ASX ANNOUNCEMENT

3 December 2020

Updated Pre-Feasibility and Expansion Studies Highlight Butcherbird Upside

Highlights

- This update builds on the Pre-Feasibility Study (**PFS**) released in May 2020 and updates key macro-economic and other study parameters whilst also adding **expansion** option study results.
- Compelling **Base Case and Expansion Case** economics.

	Base Case (1.3M tpa)	Expansion Case (2X)	Expansion Case (3X)
NPV$_8$ (Real) (Pre-tax)	A$583M	A$926M	A$1,138M
NPV$_8$ (Real) (Post-tax)	A$421M	A$652M	A$798M
IRR (Real)	387%	342%	359%
Mine Life	40	20	15

- All material assumptions relating to production and financial forecasts are detailed within the report.
- Low capital requirement of $17.0M plus $3.2M working capital.
- Average base case annual operating cashflow of **$39.6M** Yr1-5.
- No changes to the Proven and Probable Ore Reserve of **50.55Mt at 10.3% Mn** containing 5.22Mt Mn (4.28Mt Recoverable Mn).
- Simple **payback period of 6 months** from start of operations.
- Beneficial production is scheduled to commence in **Q1 2021**.
- The base case involves the annual production and sale of 364,000tpa (Yr 1-5 range 300,000-390,000) of lump manganese ore grading 30-35% Mn.
- Mining requires no drill and blast, utilising dozer ripping and mining with loaders or excavators.
- All Statutory Approvals lodged in Q3 2020. Native Vegetation Clearing Permit (NVCP) and Project Management Plan (PMP) have been approved, Mining Proposal, Works Approval and Water Abstraction Licence are pending.
- The concentrate production strategy complements and enhances the Company's plan to develop Electrolytic Manganese Metal (**EMM**) and High Purity Manganese Sulphate (**HPMS**) plant to produce battery grade manganese, and these will be the subject of separate studies

Company Snapshot

ASX Code:	E25	Board of Directors:	
Shares on Issue:	132M	Seamus Cornelius	Chairman
Share Price:	$1.46	Justin Brown	MD
Market Capitalisation:	$193M	John Ribbons	NED

Element 25 Limited is developing the world class Butcherbird Manganese Project in Western Australia to produce high quality manganese concentrate and high purity manganese products for traditional and new energy markets.

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Cautionary Statements

The production target referred to in this announcement is based on 27% Measured Resources, 68% Indicated Resources and 5% Inferred Resources for the 40 year life of mine. The mine plan comprises 90% of current global Measured Resources and 88% of current global Indicated Resources. The Company has used Inferred Mineral Resources as part of the production scenario and the impacts of the use of Inferred mineralisation is included within the report.

There is a low level of geological confidence associated with inferred mineral resources and there is no certainty that further exploration work will result in the determination of indicated mineral resources or that the production target itself will be realized. The use of Inferred mineralisation is not a determining factor in the viability of the project.

The study is based on the material assumptions described elsewhere in this announcement. These include assumptions about availability of funding. While the Company considers all the material assumptions to be based on reasonable grounds, there is no certainty that they will prove to be correct or that the range of outcomes indicated by the study will be achieved, however the Company is fully funded based on currently cashflow forecasts.

However, the Company has concluded that it has a reasonable basis for providing the forward-looking statements included in this announcement and believes it has "reasonable basis" to expect it will be able to fund the development of the Project using existing cash reserves.

The PFS focusses on a development option which has been selected as the most likely mining start up scenario. The PFS has targeted a part of the manganese resource where it is considered that reasonable grounds exist for the production target to be achieved in both the grade and size which has been reported. This PFS development option is also well supported by the larger Butcherbird Mineral Resource where there are additional Indicated and Inferred Mineral Resources.

Forward Looking Statements

Some of the statements contained in this report are forward looking statements. Forward looking statements include, but are not limited to, statements concerning estimates of tonnages, expected costs, statements relating to the continued advancement of Element 25 Limited's projects and other statements that are not historical facts. When used in this report, and on other published information of Element 25 Limited, the words such as 'aim', 'could', 'estimate', 'expect', 'intend', 'may', 'potential', 'should' and similar expressions are forward looking statements.

Although Element 25 Limited believes that the expectations reflected in the forward-looking statements are reasonable, such statements involve risks and uncertainties and no assurance can be given that the actual results will be consistent with these forward-looking statements. Various factors could cause actual results to differ from these forward-looking statements including the potential that Element 25 Limited's Project may experience technical, geological, metallurgical, mechanical problems, changes in manganese price and other risks not anticipated by Element 25 Limited.

Element 25 Limited is pleased to report this summary of the study in a fair and balanced way and believes that it has a reasonable basis for making the forward-looking statements in this announcement, including with respect to any mining of mineralised material, modifying factors, production targets and operating cost estimates. This announcement has been compiled by Element 25 Limited from the information provided by the various contributors to the announcement.

Pre-Feasibility Summary

Element 25 Limited (**Company** or **E25**) (ASX: E25) is pleased to announce that it has completed an update to the Pre-Feasibility Study (**PFS**) released in May 2020, for the 100% owned Butcherbird Project (**Project**), located in the southern Pilbara region of Western Australia.

The Project consists of eight known manganese mineral resources located in an approximately 600km^2 area of the southern Pilbara region, approximately 1,050km North of Perth and 130km South of Newman, WA. The Butcherbird site is accessible directly from the Great Northern Highway.

E25 has held exploration tenure in the Butcherbird area since 2009 and has advanced the Project via a series of exploration programmes. Several Mineral Resource Estimates have been completed since work commenced. Refer to the Resource Estimate Section for details.

The Project is 100% owned by the Company and comprises the granted Mining Lease M52/1074 and two granted exploration licences E52/2350 and E52/3606 as well as a number of granted and pending Miscellaneous Licences for Project infrastructure. Mining Lease M52/1074 encompasses the Yanneri Ridge and Coodamudgi manganese deposits where mining will commence. Water exploration has identified process water and the work programme to develop the bore-field has commenced. Project approvals are well advanced with two Native Title mining agreements in place. The Butcherbird project is located on two pastoral stations and the Company has access agreements in place to allow project development to be undertaken.

The initial base case PFS published in May 2020 identified an opportunity for a low capex, rapid startup operation exporting manganese concentrate. Based on the May 2020 Pre-feasibility study, E25 has commenced development of the Butcherbird Manganese Project, which is scheduled for commissioning in the first quarter of calendar 2021.

This update to the May 2020 PFS includes changes in the macro-economic inputs and other design parameters and includes the results of two options studies which examined the expansion of production at the Project. These parameters include:

- Inclusion of silica and other mineral credits.
- Revised process recovery to 83%, previously 82%.
- Increased plant throughput based around improved plant availability from 1.2Mtpa to 1.3Mtpa.
- Updated exchange rate to 0.70 A$/USD, previously variable.
- Revised capital expenditure reflecting the inclusion of a mining camp in the base case, with an associated increase of A$2.5M in required capital.
- Revised accommodation costs based on terms negotiated with a supplier.
- Revised site organization chart and updated costs.
- Revised mining costs based on a completed mining tender process.
- Updated sustaining capex involving the TSF and ongoing resource development.
- Inclusion of 2X and 3X manganese production expansion estimates.

The results confirm that the robust economics are maintained and improved for the base case and the expansion options offer the company opportunities to further improve the economics and performance of the Project.

The expansion cases assume that production will be increased to either 2x or 3x the plant throughput rates of the Base Case, commencing at the start of the second year of production. This results in better utilisation of the large resource/reserve base underpinning the Project. Economies of scale result in better equipment utilisation and operating efficiencies which improve project economics.

Table 1. Butcherbird Financial Summary – Years 1 to 5

Key Economic Metrics	Unit		Base Case Yr 1 + Expansion in Year 2	
		Base Case 1.3Mtpa	2X Throughput 2.6Mtpa	3X Throughput 3.9Mtpa
Ore Mined	**ktpa**	**1,300**	**2,600**	**3,900**
Manganese Concentrate Produced	**ktpa**	**341**	**682**	**1,023**
Manganese Concentrate Grade	Mn%	33	33	33
Manganese Price (Roskill Sept 2020)	US$/dmtu 33%Mn FOB Port Hedland	4.37	4.37	4.37
Exchange Rate	A$/USD	0.70	0.70	0.70
Undiscounted Cashflow	A$M pa	35.4	56.2	81.5
Mine Life	Years	40	20	15
NPV_5 (Real) (Pre-Tax)	**A$M**	**583**	**926**	**1,138**
NPV_5 (Real) (Post-Tax)	**A$M**	**421**	**652**	**798**
IRR (pre-tax)	**%**	**387**	**342**	**359**
Operating Cost	A$/dmtu 33% FOB Port Hedland	4.55	3.89	3.73
	U$/dmtu 33% FOB Port Hedland	3.19	2.76	2.65
Capital Cost (Base Case)	Project Capital A$M	15.1	15.1	15.1
	Expansion Capital	-	+13.4	+18.0
	Contingency A$M	1.9	+1.7	+2.3
	Working Capital A$M	3.3	0	0
	Total Capital A$M	**20.3**	**35.4**	**40.6**

Table 2. Butcherbird Financial Summary – Years 1 to 5

Key Economic Metrics	Unit		Base Case Yr 1 + Expansion Years 2 to 5	
		Base Case 1.3Mtpa	2X Throughput 2.6Mtpa	3X Throughput 3.9Mtpa
Ore Mined	ktpa	1,300	2,600	3,900
Manganese Concentrate Produced	ktpa	366	590	852
Manganese Concentrate Grade	Mn%	33	33	33
Manganese Price (base)	US$/dmtu 33%Mn FOB Port Hedland	4.37	4.37	4.37
Undiscounted Cashflow	A$M pa	39.6	60.2	78.8
Mine Life	Years	40	20	14
NPV_5 Real (Pre Tax)	**A$M**	**583**	**926**	**1,138**
NPV_5 Real (Post tax)	**A$M**	**421**	**652**	**798**
IRR (Pre-tax)	%	**387**	**342**	**359**
Operating Cost	A$/dmtu 33% FOB Port Hedland	4.15	3.89	3.72
	U$/dmtu 33% FOB Port Hedland	2.91	2.76	2.65

The initial 5-year of production in the base case utilises 92% Measured resources[1] and 8% Indicated resources. The 40-year Life of Mine scenario for the base case utilises 27% Measured resources, 68% Indicated resources and 5% Inferred resources.

The expansion cases use Measured and Indicated mineralisation as mine feed until it is depleted and then completes the final-year's production schedule utilising Inferred mineralisation as the ore source comprising 2% and 6% Inferred resources respectively.

The use of inferred resources is not a determining factor for project viability of the base case or expansion cases, See Table 3 and Figures 6 to 8 below. Resource definition drilling has been included as an operating cost in the expansion scenarios to allow the conversion of Inferred mineralisation to an Indicated mineralisation category, 3 years before it is required for mining and processing.

Table 3. Impact of Inferred Mineralisation on Key Financial Outputs

	Base Case 1.3Mtpa		2X Case 2.6Mtpa		3X Case 3.9Mtpa	
	Inc. Inferred	Exc. Inferred	Inc. Inferred	Exc. Inferred	Inc. Inferred	Exc. Inferred
NPV_5 (A$M) (Pre tax)	583	576	926	914	1,138	1,087
IRR (%)	387%	387%	342%	342%	359%	359%
Mine Life (Years)	40	38	20	19.6	14	13.2
Annual Cash Flow (A$M)	34.6	34.5	76.7	76.2	117.2	116.7

Table 4. JORC Resource Mineralisation Usage by Scenario

	Base Case 1.3Mtpa		2X Case 2.6Mtpa		3X Case 3.9Mtpa	
	Resource (Mt)	**%**	**Resource** (Mt)	**%**	**Resource** (Mt)	**%**
Measured	14.4	27%	14.4	28%	14.4	27%
Indicated	36.2	68%	36.2	70%	36.2	67%
Inferred	2.6	5%	1.1	2%	3.5	6%
Total	**53.2**	**100%**	**51.6**	**100%**	**54.0**	**100%**

Key Outcomes of Base Case

This PFS includes preliminary pit shells, estimated mining and production schedules and metallurgical testing relevant to manganese processing and recovery. Capital costs were based on detailed engineering designs and industry sourced quotations provided by technical experts within E25 and by external consultants. Operating costs were sourced from open tender for major operational contracts including Mining, Ore Haulage and Camp facilities, Other operational costs were sourced from budget quotations and database costs and are considered to be at ±15% level of estimation. Open pit optimisation, design and mine scheduling were performed by an external consultant, overseen by E25 staff, based on parameters provided by E25.

The study base case for the Project PFS consists of:

- Open pit mining and beneficiation operation producing between 300,000 and 390,000 t (years 1-5) of manganese lump concentrate at an average grade of 33% Mn per annum.
- An initial mine life of 40 years based on the use of existing Proved and Probable Ore Reserves[2] with

[1] Reference: Company ASX Announcement dated 17 April 2019.

[2] Reference: Company ASX Announcement dated 19 May 2020.

Inferred mineralisation used following the depletion of the Proved and Probable reserves to complete the final year of operation.

- The current project scenario utilises 27% Measured and 68% Indicated and 5% Inferred resources, with years 1-5 using 92% Measured and 8% Indicated resources.
- Inferred mineral resources are included in the base case study, comprising 5% of the 40 year ore supply. The inferred resources are not a determining factor for project viability; Refer Table 3 above.
- Inferred mineral resources are included in the expansion scenarios study and are used to complete production in the final operating year as if they are ore. The inferred resources are not a determining factor for project viability. The impact of the use of inferred resources is documented within the report; Refer Table 4 above.
- Operating expenses over the life of mine are currently estimated at A$4.55/dtmu (U$3.19/dtmu). Years 1-5 operating costs are estimated at A$4.15/dtmu (U$2.91/dtmu) assuring a low-cost operation that will be profitable throughout the manganese price cycles.
- Low estimated capital costs of A$20.3M (U$14.1M) including working capital.
- Expansion options in Year 2 to 2X and 3X% of the startup production volume have been assessed

Using a base case manganese concentrate price sourced from Roskill (September 2019) of US$4.76/dmtu Mn 33% CIF China, NPV_5 pre-tax is A$583M (U$408M), post-tax A$412.3M (U$289M), with an IRR of 387%.

The base case NPV of A$583m highlights that the Project is robust and offers returns even at conservative pricing assumptions. The Project breaks even at a manganese price of US$2.38/dmtu 33% CIF China for the life of the Project.

Expansion Studies

Expansion studies included assumptions for two scenarios where the production is doubled or tripled. The assumptions for the expansion cases are listed below and detailed within the remainder of the study. These assumptions comprise the following:

- Commencement of operations at the Project in Q1 2021.
- In the first six months of operations review the marketing, plant performance and geological performance of the project before an expansion decision is made.
- Decision to expand made within the first six months of operations .
- Expansion to either double the current base throughput by replicating the processing circuit or tripling production by building a duplicate plant with double the startup capacity next to the current planned circuit.
- The startup site layout and infrastructure has been designed to allow expansion options
- Order long lead items.
- Commence environmental and other studies required to allow statutory approvals for expansion to be obtained.
- Submit the relevant expansion approval applications.
- Commence expansion construction activities in Q3 2021.
- Expanding mining operations in Q4 2021.
- Commence expanded production in Q1 2022 to 200% or 300% of the startup production volume.

Development Timeline

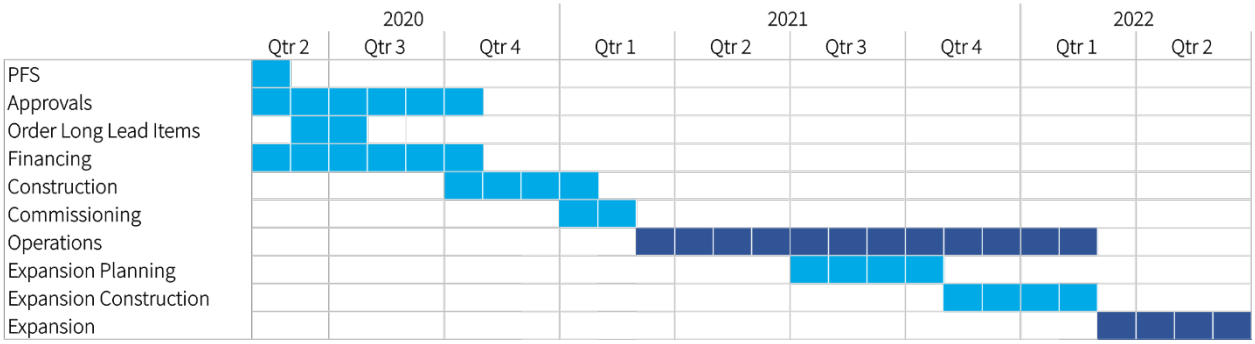

Figure 1. Project Development Timeline

Geology

The manganese mineralisation at the Project with the most economic value occur where the manganiferous shales of the Ilgarari formation intersect the weathering profile and display a supergene overprint where deep chemical weathering have upgraded the grade of the manganese and partitioned the manganese mineralisation into discrete high grade bands, resulting in an ore that is amendable to simple physical beneficiation.

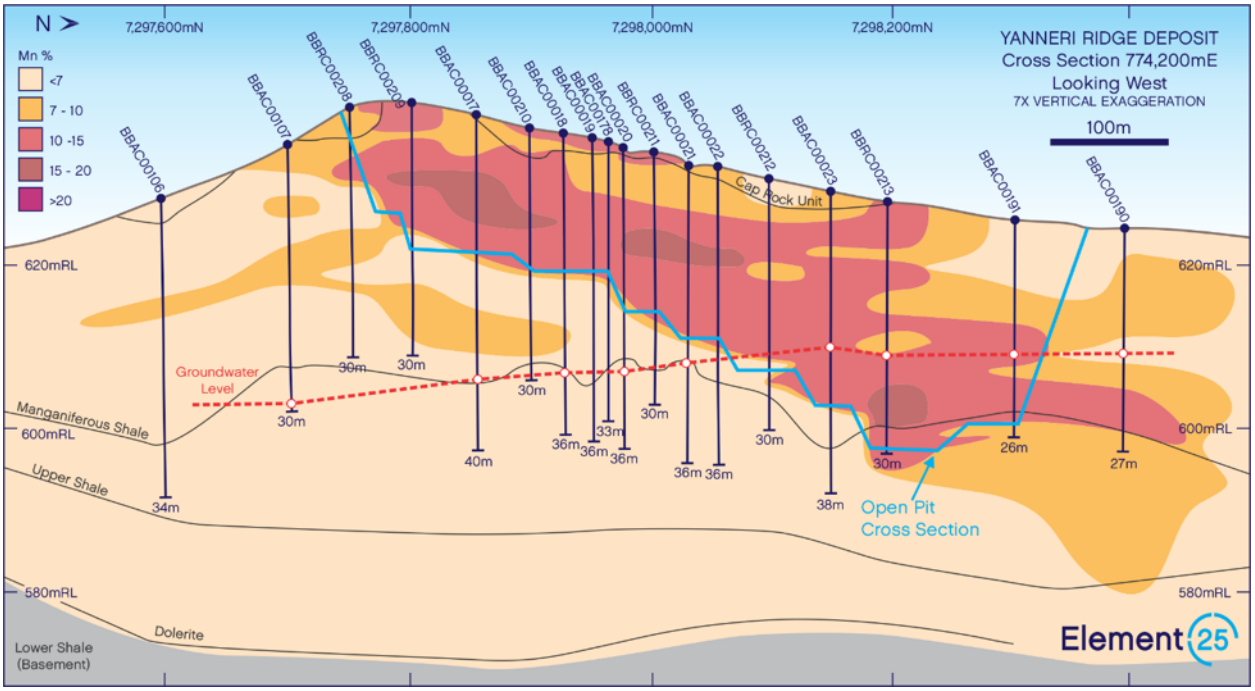

Figure 2. Yanneri Ridge Deposit cross section with simplified geology

Figure 3 illustrates the interlayered supergene manganese layers in the Manganiferous Shale Unit. The photo was taken during the bulk sampling program conducted in December 2019[3].

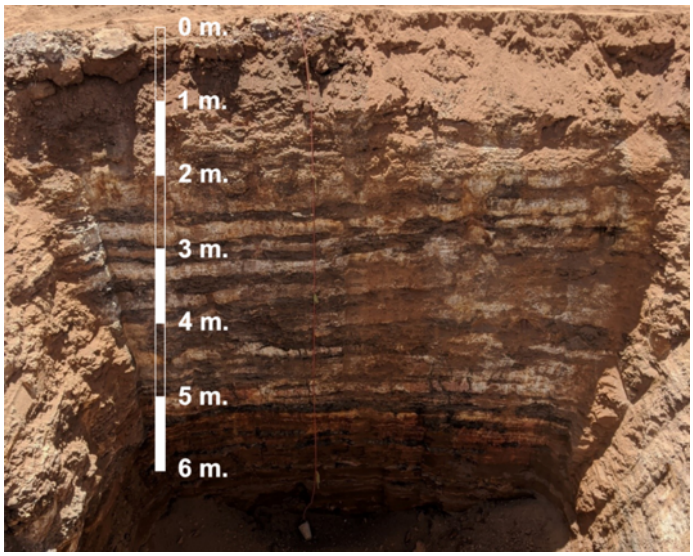

Figure 3. Bulk Sample Trial Pit - Pit Wall showing Manganese Lithology

Resource Estimate and Mining Reserve

Resource Estimate

The current 2019 JORC Measured, Indicated and Inferred Mineral Resource Estimate completed by IHC Robbins following a major infill drilling programme in 2018 and stands at 263Mt at 10% Mn[4].

Table 5. 2019 Butcherbird Manganese Project Mineral Resource Estimate[2]

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

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)

Mining Reserve

Based on the results of the Butcherbird Concentrate Pre-Feasibility Study[5], E25 published a Maiden Ore Reserve for the Project of 50.55Mt in May 2020 in the Proved and Probable categories.

Table 6. Butcherbird Ore Reserve Summary[5].

Classification	Tonnes (Mt)	Grade (Mn%)	Contained Mn (Mt)	Recovered Mn (Mt)
Proved	14.4	11.5	1.65	1.35
Probable	36.2	9.8	3.56	2.92
Total	50.6	10.3	5.21	4.27

The estimated ore reserves and/or mineral resources underpinning the production target have been prepared by a competent person or persons in accordance with the requirements in Appendix 5A (JORC Code).

[3] Reference: Company ASX Announcement dated 19 December 2019.

[4] Reference: Company ASX Release dated 17 April 2019.

[5] Reference: Element 25 Limited Reserve Statement lodged with ASX 19 May 2020.

Mining

The mine plan is designed to utilise the unique tabular geometry of the mineralisation at Yanneri Ridge to provide a simple and low-cost mining operation. Mining has been scheduled to maintain ore supply to the processing plant to meet production requirements. Geotechnical Studies supported by trial mining has identified that the orebody will mostly be mineable using free dig techniques not requiring drilling and blasting to loosen the ore. Mining will consist of loaders mining 1-2m tall benches and delivering the ore into a mobile-crusher feed-hopper via a grizzly.

To enable the loaders to efficiently extract the ore, the ore will be cross-ripped with a dozer prior to mining. This is shown schematically below in Figure 4.

The initial Project open pit is planned to be approximately 1,000 metres long, 650m wide and up to 10m deep. This is a staged seven-year starter pit within the overall optimised final pit shape. This starter pit targets the higher-grade proved and probable mining reserve and allows access for mine scheduling with minimal waste removal from the Yanneri Ridge mineral resource.

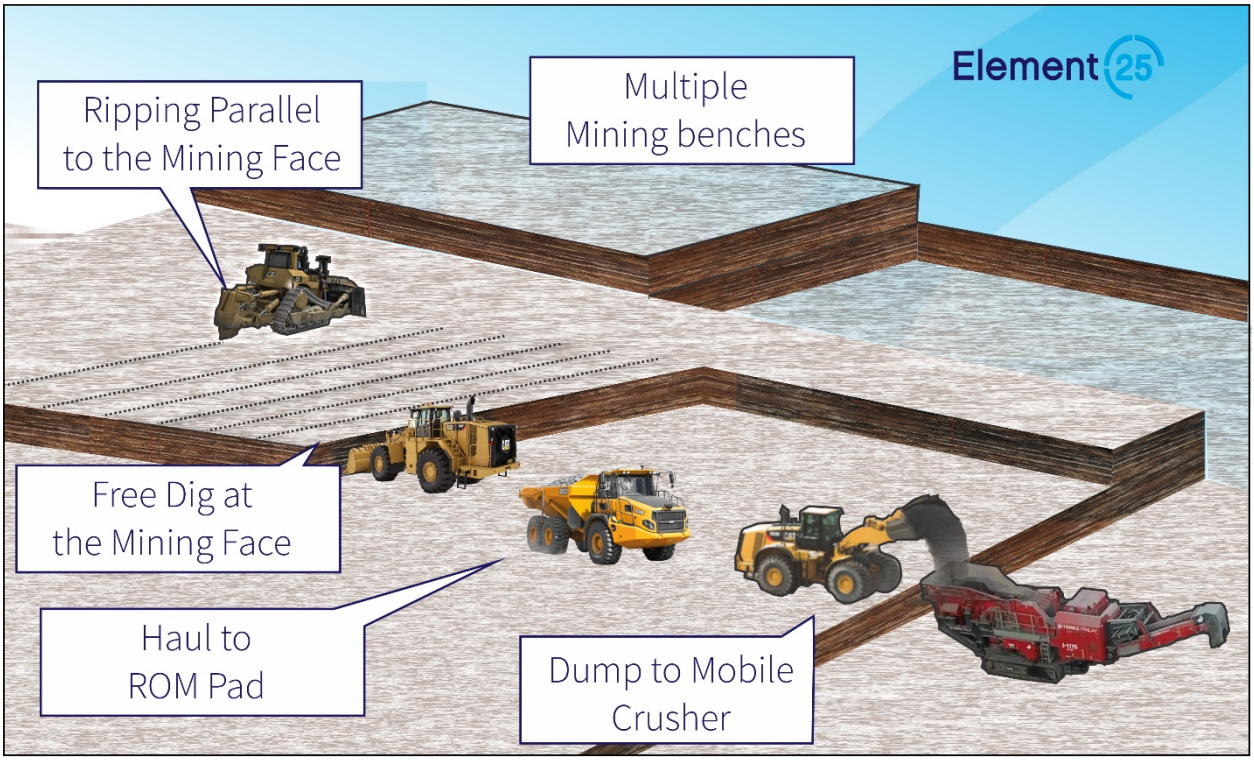

Figure 4. Mining System Schematic

The current estimated open pit life is 40 years. The pit designs contain 53.1Mt of ore at an average grade of 10.3% Mn and is expected to be mined along with 18.3Mt of waste for an overall strip ratio of 0.36 to 1 (vol:vol). The optimisation of the pit shells uses a base price of US$4.76/dmtu 33%Mn CIF China. The pit design on which the base case is modelled contains 27% Measured Resources 68% Indicated Resources and 5% Inferred Resources scheduled at the end of the 40 year mining life.

A preliminary mining schedule is illustrated in Figure 5 below. The current schedule of extraction includes a large portion of Measured Resources in years 1-8. Inferred Resources will be evaluated during mining and decisions made to treat or stockpile these resources will be made at the time they are mined.

The current mining schedule was designed as a series of nested pits within the ultimate pit shell. Project economics are not significantly impacted if Inferred resources were utilised later in the life of mine schedule.

Given that there is a low level of geological confidence associated with Inferred Mineral Resources, their treatment as an ore source after the Measured and Indicated ore is depleted is considered conservative. Resource definition drilling has been included as an operating cost to allow the conversion of Inferred to Indicated mineralisation.

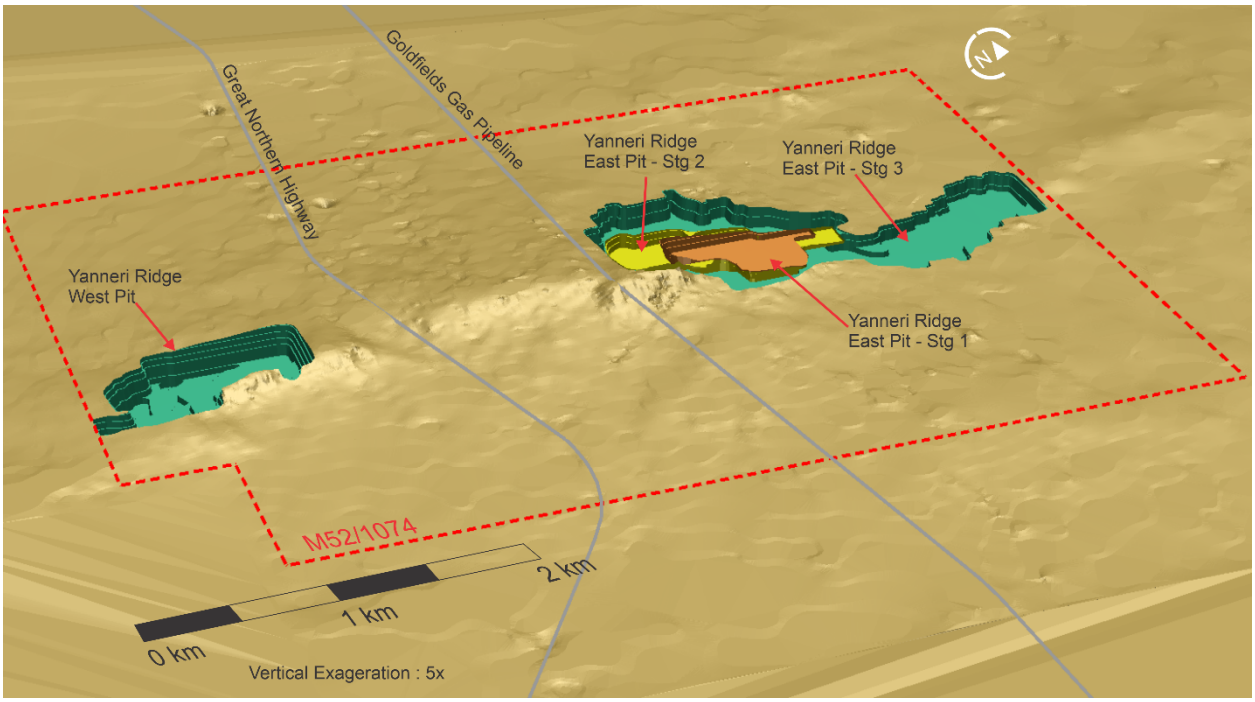

Figure 5. Butcherbird Pit Design and Staging, Looking North East

Pit Design

It has been determined that following geotechnical assessment and due to the nature of the mineralisation which consists of interlayered layers of Mn ore and clay/shale waste, that drill and Blast will not be required at Project. The Yanneri Ridge mineralisation will be mined by dozer ripping and extraction using conventional loaders to mine directly from the mining face into a mobile crusher. Where tramming distances become excessive, excavators will load haul-trucks which will transport ore to the crusher.

A contractor will be utilised for the mining operations, which will be overseen by Company management.

Mining costs used for the pit optimisation and subsequent financial evaluation were based on mining costs derived from the mining operation tender process.

Mining factors used for the pit optimisation include 95% ore recovery and 5% dilution. Because all mineralisation within the pit designs will be processed these factors are considered conservative.

The open pit designs were based on pit shells derived from an open pit optimisation study. Mining costs of $6.50/bcm mined, $17/t processed and $42/t ore haulage and $12/t port charges were used, together with a manganese concentrate price based on a U$4.76/dmtu CIF China. Subsequent to the optimisation study the company has obtained mining costs from a comprehensive tender process. The average costs are below the costs used for the optimisation. However considering that the optimisation process mined in excess of 97% of the available mineralisation using the existing parameters, the use of lower mining costs would only increase the ore conversion. The impact on the mining case would be marginal and as such hasn't been completed for this study.

Mining production by JORC resource category and average yearly manganese grade is shown below for the Base Case as Figure 6 and for the 2X and 3X expansion cases (Figure 7. Ore Supply by JORC Resource Category, 2X throughput expansion case and Figure 8. Ore Supply by JORC Resource Category, 3X throughput expansion case.

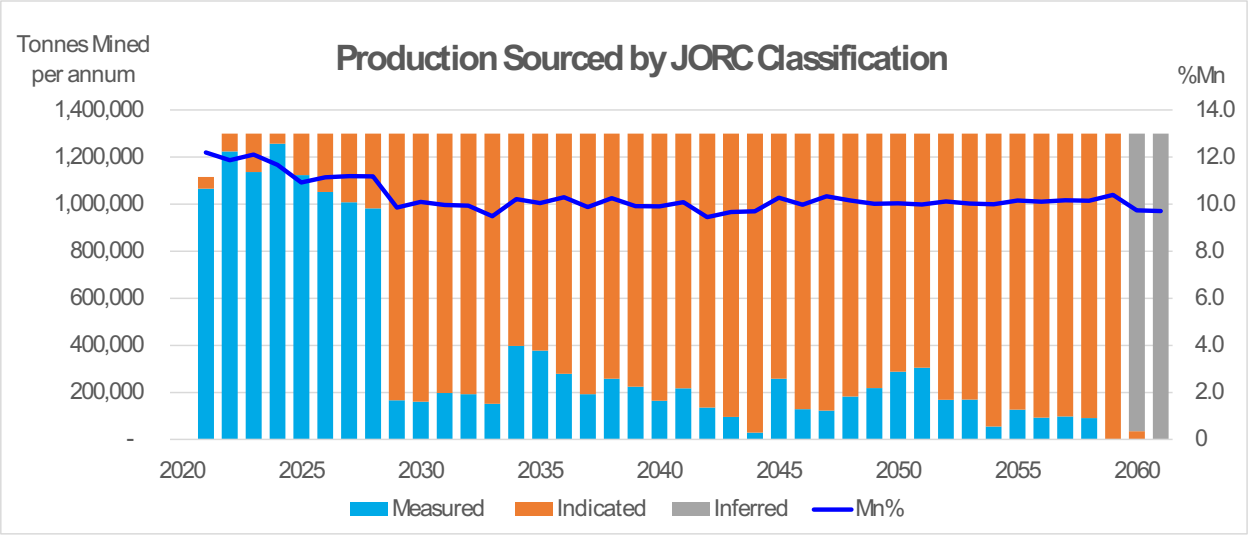

Figure 6. Ore Supply by JORC Resource Category – Base case

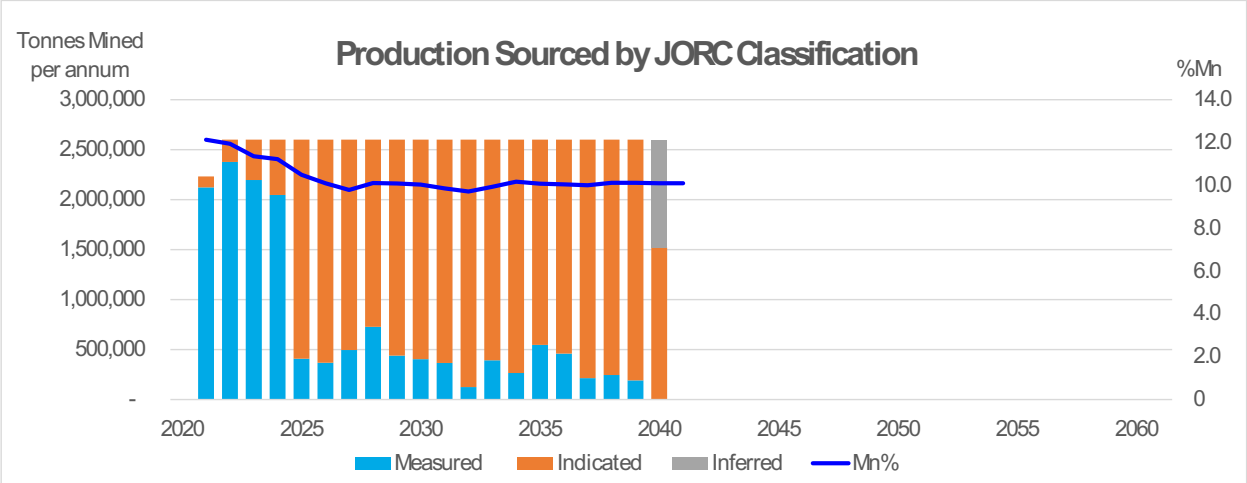

Figure 7. Ore Supply by JORC Resource Category, 2X throughput expansion case

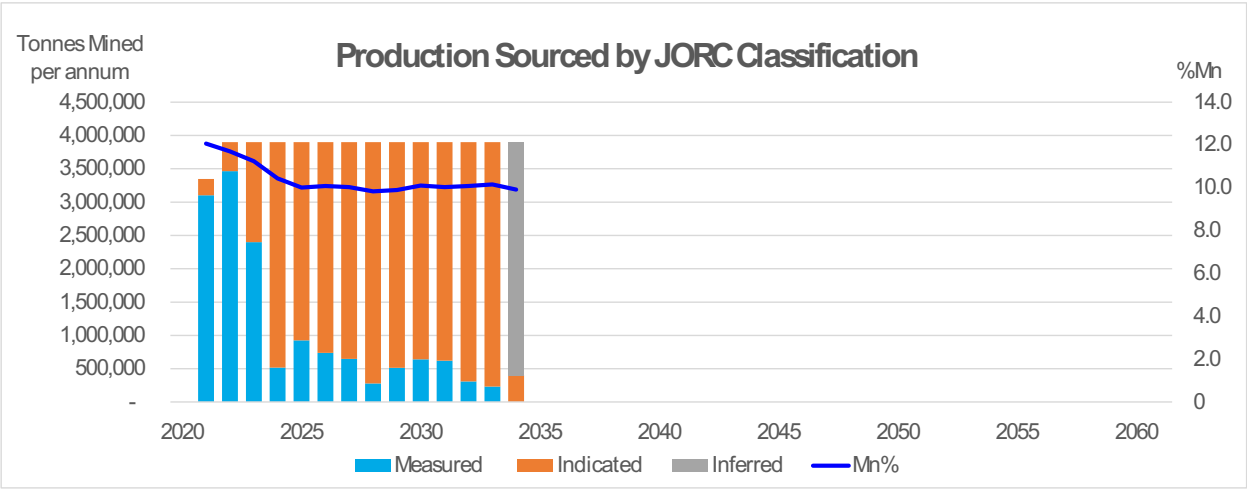

Figure 8. Ore Supply by JORC Resource Category, 3X throughput expansion case

A summary of the mining schedule showing ore and waste movement as well as average stripping ratio is shown below in Figure 9.

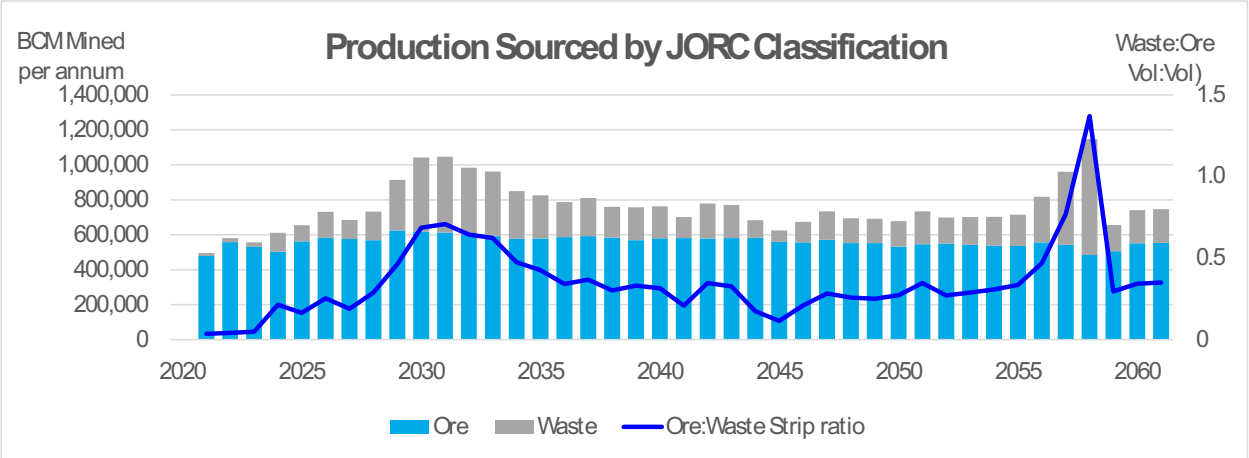

Figure 9. Mining Material Movement and Stripping Ratio – Base case

Geotechnical and Diggability Assessment

Peter O'Bryan and Associates were engaged to do a Pre-Feasibility Study level open pit geotechnical assessment study on the Yanneri Ridge section of the deposit. The study was based on 9 geotechnical holes and was completed in March 2019. The key findings of the base case wall design parameter limits for all walls in the proposed Yanneri Ridge pit included:

- Face height 5m from surface to 5m depth.
- Face height 10m below 5m depth.
- Face angles 50˚ from surface to 15m depth.
- Face angles 60˚ below 15m depth.
- Berm width - 5m throughout.

4D Geotechnics (4DG) were engaged and completed two detailed diggability reports evaluating likely excavation rates. These reports were completed on 18 July 2018 and 15 March 2019.

The 4DG study used 10 diamond drill holes. Hole sections were assessed and tabulated with 97 individual ratings. Of these 97 ratings the high values were two values above 60 (62 at 3.9m to 6.0m and 68 at 1.0m to 1.3m) and seven values in the 51 to 60 range. The study concludes that based on the results of their examination and testing of ten diamond holes in the Yanneri Ridge area that the area to be mined will mostly be free digging.

Mining Costs

Mining costs were sourced from a comprehensive mining services tender process. These costs have been used in the financial evaluation of the base and expansion cases

Other mining costs were developed from first principals based on a staff allowance and staff pricing sourced from mining industry recruitment agencies. Details of the Mining costs are discussed in the Economic Analysis section.

Processing

Beneficiation test work has been conducted over an extensive period since 2009 both specifically focusing on a manganese ore product and more recently on the feed material for the hydrometallurgical process to produce EMM. It was noted from the depth of historical test work conducted that the opportunity to produce a manganese product from the Project was likely and confirmatory tonne-scale tests were conducted.

Bulk Sampling

In December 2019, a bulk sampling programme was undertaken to mine approximately 40 tonnes of ore predominantly from the measured area of the resource[6]. This program comprised seven pits excavated and sampled in nominal 1 tonne lots at 1 m vertical intervals, to a maximum depth of 7m below the surface caprock. These pits provide material representative of the first four years of mining for subsequent test work and for the upcoming larger scale hydrometallurgical pilot testing. The programme also enhanced the geological interpretation and confirmed the suitability of mining methods.

Beneficiation Testwork

The 2020 Q1 test program was focused on physical beneficiation processes with a dual objective to optimise the manganese grade/recovery curve for a manganese concentrate, targeting both direct export into the manganese ore market and improving the quality of feedstock to supply the EMM processing plant. The testwork program followed a structured protocol of:

- Splitting, screening and crushing.
- Homogenisation and sampling.
- Scrubbing.
- Wet and dry screening.
- Ore sorting.
- Tailings assessment.

The ore material characteristics can be described as follows;

- Free-flowing.
- An average of approximately 30% >50mm.
- A moisture content in the range 4.5%-13%.

All test material was crushed to P_{100} passing 50mm. The crushing process utilised a jaw crusher in line with previous testing and the results supported the outcomes of the earlier comminution test work.

Following preliminary screening tests and subsequent scrubbing and sorting to confirm the positive impact of dry screening, approximately 19 tonnes of from five separate test pits was processed across a 6mm dry screen with no evidence of processing issues. This inclusion of the dry screen in the flowsheet has a positive impact upon the water balance reducing the scrubbing duty water consumption proportionally to the mass reduction.

Material scrubbing characteristics and scrubber performance were assessed using several methods. Size fraction analysis delivered an optimal grade/recovery outcome with the various scrubber technologies. The outcome of the test work highlighted the suitability of a scrubbing and screening for removing the finer clay fraction and friable siltstone waste material which contain minimal manganese. The massive, lumpy manganese material conversely remains substantially intact. The selected flowsheet includes two streams of manganese concentrate, at +6.3mm/-19mm and +19mm/-50mm, to facilitate optimal ore sorting efficiency.

The results supported a size cut-off at 6.3mm giving manganese recoveries and mass yields in the range 80.2% to 91.4% and 35.5% to 44.5% respectively, resulting an average of 87.4% recovery and 38.5% mass yield.

[6] Reference: Company ASX release dated 19 December 2019.

Figure 10: Bulk sampling from the Yanneri Ridge manganese resource, December 2019.

Ore Sorting

Ore sorting was identified as a potential process to further upgrade the concentrate. Sorting tests have subsequently been conducted by Steinert Australia, utilising a full-scale 1m wide multiple sensor Steinert KSS sorter, on the two size fractions generated from the scrubbing/screening process. The sorting tests confirmed the ability of an industrial scale ore sorter to upgrade the manganese concentrate on a repeatable basis to a commercially marketable specification within the range 30-35% Mn.

Table 7. Manganese Grade, Recovery and Yield by Size

	Mn Grade	Mn Recovery	Mass Yield
Ore Sorter Feed	27.3%		
+19mm Product	34.0%	97%	83%
-19mm Product	30.4%	86%	67%
Total Product	33.1%	94%	79%
Total Reject	8.0%	6%	21%

The ore sorter delivered a 33% Mn grade product which was the result of an upgrade of approximately 6% whilst maintaining a manganese recovery of 94%. This combined size fraction concentrate has the grade, composition and size distribution characteristics of commercial concentrates presently used in the steel industry.

Impurity levels across all main elements of concern are acceptable and certain key impurities may provide some marketing opportunities which will be further explored.

Testwork Product Quality

Component	Mn	Fe	SiO2	P	Al	Loss on ignition
Composition	33.1%	8.2%	21.8%	0.08%	2.97%	10.2%

Table 8. Sorted product composition.

Process Plant Design

The beneficiation process plant and other infrastructure have been designed in accordance with normal industry practice and the unit operations included in the flowsheet are well established within the resources and other industries.

The design philosophy has utilised predominantly mobile or semi-mobile equipment such that operating installation maintains a degree of flexibility for management of the advancing mining face, whilst minimising civils, structure and set-up investment costs.

The proposed processing facility includes the following unit operations, throughput and operating assumptions:

- 1.3 Million tons per annum mining rate
- Crushing
- Screening
- Scrubbing
- Sizing
- Ore Sorting

This is shown schematically in Figure 11 below:

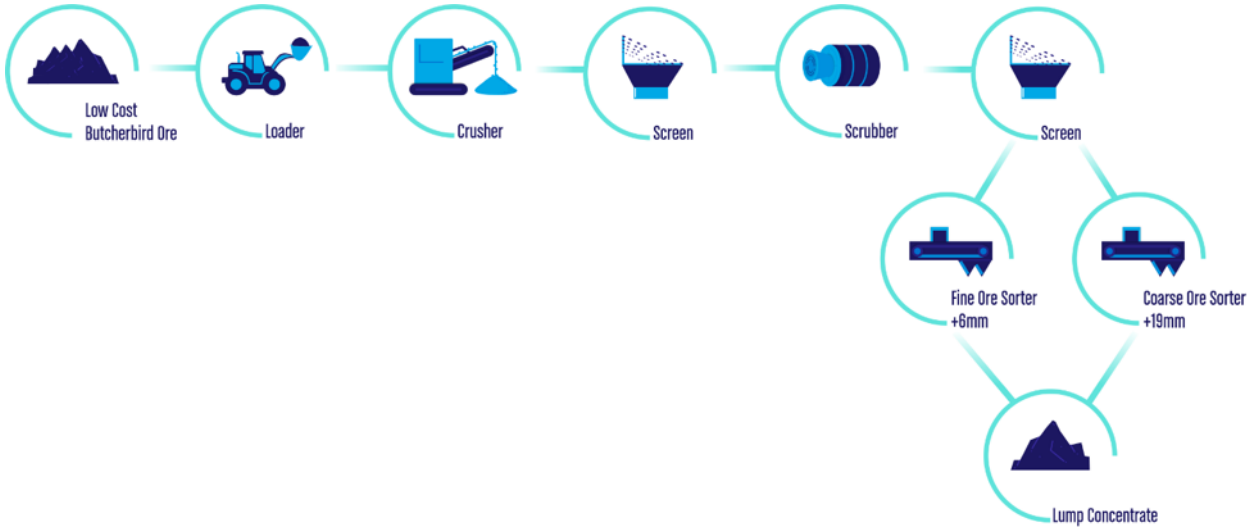

Figure 11. Butcherbird Schematic Flowsheet

Logistics and Ore Transport

The Company will produce between 300,000 and 390,000 tonnes of Mn Ore per annum. Manganese lump product will be trucked from the Project mine site to the Utah Point at Port Hedland where it will be loaded on to ships for export.

Concentrate trucking and ship loading is proposed to be completed by a licenced operator and will be in compliance with Main Roads and Pilbara Ports and other requirements. A 'mine gate to ship' logistics cycle that is endorsed by the Pilbara Port Authority and that is similar to the approach utilised by other companies in the Pilbara will be adopted.

The proposed concentrate handling method is fully compliant with Class 9 transport requirements and no special bulk shipping restrictions currently apply for UN 3077 mineral concentrates.

Concentrate Haulage

The company has sourced quotations for ore haulage from a number of haulage operators. The location of the proposed site directly of the Great Northern Highway will allow for quick turnaround times. The entire route is a defined route under the existing concessional loading provisions applying to the Pilbara allowing the uses of the quad road trains permissible under the Main Road PBS system. Transport offers ranged from the between A$0.07c/tkm and $0.09c/tkm, with a range of fuel price assumptions.

The Manganese ore is neither classified as a dangerous or as hazardous good in transit. It is a benign product and is not affected by typical atmospheric conditions (heat, cold or rain).

Port Operations

Element 25 has advanced discussions with Pilbara Ports for the access to the Utah Point stockpile and port facilities at Port Hedland. The product will be in lumpy form and is perfectly suited to existing handling infrastructure located at Utah Point.

The Company has also engaged with Qube Logistics, the current operator of the ship loading infrastructure on behalf of Pilbara Ports. Qube indicated that the product can be handled and loaded efficiently with the current infrastructure. Qube has extensive experience in loading manganese ores.

Shipping

Element 25 have engaged with a number of shipping lines and brokers to obtain indicative shipping rates. These ranged from US$12 to US$16/tonne, depending on the size of the vessel, the destination port(s). Quotes are also based on an assumed bunker rate at the time of publication. The majority of Manganese ore shipments are sold on a Cost, Insurance and Freight (CIF) basis at the destination port, with some concluded on a Free on Board (FOB) basis at the source port. As cargo owners E25 does not have to provide for destination port charges. Cargo will be insured for sea movements based on the industry standards.

Project Infrastructure

The Project location is remote and will require infrastructure to be built to support the mining and process operations (see Figure 8). The base case has provided capital and operating costs based on the infrastructure typical of the resources industry. This includes:

Borefield

Water will be sourced from suitable bores located within the E25 mineral tenements. Preliminary investigations have concluded that adequate water for the operation is available approximately 8km from the Project site and a work programme to finalise the borefield design is in progress. A number of Miscellaneous Licences have been applied for, for the areas covering the potential borefield. Programs of Work have been granted to allow access track clearing in preparation for borefield definition drilling. This will be closely followed by bore development drilling.

Camp

Personnel will be accommodated at the Kumarina Road House, located approximately 30km south of the Project. A decision to develop a permanent accommodation village on site will be considered once operational. Workers will be bussed to/from site from Kumarina. Workers will be sourced from Perth on Fly In/Fly Out rosters.

Element 25 has commenced work on the camp construction which will be operational for use in December 2020.

Access Roads

The Butcherbird operations will require a relatively short purpose-built access road to be constructed to ensure ease of access to the mine site. The access road will also cross the Goldfields Gas Pipeline.

The Company has engaged a civil engineering group, the Civil Group, to obtain suitable permitting for the driveway access to the great Northern Highway.

Main Roads approval has been received for the construction of the driveway off the Great Northern Highway. The access road will be developed during the construction of the project.

Power

A principal diesel power station will be leased for the processing equipment. Multiple smaller diesel generators will power the bore field and Tails Storage water recovery systems.

Other infrastructure

Allowances have been included for administration and storage buildings, mine and plant workshops, laboratory, communications, power, security, fuel storage, product laydown area and waste and refuse management.

Tailings Storage Facility

E25 engaged Resource Engineering Consultants (REC) to undertake a design of the tailings storage facility (TSF). The design assumes conventional wet tailings facility with an average deposition rate of 240,000tpa. Mine waste rock and dry processing waste streams will be the main material of construction for the TSF embankment walls.

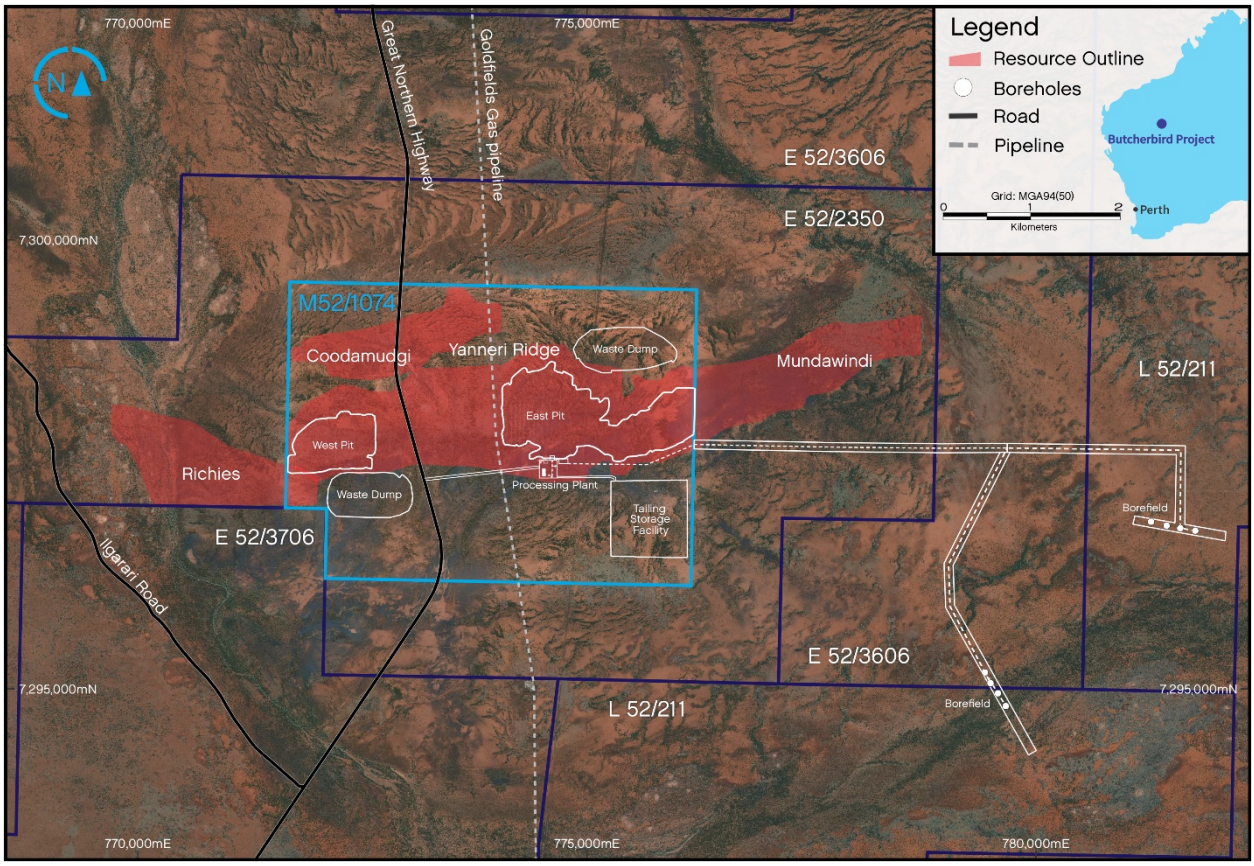

Figure 12. Butcherbird Project – Proposed Site Layout Diagram

The proposed TSF comprises a square cell, with initial internal dimensions of approximately 400 m by 400 m. The storage cell will be constructed with an initial capacity to store the two year of tailings production. During the first two years, wall lifts will continue allowing for extension of the tailings dam in height.

A decant tower will be constructed in the centre of the TSF utilising a rock-wall filter to recover and return up to 75% of the water. There is no requirement for the TSF to be lined.

Construction of the TSF is planned to commence in January 2021.

Manganese Market

The majority of Manganese ore is used to produce Manganese alloys, with a smaller proportion used to produce high value Electrolytic Manganese Metal, refer Figure 13. Silicomanganese (SiMn) alloys have seen the most significant market growth.

Manganese alloy is mainly used in the steel industry to strengthen steel. Smaller volumes find its way into stainless steel and aluminium production. The manganese content of steel has progressively been increasing in recent decades.

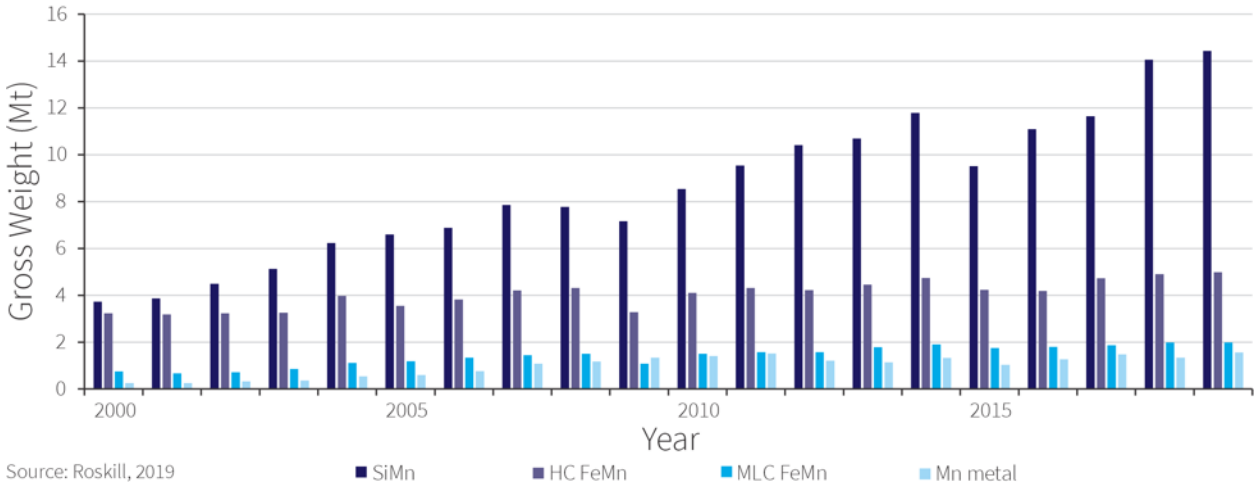

Figure 13. World: Manganese alloy production, 2000 to 2019 (Mt gross weight)

Manganese ore production has grown more than threefold in the last 20 years. The decline in low grade ore production in China has resulted in the average manganese content of ore increasing over the same period.

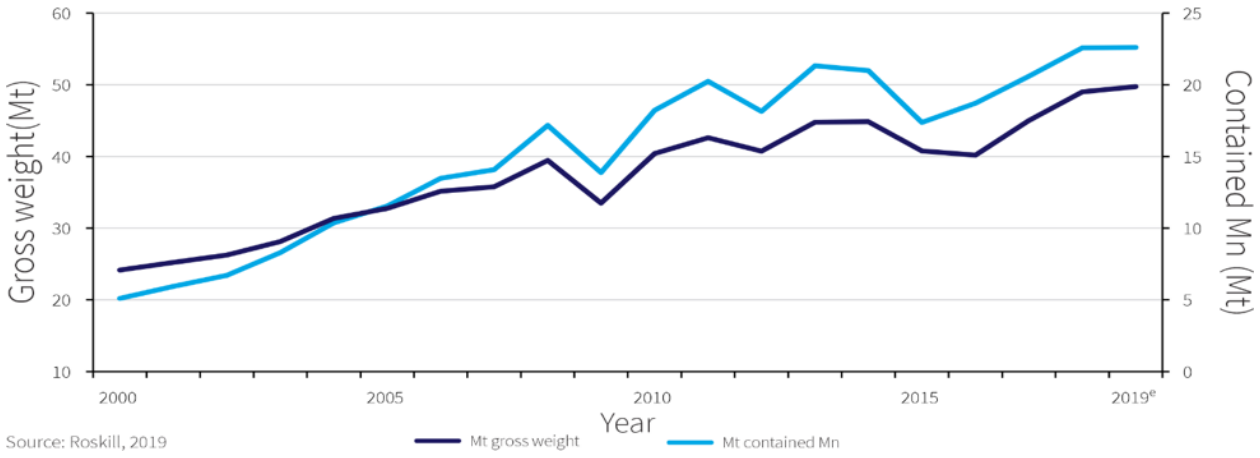

Figure 14. World: Manganese ore production, 2000 to 2019 (Mt gross weight and Mt contained Mn)

Existing high-grade Australian mines are becoming depleted and domestic Chinese ore production continues to decline. In parallel, the production from less stable jurisdictions such as Africa are often affected by government regulations, power and logistics issues and other problems. Consequently the medium grade manganese ore markets have been expanding and the Company believe that this presents an exciting opportunity to place manganese concentrate from the Project strategically into a growing market.

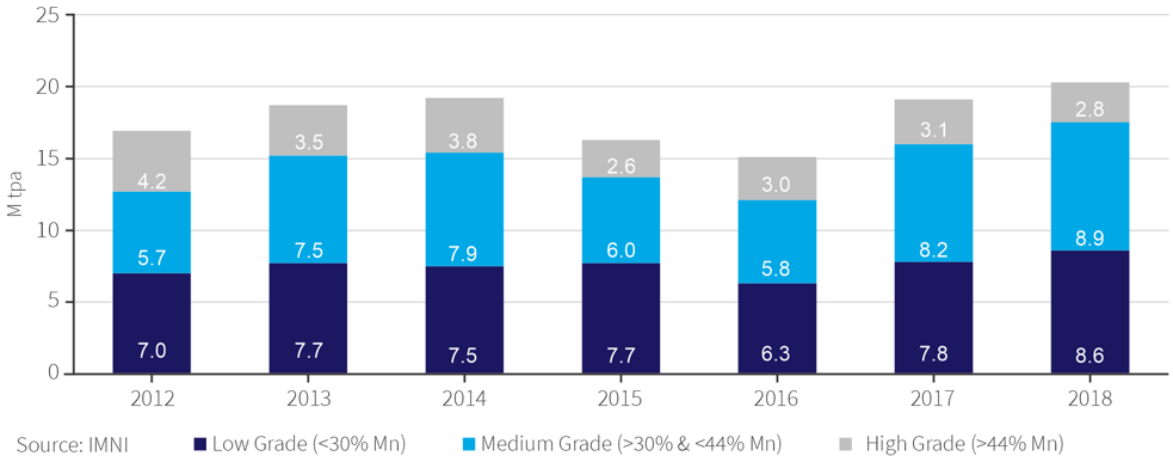

Figure 15. Global Manganese Ore Production, 2012-2018

Manganese Ore Price

Manganese ore pricing in recent years has changed from long term contracts to being negotiated on a short-term contract basis. This has marked a step change in historical manganese ore price levels.

World-wide demand for Manganese in steel remains strong, and there is currently no known substitute material. Current longer-term forecasts place manganese ore in the US$5 to US$6/dmtu bracket for high grade ore.

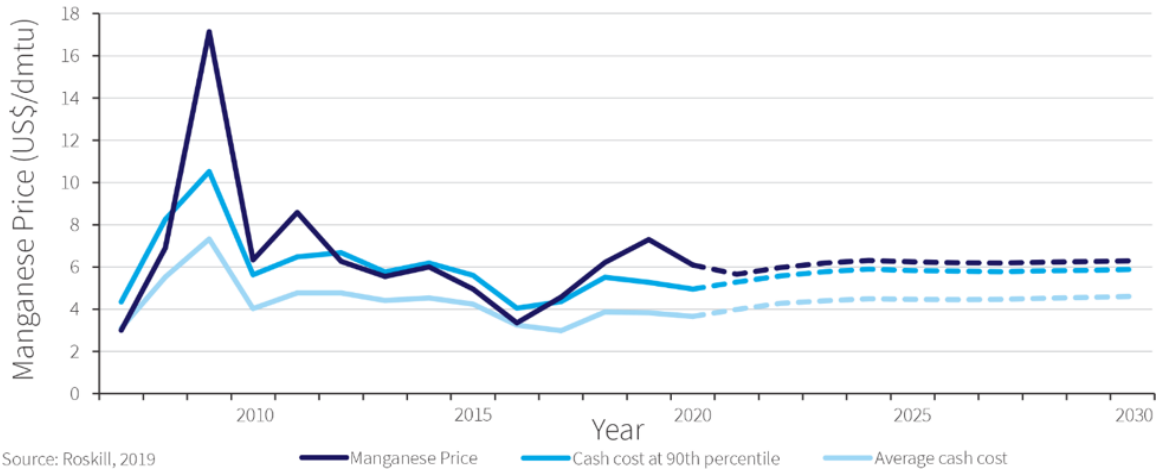

Figure 16. Prices and production costs for manganese ore, 2006 to 2029 (US$/dmtu CIF China, real 2019 dollars)

Figure 17. Monthly prices for manganese ore, nominal terms, January 2009 to June 2019 (US$/dmtu CIF China)

The Company's manganese concentrate will be placed in a market typically termed "medium grade ore". Historically medium grade ores have traded at a manganese content based discount to high grade ore.

Marketing Strategy

The Project enjoys a number of advantages over competitors including a low-cost base, high quality, proximity to market and the Company believes a new manganese producer in a stable well-regulated jurisdiction like Western Australia will be welcomed by existing consumers.

For the first stage of development, producing an estimated 300-390Kt pa, the Company has agreed key commercial terms under a non-binding term sheet (**Term Sheet**) to sell 100% of the manganese ore produced (up to 365,000 tonnes per annum) from the first stage of the Butcherbird Project development to OM Materials (S) Pte Ltd (**OMS**), a wholly owned subsidiary of ASX listed company OM Holdings Limited (**ASX:OMH**) (**OMH**) under a take-or-pay offtake arrangement[7]. Definitive agreements in relation to offtake for Stage 1 are at an advanced stage of drafting.

Manganese Ore Price Premia

Butcherbird manganese ores have been shown to have low values of particular elements compared to the generally available manganese ores on the world markets. E25 believes, the identification of these characteristics, details of which are commercial in confidence, will give the Butcherbird manganese ores a distinct pricing advantage on world markets especially competing with similar medium grade manganese ores. This allows for the ore to achieve potential premia on price as the market for this material is developed.

E25 has used these premia within the financial modelling based on a formula which is commercial in confidence but supported by commercial discussions with OMH. These credits equate to approximately U$0.65 (A$0.93)/dmtu Mn. This premium has been applied to 85% of the annual manganese production from the Project.

[7] Reference: Company ASX Release dated 12 October 2020.

Material Assumptions

The proposed base case operation at Butcherbird has been designed with future expansion in mind during the design and layout stages for all areas of the operation. This is shown in the plant layout shown below as Figure 18 where the expansion layout is penciled into the east of the main plant deign

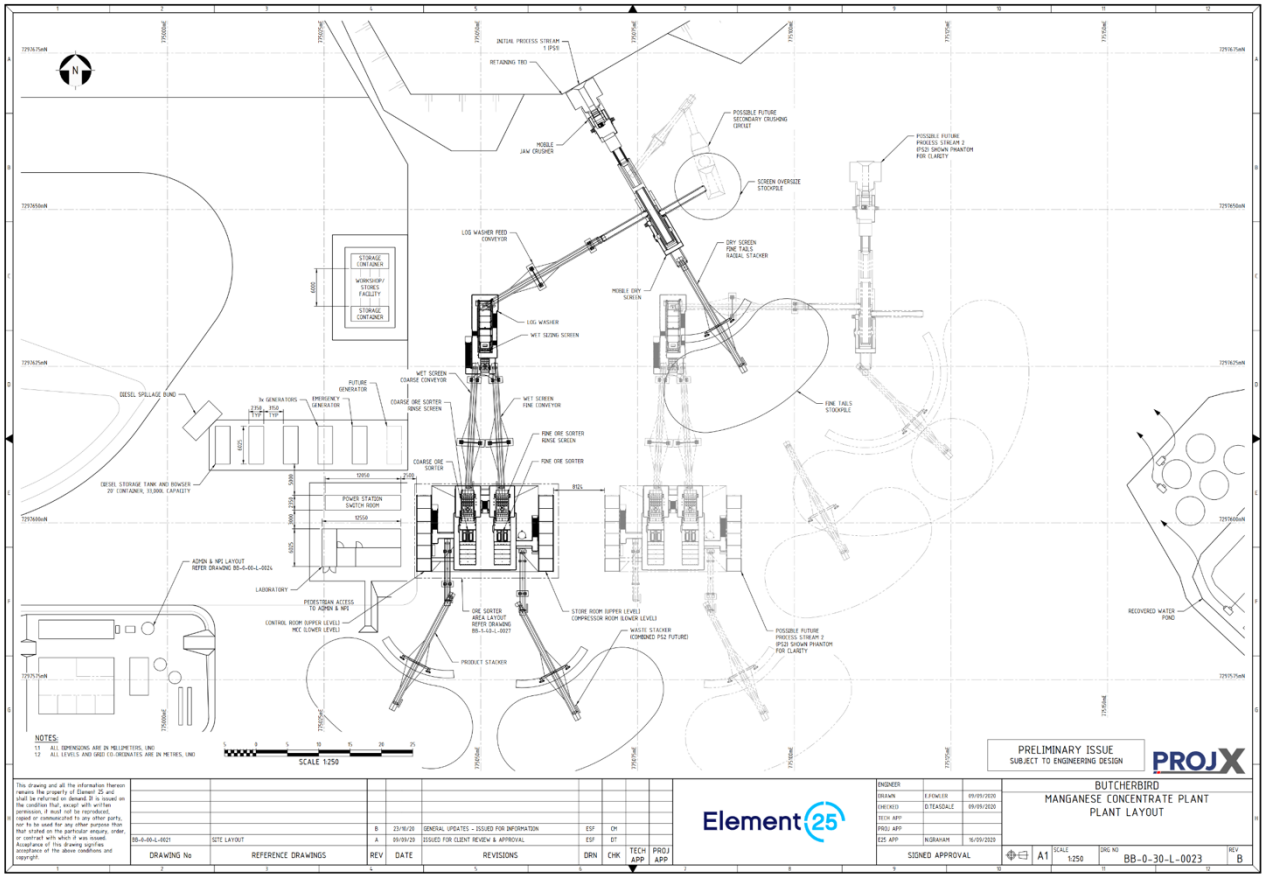

Figure 18. Proposed Plant Layout showing Expansion Consideration

Element 25 is currently approaching the build phase of stage 1 of the project with all major plant ordered, mining and other tenders have been let and Element 25 manning is currently being employed.

Site works will start in December once final approvals have been obtained.

As such Element 25 has a very good grasp on the expected operational and capital costs for the project. These costs have been used to update the base case PFS assumptions and have been used where appropriate to inform the 2x and 3x expansion cases.

The following table details the Material Assumptions taken within the analysis of the project and expansion cases.

Table 9. Material Assumptions

Area	Base case (1.3Mtpa)	X2 (2.6Mtpa)	X3 (3.9Mtpa)
Mineral Resource Estimate	The most recent Mineral Resource estimate was declared on May 17, 2019. The estimate was prepared by a Competent Person in accordance with the JORC Code 2012. The Measured, Indicated and Inferred Mineral Resource estimate for the Butcherbird area is 263Mt at 10.0% Mn which includes 16Mt at 11.6% Mn in the Measured Resource category, 41.0Mt at 10.0% Mn in the Indicated Resource Category and 206Mt at 9.8% Mn in the Inferred Mineral Resource Category. The Yanneri Ridge total Measured, Indicated and Inferred Mineral Resource is 105 Mt at 10.1% Mn which includes a Measured and Indicated Mineral Resource of 57Mt at 10.45% Mn. Approximately 43% of the total production target is in the Measured Resource category, 20% is Indicated Resource. Inferred Resources have not been used for either the optimization of the project. The mine plan comprises 95% of current global Measured resources, 96% of current global Indicated resources. The magnetite bearing gabbro sequence hosting the mineralisation strikes 80°-110° and dips at 2 to 7° to the north for 5km on 100% E25 controlled tenements. The mineral resource has been subdivided into three oxidisation states, oxide, transition and fresh. Each zone exhibits different material characteristics including density, magnetic recovery and hardness.		
Mining Assumptions and Factors	The production target is 300-390,000t manganese lump concentrate per annum. This comprises 1.3 Mt of total ore sourced from an optimised pit design. Mining will consist of 1.3 million tonnes of ore and 0.3 million tonnes of waste per annum. The mining design has been developed assuming conventional open pit mining methods with a dozer and hydraulic excavator mining, truck haulage to the ROM pad and loading ore directly into a mobile crusher. Mining costs were sourced from quotations received from mining/processing contractors with sufficient experience to manage this style of operation. Mining productivities and costs do not vary by bench as the mining and processing plant is moved from bench to bench minimizing overhaul costs. Mining factors for pit optimisation include 95% ore recovery and 5% dilution. Recovery factors were applied to all material types in the pit optimisation. Pit slope angles of 40 degrees in all directions and rock types was used for pit design. For the purpose of modelling and financial evaluation in-pit Inferred Resources were treated as waste and as such made	The production target is 600-750,000t manganese lump concentrate per annum. This comprises 2.6 Mt of total ore sourced from an optimised pit design. Mining will consist of 2.6 million tonnes of ore and 0.5-0.6 million tonnes of waste per annum. The mining design has been developed assuming conventional open pit mining methods with a dozer and hydraulic excavator mining, truck haulage to the ROM pad and loading ore directly into a mobile crusher. Mining costs were sourced from quotations received from mining/processing contractors with sufficient experience to manage this style of operation. Mining productivities and costs do not vary by bench as the mining and processing plant is moved from bench to bench minimizing overhaul costs. Mining factors for pit optimisation include 95% ore recovery and 5% dilution. Recovery factors were applied to all material types in the pit optimisation. Pit slope angles of 40 degrees in all directions and rock types was used for pit design.	The production target is 900-1,000,000t manganese lump concentrate per annum. This comprises 3.9 Mt of total ore sourced from an optimised pit design. Mining will consist of 3.9 million tonnes of ore and 0.9-1.0 million tonnes of waste per annum. The mining design has been developed assuming conventional open pit mining methods with a dozer and hydraulic excavator mining, truck haulage to the ROM pad and loading ore directly into a mobile crusher. Mining costs were sourced from quotations received from mining/processing contractors with sufficient experience to manage this style of operation. Mining productivities and costs do not vary by bench as the mining and processing plant is moved from bench to bench minimizing overhaul costs. Mining factors for pit optimisation include 95% ore recovery and 5% dilution. Recovery factors were applied to all material types in the pit optimisation. Pit slope angles of 40 degrees in all directions and rock types was used for pit design.

Area	Base case (1.3Mtpa)	X2 (2.6Mtpa)	X3 (3.9Mtpa)
	no contribution to the evaluation of the project. Review of these blocks during mining will determine if these blocks are treated as waste or are processed as ore. Inferred mineralisation was used to complete the final year of mining.	For the purpose of modelling and financial evaluation in-pit Inferred Resources were treated as waste and as such made no contribution to the evaluation of the project. Review of these blocks during mining will determine if these blocks are treated as waste or are processed as ore. Inferred mineralisation was used to complete the final year of mining.	For the purpose of modelling and financial evaluation Inferred Resources were treated as waste and as such made no contribution to the evaluation of the project. Review of these blocks during mining will determine if these blocks are treated as waste or are processed as ore. Inferred mineralisation was used to complete the final year of mining.
Cut-off Grades	Cut-off grades have been calculated as 7% Mn based on work completed during the scoping and PFS studies. Low grade domains, basal shales and inferred mineralisation are not considered for processing as ore in the base case. It is considered that the cut-off grades used for all cases are suitable as the optimisation selects the majority approximately 98% of all mineralisation within the base case. Lower cut-off grades for higher throughputs will only marginally increase mineralisation conversion.		
Open Pit Optimisation	Optimisation parameters used from May 2020 PFS are considered suitable for all cases.		
Mine Design	Mine Designs based on Optimised pit shells are considered suitable for all cases.		
Mine Schedule	Externally scheduled within company supplied scheduling constraints based around a 1.3Mtpa plant throughput	Re-scheduled to allow for 2.6Mtpa plant throughput	Re-scheduled to allow for 3.9M tpa plant throughput
Mining Costs	Sourced from Mining Tender completed in Sept 2020. Mining Costs are commercial in confidence. The mining fleet consists of the following equipment • Dozer - D9L • Loaders - Cat 992G x 2 • Trucks - Cat 777H x 3 • Grader - Cat 14G • Water cart • Service Truck The mining Fleet will operate on day shift only on a 2 on 1 off basis to meet production requirements. Extra trucks will be brought in in future years to allow for longer haulage distances.	Sourced from Mining Tender completed in Sept 2020. Mining Costs are commercial in confidence. The mining fleet consists of the following equipment • Dozer - D9L • Loaders - Cat 992G x 2 • Trucks - Cat 777H x 3 • Grader - Cat 14G • Water cart • Service Truck The mining Fleet will operate on a day and night shift basis on a 2 on 1 off basis to meet production requirements. Extra trucks will be brought in in future years to allow for longer haulage distances.	Sourced from Mining Tender completed in Sept 2020. Mining Costs are commercial in confidence. The mining fleet consists of the following equipment • Dozer - D9L • Loaders - Cat 992G x 2 • Trucks - Cat 777H x 3 • Grader - Cat 14G • Water cart • Service Truck The mining Fleet will operate on a day and night shift basis on a continuous basis to meet production requirements. Extra trucks will be brought in in future years to allow for longer haulage distances.
	Staffing numbers as per Organisation chart developed for this scenario.	Staffing numbers as per Organisation chart developed for this scenario.	Staffing numbers as per Organisation chart developed for this scenario.

<table>
<tr><th>Area</th><th>Base case
(1.3Mtpa)</th><th>X2
(2.6Mtpa)</th><th>X3
(3.9Mtpa)</th></tr>
<tr><td></td><td>Mining Staff costs sourced from Mining Labour Hire companies and Industry Salary Surveys.</td><td>Mining Staff costs sourced from Mining Labour Hire companies and Industry Salary Surveys.</td><td>Mining Staff costs sourced from Mining Labour Hire companies and Industry Salary Surveys.</td></tr>
<tr><td></td><td>Miscellaneous costs including Geology, Survey consumables sourced from Database costs</td><td>Miscellaneous costs including Geology, Survey consumables sourced from Database costs</td><td>Miscellaneous costs including Geology, Survey consumables sourced from Database costs</td></tr>
<tr><td>Process Design Criteria</td><td colspan="3">A conventional crushing and beneficiation process has been designed to produce manganese concentrate as described in the body text above.
The designs are based on preliminary annual average mine schedule data and metallurgical test-work and benchmark information where required.
Process detail design has been undertaken by Projx engineering consultants.</td></tr>
<tr><td></td><td>The following equipment has been sourced and ordered to meet the 1.3Mtpa throughput.</td><td>The plant layout has been designed so that a second plant can be installed adjacent to the base case plant, This is shown above as Figure 18.
As such economies of operation can be achieved in both a capital and operating sense. These have been incorporated into the project as appropriate.
A duplicate set of equipment has been costed for the 2.6Mtpa throughput case with minor savings in engineering and site access works being achieved.</td><td>The plant layout has been designed so that a second plant can be installed adjacent to the base case plant. As such economies of operation can be achieved in both a capital and operating sense. These have been incorporated into the project as appropriate.
A duplicate set of equipment has been costed for the 2.6Mtpa throughput case</td></tr>
<tr><td>Major Mechanical Equipment</td><td colspan="2"><table>
<tr><th>Item</th><th>No. Off</th><th>Supplier</th><th>Model</th><th>Nominal Throughput</th></tr>
<tr><td>Jaw Crusher</td><td>1</td><td>Max Plant</td><td>JQ1170EE</td><td>350tph</td></tr>
<tr><td>Dry Screen</td><td>1</td><td>Max Plant</td><td>SQ1863EE</td><td>400tph</td></tr>
<tr><td>Log Washer</td><td>1</td><td>CDE</td><td>Rotomax RX160</td><td>110tph</td></tr>
<tr><td>Screen</td><td>1</td><td>Vipro</td><td>VDDS-565-1220-3660</td><td>120tph</td></tr>
<tr><td>Rinse Screen</td><td>2</td><td>Vipro</td><td>VSDS-564-1830-3660</td><td>90tph</td></tr>
<tr><td>Ore Sorter</td><td>2</td><td>Steinert</td><td>KSS 200 430 CL I M 12U</td><td>75tph</td></tr>
<tr><td>Compressors</td><td>2</td><td>Atlas Copco</td><td>GA110P A 7.5</td><td>750cfm</td></tr>
</table></td><td>Final equipment for the expansion 3x case is yet to be specifically determined.
Capital costs were factored using an industry standard $n^{0.6}$, where n is the ratio of future throughput to base throughput. This has been applied selectively on a line by line basis to determine the 3x capital cost.</td></tr>
<tr><td>Processing Costs</td><td>Plant equipment consumables and repair costs sourced from Supplier estimates.
Plant power usage sourced from Supplier estimates.
Power supply designed for this operating scenario</td><td>Plant equipment consumables and repair costs sourced from Supplier estimates.
Plant power usage sourced from Supplier estimates.
Power supply designed for this operating scenario</td><td>Plant equipment consumables and repair costs sourced from Supplier estimates.
Plant power usage sourced from Supplier estimates.
Power supply designed for this operating scenario</td></tr>
</table>

Area	Base case (1.3Mtpa)	X2 (2.6Mtpa)	X3 (3.9Mtpa)
	Diesel costs sourced from supplier quotation. Fuel price was assumed to be $1.40/L less the primary producer of $0.38/l. Plant labour allocated as per Organisation chart developed for this scenario. Plant staff costs sourced from Labour Hire companies and Industry Salary Surveys. Plant mobile plant & loaders pricing included in the Mining Tender completed in Sept 2020. Costs are commercial in confidence.	Diesel costs sourced from supplier quotation. Fuel price was assumed to be $1.40/L less the primary producer of $0.38/l. Plant labour allocated as per Organisation chart developed for this scenario. Labour efficiencies achieved through plant layout design. Plant staff costs sourced from Labour Hire companies and Industry Salary Surveys. Plant mobile plant & loaders pricing included in the Mining Tender completed in Sept 2020. Costs are commercial in confidence.	Diesel costs sourced from supplier quotation. Fuel price was assumed to be $1.40/L less the primary producer of $0.38/l. Plant labour allocated as per Organisation chart developed for this scenario. Labour efficiencies achieved through plant layout design.Plant staff costs sourced from Labour Hire companies and Industry Salary Surveys. Plant mobile plant & loaders pricing included in the Mining Tender completed in Sept 2020. Costs are commercial in confidence.
Metallurgical Factors	A comminution and beneficiation process using a combination of conventional techniques including crushing, scrubbing, screening and ore sorting has been proposed to produce a manganese concentrate. Metallurgical test-work supports these processes which are well proven and in operation across the mining industry. The metallurgical recoveries adopted for the base case of 82% metallurgical recovery were based on test-work on multiple 1 tonne bulk samples sourced from the measured resource area and representing the first 4 years of mining. Metallurgical characterisation test-work was carried out by ALS Metallurgy and ore sorting testing was conducted by Steinert. Mineral processing data was supplied as raw data to E25.		
Capital Costs	Capital Costs are based on process design criteria, material balances, electrical load schedule and a selected equipment list. The main equipment pricing is sourced from vendor quotes. Quotes and estimates were utilised for infrastructure and mine support facilities. All costs are estimated in Australian dollars as at Q2 2020 and are calculated to have an overall project accuracy of +/-15%. Capital costs for the expansion option studies were reviewed on a line by line basis. Capital items for the 2x case were costed, based on the supplier quotations currently being received for the base plant being built. Capital items for the 3x case were costed, where appropriate, on an industry standard $n^{0.6}$ basis, where n is the expanded throughput/base throughput. The capital costs summary is tabulated below:		

Area	Base case (1.3Mtpa)	X2 (2.6Mtpa)	X3 (3.9Mtpa)

Project Section	1.3M tpa A$M	2.6M tpa A$M *	3.9M tpa A$M *	Source
Major plant and equipment	5.0	5.0	7.5	Engineering design and industry quotations sourced from the base case actual costs
Power Generation	0.4	0.4	0.6	
Water Supply	1.2	0.1	0.2	
TSF & Fresh/Dirty Water Ponds	2.3	0.2	0.2	
Buildings & Infrastructure, Site prep, SMP, Elec	2.6	1.8	2.7	
Mining Camp	2.5	5.0	5.8	
Project Management, Engineering & Consultants	1.1	1.0	1.0	
Subtotal	**15.1**	**13.4**	**16.8**	
Contingency	1.9	1.7	2.3	Weighted allowance
Total Plant & Contingency Capital	**17.0**	**15.1**	**20.3**	
Working capital allowance	3.2	-	-	First 3 months operating costs at start of Yr 1 only
Base Case Capital	-	20.2	20.2	
Total Capital (inc. base)	**20.2**	**35.3**	**40.5**	

Tails Storage	Tails storage costs derived from water balance requirements designed for the operating scenario. Pumping and power designed for this scenario and costs sourced from Supplier quotes based on detailed designs. Tails storage facility wall lifts included in the Mining Contractors Scope of work. Pricing included in the Mining Tender completed in Sept 2020. Costs are commercial in confidence.	Tails storage costs derived from water balance requirements designed for the operating scenario. Pumping and power designed for this scenario and costs sourced from Supplier quotes based on detailed designs. Tails storage facility wall lifts included in the Mining Contractors Scope of work. Pricing included in the Mining Tender completed in Sept 2020. Costs are commercial in confidence.	Tails storage costs derived from water balance requirements designed for the operating scenario. Pumping and power designed for this scenario and costs sourced from Supplier quotes based on detailed designs. Tails storage facility wall lifts included in the Mining Contractors Scope of work. Pricing included in the Mining Tender completed in Sept 2020. Costs are commercial in confidence.

Area	Base case (1.3Mtpa)	X2 (2.6Mtpa)	X3 (3.9Mtpa)
Power Supply	Power will be derived from Hire Diesel Generators designed to suit the plant power usage for this scenario. Hire costs sourced from supplier quotations Diesel usage as per supplier guidelines Diesel costs sourced from supplier quotations	Power will be derived from Hire Diesel Generators designed to suit the plant power usage for this scenario. Hire costs sourced from supplier quotations Diesel usage as per supplier guidelines Diesel costs sourced from supplier quotations	Power will be derived from Hire Diesel Generators designed to suit the plant power usage for this scenario. Hire costs sourced from supplier quotations Diesel usage as per supplier guidelines Diesel costs sourced from supplier quotations
Water Supply	A borefield has been designed and is being constructed to supply water for the plant to meet the x3 expansion option. Bores will only be equipped to supply water for the Base Case, but piping is sufficient for all 3 cases being looked at. Pump hire and operating costs were sourced from suppliers. Gensets for the borefield will be sized for the power required for each scenario. Genset hire and diesel costs were sourced from supplier quotations	A borefield has been designed and is being constructed to supply water for the plant to meet the x3 expansion option. Bores will only be equipped to supply water for the Base Case, but piping is sufficient for all 3 cases being looked at. Pump hire and operating costs were sourced from suppliers. Gensets for the borefield will be sized for the power required for each scenario. Genset hire and diesel costs were sourced from supplier quotations	A borefield has been designed and is being constructed to supply water for the plant to meet the x3 expansion option. Bores will only be equipped to supply water for the Base Case, but piping is sufficient for all 3 cases being looked at. Pump hire and operating costs were sourced from suppliers. Gensets for the borefield will be sized for the power required for each scenario. Genset hire and diesel costs were sourced from supplier quotations
Administration	Site administration staffing numbers as per an Organisation chart developed for this scenario. Site administration miscellaneous costs have been derived from Database costs in line with similar operations of this scale.	Site administration staffing numbers as per an Organisation chart developed for this scenario. Site administration miscellaneous costs have been derived from Database costs in line with similar operations of this scale.	Site administration staffing numbers as per an Organisation chart developed for this scenario. Site administration miscellaneous costs have been derived from Database costs in line with similar operations of this scale.
Ore Haulage	Ore haulage costs from Butcherbird to Utah Point at Port Hedland have been sourced from supplier quotations. Haulage for the base case involves the use of 7 quad road-trains of 132t each per day. Haulage costs including fuel range from 7.5 to 8.5c/tkm.	Ore haulage costs from Butcherbird to Utah Point at Port Hedland have been sourced from supplier quotations. Haulage for the base case involves the use of 14 quad road-trains of 132t each per day. Haulage costs including fuel range from 7.5 to 8.5c/tkm.	Ore haulage costs from Butcherbird to Utah Point at Port Hedland have been sourced from supplier quotations. Haulage for the base case involves the use of 20 quad road-trains of 132t each per day. Haulage costs including fuel range from 7.5 to 8.5c/tkm.
Port Charges	Utah Port handling and ship loading charges are based on quotations from Pilbara Ports and Qube contractors. There are no economies of scale here as charges are throughput based.	Utah Port handling and ship loading charges are based on quotations from Pilbara Ports and Qube contractors. There are no economies of scale here as charges are throughput based.	Utah Port handling and ship loading charges are based on quotations from Pilbara Ports and Qube contractors. There are no economies of scale here as charges are throughput based.

Area	Base case (1.3Mtpa)	X2 (2.6Mtpa)	X3 (3.9Mtpa)
Perth Office	Perth office charges have been built up from a zero base based around the organisation structure proposed for each operating Scenario. This contemplates increased directors and manning for the base case. Directors fees and staff salaries have been sourced from Labour Hire companies and Industry Salary Surveys. Office and corporate charges have been based on historical charges.	Perth office charges have been built up from a zero base based around the organisation structure proposed for each operating Scenario. This contemplates increased manning for the base case but only minor changes from a manning point of view for the expansion cases. Directors fees and staff salaries have been sourced from Labour Hire companies and Industry Salary Surveys. Office and corporate charges have been based on historical charges.	Perth office charges have been built up from a zero base based around the organisation structure proposed for each operating Scenario. This contemplates increased manning for the base case but only minor changes from a manning point of view for the expansion cases. Directors fees and staff salaries have been sourced from Labour Hire companies and Industry Salary Surveys. Office and corporate charges have been based on historical charges.
Royalties	Three Royalties have been allowed for, for the project. State Royalties have been based on 5% of the value of each monthly shipment based on a schedule of rates from the Mining Act. These are payable quarterly. Native Title Payments are based on Mining Agreements with the 2 Native Title Parties. The details of these payments are commercial in confidence. Pastoral Access Agreements have been included as per agreements with the two Pastoral Stations which the project sits on. The details of these payments are commercial in confidence.	Three Royalties have been allowed for, for the project. State Royalties have been based on 5% of the value of each monthly shipment based on a schedule of rates from the Mining Act. These are payable quarterly. Native Title Payments are based on Mining Agreements with the 2 Native Title Parties. The details of these payments are commercial in confidence. Pastoral Access Agreements have been included as per agreements with the two Pastoral Stations which the project sits on. The details of these payments are commercial in confidence.	Three Royalties have been allowed for, for the project. State Royalties have been based on 5% of the value of each monthly shipment based on a schedule of rates from the Mining Act. These are payable quarterly. Native Title Payments are based on Mining Agreements with the 2 Native Title Parties. The details of these payments are commercial in confidence. Pastoral Access Agreements have been included as per agreements with the two Pastoral Stations which the project sits on. The details of these payments are commercial in confidence.
Environmental	Base case environmental surveys have been completed and all approvals lodged. No issues of significance were encountered during the surveys or applications. The Native Vegetation Clearing permit, Project Management Plan and driveway access to the great northern highway has been granted. The Old Great Northern Highway has been de-gazetted Final approvals are due in early December 2020		
Social	E25 has signed mining agreements, which include heritage agreements, with the Karlka Nyiyaparli and Ngarlawanga Native Title Claimant Groups. E25 has conducted three aboriginal heritage clearance programs coinciding with previous drilling activities at Butcherbird. The company has a mining agreement with the Bulloo Downs and Kumarina Pastoral station to enable mining and other development activities on lands impacted by mining or required for development of the project.		

Area	Base case (1.3Mtpa)	X2 (2.6Mtpa)	X3 (3.9Mtpa)
	Site personnel will be mostly contractor based overseen by a small Element 25 management team. The site will operate on a Fly In/Fly Out (FIFO) basis, utilizing Newman as a transport hub. Finalised site rosters are yet to be determined.		
Market Assessment	Manganese market information and forward-looking manganese prices have been sourced from the commissioned "Mn Ore, EMM and MnSO4 market Information report" dated September 2019, by Roskill Consulting Group Ltd. The current price of manganese at the time of writing is approximately US$4.00/dmtu. The long-term average manganese price utilised is US$4.76/dmtu 33% Mn CIF China, US$4.37/dmtu FOB Port Hedland.		
Economics	The economics of the project are discussed in the following section		

Economic Analysis

Element 25 has developed a financial model for its proposed manganese concentrate production. The financial model is based on capital and operating costs estimates described below. The model, including all cost assumptions is calculated in Australian Dollars (A$). Revenue assumptions are calculated in United States Dollars (U$) and converted to Australian Dollars using an Exchange rate assumption. The model is shown in Real dollar terms, no inflation, cost or revenue escalation has been applied to the financial model. The model consists of 40 years of financial data modelled as 10 years of months and 30 years of yearly data. The mine production has been scheduled outside of the financial model, but processing and intermediate stockpiles are handled within the model, this allows for variance of the production rate and hence production profile at different throughput rates.

The financial analysis of the Study shows that the project has the potential to return a positive NPV_5 of A$583M (Pre-Tax) A$412M (Post-tax) with an annualized cash flow of A$39.6M (Years 1-5 average).

The project requires a modest start-up capital investment of A$17.0 million plus a working capital allowance of A$3.2M and provides estimated returns supporting an internal rate of return of 387%.

Project Assumptions

The following assumptions have been made in the construction of the financial model for the Project and are relevant to the base and the two expansion options:

- AUD/USD exchange rate of 0.70 for the life of the project
- 10 year straight line depreciation for capex
- Discount Factor 5%
- Cost of Capital 10%
- Project Capital costs totaling A$17.0m (U$11.9M), which includes a contingency of A$1.9M (U$1.2)
- Working capital allowance of A$3.2M
- State Royalties of 5%
- Native Title Royalties, Farm Access payments and other varied government payments included
- Manganese price forecasts sourced from Roskill 2019.
- Expansion funding to be sourced from cash flow and equity.
- Independent mine schedules developed for each operating strategy

Manganese Price

The manganese prices assumed for the project were sourced from a report written by Roskill in September 2019. Roskill presented 10 year forward estimates in Real and Nominal values for manganese prices based on a 33%Mn CIF China price. E25 has continued to use the 2019 Roskill manganese price forecasts as events during 2020 in particular the Covid pandemic have artificially altered the short-term pricing of manganese.

The manganese prices were converted to an FOB Port Hedland manganese price by subtracting freight and insurance. Freight and insurances costs were sourced from industry. The pricing assumptions are supported by the pricing structure built into the offtake agreement, the terms of which are commercial in confidence. This discount equates to an approximate U$0.39/dmtu for a 33%Mn product FOB Port Hedland manganese delivering a manganese price of U$4.37 (A$6.24) /dmtu 33%Mn FOB Port Hedland for 2021 as shown below.

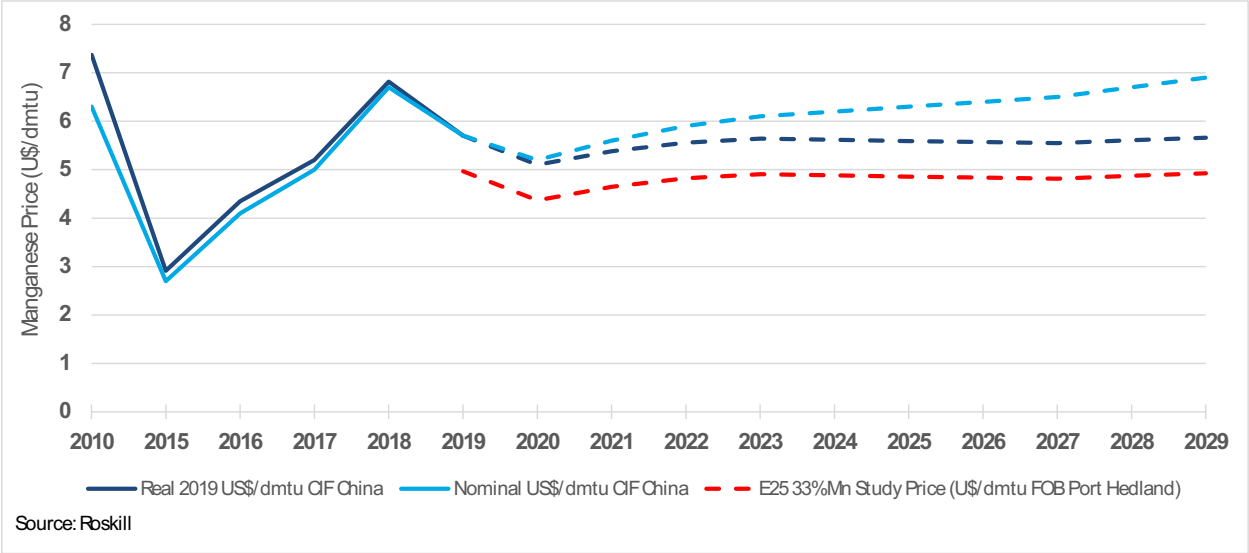

Figure 19. Historic and Forecast Mn Ore Prices (Roskill 2019)

Key Financial Parameters

Key Economic Metrics	Unit	Base Case Yr 1 + Expansion Years 2 to 5		
		Base Case 1.3Mtpa	2X Throughput 2.6Mtpa	3X Throughput 3.9Mtpa
Ore Mined	ktpa	1,300	2,600	3,900
Manganese Concentrate Produced	ktpa	366	590	852
Manganese Concentrate Grade	Mn%	33	33	33
Manganese Price (base)	US$/dmtu 33%Mn FOB Port Hedland	4.37	4.37	4.37
Undiscounted Cashflow	A$M pa	39.6	60.2	78.8
Mine Life	Years	40	20	14
$NPV_{5\ Real\ (Pre\ Tax)}$	A$M	583	926	1,138
$NPV_{5\ Real\ (Post\ tax)}$	A$M	421	652	798
IRR (Pre-tax)	%	387	342	359
Operating Cost	A$/dmtu 33% FOB Port Hedland	4.15	3.89	3.72
	U$/dmtu 33% FOB Port Hedland	2.91	2.76	2.65

Operating Costs Summary

For the expansion options all operating costs were reviewed according to the expense type. Fixed costs remained fixed or were adjusted where extra costs would be incurred, ie: Increased staffing. Where appropriate variable costs were checked to ensure suitability for use. In other cases variable costs where based on known usage of a cost component eg: fuel, were calculated based on the increased power required for the plant for the expanded option. Due to the use of fixed costs in certain areas efficiencies of scale impacts were seen resulting in lower overall unit costs for the expansion cases. . Unit operating costs for the two expansion options shown below:

Table 10. Life of Mine Operating Costs Summary for Expansion Options

Operational Area	Base 1.3Mtpa		2.6M tpa		3.9M tpa	
	A$/dt Product	A$/dmtu produced	A$/dt Product	A$/dmtu produced	A$/dt Product	A$/dmtu produced
Site Cost	70	2.13	57	1.73	52	1.58
Logistics marketing and royalties	72	2.17	71	2.15	71	2.14
Corporate	8	0.25	4	0.13	3	0.09
Total Operating Cost	150	4.55	132	4.01	126	3.81

Project Variance from May 2020 PFS

The following waterfall chart shows the impacts of the various changes in inputs on the PFS's NPV output from May 2020 to November 2020.

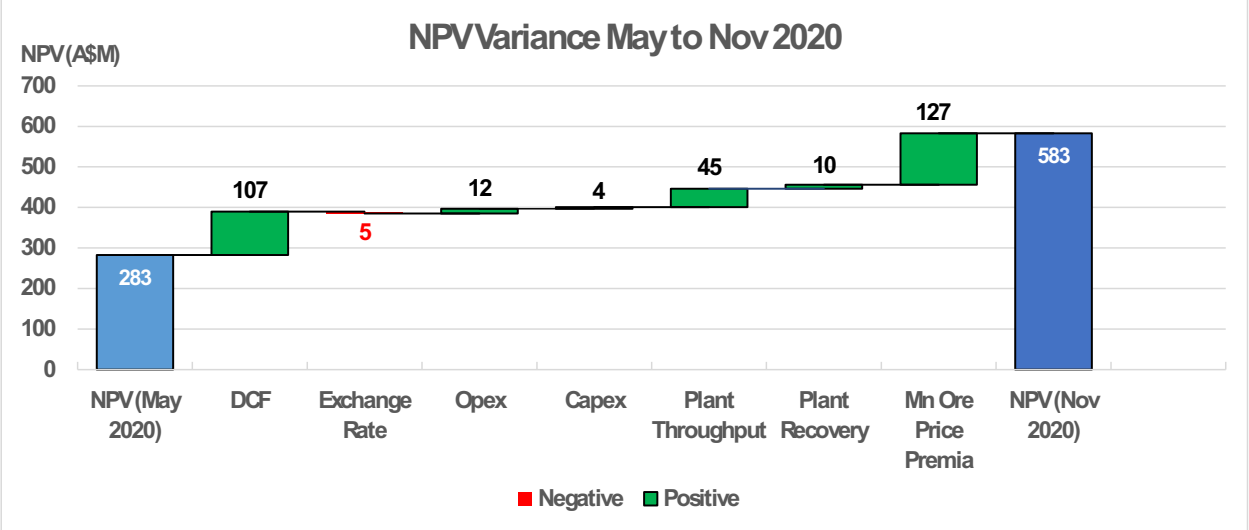

Figure 20. NPV Variance May 2020 to November 2020

Project Sensitivity

These sensitivities are shown graphically below for the Base Case:

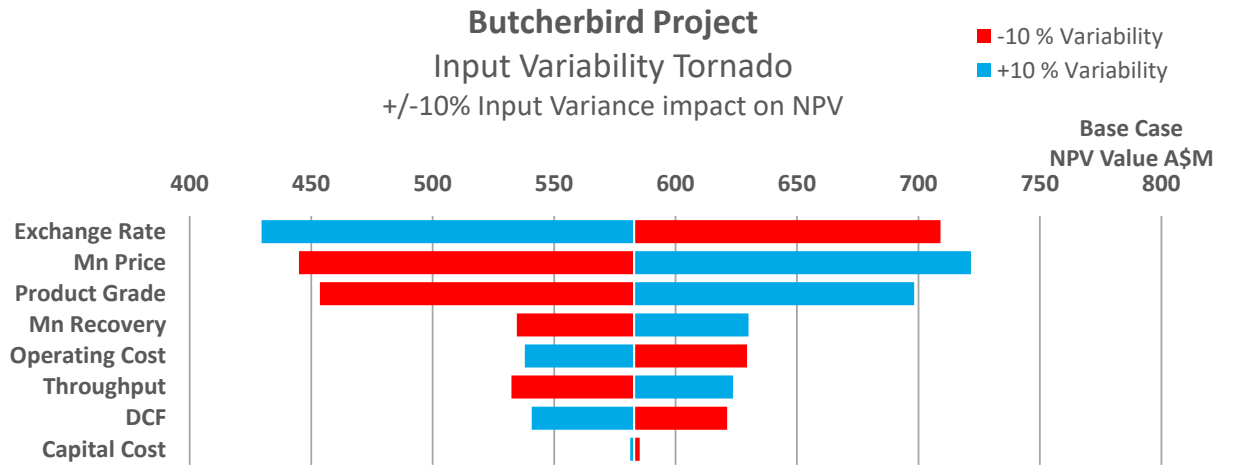

Figure 21. NPV Sensitivity Tornado Chart (note Mn Recovery variability is ±5%).

Business Plan Risks

Element 25 has undertaken a comprehensive risk management review, which identified key business and operational risks and have developed strategies to mitigate and control these risks.

Operating Costs

The top four cost areas are Manganese ore transport, Processing, Mining and Royalties. Manganese ore transport is minimized by establishment of long-term relationships with haulage contractors utilising maximum payloads available on the roads. Fuel pricing needs to be managed through appropriate rise and fall clauses in all contracts.

Processing costs are mitigated by establishing fit for purpose maintenance systems focusing on reliability with a multi-skilled flexible workforce. The balance between owned/operated equipment and contract services will be optimised to minimise operating costs. Plant utilisation and availability has been conservatively modelled and there is a natural opportunity available by improved plant performance.

Mining costs are minimised by minimising equipment hours by application of suitable mining planning systems. Ultimately the Company should review the opportunity to convert to an Owner Mining cost model.

Royalties are fixed via State Regulations and Access Agreements with native title and pastoral property holders.

Other operating cost areas which may have savings are in the construction of an owners camp at or near the mine-site and airstrip. Further review may allow operational cost savings in these areas which have been excluded from capital costs at start up.

Revenue

The Project will always be a price taker in regards to what manganese prices can be achieved.

The opportunity exists to establish long term relationships with potential offtake partners, traders and manganese smelters wherein the properties of the Project manganese including impurity levels can be used as a marketing tool. Credits may be available for some impurities and these opportunities will always be explored. The opportunity to sell screened or sorted by waste streams may add value if local disposal can be achieved.

Social Licence

Although the Project has minimal interaction with local pastoralists, native title groups and local communities, all efforts must always be taken to ensure that these stakeholders and other statutory requirements and concerns are met and that all agreements are complied with.

The Company will develop a schedule of statutory and other reporting requirements to actively manage all stakeholder requirements.

Environmental, Heritage and Approvals

Environment

All environmental baseline studies have been completed for the Project, including flora and vegetation, fauna, short range endemics (SRE), groundwater, surface water, subterranean stygofauna, groundwater, waste rock characterisation, tailings characterisation, landform and soils and tailings characterization have been completed.

Statutory approvals including a Mining Proposal including Mine Closure Plan and Native Vegetation Clearing Permit, Works Approval, Project Management Plan and water Abstraction Licence have also been developed and submitted for the relevant departmental approval.

The Native Vegetation Clearing Permit and Project Management Plan have been approved and other approvals are due in December 2020.

Flora, Fauna and Communities

No Threatened flora, vertebrate fauna or ecological communities listed at Federal or State levels or Groundwater Dependent Ecosystems (GDEs) are present within the Project area. Four Priority flora species and one Priority fauna species were identified in baseline surveys, although these are to be expected in the sub-region. Priority species are listed by the State's Department of Biodiversity, Conservation and Attractions (DBCA) generally in the regard of being poorly-known taxa, but as areas are surveyed the understanding of listed species are increased.

The Priority fauna species (Brush-tailed Mulgara) associated habitat is distributed outside of the mining lease area (not to be disturbed). Priority flora populations were found both within and external to the project tenements and proposed disturbance footprint. Project impacts to Priority flora species will be managed through avoidance as part of the project design. Project impacts on flora, vegetation and fauna are not considered as significant at this time.

Subterranean Fauna

Mining will be above the water table and within geologies considered unlikely to support subterranean fauna. A subterranean fauna survey was undertaken in June 2020. The impact area for groundwater drawdown, bore field design will be modified to ensure habitat availability remains at least 70% of pre mining habitat during the period of active abstraction. This is consistent with current industry practices for impact minimisation.

Surface water

Surface water characteristics of the site include flow velocities generally less than 0.5 m/s with some higher velocities located adjacent the Great Northern Highway and Old Road. Modelling of 10, 50 and 100 year ARI rain events indicates fairly stable water accumulation (ranging between 0 – 0.5 m deep across ARI events) throughout site, but with ponding likely to occur in heavy downpours at particular locations near Old Road to the east and Great Northern Highway to the west. These conditions have been taken into account for project design.

Groundwater

Hydrogeological studies and test bores have found a silcrete aquifer approximately 6km South east of the project area[8]. This aquifer will be developed as part of the project development plan.

Heritage

Nine Aboriginal heritage surveys have been conducted for the Project. While artefacts were found, and several unregistered sites identified in the local vicinity, there are no Registered heritage sites within the Mining Lease.

Cyclones

Newman is situated 350 kilometres inland and sits in Wind Region A4 in the Building Code of Australia (BCA). Of the major towns in the Pilbara, Newman is least at risk to tropical cyclones. However, whilst cyclones weaken as they move inland, the intensity of the winds can remain capable of causing damage.

[8] Refer: ASX Announcement 3 Aug 2020.

Project Finance

The Company reported cash at bank and ASX listed investments of $11.8m before creditor payments[9] at the end of the September 2020 quarter. Subsequent to the end of the quarter, the Company completed a capital raising to raise $9.75M before the costs of the issue. Based on the budgets prepared by the Company, this is sufficient capital to fund the development of the first stage of the Project. Cashflows from this production are expected to be sufficient to fund the incremental capital required for the expansion case.

Stockpile finance has been sourced which allows payment of production on delivery of manganese product to the port. This brings forward revenue and has reduced working capital requirements from those included in the May 2020 PFS. The Details of the stockpile finance arrangement are commercial in confidence.

Consultants and Contributors

The internal E25 team has unique expertise in process design, start-up and operation of manganese operations throughout the world. E25 has partnered with a similar team of outstanding professionals across multiple disciplines to assure that the Butcherbird Project Study is of the highest quality. The external team includes input and services from:

Table 11. Butcherbird PFS Major Consultants and Contributors

Group	Abbreviation	Function
4DG	4DG	Open Pit Excavatability assessment
ALS Laboratories	ALS	Metallurgical test-work
BurnVoir		Corporate Finance Advisor
Civil Group Pty Ltd		Access Road and Pipeline engineering
Core Group		Comminution Review
Digimaps		Drafting services
HPS (WA) Pty Ltd	HPS	Mn Marketing, Offtake and Logistics support
IHC Robbins	IHC	Resource Modelling
Karlka Nyiyaparli		Assistance with Native Title Clearance and Approvals
Land & Marine Geological Services	L&MGSPL	TSF Design and assessment
Lycopodium Limited		Comminution & Metallurgical test-work management
MBS Environmental Pty Ltd	MBS	Environmental surveys and preparation of the environmental approval documents
Mine Planning Services	MPS	Open Pit Optimisation, Design and Scheduling
Mining Solutions Pty Ltd	MinSol	Project management, Mine Engineering, Financial Modelling
MWES Pty Ltd	MWES	Water Resource Definition and assessment
NG Consult	NGC	Metallurgical assessment and Process Engineering
Orway Minerals Consultants	ORWAY	Comminution circuit option study
Peter O'Bryan and Associates	POB	Open Pit Geotechnical Review and Waste Dump Stability assessment
ProjX Pty Ltd		Engineering Services
Resource Engineering Consultants Pty Ltd	REC	TSF Geotechnical assessment
Roskill Consulting Group Ltd	Roskill	Manganese market and pricing assessment
Steinert Australia		Ore Sorting technology

[9] Reference: ASX Quarterly Report lodged 28 October 2020

Competent Persons Statement

Disclaimer

The Company confirms that in the case of estimates of Mineral Resource or Ore Reserves, all material assumptions and technical parameters underpinning the estimates in the market announcements dated 17 April 2019 and 19 May 2020 continue to apply and have not materially changed. The Company confirms that the form and context in which the competent person's findings are presented has not been materially modified from the original market announcements.

Competent Person Statement - Mining, Metallurgical Results and Financial Analysis Results

The information in this statement that relates to Mining, Metallurgical and Financial Modelling is based on information compiled by independent consulting mining engineer Ian Huitson (B.Eng Mining Eng, Fellow AusIMM, CP Min). Mr Huitson is a Fellow of The Australasian Institute of Mining and Metallurgy. Ian Huitson is employed by Mining Solutions Pty Ltd. Mr Huitson is a shareholder of Element 25 Limited. Mr Huitson has visited site on a number of occasions as part of the ongoing studies and development of the Butcherbird Project. Mr Huitson has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which is 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 Huitson consents to the inclusion in the report of the matters based on the information made available to him, in the form and context in which it appears.

This announcement is authorised for market release by Element 25 Limited's Board of Directors.