

## Highlights

All key work streams for the Butcherbird Pre-Feasibility Study are active:

- **Metallurgy:** Flowsheet optimisation test work underway. ~40t bulk sample mined to provide feed for the test programmes and **piloting programme**.
- **Power:** PFS power generation report complete, with improvements of the Scoping Study. Discussions with tier one energy companies ongoing. Realtime solar and wind data continues to confirm modelling assumptions.
- **Project Finance:** The Northern Australia Infrastructure Facility (NAIF) determined that it will further investigate the potential to provide debt financing for the Butcherbird Manganese Project.
- **Marketing/Offtake:** Offtake discussions are well advanced with a number of potential Japanese, Korean, US and European consumers of EMM.
- **Technical Team:** Strengthening and broadening of the owner's team continues.



The quarter ending 30 December 2019 has seen further progress for Element 25 Limited (**Company** or **E25**) across multiple work streams. The work continues to progress the Pre-Feasibility Study (**PFS**) in relation to the Butcherbird High Purity Manganese Project (**Project**). E25 intends to produce high purity manganese including manganese sulphate for lithium ion batteries (**HPMS**) and Electrolytic Manganese Metal (**EMM**)<sup>1</sup>.

<sup>1</sup> Company announcement dated 17 October 2017

## Company Snapshot

ASX Code:	E25	<b>Board of Directors:</b>		Element 25 Limited is developing the world class
Shares on Issue:	92M	Seamus Cornelius	Chairman	Butcherbird manganese project in Western Australia to
Share Price:	\$0.17	Justin Brown	MD	produce high purity manganese sulphate for lithium ion
Market Capitalisation:	\$15.6M	John Ribbons	NED	batteries and electrolytic manganese metal.
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## PRE-FEASIBILITY STUDY

The Company is currently completing a PFS which is anticipated to provide a robust base case for the commercialisation of the Company's world class manganese resource.

A number of key consulting groups are engaged to undertake or manage the various elements of the study. All key work streams are progressing well. No fatal flaws have been identified and the Company remains of the view that the Project has the potential to underpin a long life, low cost high purity manganese production hub producing Electrolytic Manganese Metal (EMM) for the steel industry and High Purity Manganese Sulphate Monohydrate (HPMSM) for the lithium ion batteries that will drive the Electric Vehicle (EV) transition.

Importantly, the work to date has identified a number of potential modifications to the flowsheet implementation strategy which are expected to have a positive impact on capital and operating costs and the decision has been made to undertake this additional work prior to finalising the PFS in 2020 and in preparation for the DFS to follow.

### Mining

Open pit optimisations are complete pending receipt of detailed operating cost estimates. The associated documentation is well advanced and awaiting finalisation for inclusion into the PFS documentation. Given the low stripping ratios, and free dig mining methodology, mining costs are not expected to be a key cost driver for the operation.

### Processing

Principal PFS metallurgical test work is now complete. The work has shown slightly higher recoveries than the Scoping Study test programme, with all other outcomes in line with expectation.

The test programme has successfully yielded a high purity Electrolytic Manganese Metal product grading 99.9% Mn, which exceeds the required 99.7% Mn purity required for commercial production.

Optimisation test programme is now underway.



Figure 1: Manganese leaching test equipment.

### Bulk Sampling for Pilot Plant Test Material

In December 2019, a bulk sampling programme was undertaken to mine approximately 40 tonnes of ore from the Project area in seven small pits to provide representative material for metallurgical optimisation work and for the pilot test programme scheduled for 2020<sup>2</sup>. The location of the pits were focussed within the measured resource and were designed to provide geometallurgical variability data as well as confirming geological and diggability assumptions in relation to the Project.



Figure 2: Excavator acquiring bulk ore samples.

### Programme Design

Seven trenches were excavated to up to a depth of 7m below the surface. Bulk samples were collected at 1m intervals as each pit was being excavated with approximately 1 tonne of material collected for each sample. The designed locations of the pits are adjacent to previous drill holes to allow for grade reconciliation against existing data. All pits were excavated by free digging with minor use of a rock breaker, confirming earlier diggability assessments.

The field programme was completed in late December 2019 and the samples were delivered to ALS Laboratories in Perth in early January 2020.



Figure 3: Excavator digging bulk sample pit to acquire bulk sample material at Butcherbird.

<sup>2</sup> Reference: Company announcement dated 19 December 2019

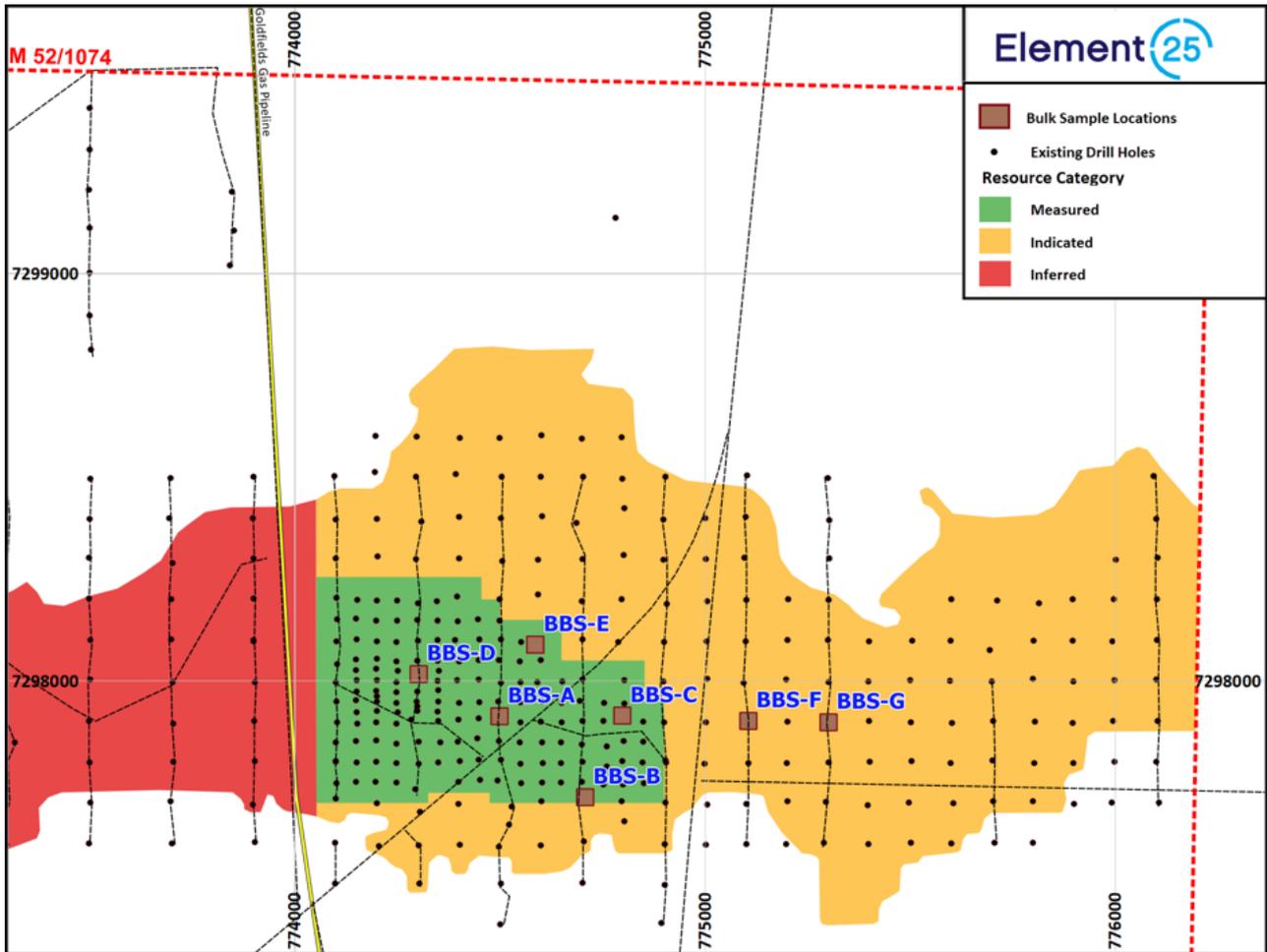


Figure 4: Nominal locations of the bulk sample pits.

## Marketing

A final draft of the manganese market report has been received from Roskill including coverage of both the EMM and battery grade  $MnSO_4$  market statistics and forecast pricing. This will inform the pricing assumptions used in the PFS. The forecasts both in terms of pricing and volumes are in line with assumptions used in the Scoping Study released in 2018.

Offtake agreement discussions are well advanced with a number of potential Japanese, Korean, US and European consumers of EMM. The identity of the potential end users remain confidential however they represent a number of major steel producers in jurisdictions outside of China. In discussions to date, the Company has received strong indications that demand for non-Chinese production of these high purity manganese products is robust which bodes well for the Company's efforts to lock in bankable offtake arrangements with credible counterparties to underpin project financing discussions.

A productive visit to Japan and Korea was undertaken in late October 2019 to continue negotiations. A number of positive meetings were held with senior personnel from several major steel producers as well as global metals traders.

The meetings highlighted the appetite for long term stable supply of high purity manganese products in a stable, well-regulated jurisdiction. Key takeaways included a demand for supply chain transparency, environmentally sustainable production methods, and carbon intensity reduction, all of which are matched by the Company’s development philosophy at Butcherbird. These discussions are ongoing with the aim of entering into bankable offtake agreements with strategic end users.

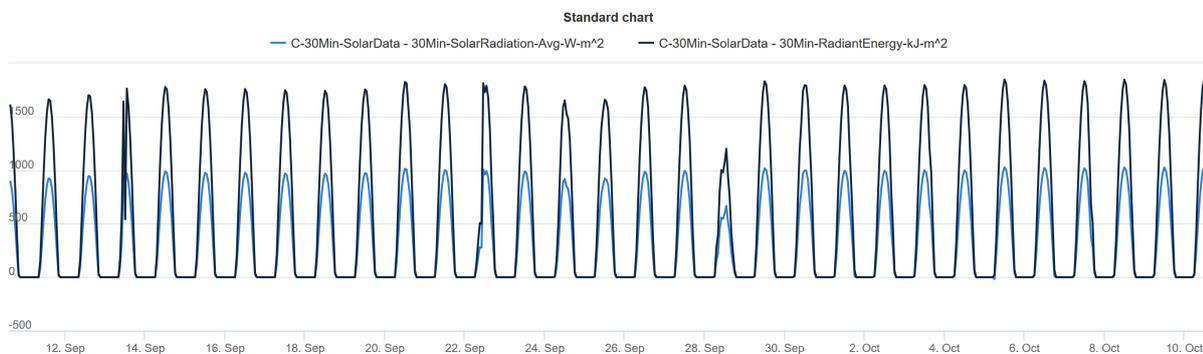
**Power Generation**

Advisian (Worley Group) have completed the PFS level report of the recommended power solution for the Project which is expected to comprise a hybrid wind/gas power station contracted over a 20 year power purchase agreement (PPA) term with a total LOM power cost of approximately \$94/MWh. This is a significant improvement on the Scoping Study power cost estimates of approximately \$120/MWh using a gas only base case. The renewable/gas option assumes a flat load profile.

As previously announced, the Company is also working with Murdoch University to explore the potential for a more dynamic operational regime which has the potential to allow for a higher renewable energy penetration than in the current base case which is expected to utilise approximately 50% renewable energy in tandem with gas fired generation using high efficiency reciprocating engines.

To support the case for renewable energy as part of the design for the Project, a SODAR and pyranometer have been in continuous operation on site, collecting ten-minute interval wind and solar data. The data collection exercise is expected to continue indefinitely to support PPA negotiations as we progress toward contracting of the power infrastructure.

Discussions are ongoing with a number of potential tier one energy partners in relation to the Project.



**Figure 5:** Solar insolation data collected at Butcherbird during September 2019.

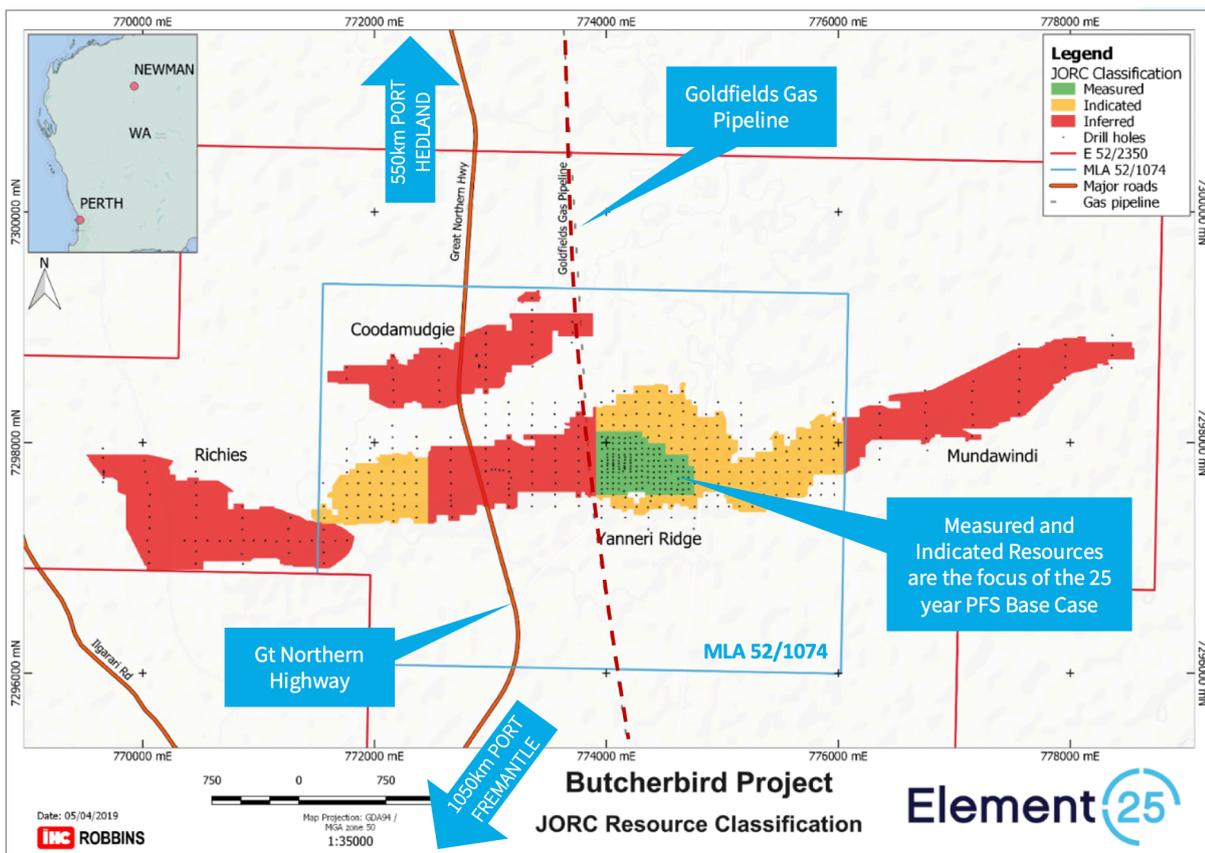


**Figure 6:** SODAR wind data collected at Butcherbird during September 2019. Data shows wind speeds and direction over time at various vertical heights above the instrument which will drive the modelling of various hub heights for wind turbine design.

### Geology and Mineralisation Report

The PFS documentation for the updated resource statement released on 17 April 2019 is complete and will form the basis of the feasibility study report.

The PFS base case will target a nominal 50 year initial mine life focussing on the Measured and Indicated resource categories (combined total of 57 Mt of ore) to allow the reporting of a maiden reserve statement.



**Figure 7:** Project plan showing the mining lease application MLA 52/1074 as well as key transport and energy infrastructure and the Yanneri Ridge resource outlines highlighting the measured and indicated zones of mineralisation.

## Access Agreements

As announced on 30 May 2019, the final Native Title Agreement required for the grant of M52/1074 and development of the Project has been entered into and the Company has mining agreements in place with both the Nyiyaparli and Ngarlawanga native title groups.

An access agreement has been agreed with the owners of the Kumarina station. Negotiations with the owners of the Bulloo Downs pastoral lease are ongoing.

## Environment

Final flora and fauna environmental surveys and reports have been completed to a PFS level of detail and have been included in the PFS documentation. Importantly, no Commonwealth *Environment Protection and Biodiversity Conservation Act* or Western Australian *Biodiversity Conservation Act* listed Threatened Flora species have been identified in the project area.

Preliminary waste characterisation is complete and recommendations for future work will be incorporated into post PFS metallurgical work plans.

## Process Water

A ground magnetic survey has defined an area to the east of planned mining operations which is interpreted as a paleo-drainage system prospective for groundwater. This area will be targeted for a groundwater exploration drilling programme expected to commence in the coming quarter.

## Owners Team Strengthened

Mr Neil Graham has joined the E25 Team. Neil is a chartered chemical engineer with more than 30 years of international experience in the chemical and resources industries. His experience in greenfield and brownfield project development has been gained in various senior roles across a breadth of organisations and locations including Europe, Asia and Australia.

## Logistics

The logistics solution for the Project comprises road haulage of both inbound reagents and consumables and outbound product. The EMM product will be shipped out of Fremantle Port in the early stages of the Project followed by Port Hedland once suitable facilities have been commissioned. Contractor pricing has been received for domestic and sea freight components and will be included in the PFS.

## Project Finance

Burnvoir continues to engage with a number of groups in relation to project financing and on 9 October 2019, the Company announced that the Northern Australia Infrastructure Facility determined that it will further investigate the potential to provide debt financing for the Project.

This decision was taken after E25 provided NAIF with strategic assessment information detailing the benefits that will flow from the Project and its associated infrastructure to the local communities in the Pilbara region.

### **Butcherbird Manganese Project in Due Diligence Phase with Northern Australia Infrastructure Facility (NAIF)**

After several positive discussions, and providing NAIF with strategic assessment information detailing the Butcherbird Manganese Project (**Project**), its associated infrastructure requirements and benefits that will flow to local communities in the Pilbara region during and beyond the Project's current mine life, E25 received confirmation that the NAIF CEO has considered a Strategic Assessment Paper for the Project and has consented to the NAIF Executive to progress the Project to the Due Diligence stage of assessment. This Strategic Assessment Paper has been noted by the NAIF Board.

This represents the first milestone in E25's engagement with NAIF. The next step for the Company is to submit a formal Investment Proposal. NAIF has not made any decision to offer finance or made any commitment to provide any financial accommodation and there is no certainty that an agreement will be reached between the parties. E25 will continue to assist NAIF with its required due diligence investigations regarding participation in the debt facilities that will fund the Project capital expenditure necessary to develop the Project.

### *About NAIF*

NAIF was established on 1 July 2016 by the Northern Australia Infrastructure Facility Act 2016 (NAIF Act) and is a corporate Commonwealth entity. The objective of the NAIF Act is to provide financial assistance to the States of Queensland, Western Australia and the Northern Territory for the construction of infrastructure to benefit northern Australia.

### **CRC-P Grant Funding Awarded**

During the Quarter, the Company was awarded funding under the seventh round of the Cooperative Research Centres Project (CRC-P) grant program. Government funding of \$1,342,223 has been approved for the pilot plant test programme for the Project.

The funding is provided by the Department of Industry, Innovation and Science to support the pilot testing programme for the Project. The technology development will be undertaken in association with Lycopodium, ALS and Murdoch University.

The test programme will focus on pilot scale validation of the innovative leaching and purification process for manganese ores at Butcherbird to produce high-purity EMM and HPMSM, used in Li-ion batteries. The process is a cleaner, lower carbon intensity flowsheet which will reduce environmental impacts, and present a process pathway for the utilisation of the large manganese resource at and provide an important case study for the onshore processing of critical minerals in Australia.



Australian Government  
Department of Industry,  
Innovation and Science

**Business**  
Cooperative Research  
Centres Program

### About the Butcherbird High Purity Manganese Project

The Butcherbird High Purity Manganese Deposit is a world class manganese resource with current JORC resources in excess of 263 Mt of manganese ore<sup>3</sup>. The Company has completed a robust scoping study with respect to developing the deposit to produce High Purity Manganese Sulphate for lithium ion battery cathodes as well as Electrolytic Manganese Metal for use in certain specialty steels. A PFS is currently being completed and is expected to further confirm the commercial potential of the Project.

The Project straddles the Great Northern Highway and the Goldfields Gas Pipeline providing turnkey logistics and energy solutions. The Company is also intending to integrate renewable energy into the power solution to minimise the carbon intensity of the Project as well as reducing energy costs.

### Mineral Resources

Category	Tonnes (Mt)	Mn (%)	Si (%)	Fe (%)	Al (%)
<b>Measured</b>	<b>16</b>	<b>11.6</b>	<b>20.6</b>	<b>11.7</b>	<b>5.7</b>
<b>Indicated</b>	<b>41</b>	<b>10.0</b>	<b>20.9</b>	<b>11.0</b>	<b>5.8</b>
<b>Inferred</b>	<b>206</b>	<b>9.8</b>	<b>20.8</b>	<b>11.4</b>	<b>5.9</b>
<b>Total</b>	<b>263</b>	<b>10.0</b>	<b>20.8</b>	<b>11.4</b>	<b>5.9</b>

Notes:

- Reported at a 7% Mn cut-off for the Measured and Indicated categories and an 8% Mn cut-off for the Inferred categories.
- All figures rounded to reflect the appropriate level of confidence (apparent differences may occur due to rounding).

<sup>3</sup> Reference: Company ASX release dated 17 April 2019.

## Corporate

### Investment Portfolio (as at 31 December 2019)

In addition to cash reserves, the Company also currently holds securities in the following listed entities:

Listed securities at market value:	No. Held	Closing Price	Market Value
Anova Metals Ltd (ASX:AWV)	7,000,000	\$0.009	\$63,000
Buxton Resources Ltd (ASX:BUX)	356,001	\$0.084	\$29,904
Duketon Mining (ASX:DKM)	1,450,000	\$0.155	\$224,750
Danakali Limited (ASX:DNK)	8,500,097	\$0.60	\$5,100,058
Sagon Resources (ASX:SG1)	13,338,261	0.043	\$573,545
<b>Total</b>			<b>\$5,991,257</b>

Justin Brown

### Managing Director

Company information, ASX announcements, investor presentations, corporate videos and other investor material on the Company's projects can be viewed at: <http://www.element25.com.au>.

## Competent Persons Statement

The information in this report that relates to Exploration Results and Exploration Targets is based on information compiled by Mr Justin Brown who is a member of the Australasian Institute of Mining and Metallurgy. At the time that the Exploration Results and Exploration Targets were compiled, Mr Brown was an employee of Element 25 Limited. Mr Brown is a geologist and has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 edition of the 'Australasian Code for Reporting of Exploration Results and Exploration Targets'. Mr Brown consents to the inclusion of this information in the form and context in which it appears in this report

Please note with regard to Exploration Targets, the potential quantity and grade is conceptual in nature, that there has been insufficient exploration to define a Mineral Resource and that it is uncertain if further exploration will result in the determination of a Mineral Resource.

The information in this report that relates to Mineral Resources is based on information announced to the ASX on 17 April 2019. Element 25 confirms that it is not aware of any new information or data that materially affects the information included in the relevant market announcements, and that all material assumptions and technical parameters underpinning the estimates in the relevant market announcements continue to apply and have not materially changed.

## Disclaimer

The views expressed herein are not necessarily the views of the Australian Government, and the Australian Government does not accept responsibility for any information or advice contained herein.

## Element 25 Limited

## ASX Additional Information for Quarterly Report to 31 December 2019

	Tenement reference	Location	Interest at beginning of quarter	Acquired / Disposed	Interest at end of quarter
The mining tenements held at the end of the quarter and their location	E20/659	Eelya Hill WA	10%	N/A	10%
	E20/948	Yallon Well WA	100%	N/A	100%
	E20/953	Sunday Well WA	100%	N/A	100%
	E28/2577	Pinnacles WA	100%	N/A	100%
	E28/2701	Pinnacles East WA	100%	Disposed	0%
	E28/2761	Flanker South WA	100%	N/A	100%
	E28/2908	Pinnacles WA	100%	N/A	100%
	E28/2925	Fraser Range WA	100%	N/A	100%
	E37/1295	Leonora WA	100%	N/A	100%
	E39/2135	Mulga Tank	100%	N/A	100%
	E46/1300	Black Hill WA	100%	N/A	100%
	E52/1529	Mt Padbury WA	100% (Note 1)	N/A	100% (Note 1)
	E52/2350	Butcher Bird WA	100%	N/A	100%
	E52/3606	Yanneri Bore WA	100%	N/A	100%
	E52/3663	Dead Camel WA	100%	Disposed	0%
	E52/3704	Corner Bore WA	100%	N/A	100%
	E52/3706	Yanneri Pool WA	100%	N/A	100%
	E52/3708	Millidie Creek WA	100%	N/A	100%
	E52/3710	Neds Gap WA	100%	N/A	100%
	E52/3735	Limestone Bore WA	100%	N/A	100%
	E52/3738	Mt Padbury WA	100%	N/A	100%
	E52/3762	Dead Camel WA	0%	N/A	100%
	E52/3769	Kumarina WA	0%	N/A	100%
	E52/3779	Beyondie Bluff WA	0%	N/A	100%
	E52/3788	Neds Gap WA	0%	N/A	100%
	E52/3789	Coner Bore WA	0%	N/A	100%
	L52/211	Limestone Bore WA	100%	N/A	100%
	M52/1074	Yaneri Ridge WA	100%	N/A	100%
	E57/1060	Victory Well WA	100%	Disposed	20%
	E63/1750	Lake Johnston WA	85%	Disposed	0%
	E63/1789	Lake Johnston WA	85%	Disposed	0%
	E63/1838	Lake Johnston WA	85%	Disposed	0%
	E69/3541	Cunyu Woolshed WA	100%	N/A	100%
E80/5056	Eileen Bore WA	100%	N/A	100%	

Notes:

- 1) 100% interest held in all minerals other than iron ore and manganese.