Thunderbird Mineral Resource estimate, announced to the ASX on 5 July 2016. Measured and Indicated Mineral Resources were converted too Proved and Probable Ore Reserves respectively, subject to mine design, modifying factors and economic evaluation.

SHEFFIELD MINERAL RESOURCE

1) DAMPIER PROJECT MINERAL RESOURCES

SHEFFIELD MINERAL RESOURCE FOR DAMPIER PROJECT AT 31 DECEMBER 2020 (in-situ assemblage)

Summary of Mineral Resource[1,2,3]						In-situ Assemblage[4, 5]					
Deposit	Mineral Resource Category	Cut off (Total HM%)	Material (Million Tonnes)	In-situ Total HM[6] (Million Tonnes)	Total HM Grade (%)	Zircon (%)	HiTi Leuc (%)	Leuco-xene (%)	Ilmenite (%)	Over size (%)	Slimes (%)
Thunderbird (low-grade)	Measured	3.0	510	45	8.9	0.71	0.20	0.19	2.4	12	18
	Indicated	3.0	2,120	140	6.6	0.55	0.18	0.20	1.8	9	16
	Inferred	3.0	600	38	6.3	0.53	0.17	0.20	1.7	8	15
	Total	3.0	3,230	223	6.9	0.57	0.18	0.20	1.9	9	16
Night Train (low-grade)	Inferred	1.2	130	4.2	3.3	0.45	0.18	1.5	0.71	2.2	8.7
	Total	1.2	130	4.2	3.3	0.45	0.18	1.5	0.71	2.2	8.7
All Dampier Project (low grade cut-off)	Measured	3.0	510	45	8.9	0.71	0.20	0.19	2.4	12	18
	Indicated	3.0	2,120	140	6.6	0.55	0.18	0.20	1.8	9	16
	Inferred	Various	730	42	5.8	0.51	0.17	0.43	1.6	7.2	13
	Total	**Various**	**3,360**	**227**	**6.8**	**0.57**	**0.18**	**0.25**	**1.9**	**8.7**	**15**
Thunderbird (high-grade)	Measured	7.5	220	32	14.5	1.07	0.31	0.27	3.9	15	16
	Indicated	7.5	640	76	11.8	0.90	0.28	0.25	3.3	11	14
	Inferred	7.5	180	20	10.8	0.87	0.27	0.26	3.0	9	13
	Total	7.5	1,050	127	12.2	0.93	0.28	0.26	3.3	11	15
Night Train (high-grade)	Inferred	2.0	50	3.0	5.9	0.82	0.33	2.9	1.06	2.2	10.2
	Total	2.0	50	3.0	5.9	0.82	0.33	2.9	1.06	2.2	10.2
All Dampier Project (high grade cut-off)	Measured	7.5	220	32	14.5	1.07	0.31	0.27	3.9	15	16
	Indicated	7.5	640	76	11.8	0.90	0.28	0.25	3.3	11	14
	Inferred	Various	230	23	9.7	0.85	0.28	0.83	2.6	7.2	12
	Total	**Various**	**1,090**	**130**	**11.9**	**0.92**	**0.29**	**0.38**	**3.2**	**11**	**14**

[1] Night Train: The Mineral Resource estimate was prepared by Optiro Pty Ltd and first disclosed under the JORC Code (2012) refer to ASX announcement 31 January 2019 for further details including Table 1. The Mineral Resource reported above 1.2% heavy mineral (HM) cut-off is inclusive of (not additional to) the Mineral Resource reported above 2.0% HM cut-off. Thunderbird: The Mineral Resource estimate was prepared by Optiro Pty Ltd and first disclosed under the JORC Code (2012) refer to ASX announcement 5 July 2016 for further details including Table 1. The Dampier Project Mineral Resources are reported inclusive of (not additional to) Ore Reserves. The Mineral Resource reported above 3.0% HM cut-off is inclusive of (not additional to) the Mineral Resource reported above 7.5% HM cut-off.

[2]Total HM is within the 38µm to 1mm size fraction and reported as a percentage of the total material, slimes is the -38µm fraction and oversize is the +1mm fraction.

[3]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.

[4] Night Train: Estimates of Mineral Assemblage are presented as percentages of the Heavy Mineral (HM) component of the deposit, as determined by magnetic separation, QEMSCAN™ and XRF for one of 12 composite samples. Magnetic fractions were analysed by QEMSCAN™ for mineral determination as follows: Ilmenite: 40-70% TiO_2 >90% Liberation; leucoxene: 70-90% TiO_2 >90% Liberation; High titanium leucoxene (HiTi leucoxene) and rutile 90% TiO_2 >90% Liberation, and zircon: 66.7% ZrO_2+HfO_2 >90% Liberation. The non-magnetic fraction was submitted for XRF analysis and minerals determined as follows: zircon: ZrO2+HfO2/0.667 and HiTi leucoxene: TiO_2/0.94. HM assemblage determination was by the QEMSCAN™ process for 11 of 12 composite samples which uses observed mass and chemistry to classify particles according to their average chemistry, and then report mineral abundance by dominant % mass in particle. For the TiO_2 minerals the following breakpoints were used to distinguish between Ilmenite 40% to 70% TiO_2, leucoxene 70% to 90% TiO_2, HiTi leucoxene and rutile > 90%, Screening of the heavy mineral was not required. Thunderbird: estimates of Mineral Assemblage are presented as percentages of the HM component of the deposit, as determined by magnetic separation, QEMSCAN™ and XRF. Magnetic fractions were analysed by QEMSCAN™ for mineral determination as follows: Ilmenite: 40-70% TiO_2 >90% Liberation; leucoxene: 70-94% TiO_2 >90% Liberation; HiTi leucoxene: >94% TiO_2 >90% Liberation; and zircon: 66.7% ZrO_2+HfO_2 >90% Liberation. The non-magnetic fraction was submitted for XRF analysis and minerals determined as follows: zircon: ZrO_2+HfO_2/0.667 and HiTi leucoxene: TiO_2/0.94.

[5]In-situ assemblage 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] The contained in-situ tonnes derived from HM and material tonnes from information in the Mineral Resource tables.

SHEFFIELD MINERAL RESOURCES FOR DAMPIER PROJECT AT 31 DECEMBER 2020 (HM assemblage)

Summary of Mineral Resource[1,2,3]						HM Assemblage[4]					
Deposit	Mineral Resource Category	Cut off (Total HM%)	Material (Million Tonnes)	In-situ Total HM[6] (Million Tonnes)	Total HM Grade (%)	Zircon (%)	HiTi Leuc[5] (%)	Leuco-xene (%)	Ilmenite (%)	Over size (%)	Slimes (%)
Thunderbird (low-grade)	Measured	3.0	510	45	8.9	8.0	2.3	2.2	27	12	18
	Indicated	3.0	2,120	140	6.6	8.4	2.7	3.1	28	9	16
	Inferred	3.0	600	38	6.3	8.4	2.6	3.2	28	8	15
	Total	3.0	3,230	223	6.9	8.3	2.6	2.9	28	9	16
Night Train (low-grade)	Inferred	1.2	130	4.2	3.3	14	5.4	46	22	2.2	8.7
	Total	1.2	130	4.2	3.3	14	5.4	46	22	2.2	8.7
All Dampier Project (low grade cut-off)	Measured	3.0	510	45	8.9	8.0	2.3	2.2	27	12	18
	Indicated	3.0	2,120	140	6.6	8.4	2.7	3.1	28	9	16
	Inferred	Various	730	42	5.8	8.9	2.9	7.5	27	7.2	13
	Total	**Various**	**3,360**	**227**	**6.8**	**8.4**	**2.7**	**3.7**	**28**	**8.7**	**15**
Thunderbird (high-grade)	Measured	7.5	220	32	14.5	7.4	2.1	1.9	27	15	16
	Indicated	7.5	640	76	11.8	7.6	2.4	2.1	28	11	14
	Inferred	7.5	180	20	10.8	8.0	2.5	2.4	28	9	13
	Total	7.5	1,050	127	12.2	7.6	2.3	2.1	27	11	15
Night Train (high-grade)	Inferred	2.0	50	3.0	5.9	14	5.6	49	18	2.2	10.2
	Total	2.0	50	3.0	5.9	14	5.6	49	18	2.2	10.2
All Dampier Project (high grade cut-off)	Measured	7.5	220	32	14.5	7.4	2.1	1.9	27	15	16
	Indicated	7.5	640	76	11.8	7.6	2.4	2.1	28	11	14
	Inferred	Various	230	23	9.7	8.8	2.9	8.6	27	7.2	12
	Total	**Various**	**1,090**	**130**	**11.9**	**7.8**	**2.4**	**3.2**	**27**	**11**	**14**

[1] Night Train: The Mineral Resource estimate was prepared by Optiro Pty Ltd and first disclosed under the JORC Code (2012) refer to ASX announcement 31 January 2019 for further details including Table 1. The Night Train Mineral Resource reported above 1.2% heavy mineral (HM) cut-off is inclusive of (not additional to) the Mineral Resource reported above 2.0% HM cut-off. Thunderbird: The Mineral Resource estimate was prepared by Optiro Pty Ltd and first disclosed under the JORC Code (2012) refer to ASX announcement 5 July 2016 for further details including Table 1. The Dampier Project Mineral Resources are reported inclusive of (not additional to) Ore Reserves. Thunderbird: The Mineral Resource reported above 3.0% HM cut-off is inclusive of (not additional to) the Mineral Resource reported above 7.5% HM cut-off.

[2] Total HM is within the 38µm to 1mm size fraction and reported as a percentage of the total material, slimes is the -38µm fraction and oversize is the +1mm fraction.

[3] 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.

[4] Night Train: Estimates of Mineral Assemblage are presented as percentages of the HM component of the deposit, as determined by magnetic separation, QEMSCAN™ and XRF for one of 12 composite samples. Magnetic fractions were analysed by QEMSCAN™ for mineral determination as follows: Ilmenite: 40-70% TiO_2 >90% Liberation; leucoxene: 70-90% TiO_2 >90% Liberation; High titanium leucoxene (HiTi leucoxene) and rutile 90% TiO_2 >90% Liberation, and zircon: 66.7% ZrO_2+HfO_2 >90% Liberation. The non-magnetic fraction was submitted for XRF analysis and minerals determined as follows: zircon: ZrO2+HfO2/0.667 and HiTi leucoxene: TiO_2/0.94. HM assemblage determination- was by the QEMSCAN™ process for 11 of 12 composite samples which uses observed mass and chemistry to classify particles according to their average chemistry, and then report mineral abundance by dominant % mass in particle. For the TiO_2 minerals the following breakpoints were used to distinguish between Ilmenite 40% to 70% TiO_2, Leucoxene 70% to 90% TiO_2, HiTi leucoxene and rutile > 90%, Screening of the heavy mineral was not required. Thunderbird: estimates of Mineral Assemblage are presented as percentages of the HM component of the deposit, as determined by magnetic separation, QEMSCAN™ and XRF. Magnetic fractions were analysed by QEMSCAN™ for mineral determination as follows: Ilmenite: 40-70% TiO_2 >90% Liberation; leucoxene: 70-94% TiO_2 >90% Liberation; HiTi leucoxene: >94% TiO_2 >90% Liberation; and zircon: 66.7% ZrO_2+HfO_2 >90% Liberation. The non-magnetic fraction was submitted for XRF analysis and minerals determined as follows: zircon: ZrO_2+HfO_2/0.667 and HiTi leucoxene: TiO_2/0.94.

[5] HiTi leucoxene and rutile (%) combined for Night Train at a >90% TiO_2 (as one assemblage sample utilised=> 90% rutile and HiTi leucoxene), HiTi leucoxene for Thunderbird > 94% TiO_2

[6] The contained in-situ tonnes derived from HM and material tonnes from information in the Mineral Resource tables.

SHEFFIELD MINERAL RESOURCE FOR DAMPIER PROJECT AT 31 DECEMBER 2020 (in-situ tonnes)

Summary of Mineral Resource[1,2,3]				In-situ Tonnes[4]					
Deposit	Mineral Resource Category	Cut off (Total HM%)	Material (Million Tonnes)	In-situ Total HM[6] (Million Tonnes)	Zircon (Thousand Tonnes)	HiTi Leuc[5] (Thousand Tonnes)	Leucoxene (Thousand Tonnes)	Ilmenite (Thousand Tonnes)	Total VHM (Thousand Tonnes)
Thunderbird (low-grade)	Measured	3.0	510	45	3,600	1,000	1,000	12,000	17,700
	Indicated	3.0	2,120	140	11,800	3,800	4,300	39,100	59,000
	Inferred	3.0	600	38	3,200	1,000	1,200	10,500	15,900
	Total	3.0	3,230	223	18,600	5,900	6,500	61,700	92,600
Night Train (low-grade)	Inferred	1.2	130	4.2	560	220	1,900	900	3,590
	Total	1.2	130	4.2	560	220	1,900	900	3,590
All Dampier Project (low grade cut-off)	Measured	3.0	510	45	3,600	1,000	1000	12,000	17,700
	Indicated	3.0	2,120	140	11,800	3,800	4,300	39,100	59,000
	Inferred	Various	730	42	3,760	1,220	3,100	11,400	19,490
	Total	**Various**	**3,360**	**227**	**19,160**	**6,020**	**8,400**	**62,600**	**96,190**
Thunderbird (high-grade)	Measured	7.5	220	32	2,300	700	600	8,400	12,000
	Indicated	7.5	640	76	5,800	1,800	1,600	21,000	30,200
	Inferred	7.5	180	20	1,600	500	500	5,600	8,200
	Total	7.5	1,050	127	9,700	3,000	2,700	35,000	50,400
Night Train (high-grade)	Inferred	2.0	50	3.0	420	170	1,500	540	2,600
	Total	2.0	50	3.0	420	170	1,500	540	2,600
All Dampier Project (high grade cut-off)	Measured	7.5	220	32	2,300	700	600	8,400	12,000
	Indicated	7.5	640	76	5,800	1,800	1,600	21,000	30,200
	Inferred	Various	230	23	2,020	670	2,000	6,140	10,800
	Total	**Various**	**1,090**	**130**	**10,120**	**3,170**	**4,200**	**35,540**	**53,000**

[1] Night Train: The Mineral Resource estimate was prepared by Optiro Pty Ltd and first disclosed under the JORC Code (2012) refer to ASX announcement 31 January 2019 for further details including Table 1. The Night Train Mineral Resource reported above 1.2% heavy mineral (HM) cut-off is inclusive of (not additional to) the Mineral Resource reported above 2.0% HM cut-off. Thunderbird: The Mineral Resource estimate was prepared by Optiro Pty Ltd and first disclosed under the JORC Code (2012) refer to ASX announcement 5 July 2016 for further details including Table 1. The Dampier Project Mineral Resources are reported inclusive of (not additional to) Ore Reserves. Thunderbird: The Mineral Resource reported above 3.0% HM cut-off is inclusive of (not additional to) the Mineral Resource reported above 7.5% HM cut-off.

[2] Total HM is within the 38µm to 1mm size fraction and reported as a percentage of the total material, slimes is the -38µm fraction and oversize is the +1mm fraction.

[3] 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.

[4] The contained in-situ tonnes for the valuable heavy minerals were derived from information from the Mineral Resource tables. The in-situ assemblage 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.

[5] HiTi leucoxene and rutile (%) combined for Night Train at a >90% TiO_2 (as one assemblage sample utilised=> 90% Rutile and HiTi leucoxene), HiTi leucoxene for Thunderbird > 94% TiO_2

[6] The contained in-situ tonnes derived from HM and material tonnes from information in the Mineral Resource tables

2) ENEABBA PROJECT MINERAL RESOURCES

SHEFFIELD MINERAL RESOURCES FOR THE ENEABBA PROJECT AT 31 DECEMBER 2020 (in-situ assemblage)

Summary of Mineral Resource[1,2]						In-situ Assemblage[11]					
Deposit	Mineral Resource Category	Cut off (Total HM%)	Material (Million Tonnes)	In-situ Total HM[12] (Thousand Tonnes)	Total HM Grade (%)	Zircon (%)	Rutile (%)	Leuco-xene (%)	Ilmenite (%)	Over size (%)	Slimes (%)
Yandanooka[4,6,8]	Measured	1.4	2.6	112	4.3	0.44	0.09	0.10	3.08	11.3	15
	Indicated	1.4	57.7	1,726	3.0	0.37	0.11	0.11	2.08	11.4	15
	Inferred	1.4	0.4	7	1.5	0.16	0.05	0.07	1.01	21.9	20
	Total	1.4	60.8	1,845	3.0	0.37	0.11	0.11	2.11	11.5	15
Durack[4,6,7,8]	Indicated	1.4	20.7	600	2.9	0.40	0.09	0.11	2.07	14.7	14
	Inferred	1.4	5.6	148	2.6	0.37	0.07	0.19	1.68	18.3	16
	Total	1.4	26.3	748	2.8	0.39	0.08	0.13	1.99	15.5	14
Drummond Crossing[3,4,6,8]	Indicated	1.4	35.5	838	2.4	0.33	0.24	0.08	1.26	7.7	14
	Inferred	1.4	3.3	77	2.3	0.26	0.21	0.06	1.31	7.2	12
	Total	1.4	38.8	915	2.4	0.33	0.24	0.08	1.26	7.7	14
Robbs Cross[5,6,8]	Indicated	1.4	14.0	261	1.9	0.27	0.24	0.09	0.88	6.2	6
	Inferred	1.4	3.8	77	2.0	0.29	0.22	0.08	1.02	8.1	6
	Total	1.4	17.8	338	1.9	0.28	0.23	0.09	0.91	6.6	6
Thomson[5,8,]	Inferred	1.4	26	516	2.0	0.38	0.28	0.11	0.85	6.9	18
	Total	1.4	26	516	2.0	0.38	0.28	0.11	0.85	6.9	18
West Mine North[3,4,6,9]	Indicated	2.0	10.2	748	7.3	0.43	0.48	0.13	3.51	2.3	11
	Inferred	2.0	1.8	48	2.7	0.25	0.23	0.06	1.31	3.0	17
	Total	2.0	12.0	796	6.6	0.40	0.44	0.12	3.18	2.4	12
Ellengail[3,4,9,10]	Indicated	2.0	6.5	346	5.3	0.53	0.43	0.55	3.49	3.2	15
	Inferred	2.0	5.3	218	4.1	0.41	0.34	0.35	2.55	2.5	15
	Total	2.0	11.8	565	4.8	0.47	0.39	0.46	3.07	2.9	15
Total	Measured	1.4	2.6	112	4.3	0.44	0.09	0.10	3.08	11	15
	Indicated	Various	144.6	4,519	3.1	0.37	0.19	0.12	1.92	9	14
	Inferred	Various	46.0	1,091	2.4	0.36	0.24	0.14	1.21	8	16
	Total	**Various**	**193.3**	**5,723**	**3.0**	**0.36**	**0.20**	**0.13**	**1.77**	**9**	**14**

[1]The Mineral Resource estimates were prepared by Optiro Pty Ltd and first disclosed under the JORC Code (2012) refer 03 October 2018 ASX announcement for Yandanooka, Durack, Drummond Crossing, West Mine North and Ellengail. Refer to December 2017 Quarterly Activities Report for Robbs Cross and Thomson deposits for further details
[2]All tonnages and grades have been rounded to reflect the relative uncertainty of the estimate, thus the sums of columns may not equal.
[3]Total heavy mineral (HM) %: Samples from 1989 and 1996 (Drummond Crossing, Ellengail and West Mine North) were analysed using a -75 µm slimes / +2 mm oversize screen. Separation of HM% was by heavy liquid TBE (density 2.84 g/ml) from the -710µm+75µm fraction.
[4]Total HM %: RGC samples from 1998 and Iluka samples (Drummond Crossing, Durack, Ellengail, West Mine North and Yandanooka) were analysed using a -53 µm slimes / +2 mm oversize screen. Separation of total HM% was by heavy liquid TBE (density 2.90 g/ml) from the -710µm+53µm fraction.
[5]Total HM %: Samples from Robbs Cross and Thomson analysed by Diamantina Laboratories in Perth using a -45 µm slimes / +1 mm oversize screen (method DIA_HLS_45µm_1mm). Separation of total HM% was by heavy liquid TBE (density 2.96g/ml) from the -45 µm+1mm fraction.
[6]Total HM %: Samples from Drummond Crossing, Durack, West Mine North and Yandanooka were analysed by Western Geolabs in Perth using a -53 µm slimes / +1 mm oversize screen. Separation of total HM% was by heavy liquid TBE (density 2.96 g/ml) from the +53µm-1mm fraction.
[7]Reported below an upper cut-off grade of 35% slimes.
[8]Estimates of mineral assemblage are presented as percentages of the total HM component of the deposit, as determined by QEMSCAN™ analysis. For the TiO_2 minerals specific breakpoints are used to distinguish between rutile (>95% TiO_2), leucoxene (85-95% TiO_2) and ilmenite (<55-85% TiO_2).
[9]At West Mine North and Ellengail mineral assemblage data determined by Iluka using Method 4 (HM concentrate is separated into magnetics and non-magnetics) was used with the Sheffield QEMSCAN™ data
[10]At Ellengail mineral assemblage data determined by Iluka using Method 3 (magnetic separation and XRF) was used with the Sheffield QEMSCAN™ data and Iluka Method 4
[11]The in-situ assemblage 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.
[12] The contained in-situ tonnes derived from HM and material tonnes from information in the Mineral Resource tables

SHEFFIELD MINERAL RESOURCE FOR ENEABBA PROJECT AT 31 DECEMBER 2020 (HM assemblage)

Summary of Mineral Resource[1,2]						HM Assemblage[8,9,10]					
Deposit	Mineral Resource Category	Cut off (Total HM%)	Material (Million Tonnes)	In-situ Total HM[11] (Thousand Tonnes)	Total HM Grade (%)	Zircon (%)	Rutile (%)	Leuco-xene (%)	Ilmenite (%)	Over size (%)	Slimes (%)
Yandanooka[4,6,8]	Measured	1.4	2.6	112	4.3	10	2.1	2.3	72	11.3	15
	Indicated	1.4	57.7	1,726	3.0	12	3.6	3.7	69	11.4	15
	Inferred	1.4	0.4	7	1.5	11	3.0	4.4	68	21.9	20
	Total	1.4	60.8	1,845	3.0	12	3.5	3.6	70	11.5	15
Durack[4,6,7,8]	Indicated	1.4	20.7	600	2.9	14	2.9	3.7	71	14.7	14
	Inferred	1.4	5.6	148	2.6	14	2.6	7.4	64	18.3	16
	Total	1.4	26.3	748	2.8	14	2.9	4.4	70	15.5	14
Drummond Crossing[3,4,6,8]	Indicated	1.4	35.5	838	2.4	14	10.3	3.4	53	7.7	14
	Inferred	1.4	3.3	77	2.3	11	9.0	2.7	56	7.2	12
	Total	1.4	38.8	915	2.4	14	10.2	3.4	54	7.7	14
Robbs Cross[5,6,8]	Indicated	1.4	14.0	261	1.9	15	12.7	5.0	47	6.2	6
	Inferred	1.4	3.8	77	2.0	14	10.9	4.1	50	8.1	6
	Total	1.4	17.8	338	1.9	15	12.3	4.8	48	6.6	6
Thomson[5,8,]	Inferred	1.4	26	516	2.0	19	13.8	5.4	42	6.9	18
	Total	1.4	26	516	2.0	19	13.8	5.4	42	6.9	18
West Mine North[3,4,6,9,]	Indicated	2.0	10.2	748	7.3	6	6.5	1.8	48	2.3	11
	Inferred	2.0	1.8	48	2.7	9	8.6	2.1	50	3.0	17
	Total	2.0	12.0	796	6.6	6	6.6	1.8	48	2.4	12
Ellengail[3,4,9,10]	Indicated	2.0	6.5	346	5.3	10	8.0	10.4	66	3.2	15
	Inferred	2.0	5.3	218	4.1	10	8.2	8.4	62	2.5	15
	Total	2.0	11.8	565	4.8	10	8.1	9.6	64	2.9	15
Total	Measured	1.4	2.6	112	4.3	10	2.1	2.3	72	11	15
	Indicated	Various	144.6	4,519	3.1	12	6.1	3.9	62	9	14
	Inferred	Various	46.0	1,091	2.4	15	10.3	5.8	51	8	16
	Total	**Various**	**193.3**	**5,723**	**3.0**	**12**	**6.8**	**4.2**	**60**	**9**	**14**

[1] The Mineral Resource estimates were prepared by Optiro Pty Ltd and first disclosed under the JORC Code (2012) refer 03 October 2018 ASX announcement for Yandanooka, Durack, Drummond Crossing, West Mine North and Ellengail. Refer to December 2017 Quarterly Activities Report for Robbs Cross and Thomson deposits for further details

[2]All tonnages and grades have been rounded to reflect the relative uncertainty of the estimate, thus the sums of columns may not equal.

[3]Total heavy mineral (HM) %: Samples from 1989 and 1996 (Drummond Crossing, Ellengail and West Mine North) were analysed using a -75µm slimes / +2 mm oversize screen. Separation of HM% was by heavy liquid TBE (density 2.84 g/ml) from the -710µm+75µm fraction.

[4]Total HM %: RGC samples from 1998 and Iluka samples (Drummond Crossing, Durack, Ellengail, West Mine North and Yandanooka) were analysed using a -53 µm slimes / +2 mm oversize screen. Separation of total HM% was by heavy liquid TBE (density 2.90 g/ml) from the -710µm+53µm fraction.

[5]Total HM %: Samples from Robbs Cross and Thomson analysed by Diamantina Laboratories in Perth using a -45µm slimes / +1mm oversize screen (method DIA_HLS_45µm_1mm). Separation of total HM% was by heavy liquid TBE (density 2.96g/ml) from the -45 µm+1mm fraction.

[6]Total HM %: Samples from Drummond Crossing, Durack, West Mine North and Yandanooka were analysed by Western Geolabs in Perth using a -53 µm slimes / +1 mm oversize screen. Separation of total HM% was by heavy liquid TBE (density 2.96g/ml) from the +53µm-1mm fraction.

[7]Reported below an upper cut-off grade of 35% slimes.

[8]Estimates of mineral assemblage are presented as percentages of the total HM component of the deposit, as determined by QEMSCAN™ analysis. For the TiO_2 minerals specific breakpoints are used to distinguish between rutile (>95% TiO_2), leucoxene (85-95% TiO_2) and ilmenite (<55-85% TiO_2).

[9]At West Mine North and Ellengail mineral assemblage data determined by Iluka using Method 4 (HM concentrate is separated into magnetics and non-magnetics) was used with the Sheffield QEMSCAN™ data

[10]At Ellengail mineral assemblage data determined by Iluka using Method 3 (magnetic separation and XRF analysis) was used with the Sheffield QEMSCAN™ data and Iluka Method 4 data

[11] The contained in-situ tonnes derived from HM and material tonnes from information in the Mineral Resource tables

SHEFFIELD MINERAL RESOURCE FOR ENEABBA PROJECT AT 31 DECEMBER 2020 (in-situ tonnes)

Summary of Mineral Resource[1,2,3]				In-situ Tonnes					
Deposit	Mineral Resource Category	Cut off (Total HM%)	Material (Million Tonnes)	In-situ Total HM[11] (Thousand Tonnes)	Zircon (Thousand Tonnes)	Rutile (Thousand Tonnes)	Leuco-xene (Thousand Tonnes)	Ilmenite (Thousand Tonnes)	Total VHM (Thousand Tonnes)
Yandanooka[4,6,8]	Measured	1.4	2.6	112	12	2	3	81	98
	Indicated	1.4	57.7	1,726	212	63	63	1,197	1,535
	Inferred	1.4	0.4	7	1	0.2	0.3	4	6
	Total	1.4	60.8	1,845	224	65	66	1,283	1,639
Durack[4,6,7,8]	Indicated	1.4	20.7	600	82	18	22	429	551
	Inferred	1.4	5.6	148	21	4	11	95	130
	Total	1.4	26.3	748	104	21	33	523	681
Drummond Crossing[3,4, 6,8]	Indicated	1.4	35.5	838	118	86	29	447	680
	Inferred	1.4	3.3	77	9	7	2	43	61
	Total	1.4	38.8	915	127	93	31	490	741
Robbs Cross[5,6,8]	Indicated	1.4	14.0	261	38	33	13	123	208
	Inferred	1.4	3.8	77	11	8	3	39	61
	Total	1.4	17.8	338	50	41	16	162	269
Thomson[5,8,]	Inferred	1.4	26	516	97	71	28	219	415
	Total	1.4	26	516	97	71	28	219	415
West Mine North[3,4,6,9,]	Indicated	2.0	10.2	748	44	49	13	359	465
	Inferred	2.0	1.8	48	5	4	1	24	34
	Total	2.0	12.0	796	48	53	14	383	498
Ellengail[3,4,9,10]	Indicated	2.0	6.5	346	34	28	36	227	325
	Inferred	2.0	5.3	218	22	18	18	136	193
	Total	2.0	11.8	565	56	46	54	363	519
Total	Measured	1.4	2.6	112	12	2	3	81	98
	Indicated	Various	144.6	4,519	529	276	176	2,782	3,764
	Inferred	Various	46.0	1,091	165	113	64	559	900
	Total	**Various**	**193.3**	**5,723**	**705**	**392**	**242**	**3,423**	**4,762**

[1] The Mineral Resource estimates were prepared by Optiro Pty Ltd and first disclosed under the JORC Code (2012) refer 03 October 2018 ASX announcement for Yandanooka, Durack, Drummond Crossing, West Mine North and Ellengail. Refer to December 2017 Quarterly Activities Report for Robbs Cross and Thomson deposits for further details

[2]All tonnages and grades have been rounded to reflect the relative uncertainty of the estimate, thus the sums of columns may not equal.

[3]Total heavy mineral (HM) %: Samples from 1989 and 1996 (Drummond Crossing, Ellengail and West Mine North) were analysed using a -75µm slimes / +2mm oversize screen. Separation of HM% was by heavy liquid TBE (density 2.84 g/ml) from the -710µm+75µm fraction.

[4]Total HM %: RGC samples from 1998 and Iluka samples (Drummond Crossing, Durack, Ellengail, West Mine North and Yandanooka) were analysed using a -53 µm slimes / +2 mm oversize screen. Separation of total HM% was by heavy liquid TBE (density 2.90 g/ml) from the -710µm+53µm fraction.

[5]Total HM %: Samples from Robbs Cross and Thomson analysed by Diamantina Laboratories in Perth using a -45 µm slimes / +1 mm oversize screen (method DIA_HLS_45µm_1mm). Separation of total HM% was by heavy liquid TBE (density 2.96g/ml) from the -45 µm+1mm fraction.

[6]Total HM %: Samples from Drummond Crossing, Durack, West Mine North and Yandanooka were analysed by Western Geolabs in Perth using a -53µm slimes / +1mm oversize screen. Separation of total HM% was by heavy liquid TBE (density 2.96 g/ml) from the +53µm-1mm fraction.

[7]Reported below an upper cut-off grade of 35% slimes.

[8]Estimates of mineral assemblage are presented as percentages of the total HM) component of the deposit, as determined by QEMSCAN™ analysis. For the TiO_2 minerals specific breakpoints are used to distinguish between rutile (>95% TiO_2), leucoxene (85-95% TiO_2) and ilmenite (<55-85% TiO_2).

[9]At West Mine North and Ellengail mineral assemblage data determined by Iluka using Method 4 (HM concentrate is separated into magnetics and non-magnetics) was used with the Sheffield QEMSCAN™ data

[10]At Ellengail mineral assemblage data determined by Iluka using Method 3 (magnetic separation and XRF analysis) was used with the Sheffield QEMSCAN™ data and Iluka Method 4 data

[11] The contained in-situ tonnes derived from HM and material tonnes from information in the Mineral Resource tables

3) McCALLS PROJECT MINERAL RESOURCES

SHEFFIELD MINERAL RESOURCES FOR McCALLS PROJECT AT 31 DECEMBER 2020 (in-situ assemblage)

Summary of Mineral Resources[1,2,3,4]						In-situ Assemblage[5, 6]					
Deposit	Mineral Resource	Cut off	Material	In-situ Total HM[6]	Total HM Grade	Zircon	Rutile	Leuco-xene	Ilmenite	Over size	Slimes
	Category	(Total HM%)	(Million Tonnes)	(Million Tonnes)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
McCalls	Indicated	1.1	1,630	23.3	1.4	0.07	0.05	0.04	1.10	1.1	21
	Inferred	1.1	1,980	24.4	1.2	0.06	0.05	0.04	1.00	1.1	26
	Total	1.1	3,600	47.7	1.3	0.07	0.05	0.04	1.05	1.1	24
Mindarra Springs[7]	Inferred	1.1	2,200	36.3	1.6	0.07	0.01	0.05	1.32	5.1	20
	Total	1.1	2,200	36.3	1.6	0.07	0.01	0.05	1.32	5.1	20
Total	Indicated	1.1	1,630	23.3	1.4	0.07	0.05	0.04	1.10	1.1	21
	Inferred	1.1	4,180	60.7	1.5	0.07	0.03	0.05	1.17	3.2	23
	Total	**1.1**	**5,800**	**84.0**	**1.4**	**0.07**	**0.03**	**0.04**	**1.15**	**2.6**	**22**

SHEFFIELD MINERAL RESOURCES FOR McCALLS PROJECT AT 31 DECEMBER 2020 (HM assemblage)

Summary of Mineral Resources[1,2,3,4,7]						HM Assemblage[5, 6]					
Deposit	Mineral Resource	Cut off	Material	In-situ Total HM[6]	Total HM Grade	Zircon	Rutile	Leuco-xene	Ilmenite	Over size	Slimes
	Category	(Total HM%)	(Million Tonnes)	(Million Tonnes)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
McCalls	Indicated	1.1	1,630	23.3	1.4	5.2	3.3	2.8	77	1.1	21
	Inferred	1.1	1,980	24.4	1.2	5.0	3.8	3.2	81	1.1	26
	Total	1.1	3,600	47.7	1.3	5.1	3.6	3.0	79	1.1	24
Mindarra Springs[7]	Inferred	1.1	2,200	36.3	1.6	4.2	0.9	3.1	80	5.1	20
	Total	1.1	2,200	36.3	1.6	4.2	0.9	3.1	80	5.1	20
Total	Indicated	1.1	1,630	23.3	1.4	5.2	3.3	2.8	77	1.1	21
	Inferred	1.1	4,180	60.7	1.5	4.5	2.1	3.2	81	3.2	23
	Total	**1.1**	**5,800**	**84.0**	**1.4**	**4.7**	**2.4**	**3.1**	**79**	**2.6**	**22**

[1]The Mineral Resource estimates for McCalls and Mindarra Springs were prepared by Optiro Pty Ltd and first disclosed under the JORC Code (2012) refer to ASX announcement 03 October 2018

[2]All tonnages and grades have been rounded to reflect the relative uncertainty of the estimate, thus the sums of columns may not equal

[3]Total heavy mineral (HM) is within the 45µm to 1mm size fraction and reported as a percentage of the total material, slimes is the -45µm fraction and oversize is the +1mm fraction

[4]Reported below an upper cut-off grade of 35% slimes

[5]Estimates of mineral assemblage (Sheffield) are presented as percentages of the total HM) component of the deposit, as determined by QEMSCAN™ analysis. For the TiO_2 minerals specific breakpoints are used to distinguish between rutile (>95% TiO_2), leucoxene (85-95% TiO_2) and ilmenite (<55-85% TiO_2). Estimates of mineral assemblage (BHP) HM assemblage determination was by magnetic separation and observation (grain-counting)

[6] The contained in-situ tonnes derived from HM and material tonnes from information in the Mineral Resource tables

[7]Excludes Mineral Resources within the Mogumber Nature Reserve

SHEFFIELD MINERAL RESOURCES FOR McCALLS PROJECT AT 31 DECEMBER 2020 (in-situ tonnes)

Summary of Mineral Resources[1,2,3,4]				In-situ Tonnes					
Deposit	Mineral Resource Category	Cut off (Total HM%)	Material (Million Tonnes)	In-situ Total HM[7] (Million Tonnes)	Zircon (Thousand Tonnes)	Rutile (Thousand Tonnes)	Leuco-xene (Thousand Tonnes)	Ilmenite (Thousand Tonnes)	Total VHM (Thousand Tonnes)
McCalls	Indicated	1.1	1,630	23.3	1,210	770	650	17,940	20,570
	Inferred	1.1	1,980	24.4	1,210	930	790	19,790	22,720
	Total	1.1	3,600	47.7	2,430	1,700	1,430	37,730	43,290
Mindarra Springs[8]	Inferred	1.1	2,200	36.3	1,520	320	1,130	29,080	32,050
	Total	1.1	2,200	36.3	1,520	320	1,130	29,080	32,050
Total	Indicated	1.1	1,630	23.3	1,210	770	650	17,940	20,570
	Inferred	1.1	4,180	60.7	2,740	1,250	1,920	48,860	54,770
	Total	**1.1**	**5,800**	**84.0**	**3,950**	**2,020**	**2,570**	**66,810**	**75,340**

[1]The Mineral Resource estimates for McCalls and Mindarra Springs were prepared by Optiro Pty Ltd and first disclosed under the JORC Code (2012) refer to ASX announcement 03 October 2018

[2]All tonnages and grades have been rounded to reflect the relative uncertainty of the estimate, thus the sums of columns may not equal

[3]Total heavy mineral (HM) is within the 45µm to 1mm size fraction and reported as a percentage of the total material, slimes is the -45µm fraction and oversize is the +1mm fraction

[4]Reported below an upper cut-off grade of 35% slimes

[5]Estimates of mineral assemblage (Sheffield) are presented as percentages of the total HM component of the deposit, as determined by QEMSCAN™ analysis. For the TiO_2 minerals specific breakpoints are used to distinguish between rutile (>95% TiO_2), leucoxene (85-95% TiO_2) and ilmenite (<55-85% TiO_2). Estimates of mineral assemblage (BHP) HM assemblage determination was by magnetic separation and observation (grain-counting)

[6]The in-situ assemblage 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

[7]The contained in-situ tonnes derived from HM and material tonnes from information in the Mineral Resource tables

[8]Excludes mineralisation within the Mogumber Nature Reserve

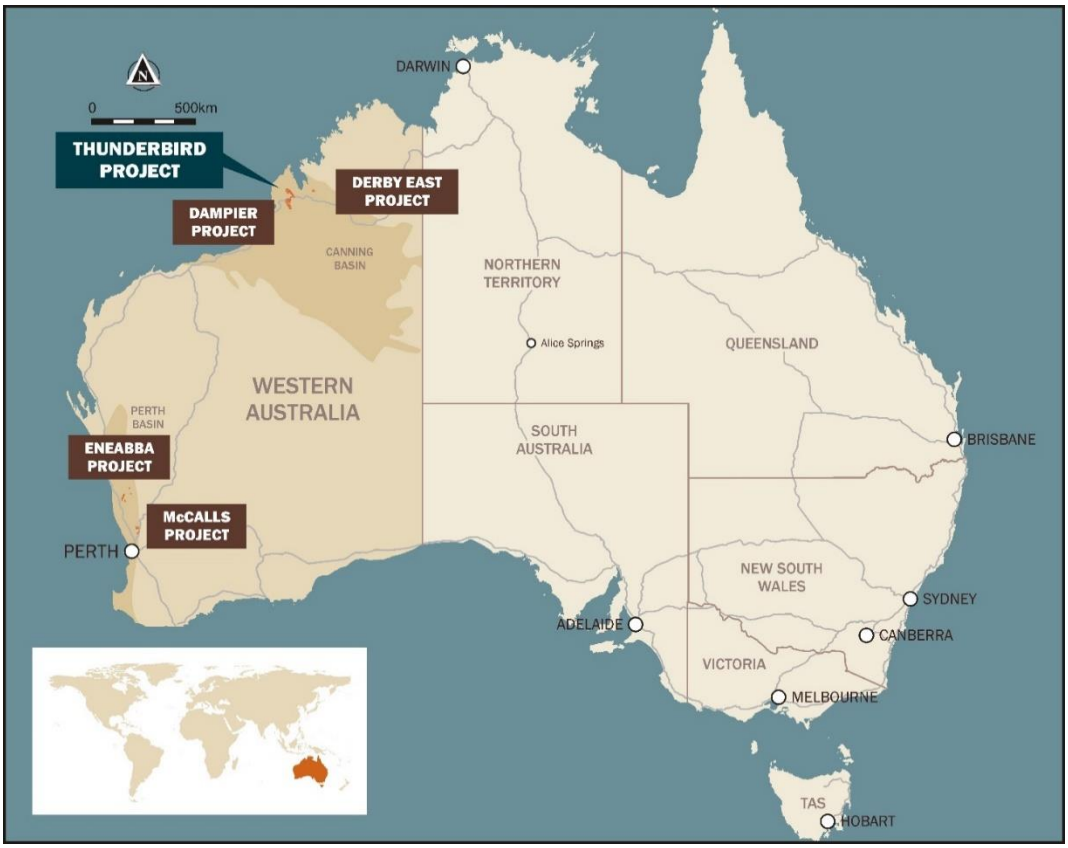

Figure 12: Location of Sheffield's Mineral Sands Projects

FORWARD LOOKING AND CAUTIONARY STATEMENTS

The contents of this report reflect various technical and economic conditions at the time of writing. Given the nature of the resources industry, these conditions can change significantly over relatively short periods of time. Consequently, actual results may vary from those contained in this report.

Some statements in this report regarding estimates or future events are forward-looking statements. They include indications of, and guidance on, future earnings, cash flow, costs and financial performance. Forward-looking statements include, but are not limited to, statements preceded by words such as “planned”, “expected”, “projected”, “estimated”, “may”, “scheduled”, “intends”, “anticipates”, “believes”, “potential”, "predict", "foresee", "proposed", "aim", "target", "opportunity", “could”, “nominal”, “conceptual” and similar expressions. Forward-looking statements, opinions and estimates included in this report are based on assumptions and contingencies which are subject to change without notice, as are statements about market and industry trends, which are based on interpretations of current market conditions. Forward-looking statements are provided as a general guide only and should not be relied on as a guarantee of future performance. Forward-looking statements may be affected by a range of variables that could cause actual results to differ from estimated results and may cause the Company’s actual performance and financial results in future periods to materially differ from any projections of future performance or results expressed or implied by such forward-looking statements. So there can be no assurance that actual outcomes will not materially differ from these forward-looking statements.

GOVERNANCE AND INTERNAL CONTROLS

Mineral Resource and Ore Reserve are compiled by qualified Sheffield personnel and/or independent consultants following industry standard methodology and techniques. The underlying data, methodology, techniques and assumptions on which estimates are prepared are subject to internal peer review by senior Company personnel, as is JORC compliance. Where deemed necessary or appropriate, estimates are reviewed by independent consultants. Competent Persons named by the Company are members of the Australasian Institute of Mining and Metallurgy and/or the Australian Institute of Geoscientists and qualify as Competent Persons as defined in the JORC Code 2012.

COMPETENT PERSONS AND COMPLIANCE STATEMENTS

The information in this report that relates to Exploration Results is based on information compiled by Mr Seb Gray, a Competent Person who is a Member of Australian Institute of Geoscientists (AIG). Mr Gray 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 Gray consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

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’s website www.sheffieldresources.com.au. Mineral Resources and Ore Reserves reported for the Dampier Project and Mineral Resources reported for the Eneabba and McCalls Projects, are prepared and disclosed under the JORC Code 2012. The Company confirms that it is not aware of any new information or data that materially affects the information included in the relevant original market announcements and that all material assumptions and technical parameters underpinning the estimates in the relevant original market announcement continue to apply and have not materially changed.

The information in this report that relates to the estimation of the Ore Reserve is based on information compiled by Mr Per Scrimshaw, a Competent Person who is a Member of The Australasian Institute of Mining and Metallurgy. Mr Scrimshaw is employed by Entech Pty 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 Scrimshaw 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 Mineral Resources is based on information compiled by Mrs Christine Standing, a Competent Person who is a Member of the Australian Institute of Geoscientists (AIG) and the Australasian Institute of Mining and Metallurgy (AusIMM). Mrs Standing is a full-time employee of Optiro Pty Ltd and has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which she is undertaking 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’. Mrs Standing consents to the inclusion in this report of the matters based on her information in the form and context in which it appears.

The information in this report that relates to the Thunderbird Mineral Resource is based on information compiled under the guidance of Mr Mark Teakle, a Competent Person who is a Member of the Australian Institute of Geoscientists (AIG) and the Australasian Institute of Mining and Metallurgy (AusIMM). Mr Teakle is an 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 Teakle consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

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

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	Thunderbird 10% Ore Reserve Increase	31 July 2019	P. Scrimshaw
Thunderbird Mineral Resource	Sheffield Doubles Measured Mineral Resource at Thunderbird	05 July 2016	M. Teakle, C. Standing
Night Train Mineral Resource	High Grade Maiden Mineral Resource at Night Train	31 January 2019	C. Standing
Robbs Cross Mineral Resource	Quarterly Activities Report for The Period Ended 31 December 2017	30 January 2018	C. Standing
Thomson Mineral Resource	Quarterly Activities Report for The Period Ended 31 December 2017	30 January 2018	C. Standing
Yandanooka Mineral Resource	Mineral Resource and Ore Reserve Statement	03 October 2018	C. Standing
Durack Mineral Resource	Mineral Resource and Ore Reserve Statement	03 October 2018	C. Standing
Drummond Crossing Mineral Resource	Mineral Resource and Ore Reserve Statement	03 October 2018	C. Standing
West Mine North Mineral Resource	Mineral Resource and Ore Reserve Statement	03 October 2018	C. Standing
Ellengail Mineral Resource	Mineral Resource and Ore Reserve Statement	03 October 2018	C. Standing
McCalls Mineral Resource	Mineral Resource and Ore Reserve Statement	03 October 2018	C. Standing
Mindarra Springs Mineral Resource	Mineral Resource and Ore Reserve Statement	03 October 2018	C. Standing

Item	Name	Company	Professional Affiliation
Exploration Results	Mr Seb Gray	Sheffield Resources	MAIG
Mineral Resource Reporting	Mr Mark Teakle	Sheffield Resources	MAIG, MAusIMM
Mineral Resource Estimation	Mrs Christine Standing	Optiro	MAIG, MAusIMM
Ore Reserve	Mr Per Scrimshaw	Entech	MAusIMM

SUPPORTING INFORMATION REQUIRED UNDER ASX LISTING RULES, CHAPTER 5

The supporting information below is required, under Chapter 5 of the ASX Listing Rules, to be included in market announcements reporting estimates of Mineral Resources and Ore Reserves.

PREVIOUSLY REPORTED INFORMATION

This report includes information that relates to Exploration Results, Mineral Resources and Ore Reserves prepared and first disclosed under the JORC Code 2012 and a Bankable Feasibility Study. The information was extracted from the Company's previous ASX announcements as follows:

- Mineral Resource and Ore Reserve Statement: "MINERAL RESOURCE AND ORE RESERVE STATEMENT" 24 September 2019
- Thunderbird Ore Reserve Update: "THUNDERBIRD ORE RESERVE UPDATE" 31 July 2019
- Thunderbird BFS Update: "BFS UPDATE MATERIALLY REDUCES CAPITAL", 31 July 2019
- Night Train Inferred Resource and Mineral Assemblage results "HIGH GRADE MAIDEN MINERAL RESOURCE AT NIGHT TRAIN" 31 January 2019
- Yandanooka, Durack, Drummond Crossing, West Mine North, Ellengail, McCalls and Mindarra Springs Resource Estimates and including Mineral Resource and Ore Statement "*MINERAL RESOURCE AND RESERVE STATEMENT*" 03 October, 2018
- Thomson and Robbs Cross Mineral Resources: "QUARTERLY ACTIVITIES REPORT FOR THE PERIOD ENDED 31 DECEMBER 2017" 30 January, 2018
- Thunderbird Mineral Resource: "SHEFFIELD DOUBLES MEASURED MINERAL RESOURCE AT THUNDERBIRD" 5 July, 2016
- Thunderbird drilling: "EXCEPTIONALLY HIGH GRADES FROM INFILL DRILLING AT THUNDERBIRD MINERAL SANDS PROJECT" 09 February 2015

These announcements are available to view on Sheffield's website 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 relevant market announcements and, in the case of estimates of Mineral Resources, Ore Reserves and the Bankable Feasibility Study Update, 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 Persons' findings are presented have not been materially modified from the relevant original market announcements.