



**Sheffield**Resources  
LIMITED

ABN 29 125 811 083

# Interim Financial Report

For the half year ended 31 December 2019

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## DIRECTORS' REPORT

Your Directors submit the financial report of the Group for the half year ended 31 December 2019. In order to comply with the provisions of the Corporations Act 2001, the Directors report as follows.

The Directors of the Company during or since the end of the interim period (unless otherwise stated) are:

Will Burbury	Non-Executive Chairman
Bruce McFadzean	Managing Director
David Archer	Technical Director
Bruce McQuitty	Non-Executive Director (retired 19 November 2019)
Ian Macliver	Non-Executive Director (appointed 1 August 2019)
John Richards	Non-Executive Director (appointed 1 August 2019)

## REVIEW OF OPERATIONS

During the half year, the Company has continued to progress its fully permitted and construction ready, world class Thunderbird Mineral Sands Project (Thunderbird or Project), with the release of the completed Bankable Feasibility Study Update (BFSU) in late July. Subsequent to the release of the BFSU, the Company has also been actively pursuing potential funding partners to support development of Thunderbird. Expressions of interest were received from credible third parties, with the Company working towards securing an equity investment throughout the period. Whilst the Company has been unable to conclude an acceptable funding solution at this stage, Sheffield remains open to pursuing a range of alternate funding strategies to support Thunderbird's development.

During the reporting period, and to support the BFSU strategy, the Company successfully raised \$18 million before costs via a Share Placement. This placement was concluded in October 2019.

The Company appointed Mr John Richards and Mr Ian Macliver as Non-Executive Directors. These appointments form part of an ongoing Board renewal process which also saw Mr Bruce McQuitty, a founding member of the Sheffield Board, retire from the position of Non-Executive Director.

An updated Thunderbird Ore Reserve (Proven and Probable) was released (refer to ASX announcement 31 July 2019) with an increase of 68 million tonnes to 748 million tonnes @ 11.2% Heavy Mineral (HM) from the previous Ore Reserve of 680.5 million tonnes at 11.3% HM (refer to ASX announcement 16 March 2017).

Sheffield has applied for 1,350km<sup>2</sup> of new tenure within the Eucla basin of South Australia during the reporting period. This includes the addition to the Barton Project of tenement application ELA2019/0152, covering an area of 426km<sup>2</sup> over the Oodlea Range in the northeast of the Eucla basin. Sheffield's new Ceduna Project consists of ELA2019/0145 totalling 924km<sup>2</sup> and is located 45km east of Ceduna in the eastern Eucla Basin of South Australia. Sheffield tenement applications within the northeast and eastern Eucla Basin of South Australia now comprise a total of 2,333km<sup>2</sup>.

## THUNDERBIRD MINERAL SANDS PROJECT

The Company released a Bankable Feasibility Study Update (BFSU) at the end of July 2019. The BFSU followed detailed technical assessment by the Company and GR Engineering Services (GRES) with the primary focus of lowering capital, increasing annual revenue and decreasing operating costs. These improved metrics were achieved by removing the ilmenite processing circuit and increasing zircon production to materially reduce the equity funding requirement and operating costs for the Project. The BFSU reduces estimated Stage 1 funding capital expenditure by A\$101 million to A\$478 million. The equity funding requirement has materially reduced by A\$108 million to a total of A\$143 million. The zircon focused Project increases life of mine average annual zircon production to over 200kt.

The on-site care and maintenance program has delivered various minor projects including storm water management, contouring and compaction of the ground surface around buildings, painting and general maintenance to existing village buildings.

The accommodation village, communications equipment and site access road remain in excellent condition and ready to support the start of construction activities upon the completion of the funding process.

### Engineering

Subsequent to the release of the BFSU, the Company has re-engaged with key suppliers to commence a review of the commercial arrangements aligned to the BFSU strategy. Together with GRES, engineering and design activities focused on updating design documentation to reflect the revised criteria and on amending the EPC Agreement to reflect the BFSU strategy.

### Early Works Program

The care and maintenance program continued during the half year, with asset protection the primary focus. The activities have included storm water management, contouring and compaction of the ground surface around buildings, painting and general maintenance to existing village buildings. These, together with regular inspections and upkeep of key infrastructure, have maintained the site in excellent condition in readiness or construction.

The site based team have participated in bush fire training that was facilitated by North Regional TAFE. This has provided them with bush fire management techniques which has contributed to their preparation for the fire season and protection of the Thunderbird assets. The team have also participated in GPS and Mapping Ranger workshops, providing the team with valuable navigation skills using GPS and topographic mapping techniques.



**Figure 1 & 2: Thunderbird Accommodation Village and Communications Infrastructure**

### Aboriginal Engagement

The Company has continued to engage with the Native Title Party through the Implementation Committee and initiatives to realise future employment and business engagement with of Traditional Owners.

During the half year the Company completed final artefact checks over 285 hectares of land required for construction activities. The heritage monitors were selected by the Native Title Party and engaged by Sheffield as per the Co-existence Agreement. The fieldwork provided an opportunity for on country knowledge sharing between Traditional Owners and Thunderbird employees, it also demonstrated one of the many employment opportunities for Aboriginal people at the Thunderbird Project.



**Figure 3: Sheffield's Community Relations Superintendent at the Youth Job Exchange in Broome**

#### Sustainability

The Company received approval for the Department of Mines Industry Regulation and Safety (DMIRS) for the Thunderbird Mining Proposal and Mine Closure Plan. The approvals allow the Company to undertake mining, processing, maintenance and haulage activities during Stage 1 of the Project whilst ensuring safety, environmental and mine closure outcomes are achieved.

Annual environmental compliance reports were lodged for the Thunderbird Mineral Sands Project. Project compliance against tenement and ministerial conditions were reported to the DMIRS and the Department of Water and Environmental Regulation (DWER).

#### Marketing and Offtake

The Bankable Feasibility Study Update has resulted in the expectation that the Thunderbird Mineral Sands Project will produce additional volumes of Premium Zircon, Zircon Concentrate and Primary Ilmenite. IHC Robbins have been engaged to prepare a large sample of Primary Ilmenite for a major offtake partner to advance final test work on determining the optimal upgrade process for chloride slag production.

The zircon sand market has seen some softening in demand during the latter part of 2019. The softening in demand has seen minor price erosion as suppliers look to maintain their market share. The industry sentiment is that the softening is due to a level of de-stocking and continued concerns related to trade tensions. The long term view for the zircon market has not altered, with the view that significant supply shortages will create strong demand in the industry. Global supply of zircon continues to decrease with many mature mines nearing the end of their deposits which impacts on costs, recoveries and quality.

Pricing for titanium pigment feedstocks remained solid with major feedstock suppliers successfully implementing regular incremental price increases for the sulfate pigment producers.

During the half year, the Company announced the signing of a binding maiden Primary Ilmenite offtake agreement with Bengbu Zhongheng New Materials S&T Co., Ltd (Bengbu). The agreement is based on an annual supply contract of 650,000 tonnes of Primary Ilmenite. This represents all of the estimated volume of Primary Ilmenite to be produced during Thunderbird Stage 1.

The Company also announced the signing of additional binding Zircon Concentrate and Premium Zircon offtake agreements. The Zircon Concentrate agreement with Hainan Wensheng High-Tech Materials Company Limited

(Wensheng) increased the contracted volume to 52,000 tonnes. The Premium Zircon agreement with CFM Minerales.sa (CFM) increased the contracted volume to 4,000 tonnes. These additional offtake agreements mean that 100% of all Stage 1 zircon and ilmenite production volumes at Thunderbird, are under binding offtake agreements.



Figure 4: Sheffield representatives with our Chinese offtake partner

#### Project Financing

Financing arrangements to support the development of Thunderbird continued during the half year. During this time the Company has actively pursued potential funding partners to support development of the Thunderbird Mineral Sands Project. Expressions of interest and proposals have been received from credible third parties, with the Company continuing to engage with these third parties with a view to securing an equity investment. The Company remains open to pursuing a range of alternate funding strategies to support the development of the Project.

#### **EXPLORATION ACTIVITIES**

##### Dampier Mineral Sands Project

Sheffield released an updated Thunderbird Ore Reserve (refer to ASX announcement 31 July 2019) which reported an increase of 68 million tonnes or 10% (ore tonnes) and approximately 9% (HM tonnes) to 748 million tonnes @ 11.2% HM (Proven and Probable) compared to the previous Ore Reserve of 680.5 million tonnes at 11.3% HM (refer to ASX announcement 16 March 2017). The updated Thunderbird Ore Reserve supports a 37-year mine life.

The Mineral Resource and Ore Reserve Statement was released (refer to ASX announcement 24 September 2019) to include the updated Thunderbird Ore Reserve and the maiden Night Train Inferred Resource (refer to ASX announcement 31 January 2019). The Dampier Project contains a total Mineral Resource of 3.36 billion tonnes at an average grade of 6.8% HM (Measured, Indicated and Inferred) for both the Thunderbird (3.0% HM cut-off) and Night Train (1.2% HM cut-off) deposits. The increase of 4% for material tonnes and by 2% for contained in-situ HM tonnes is due to the addition of the maiden Inferred Night Train Resource, that contains 130 million tonnes @ 3.3% HM above a 1.2% HM cut-off (refer to ASX announcement 31 January 2019).

Heritage impact assessments were lodged with representative parties of Traditional Owners in regard to proposed future exploration drill programs on the Dampier peninsula. Four tenement applications Judas South, South Sand, Parfix and Jet were granted during the quarter for 397km<sup>2</sup>. Two of these Judas South and South Sand overlie the Runaway HM prospect totalling an area of 358km<sup>2</sup>.

#### Barton Mineral Sands Project

The Barton Project is located within the northeast Eucla basin of South Australia. Sheffield applied for tenement ELA2019/0152 which covers an area of 426km<sup>2</sup> at the Ooldea Range. Mineralisation on this tenement application was discovered by the Northern Mining joint venture with National Mineral Sands during the mid to late 1990's. The application has been incorporated into the Barton Project which now covers 1,409km<sup>2</sup> of HM prospective mid to late Eocene sands. The addition of this tenement has enabled Sheffield's Barton Project to cover HM occurrences beneath the Barton, Paling and Oodlea Ranges.

#### Ceduna Mineral Sands Project

Sheffield's newly applied for Ceduna Project is situated 45km east of Ceduna in South Australia's Eucla basin. The Project consists of a single tenement application covering 924km<sup>2</sup>. Three HM prospects have been identified historically including the strand-style mineral sand prospects of Dromedary and Namib, as well as the embayment-style Gullivers prospect.

#### Eneabba Mineral Sands Project

The Eneabba Project comprises of seven deposits with a combined Mineral Resource totalling 193 million tonnes @ 3.0% HM (Measured, Indicated and Inferred) containing 4.8 million tonnes of VHM, across seven deposits. These include Yandanooka, Durack, Drummond Crossing, Robbs Cross, Thomson, West Mine North, and Ellengail (refer to ASX 3 October 2018), all situated proximal to Eneabba in the Midwest wheatbelt region of Western Australia.

During the reporting period, retention status was achieved for the Drummond Crossing and Robbs Cross Mineral Resources. All of the Eneabba Project Mineral Resources are now under retention status or are located on granted Mining Leases.

#### McCalls Mineral Sands Project

The McCalls Mineral Sand Project, located 110km to the north of Perth near the town of Gingin, has a combined Mineral Resource totalling 5.8 billion tonnes @ 1.4% HM (Indicated and Inferred) containing 75 million tonnes of VHM across two deposits, McCalls and Mindarra Springs (refer to ASX dated 3 October 2018). These deposits are large chloride ilmenite resources.

During the reporting period, retention status was achieved on the remainder of Sheffield tenure for the McCalls Mineral Resource. All of the McCalls Project Mineral Resources are now under retention status.

#### Derby East Construction Sand Project

The Derby East Project contains a large sand target which Sheffield is investigating for the potential to yield commercial quantities of sand suitable for end-use construction purposes. The Project is located 24km east of the Port of Derby. A technical report was compiled during the period.

#### Further Work

Heritage meetings and ground surveys are planned to be undertaken with representative parties of Traditional Owners in regard to proposed 2020 exploration drill programs on the Dampier peninsula. Further bulk sample material is planned to be collected from the Night Train deposit on commencement of proposed drill programs to enable further metallurgical and process flow test work to be carried out at the Night Train HM prospect.

### **CORPORATE ACTIVITIES**

At the end of the half year, the Group held \$10.9m in cash and incurred a loss of \$5.9m (2018: \$5.8m loss).

The Company completed a share placement to professional and sophisticated investors, raising a total of \$18 million in two tranches with the proceeds used to advance the development of Thunderbird.

During the half year, the Company welcomed John Richards and Ian Macliver to the Board and farewellled Bruce McQuitty, a founding member of Sheffield Resources Limited.

#### AUDITOR'S INDEPENDENCE DECLARATION

Section 307C of the Corporations Act 2001 requires our auditors, HLB Mann Judd, to provide the Directors of the Company with an Independence Declaration in relation to the review of the half year financial report. This Independence Declaration is set out on page 21 and forms part of this Directors' report for the half year ended 31 December 2019.

This report is signed in accordance with a resolution of the Board of Directors made pursuant to s.306(3) of the Corporations Act 2001.



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Mr Bruce McFadzean  
Managing Director

27 FEBRUARY 2020

## ORE RESERVE AND MINERAL RESOURCE STATEMENT

### DAMPIER PROJECT ORE RESERVE

#### SHEFFIELD ORE RESERVE FOR DAMPIER PROJECT AT 31 DECEMBER 2019 (in-situ assemblage)

Deposit	Ore Reserve Category	Material (Million Tonnes)	In-situ Total HM <sup>7</sup> (Million Tonnes)	Total HM Grade (%)	Valuable HM Assemblage (in-situ) <sup>5</sup>					
					Zircon	HiTi Leuc	Leuco- xene	Ilme- nite	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
<b>Total</b>		<b>748</b>	<b>83.8</b>	<b>11.2</b>	<b>0.86</b>	<b>0.27</b>	<b>0.27</b>	<b>3.11</b>	<b>11.6</b>	<b>15.0</b>

#### SHEFFIELD ORE RESERVE FOR DAMPIER PROJECT AT 31 DECEMBER 2019 (HM assemblage)

Deposit	Ore Reserve Category	Material (Million Tonnes)	In-situ Total HM <sup>7</sup> (Million Tonnes)	Total HM Grade (%)	Valuable HM Assemblage <sup>6</sup>					
					Zircon	HiTi Leuc	Leuco- xene	Ilme- nite	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
<b>Total</b>		<b>748</b>	<b>83.8</b>	<b>11.2</b>	<b>7.7</b>	<b>2.4</b>	<b>2.4</b>	<b>27.8</b>	<b>11.6</b>	<b>15.0</b>

<sup>1</sup>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

<sup>2</sup>Ore Reserve is a sub-set of Mineral Resource

<sup>3</sup>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.

<sup>4</sup>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.

<sup>5</sup>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.

<sup>6</sup>Mineral Assemblage is reported as a percentage of HM Grade, it is derived by dividing the in-situ grade by the HM grade.

<sup>7</sup> 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 to Proved and Probable Ore Reserves respectively, subject to mine design, modifying factors and economic evaluation.

SHEFFIELD HM MINERAL RESOURCE

DAMPIER PROJECT MINERAL RESOURCES

SHEFFIELD MINERAL RESOURCE FOR DAMPIER PROJECT AT 31 DECEMBER 2019 (in-situ assemblage)

Summary of Mineral Resource <sup>1,2,3</sup>						In-situ Assemblage <sup>4,5</sup>					
Deposit	Mineral Resource	Cut off	Material	In-situ Total HM <sup>6</sup>	Total HM Grade	Zircon	HiTi Leuc	Leuco-xene	Ilmenite	Over size	Slimes
	Category	(Total HM%)	(Million Tonnes)	(Million Tonnes)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
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
	<b>Total</b>	<b>3.0</b>	<b>3,230</b>	<b>223</b>	<b>6.9</b>	<b>0.57</b>	<b>0.18</b>	<b>0.20</b>	<b>1.9</b>	<b>9</b>	<b>16</b>
Night Train (low-grade)	Inferred	1.2	130	4.2	3.3	0.45	0.18	1.5	0.71	2.2	8.7
	<b>Total</b>	<b>1.2</b>	<b>130</b>	<b>4.2</b>	<b>3.3</b>	<b>0.45</b>	<b>0.18</b>	<b>1.5</b>	<b>0.71</b>	<b>2.2</b>	<b>8.7</b>
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
	<b>Total</b>	<b>Various</b>	<b>3,360</b>	<b>227</b>	<b>6.8</b>	<b>0.57</b>	<b>0.18</b>	<b>0.25</b>	<b>1.9</b>	<b>8.7</b>	<b>15</b>
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
	<b>Total</b>	<b>7.5</b>	<b>1,050</b>	<b>127</b>	<b>12.2</b>	<b>0.93</b>	<b>0.28</b>	<b>0.26</b>	<b>3.3</b>	<b>11</b>	<b>15</b>
Night Train (high-grade)	Inferred	2.0	50	3.0	5.9	0.82	0.33	2.9	1.06	2.2	10.2
	<b>Total</b>	<b>2.0</b>	<b>50</b>	<b>3.0</b>	<b>5.9</b>	<b>0.82</b>	<b>0.33</b>	<b>2.9</b>	<b>1.06</b>	<b>2.2</b>	<b>10.2</b>
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
	<b>Total</b>	<b>Various</b>	<b>1,090</b>	<b>130</b>	<b>11.9</b>	<b>0.92</b>	<b>0.29</b>	<b>0.38</b>	<b>3.2</b>	<b>11</b>	<b>14</b>

<sup>1</sup> 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.

<sup>2</sup>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.

<sup>3</sup>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.

<sup>4</sup> 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<sub>2</sub> >90% Liberation; leucoxene: 70-90% TiO<sub>2</sub> >90% Liberation; High titanium leucoxene (HiTi leucoxene) and rutile 90% TiO<sub>2</sub> >90% Liberation, and zircon: 66.7% ZrO<sub>2</sub>+HfO<sub>2</sub> >90% Liberation. The non-magnetic fraction was submitted for XRF analysis and minerals determined as follows: zircon: ZrO<sub>2</sub>+HfO<sub>2</sub>/0.667 and HiTi leucoxene: TiO<sub>2</sub>/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<sub>2</sub> minerals the following breakpoints were used to distinguish between Ilmenite 40% to 70% TiO<sub>2</sub>, leucoxene 70% to 90% TiO<sub>2</sub>, 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<sub>2</sub> >90% Liberation; leucoxene: 70-94% TiO<sub>2</sub> >90% Liberation; HiTi leucoxene: >94% TiO<sub>2</sub> >90% Liberation; and zircon: 66.7% ZrO<sub>2</sub>+HfO<sub>2</sub> >90% Liberation. The non-magnetic fraction was submitted for XRF analysis and minerals determined as follows: zircon: ZrO<sub>2</sub>+HfO<sub>2</sub>/0.667 and HiTi leucoxene: TiO<sub>2</sub>/0.94.

<sup>5</sup>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.

<sup>6</sup> 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 2019 (HM assemblage)

Deposit	Mineral Resource Category	Cut off (Total HM%)	Material (Million Tonnes)	In-situ Total HM <sup>6</sup> (Million Tonnes)	Total HM Grade (%)	HM Assemblage <sup>4</sup>					
						Zircon (%)	HiTi Leuc <sup>5</sup> (%)	Leuco-xene (%)	Ilme-nite (%)	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
	<b>Total</b>	<b>3.0</b>	<b>3,230</b>	<b>223</b>	<b>6.9</b>	<b>8.3</b>	<b>2.6</b>	<b>2.9</b>	<b>28</b>	<b>9</b>	<b>16</b>
Night Train (low-grade)	Inferred	1.2	130	4.2	3.3	14	5.4	46	22	2.2	8.7
	<b>Total</b>	<b>1.2</b>	<b>130</b>	<b>4.2</b>	<b>3.3</b>	<b>14</b>	<b>5.4</b>	<b>46</b>	<b>22</b>	<b>2.2</b>	<b>8.7</b>
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
	<b>Total</b>	<b>Various</b>	<b>3,360</b>	<b>227</b>	<b>6.8</b>	<b>8.4</b>	<b>2.7</b>	<b>3.7</b>	<b>28</b>	<b>8.7</b>	<b>15</b>
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
	<b>Total</b>	<b>7.5</b>	<b>1,050</b>	<b>127</b>	<b>12.2</b>	<b>7.6</b>	<b>2.3</b>	<b>2.1</b>	<b>27</b>	<b>11</b>	<b>15</b>
Night Train (high-grade)	Inferred	2.0	50	3.0	5.9	14	5.6	49	18	2.2	10.2
	<b>Total</b>	<b>2.0</b>	<b>50</b>	<b>3.0</b>	<b>5.9</b>	<b>14</b>	<b>5.6</b>	<b>49</b>	<b>18</b>	<b>2.2</b>	<b>10.2</b>
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
	<b>Total</b>	<b>Various</b>	<b>1,090</b>	<b>130</b>	<b>11.9</b>	<b>7.8</b>	<b>2.4</b>	<b>3.2</b>	<b>27</b>	<b>11</b>	<b>14</b>

<sup>1</sup> 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.

<sup>2</sup> 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.

<sup>3</sup> 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.

<sup>4</sup> 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<sub>2</sub> >90% Liberation; leucoxene: 70-90% TiO<sub>2</sub> >90% Liberation; High titanium leucoxene (HiTi leucoxene) and rutile 90% TiO<sub>2</sub> >90% Liberation, and zircon: 66.7% ZrO<sub>2</sub>+HfO<sub>2</sub> >90% Liberation. The non-magnetic fraction was submitted for XRF analysis and minerals determined as follows: zircon: ZrO<sub>2</sub>+HfO<sub>2</sub>/0.667 and HiTi leucoxene: TiO<sub>2</sub>/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<sub>2</sub> minerals the following breakpoints were used to distinguish between Ilmenite 40% to 70% TiO<sub>2</sub>, Leucoxene 70% to 90% TiO<sub>2</sub>, 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<sub>2</sub> >90% Liberation; leucoxene: 70-94% TiO<sub>2</sub> >90% Liberation; HiTi leucoxene: >94% TiO<sub>2</sub> >90% Liberation; and zircon: 66.7% ZrO<sub>2</sub>+HfO<sub>2</sub> >90% Liberation. The non-magnetic fraction was submitted for XRF analysis and minerals determined as follows: zircon: ZrO<sub>2</sub>+HfO<sub>2</sub>/0.667 and HiTi leucoxene: TiO<sub>2</sub>/0.94.

<sup>5</sup> HiTi leucoxene and rutile (%) combined for Night Train at a >90% TiO<sub>2</sub> (as one assemblage sample utilised=> 90% rutile and HiTi leucoxene), HiTi leucoxene for Thunderbird > 94% TiO<sub>2</sub>

<sup>6</sup> 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 2019 (in-situ tonnes)

Summary of Mineral Resource <sup>1,2,3</sup>				In-situ Tonnes <sup>4</sup>					
Deposit	Mineral Resource	Cut off	Material	In-situ Total HM <sup>6</sup>	Zircon	HiTi Leuc <sup>5</sup>	Leucoxene	Ilmenite	Total VHM
	Category	(Total HM%)	(Million Tonnes)	(Million Tonnes)	(Thousand Tonnes)	(Thousand Tonnes)	(Thousand Tonnes)	(Thousand Tonnes)	(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
	<b>Total</b>	<b>3.0</b>	<b>3,230</b>	<b>223</b>	<b>18,600</b>	<b>5,900</b>	<b>6,500</b>	<b>61,700</b>	<b>92,600</b>
Night Train (low-grade)	Inferred	1.2	130	4.2	560	220	1,900	900	3,590
	<b>Total</b>	<b>1.2</b>	<b>130</b>	<b>4.2</b>	<b>560</b>	<b>220</b>	<b>1,900</b>	<b>900</b>	<b>3,590</b>
All Dampier Project (low grade cut-off)	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	Various	730	42	3,760	1,220	3,100	11,400	19,490
	<b>Total</b>	<b>Various</b>	<b>3,360</b>	<b>227</b>	<b>19,160</b>	<b>6,020</b>	<b>8,400</b>	<b>62,600</b>	<b>96,190</b>
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
	<b>Total</b>	<b>7.5</b>	<b>1,050</b>	<b>127</b>	<b>9,700</b>	<b>3,000</b>	<b>2,700</b>	<b>35,000</b>	<b>50,400</b>
Night Train (high-grade)	Inferred	2.0	50	3.0	420	170	1,500	540	2,600
	<b>Total</b>	<b>2.0</b>	<b>50</b>	<b>3.0</b>	<b>420</b>	<b>170</b>	<b>1,500</b>	<b>540</b>	<b>2,600</b>
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
	<b>Total</b>	<b>Various</b>	<b>1,090</b>	<b>130</b>	<b>10,120</b>	<b>3,170</b>	<b>4,200</b>	<b>35,540</b>	<b>53,000</b>

<sup>1</sup> 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.

<sup>2</sup> 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.

<sup>3</sup> 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.

<sup>4</sup> 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.

<sup>5</sup> HiTi leucoxene and rutile (%) combined for Night Train at a >90% TiO<sub>2</sub> (as one assemblage sample utilised=> 90% Rutile and HiTi leucoxene), HiTi leucoxene for Thunderbird > 94% TiO<sub>2</sub>

<sup>6</sup> The contained in-situ tonnes derived from HM and material tonnes from information in the Mineral Resource tables

ENEABBA PROJECT MINERAL RESOURCES

SHEFFIELD MINERAL RESOURCES FOR THE ENEABBA PROJECT AT 31 DECEMBER 2019 (in-situ assemblage)

Deposit	Mineral Resource Category	Cut off (Total HM%)	Material (Million Tonnes)	In-situ Total HM <sup>12</sup> (Thousand Tonnes)	Total HM Grade (%)	In-situ Assemblage <sup>11</sup>					
						Zircon (%)	Rutile (%)	Leuco-xene (%)	Ilme-nite (%)	Over size (%)	Slimes (%)
Yandanooka <sup>4,6,8</sup>	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
	<b>Total</b>	<b>1.4</b>	<b>60.8</b>	<b>1,845</b>	<b>3.0</b>	<b>0.37</b>	<b>0.11</b>	<b>0.11</b>	<b>2.11</b>	<b>11.5</b>	<b>15</b>
Durack <sup>4,6,7,8</sup>	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
	<b>Total</b>	<b>1.4</b>	<b>26.3</b>	<b>748</b>	<b>2.8</b>	<b>0.39</b>	<b>0.08</b>	<b>0.13</b>	<b>1.99</b>	<b>15.5</b>	<b>14</b>
Drummond Crossing <sup>3,4,6,8</sup>	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
	<b>Total</b>	<b>1.4</b>	<b>38.8</b>	<b>915</b>	<b>2.4</b>	<b>0.33</b>	<b>0.24</b>	<b>0.08</b>	<b>1.26</b>	<b>7.7</b>	<b>14</b>
Robbs Cross <sup>5,6,8</sup>	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
	<b>Total</b>	<b>1.4</b>	<b>17.8</b>	<b>338</b>	<b>1.9</b>	<b>0.28</b>	<b>0.23</b>	<b>0.09</b>	<b>0.91</b>	<b>6.6</b>	<b>6</b>
Thomson <sup>5,8</sup>	Inferred	1.4	26	516	2.0	0.38	0.28	0.11	0.85	6.9	18
	<b>Total</b>	<b>1.4</b>	<b>26</b>	<b>516</b>	<b>2.0</b>	<b>0.38</b>	<b>0.28</b>	<b>0.11</b>	<b>0.85</b>	<b>6.9</b>	<b>18</b>
West Mine North <sup>3,4,6,9</sup>	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
	<b>Total</b>	<b>2.0</b>	<b>12.0</b>	<b>796</b>	<b>6.6</b>	<b>0.40</b>	<b>0.44</b>	<b>0.12</b>	<b>3.18</b>	<b>2.4</b>	<b>12</b>
Ellengail <sup>3,4,9,10</sup>	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
	<b>Total</b>	<b>2.0</b>	<b>11.8</b>	<b>565</b>	<b>4.8</b>	<b>0.47</b>	<b>0.39</b>	<b>0.46</b>	<b>3.07</b>	<b>2.9</b>	<b>15</b>
<b>Total</b>	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
	<b>Total</b>	<b>Various</b>	<b>193.3</b>	<b>5,723</b>	<b>3.0</b>	<b>0.36</b>	<b>0.20</b>	<b>0.13</b>	<b>1.77</b>	<b>9</b>	<b>14</b>

<sup>1</sup>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

<sup>2</sup>All tonnages and grades have been rounded to reflect the relative uncertainty of the estimate, thus the sums of columns may not equal.

<sup>3</sup>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.

<sup>4</sup>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.

<sup>5</sup>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.

<sup>6</sup>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.

<sup>7</sup>Reported below an upper cut-off grade of 35% slimes.

<sup>8</sup>Estimates of mineral assemblage are presented as percentages of the total HM component of the deposit, as determined by QEMSCAN™ analysis. For the TiO<sub>2</sub> minerals specific breakpoints are used to distinguish between rutile (>95% TiO<sub>2</sub>), leucocene (85-95% TiO<sub>2</sub>) and ilmenite (<55-85% TiO<sub>2</sub>).

<sup>9</sup>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

<sup>10</sup>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

<sup>11</sup>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.

<sup>12</sup> 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 2019 (HM assemblage)

Deposit	Mineral Resource Category	Cut off (Total HM%)	Material (Million Tonnes)	In-situ Total HM <sup>11</sup> (Thousand Tonnes)	Total HM Grade (%)	HM Assemblage <sup>8,9,10</sup>					Slimes (%)
						Zircon (%)	Rutile (%)	Leuco-xene (%)	Ilme-nite (%)	Over size (%)	
Yandanooka <sup>4,6,8</sup>	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
	<b>Total</b>	<b>1.4</b>	<b>60.8</b>	<b>1,845</b>	<b>3.0</b>	<b>12</b>	<b>3.5</b>	<b>3.6</b>	<b>70</b>	<b>11.5</b>	<b>15</b>
Durack <sup>4,6,7,8</sup>	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
	<b>Total</b>	<b>1.4</b>	<b>26.3</b>	<b>748</b>	<b>2.8</b>	<b>14</b>	<b>2.9</b>	<b>4.4</b>	<b>70</b>	<b>15.5</b>	<b>14</b>
Drummond Crossing <sup>3,4,6,8</sup>	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
	<b>Total</b>	<b>1.4</b>	<b>38.8</b>	<b>915</b>	<b>2.4</b>	<b>14</b>	<b>10.2</b>	<b>3.4</b>	<b>54</b>	<b>7.7</b>	<b>14</b>
Robbs Cross <sup>5,6,8</sup>	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
	<b>Total</b>	<b>1.4</b>	<b>17.8</b>	<b>338</b>	<b>1.9</b>	<b>15</b>	<b>12.3</b>	<b>4.8</b>	<b>48</b>	<b>6.6</b>	<b>6</b>
Thomson <sup>5,8</sup>	Inferred	1.4	26	516	2.0	19	13.8	5.4	42	6.9	18
	<b>Total</b>	<b>1.4</b>	<b>26</b>	<b>516</b>	<b>2.0</b>	<b>19</b>	<b>13.8</b>	<b>5.4</b>	<b>42</b>	<b>6.9</b>	<b>18</b>
West Mine North <sup>3,4,6,9</sup>	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
	<b>Total</b>	<b>2.0</b>	<b>12.0</b>	<b>796</b>	<b>6.6</b>	<b>6</b>	<b>6.6</b>	<b>1.8</b>	<b>48</b>	<b>2.4</b>	<b>12</b>
Ellengail <sup>3,4,9,10</sup>	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
	<b>Total</b>	<b>2.0</b>	<b>11.8</b>	<b>565</b>	<b>4.8</b>	<b>10</b>	<b>8.1</b>	<b>9.6</b>	<b>64</b>	<b>2.9</b>	<b>15</b>
<b>Total</b>	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
	<b>Total</b>	<b>Various</b>	<b>193.3</b>	<b>5,723</b>	<b>3.0</b>	<b>12</b>	<b>6.8</b>	<b>4.2</b>	<b>60</b>	<b>9</b>	<b>14</b>

<sup>1</sup> 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

<sup>2</sup> All tonnages and grades have been rounded to reflect the relative uncertainty of the estimate, thus the sums of columns may not equal.

<sup>3</sup> 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.

<sup>4</sup> 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.

<sup>5</sup> 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.

<sup>6</sup> 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.

<sup>7</sup> Reported below an upper cut-off grade of 35% slimes.

<sup>8</sup> Estimates of mineral assemblage are presented as percentages of the total HM component of the deposit, as determined by QEMSCAN™ analysis. For the TiO<sub>2</sub> minerals specific breakpoints are used to distinguish between rutile (>95% TiO<sub>2</sub>), leucocene (85-95% TiO<sub>2</sub>) and ilmenite (<55-85% TiO<sub>2</sub>).

<sup>9</sup> 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

<sup>10</sup> 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

<sup>11</sup> 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 2019 (in-situ tonnes)

Summary of Mineral Resource <sup>1,2,3</sup>				In-situ Tonnes					
Deposit	Mineral Resource Category	Cut off (Total HM%)	Material (Million Tonnes)	In-situ Total HM <sup>11</sup>	Zircon	Rutile	Leucoxene	Ilmenite	Total VHM
				(Thousand Tonnes)	(Thousand Tonnes)	(Thousand Tonnes)	(Thousand Tonnes)	(Thousand Tonnes)	(Thousand Tonnes)
Yandanooka <sup>4,6,8</sup>	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
	<b>Total</b>	<b>1.4</b>	<b>60.8</b>	<b>1,845</b>	<b>224</b>	<b>65</b>	<b>66</b>	<b>1,283</b>	<b>1,639</b>
Durack <sup>4,6,7,8</sup>	Indicated	1.4	20.7	600	82	18	22	429	551
	Inferred	1.4	5.6	148	21	4	11	95	130
	<b>Total</b>	<b>1.4</b>	<b>26.3</b>	<b>748</b>	<b>104</b>	<b>21</b>	<b>33</b>	<b>523</b>	<b>681</b>
Drummond Crossing <sup>3,4, 6,8</sup>	Indicated	1.4	35.5	838	118	86	29	447	680
	Inferred	1.4	3.3	77	9	7	2	43	61
	<b>Total</b>	<b>1.4</b>	<b>38.8</b>	<b>915</b>	<b>127</b>	<b>93</b>	<b>31</b>	<b>490</b>	<b>741</b>
Robbs Cross <sup>5,6,8</sup>	Indicated	1.4	14.0	261	38	33	13	123	208
	Inferred	1.4	3.8	77	11	8	3	39	61
	<b>Total</b>	<b>1.4</b>	<b>17.8</b>	<b>338</b>	<b>50</b>	<b>41</b>	<b>16</b>	<b>162</b>	<b>269</b>
Thomson <sup>5,8</sup>	Inferred	1.4	26	516	97	71	28	219	415
	<b>Total</b>	<b>1.4</b>	<b>26</b>	<b>516</b>	<b>97</b>	<b>71</b>	<b>28</b>	<b>219</b>	<b>415</b>
West Mine North <sup>3,4,6,9</sup>	Indicated	2.0	10.2	748	44	49	13	359	465
	Inferred	2.0	1.8	48	5	4	1	24	34
	<b>Total</b>	<b>2.0</b>	<b>12.0</b>	<b>796</b>	<b>48</b>	<b>53</b>	<b>14</b>	<b>383</b>	<b>498</b>
Ellengail <sup>3,4,9,10</sup>	Indicated	2.0	6.5	346	34	28	36	227	325
	Inferred	2.0	5.3	218	22	18	18	136	193
	<b>Total</b>	<b>2.0</b>	<b>11.8</b>	<b>565</b>	<b>56</b>	<b>46</b>	<b>54</b>	<b>363</b>	<b>519</b>
<b>Total</b>	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
	<b>Total</b>	<b>Various</b>	<b>193.3</b>	<b>5,723</b>	<b>705</b>	<b>392</b>	<b>242</b>	<b>3,423</b>	<b>4,762</b>

<sup>1</sup> 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

<sup>2</sup> All tonnages and grades have been rounded to reflect the relative uncertainty of the estimate, thus the sums of columns may not equal.

<sup>3</sup> 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.

<sup>4</sup> 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.

<sup>5</sup> 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.

<sup>6</sup> 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.

<sup>7</sup> Reported below an upper cut-off grade of 35% slimes.

<sup>8</sup> Estimates of mineral assemblage are presented as percentages of the total HM) component of the deposit, as determined by QEMSCAN™ analysis. For the TiO<sub>2</sub> minerals specific breakpoints are used to distinguish between rutile (>95% TiO<sub>2</sub>), leucoxene (85-95% TiO<sub>2</sub>) and ilmenite (<55-85% TiO<sub>2</sub>).

<sup>9</sup> 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

<sup>10</sup> 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

<sup>11</sup> The contained in-situ tonnes derived from HM and material tonnes from information in the Mineral Resource tables

McCALLS PROJECT MINERAL RESOURCES

SHEFFIELD MINERAL RESOURCES FOR McCALLS PROJECT AT 31 DECEMBER 2019 (in-situ assemblage)

Summary of Mineral Resources <sup>1,2,3,4</sup>											
Deposit	Mineral Resource Category	Cut off (Total HM%)	Material (Million Tonnes)	In-situ Total HM <sup>6</sup> (Million Tonnes)	Total HM Grade (%)	In-situ Assemblage <sup>5, 6</sup>					Slimes (%)
						Zircon (%)	Rutile (%)	Leuco-xene (%)	Ilme-nite (%)	Over size (%)	
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
	<b>Total</b>	<b>1.1</b>	<b>3,600</b>	<b>47.7</b>	<b>1.3</b>	<b>0.07</b>	<b>0.05</b>	<b>0.04</b>	<b>1.05</b>	<b>1.1</b>	<b>24</b>
Mindarra Springs <sup>7</sup>	Inferred	1.1	2,200	36.3	1.6	0.07	0.01	0.05	1.32	5.1	20
	<b>Total</b>	<b>1.1</b>	<b>2,200</b>	<b>36.3</b>	<b>1.6</b>	<b>0.07</b>	<b>0.01</b>	<b>0.05</b>	<b>1.32</b>	<b>5.1</b>	<b>20</b>
<b>Total</b>	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
	<b>Total</b>	<b>1.1</b>	<b>5,800</b>	<b>84.0</b>	<b>1.4</b>	<b>0.07</b>	<b>0.03</b>	<b>0.04</b>	<b>1.15</b>	<b>2.6</b>	<b>22</b>

SHEFFIELD MINERAL RESOURCES FOR McCALLS PROJECT AT 30 SEPTEMBER 2019 (HM assemblage)

Summary of Mineral Resources <sup>1,2,3,4,7</sup>											
Deposit	Mineral Resource Category	Cut off (Total HM%)	Material (Million Tonnes)	In-situ Total HM <sup>6</sup> (Million Tonnes)	Total HM Grade (%)	HM Assemblage <sup>5, 6</sup>					Slimes (%)
						Zircon (%)	Rutile (%)	Leuco-xene (%)	Ilme-nite (%)	Over size (%)	
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
	<b>Total</b>	<b>1.1</b>	<b>3,600</b>	<b>47.7</b>	<b>1.3</b>	<b>5.1</b>	<b>3.6</b>	<b>3.0</b>	<b>79</b>	<b>1.1</b>	<b>24</b>
Mindarra Springs <sup>7</sup>	Inferred	1.1	2,200	36.3	1.6	4.2	0.9	3.1	80	5.1	20
	<b>Total</b>	<b>1.1</b>	<b>2,200</b>	<b>36.3</b>	<b>1.6</b>	<b>4.2</b>	<b>0.9</b>	<b>3.1</b>	<b>80</b>	<b>5.1</b>	<b>20</b>
<b>Total</b>	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
	<b>Total</b>	<b>1.1</b>	<b>5,800</b>	<b>84.0</b>	<b>1.4</b>	<b>4.7</b>	<b>2.4</b>	<b>3.1</b>	<b>79</b>	<b>2.6</b>	<b>22</b>

<sup>1</sup>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

<sup>2</sup>All tonnages and grades have been rounded to reflect the relative uncertainty of the estimate, thus the sums of columns may not equal

<sup>3</sup>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

<sup>4</sup>Reported below an upper cut-off grade of 35% slimes

<sup>5</sup>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<sub>2</sub> minerals specific breakpoints are used to distinguish between rutile (>95% TiO<sub>2</sub>), leucogene (85-95% TiO<sub>2</sub>) and ilmenite (<55-85% TiO<sub>2</sub>). Estimates of mineral assemblage (BHP) HM assemblage determination was by magnetic separation and observation (grain-counting)

<sup>6</sup>The contained in-situ tonnes derived from HM and material tonnes from information in the Mineral Resource tables

<sup>7</sup>Excludes Mineral Resources within the Mogumber Nature Reserve

SHEFFIELD MINERAL RESOURCES FOR McCALLS PROJECT AT 31 DECEMBER 2019 (in-situ tonnes)

Summary of Mineral Resources <sup>1,2,3,4</sup>				In-situ Tonnes					
Deposit	Mineral Resource	Cut off	Material	In-situ Total HM <sup>7</sup>	Zircon	Rutile	Leucoxene	Ilmenite	Total VHM
	Category	(Total HM%)	(Million Tonnes)	(Million Tonnes)	(Thousand Tonnes)	(Thousand Tonnes)	(Thousand Tonnes)	(Thousand Tonnes)	(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
	<b>Total</b>	<b>1.1</b>	<b>3,600</b>	<b>47.7</b>	<b>2,430</b>	<b>1,700</b>	<b>1,430</b>	<b>37,730</b>	<b>43,290</b>
Mindarra Springs <sup>8</sup>	Inferred	1.1	2,200	36.3	1,520	320	1,130	29,080	32,050
	<b>Total</b>	<b>1.1</b>	<b>2,200</b>	<b>36.3</b>	<b>1,520</b>	<b>320</b>	<b>1,130</b>	<b>29,080</b>	<b>32,050</b>
<b>Total</b>	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
	<b>Total</b>	<b>1.1</b>	<b>5,800</b>	<b>84.0</b>	<b>3,950</b>	<b>2,020</b>	<b>2,570</b>	<b>66,810</b>	<b>75,340</b>

<sup>1</sup>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

<sup>2</sup>All tonnages and grades have been rounded to reflect the relative uncertainty of the estimate, thus the sums of columns may not equal

<sup>3</sup>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

<sup>4</sup>Reported below an upper cut-off grade of 35% slimes

<sup>5</sup>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<sub>2</sub> minerals specific breakpoints are used to distinguish between rutile (>95% TiO<sub>2</sub>), leucoxene (85-95% TiO<sub>2</sub>) and ilmenite (<55-85% TiO<sub>2</sub>). Estimates of mineral assemblage (BHP) HM assemblage determination was by magnetic separation and observation (grain-counting)

<sup>6</sup>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

<sup>7</sup>The contained in-situ tonnes derived from HM and material tonnes from information in the Mineral Resource tables

<sup>8</sup>Excludes mineralisation within the Mogumber Nature Reserve

## 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 Seb 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 Seb 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](http://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 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 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
Exploration Results	Mr David Archer	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.

Refer to the Sheffield ASX Release 'MINERAL RESOURCE AND ORE RESERVE STATEMENT' released on the 24 September 2019. This can be found on the company's website [www.sheffieldresources.com.au](http://www.sheffieldresources.com.au).

## 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
- Quarterly Activities Report June 30, 2019 "QUARTERLY ACTIVITIES REPORT FOR THE PERIOD ENDED 30 JUNE 2019" 31 July 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

These announcements are available to view on Sheffield's website [www.sheffieldresources.com.au](http://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, 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.

## 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.

## AUDITOR'S INDEPENDENCE DECLARATION

As lead auditor for the review of the consolidated interim financial report of Sheffield Resources Limited for the half-year ended 31 December 2019, I declare that to the best of my knowledge and belief, there have been no contraventions of:

- a) the auditor independence requirements of the *Corporations Act 2001* in relation to the review; and
- b) any applicable code of professional conduct in relation to the review.

Perth, Western Australia  
27 February 2020



**D I Buckley**  
Partner

**hlb.com.au**

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HLB Mann Judd (WA Partnership) is a member of HLB International, the global advisory and accounting network.

	Consolidated	
	31 December 2019 \$'000	31 December 2018 \$'000
Notes		
<b>Continuing operations</b>		
Other Income	53	69
Employee benefits expense	(2,867)	(2,559)
Corporate expense	2 (3,077)	(3,463)
Other expenses	3	(52)
<b>Results from operating activities</b>	<b>(5,888)</b>	<b>(6,005)</b>
Net financing income	(37)	170
<b>Net loss before income tax</b>	<b>(5,925)</b>	<b>(5,835)</b>
Income tax benefit	-	-
<b>Loss for the period</b>	<b>(5,925)</b>	<b>(5,835)</b>
<b>Other comprehensive income</b>		
Other comprehensive income for the year, net of tax	-	-
<b>Total comprehensive loss for the half year</b>	<b>(5,925)</b>	<b>(5,835)</b>
Basic earnings per share (cents per share)	(2.08)	(2.51)
Dilutive earnings per share (cents per share)	(2.08)	(2.51)

The accompanying notes form part of these financial statements

		31 December 2019 \$'000	30 June 2019 \$,000
	Notes		
<b>Assets</b>			
<b>Current Assets</b>			
Cash and cash equivalents		10,930	2,698
Trade and other receivables		687	324
Other current assets		-	-
Inventories		17	11
<b>Total Current Assets</b>		<b>11,634</b>	<b>3,033</b>
<b>Non-Current Assets</b>			
Other non-current assets	3	3,355	6,624
Plant and equipment	4	3,973	4,232
Right of use asset	4	1,896	2,058
Exploration and evaluation expenditure	5	10,584	9,641
Mine development	4	61,705	53,952
<b>Total Non-Current Assets</b>		<b>81,513</b>	<b>76,507</b>
<b>Total Assets</b>		<b>93,147</b>	<b>79,540</b>
<b>Liabilities</b>			
<b>Current Liabilities</b>			
Trade and other payables	6	4,362	4,334
Interest bearing liabilities		159	164
Provisions		395	364
<b>Total Current Liabilities</b>		<b>4,916</b>	<b>4,862</b>
<b>Non-Current Liabilities</b>			
Interest bearing liabilities		1,907	1,975
Provisions		63	63
<b>Total non-current liabilities</b>		<b>1,970</b>	<b>2,038</b>
<b>Total Liabilities</b>		<b>6,886</b>	<b>6,900</b>
<b>Net Assets</b>		<b>86,261</b>	<b>72,640</b>
<b>Equity</b>			
Issued capital	7	117,559	99,469
Reserves		11,119	9,663
Accumulated losses		(42,417)	(36,492)
<b>Total Equity</b>		<b>86,261</b>	<b>72,640</b>

The accompanying notes form part of these financial statements

	Issued Capital	Accumulated Losses	Reserves	Total Equity
	\$	\$	\$	\$
<b>Balance at 1 July 2018</b>	<b>80,602</b>	<b>(26,242)</b>	<b>7,325</b>	<b>61,685</b>
Loss for the period	-	(5,835)	-	(5,835)
<b>Total comprehensive loss for the period</b>				
Shares issued during the period	16,787	-	-	16,787
Share issue costs	(667)	-	-	(667)
Share-based payments	-	-	852	852
<b>Balance at 31 December 2018</b>	<b>96,722</b>	<b>(32,077)</b>	<b>8,177</b>	<b>72,822</b>

	Issued Capital	Accumulated Losses	Reserves	Total Equity
	\$	\$	\$	\$
<b>Balance at 1 July 2019</b>	<b>99,469</b>	<b>(36,492)</b>	<b>9,663</b>	<b>72,640</b>
Loss for the period	-	(5,925)	-	(5,925)
<b>Total comprehensive loss for the period</b>				
Shares issued during the period and options exercised	18,000	-	-	18,000
Share issue costs	(1,372)	-	-	(1,372)
Share-based payments	1,462	-	1,456	2,918
<b>Balance at 31 December 2019</b>	<b>117,559</b>	<b>(42,417)</b>	<b>11,119</b>	<b>86,261</b>

The accompanying notes form part of these financial statements

	Consolidated	
	31 December 2019 \$'000	31 December 2018 \$'000
	Inflows/(Outflows)	
<b>Cash flows from operating activities</b>		
Receipts from customers	2	69
Payments to suppliers and employees	(2,088)	(3,482)
Interest received	32	205
Net cash (outflows) from operating activities	(2,054)	(3,208)
<b>Cash flows from investing activities</b>		
Payments for exploration and evaluation expenditure	(937)	(1,789)
Payments for development expenditure	(5,224)	(20,730)
Payments for plant and equipment	-	(101)
Payments for guarantees	(67)	-
Proceeds from disposal of assets	5	-
Net cash (outflows) from investing activities	(6,223)	(22,620)
<b>Cash flows from financing activities</b>		
Proceeds from issue of shares and exercise of options	18,000	16,787
Payments for share issue costs	(1,412)	(667)
Repayment of finance lease	(79)	(75)
Net cash inflows from financing activities	16,509	16,045
Net increase/(decrease) in cash held	8,232	(9,783)
Cash and cash equivalents at the beginning of the period	2,698	23,142
<b>Cash and cash equivalents at the end of the period</b>	<b>10,930</b>	<b>13,359</b>

The accompanying notes form part of these financial statements

## **NOTE 1: STATEMENT OF SIGNIFICANT ACCOUNTING POLICIES**

### **Statement of compliance**

The half year consolidated financial statements are general purpose financial statements prepared in accordance with the requirements of the Corporations Act 2001, applicable accounting standards including AASB 134 'Interim Financial Reporting', Accounting Interpretations and other authoritative pronouncements of the Australian Accounting Standards Board ('AASB'). Compliance with AASB 134 ensures compliance with IAS 34 'Interim Financial Reporting'.

This condensed half year financial report does not include full disclosures of the type normally included in an annual financial report. Therefore, it cannot be expected to provide as full an understanding of the financial performance, financial position and cash flows of the Group as in the full financial report.

It is recommended that this financial report be read in conjunction with the annual financial report for the year ended 30 June 2019 and any public announcements made by Sheffield Resources Limited during the half year in accordance with continuous disclosure requirements arising under the Corporations Act 2001 and the ASX Listing Rules.

### **Basis of preparation**

The half year report has been prepared on a historical cost basis. Cost is based on the fair value of the consideration given in exchange for assets. The company is domiciled in Australia and all amounts are presented in Australian dollars, unless otherwise noted.

For the purpose of preparing the interim report, the half year has been treated as a discrete reporting period.

The accounting policies adopted are consistent with those of the previous financial year and corresponding interim reporting period.

The amounts contained in the financial reported have been rounded to the nearest \$1,000 (unless otherwise stated) pursuant to the option available to the Company under ASIC Class Order 2016/191. The Company is an entity to which this class order applies.

### **Going Concern**

Notwithstanding the fact that the Group incurred an operating loss of \$5.9m for the period ended 31 December 2019, had net cash outflow from operating activities of \$2.0m and investing activities of \$6.2m and has current working capital of \$6.7m, the Directors are of the opinion that the Group is a going concern for the following reasons:

- The Company has been successful in completing material equity raisings to progress the development of the Thunderbird Mineral Sands Project over the last two years;
- The Company, is seeking a strategic partner to progress the development of the Thunderbird Mineral Sands Project;
- The Company is able to consider and assess alternate sources of finance to fund short-term working capital; and
- The Company is taking measures to minimize cash burn whilst the funding process for Thunderbird continues.

Given the early stage life cycle of the Company's primary asset, The Thunderbird Mineral Sands Project, the Directors anticipate that further equity raisings may be required to meet ongoing working capital and expenditure commitments.

Should the equity raisings or other sources of funding not be completed, there is a material uncertainty that may cast significant doubt as to whether the Group will be able to realise its assets and extinguish its liabilities in the normal course of business and at the amount stated in the financial report.

### **Significant accounting judgments and key estimates**

The preparation of half year financial report requires management to make judgments, estimates and assumptions that affect the application of accounting policies and the reported amounts of assets, liabilities, income and expense. Actual results may differ from these estimates.

Except as described below, in preparing this half year financial report, the significant judgments made by management in applying the Group's accounting policies and the key sources of estimation uncertainty were the same as those that applied to the consolidated financial report for the year ended 30 June 2019.

#### Accounting policies and method of computation

The accounting policies and methods of computation adopted are consistent with those of the previous financial year and corresponding interim reporting period. These accounting policies are consistent with Australian Accounting Standards and with International Financial Reporting Standards.

#### Adoption of new and revised standards

In the period ended 31 December 2019, the Directors have reviewed all of the new and revised Standards and Interpretations issued by the AASB that are relevant to the Group and effective for the current reporting period. The Group early adopted AASB 16 Leases with a date of initial application of 1 July 2016. The Group also early adopted AASB 15 Revenue from Contracts with Customers. As a result of this review, the Directors have determined that there is no material impact of the new and revised Standards and Interpretations on the Group and, therefore, no material change is necessary to Group accounting policies.

The Directors have also reviewed all of the new and revised Standards and Interpretations in issue not yet adopted for the period ended 31 December 2019. As a result of this review the Directors have determined that there is no material impact of the Standards and Interpretations in issue not yet adopted to the Group and, therefore, no change is necessary to Group accounting policies.

#### NOTE 2: CORPORATE EXPENSES

	Consolidated	
	31 December 2019	31 December 2018
	\$'000	\$'000
Accounting fees	22	58
Legal fees	35	364
Conferences and seminars	18	19
Operating lease variable outgoings	56	34
Consultancy fees	2,123	2,155
Depreciation – non-mine assets	259	126
Depreciation – right of use assets	163	-
Other	401	707
	<b>3,077</b>	<b>3,463</b>

#### NOTE 3: OTHER NON-CURRENT ASSETS

	Consolidated	
	31 December 2019	30 June 2019
	\$'000	\$'000
Transaction costs <sup>1</sup>	3,355	6,624
	<b>3,355</b>	<b>6,624</b>

<sup>1</sup> The amount relates to transaction costs that are directly attributable to the establishment of the funding facilities negotiated for the Thunderbird Project. These amounts will be reclassified to borrowings upon drawdown of the facilities.

**NOTE 4: PROPERTY, PLANT AND EQUIPMENT**

	Plant & Equipment \$'000	Right of Use Assets \$'000	Mine Property and Development \$'000	Total \$'000
<b>As at 31 December 2019</b>				
At cost	4,894	2,433	61,705	69,032
Accumulated depreciation	(921)	(537)	-	(1,458)
<b>Closing carrying amount</b>	<b>3,973</b>	<b>1,896</b>	<b>61,705</b>	<b>67,574</b>
<b>Reconciliation of carrying amounts:</b>				
Balance at 1 July 2019	4,232	2,058	53,952	60,242
Additions	-	1	4,422	4,423
Transfers between asset classes	-	-	3,331 <sup>1</sup>	3,331
Capitalisation of research and development grant	-	-	-	-
Additions to mine rehabilitation asset	-	-	-	-
Depreciation expense	(259)	(163)	-	(422)
<b>Balance at 31 December 2019</b>	<b>3,973</b>	<b>1,896</b>	<b>61,705</b>	<b>67,574</b>

<sup>1</sup>During the half year the Group transferred \$3.3m from Other Non-Current Assets in relation to commitment fees paid on the undrawn US\$175m Taurus Mining Fund facility. These fees are classified as borrowing costs and have been capitalised to Mine Property and Development.

NOTE 4: PROPERTY, PLANT AND EQUIPMENT (continued)

	Plant & Equipment	Right of Use Assets	Mine Property and Development	Total
	\$'000	\$'000	\$'000	\$'000
<b>As at 30 June 2019</b>				
At cost	4,928	2,431	53,952	61,311
Accumulated depreciation	(696)	(373)	-	(1,069)
<b>Closing carrying amount</b>	<b>4,232</b>	<b>2,058</b>	<b>53,952</b>	<b>60,242</b>
<b>Reconciliation of carrying amounts:</b>				
Balance at 1 July 2018	228	282	36,838	37,348
Additions	102	2,008	22,254	24,364
Transfers between asset classes	4,220 <sup>1</sup>	-	(4,220)	-
Capitalisation of research & development grant	-	-	(983)	(983)
Additions to mine rehabilitation asset	-	-	63	63
Depreciation expense	(318)	(232)	-	(550)
<b>Balance at 30 June 2019</b>	<b>4,232</b>	<b>2,058</b>	<b>53,952</b>	<b>60,242</b>

<sup>1</sup>During the year the Group completed the installation of 52 rooms and associated support buildings and infrastructure for the permanent village. These rooms are now ready for use and the associated costs have been transferred from mine property and development.

NOTE 5: DEFERRED EXPLORATION AND EVALUATION EXPENDITURE

	Consolidated	
	31 December 2019	30 June 2019
	\$'000	\$'000
<b>Exploration and evaluation phase – at cost</b>		
Balance at beginning of period	9,641	7,256
Expenditure incurred	945	2,432
Impairment of exploration expenditure	(2)	(47)
<b>Balance as at 31 December 2019</b>	<b>10,584</b>	<b>9,641</b>

The recoupment of costs carried forward in relation to areas of interest in the exploration and evaluation phases is dependent upon the successful development and commercial exploitation or sale of the respective areas.

**NOTE 6: TRADE AND OTHER PAYABLES**

	Consolidated	
	31 December 2019	30 June 2019
	\$'000	\$'000
Trade payables	2,862	3,230
Other payables	1,500	1,104
	<b>4,362</b>	<b>4,334</b>

Trade payables are non-interest bearing and are normally settled on 30-day terms.

Trade and other payables represent liabilities for goods and services provided to the Group prior to the year end and which are unpaid. These amounts are unsecured and have 30-60-day payment terms. They are recognised initially at fair value and subsequently at amortised cost.

**NOTE 7: ISSUED CAPITAL**

	Consolidated	
	31 December 2019	30 June 2019
	\$'000	\$'000
<i>Ordinary shares</i>		
Issued and fully paid	117,559	99,469

	Consolidated			
	No.		\$'000	
	31 December 2019	30 June 2019	31 December 2019	30 June 2019
<i>Movements in ordinary shares on issue</i>				
At start of period	260,555,374	228,990,124	99,469	80,602
Issue of fully paid ordinary shares	46,153,846	25,986,945	18,000	16,891
Issued for cash on exercise of share options	-	1,480,932	-	556
Issued in payment for services	-	1,565,570	-	960
Issued pursuant to a Facility Agreement	2,250,000	2,534,803	1,462	1,436
Share issue costs	-	-	(1,372)	(976)
At end of period	308,959,220	260,555,374	117,559	99,469

**NOTE 8: DIVIDENDS**

No dividends were paid or declared during the half year ended 31 December 2019.

**NOTE 9: SEGMENT REPORTING**

December 2019	Sheffield Project	Thunderbird Project	Unallocated Corporate / Other	Consolidated
	\$'000	\$'000	\$'000	\$'000
Other income	-	-	53	53
Employee benefits expense	-	-	(2,867)	(2,867)
Corporate expense	-	-	(3,072)	(3,072)
Gain on disposal of asset	-	-	5	5
Exploration write off	-	(2)	-	(2)
Net financing income	-	-	(37)	(37)
Segment assets	6,795	75,913	10,439	93,147
Segment liabilities	-	(4,622)	(2,264)	(6,886)
December 2018	Sheffield Project	Thunderbird Project	Unallocated Corporate / Other	Consolidated
	\$'000	\$'000	\$'000	\$'000
Other income	-	-	69	69
Employee benefits expense	-	-	(2,559)	(2,559)
Corporate expense	-	-	(3,463)	(3,463)
Exploration write off	-	(52)	-	(52)
Net financing income	-	-	170	170
Segment assets	6,444	63,410	13,817	83,671
Segment liabilities	-	(7,540)	(3,309)	(10,849)

*Description of Projects*

- I. Sheffield Project: This Project consists of mineral sand exploration tenements located in Western Australia, exploration activities continue to be conducted in these areas.
- II. Thunderbird Project: This Project consists of mineral sand tenements located in the Canning Basin that form part of the Thunderbird mineral sand mining operation, currently under construction.
- III. Unallocated Items: Part of the following items and associated assets and liabilities are not allocated to operating segments as they are not considered part of the core operations of any segment:
  - corporate expenses; and
  - share-based payment expense.

#### NOTE 10: FINANCIAL INSTRUMENT

The directors consider that the carrying value of the financial assets and liabilities as recognised in the financial statements at their approximate fair values.

#### NOTE 11: SHARE-BASED PAYMENT PLANS

##### Options

The following unlisted options were issued during the half year to directors as approved at the Annual General Meeting of Shareholders:

	Number	Grant date	Expiry date	Exercise price	Fair value at grant date
Series 13	960,000	19/11/2019	30/11/2023	\$0.65	\$0.13

The fair value of the share options granted was estimated as at the date of grant using the Black-Scholes model taking into account the terms and conditions upon which the options were granted.

##### SERIES 13

Dividend yield (%)	-
Expected volatility (%)	70
Risk-free interest rate (%)	0.75
Expected life of option (years)	4
Exercise price	\$0.65
Grant date share price (cents)	35

No options were exercised during the half year.

##### Performance Rights

No performance rights were exercised or issued during the half year.

#### NOTE 12: CONTINGENT LIABILITIES

The Directors are of the opinion that there are no contingent liabilities as at 31 December 2019 (2018: nil).

#### NOTE 13: MATERIAL CAPITAL COMMITMENTS

The Facility Agreement with Taurus Mining Fund and Taurus Mining Annex Fund, securing US\$175 million debt for the Thunderbird Project has a commitment fee on the value of the undrawn facilities, payable quarterly in arrears. The fee is 2% per annum of the undrawn facility amount. As at 31 December 2019 no draw down of the facility has occurred.

#### NOTE 14: EVENTS SUBSEQUENT TO REPORTING DATE

Subsequent to the end of the half year, the Company announced to the ASX on 17 February 2020 that it had initiated amendments to the development strategy for the Thunderbird Mineral Sands Project. The amendments focus on a change of scale and product mix to significantly reduce capital cost and provide a more readily financeable project scope, alongside measured and appropriate corporate and organisational changes to preserve cash resources.

In the opinion of the Directors of Sheffield Resources Limited ('the Group'):

1. The attached financial statements and notes thereto are in accordance with the Corporations Act 2001 including:
  - a. complying with Accounting Standards, the Corporations Regulations 2001 and other mandatory professional reporting requirements; and
  - b. giving a true and fair view of the Group's financial position as at 31 December 2019 and of its performance for the half year then ended; and
2. There are reasonable grounds to believe that the Group will be able to pay its debts as and when they become due and payable.

This declaration is signed in accordance with a resolution of the Board of Directors made pursuant to s.303(5) of the Corporations Act 2001.



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**Mr Bruce McFadzean**  
**Managing Director**

27 FEBRUARY 2020

## **INDEPENDENT AUDITOR'S REVIEW REPORT**

To the members of Sheffield Resources

### **Report on the Condensed Interim Financial Report**

#### *Conclusion*

We have reviewed the accompanying Interim Financial Report of Sheffield Resources Limited ("the company") which comprises the condensed consolidated statement of financial position as at 31 December 2019, the condensed consolidated statement of comprehensive income, the condensed consolidated statement of changes in equity and the condensed consolidated statement of cash flows for the half-year ended on that date, notes comprising a summary of significant accounting policies and other explanatory notes, and the directors' declaration, for the Group comprising the company and the entities it controlled at the half-year end or from time to time during the half-year.

Based on our review, which is not an audit, we have not become aware of any matter that makes us believe that the Interim Financial Report of Sheffield Resources Limited is not in accordance with the *Corporations Act 2001* including:

- (a) giving a true and fair view of the Group's financial position as at 31 December 2019 and of its performance for the half-year ended on that date; and
- (b) complying with Accounting Standard AASB 134 *Interim Financial Reporting* and the *Corporations Regulations 2001*.

#### *Emphasis of matter - material uncertainty related to going concern*

We draw attention to Note 1 in the financial report, which indicates that a material uncertainty exists that may cast significant doubt on the entity's ability to continue as a going concern. Our conclusion is not modified in respect of this matter.

#### *Directors' responsibility for the Interim Financial Report*

The directors of the company are responsible for the preparation of the Interim Financial Report that gives a true and fair view in accordance with Australian Accounting Standards and the *Corporations Act 2001* and for such internal control as the directors determine is necessary to enable the preparation of the Interim Financial Report that gives a true and fair view and is free from material misstatement, whether due to fraud or error.

#### *Auditor's responsibility*

Our responsibility is to express a conclusion on the Interim Financial Report based on our review. We conducted our review in accordance with Auditing Standard on Review Engagements ASRE 2410 *Review of a Financial Report Performed by the Independent Auditor of the Entity* in order to state whether, on the basis of the procedures described, we have become aware of any matter that makes us believe that the Interim Financial Report is not in accordance with the *Corporations Act 2001* including: giving a true and fair view of the Group's financial position as at 31 December 2019 and its performance for the half-year ended on that date; and complying with Accounting Standard AASB 134 *Interim Financial Reporting* and the *Corporations Regulations 2001*. As the auditor of the company, ASRE 2410 requires that we comply with the ethical requirements relevant to the audit of the annual financial report.

A review of an Interim Financial Report consists of making enquiries, primarily of persons responsible for financial and accounting matters, and applying analytical and other review procedures. A review is substantially less in scope than an audit conducted in accordance with

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Australian Auditing Standards and consequently does not enable us to obtain assurance that we would become aware of all significant matters that might be identified in an audit. Accordingly, we do not express an audit opinion.

*Independence*

In conducting our review, we have complied with the independence requirements of the *Corporations Act 2001*.



**HLB Mann Judd**  
**Chartered Accountants**

**Perth, Western Australia**  
**27 February 2020**



**D I Buckley**  
**Partner**