athena
RESOURCES

BYRO MAGNETITE PROJECT
FE1 SCOPING STUDY

CAUTIONARY STATEMENT: BYRO SCOPING STUDY

This Scoping Study has been undertaken for the purpose of an initial evaluation of a potential 2.4 Mtpa processing operation (0.72 Mtpa Magnetite concentrate Production Target) of the FE1 magnetite deposit which forms part of the Byro Magnetite Project located northeast of Geraldton, Western Australia, 100% owned by Athena Resources Pty Ltd ("Athena").

This Scoping Study is a preliminary technical and economic assessment of the potential viability of the Project and builds on several studies conducted and statements released since 2009.

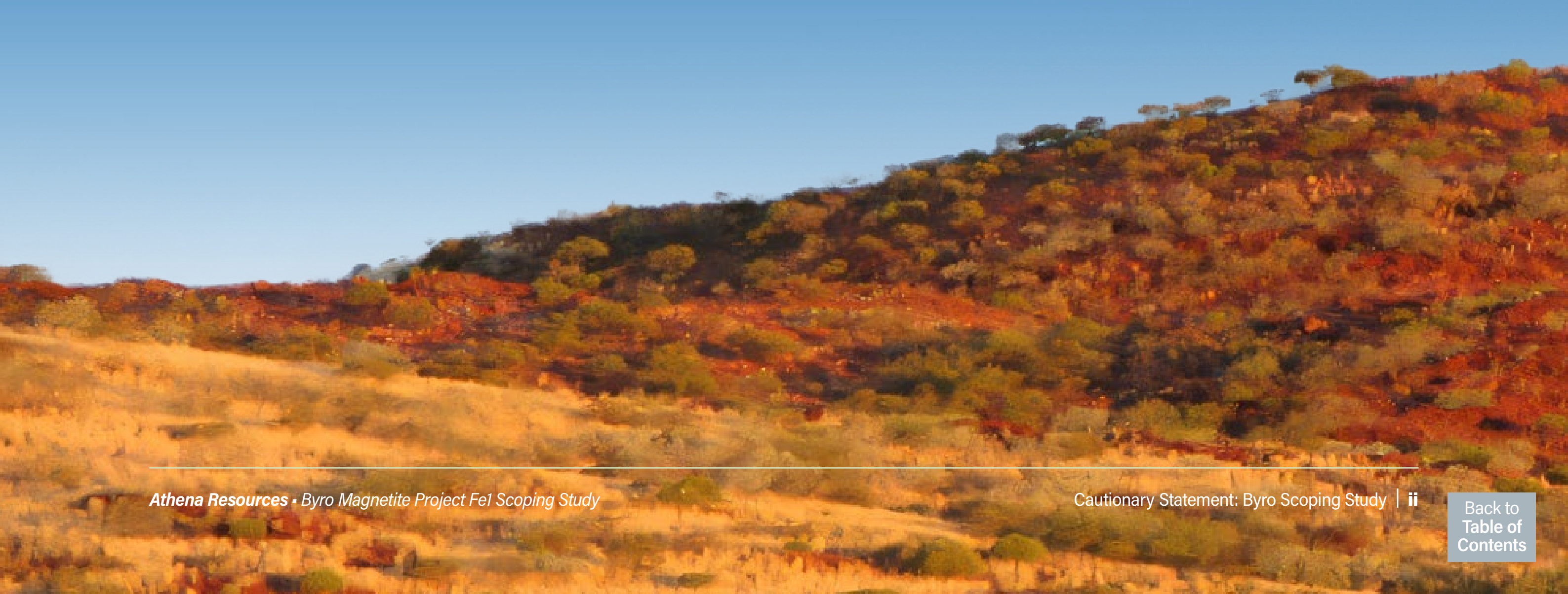
The Scoping Study outcomes, Production Target and forecast financial information are based on low accuracy level technical and economic assessments that are insufficient to support estimation of Ore Reserves.

While each of the modifying factors was considered and applied, there is no certainty of eventual conversion to Ore Reserves or that the Production Target itself will be realised. Further exploration and evaluation work and appropriate studies are required before Athena will be able to estimate any Ore Reserves or to provide any assurance of an economic development case.

The published FE1 Mineral Resource of 29.3 million tonnes, 82% of which is categorised as an Indicated Resource and 18% as Inferred Resources underpins the Production Target in this Scoping Study. That resource has been prepared by a competent person in accordance with the requirements of the JORC Code (2012). For full details of the Mineral Resource Estimate, refer to Athena's ASX release dated 29 March 2023, "Byro FE1 Mineral Resource Estimate Full Entech Report". Athena confirms that it is not aware of any new information or data that materially affects the information included in that release. All material assumptions and technical parameters underpinning the estimates in that ASX release continue to apply and have not materially changed.

The Production Target utilised for this study is a subset of 17.0 million tonnes from that published resource. This is made up of 92% Indicated and 8% Inferred mineralisation. There is a low level of geological confidence associated with an Inferred Mineral Resource and there is no certainty that further exploration work will result in the determination of Indicated Mineral Resources or that the Production Target will be realised. Athena does not anticipate that a failure to convert this mineralisation to Indicated status would materially impact the conclusions of the study.

Key components of the Scoping Study and the material assumptions used are detailed throughout this study. Information includes preliminary mine design studies, metallurgical recoveries from existing test work and indicative costs based on budgetary estimates and quotations from several sources. The cash flow and economic analysis has been prepared on a 100% of the project basis and are in Australian Dollars. Cost estimations are considered to be at a scoping study level of accuracy of +/- 30%.



This Scoping Study contains a series of forward-looking statements. Generally, the words "expect," "potential," "intend," "estimate," "will" and similar expressions identify forward-looking statements. By their very nature forward-looking statements are subject to known and unknown risks and uncertainties that may cause the actual results, performance, or achievements, to differ materially from those expressed or implied in any of the forward-looking statements, which are not guarantees of future performance. Athena has concluded it has a reasonable basis for providing the forward-looking statements and expects that it will be able to proceed further with the project.

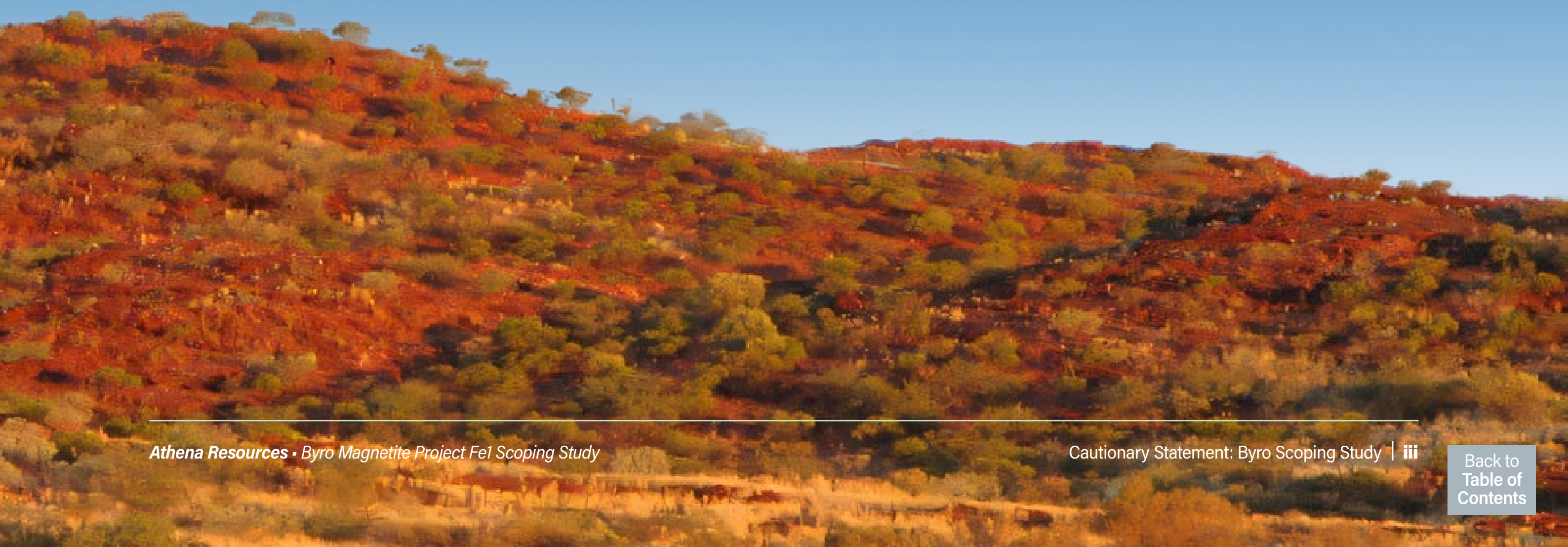
To achieve the outcomes as indicated in this Scoping Study, it is estimated that pre-production funding of approximately AUD $150M including additional studies and before working capital will be required.

The Company considers that there is a reasonable expectation that the quality of the concentrate forecast to be produced will assist in the securing of funding and has undertaken a number of preliminary discussions with various parties.

Those preliminary discussions and the positive outcomes indicated by the Scoping Study provides confidence to the Board of the Company that there is a reasonable basis to assume the necessary funding for the Project will be obtained as and when required, through conventional mining project financing methods that may include a combination of debt and equity, joint venture or partial sale of the Company's interest in the project, subject to the delivery of key development milestones.

However, the normal risks for the raising of capital will apply and at this time there is no certainty that the Company will be able to source the necessary development funding when required. It is possible that such funding may only be available on terms that are dilutive to or otherwise affect the value of the company's existing shares.

Given the uncertainties involved, investors should not make any investment decisions based solely on the results of the scoping study.



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The Project

Athena Resources Limited is a Western Australian based and ASX listed company (ASX Code: AHN) that owns the Byro Magnetite Project located within the Murchison Province of Western Australia. The Project is situated approximately 285km north-northeast of the town of Mullewa, 340km north-east of the Port of Geraldton, and 650km north of Perth.

This scoping study investigates the development potential of the magnetite ore from the FE1 Magnetite deposit within the Byro Magnetite Project and builds on several previous studies.

The FE1 Prospect has a Mineral Resource Estimate (MRE) with a total of 29.3 million tonnes at 24.7% Fe (ASX release 29 March 2023)

Byro Magnetite Project Location.

Executive Summary

HIGHLIGHTS

An economically robust project based on the current IODEX62 pricing adjusted for the higher grade and quality FE1 magnetite project is indicated.

- A **Mineral Resource** of 29.3 Mt at 24.7% Fe
- A **Production Target** of 16.96 Mt at 26.1% Fe from the MRE of 29.3Mt grading 24.7% Fe
- A **process rate** of 2.4 Mtpa at an average grade of 26.1% Fe over an 8 year mine life with significant potential to extend utilising additional resources
- **Magnetite recoveries** based on extensive testwork of 79.1%
- **Production** of 5.0 Mt of magnetite concentrates grading 70% Fe, 1.8% SiO_2, 0.4% Al_2O_3, 0.002% P and 0.03% S
- **Extremely high grade** concentrate with minimal impurities
- Eminently suitable for DRI pellet production for supply to the emerging **Green Steel** market
- **Payback period** of just over three years from first production.

NPV_8 \$194M

IRR 32%

Payback Period
40 months

Capex \$111M
Plant, equipment, infrastructure

Prestrip \$31M
Prestrip mining works

Free Cash Flow \$387M

PROJECT PHYSICALS

MINING PHYSICALS	Stage 1 Pit	Stage 2 Pit	Total
TOTAL Tonnes mined	32.5 Mt	36.0 Mt	68.5 Mt
WASTE mined	-25.7 Mt	-25.8 Mt	-51.6 Mt
ORE to ROM Pad	6.8 Mt	10.2 Mt	17.0 Mt
Indicated Ore	5.82 Mt	9.77 Mt	15.60 Mt
Inferred Ore	0.94 Mt	0.43 Mt	1.36 Mt
TOTAL ORE	**6.76 Mt**	10.20 Mt	16.96 Mt
Fe GRADES		**% Fe**	
Waste	5.40%	3.74%	4.57%
Indicated Ore	25.63%	27.04%	26.52%
Inferred Ore	22.31%	20.71%	21.81%
CONTAINED Fe UNITS		**Tonnes (000's)**	
Waste	1,390	966	2,356
Indicated	1,492	2,643	4,135
Inferred	209	88	297
	3,091	3,697	6,788

TONNES TO ROM PAD	16.960Mt
FE UNITS TO ROM PAD	**4.433Mt**
GRADE	26.14%

PROJECT KEY NUMBERS

		ORE tonnes 000	Fe tonnes 000	total $000'	$ per tonne	
Mined		**68,520**		316,876	4.62	of material
Waste - Strip Ratio 3:1	75.2%	-51,560				
Ore to processing	26.1%	16,960	**4,433**	316,876	18.68	of ore
Production loss	20.9%		-928			
			3,505	316,876	90.41	of contained Fe
Dilution gain	70%		1,502		-27.12	
Concentrate produced			**5,007**		63.28	of 70% concentrate
			Concentrate			
Sales	US$195		5,007	1,502,173	300.00	of 70% concentrate
Royalties	5.50%		5,007	-82,620	-16.50	
Mining cost to site stockpile			5,007	-316,876	-63.28	
Processing cost			5,007	-277,149	-55.35	
Average Transport and shipping			5,007	-256,621	-51.25	
Road Maintenance			5,007	-40,000	-7.99	
Total cost				-973,266	-194.37	
Profit A$000				**528,907**	105.63	of 70% concentrate

NPV of operating profit as above	**A$321 million**
NPV of capex and pre production costs	**-A$127 million**
Project NPV	**A$194 million**

FE1 Mineral Resource Interpreted at 10% Fe cut-off.

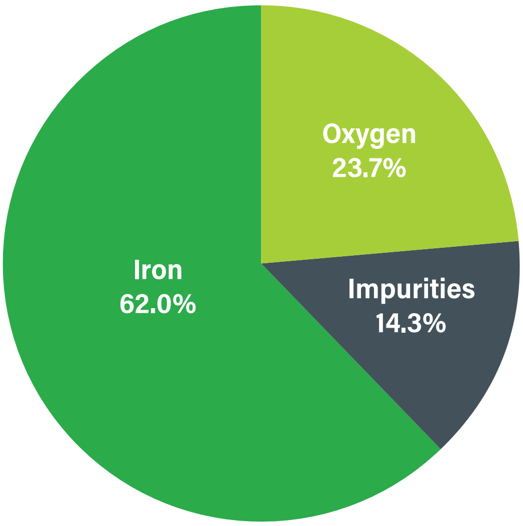
Mineral Resource Category	Weathering	Tonnes (Mt)	Fe (%)	SiO_2 (%)	Al_2O_3 (%)	P (%)	S (%)	TiO_2 (%)	S.G.
Indicated	Fresh	24.0	25.1	49.3	5.48	0.052	0.079	0.32	3.27
Inferred	Fresh	5.3	22.7	50.6	6.56	0.048	0.085	0.37	3.21
Total		**29.3**	**24.7**	**49.6**	**5.68**	**0.051**	**0.080**	**0.33**	**3.26**

A preliminary optimisation and evaluation of the resource was undertaken and a two stage mine design completed to establish a Production Target of 16.96 million tonnes (being 58% of the MRE) at 26.1% Fe and of which 1.4 million tonnes or 8% is from the Inferred resource classification. Material Quantities and Grades are summarised as follows.

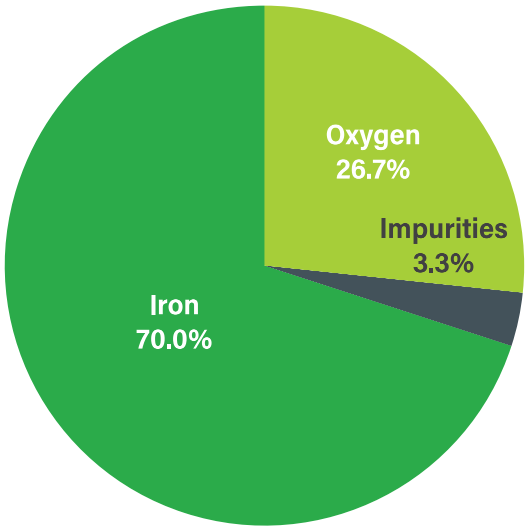
Material	Volume M.BCM	Mass Mt	Fe	Al_2O_3	CaO	K_2O	MgO	MnO	Na_2O	P	S	SiO_2	TiO_2	V
Indicated	4.73	15.60	26.52	4.80	2.75	0.41	3.64	0.14	0.98	0.05	0.08	48.81	0.29	0.01
Inferred	0.43	1.36	21.81	6.80	3.37	0.85	4.08	0.13	1.75	0.04	0.09	52.43	0.36	0.01
	5.16	**16.96**	**26.14**	**4.96**	**2.80**	**0.45**	**3.68**	**0.14**	**1.05**	**0.05**	**0.08**	**49.10**	**0.29**	**0.01**
WASTE	18.64	51.56	4.57	14.13	2.34	1.71	1.94	0.06	4.11	0.03	0.02	66.73	0.42	0.01
TOTAL	**23.80**	**68.52**												

Studies have indicated that the high quality Byro magnetite concentrate may be suitable for use in a range of applications, in addition to the steel making industry. Magnetite concentrates typically range between 65 to 70% Fe and are increasingly being sought as a preferred feedstock for steel making, particularly those higher-grade magnetite concentrates with lower impurities.

The following Pie-Charts show the effect of increasing Fe grade on impurites.



Impurities 14.3%



Impurities 3.3%

The major impurities in magnetite include Silica as SiO_2, Aluminum as Al_2O_3, Phosphorus as P and Sulphur as S with the following upper limits SiO_2 <5% (typically 2.3 to 3.5%), Al_2O_3 <1.9% (typically 0.15 to 0.51%), P <0.07% (typically 0.002 to 0.02%) and S <0.05%.

The following table shows assay grades indicated by testwork completed for FE1 head grade, magnetic concentrate, and non-magnetic tails. All impurities in concentrate are below the upper limits.

FE1 Feed & Magnetite Concentrate Grades (P_{100} –150um) Fe and Major Impurities

Product	Fe	SiO_2	Al_2O_3	P	S
FE1 Head Grade	26.14	49.09	4.97	0.051	0.079
Final Concentrate	70.0	1.78	0.39	0.002	0.034
Non-Mag Tails	7.2	69.98	6.86	0.073	0.178

Steel making using magnetite has lower environmental impacts and as such high-grade magnetite concentrates are often sought to blend with and upgrade lower grade concentrates or ores.

Processing scenarios based on the potential supply of the high quality FE1 magnetite concentrate into steel manufacturing or Coal Wash Media markets at a range of throughputs and concentrate production outputs were evaluated.

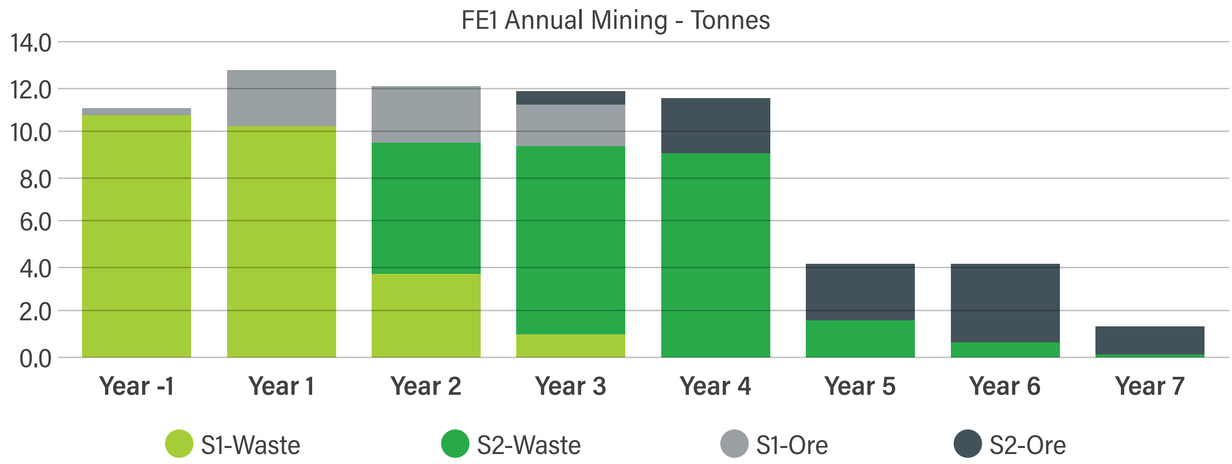
After evaluating these alternatives and because of associated market uncertainties a decision was made to base this scoping study on the supply of high-grade magnetite concentrate into the steel making industry.

The base case for this study is the processing of 2.4 million tonnes of magnetite ore per year, producing a coarse P100 -150um high-grade magnetite concentrate for the purposes of steel making at an average output of 720,000 tpa (dry) and at a grade of 70% Fe.

A mining schedule to deliver the 2.4 Mtpa of ore was developed with a nominal mining target of 12 Mtpa for the initial four years of the project, reducing to 4 Mtpa for remaining years as waste strip requirements reduced.

Mining Schedule – Tonnes by Material Type and Year

The design process to produce the -150um concentrate comprises on a 24/7 production basis:



1. Three stage crushing: primary jaw crusher and two stage cone crushers producing crushed fine ore with P100 of 12mm.
2. Primary ball mill closed circuit with double deck screen producing screen undersize of -1mm.
3. Coarse "Cobber" wet LIMS of -1mm product to reject approximate 40% of mass as non-magnetite tails.
4. Classification at 150um of coarse Cobber wet LIMS magnetic product, with secondary ball mill regrinding -1mm/+150um fraction.
5. Rougher LIMS and Cleaner LIMS of -150um fraction.
6. The -150um concentrate is thickened, filtered prior to storage as final concentrate for steel making.

A production schedule has been determined based on the 2.4 Mtpa process rate, the variable feed grade as established by the mining schedule, a target concentrate grade of 70% Fe and utilising a Fe recovery, as determined by testwork of 79.1%.

Process & Magnetite Concentrate Production Schedule

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Total
Feed Tonnes (Mt)	2.25	2.40	2.40	2.40	2.40	2.40	2.40	0.31	16.96
Feed Grade Fe%	23.06	26.20	26.13	26.87	26.63	27.33	26.61	25.63	26.14
Conc. Tonnes (kt)	**585.4**	**710.3**	**708.4**	**728.5**	**721.9**	**741.0**	**721.4**	**90.4**	**5.007**
Conc. Grade Fe%	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0
Fe Rec'y %	79.07	79.07	79.07	79.07	79.07	79.07	79.07	79.07	79.07

May contain apparent errors of summation due to rounding.

Magnetite is an iron oxide Fe_3O_4 and pure magnetite has a mass percent of 72.36% Fe and 27.64% O. The Byro FE1 concentrate at 70% Fe is high-grade containing only minor quantities of impurities at 3.3%.

Water requirements for the project are estimated to be in the order of 1 GL/year. A study undertaken in 2019/20 indicated several targets are available nearby as potential sources to meet this requirement. These included the Yarra Yarra paleodrainage system within the Project area.

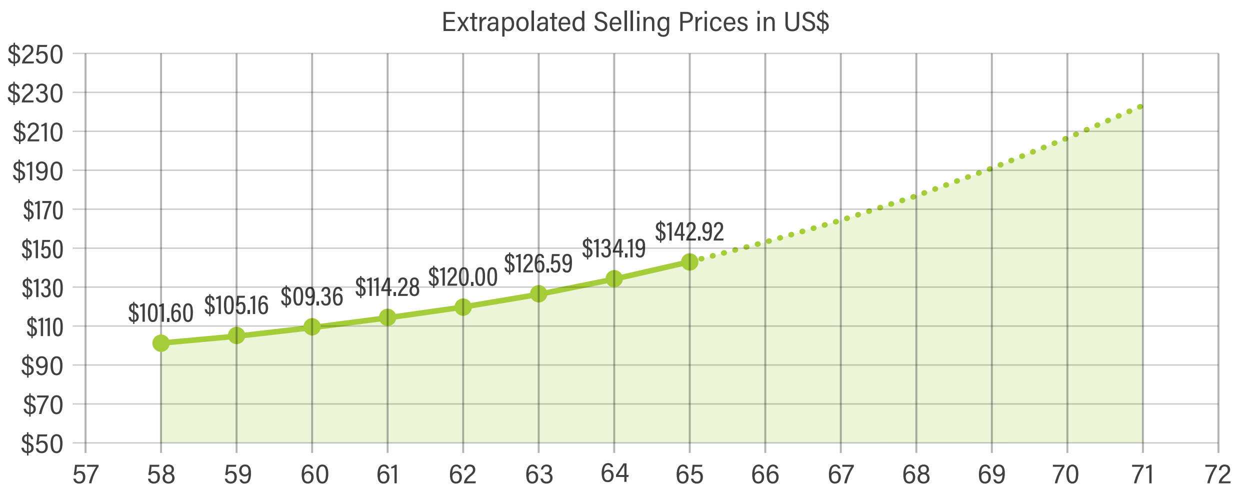
Power generation for the project will be provided under a Build, Own & Operate (BOO) contract for supply, installation, and operation of a hybrid gas/solar farm with battery storage power station. Budget pricing has been obtained from Pacific Energy.

Concentrate transport will be via road utilising 100 tonne road trucks at an annual rate of 720,000 dry tonnes per year (64kt wet tonnes per month). There is potential that this could be upgraded to quad trucks with 200 tonne capacity. Budget proposals based on 100t capacity for transport, storage and shipping from Geraldton have been utilised for the Scoping Study.

The price for Iron Ore is a combination of the value of the Fe units, the penalty for impurities and a quality adjustment. The most quoted pricing for this product is the $IODEX_{62}$ which is the price in US$ for one tonne of Iron Ore with a 62% Fe content, delivered to Qingdao in East China. The IODEX 62 has averaged approximately US$120 per tonne over the past five years and during that time has ranged between US$100 and US$200 per tonne.

FE1 concentrate will be 70% Fe and this requires an adjustment to the IODEX price based on lower quality and grade concentrates. Using an $IODEX_{62}$ of US$120 per tonne CFR China and reviewing general market pricing for higher grade lower impurity concentrates provided the following.

Selling Price Based on Concentrate Grade (US$)



Estimated CFR China Ore Value by Fe Grade

Grade	60%	62%	64%	65%	66%	68%	70%
CFR China	US$109	US$120	US$134	US$143	US$153	US$178	US$210

Adjusting for Freight and associated costs it would expected that a 70% concentrate would sell for US$195 per tonne FOB Geraldton. AHN have utilised this value for the purposes of concentrate sales for this study with financial analysis summarised as follows.

Profit & Loss Estimate (AUD) at an exchange rate of US$0.6500

Sales	Million Tonnes	Per Tonne Concentrate	Total ($M)
Income			
Sales - DRI Feed	2.5	$ 300.00	751.1
Sales - Export	2.5	$ 300.00	751.1
Total Sales	**5.0**	**$ 300.00**	**1,502.2**
Cost of Sales			
Royalties	5.0	$ 16.50	82.6
Mining - Fixed	5.0	$ 12.43	62.2
Mining - Variable	5.0	$ 50.86	254.7
Processing - Fixed	5.0	$ 35.81	179.3
Processing - Variable	5.0	$ 19.54	97.8
Transport - Mullewa	2.5	$ 37.50	93.9
Transport - Geraldton	2.5	$ 50.00	125.2
Storage / Shipping	2.5	$ 15.00	37.6
Road Maintenance (Transport)	5.0	$ 7.99	40.0
Total Costs			**973.3**
Profit		**$ 105.63**	**528.9**

Study cost estimation is to an accuracy of +/- 30%.

PROJECT FUNDING

To achieve the outcomes as indicated in this Scoping Study, it is estimated that pre-production funding of approximately AUD $150M including additional studies and before working capital will be required. The Company considers that there is a reasonable expectation that the quality of the concentrate forecast to be produced will assist in the securing of funding and has undertaken a number of preliminary discussions with various parties.

Those preliminary discussions and the positive outcomes indicated by the Scoping Study provides confidence to the Board of the Company that there is a reasonable basis to assume the necessary funding for the Project will be obtained as and when required, through conventional mining project financing methods that may include a combination of debt and equity, joint venture or partial sale of the Company's interest in the project, subject to the delivery of key development milestones. However, the normal risks for the raising of capital will apply and at this time there is no certainty that the Company will be able to source the necessary development funding when required. It is possible that such funding may only be available on terms that are dilutive to or otherwise affect the value of the company's existing shares.

Given the uncertainties involved, investors should not make any investment decisions based solely on the results of the scoping study.

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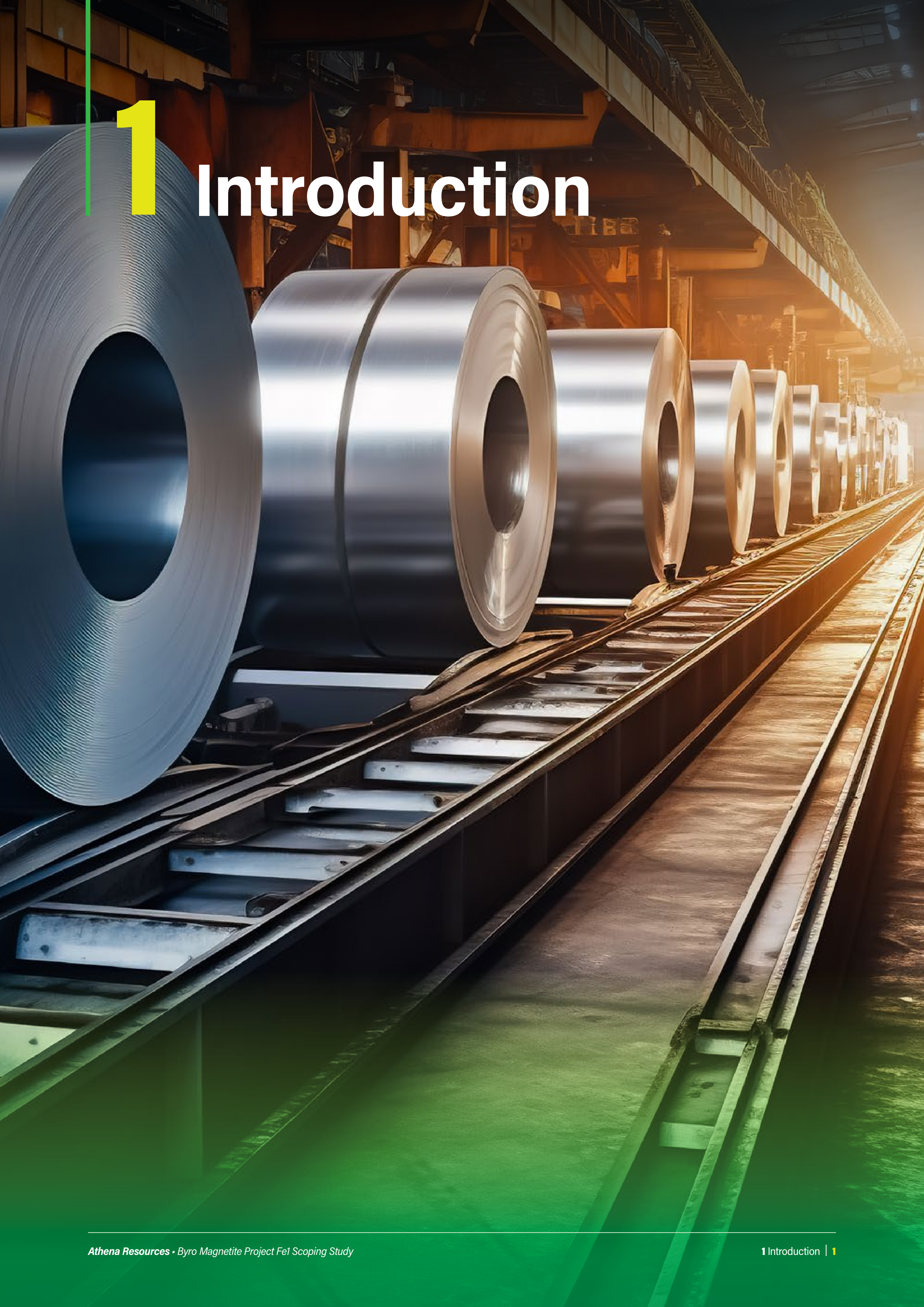


1 Introduction

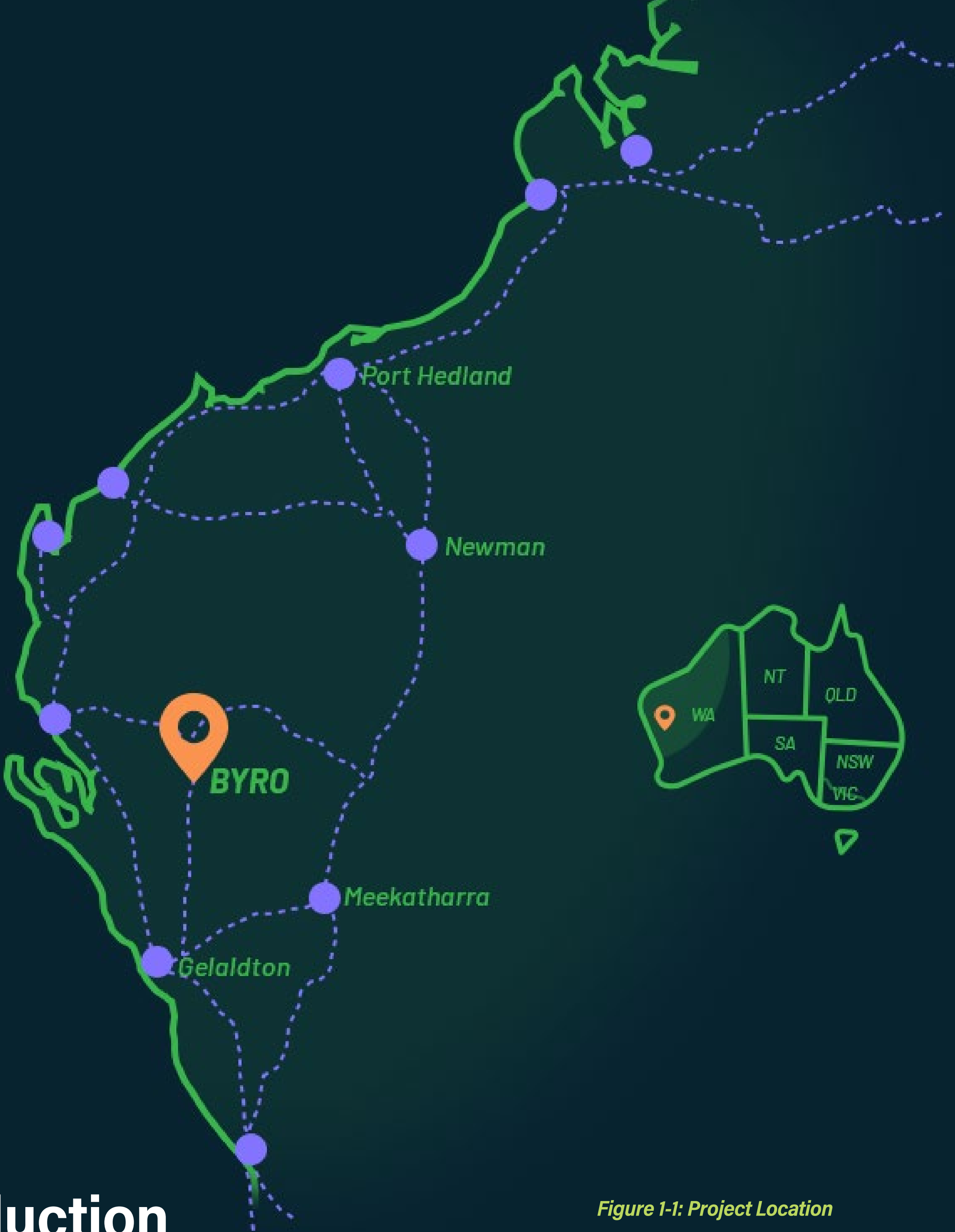


Figure 1-1: Project Location

1 Introduction

1.1 LOCATION AND CLIMATE

The Byro Magnetite Project is located within the Murchison Province of Western Australia. The Murchison Province forms a part of the Mid-West Region, a well-established mining and pastoral hub. The Project is situated approximately 90km north of the Murchison Shire Settlement, 285km north-northeast of the town of Mullewa, 340km north-east of the Port of Geraldton, and 650km north of Perth. The road distance is slightly longer, being 410km from Geraldton, of which approximately 100km is unsealed.

The Port of Geraldton is operated by the Mid-West Port Authority (MWPA) with seven commercial berths to facilitate trade for the Mid-West Region. A variety of products are exported including iron-ore, grains, mineral sands, mineral concentrates, and livestock.

The local climate is arid, with approximately 230mm of annual rainfall, and an average maximum temperature of 30°C. The region experiences warm to hot summers and cool, dry winters. Long term climatic data is available from the Australian Bureau of Meteorology.

1.2 TENEMENTS

1.2.1 Byro Magnetite Project

The Byro Magnetite Project is comprised of four Exploration Licences (E09/1552-I, E09/1507-I, E09/1781-I, and E09/1637-I), and one granted Mining Lease (M09/166-I) covering an area of 380 km^2. The tenements are held by Complex Exploration Pty Ltd (80%) and Byro Exploration (20%) both of which are wholly owned subsidiaries of Athena Resources Limited. The FE1 magnetite deposit is within M09/166-I, while other magnetite targets occur on each of the Exploration Licences. These prospective targets include Byro South, Whitmarsh Find, Whistlejack, Byro Deeps, Byro North, and Milly Milly. The Byro Project is wholly within Byro Station Pastoral Lease. Tenement details of the Byro Project are tabulated below.

Table 1-1: Byro Project Tenement Details

Tenement	Holder	Granted	Term	Expiry	Area (km^2)	Rent	Expenditure
M09/166	Complex Exploration Pty Ltd; Byro Exploration Pty Ltd	9/04/2018	21 years	8/04/2039	6.71	$16,104	$67,100
E09/1507	Complex Exploration Pty Ltd; Byro Exploration Pty Ltd	23/10/2009	5 years (extended)	22/10/2025	231.2	$54,747	$231,000
E09/1552	Complex Exploration Pty Ltd; Byro Exploration Pty Ltd	23/10/2009	5 years (extended)	22/10/2025	33.97	$7,821	$70,000
E09/1781	Complex Exploration Pty Ltd; Byro Exploration Pty Ltd	14/04/2011	5 years (extended)	13/04/2025	49.3	$11,376	$70,000
E09/1637	Complex Exploration Pty Ltd; Byro Exploration Pty Ltd	23/03/2010	5 years (extended)	22/03/2024[1]	58.6	$13,509	$70,000
				TOTAL	**379.8**	**$103,557**	**$508,100**

[1] *Extension of Term lodged.*

1.2.2 Narryer Project

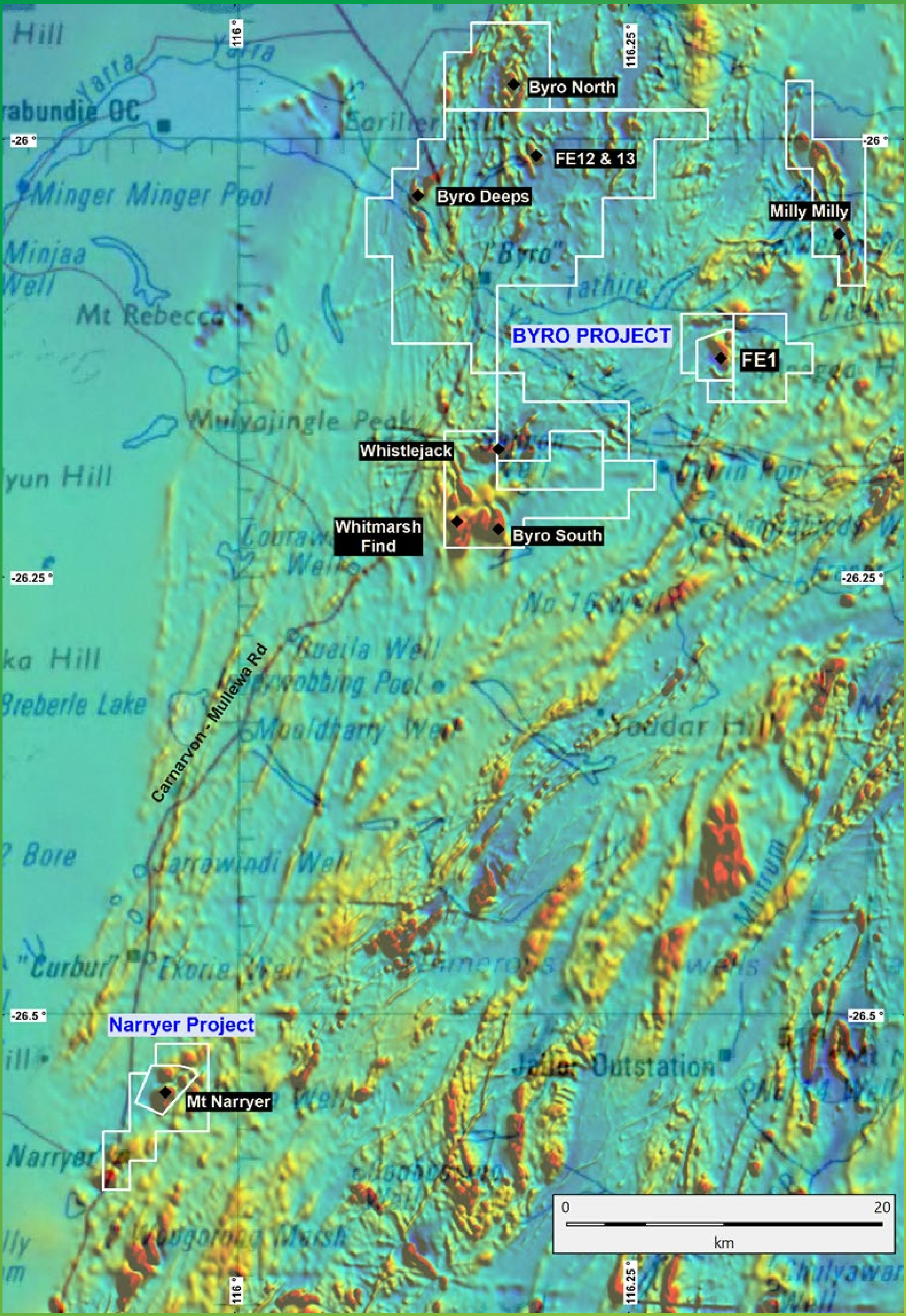
The Narryer Project is located some 60km to the south of FE1 and contains the Narryer Magnetite Prospect. The Narryer Project is comprised of a single granted Exploration Licence and a single granted Mining Lease. Tenement details of the Mt Narryer Project are tabulated below in Table 1-2.

Table 1-2: Narryer Project Tenement Details

Tenement	Holder	Granted	Term	Expiry	Area (km^2)	Rent	Expenditure
M09/168	Complex Exploration Pty Ltd	9/04/2018	21 years	8/04/2039	7.32	$17,592	$73,300
E09/1938	Complex Exploration Pty Ltd	29/06/2012	5 years (extended)	28/06/2024	26.65	$7,821	$70,000
				TOTAL	**33.97**	**$25,413**	**$143,300**

Note: Each tenement includes authorisation for iron.

Figure 1-2:- Byro Project Location and Magnetite Prospects



1.3 FE1 PROSPECT BACKGROUND

The FE1 magnetite deposit was discovered by Athena in 2009 following detailed aeromagnetic surveying, with follow-up field mapping and sampling of locally outcropping iron formations. Reverse circulation (RC) drilling commenced in 2010 resulting in thickened intersections of magnetite, with Davis Tube Recovery (DTR) testwork showing significant grade improvement with magnetic separation.

Further drilling of the FE1 magnetic anomaly culminated in the November 2011 maiden Mineral Resource Estimate (MRE). This included separate Mineral Resource estimates for the whole rock data and concentrate data with the concentrate data being a subset of the whole rock resource estimate.

The MRE was prepared by AMC Consultants Pty Ltd (AMC) on behalf of Athena. The estimate was conducted in accordance with the 2004 Edition of the '*Australian Code for Reporting of Exploration Results, Mineral Resources, and Ore Reserves*' prepared by the Joint Ore Reserves Committee of The Australasian Institute of Mining and Metallurgy, Australian Geoscientists and Minerals Council of Australia (2004).

The 2011 MRE included the following:

Whole Rock Inferred Mineral Resource Estimate 22.8 Mt @ 25.6 % Fe, and

Concentrate Inferred Mineral Resource Estimate 18.1 Mt @ 70.7% Fe, DTR of 35.1%

(ASX: AHN Announcement 28/11/2011)

Prior to the 2011 MRE, metallurgical testwork was carried out on samples from FE1. This was carried out in China by the Changsha Institute of Mining and Metallurgy (CRIMM), and in Australia by ALS Ammtec's specialist iron ore laboratory in Perth. This laboratory has subsequently been renamed the ALS Iron Ore Technical Centre (IOTC). The two sets of results were independently in agreement and collectively underpinned engineering designs and a Pre-Feasibility Study on the FE1 deposit in late 2011, completed by GR Engineering Services, ('GRES').

During 2022, a campaign of resource development drilling was carried out to infill and extend the FE1 magnetite deposit and improve geological confidence. The program included RC and diamond drilling and was designed to satisfy the identified gaps in data, and to also provide geotechnical data for pit optimisation studies. This program included 15 RC drill holes, of which 11 had diamond "tails" drilled from them. A total of 1,304.95m of HQ diameter core was drilled, with 1,038.3m of RC drilling. Three of the holes drilled were twins of holes previously drilled in the 2011 campaign for comparative purposes between datasets and to define variability within the mineral deposit. The drill spacing was improved to approximately 100m between sections, with drill collars typically 50m apart along a section/travers of drilling.

The drill program confirmed the high-purity magnetite mineralisation was contiguous between sections, thickens at depth, and is of high metamorphic grade. The mineralisation occurs as granulites, being alteration products of mafic intrusive host rocks.

The following image shows photographs of HQ diamond core drilled from hole AHRC0115D, from a depth of 127m with an assayed grade of 36.6% Fe. The magnetite mineralisation (silvery brown) is heavily disseminated to matrix in concentration throughout the core and is typical of mineralisation within the higher-grade lenses of the deposit.

All holes were geologically, structurally, and geotechnically logged by a consultant geologist. Drill samples submitted to ALS IOTC in Wangara for XRF analysis. From this analysis, composites were determined for further DTR testwork. This work, along with the previous work showed that grade increases significantly with magnetic separation.

Athena engaged Entech Mining Consultancy Limited ("Entech") in 2022 to complete an updated Mineral Resource Estimate for the FE1 magnetite deposit. With the completion of the 2022 drilling campaign, a total of 46 drillholes for 6,790m (RC and diamond) with 2,361 samples/assays, and 373 composite samples with recovery and concentrate assays from DTR testwork.

Figure 1-3: FE1 Magnetite Mineralisation in HQ Diamond Core

This estimate was conducted in accordance with the 2012 Edition of the '*Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves*' prepared by the Joint Ore Reserves Committee of The Australasian Institute of Mining and Metallurgy, Australian Geoscientists and Minerals Council of Australia (2012). Further drilling has been carried out at FE1 since the 2022 diamond/RC drilling campaign. The 2023 Mineral Resource Estimate, (ASX: AHN Announcement 17/01/2023) included the following:

Table 1-3: Whole Rock Mineral Resource Estimate

Mineral Resource Category	Weathering	Tonnes (Mt)	Fe (%)	SiO_2 (%)	Al_2O_3 (%)	P (%)	S (%)	TiO_2 (%)	LOI (%)	Density (%)
Indicated	Fresh	24.0	25.1	49.3	5.48	0.052	0.079	0.32	-0.059	3.27
Inferred	Fresh	5.3	22.7	50.6	6.56	0.048	0.085	0.37	-0.023	3.21
TOTAL		**29.3**	**24.7**	**49.6**	**5.68**	**0.051**	**0.084**	**0.33**	**-0.044**	**3.26**

Note: No cutoff grade used

Table 1-4: Concentrate Mineral Resource Estimate

Mineral Resource Category	Weathering	Tonnes (Mt)	DTR (%)	Fe (%)	SiO_2 (%)	Al_2O_3 (%)	P (%)	S (%)	LOI (%)	Density (%)
Indicated	Fresh	17.7	33.6	70.7	1.23	0.32	0.003	0.021	-3.2	3.3
Inferred	Fresh	3.3	32.6	70.8	0.95	0.34	0.002	0.023	-3.17	3.26
TOTAL		**21.0**	**33.4**	**70.7**	**1.18**	**0.32**	**0.003**	**0.021**	**-3.19**	**3.29**

No cutoff grade used

The estimated magnetite Mineral Resource is contained within the Whole Rock Mineral Resource, and they are not cumulative.

Entech were commissioned to undertake a geotechnical study based on the logging of the HQ diamond holes drilled in 2022. The work included collation of logging, data validation and collation, processing, rock mass characterisation, structural discontinuity characterisation, and development of a geotechnical model and analysis of special variability of rock mass characteristics. The work also included pit design and analysis with establishment of geotechnical sectors and domains, and determination of initial slope configurations.

Entech were then engaged to undertake mining engineering studies in relation to the FE1 Magnetite deposit. The scope of work included the collation of input parameters, open pit optimisation studies, open pit designs and pit production scheduling. This work was based on the resource modelling previously carried out by Entech.

Optimization input parameters containing processing data, fixed and variable operating costs for both processing and mining plus recovery were arrived at in consultation with Athena, which included base economic, geotechnical, mining and processing parameters for the study.

The open pit optimisations were developed using WHITTLE® software, which uses the Lerchs-Grossman algorithm to determine a range of optimal shells at varying metal prices. The program generates economic shells based on input parameters consisting of operating costs (mining & processing costs, royalties, selling costs), metallurgical recoveries, geological and geotechnical (slope) considerations.

1.4 STUDY SCOPE

The study will consider a fit for purpose magnetite processing facility with a nameplate capacity of at least 2.4 Mtpa to produce a high grade (70% Fe) magnetite concentrate of -150 micron for sale into the steel making industry including the developing environmentally friendly Green Steel Industry

The mine plan will be based on supplying a production target of 2.4 Mtpa utilising material from both the "Indicated" and "Inferred" Mineral Resource categories.

This Scoping Study also considers the following parameters:

- The crushing circuit is to be designed to operate on a 12-hour Dayshift basis at up to 750 tph, approximately two and a half times that of the grinding circuit which will operate 24/7.
- The power supply considered for this study is to be a hybrid gas/solar power station.
- Operation of the crushing section is to be based on a Dayshift only basis to enable power from solar to be the main source for crushing power.
- Concentrate will be handled by road from site to the port of Geraldton for export.

2 Geology and FE1 Mineral Resource

2 Geology and FE1 Mineral Resource

2.1 REGIONAL GEOLOGY

The Byro Project is situated in the western part of the Archaean Narryer Terrane, the north-western most subdivision of the Yilgarn Craton. The edge of the craton lies within 20 kilometres to the west of the Project area and is marked by the Darling and Meeberrie Faults. Phanerozoic sedimentary basins occur beyond this major geological break. Extensive Tertiary weathering and fluviatile/alluvial sedimentary processes have obscured well over 60% of the Archaean bedrock in the Byro Project Area.

The Narryer Terrane rocks consist largely of quartzo-feldspathic gneisses and migmatite, lenses and pods of amphibolite after mafic igneous intrusions and calc-silicate rocks are scattered throughout the gneissic terrane. Quartzite and meta-conglomerates form prominent strike ridges and banded quartz-magnetite rocks, pelitic granofels and related rocks also occur.

Mafic granofels are known from several locations in the area, one of which is the vicinity of Iniagi Well. Recent exploration, geophysical surveys, and drilling has identified more significant and extensive intrusive mafic and ultramafic formations occurring throughout the project area, such as at Moonborough, FE1, Byro South, and several other localities.

The geology of the internal components of the Narryer Terrane, and of the supracrustal are poorly understood. Greenstones of the Narryer Terrane are restricted to belts of strongly deformed and metamorphosed rocks yielding depositional ages between 3.1 and 2.7 Ga. Discrete ultramafic bodies are scattered through the migmatite and are related to larger layered intrusive complexes. Gneissic granitoids have intruded the terrane and are an anatectic product of the migmatisation event which predate emplacement of younger 2.6 Ga granitoids.

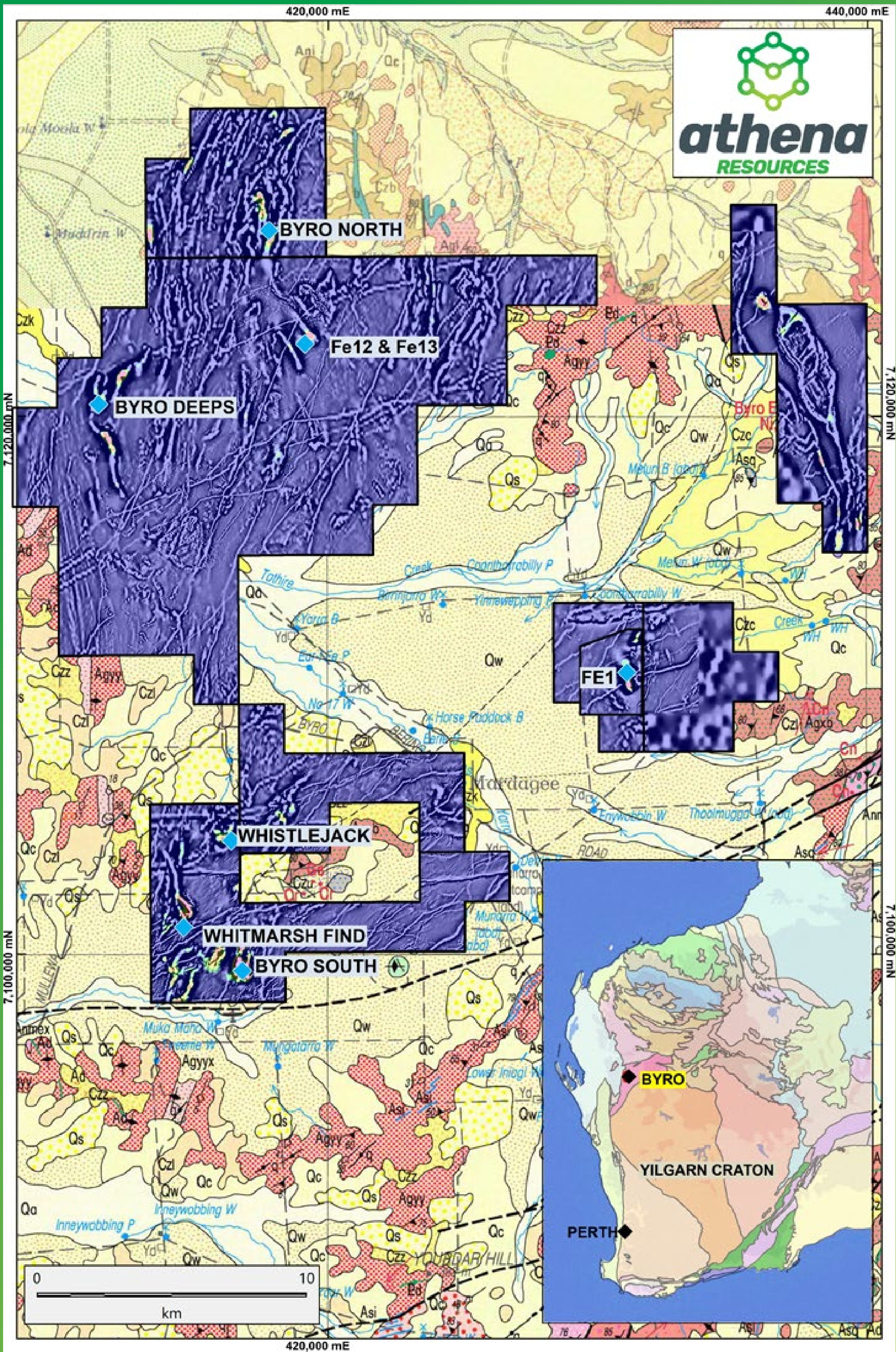
The Narryer Gneiss Terrane has undergone many high-grade polyphase deformation events, with the most notable being at 2.6 Ga to 2.7 Ga associated with granite-greenstone magmatism Yilgarn Craton, following an event at ~3.35 Ga of amphibolite facies. Structural trends, delineated by gneissic banding, foliations, and lithologic units in the gneiss-migmatite terrane vary from a northerly to north-easterly direction and dip steeply east and west.

2.2 PROJECT GEOLOGY

At FE1, the local geology is dominated by granitic gneisses and migmatites bounding a discrete, north-south magnetic anomaly representing magmatic magnetite hosted within a metamorphosed remnant of a mafic and ultramafic intrusion. The intrusive rocks have undergone a high degree of deformation and recrystallisation.

The surrounding area is flat with occasional lateritic breakaway ridges and low rocky outcrops. Lateritic ridges occur immediately to the north of FE1 and mark the contact between the mafic/ultramafic intrusive, and the surrounding granitoids. Rare outcrops of gabbro and anorthosites occur towards the top of the intrusions and may be related to magnetite bearing units. In the southern portion of the Project, it appears that much of the ferruginous duricrust and upper saprolite has been removed leaving sub cropping exposures of gneisses and migmatite.

Figure 2-1: Byro Magnetite Project Tenements



In the immediate vicinity of FE1, the hanging wall lithology is dominated by potassium feldspar bearing granitic gneiss, while the footwall is a migmatite assemblage of granitoids and mafic sequences appearing as compositionally differing gneissic bands. Mafic units are largely altered to biotite with a siliceous groundmass, while granitoids have large K-feldspar phenocrysts proving kinematic indicators. A Proterozoic dolerite truncates the FE1 mineral deposit in a north-east to south-west orientation.

Figure 2-1 shows the Byro Magnetite Project tenements over GSWA 250,000 Byro Map sheet, with filtered TMI aeromagnetic image showing high amplitude anomalies >1,500nT.

Topographic inversion is likely to have occurred with Tertiary drainage systems preferentially eroding and now occupying what were the highlands prior to the development of the deep laterite profile. The laterite profile resulted in the precursor to resistant ferruginous duricrusts forming in the low ground close to the water table at the time. This process is believed responsible for the current situation where a large, layered intrusion is predominantly buried beneath sediment.

Historically, mineral exploration has targeted nickel-copper-PGE mineralisation associated with the poorly defined mafic and ultramafic intrusive rocks, including previous explorers and Athena. Detailed airborne magnetic surveying, designed to improve the resolution of the known extents of these intrusions revealed several high amplitude magnetic anomalies. Further, and more detailed airborne surveys were subsequently flown, with imagery filtered 1,500nT. This enabled identification of the most prominent peaks and the ones relating to magnetite mineralization. Follow up field verification and rock chip sampling of outcrop and subcrop preceded the initial drill testing of the FE1 target, and several others.

2.3 BYRO PROJECT MAGNETITE TARGETS

The 2010 and 2011 detailed aeromagnetic surveys revealed several high amplitudes (>1,500nT) magnetic conductors attributed to magnetite mineralisation. Follow up surface mapping and rock-chip sampling preceded drilling of the highest ranked targets, which resulted in significant magnetite iron intersections warranting further work. These targets include the following Prospects and are described in the sections below:

- FE1
- Byro South
- Whitmarsh Find
- Whistlejack
- FE12 and FE13
- Narryer

2.4 FE1

2.4.1 Mineralisation

Magnetite mineralisation within the host mafic lithologies occurs as moderate to heavy dissemination of relatively coarse, euhedral grains throughout the mineralised zones, often lineated where foliation is present. Mineral lineation of magnetite grains often displays small scale fold structures, with parasitic folds and kink bands. Within the highest-grade zones, heavy magnetite

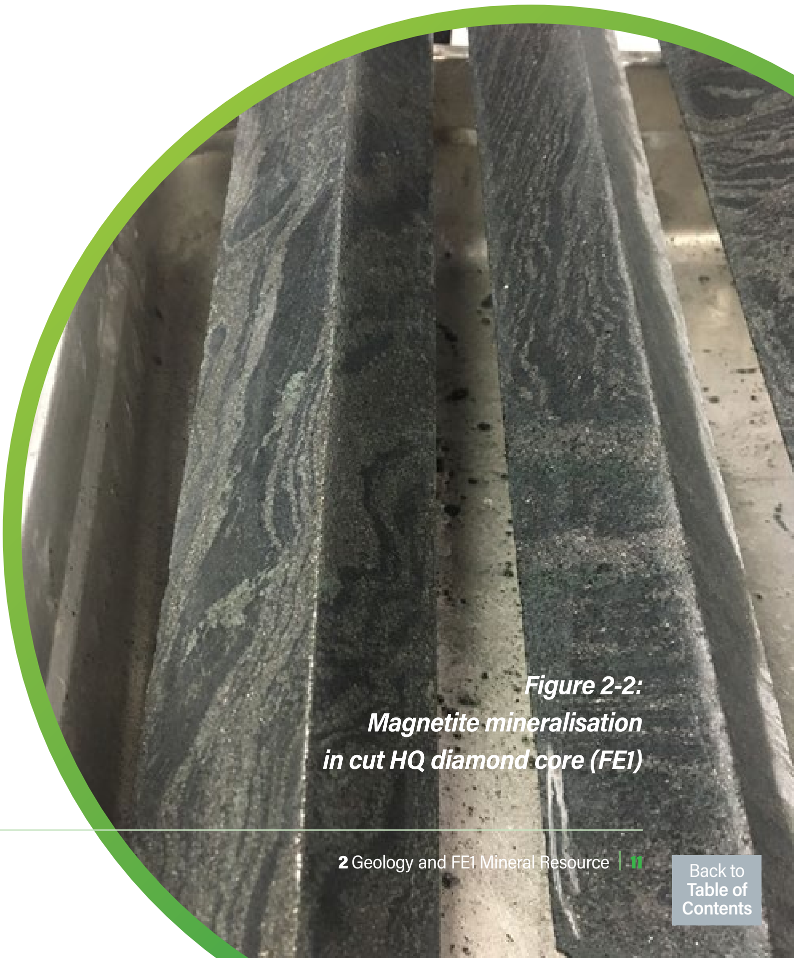


Figure 2-2: Magnetite mineralisation in cut HQ diamond core (FE1)

dissemination becomes a magnetite matrix, with semi-massive zones where the iron grade peaks. The magnetite intersected in drilling has a true width that is often >100m.

Mineralisation occurs solely within these darker, mafic bands with mineralisation terminating when in contact with the surrounding felsic granitic gneiss lithologies. The mineralisation is contiguous for over 800m of strike, dips westerly between 43 and 35 degrees extending to beyond 200m in depth.

The cut HQ Diamond Core (Figure 2-2) illustrates the bands of folded magnetite mineralisation within siliceous, biotite matrix.

2.4.2 Resource Modelling

In January 2023, an updated Mineral Resource Estimate was announced following the 2022 RC and diamond drilling campaign over the FE1 resource prospect.

Entech were commissioned to validate data, produce the MRE and compile a detailed report of the body of work in accordance with the Australian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (the 'JORC Code') 2012 edition.

The MRE included 29 reverse circulation (RC) drill holes completed during 2010 to 2011. A further four RC drill holes were added in 2022 along with one diamond drill hole (DD), and ten drill holes with RC pre-collars and diamond core tails. The depth from surface to the current vertical limit of the MRE is approximately 200m. Entech considered the Mineral Resource evaluation to be a reasonable representation of the global open pit magnetite Mineral Resource within the deposit, based upon sampling drill data available as of 13 December 2022.

The DTR analysis showed exceptional ultra-high grades and purity within the resource. Intersections as summarised in Table 2-1:- Significant FE1 DTR Concentrate Drill Intercepts

Table 2-1: Significant FE1 DTR Concentrate Drill Intercepts

Hole ID	Type	East	North	RL	Depth	From (m)	To (m)	Int. (m)	DTR Fe
AHRC0111D	RD	431000	7110036	349.0	198.26	91.3	194.9	103.6	**70.9**
AHRC0112D	RD	430950	7110036	349.0	258.30	152.4	212.0	59.6	**71.3**
AHRC0113D	RD	430950	7109970	348.5	209.90	166.0	205.2	39.2	**70.5**
AHRC0114D	RD	431000	7109970	349.0	219.10	105.0	184.0	79.0	**70.8**
AHRC0115D	RD	431050	7109970	349.0	186.27	62.0	186.3	124.3	**70.6**
AHRC0118	RC	430990	7110907	348.0	120.00	54.0	114.0	60.0	**70.3**
AHRC0108D	RD	430910	7110303	347.5	195.40	116.0	128.8	12.8	**70.9**
AND						138.0	197.1	59.1	**70.6**
AHRC0107D	RD	431008	7110303	348.5	177.16	81.0	109.0	28.0	**68.2**
AND						115.0	163.2	48.2	**71.3**

Interpretation of mineralisation and lithogeochemistry was carried out by a consultant geologist and Athena staff. The lithology and mineralisation domains formed the basis of the domains verified by Entech using Vulcan software. The mineralisation is cross-cut by a steeply dipping southwest-northeast striking dolerite dyke. It is also offset by a steep east dipping north-south trending fault. The following figures from the Entech report show details of the resource.

Views of the mineralisation domains, dolerite dyke and fault zones of the deposit, as modelled, are shown in a plan perspective, 3D view and sectional views.

Figure 2-3: Plan View of Mineralisation Domains - FE1 Resource Modelling

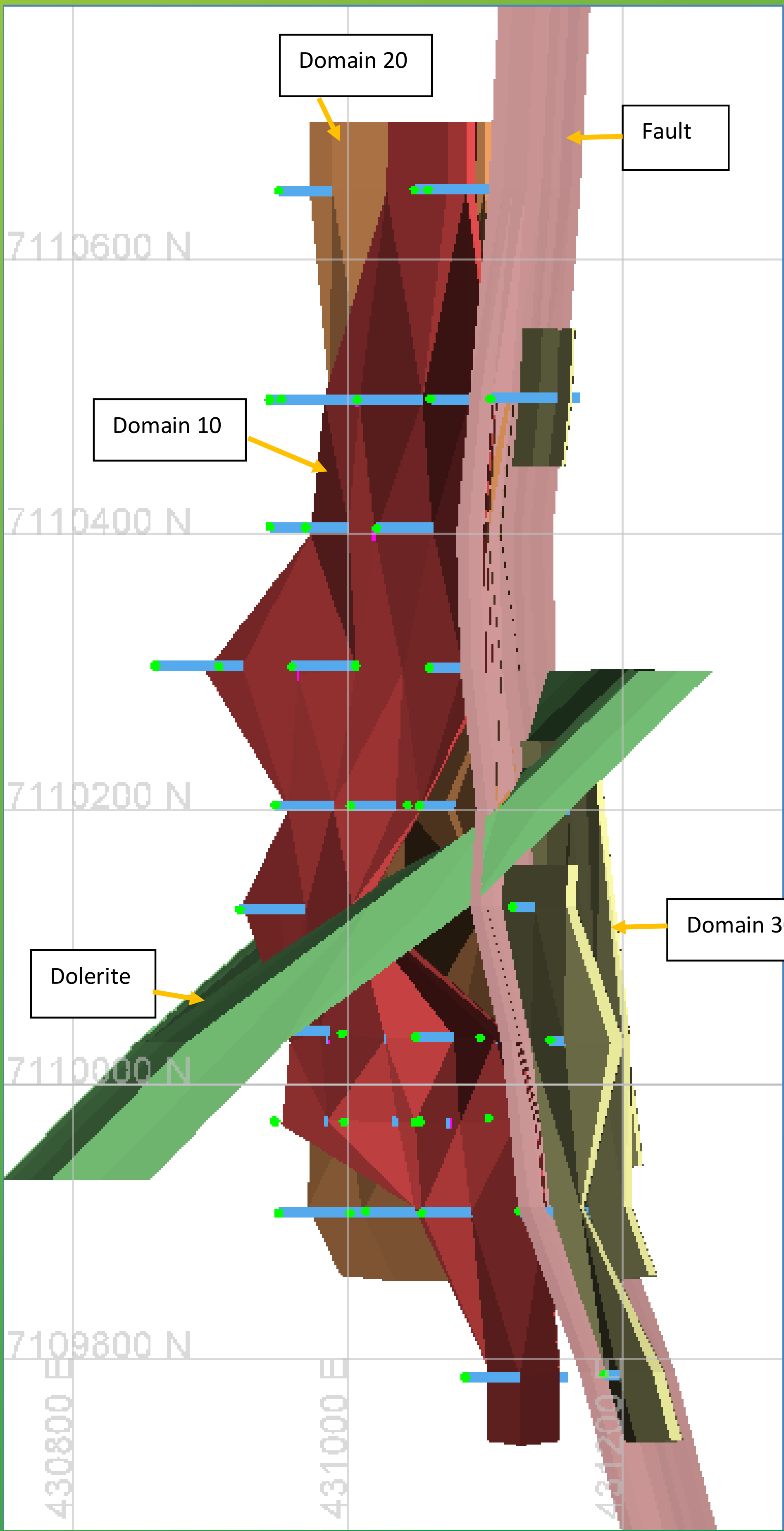


Figure 2-4: 3D View of Mineralisation Domains Dolerite Dyke and Fault

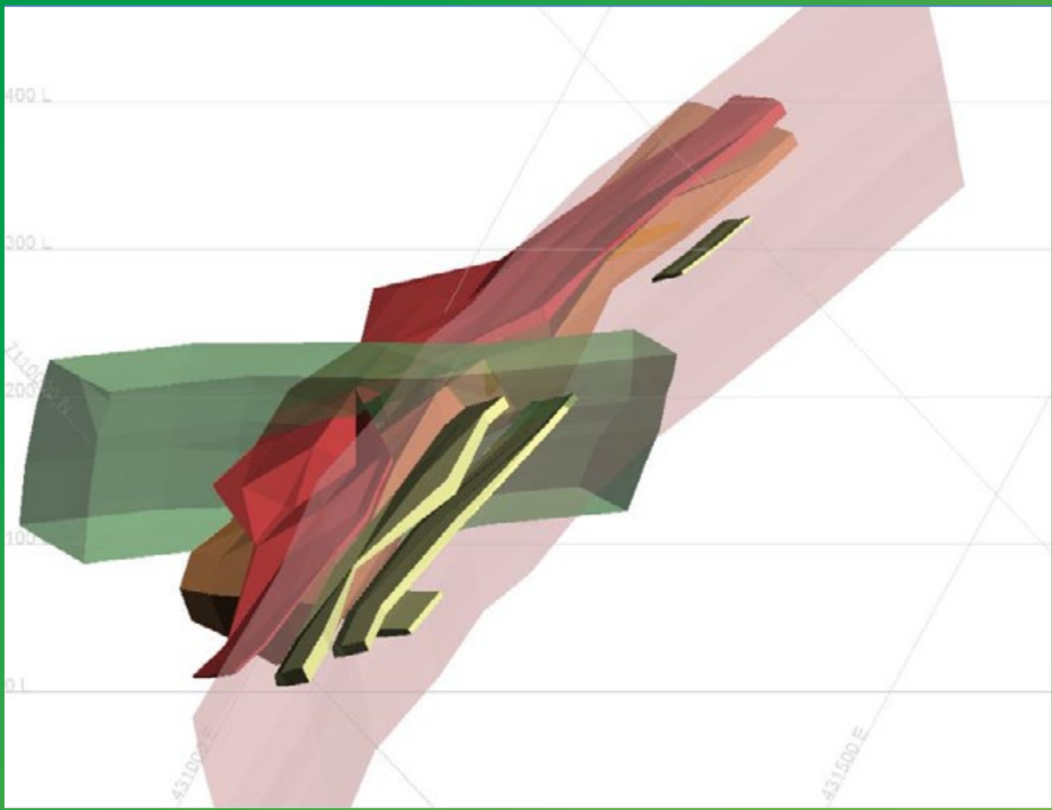


Figure 2-5: Cross Section 7110500 - Mineralisation Domains & Fault Orientations

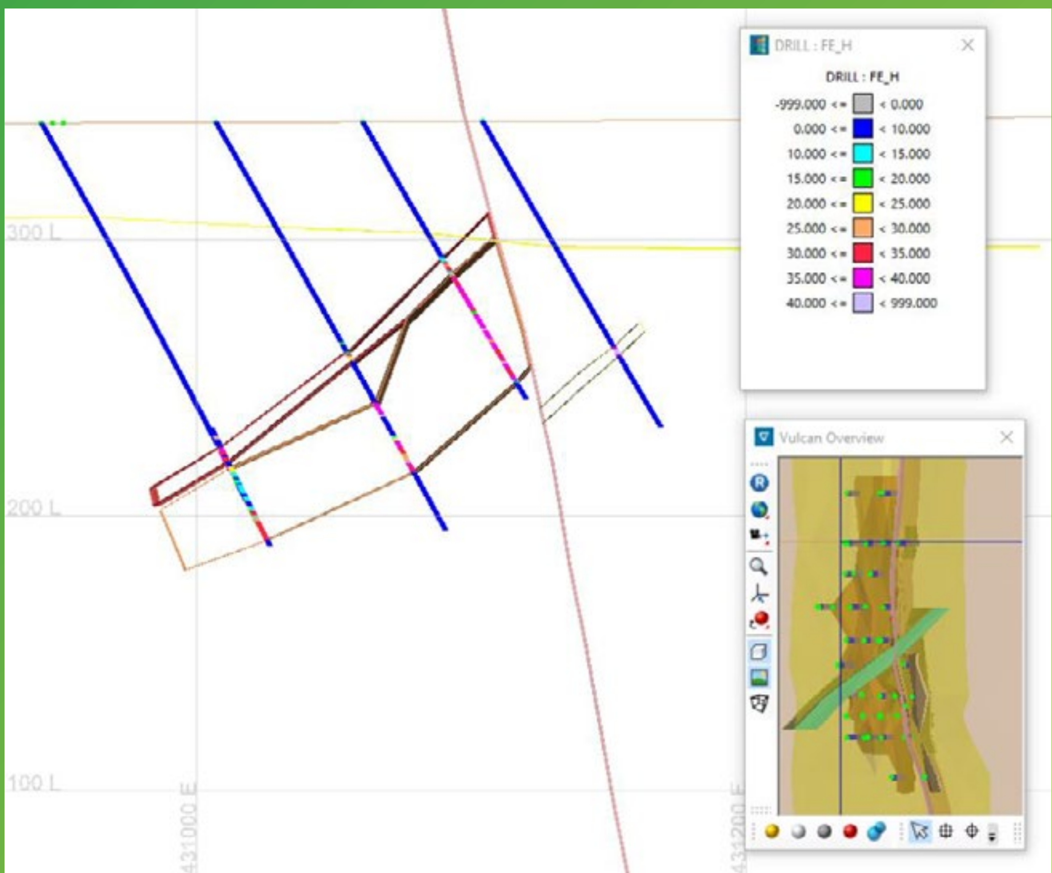


Figure 2-6: Cross Section 7110200 – Mineralisation Domains & Fault Orientations

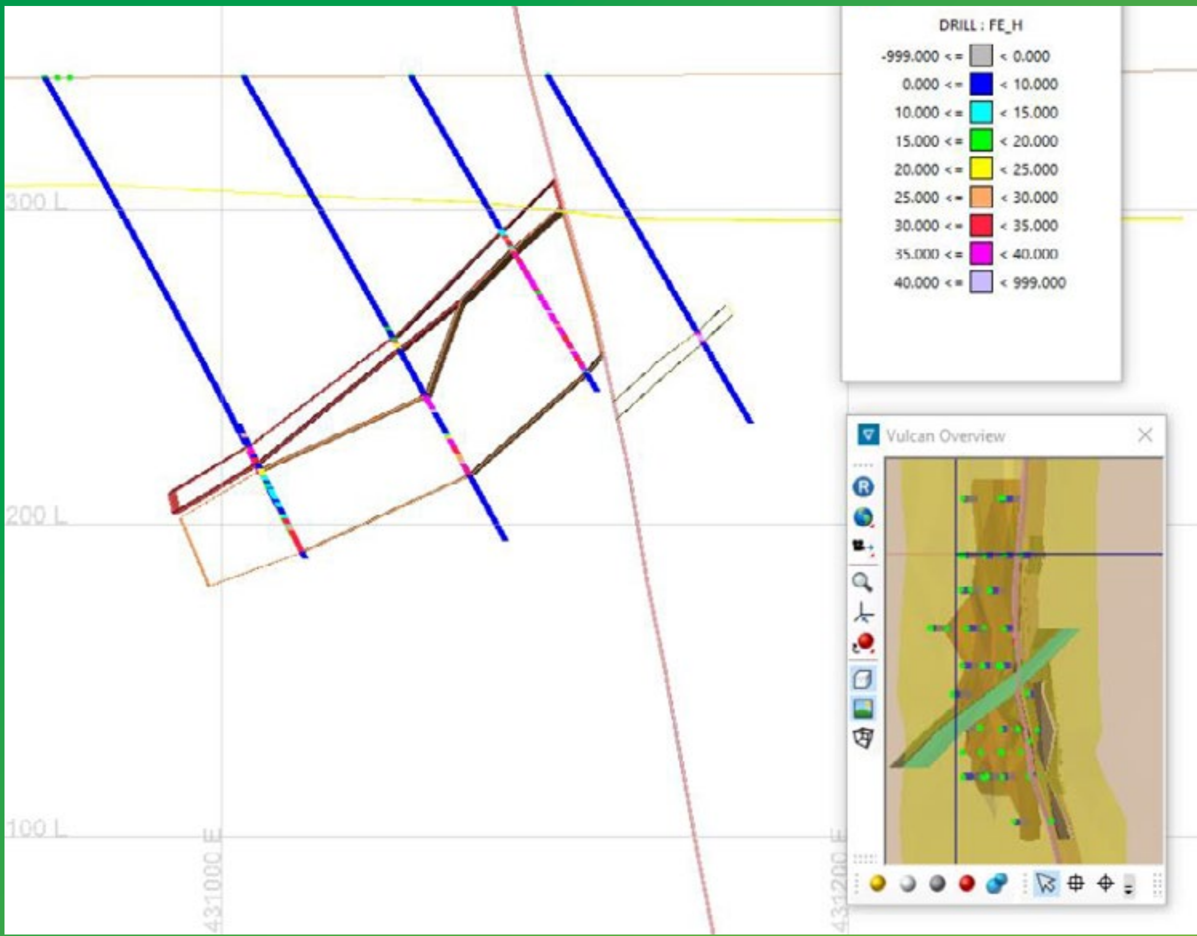
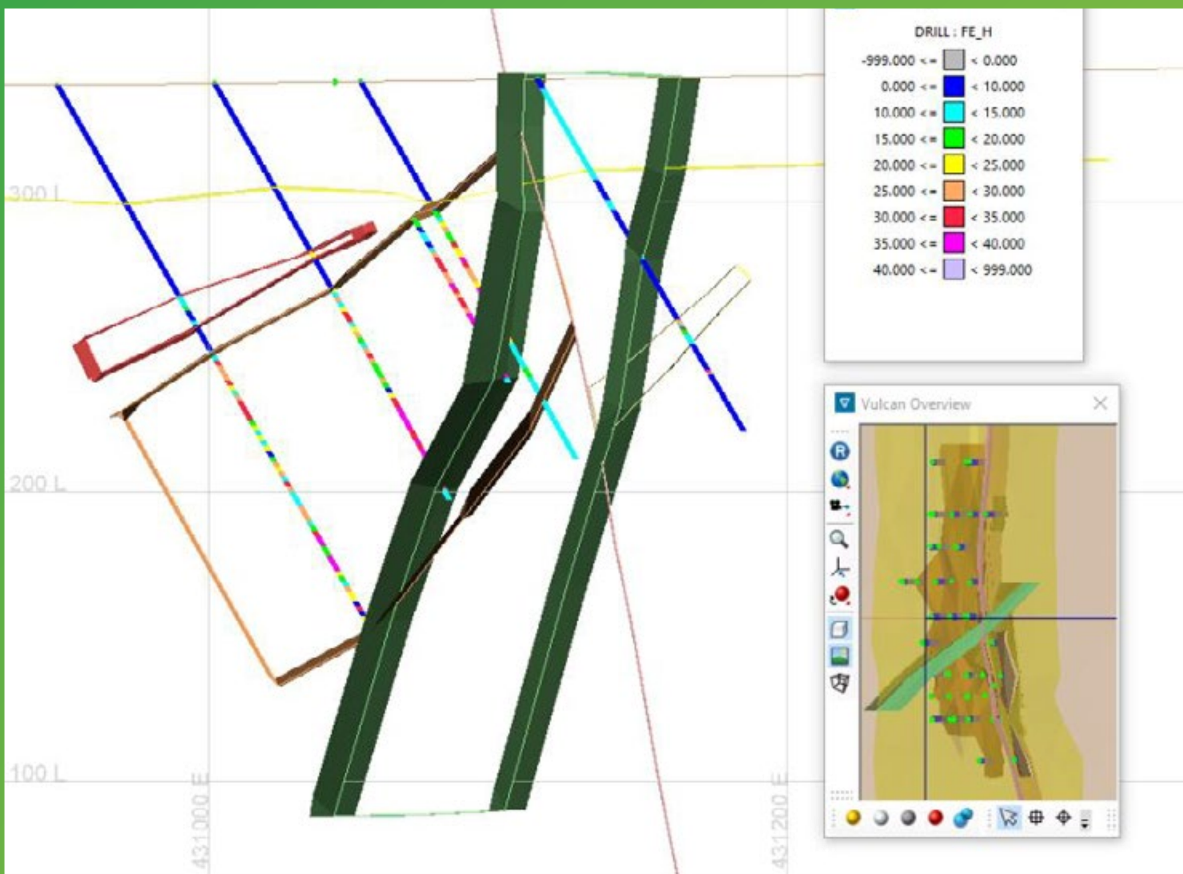


Figure 2-7: Cross Section 7109970 – Mineralisation Domains & Fault Orientations



2.4.3 Resource Summary

The Indicated and Inferred Mineral Resources comprise fresh rock material.

The Mineral Resource Statement is presented in Table 2-2 for whole rock mineralisation using a 10% Fe grade cut-off. (ASX: AHN Announcement 17/01/2023 & 29/03/2023)

This resource forms the basis of the Production Targets developed in this scoping study with the competent person statement and the material assumptions and modifying factors contained within that report remaining materially unchanged.

Table 2-2: Whole Rock Mineral Resource Estimate

Mineral Resource Category	Weathering	Tonnes (Mt)	Fe (%)	SiO_2 (%)	Al_2O_3 (%)	P (%)	S (%)	TiO_2 (%)	LOI (%)	Density (%)
Indicated	Fresh	24.0	25.1	49.3	5.48	0.052	0.079	0.32	-0.059	3.27
Inferred	Fresh	5.3	22.7	50.6	6.56	0.048	0.085	0.37	-0.023	3.21
TOTAL		**29.3**	**24.7**	**49.6**	**5.68**	**0.051**	**0.08**	**0.33**	**-0.044**	**3.26**

Note: No cutoff grade used

Table 2-3: Concentrate Mineral Resource Estimate

Mineral Resource Category	Weathering	Tonnes (Mt)	DTR (%)	Fe (%)	SiO_2 (%)	Al_2O_3 (%)	P (%)	S (%)	LOI (%)	Density (%)
Indicated	Fresh	17.7	33.6	70.7	1.23	0.32	0.003	0.021	-3.2	3.3
Inferred	Fresh	3.3	32.6	70.8	0.95	0.34	0.002	0.023	-3.17	3.26
TOTAL		**21.0**	**33.4**	**70.7**	**1.18**	**0.32**	**0.003**	**0.021**	**-3.19**	**3.29**

No cutoff grade used.

The estimated magnetite Mineral Resource is contained within the Whole Rock Mineral Resource, and they are not cumulative.

Highlights from the 2023 Mineral Resource Estimate included: -

- Whole Rock Mineral Resource Estimate increased from 22.8 million tonnes (inferred, reported in 2012) to 29.3 million tonnes, a 28% increase.
- Contained Fe increased by a total of 24%.

Most of the additional high grade ore tonnes resulted from incremental extensions in depth in the central and eastern portion of the ore body.

2.5 BYRO SOUTH MAGNETITE PROSPECT

The Byro South Prospect (E09/1781) is within the Byro Project area and centered on a magnetic anomaly about 18km south-east of the FE1 magnetite deposit. The anomaly includes twin, sub-parallel magnetite units that are representative of an asymmetrical synform fold structure, of a thrust faulted repetition of the stratigraphic sequence. Mineralisation along each limb has lithogeochemical similarity, with similar magnetite grades intersected. The western limb is steep dipping, while the eastern limb is flatter at approximately 50^{o} W. The lenses, as defined by the strongly correlated magnetic anomalies, are each approximately 700m in strike length.

The mineralisation is similar to FE1, being upper amphibolite to granulite metamorphic facies, is magmatic and hosted within mafic intrusive rocks, with heavily disseminated to matrix magnetite mineralisation. Unlike FE1, there is an enriched haematite zone near surface which may represent the opportunity for a smaller DSO grade resource overlying the main zones of magnetite mineralisation.

Byro South Prospect is second only to FE1 in terms of level of resource development. While drilling is of sufficient density, a Mineral Resource estimation is yet to be carried out. A total of 22 RC and diamond holes have been drilled for 3,037.3 metres. This includes 2,284 metres of RC drilling, and 753.3 metres of diamond drilling. On average, grades drilled at Byro South are higher than those at FE1 with magnetite head assays as high as 46% Fe.

Significant intersections had composites submitted for DTR testwork to determine concentrate grades. Concentrate weighted average intersections ranged from 65.81% (AHRC0049) to 70.89% (AHRC0052).

Additional metallurgical test work was completed by ALS on the DTR composite intersections. Following grinding and head assaying, the composites were subjected to Wet Low Intensity Magnetic Separation (Wet LIMS) at 1,200G. The LIMS magnetic and non-magnetic components were split and assayed. These were then subjected to flotation tests (different reagents) achieving a product assay of 70.61% Fe from a calculated head grade of 69.36% Fe, demonstrating a reduction in impurities and an increase in Fe grade. (ASX: AHN Announcement 19/07/2021)

Average grade drilling intersections are detailed in Table 2-4 below.

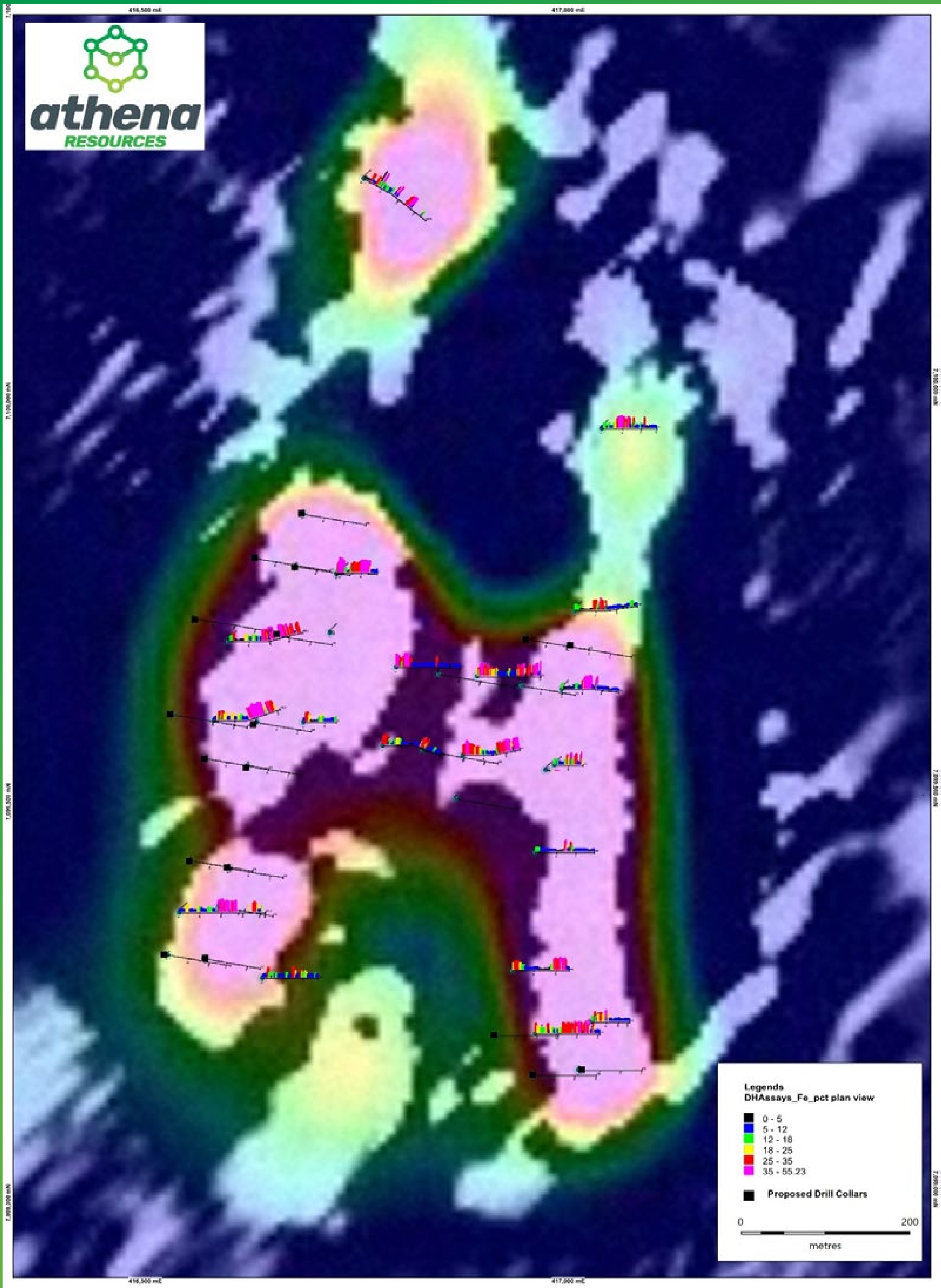
Table 2-4: Byro South Project - Significant Drill Intercepts

Hole_ID	Type	East	North	RL	Depth	From (m)	To (m)	Int. (m)	Fe
AHRC0045	RC	416885.31	7099647.20	335	150	0	50	50	26.9
and						94	114	30	**30.7**
and						133	150	17	**30.1**
AHRC0048A	RC	416723.30	7099776.60	333	87	24	72	48	**34.54**
AHRC0049	RC	416773.91	7099561.10	332	150	88	106	18	27.15
AHRC0050	RC	416868.37	7099549.30	334	132	80	132	52	**31.56**
AHRC0051	RC	416985.19	7099631.20	336	150	48	86	38	**30.63**
AHRC0052	RC	417000.71	7099729.40	335	150	44	78	34	22.45
AHRC0053D	RD	416591.00	7099691	331	187	80	114	34	**33.52**
and						125	164	39	**33.92**
AHRC0054D	RD	416532.90	7099352.60	330	200	92	135	43	**36.37**
AHRC0055	RC	416927.42	7099280.80	332	130	88	124	36	**32.71**
AHRC0058	RC	416953.82	7099201.80	332	154	60	142	82	**30.65**
AHRC0059	RC	417020.75	7099216.50	332	160	0	60	60	21.07
AHRC0060	RC	416976.23	7099536.40	336	100	40	80	40	25.75
AHRC0061	RC	417032.28	7099956.40	336	150	28	68	40	**31.6**
AHRC0063D	RD	416573.94	7099592.10	331	157	86	126	40	**36.58**
and						131	148	17	27.66
AHDH0004	DD	416966.00	7099530.30	335	172	54	101	47	**30.51**

While to date, there has not been an MRE at Byro South, the drilling intercepts, drilling density, lithogeochemistry, and metallurgical testwork suggest that with further drilling, a maiden MRE would potentially occur. Figure 2-8 shows the TMI aeromagnetic imagery, drill traces with Fe histograms, and proposed drill collars and traces for the Byro South Project.

Athena currently has a detailed, predominately reverse circulation, 23 drill hole program proposed to achieve this outcome. Next to FE1, the Byro South Prospect is Athena's most advanced magnetite project.

Figure 2-8: Byro South Project. – Completed and Proposed Drilling



2.6 WHITMARSH FIND PROSPECT

The Whitmarsh Find Prospect is situated 2.2km north-west of Byro South Prospect, and is a high amplitude, magnetic anomaly associated with bands of magnetite bearing intrusive lithologies. The feature is a discrete, 700m length anomaly striking to the northwest/southeast with several other smaller anomalies immediately south of it. The iron unit dips moderately to steeply toward the southwest.

Following the magnetic survey and analysis, field investigation and geological mapping revealed the outcropping iron formation and yielded several significant iron assay results from rock chip sampling. This target was subsequently tested with four RC drill holes for a total of 520m. Three of the holes intersected the target, attaining average Fe grades analogous to those at the Byro South Prospect.

The iron anomalies immediately to the south of Whitmarsh Find are yet to be tested by drilling, however field mapping has delineated several targets where magnetite crops out at surface in locations coincident to peaks in magnetism.

Table 2-5: Whitmarsh Find Prospect - Significant Drill Intercepts

Hole_ID	Type	East	North	RL	Depth	From (m)	To (m)	Int. (m)	Fe
AHRC0056	RC	414853	7101751	315	150	0	24	24	20.41
and						88	144	56	**32.76**
AHRC0064	RC	414721	7101792	315	136	44	70	26	23.6
and						88	114	26	**33.82**
AHRC0087	RC	414629	7101912	320	132	76	106	30	**35.09**
AHRC0088	RC	414895	7101521	310	102	66	70	4	36.15

2.7 WHISTLEJACK PROSPECT

The Whistlejack Prospect, a significant magnetic anomaly, is within E09/1781 and E09/1507. The Prospect is 4km north of the Byro South Prospect and is 2.5km northeast of Whitmarsh Find Prospect. Magnetite mineralisation, is oriented east-west, extending for 1.8km of strike length, and is >50m in true width. The intrusive host rocks form part of the greater Moonborough layered mafic intrusion and is bounded by the K-feldspar bearing granitic Narryer Gneiss. The magnetite at Whistlejack has also been highly metamorphosed to granulite facies, with coarse-grained magnetite mineralisation.

Six RC holes have been drilled for 926m as listed in Table 2-6 below.

DTR testwork was carried out on two of the RC drill holes with concentrate results of up to 68.52% Fe as summarised in Table 2-7 on following page. Again, demonstrating that the magmatic magnetite bearing lithologies in the Byro Project can produce high grade iron concentrate producing projects.

The drilling results at Whistlejack reported exceptionally low impurities, particularly for phosphorus and sulphur.

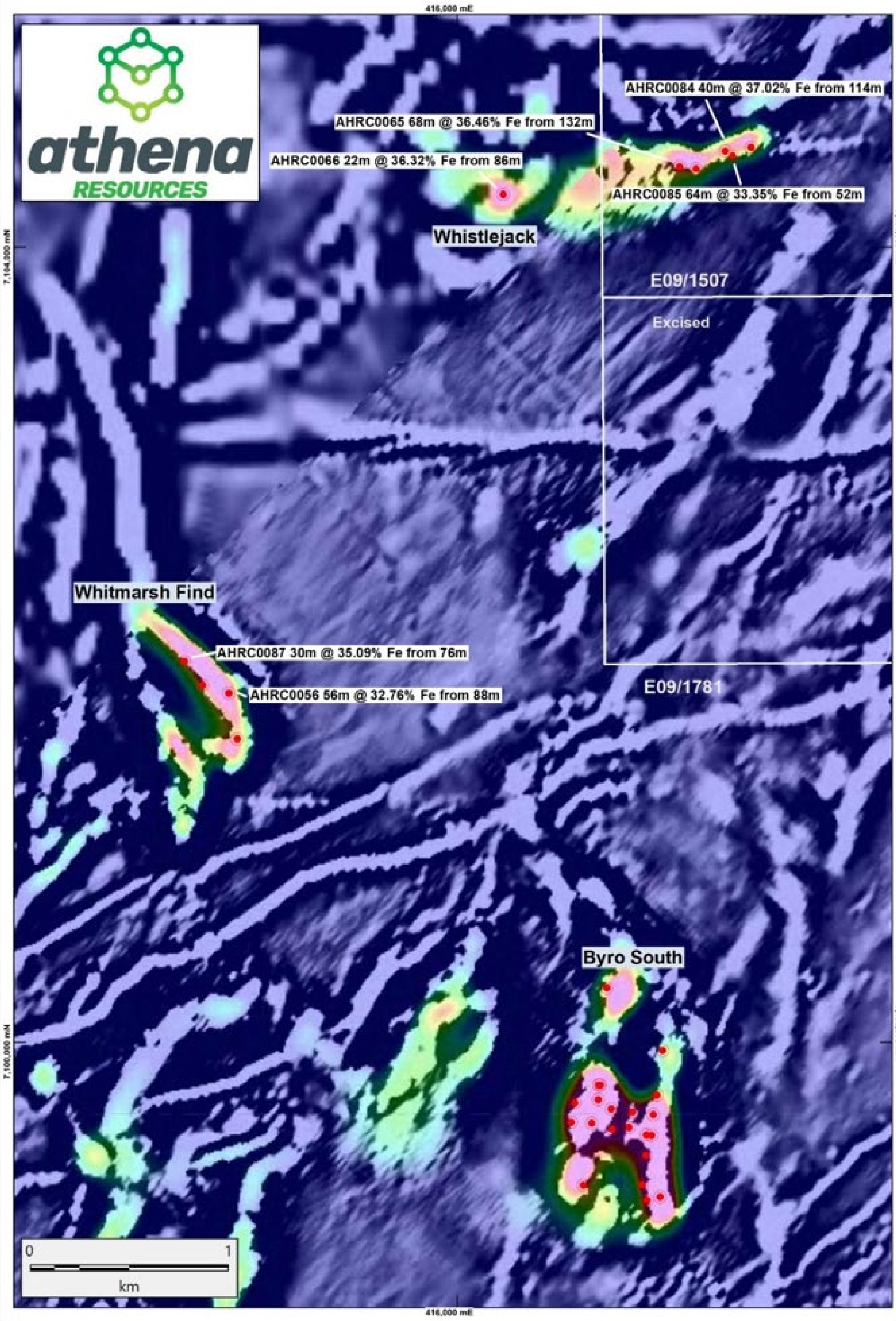
Table 2-6: Whistlejack Prospect – Significant Drill Intercepts

Hole_ID	Type	East	North	RL	Depth	From (m)	To (m)	Int. (m)	Fe
AHRC0065	RC	417201	7104389	320	200	132	200	68	**36.46**
AHRC0066	RC	416231	7104262	320	200	86	108	22	**36.32**
and						128	134	6	22.13
AHRC0083	RC	417478	7104498	320	124	80	110	30	**34.42**
AHRC0084	RC	417384	7104454	320	154	114	154	40	**37.02**
AHRC0085	RC	417348	7104479	320	124	52	116	64	**33.35**
AHRC0086	RC	417118	7104400	320	124	86	106	20	**38.26**

Table 2-7: Whistlejack Prospect - Significant DTR Concentrate Drill Intercepts

Hole_ID	Type	East	North	RL	Depth	From (m)	To (m)	Int. (m)	Fe
AHRC0084	RC	417384	7104454	320	154	114	154	40	**68.52**
AHRC0085	RC	417348	7104479	320	124	56	88	32	**67.08**
and						90	116	26	**67.54**

Figure 2-9: Byro South, Whitmarsh Find, and Whistlejack Prospects Proximity



Additional metallurgical testwork was undertaken on the Whistlejack core based on the significance of the mineralised drill intercepts and positive DTR testwork results.

Preliminary flotation testwork was carried out to determine if a processing option for a concentrate product analogous to the FE1 concentrate could be achieved.

A 20kg representative composite sample from the DTR composites was ground and processed using Wet LIMS to form a primary concentrate of P80/45μm at 68.62% Fe.

The concentrate was then subject to three float tests using different reagents. The most successful test yielded a product assay of 70.22%, an improvement of 1.6% Fe. The test demonstrated it was feasible to further reduce impurities with the reduction of residual silica, aluminum oxide, phosphorus, potassium, and sodium by scavenging using industry standard reverse flotation processes and improve the concentrate grade from the Whistlejack Prospect.

With a significant strike length, width, and supported by positive metallurgical work, the six RC drill holes require expansion with a program of detailed and infill resource definition drilling prior to a Mineral Resource estimate being commissioned.

Together Whistlejack, Whitmarsh Find, and Byro South form a cluster of magnetite bearing host rocks that are all considered to be advanced exploration targets. The logistical proximity of the three projects, Byro South, Whitmarsh Find, and Whistlejack Prospects are shown on the preceding Laplacian filtered TMI 1VD aeromagnetic image with drill intercepts.

2.8 NARRYER PROJECT AREA

The Narryer Project area contains the Mt Narryer Prospect and includes one Exploration Licence E09/1938 and the granted Mining Lease M09/168. Mt Narryer prospect is approximately 50 km south of the Byro Project and approximately six kilometres north of the Mt Narryer homestead.

The Mt Narryer Magnetite Prospect has iron bearing lithologies that outcrop sporadically over a 1.5km strike length.

The hanging wall lithology (to the west) tends to display largely granite assemblages of granodiorite and adamellite. It is dominantly coarse, even grained, granulite-facies leucocratic monzogranite with sheets of granite. Magnetite occurs in a banded iron formation (BIF) and has metamorphosed to upper greenschist, lower amphibolite metamorphic facies. The footwall lithology (to the east) also displays a granite assemblage and texture. It is dominantly quartzo-feldspathic composition with potassium feldspar.

Initial mapping and sampling took place in 2012 following up on open file gravity and magnetic anomalies.

Exploration to date has included outcrop mapping, rock-chip sampling, and drilling (diamond and RC). At Mt Narryer, 12 holes have been drilled, predominantly RC with metallurgical diamond drilling. Significant intercepts from drilling are tabulated below in Table 2-8 while Figure 2-10 is a Laplacian filtered 1VD TMI aeromagnetic image with drill dollars of the Mt Narryer prospect.

Table 2-8: Mt Narryer Prospect - Significant DTR Concentrate Drill Intercepts

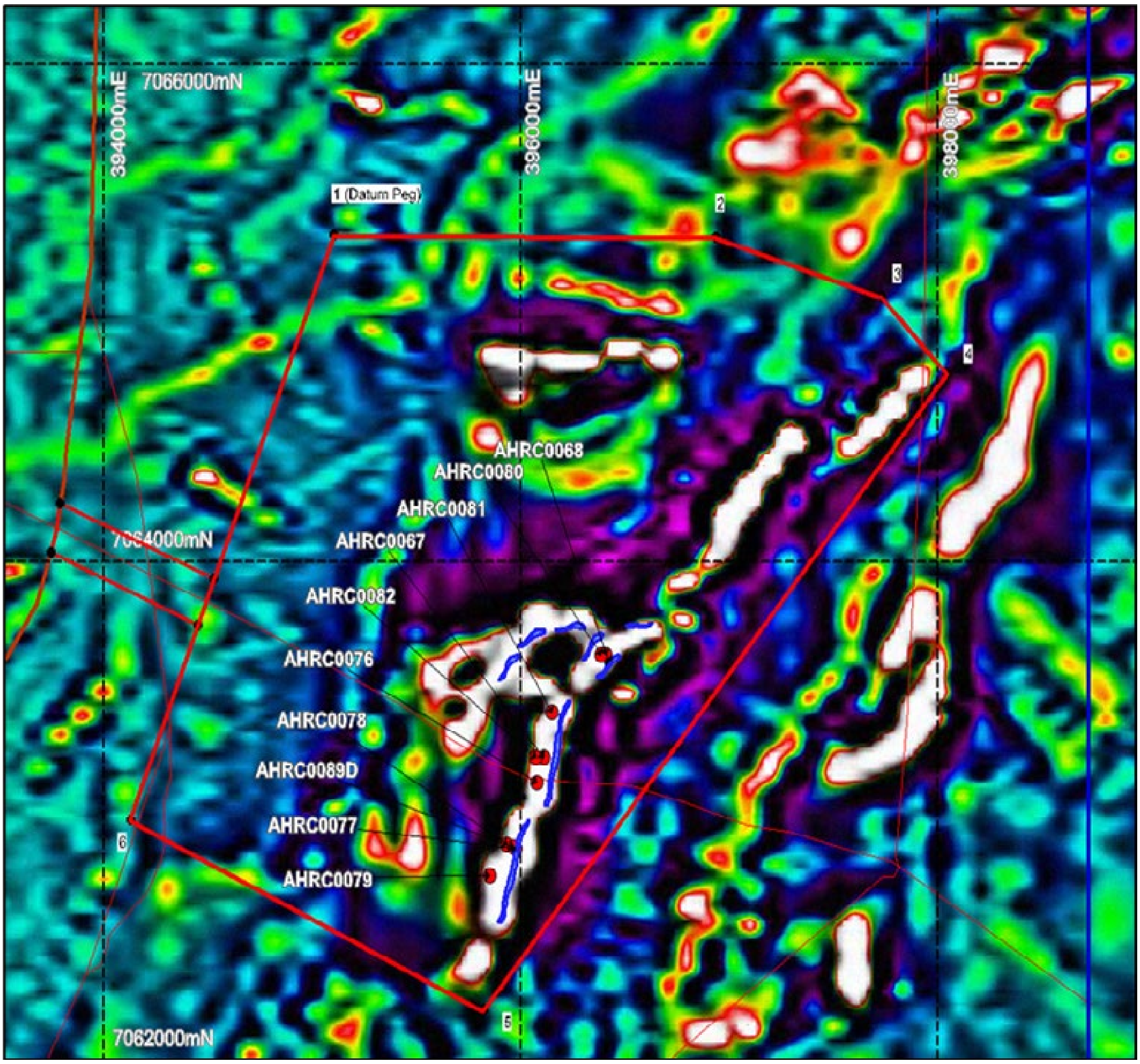
Hole_ID	Type	East	North	RL	Depth	From (m)	To (m)	Int. (m)	DTR Fe
AHRC0067	RC	396111	7063213	330	82	42	68	26	**66.16**
AHRC0068	RC	396406	7063626	330	76	28	44	16	**67.14**
AHRC0076	RC	396078	7063112	320	112	32	58	26	**68.21**
AHRC0077	RC	395976	7062851	320	150	30	50	20	**68.67**
AHRC0078	RC	395934	7062863	320	106	68	96	28	**69.19**
AHRC0079	RC	395849	7062738	320	145	100	114	14	**69.06**
and						116	124	8	**65.89**
AHRC0080	RC	396384	7063625	325	88	20	52	32	**67.05**
AHRC0082	RC	396074	7063213	320	106	68	74	6	**57.97**
and						76	86	10	62.64

A significant amount of metallurgical testwork has been carried out on bulk samples from percussion and core drilling at Mt Narryer. This includes grind optimization, DTR test work, ore characterization, Wet LIMs separation, and flotation.

In 2017 The Yantai Xinhai Mining Research and Design Co. Ltd. ('XINHAI') conducted advanced mineral processing test work to develop a processing route for a consistent volume, High Purity and Super Purity product from both the Byro Project and the Mt Narryer Project.

A pilot test plant was developed leading to engineering designs for an advanced processing system for high grade industrial products and feasibility study completed in China. This study focused on the FE1 and Mt Narryer ores and demonstrated the Mt Narryer ore was suited for upgrade to a High Purity product, HPFE of 71.5%Fe. The final product is suited for use in areas that utilise high purity magnetite concentrates such as for Coal Wash Media.

Figure 2-10: Mt Narryer Prospect.



2.9 OTHER BYRO PROJECT TARGETS

Within the Byro Project, there are numerous magnetic anomalies, not all of which have been explored. These include Byro Deeps, FE12 and FE13, The Byro North Prospects, Milly Milly magnetic targets, and FE1 north.

The resource definition efforts to date have focused on the most prospective and highest ranked targets. Additional explorative work is required to further develop the middle order magnetite targets at the Byro Project.

3 Mining

3 Mining

3.1 BACKGROUND

The mining evaluation develops a preliminary mining schedule for the FE1 mineral resource, to match process feed requirements based on a 2.4 Mtpa feed rate and to provide a budget estimate of mining costs for this scoping study.

The resource estimation, evaluation and optimisation has been completed by Entech Pty Ltd (Entech) June to November 2023. The development of the mine plan, schedule and budget for mining costs have been completed by Direct Mining Services Pty Ltd.

The resource model utilised in the optimisation was the model produced by Entech as notified to the Australian Stock Exchange in the release dated 29 March 2023, titled "Byro FE1 Mineral Resource Estimate Full Entech Report" and summarised in Table 3-1.

Table 3-1: FE1 Mineral Resource Interpreted at 10% Fe cut-off

Mineral Resource Category	Weathering	Tonnes (Mt)	Fe (%)	SiO_2 (%)	Al_2O_3 (%)	P (%)	S (%)	TiO_2 (%)	S.G.
Indicated	Fresh	24.0	25.1	49.3	5.48	0.052	0.079	0.32	3.27
Inferred	Fresh	5.3	22.7	50.6	6.56	0.048	0.085	0.37	3.21
Total		**29.3**	**24.7**	**49.6**	**5.68**	**0.051**	**0.080**	**0.33**	**3.26**

3.2 RESOURCE OPTIMISATION

The mineral resource was evaluated by optimisation by Entech.

The Entech optimisation results showed a resource that was relatively insensitive to the parameters applied.

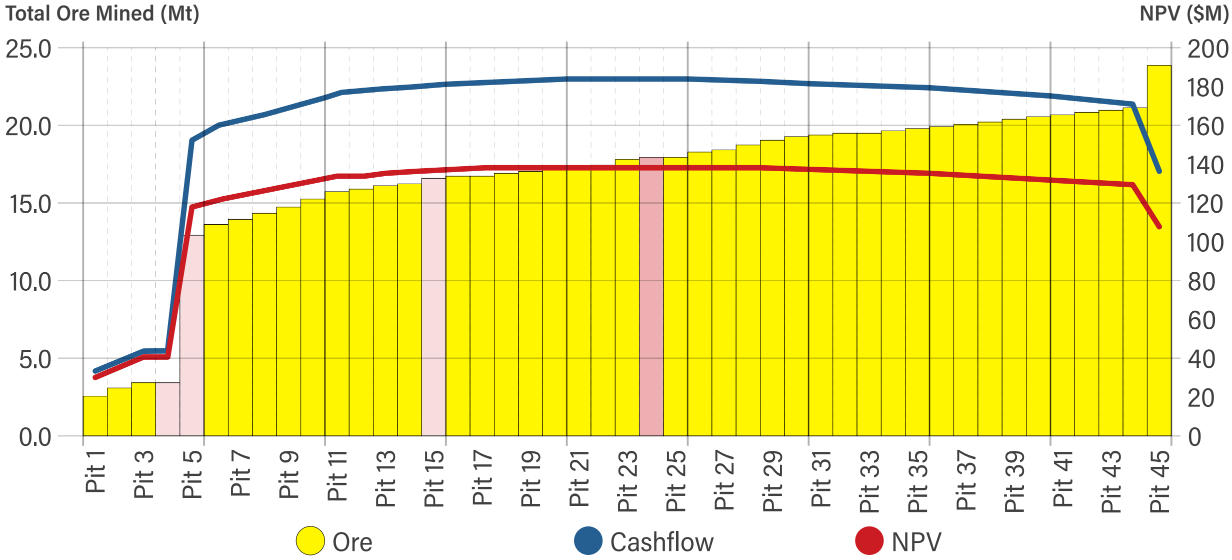
There is one significant step change in quantities between Shells 4 & 5 as the optimisation steps deeper in the southern end of the resource and breaks north through the barren dyke that crosscuts the resource. (Pits 4/5 on Table 3-2) Ore tonnes increase from 3.5 Mt to 12.9 Mt and total quantities increase from 11.6 Mt to 47.8 Mt. Associated NPV, as indicated by the optimisation steps up from $41M to $117M on an additional cost of $446M.

Pit Shell 24 is the shell that offers the maximum optimisation calculated NPV of $138M for 17.9 Mt of ore enclosed within that shell. (61% of the published 29.3 Mt resource tonnes).

Table 3-2: Optimisation Output Shells 1 to 30

SHELL		Cumulative Tonnes Mined				Concentrate		Economic Assessment						
Phase	Factor	ORE	WST (w)	INCR. STRIP	Rock	Qty	Cost/t	Reve-nue	Process Cost	Mining Cost	Cash-flow	Cost per Ore Tonne Mined	NPV	ROI
		Mt	Mt	W:O	tonnes	Mt	$/t conc	$ (M)	$ (M)	$ (M)	$ (M)	$/t	$ (M)	%
Pit 1	0.77	2.5	5.9	2.35	8.4	0.8	139	139	72	36	32	42.95	30.20	29.5
Pit 2	0.78	3.0	6.9	2.34	9.9	0.9	140	165	85	42	37	43.04	35.15	29.2
Pit 3	0.79	3.5	8.1	2.35	11.6	1.1	140	193	99	50	43	43.24	40.42	28.9
Pit 4	0.80	3.5	8.1	2.35	11.6	1.1	140	193	100	50	43	43.28	40.53	28.9
Pit 5	0.81	12.9	34.9	2.70	47.8	4.2	144	749	378	218	152	46.19	116.95	25.5
Pit 6	0.82	13.6	36.5	2.69	50.1	4.4	144	786	398	229	159	46.16	121.11	25.3
Pit 7	0.83	13.9	37.3	2.68	51.3	4.5	144	805	407	235	162	46.10	123.50	25.2
Pit 8	0.84	14.2	38.2	2.68	52.4	4.6	144	822	416	241	165	46.13	125.59	25.1
Pit 9	0.85	14.7	39.2	2.67	53.9	4.7	144	845	428	248	169	46.09	128.10	24.9
Pit 10	0.86	15.2	40.5	2.66	55.7	4.8	145	872	443	257	172	46.06	130.90	24.6
Pit 11	0.87	15.7	41.8	2.66	57.5	5.0	145	899	457	266	176	46.04	133.39	24.3
Pit 12	0.88	15.8	42.3	2.67	58.1	5.0	145	907	461	269	177	46.10	134.03	24.3
Pit 13	0.89	16.1	43.1	2.67	59.2	5.1	145	922	469	274	179	46.11	135.15	24.1
Pit 14	0.90	16.2	43.3	2.67	59.5	5.1	145	926	471	276	179	46.11	135.44	24.0
Pit 15	0.91	16.5	44.2	2.68	60.7	5.2	146	942	480	282	181	46.11	136.46	23.7
Pit 16	0.92	16.6	44.6	2.68	61.3	5.3	146	949	483	284	181	46.15	136.82	23.6
Pit 17	0.93	16.8	45.0	2.68	61.7	5.3	146	955	487	287	182	46.14	137.12	23.5
Pit 18	0.94	16.8	45.1	2.68	62.0	5.3	146	958	488	288	182	46.16	137.22	23.4
Pit 19	0.95	16.9	45.6	2.69	62.5	5.3	146	964	492	290	182	46.20	137.42	23.3
Pit 20	0.96	17.2	46.5	2.70	63.8	5.4	147	980	500	297	183	46.21	137.82	23.0
Pit 21	0.97	17.4	47.0	2.71	64.3	5.5	147	986	503	299	183	46.25	137.92	22.8
Pit 22	0.98	17.4	47.2	2.71	64.7	5.5	147	990	505	301	183	46.28	137.96	22.7
Pit 23	0.99	17.8	48.3	2.71	66.0	5.6	147	1,006	515	308	184	46.26	137.98	22.3
Pit 24	1.00	17.9	48.5	2.72	66.4	5.6	148	1,010	517	310	184	46.28	137.97	22.2
Pit 25	1.01	17.9	48.6	2.72	66.5	5.6	148	1,012	518	310	184	46.26	137.95	22.2
Pit 26	1.02	18.2	49.5	2.71	67.7	5.7	148	1,026	526	316	183	46.23	137.69	21.8
Pit 27	1.03	18.3	49.9	2.73	68.2	5.7	148	1,031	529	319	183	46.28	137.58	21.6
Pit 28	1.04	18.7	50.8	2.72	69.5	5.8	149	1,046	538	325	183	46.21	137.15	21.2
Pit 29	1.05	19.0	51.8	2.72	70.8	5.9	149	1,061	547	332	182	46.18	136.67	20.7

Figure 3-1: FE1 Optimisation Ore Tonnes and NPV by Shell



As can be seen in Figure 3-1:- FE1 Optimisation Ore Tonnes and NPV by Shell the NPV incremental value changes only marginally from pit shell 15 onwards, despite increasing pit quantities and costs. Comparing the details of Pit 15 to Pit 24 in Table 3-3 indicates an additional cost of $75M to mine a further 2.3M ore tonnes ($33/t) that is indicated to only increase NPV by $1.5M. For this reason, it was elected to base the ultimate pit design on Pit Shell 15, the shell after which the NPV value curve flattens.

Table 3-3: Compare Optimisation Shells 15 vs 24

Pit	Ore (Mt)	Waste (MT)	Costs ($M)	Revenue ($M)	Cash Flow ($M)	NPV ($M)
15	16.5	44.2	$762	$942	$180	$136.5
24	17.8	48.5	$827	$1,010	$184	$138.0

3.3 MINE DESIGN

A two-stage mining approach has been utilised for the FE1 prospect, incorporating two mining stages over the estimated project life of 8 years, based on a nominal processing rate of 2.4 Mtpa. The intent of this approach is to smooth the mining profiles and quantities to maintain ore supply but to also optimise waste mining requirements and project cash flow.

Entech completed two pit designs, the initial Stage 1 design based on the limits between shells 4/5 with the objective of mining the southern end of the resource to optimisation limits and to deliver an initial five years of ore supply.

The two designs, produced by Entech, are shown in the following figures. The contained Indicated and Inferred mineralisation as well as associated waste quantities as per the designs are summarised in Table 3-3: Compare Optimisation Shells 15 vs 24.

Figure 3-2: Stage 1 Pit Design

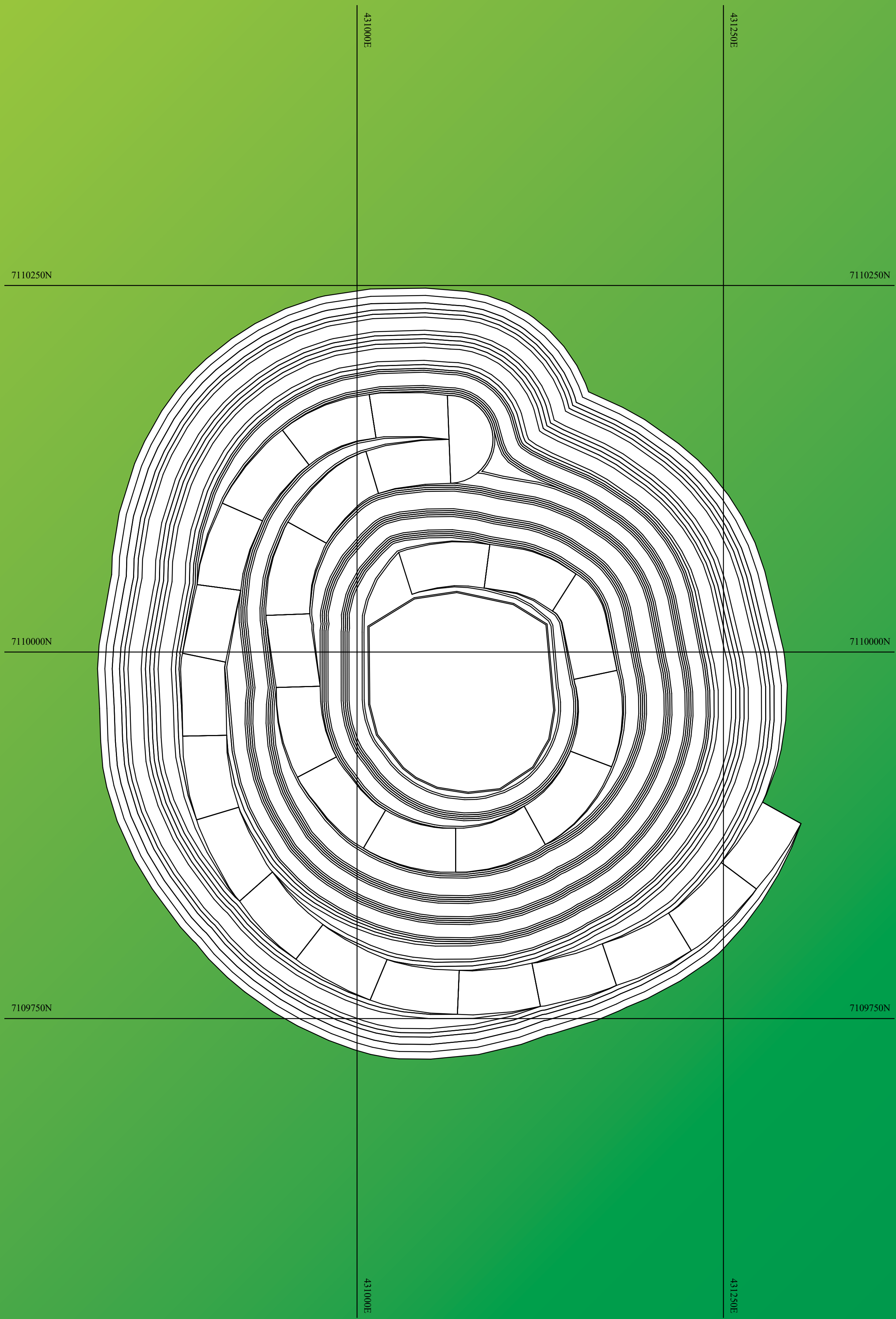


Figure 3-3: Stage 2 Pit Design

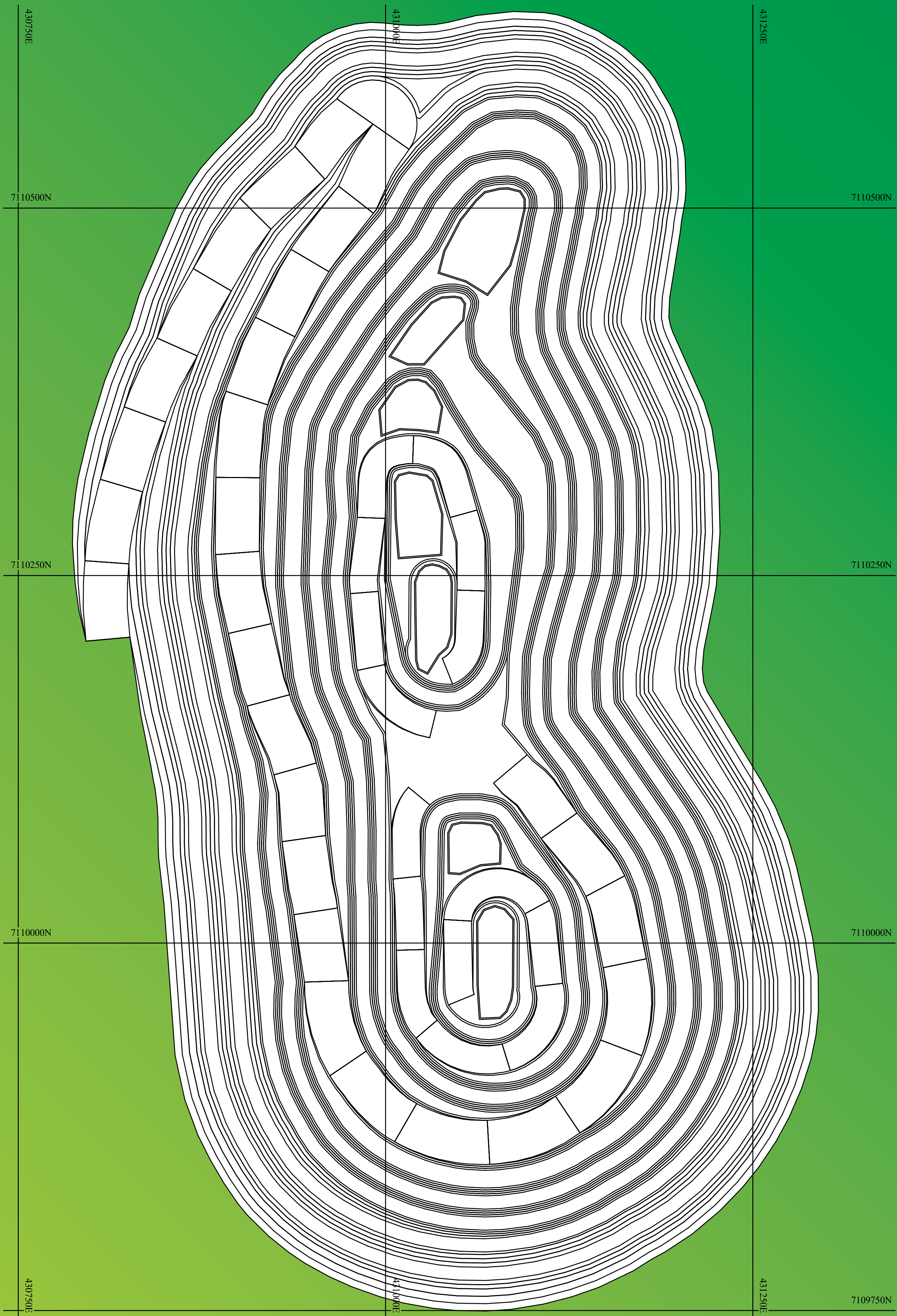


Table 3-4: Pit Designs: - Ore Quantities and Grades - Stage 1 and Stage 2

Pit Stage	Material	Volume M.BCM	Mass - Mt	Fe	Al_2O_3	CaO	K_2O	MgO	MnO	Na_2O	P	S	SiO_2	TiO_2	V
Stage 1	Indicated Resource Material	1.773	5.823	25.63	5.03	2.84	0.47	3.88	0.17	1.07	0.05	0.08	49.12	0.29	0.01
	Inferred Resource Material	0.294	0.937	22.31	6.66	3.53	0.86	4.10	0.14	1.71	0.04	0.10	51.76	0.37	0.01
	WST_OX	4.734	13.035	3.99	14.44	1.94	1.90	1.63	0.06	4.02	0.02	0.01	67.11	0.46	0.01
	WST_FR	4.505	12.703	6.84	12.91	3.16	1.72	3.32	0.08	3.74	0.03	0.04	63.56	0.45	0.01
	Total Waste	9.239	25.739	5.40	13.68	2.54	1.81	2.46	0.07	3.88	0.03	0.02	65.36	0.46	0.01
		9.532	26.675												
Stage 2	Indicated Resource Material	2.958	9.774	27.04	4.67	2.70	0.38	3.51	0.13	0.94	0.05	0.08	48.63	0.29	0.01
	Inferred Resource Material	0.135	0.426	20.71	7.09	3.01	0.81	4.02	0.12	1.84	0.04	0.08	53.90	0.34	0.01
	WST_OX	4.749	12.896	2.26	15.52	1.28	1.62	0.61	0.03	4.19	0.02	0.01	70.56	0.34	0.00
	WST_FR	4.655	12.926	5.21	13.63	3.01	1.58	2.25	0.06	4.47	0.03	0.03	65.65	0.44	0.01
	Total Waste	9.404	25.822	3.74	14.57	2.15	1.60	1.43	0.05	4.33	0.02	0.02	68.11	0.39	0.01
		9.539	26.247												
ALL	Indicated Resource Material	4.730	15.597	26.52	4.80	2.75	0.41	3.64	0.14	0.98	0.05	0.08	48.81	0.29	0.01
	Inferred Resource Material	0.429	1.362	21.81	6.80	3.37	0.85	4.08	0.13	1.75	0.04	0.09	52.43	0.36	0.01
	WST_OX	9.483	25.931	3.13	14.97	1.61	1.76	1.12	0.04	4.10	0.02	0.01	68.83	0.40	0.01
	WST_FR	9.160	25.629	6.02	13.28	3.08	1.65	2.78	0.07	4.11	0.03	0.03	64.62	0.45	0.01
	Total Waste	18.643	51.560	4.57	14.13	2.34	1.71	1.94	0.06	4.11	0.03	0.02	66.73	0.42	0.01
		19.071	52.922												

3.4 MINE SCHEDULE

Utilising the designs developed by Entech a preliminary mining schedule was developed based on a staged development for each pit that provided for a deferred waste mining approach to balance out mining movement requirements while targeting supply of ore to match process feed requirements.

The mining strategy focuses on establishment of an initial ore supply stockpile and then maintaining a mining rate to deliver the required process tonnes each period.

Within each design, intermediate waste stripping has been utilised to establish ore exposure with those intermediate faces taken to actual design limits as mining capacity and ore supply allows.

Both resource classifications have been utilised for the production target. All material has been taken to require blasting.

Mining costs have been developed from first principles based on a mining fleet consisting of 190t hydraulic excavators matched to 93t dump trucks with associated support equipment.

A mining schedule with a nominal mining target of 12 Mtpa for the initial four production years of the project was developed based on a 24/7 mining operation. This was reduced for Years 5 to Year 7 as ore exposure is obtained in Stage 2 and mining is scheduled to be undertaken on a single day shift operational basis.

Process ore mining is accelerated in line with mining capacity and bench advancement capacity. This ore is stockpiled for later processing once mining operations are completed by the middle of year 8 and the mining contractor is demobilised.

The schedule utilised is summarised in the following two tables and figures showing tonnes and volumes scheduled.

Table 3-5: FE1 Mining Schedule - Tonnes Mined (000's)

	Tonnes Mined	Yr -1	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7
STAGE 1 - Ore	6,760	225	2,400	2,400	1,735				
STAGE 2 - Ore	10,200				665	2,400	2,400	3,500	1,235
ORE_MINED	**16,960**	**225**	**2,400**	**2,400**	**2,400**	**2,400**	**2,400**	**3,500**	**1,235**
STAGE 1 - WASTE	25,739	10,775	10,300	3,682	981				
STAGE 2 - WASTE	25,822			5,918	8,419	9,100	1,700	600	85
WASTE MINED	**51,560**	**10,775**	**10,300**	**9,600**	**9,400**	**9,100**	**1,700**	**600**	**85**
TOTAL MINED	**68,520**	**11,000**	**12,700**	**12,000**	**11,800**	**11,500**	**4,100**	**4,100**	**1,320**

Table 3-6: FE1 Mining Schedule - Volume Mined (BCM) (000's)

	BCM MINED	Yr -1	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7
STAGE 1 - Ore	2,066	70	766	726	523				
STAGE 2 - Ore	3,093				204	729	729	1,055	376
ORE_MINED	**5,159**	**70**	**766**	**726**	**727**	**729**	**729**	**1,055**	**376**
STAGE 1 - WASTE	9,239	3,913	3,697	1,295	334				
STAGE 2 - WASTE	9,404			2,178	3,095	3,304	594	205	27
WASTE MINED	**18,643**	**3,913**	**3,697**	**3,473**	**3,429**	**3,304**	**594**	**205**	**27**
TOTAL MINED	**23,802**	**3,983**	**4,443**	**4,199**	**4,156**	**4,034**	**2,405**	**1,260**	**404**

Figure 3-4: Mining Schedule – Volumes

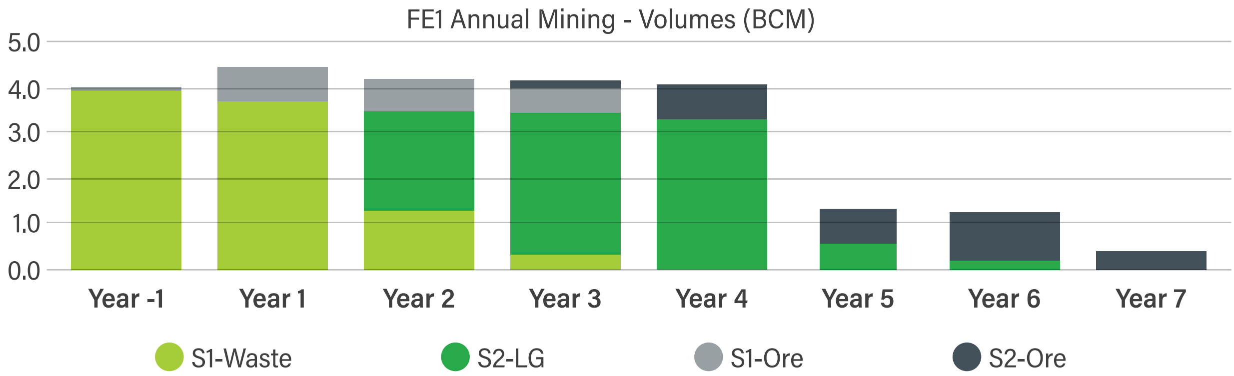
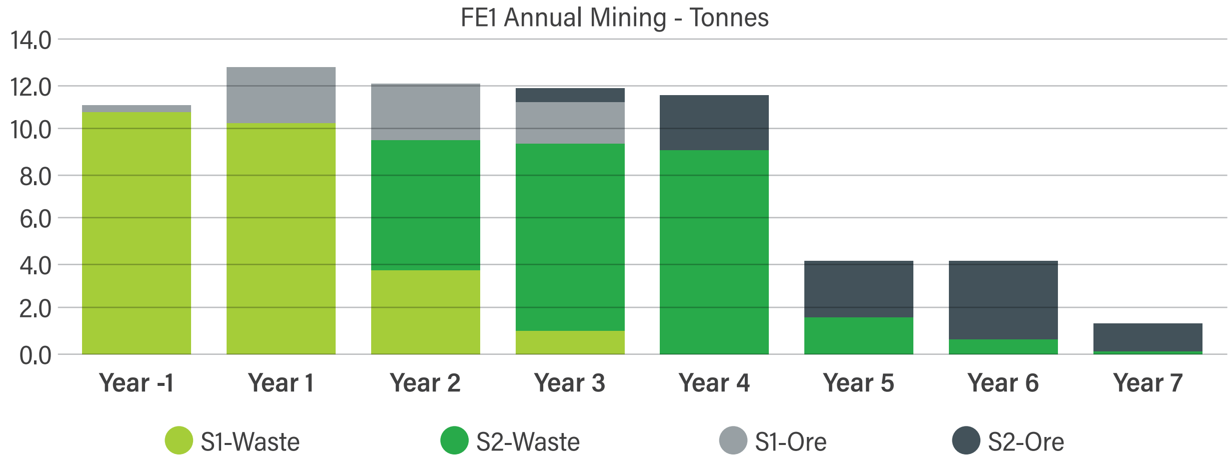


Figure 3-5: Mining Schedule - Tonnes by Material



3.5 MINE EQUIPMENT

The nominated primary load and haul fleet consists of the Hitachi EX1900-6BH matched to the Caterpillar 777G, 93 t dump truck. The Caterpillar 777G dump truck has been utilised as the primary haulage unit due to the reliability of current costing data.

For the purposes of estimation, Caterpillar ancillary equipment has also been utilised.

Drill and blast is based on the assumption that all material will require to be blasted dependent on material type. It should be noted that this approach may be conservative with a proportion of material likely to be mined as "free dig" by the nominated loading unit in backhoe or excavator configuration.

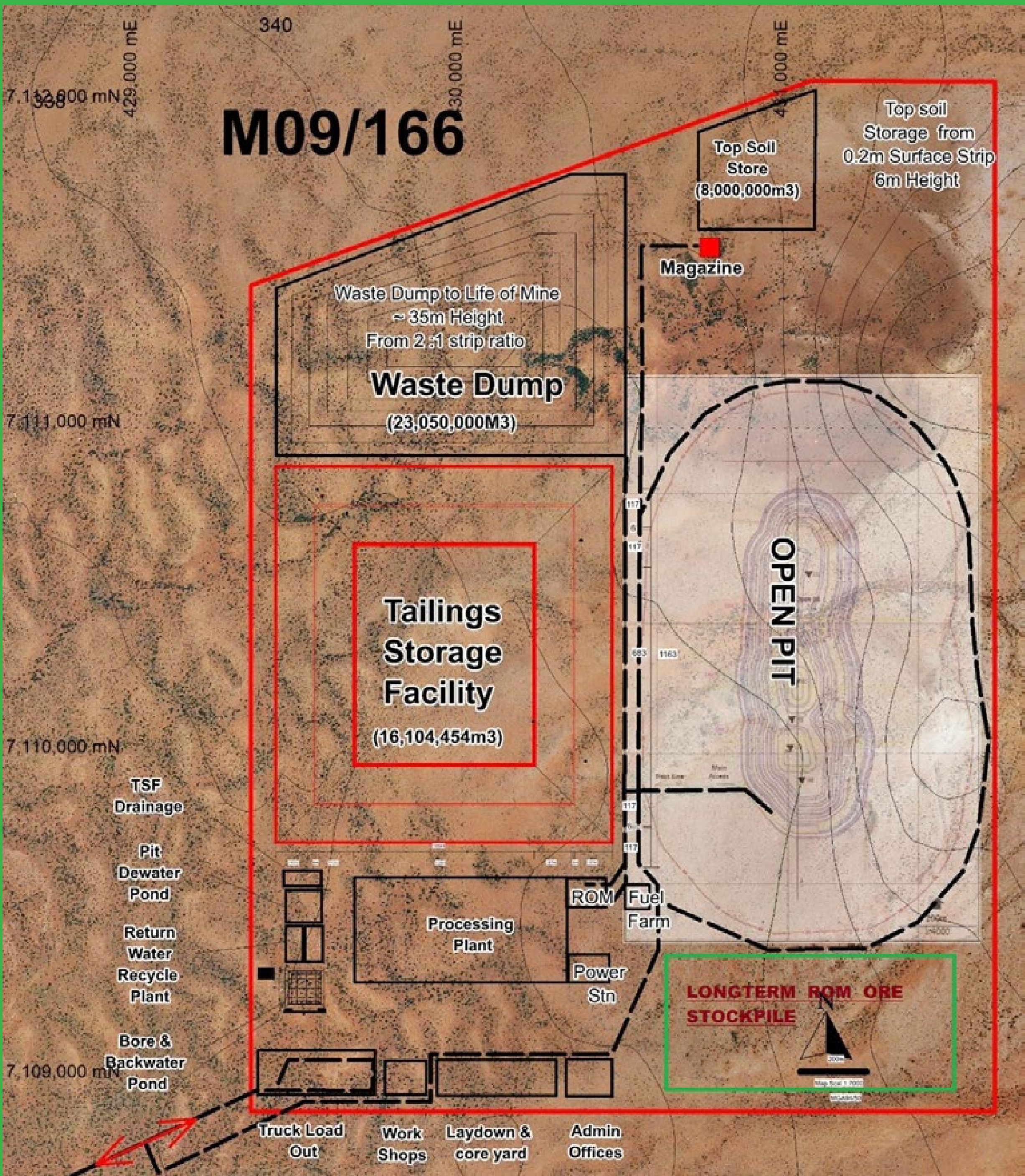
Drill hole size, drill penetration rate and target blast powder factor were based on limited experience and review of the available materials properties. A nominal 165mm hole size has been utilised and powder factors varied based on material and anticipated fragmentation requirements. The Epiroc D65SP down the hole hammer drill rig has been used for drilling purposes.

Table 3-7: FE1 Mining Equipment List

Load & Haul	Model	Maximum Fleet Number
Primary Shovel	Hitachi EX1900-6 BH	3
Truck	Caterpillar 777G	9
Ancillary	**Model**	**Maximum Fleet Number**
Track Dozer	Caterpillar D10T	2
Grader	Caterpillar 16M	1
Watercart	Caterpillar 777	2
Service Truck	Caterpillar 773F	1
Service Loader	Caterpillar 950M	1
Cleanup Loader	Caterpillar 980 H	1
Rock Breaker	Hitachi ZX350 RB	1
Lighting Plant	MS9K-10	6
Drill & Blast	**Model**	**Maximum Fleet Number**
Drill Rig	Epiroc D65XLF	2

The site layout remains like that used for previous studies with plant location, waste dumps and tailings storage facility as illustrated in Figure 3-6.

Figure 3-6: FE1 Project - Site Layout

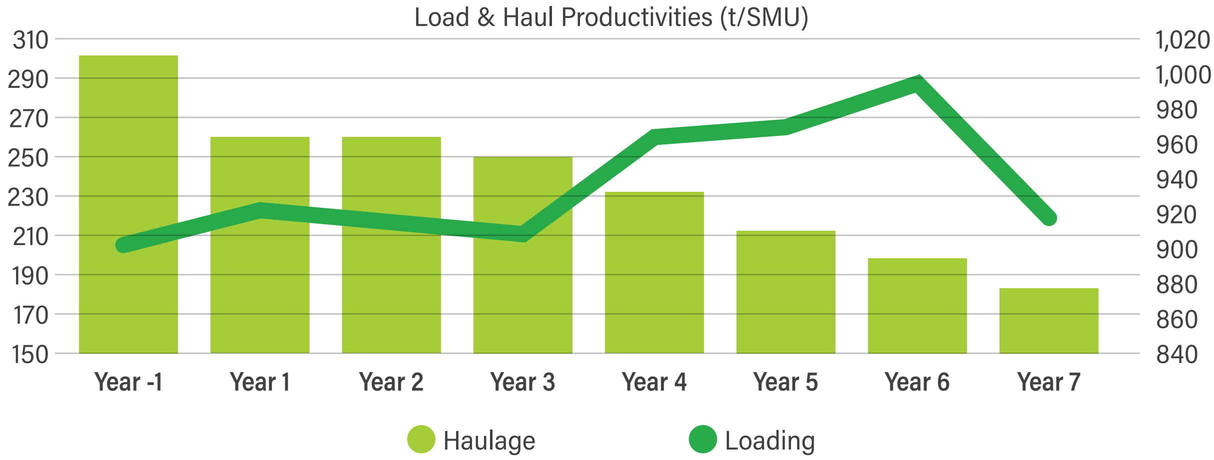


Nominal haul profiles were produced based on the pit designs, destinations and road networks and utilised to estimate mining equipment productivities.

Truck productivities average 250t/hr ranging from 296t/SMU during prestrip mining and decreasing with project duration and increasing average pit depth to 195t/SMU in the final year of mining. Excavator productivity is indicated to average 931 t/SMU, ranging from 898t/SMU to 991t/SMU primarily due to truck matching and available truck capacity.

Average productivities calculated are shown in Figure 3-7.

Figure 3-7: Load & Haul Equipment Productivities



Fleet requirements vary dependent on the mining schedule and maximum numbers by year are shown in Table 3-8.

Table 3-8: Equipment Numbers by Year

FLEET NUMBERS BY ASSET	MAX NO.	Year -1	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Primary Excavator	3	2	3	3	3	2	1	1	1
Primary Truck	8	7	9	8	9	9	8	8	8
Production Drill	2	2	2	2	2	2	1	1	1
Track Dozer	2	2	2	2	2	2	1	1	1
Grader	1	1	1	1	1	1	1	1	1
Water Cart	2	1	2	2	1	1	1	1	1
Secondary Shovel	1	1	1	1	1	1	1	1	1
L/Plant	6	5	6	6	6	6	2	2	2
Stemming Loader	1	1	1	1	1	1	1	1	1
Support Equip	1	1	1	1	1	1	1	1	1
Service Truck	1	1	1	1	1	1	1	1	1

Annual hours scheduled consolidated by equipment type are summarised in Table 3-9.

Table 3-9: Annual Equipment SMU's (000's)

		LOM	Year -1	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
	TOTAL	698	101	129	121	111.9	110.4	91.5	45.4	33.1
Primary Excavator	EX1900-6BH	74	12	14	13	13	12	4.2	4.1	1.4
Primary Truck	777G	275	37	49	46	47	49	19	21	7.2
Production Drill	D65XLF	42	5.2	8.6	7.0	5.6	6.9	5.2	2.2	0.8
Track Dozer	D10T	62	9.3	11.5	11.5	11.5	11.5	2.9	2.9	0.4
Grader	16M	32	5.1	5.9	5.9	5.9	5.9	1.5	1.5	0.4
Water Cart	777G-WT	46	6.0	9.5	7.5	9.9	9.9	1.2	1.2	0.3
Secondary Shovel	EX1200	26	4.1	4.7	4.7	4.7	4.7	1.2	1.2	0.3
L/Plant	MS9K-10	80	12	14.7	14.7	14.7	14.7	3.7	3.7	0.9
Stemming Loader	950M	8.1	1.3	1.5	1.5	1.5	1.5	0.4	0.4	0.1
Support Equip	ZX350_RB	31	4.9	5.7	5.7	5.7	5.7	1.4	1.4	0.4
Service Truck	773F-ST	24	3.5	3.9	3.9	3.9	3.9	2.0	2.0	1.0

3.6 PERSONNEL

Table 3-10 summarises the estimated management and operational personnel, including mining operators and maintenance support numbers based on the operating shifts and shift panel structures applied to this evaluation.

Management personnel are those associated with the direct mining operations only. The Athena mining personnel are allowed under the administration section of this scoping study.

Table 3-10: Operator and Maintenance Personnel

	TOTAL	Year -1	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
TOTAL	118	97	116	109	112	115	54	53	31
MANAGEMENT	23	23	23	22	22	22	15	14	10
Mine Admin	12	12	12	11	11	11	7	6	4
Maint Admin	3	3	3	3	3	3	2	2	2
Maint Tech Services	4	4	4	4	4	4	3	3	1
Maint Contract	4	4	4	4	4	4	4	4	3
OPERATIONS	95	74	93	87	90	93	39	39	21
Loading	7	7	8	6	6	6	3	3	1
Hauling	26	20	26	25	26	26	12	12	4
Drilling	6	6	6	6	6	6	3	3	3
Blasting	5	5	5	5	5	5	5	5	5
Mine Support	19	15	19	18	19	19	8	8	6
Maint Trades	32	25	32	31	31	31	8	8	3

3.7 MINING COST

Total mining cost for the project is estimated to be in the order of $348 Million as summarised in Table 3-11. This estimate comprises $267M as direct operating cost, $44M mining capital and a further $37M in contractor margin.

Table 3-11: Mining Cost Estimate

	TOTAL	Year -1	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
MINE MANAGEMENT	**58.3**	**8.5**	**8.6**	**8.4**	**8.3**	**8.3**	**6.0**	**5.8**	**4.4**
Personnel / Labour	24.9	3.8	3.8	3.6	3.6	3.6	2.5	2.3	1.6
Overheads & Support	9.6	1.5	1.5	1.5	1.5	1.5	0.8	0.8	0.4
Contracted Services	3.9	2.8	0.2	0.2	0.2	0.2	0.1	0.1	0.1
SUB -CONTRACT	**3.9**	**2.8**	**0.2**	**0.2**	**0.2**	**0.2**	**0.1**	**0.1**	**0.1**
LOAD & HAUL	**151.0**	**21.1**	**27.2**	**25.5**	**26.0**	**26.3**	**10.3**	**10.7**	**3.7**
Loading	44.6	7.4	8.4	7.8	7.7	7.2	2.7	2.6	0.9
Hauling	106.4	13.7	18.8	17.8	18.3	19.2	7.7	8.1	2.9
DRILL & BLAST	**57.2**	**7.5**	**10.9**	**9.3**	**8.9**	**10.7**	**4.0**	**3.9**	**1.9**
Drilling	25.8	3.2	5.1	4.1	3.9	5.1	1.8	1.7	0.9
Blasting	31.4	4.3	5.9	5.1	5.0	5.6	2.2	2.2	1.1
MINE SUPPORT FLEET	**77.2**	**11.4**	**14.3**	**13.6**	**14.4**	**14.4**	**3.8**	**3.8**	**1.4**
TOTAL COST ($M)	**348**	**51**	**61**	**57**	**58**	**60**	**24**	**24**	**12**

The average mining cost is $5.07 per tonne mined or $14.60/BCM using the total mining quantities of 68.5 million tonnes or 23.8 million Bank Cubic Metres. Costs include the allowance for mining contractor overheads and margin of 12% on total mining costs. These costs are summarised by main cost activities in the following tables.

Table 3-12 is the Overall Unit Cost on a $/Tonne all tonnes mined, while Table 3-13 is the same but on a volume basis.

Table 3-14 shows the average mining cost on a rate per Mill Feed tonne mined in each period. The average mining cost is indicated to be $20.43/tonne.

Table 3-12: Overall Unit Cost - $/Tonne Mined

	Average	Year -1	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
COST PER TONNE MINED	5.07	4.67	4.82	4.75	4.91	5.22	5.92	5.92	8.76
Management/Subcontract	0.91	1.03	0.69	0.71	0.73	0.75	1.49	1.43	3.37
Load & Haul	2.20	1.92	2.14	2.13	2.21	2.29	2.52	2.62	2.83
Load	0.65	0.67	0.66	0.65	0.65	0.62	0.65	0.63	0.65
Haul	1.55	1.25	1.48	1.48	1.55	1.67	1.87	1.98	2.18
Drill & Blast	0.83	0.68	0.86	0.77	0.76	0.93	0.99	0.94	1.47
Drill	0.38	0.29	0.40	0.34	0.33	0.44	0.44	0.42	0.65
Blast	0.46	0.39	0.46	0.43	0.42	0.49	0.55	0.53	0.81
Mine Support Fleet	1.13	1.04	1.12	1.13	1.27	1.25	0.53	0.53	1.09

Table 3-13: Overall Unit Cost - $/BCM Mined

	Average	Year -1	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
COST PER TONNE MINED	14.60	12.90	13.77	13.56	13.94	14.88	18.35	19.26	28.63
Management/Subcontract	2.61	2.84	1.98	2.04	2.06	2.12	4.61	4.66	11.02
Load & Haul	6.35	5.30	6.12	6.08	6.26	6.53	7.81	8.52	9.26
Load	1.87	1.85	1.90	1.85	1.86	1.78	2.01	2.06	2.13
Haul	4.47	3.45	4.23	4.23	4.41	4.75	5.80	6.46	7.13
Drill & Blast	2.40	1.89	2.46	2.20	2.14	2.66	3.06	3.07	4.79
Drill	1.08	0.81	1.14	0.98	0.94	1.26	1.36	1.35	2.13
Blast	1.32	1.08	1.32	1.22	1.21	1.39	1.70	1.71	2.66
Mine Support Fleet	3.24	2.87	3.21	3.23	3.47	3.57	2.88	3.02	3.55

Table 3-14: Overall Unit Cost - $/ Mill Feed Tonne

	Average	Year -1	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
COST PER TONNE MINED	20.43	216.00	25.45	23.69	24.11	24.97	10.15	6.99	9.46
Management/Subcontract	3.60	38.67	3.62	3.53	3.53	3.53	2.58	1.73	3.70
Load & Haul	8.91	93.89	11.34	10.64	10.84	10.97	4.30	3.07	3.03
Load	2.63	32.83	3.51	3.24	3.21	2.99	1.11	0.74	0.70
Haul	6.28	61.06	7.83	7.40	7.63	7.98	3.20	2.32	2.33
Drill & Blast	3.37	33.47	4.55	3.86	3.71	4.47	1.68	1.10	1.57
Drill	1.52	14.38	2.11	1.72	1.63	2.12	0.75	0.49	0.70
Blast	1.85	19.10	2.44	2.14	2.09	2.34	0.94	0.62	0.87
Mine Support Fleet		50.83	5.95	5.66	6.02	6.00	1.59	1.09	1.16

4 FE1 Metallurgy Test Work

4 FE1 Metallurgy Test Work

An extensive testwork programme was conducted at ALS Iron Ore Technical Centre laboratory (previously ALS Ammtec) in Wangara, Perth W.A. A total of 90 RC chip samples and 759 HQ core samples (a total of 849 samples) were dispatched to ALS for metallurgical testwork including: -

- In-Situ Density Testwork.
- MagSus analysis detailing percentage of Magnetic.
- Multi-element X-ray fluorescence (XRF) analysis which included a suite of 24 elements.
- Davis Tube Recovery (DTR) test work.

A selection of results is presented in the following sub-sections. Full results are detailed in ALS IOTC report "Davis Tube Recovery Testwork conducted upon samples from the Byro Iron Ore Project for Athena Resources Limited" Report No. A23764 May 2023, which is included in Appendices.

4.1 IN-SITU DENSITY RESULTS

Selected HQ core samples were submitted for in-situ apparent density testwork and MagSus readings.

Table 4-1: Summary of In-Situ Density Results

IN-SITU DENSITY			
Sample ID	In-Situ Density (SG)	Sample ID	In-Situ Density (SG)
FE1D00032	2.65	FE1D00365	3.27
FE1D00038	3.50	FE1D00438	3.37
FE1D00073	3.50	FE1D00455	3.44
FE1D00092	2.61	FE1D00480	3.04
FE1D00106	3.47	FE1D00518	2.64
FE1D00160	3.55	FE1D00545	3.53
FE1D00169	2.63	FE1D00570	2.65
FE1D00204	2.85	FE1D00571	3.59
FE1D00211	3.19	FE1D00637	3.40
FE1D00272	2.64	FE1D00646	3.07
FE1D00311	2.67	FE1D00688	3.07
FE1D00320	3.53	FE1D00737	2.67
FE1D00346	2.68	FE1D00739	3.36

4.2 MAGSUS ANALYSIS RESULTS

Table 4-2: Summary of MagSus Results

MAGSUS ANALYSIS			
Sample ID	Percentage Magnetic (%)	Sample ID	Percentage Magnetic (%)
FE1D00032	1.02	FE1D00365	40.29
FE1D00038	51.08	FE1D00438	20.84
FE1D00073	51.03	FE1D00455	41.21
FE1D00092	2.07	FE1D00480	6.42
FE1D00106	37.52	FE1D00518	1.03
FE1D00160	50.39	FE1D00545	40.74
FE1D00169	1.02	FE1D00570	3.39
FE1D00204	1.03	FE1D00571	46.26
FE1D00211	40.41	FE1D00637	31.86
FE1D00272	1.02	FE1D00646	1.01
FE1D00311	1.31	FE1D00688	1.04
FE1D00320	47.08	FE1D00737	1.78
FE1D00346	1.06	FE1D00739	41.67

There is an exceptionally good correlation between S.G. and MagSus readings, where high MagSus readings are reported from samples with high S.G, indicative of the presence of high-grade magnetite.

4.3 HEAD GRADE ANALYSIS RESULTS

Table 4-3: Summary of Selected Head Assay Results

HEAD ANALYSIS						
Sample ID	Fe (%)	SiO_2 (%)	Al_2O_3 (%)	P (%)	S (%)	LOI-1000 (%)
FE1D00001	35.3	44.3	1.11	0.035	0.052	-0.98
FE1D00002	11.0	60.2	13.15	0.044	0.008	1.22
FE1D00003	10.4	48.6	11.70	0.053	0.002	1.00
FE1D00004	30.2	48.0	2.72	0.039	0.031	-0.68
FE1D00005	7.2	62.4	15.40	0.063	0.004	0.56
FE1D00006	32.6	48.1	1.44	0.045	0.041	-0.86
FE1D00007	1.9	69.7	15.5	0.060	0.007	0.40
FE1D00008	14.6	49.6	9.75	0.066	0.009	0.65
FE1D00009	9.9	53.7	13.45	0.076	0.043	0.43
FE1D00010	3.8	64.3	15.3	0.101	0.063	0.62

4.4 DAVIS TUBE RECOVERY RESULTS

Table 4-4 details results for whole rock feed assay grades above a 10% Fe cut-off and where DTR concentrate assay grades are above 65% Fe cut-off.

Table 4-4: Detailing DTR Results for Significant Intercepts from Infill Program

Hole	Type	Whole Rock Intersection				DTR Intersection			
AHRC0118	Twin	60.0m	28.2%	from	54.0m	60.0m	70.3%	from	54.0m
AHRC0108D	In-fill	12.8m	33.8%	from	116.0m	12.8m	70.9%	from	116.0m
		59.1m	29.9%	from	138.0m	59.1m	70.6%	from	138.0m
AHRC0107D	In-fill	28.0m	19.9%	from	81.0m	28.0m	68.2%	from	81.0m
		48.2m	31.9%	from	115.0m	48.2m	71.3%	from	115.0m
		4.2m	17.4%	from	167.6m	4.0m	69.0%	from	167.6m
AHRC0116D	In-fill	3.2m	19.3%	from	108.5m	3.2m	70.8%	from	108.5m
		6.9m	18.0%	from	124.6m	6.9m	69.6%	from	124.6m
AHRC0121D	Twin	17.9m	17.1%	from	126.2m	17.8m	69.9%	from	126.2m
		13.5m	28.5%	from	154.9m	13.5m	70.9%	from	154.9m
AHRC0110D	In-fill	33.2m	20.0%	from	23.0m	33.2m	70.2%	from	23.0m
		27.7m	25.9%	from	60.5m	27.7m	70.5%	from	60.5m
		9.0m	15.7%	from	92.0m	9.0m	71.0%	from	92.0m
AHRC0111D	In-fill	16.0m	19.3%	from	60.0m	16.0m	69.8%	from	60.0m
		103.6m	29.6%	from	91.3m	103.6m	70.9%	from	91.3m
AHRC0112D	Twin	18.0m	19.5%	from	82.0m	18.0m	70.3%	from	82.0m
		15.2m	26.4%	from	111.7m	15.2m	69.7%	from	111.7m
		16.4m	17.6%	from	136.0m	16.4m	71.5%	from	136.0m
		59.6m	19.5%	from	152.4m	59.6m	71.3%	from	152.4m
		25.9m	19.3%	from	218.1m	25.9m	71.1%	from	218.1m
		3.5m	33.1%	from	247.4m	3.5m	71.0%	from	247.4m
AHRC0113D	In-fill	10.5m	19.7%	from	90.0m	10.5m	70.5%	from	90.0m
		3.6m	19.5%	from	119.5m	3.6m	71.3%	from	119.5m
		22.1m	13.2%	from	127.9m	22.1m	70.5%	from	127.9m
		39.2m	18.9%	from	166.0m	39.2m	70.5%	from	166.0m
AHRC0114D	In-fill	8.5m	18.1%	from	80.0m	8.5m	70.5%	from	80.0m
		79.0m	25.6%	from	105.0m	79.0m	70.8%	from	105.0m
		26.4m	23.9%	from	189.6m	26.4m	70.7%	from	189.6m
AHRC0115D	In-fill	8.0m	12.4%	from	42.0m	8.0m	70.4%	from	42.0m
		124.3m	27.5%	from	62.0m	124.3m	70.6%	from	62.0m
AHRC0120D	In-fill	12.6m	17.9%	from	42.0m	12.6m	70.2%	from	42.0m
		18.3m	27.1%	from	57.7m	18.0m	70.0%	from	57.7m
		18.1m	17.9%	from	80.0m	18.1m	71.0%	from	80.0m
		2.5m	32.2%	from	137.6m	2.5m	71.1%	from	137.6m
		8.0m	24.9%	from	155.0m	8.0m	70.5%	from	155.0m

All assays were completed using Xray Florescence (XRF) for an extended iron ore suite for 24 elements.

281 composites were formed by blending selected representative sub-samples from the received samples.

The composites were submitted for DTR at a screen size of -150 um.

At this coarse grind size, to obtain an overall recovery into a magnetic concentrate of 23.9% mass recovery with a grade of 69.9 % Fe is a particularly good result as shown in Table 4-5.

Pure magnetite Fe3O4 has a Fe grade of 72.4% indicating the following results are exceptionally good.

Table 4-5: Summary of DTR Results.

DAVIS TUBE RECOVERY (Averaged Results)								
Composite Group	No of Comps	Head			Mags			
		Fe (%)	SiO_2 (%)	$A_{l2}O_3$ (%)	Mass Rec'y %	Fe (%)	SiO_2 (%)	$A_{l2}O_3$ (%)
AHRC0107D	25	23.9	52.39	5.15	28.29	69.1	3.34	0.26
AHRC0108D	20	28.0	48.86	3.93	32.88	70.3	1.36	0.43
AHRC0110D	19	23.2	51.70	5.94	25.01	70.5	1.43	0.31
AHRC0111D	29	27.4	47.91	4.48	30.74	70.7	1.15	0.26
AHRC0112D	43	17.8	54.42	8.37	17.47	70.8	1.28	0.24
AHRC0113D	28	13.3	59.15	9.81	11.92	70.4	1.42	0.25
AHRC0114D	33	21.4	49.67	7.69	21.84	70.8	1.04	0.29
AHRC0115D	31	26.7	48.84	4.39	29.60	70.6	1.29	0.28
AHRC0116D	3	20.4	56.00	7.20	24.30	70.2	1.08	0.23
AHRC0118D	16	28.0	47.89	4.45	31.89	70.1	1.67	0.41
AHRC0120D	24	17.9	52.17	8.55	16.83	70.4	1.10	0.33
AHRC0121D	10	17.4	53.36	9.43	16.07	65.2	5.25	1.35
Overall	**281**	**22.1**	**51.86**	**6.62**	**23.90**	**69.9**	**1.78**	**0.39**

4.5 WET LIMS RESULTS

Following the completion and review of results from the extensive DTR testwork program from 2022, several bulk samples were prepared for a large-scale simulation to test the wet Low Intensity Magnetic Separation (LIMS) used within the process plant design.

Comparing the bulk LIMS results against the previous LIMS and the large DTR dataset used for the process design provides a clear indication of how successful the wet LIMS magnetic separation will be and gives a practical understanding of actual masses reporting to various stages of the concentrate grinding/classification process or tailings as Non-Magnetic low-grade waste.

For the optimisation tests, samples were selected and composited from two HQ cored diamond drill holes, AHRC0107D and AHRC0110D. These drill holes included both weathered and fresh ore composites situated within the open pit design and will be amongst the material designated for early treatment by the mine plan. The samples were from a down-hole depth range of 23m to 163.2m (~140m vertical).

Composites were tested by both standard DTR with feed at a grind size of 100% passing 150um (approx. P80 of 106um) and wet LIMS with a feed P80 of 106um to provide data on mass balance and grade at the final wet LIMS stage.

DTR tests are typically used in magnetite programs to determine the initial weight recovery of the magnetic iron. This is utilised to determine the proportion of the deposit that is magnetite, and to determine the grade of concentrate at the grind size (typically the feed is screened at 150um to provide an approximate P80 of 106um). Wet LIMS more closely resemble the magnetic separation used within the Process Plant. A close comparison of DTR & wet LIMS results provides an indication of how successful the wet LIMS process is to achieving maximum iron recovery.

Full results are detailed in ALS IOTC report "Cobbing and Grind Liberation Testwork conducted upon five composite samples from the Byro Iron Ore Project for Athena Resources Limited" Report No. A23764 part 2 November 2023, which is included in Appendices.

The DTR tests were conducted at a magnetic intensity of 3000 Gauss to yield close to the maximum results achievable for the concentrate Fe grade and Fe recovery. The laboratory wet LIMS was conducted at 1100 Gauss, limited by the unit utilised for testing. The normal Gauss setting in a processing plant can range from 850G to 2000G or higher.

The 2023 wet LIMS testwork program at ALS IOTC investigated both weathered and fresh ores from two drill holes as represented by the following four composites detailed in Table 4-6 covering head grades from 24.1% to 32.3% Fe.

Table 4-6: Details of Composites for LIMS Testwork

Hole ID	Weathering	m From	m To	Total m	Mass Kg	Calc'd Head Grade Fe (%)
AHRC0107D	Weathered	77.00	98.80	21.80	27.27	24.11
AHRC0107D	Fresh	115.00	163.21	48.21	28.92	32.31
AHRC0110D	Weathered	23.00	28.00	5.00		
AHRC0110D	Weathered	32.00	40.50	8.50		
AHRC0110D	Weathered			13.50	27.00	29.81
AHRC0110D	Fresh	40.50	71.20	30.70		
AHRC0110D	Fresh	76.78	96.00	19.22		
AHRC0110D	Fresh			49.92	27.46	25.64

The testwork program included the following: -

- Grind establishments on all four composites to determine grind times to produce samples at grind size P80s of 250um, 150um, 125um and 106um.
- A DTR test on all four composites. The DTR test is carried out on 20gms of sample at a grind size of -150um and conducted at 3000G
- A LIMS test on all four composites carried out on approximate 3kg of sample at a P80 of 106um and conducted at 1100G. These results are compared directly against the DTR tests.
- A LIMS test on one composite (AHRC0110D Fresh ore) carried out on approximate 3kg of sample at a P80 of 125um and conducted at 1100G.
- A LIMS test on two composites (AHRC0107D Weathered ore and AHRC0110D Fresh ore) carried out on approximate 3kg of sample at a P80 of 150um and conducted at 1100G.
- A "cobber" LIMS test on all four composites carried out on approximate 3kg of sample at a crushed size of -1mm and conducted at 1100G. These results are used to determine if a low-grade Non-Magnetic product can be produced that can be rejected to tails, thus reducing the grinding load on the secondary ball mill/classification section.

Table 4-7 compares the wet LIMS verses DTR results and shows the design is robust and will achieve the high grade – low impurity product in the volume targeted.

Table 4-7: Byro FE1 Wet LIMS Verses DTR Results

Hole ID	Down-hole length	Method	Mag. Intensity	Grind	Magnetic Concentrate		
					Wet Rec'y %	Grade Fe%	Fe Rec'y %
AHRC0107D	70m from 77.0m	DTR	3000G	-150um (~P80 of 106um)	39.3	70.1	90.8
		Wet LIMS	1100G	P80 of 106um	38.4	69.8	89.3
AHRC0110D	63.4m from 23.0m	DTR	3000G	-150um (~P80 of 106um)	31.1	70.4	80.8
		Wet LIMS	1100G	P80 of 106um	30.3	70.1	79.8

Both the weathered and fresh ore composites were tested to determine if there was a variation in wet LIMS grade and recovery between the two ore types. The outcome of the wet LIMS is positive, confirming a production concentrate grade of at least 69.8% Fe for both ore types and the mass flow through the processing system is optimised. Table 4-8 and Table 4-9 show the DTR and wet LIMS concentrate Fe grades, Fe recoveries and weight recoveries for both weathered and fresh ore from holes AHRC0107D and AHRC0110D.

Table 4-8: Byro FE1 Wet LIMS Verses DTR Results - Hole AHRC0107D

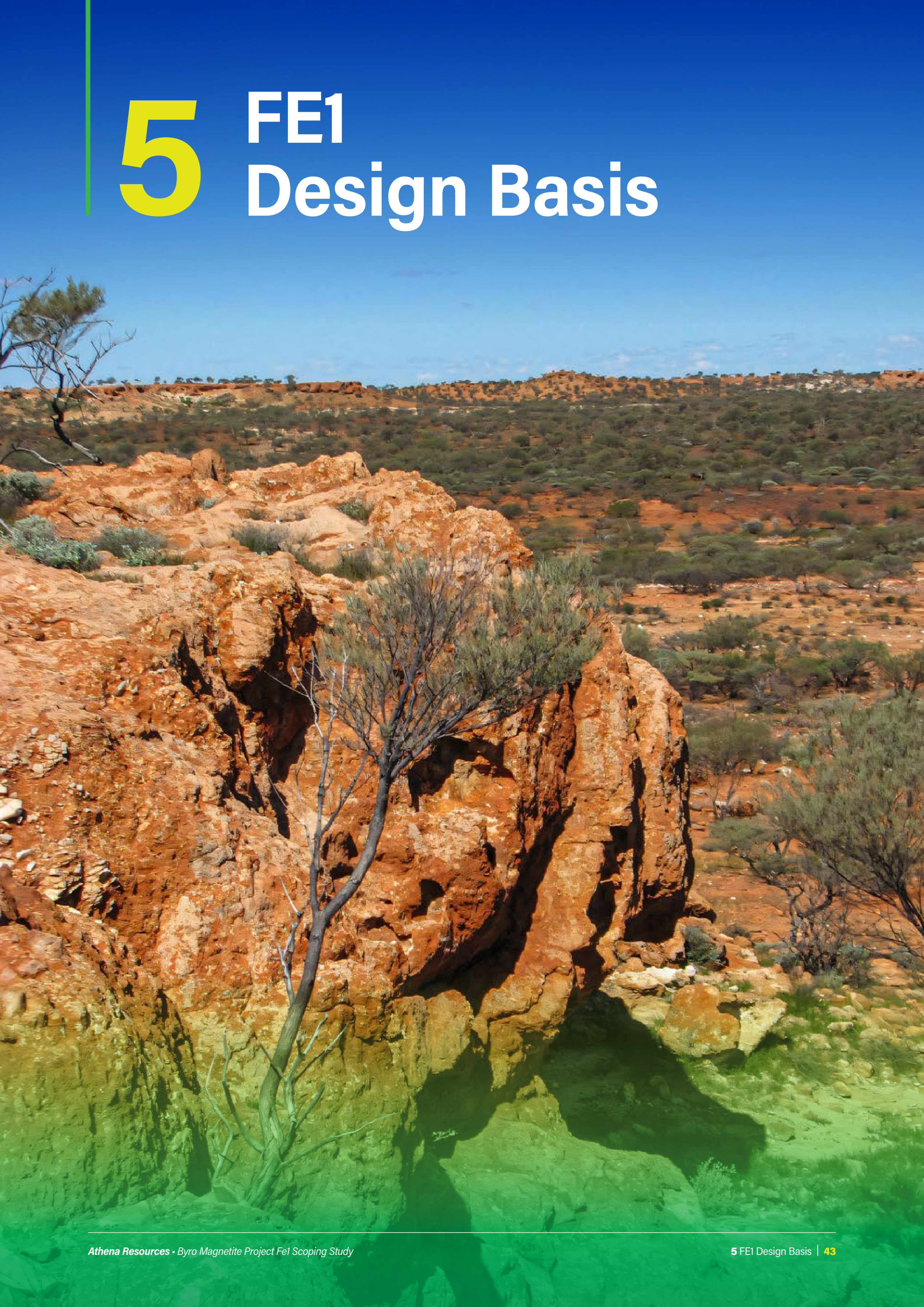
Hole ID	Down-hole length	Method	Mag. Intensity	Grind	Magnetic Concentrate		
					Wet Rec'y %	Grade Fe%	Fe Rec'y %
AHRC0107D Weathered Ore	**21.8m** from 77.0m	DTR	3000G	-150um (~P80 of 106um)	30.1	68.4	81.3
		Wet LIMS	1100G	P80 of 106um	30.6	67.7	78.4
AHRC0107D Fresh Ore	**48.21m** from 115.0m	DTR	3000G	-150um (~P80 of 106um)	43.4	70.6	94.1
		Wet LIMS	1100G	P80 of 106um	41.9	70.4	93.4

Table 4-9: Byro FE1 Wet LIMS Verses DTR Results - Hole AHRC0110D

Hole ID	Down-hole length	Method	Mag. Intensity	Grind	Magnetic Concentrate		
					Wt Rec'y %	Grade Fe%	Fe Rec'y %
AHRC0110D Weathered Ore	**13.5m** from 23.0 to 28.0m plus 32.0m to 40.5m	DTR	3000G	-150um (~P80 of 106um)	33.6	70.3	77.9
		Wet LIMS	1100G	P80 of 106um	35.7	70.4	79.7
AHRC0110D Fresh Ore	**49.92m** from 40.5m to 71.2m plus 76.78m to 96.0m	DTR	3000G	-150um (~P80 of 106um)	30.4	70.4	81.7
		Wet LIMS	1100G	P80 of 106um	28.8	70.0	79.8

Figure 4-1: Wet LIMS Laboratory Unit at IOTC Recovering Magnetite Concentrate.

5 FE1 Design Basis



5 FE1 Design Basis

5.1 HISTORY OF PROCESS DESIGN

There have been three phases in developing the design and processing option.

The first two designed processing systems based on distinct output tonnages and products were developed for AHN through the independent engineering companies 'GR Engineering Services' (GRES) in Australia and 'Xinhai Mining Research' in China. The outcome of those designs resulted in two separate studies.

5.1.1 Changsha Research Institute of Mining and Metallurgy and GRES

In the earliest study (2011), GRES evaluated the design and costs associated with the construction and operation of a 5 Mtpa processing facility for the Byro FE1 Magnetite Project. The plant capacity of 5 Mtpa was nominated based on an anticipated significant upgrade to the delineated Byro Project mineral resources at that time.

The 5 Mtpa process flowsheet and plant design was based on analysis of the mineralogical and metallurgical investigations conducted by Changsha Research Institute of Mining and Metallurgy (CRIMM) in China and ALS Ammtec laboratories in Australia.

The process circuit consisted of crushing, grinding, classification, rougher and cleaning wet Low Intensity Magnetic Separation (LIMS), thickening and filtration.

The testwork was based on sixteen (16) PQ drill core samples of approximately 80kg mass plus RC chips samples of approximately 12kg. The PQ drill core was of high grade with the DTR and wet LIMS testwork having an assayed head grade of 35.4% Fe. This high feed grade contributed to a final concentrate with an average grade of 67.5% Fe and a high Fe recovery of 93.1%. (Fe recovery increases with increased head grades.)

From this testwork the Byro's magnetite ore feed size requirement for the rougher and cleaner wet LIMS circuit was determined to be at a P80 grind of 125 microns. This feed size was indicated to facilitate the production of an average concentrate grade of 67.5% Fe.

The coarse grind results in a significant cost reduction in power required for grinding and associated reduced capital and operating cost when the project was compared to other magnetite projects in Australia that required fine grinding and more complex separation techniques.

[It should be noted that the later 2022/23 metallurgical testwork indicated a finer grind P80 of 106 microns would produce a final concentrate with an average grade between 69.5% and 70.5% Fe].

5.1.2 Xinhai

The decline in iron ore prices through 2011 to 2015 had a detrimental impact on project economics and AHN undertook further research and development to investigate alternatives to improve the projects' potential. This resulted in the identification of the potential to produce a high-grade product acceptable to higher value industrial markets other than steel production.

The Xinhai prefeasibility study (2015), evaluated design and costs associated with construction and operation of a 4 Mtpa (12,000 t/d) mining, crushing, and processing facility producing 1.2 Mtpa concentrate with a target grade of 68%–70% Fe, P80 at 106 to 125 µm.

The primary concentrate was to then be further processed, producing a Super Purity magnetite (SPFe) of >72%Fe and a high Purity coal wash magnetite (HPFe) of <71.3%Fe and a lower grade 65% Fe by-product.

The process flowsheet included the following: -

- Three stage crushing to produce crushed product at -12mm,
- Three single stage ball mills operating as parallel circuits, with classification by hydrocyclones and vibrating screens to produce final product of 45% passing 200 mesh (approx. P80 of 106 to 125um).
- Two stage Wet Low Intensity Magnetic Separator (LIMS) of screen underflow fines at 1150G for rougher separation,
- Single stage Wet Low Intensity Magnetic Separator (LIMS) of rougher LIMS Magnetic product at 860G for cleaner separation,
- Thickening and disk vacuum filtration of final magnetite concentrate.

Processing options to achieve the high and super purity grades utilised separation techniques that excluded the use of reverse floatation circuits and the related use of environmentally harmful reagents, possible due to the physical characteristics of the FE1 magnetite ore having very few impurities.

A target of 1.11 Mtpa of concentrate would be produced with the following split of final products: -

- SPFe with a grade of 72.0% yielding 453,000 tpa,
- HPFe grade coal wash with a grade of 68-71% yielding 624,000 tpa,
- The remaining magnetite concentrate with a grade of 65.0% and a yield of 33,000 tpa which is considered a by-product but still of premium grade quality.

5.1.3 GRES Design Update - 2022 DTR and 2023 Wet LIMS Testwork

It should also be noted that this 2022/23 magnetic separation testwork was conducted on a significantly larger sample base than that tested in 2011 and covered a much larger variation in Fe head grade, ranging from 15% Fe to 36% Fe.

The 2022 Infill drilling program included fifteen (15) drill holes, from which samples of diamond core and RC chip sample were taken from twelve (12) drill holes and were submitted to ALS IOTC for head assays and DTR magnetic separation testwork.

The 2022 DTR testwork program at ALS IOTC included the following: -

- 1,200kg of diamond ¼ NQ core samples plus 735kg of RC chip samples,
- 849 samples (from intercepts mostly 2m in length with some smaller/longer due to lithological boundaries) being submitted for head assays by XRF 24 element analysis (ME-XRF 24N),
- A total of 293 composite intercepts (277 samples plus 16 QAQC check samples) were submitted for DTR magnetic separation tests at P80 of 106 microns.

Significant DTR Results for whole rock feed assay grades above a 10% Fe cut-off and where DTR concentrate assay grades are above 65% Fe cut-off have been reported previously in Table 3-3.

Following the completion of the 2022 head assaying DTR testwork at ALS IOTC, it became evident that a slightly finer grind with a P80 of 106 microns improved the quality of the final magnetite concentrate grade.

This later DTR testwork increased the average grade of concentrate produced to 70.7% Fe, a significant improvement to the average grade of 67.5% Fe that was achieved from the testwork conducted in 2011.

5.1.4 Revised Design

Following a review by GRES (March 2023) of the 2011 5 Mtpa Byro plant design it was determined that the target project throughput should be reviewed.

Several reasons include: -

- Entech FE1 pit optimisation indicated a potential production target of around 15 million tonnes from that resource (three years feed only)
- High Capital Cost for 5 Mtpa operation for a three-year defined mineral resource.
- The 100km of unsealed road between Byro and Mullewa was indicated to likely place limitation on magnetite concentrate quantities that could be transported to the port of Geraldton.
- The current volatility within the Iron Ore market (including the projection for the next five years.)

After reviewing the Process Flowsheets from both GRES (5 Mtpa) and Xinhai (4 Mtpa) a treatment rate of 1.5 Mtpa was initially selected based on the potential production of a magnetite concentrate suitable for Coal Wash Media.

After further reviews, the utilisation of a coarser grind than that required for the CWM scenario and target production of a high-grade magnetite product for the steel industry was investigated. This initially allowed an increase in plant feed to 1.8 Mtpa for an average concentrate production of 540k tonnes but project returns were less than optimal.

A further review at 2.4 Mtpa, based on what was considered to be the maximum practical mining rate for the FE1 designs offered improved economics for the project with an average concentrate production of 720k dry tonnes.

The 2.4 Mtpa process scenario was adopted for the Scoping Study. This results in an 8-year production life for the project, but with the expectation that resource definition on the known additional resource prospects will add to this mine life once the operations commence.

Contributing factors include the following: -

- 2.4 Mtpa provides a mine-life of more than eight years based on the resource mineralisation within the FE1 pit design, including prestrip operations.
- The crushing circuit has been designed to operate at up to 750tph on a 12-hour Dayshift basis and has the capability to crush the required feed tonnes.
- Crusher operation during daylight hours will maximise the utilisation of the hybrid solar/gas generation power supply. Gas generation is likely to be required more during nighttime, so non-operation of the crusher section will be beneficial.
- To produce concentrate for steel making the secondary grinding/classification operates at a split size of 150um (significantly coarser than the 106um, required for CWM product).
- Based on minimal changes to plan design, mill throughput can be increased to the required 300tph.

5.2 MATERIALS HANDLING

The following sub-sections outline the general assumptions made in the mechanical configuration of the materials handling equipment.

5.2.1 Conveyors

Plant conveyors will be a combination of open frame ground modules and open frame elevated modules. The conveyor support structure, tail end and head end structures and conveyor geometry will be designed to conform to industry standard requirements, based upon best industry standards.

All elevated sections of plant conveyors will have single sided 750 mm wide walkways to enable easy personnel access to any point on the conveyor. Belt conveyors with a belt width greater than 1,000 mm will have dual sided walkways. Conveyors will be typically constructed with gravity take-ups on the return strand or screw type take-ups for short conveyors (less than 50 metres).

All pulley locations and any hazard points will be fully guarded using a fixed bolted type of construction in according to Australian Standards.

Belt speed will be based upon the design capacity of the conveyor.

5.2.2 Feeders

Feeders will be designed to provide reliable operation at the design capacities.

Belt feeders and apron feeders will be typically constructed with fixed type take-ups that are adjusted manually with temporary/removable hydraulic cylinders.

Vibrating feeders will be removable and rolled-out by winch for maintenance.

Feeders will be electro-mechanical with VVVF drives. Feeder throughput will be controlled through drive speed during operation.

5.2.3 Tramp Magnets

Tramp magnets will be installed in the material handling system to detect and remove metallic tramp. Metal detectors will be installed downstream of magnet, where appliable, to detect ferrous and non-ferrous tramp material that the magnet does not capture.

5.2.4 Belt Weighers

Belt weighers used for control purposes and for information purposes will be capable of achieving an accuracy of +/-0.5% over the range of 30% to 120% of conveyor design. Weighers will be calibrated with certified static weights.

5.2.5 Dust Collectors

Dust collectors will be reverse pulse type with filter bag cloth baghouse. Dust loading will have a design loading of 10,000 mg/m3. Dust will be extracted from pick-up points and be discharged onto a belt conveyor for disposal or recycled.

5.3 ELECTRICAL

Electrical installed power for major equipment has been taken from the various budget quotes while smaller items are factored from equipment lists. Other items have been factored from the GRES Capital and Operating Cost review carried out in March 2023.

6 Process Plant

6 Process Plant

6.1 FLOWSHEET DEVELOPMENT

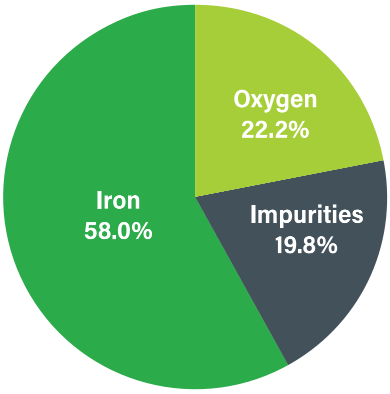
The Byro flowsheet is designed to process 2.4 Mtpa of magnetite ore to produce a high grade 70% Fe concentrate at P_{100} -150 micron suitable for sales into the Steel Making Industry.

Steel making using magnetite has lower environmental impacts. High-grade magnetite concentrates, like the Byro product, are sought to blend with and upgrade lower-grade concentrates.

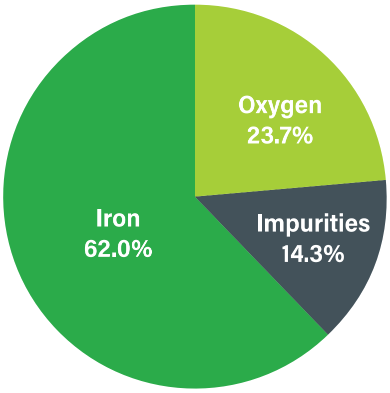
Magnetite is an iron oxide Fe_3O_4 and pure magnetite has a mass percent of 72.36% Iron and 27.64% Oxygen. The Byro FE1 concentrate at 70% Fe is high-grade containing only minor quantities of impurities at 3.3%.

Studies have indicated that the high quality Byro magnetite concentrate may be suitable for use in a range of applications, in addition to the steel making industry. Magnetite concentrates typically range between 65 to 70% Fe and are increasingly being sought as a preferred feedstock for steel making, particularly those higher-grade magnetite concentrates with lower impurities.

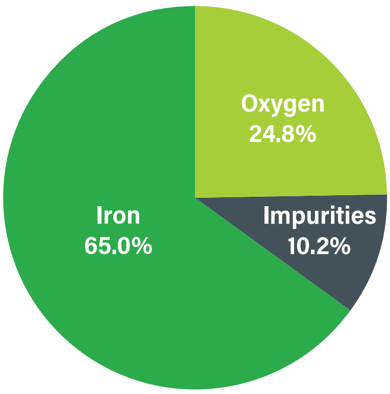
Figure 6-1: Concentrate Impurity Content vs Magnetite Grade



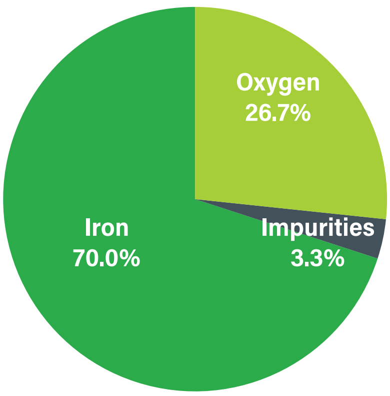
Magnetite Fe_3O_4 - 58%



Magnetite Fe_3O_4 - 62%



Magnetite Fe_3O_4 - 65%



Magnetite Fe_3O_4 - 70%

The following Pie-Charts show the effect on impurity content of the concentrate produced of increasing the Fe grade.

The major impurities in magnetite include Silica as SiO_2, Aluminium as Al_2O_3, Phosphorus as P and Sulphur as S with the following upper limits SiO_2 <5% (typically 2.3 to 3.5%), Al_2O_3 <1.9% (typically 0.15 to 0.51%), P <0.07% (typically 0.002 to 0.02%) and S <0.05%.

The following Table 6-1 shows assay grades indicated by testwork completed for FE1 head grade, magnetic concentrate, and non-magnetic tails. All impurities in concentrate are below the upper limits.

Table 6-1: Feed & Concentrate Grades (P_{100} -150um) Fe and Major Impurities

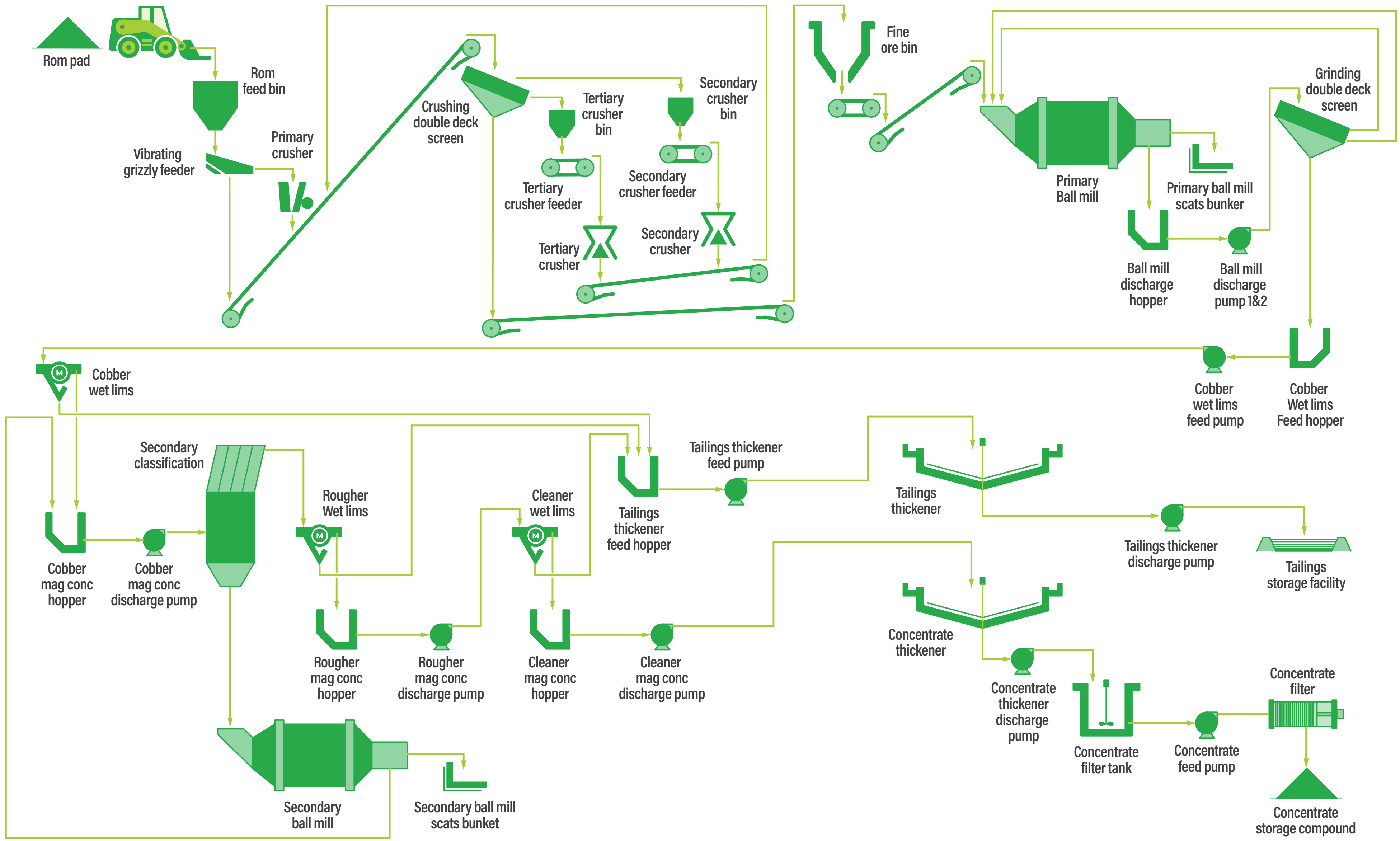
Product	Fe	SiO_2	Al_2O_3	P	S
FE1 Head Grade	26.14	49.09	4.97	0.051	0.079
Final Concentrate	70.0	1.78	0.39	0.002	0.034
Non-Mag Tails	7.2	69.98	6.86	0.073	0.178

This process design excludes the requirement for the tertiary classification and a regrind section that was incorporated into the CWM option and is indicated to reduce the operating costs by approximately 17% compared to that option.

The facility will include the following: -

- Three stage crushing, operating a single 12-hour Dayshift.
- FOB with capacity of 7,500 tonnes.
- Primary grinding and classification by screens to produce material at -1mm.
- Coarse wet "Cobber" Low Intensity Magnetic Separation (LIMS) to reject at least 40% of mass as Non-Magnetic tailings.
- Secondary grinding of "Cobber" LIMS Magnetic concentrate and classification by Reflux Classifier to produce material at -150um.
- Rougher LIMS of -150um product to up-grade the Magnetic concentrate and reject additional Non-magnetic tailings.
- Cleaner LIMS of rougher LIMS Magnetic product to produce -150um magnetite concentrate of 70% Fe (which can be sold into the steel making industry, including "Green Steel") and reject additional Non-magnetic tailings.
- Concentrate thickening and filtration.
- Tailings disposal to a paddock style TFS.
- Reagent storage and distribution.
- Water and air storage and distribution.

Figure 6-2: Process Flow Diagram - 2.4 Mtpa Plant



6.3 SUMMARY OF MAJOR EQUIPMENT

A summary of major equipment is detailed in Table 6-2

Table 6-2: Summary of Major Equipment

Equipment	Number	Unit Installed Power (kW)	Total Installed Power (kW)
ROM Feed Bin – 250t	1	-	-
Apron Feeder – FLSmidth AFD4 1500mm W x 8000mm L	1	22	22
Scalping Screen – Metso LH1536-1G	1	55	55
Primary Crusher – Metso Jaw Crusher C150 Quarry	1	200	200
Secondary Crusher – Metso HP5 Std head	1	500	500
Tertiary Crusher – Metso HP5 fine head	1	500	500
Double Deck Sizing Screen Metso MF 3673-2	1	55	55
Fine Ore Bin – 37.5 hr. live capacity (7,500 t)	1	-	-
Reclaim Feeders	2	11	22
Primary Ball Mill Sedgman 13ft Dia x 19ft EGL	1	1500	1500
Double Deck Sizing Screen Metso MF3085-2	1	55	55
Primary Cobber Steinert wet LIMS	2	7.5	15
Secondary Ball Mill Sedgman13ft Dia x 19ft EGL	1	1500	1500
Secondary Classification - FLSmidth Reflux Classifier	1	-	-
Rougher LIMS – Steinert 1220mm D x 3600mm W	1	7.5	7.5
Cleaner LIMS (3 drum) – Steinert 1220mm D x 1800mm W	1	3	9
Concentrate Thickener – FLSmidth Hi-rate 12m Dia	1	3.7	3.7
Concs Filter – FLSmidth Pneumapress	1		
Tailings Thickener – FLSmidth Hi-rate 20m Dia	1	5.5	5.5

6.4 PROCESS DESCRIPTION

6.4.1 Crushing

Crushing is envisaged to be undertaken in a three (3) stage circuit reducing the expected ROM feed size F100 of 650mm to a product size P100 of 12mm (P80 of 7.6mm). The crushing circuit is designed to operate only during the 12-hour Dayshift, seven days per week and be capable of achieving up to 750tph through-put. The overall utilisation will be between 80% to 85% of the 12 hours available.

Ore will be trucked in 93 tonne dump trucks to the ROM pad and tipped onto one of two stockpiles located at the ROM.

It is not intended for trucks to direct tip into the crusher ROM bin.

Blasting will be adjusted to ensure material suits the size of truck selected and deliver the top size of 650mm. Where necessary secondary breakage will be utilised to reduce ore that is greater than 650mm.

Each of the stockpiles will have a capacity of approximately 200,000t, equivalent to one month's mill feed. Stockpile One will be active from a production ore tip perspective with all ore mined from the open pit over the period dumped only onto that stockpile. Stockpile Two will be closed to mining and be utilised for ROM crusher feed until depleted. On depletion of Stockpile Two the functions of each stockpile will be reversed, where Stockpile One will become the source for ROM crusher feed and Stockpile Two become active for dumping of ore from the pit.

Ore will be withdrawn from the ROM feed stockpile by a dedicated Front End Loader (FEL), that will work taking longitudinal strips along the side of that stockpile and will discharge to the ROM bin at the head of the crushing circuit. This should ensure a consistent feed grade and quality for the duration of that stockpile, nominally one month.

The nominal residence time of the ROM bin will be thirty minutes. Ore will be withdrawn from the ROM bin at a measured rate by an apron feeder which will discharge to a vibrating grizzly feeder immediately ahead of a Metso C150 Quarry primary jaw crusher. The grizzly feeder will scalp the jaw crusher feed at nominally 130mm with only grizzly oversize feeding the jaw crusher. Grizzly undersize will bypass the first crushing stage and will be combined with the jaw crusher product. The jaw crusher will operate in an open circuit with a nominal closed side setting of 130mm.

Both jaw crusher product and grizzly feeder undersize will be conveyed to a double deck sizing screen. The nominal deck apertures for the screen will be 35mm for the top deck and 12mm for the bottom deck. Top deck oversize will be conveyed to the secondary crusher feed while the bottom deck oversize will be conveyed to the tertiary crusher feed.

The configuration of the secondary and tertiary crushers will be similar in that they will consist of a single cone crusher being preceded by a feed surge bin and a vibrating feeder. Respective screen oversize will be conveyed from the respective screen deck to the feed surge bin. Ore will be withdrawn from the feed surge bin by a vibrating feeder such that the receiving crusher will operate in choke feed conditions. Nominally, both crushers will be 1,250 mm head diameter Metso HP5 units with the secondary crusher running a 30mm gap and the tertiary crusher running a 14mm gap. Both secondary and tertiary crushers will operate in closed circuit with the sizing screen, discharging their crushed product to the screen feed conveyor for re-sizing.

Screen bottom deck undersize will be conveyed to the Fine Ore Bin with a capacity of 7,500 tonnes.

Tramp metal will be managed within the crushing circuit by the inclusion of magnets on the screen feed and secondary and tertiary crusher feed conveyors. Flag drop metal detectors immediately prior to the secondary and tertiary crusher feed bins will provide non-ferrous metal protection for the cone crushers.

6.4.2 Primary Grinding and Classification

Primary grinding consists of a ball mill in closed circuit with a double deck sizing screen. The primary duty being to reduce the crushed product with a F100 of 12mm (P80 of 7.6mm) to a F80 of 1mm (P80 of approx. 625um).

Crushed ore from the FOB will be reclaimed at a measured rate via a belt feeder and transferred to the mill feed conveyor. A weightometer on the mill feed conveyor will monitor the feed rate to the mill.

The primary ball mill product will be discharged through a trommel screen to remove entrained grinding ball scats, with trommel underflow directed to the primary ball mill discharge pump hopper. Trommel oversize, inclusive of the entrained grinding ball scats, will report to a scats bunker for later disposal.

Pulp from the primary mill discharge hopper will be pumped to a double deck sizing screen. The nominal deck apertures for the screen will be 3mm for the top deck and 1mm for the bottom deck. Both the top deck oversize and the bottom deck oversize will be returned to the primary ball mill feed while the bottom deck undersize, at -1mm, will discharge to the coarse "Cobber" wet LIMS feed pump hopper. Pulp from the "Cobber" LIMS feed pump hopper will be pumped to a splitter box ahead of two (2) "Cobber" LIMS units.

6.4.3 Coarse "Cobber" Wet Low Intensity Magnetic Separation (LIMS)

Combined Cobber LIMS Magnetic concentrate will be pumped to the secondary ball mill discharge pump hopper, while the combined Cobber LIMS Non-Magnetic product will be pumped to the Tailings Hi-rate thickener prior to the thickener underflow being discharged to the tailings storage facility (TSF).

6.4.4 Secondary Grinding and Classification

Pulp from the secondary mill discharge hopper will be pumped to a Reflux Classifier targeting a cut at 150um. The classifier underflow (-1000um/+150um) will be returned to the secondary ball mill feed while the classifier overflow, at -150um, will discharge to the Rougher wet LIMS feed pump hopper to be pumped to one (1) rougher Mag separator.

6.4.5 Rougher Wet LIMS

Pulp from the Rougher LIMS feed hopper will be pumped to a single stage Rougher Mag separator. Rougher LIMS Magnetic concentrate will be pumped to the Cleaner LIMS feed pump hopper, while the Rougher LIMS Non-Magnetic product will be pumped to the Tailings Hi-rate thickener prior to the thickener underflow being discharged to the TSF.

6.4.6 Cleaner Wet LIMS

Pulp from the Cleaner LIMS feed hopper will be pumped to a three (3) stage cleaner Mag separator. Cleaner LIMS Magnetic concentrate will be pumped to the concentrate Hi-rate thickener, while the Cleaner LIMS Non-Magnetic product will be pumped to the Tailings Hi-rate thickener prior to the thickener underflow being discharged to the TSF.

6.4.7 Concentrate Thickening, Filtration and Storage

Pulp from the thickener underflow will be pumped to the concentrate filter feed storage tank, prior to being pumped to a Pneumapress filter. Filter cake will be conveyed to one of two product bins.

6.4.8 Transport to Geraldton Port

Final concentrate will be withdrawn from the product storage bins and loaded into trucks with 100 tonnes capacity to be transported to the port of Geraldton, where it will be stored prior to loading into ships for transport to its destination. If the 100km of unsealed road is sealed prior to processing commencing, then quad trucks with 200 tonne capacity could be utilised for the transport to Geraldton.

6.4.9 Tailings

Non-Magnetic products from Cobber LIMS, Rougher LIMS and Cleaner LIMS are transferred to a Hi Rate Thickener, prior to the underflow being pumped to the tailings storage facility (TSF). Thickener overflow reports to process water storage for recycling within the process plant.

6.5 CONCENTRATE PRODUCTION

A process and magnetite production schedule has been developed based on the 2.4 Mtpa process rate, the variable feed grade as established by the mining schedule, a concentrate grade of 70% FE and Fe recovery, as determined by testwork of 79.1%.

Table 6-3: Process & Magnetite Concentrate Production Schedule

Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Total
Feed Tonnes (Mt)	2.25	2.40	2.40	2.40	2.40	2.40	2.40	0.31	16.96
Feed Grade Fe%	23.06	26.20	26.13	26.87	26.63	27.33	26.61	25.63	26.14
Conc. Tonnes (kt)	585.4	710.3	708.4	728.5	721.9	741.0	721.4	90.4	5,007
Conc. Grade Fe%	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0
Fe Rec'y %	79.07	79.07	79.07	79.07	79.07	79.07	79.07	79.07	79.07

7 Infrastructure

7 Infrastructure

7.1 PROJECT WATER SUPPLY SOURCES

7.1.1 Preliminary Water Supply Investigations

The makeup water requirement for the FE1 Project with a treatment rate of 2.4 Mtpa is estimated at one gigalitre per annum. Preliminary investigations were carried out by Athena to determine potential water sources to meet this requirement. This work assumed up to a two gigalitre requirement based on the initial assumption of a five Mtpa processing operation. Reducing the throughput to 2.4Mtpa approximately halves this requirement.

Investigations into local water sources considered the water demands, opportunities, and constraints for the Project. Several potential water sources were identified including:

- The Murchison Palaeochannel
- The Byro Sub Basin, (Keogh-Ballythanna aquifer)
- The Minilya Palaeochannel
- The Yarra Yarra Palaeochannel.

A water source development strategy was devised, with indicative cost estimates and timelines to satisfy the requirements of the FE1 Project.

7.1.2 Murchison Palaeochannel

The Murchison Palaeochannel has been explored by CSIRO and Crosslands Pty Ltd ("Crosslands"). Crosslands established a borefield approximately 100km from the FE1 magnetite deposit, with a licence to extract up to three gigalitres per annum.

The Murchison Palaeochannel varies from 150m to 200m in depth and, based on the length of channel, is likely to contain significant resources. DWER mapping indicates the water quality is likely to be between 3,000 and 7,000 mg/L total dissolved salts.

The closest part of the palaeochannel is due east of the Project area, about 45km from the FE1 magnetite deposit. Although there is likely to be significant water available the distance to the Project area is large and pipeline costs high.

7.1.3 Byro Sub Basin

Assessment of the Byro Sub Basin was completed in 2011 by Global Ground Water, a subsidiary of Australian Bore Consultants Pty Ltd. The groundwater assessment concluded that there were sufficient groundwater resources in the Byro Sub-basin to meet an extraction of up to 37 gigalitres per annum over 30 years within the Keogh–Ballythanna Aquifer.

The Study by Global Ground Water recommended allocation from the Byro Sub-basin for the Mitsubishi, formally Crosslands, Jack Hills Project. The Department of Water placed strict monitoring conditions to ensure the aquifer performed as modelled. Presently, no water extraction has been undertaken as the Project is yet to advance. Although there are sufficient groundwater resources, the distance to the Project area is large and pipeline costs would be high.

7.1.4 Minilya Palaeochannel

This unexplored palaeochannel is situated approximately 30 km north of the Project and is likely to represent the trunk channel in the region. This palaeochannel's depth is unknown, however based on analogies in the region, it is loosely estimated at up to 100m deep. DWER mapping indicates the water is of excellent quality, with total dissolved solids ranging from 500 to 1,000 mg/L. Although 30km from FE1, this Palaeochannel is considered a reasonable option for the Project, and a good contingency area for water exploration if necessary.

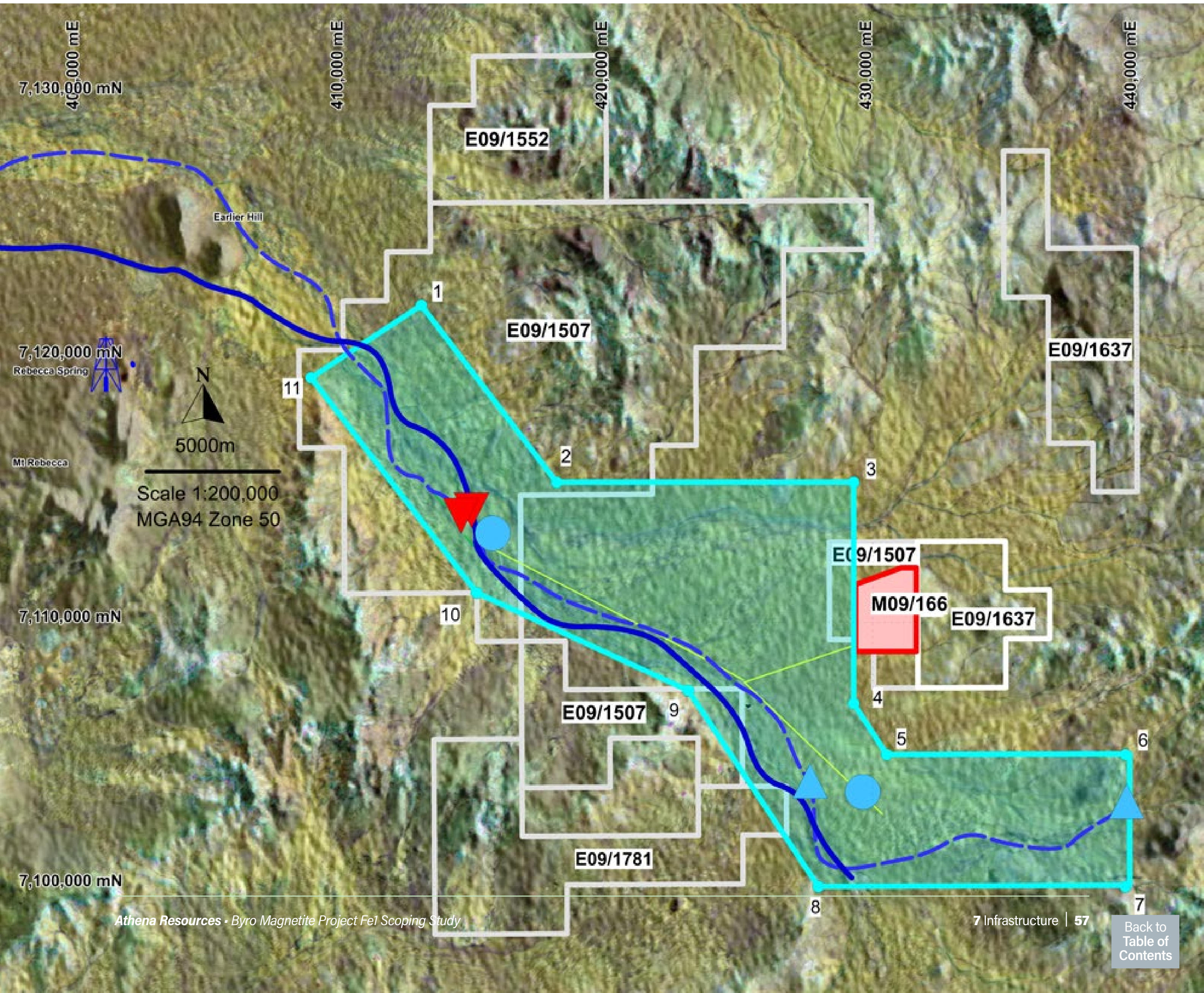
7.1.5 Yarra Yarra Palaeochannel

The Yarra Yarra Palaeochannel runs from southeast to northwest through the Byro Project's tenements passing within five kilometres of the FE1 magnetite deposit. Due to its proximity, this option is considered the most viable due to the low capital expenditure requirement.

The position of the Yarra Yarra Palaeochannel has been interpreted from several geophysical surveys, including airborne electromagnetic (VTEM), historic TDEM, regional seismic, and more recent gravity survey with inversion modelling. This has also been partially confirmed with RC drilling. The Yarra Yarra Palaeochannel feeds into the Minilya Palaeochannel and Byro Sub Basin aquifers.

The paleochannel extends within the project's water search license area for 30km in length, (Figure 7-11).

Figure 7-11: Yarra Yarra Paleochannel Water Search Area



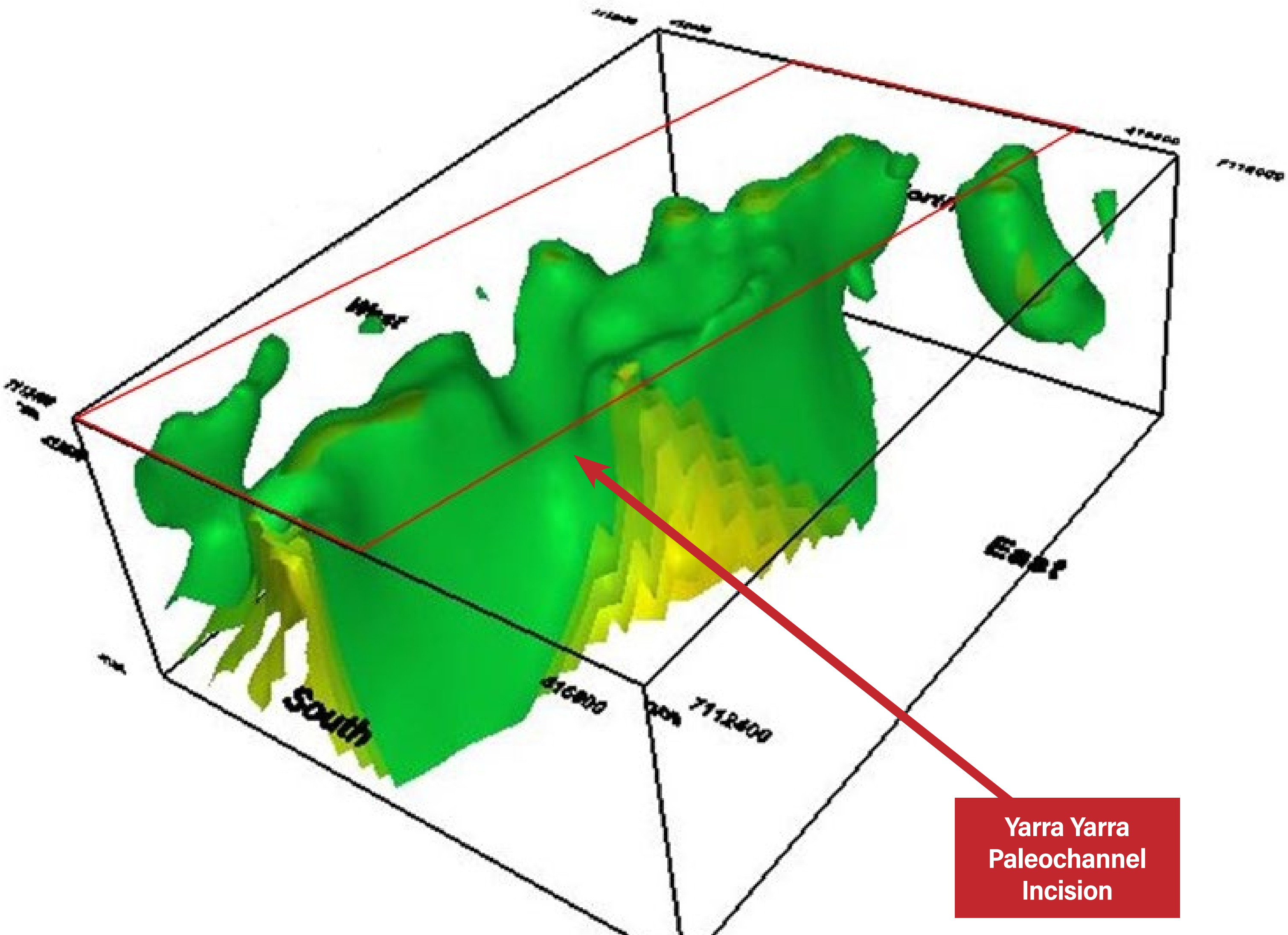


Figure 7-2: 3D Inversion Modelling

Exploration drilling (AHRC0019, and AHRC0020) for base metal targets to the northwest of the Byro Homestead, encountered significant volumes of groundwater within the approximate position of the Yarra Yarra Palaeochannel to depths of over 120m. In the process of assessing these targets gravity surveying and inversion modelling was carried out. This modelling was successful in delineating the target layered intrusion, and highlighted a low-density incision in the basement, possibly confirming position of the channel.

Murchison Shire data for draw down from public works recorded a sustained extraction over a 12-day period of up to 420kl per day. This was from two areas along the channel within 20km from FE1 within the water search licence area.

Water ingress data into the palaeochannel is supported by Bureau of Meteorology rainfall data over approximately 100 years.

In 2011, Geological Surbey of Western Australia (GSWA) carried out the YOM 2D Seismic Surveys across broad regional areas. One part of this series of surveys were conducted through the project area with modelled basement profile indicating an incision correlating with the approximate position of the Yarra Yarra Creek and Palaeochannel.

While is difficult to determine accurate contained water volumes from the Yarra Yarra Palaeochannel, the limited available data is suggestive that it has the potential to be a viable water source for the FE1 Project.

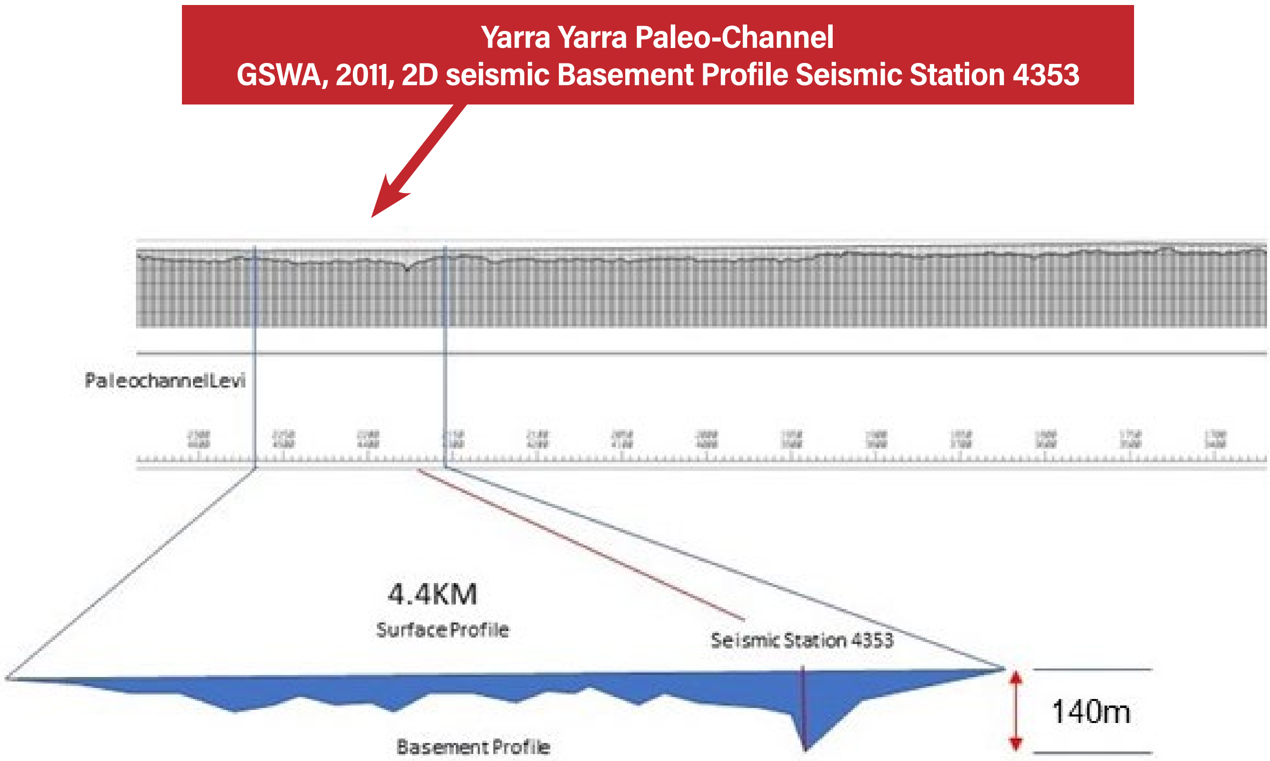


Figure 7-3: Seismic Profile of the Yarra Yarra Paleochannel

To further develop this water resource, cost estimates have been obtained for a detailed airborne TDEM survey to model the Palaeochannel. This data is integral for the targeting of a comprehensive program of test bores incorporated into an H3 Hydrogeological Study.

The outcome of investigations to date is sufficiently positive to proceed to application for a 5C License for extraction to confirm draw down, recharge and sustainability of project water supply. This work will include environmental, and stakeholder impacts that result from the establishment of the bore field.

7.2 WATER SUPPLY REQUIREMENT

The water supply investigation was based on the requirement of two gigalitres per annum for the five Mtpa Process Plant option being considered at that time.

The supply of up to two gigalitres per annum was indicated to require an installed bore field capacity of 112 L/s. This was based on a minimum sustainable capacity of 84 L/s to allow for 75% pumping duty cycle. A provision for an additional 25% standby bore capacity for maintenance was also included in the design specifications.

An average pump installation depth of 120m was estimated to likely be required with study indicating potential yields of 12 L/s per bore. Actual sustainable yields were approximated to vary between 8 to 16 L/s depending on the individual bore efficiency. Test pump CRT yield and modelling was not undertaken as part of the investigation and as such are required to be completed to confirm the estimated sustainable bore field yield.

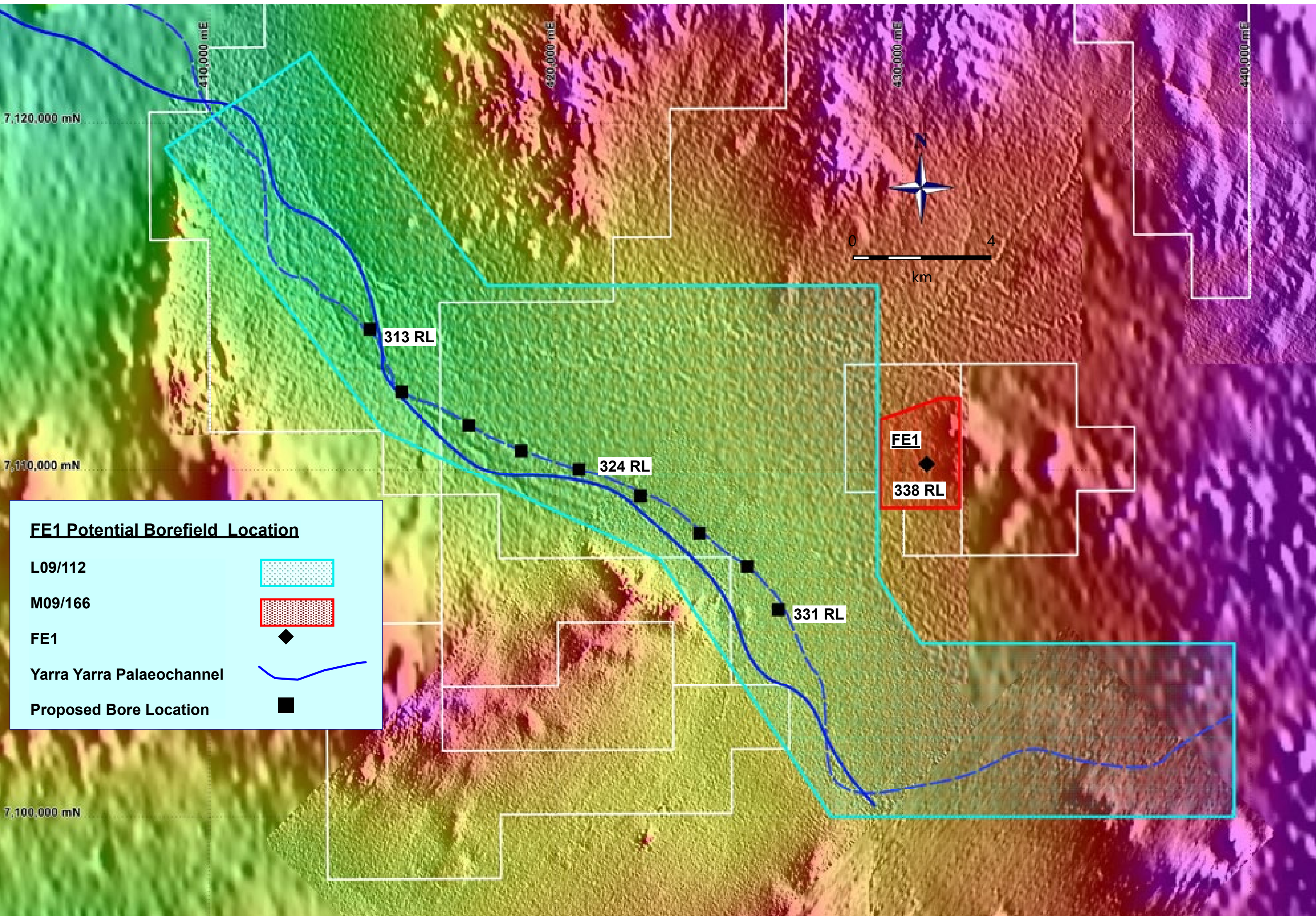
The investigation indicated that nine water bores would be required for a five Mtpa production scenario. Capital expenditure estimates for a nine bore field included drilling and installation of the bore field, incorporating solar/diesel hybrid bore pump systems, pipework, pumps, and control system.

With base case and reasonable assumptions of production capacity, it was estimated that nine production bores would likely be required over 17km of the length of the palaeochannel.

Based on the study indicated capacity of 325kl of water per channel kilometre per day and 9 production bores, a minimum channel length of 17km was indicated to be required to be exploited. The interpreted paleochannel extends within the project water search license area for 30km providing a more than adequate length of channel for project requirements, (Figure 7-4).

Based upon the above and for a water supply of 1 GL/year, as indicated to be required for a 2.4 Mtpa process plant, from the trunk channel, a borefield of four to five production bores will be required.

Figure 7-4: FE1 Bore Field and Pipeline



Based upon the above and for a water supply of 1 GL/year, as indicated to be required for a 2.4 Mtpa process plant, from the trunk channel, a borefield of four to five production bores will be required.

This Scoping Study utilises a bore field of five bores with each bore spaced 2 km apart, being sites 3 – 7 from (Figure 7-4)

7.3 WATER USE

7.3.1 Potable Water

Reverse osmosis will be used to prepare drinking water from the bore field.

7.3.2 Raw Water Input

Make-up water from the bore field is estimated at 0.8 GL/year, based on details contained in the Process Plant Mass Balance in the Study. The raw water requirements will be met by bore water, which will be pumped from the bore field to the raw water tank. Raw water pumps (duty/standby) will deliver water from the tank to the processing facility and firefighting services. The same suction header pipe as used for the raw water pump will feed a diesel driven fire water pump that will provide firefighting capacity in case of power outage.

7.3.3 Water Recovery Circuit

The project currently assumes that about 50% of water used at the Project is recovered and re-used and an overall water use of 0.48 kL per ton of ore.

This represents a very water-efficient mine. Contingency water storage has been included in the process tank should the Project not achieve the planned water efficiency.

7.3.4 Water Retained in Solids sent to TSF

The Project Study provides an estimate for the moisture content retained in the TSF. The tailings slurry will be thickened to an underflow pulp density of 60% solids. By using thickeners and dry stacking the moisture content in the TSF will be reduced to around 25%.

Water reclaimed from the TSF will also be returned to the plant for process water by the tailings decant pump.

7.3.5 Process Water

A process water tank with capacity of 10,000m3 and a freshwater tank with capacity of 1,500m3 are designed to be built to reserve water for mineral processing production and fire protection. Tailings decant water will be pumped from the TSF to the process water tank. Overflow from the thickeners will also report to this tank. Supplementary water, to suit the process water requirements, will be added to the process water pond via the raw water supply.

7.3.6 Production Drainage

Production drainage is collected and recycled via return water from the tailings pond, plant runoff and pit dewatering. Initial suspended particle removal will be by settlement. The final stage of treatment by filtration and ph. adjustment.

7.3.7 Pit Dewatering

Water has been encountered in all drill holes within the mineral resource. Development of the FE1 pit will need dewatering to extract the ore.

Dewatering will be greatest in the early years of mining, but typically later exaction rates decline. The sustainability of the FE1 pit dewatering is unknown and is not factored into the water supply calculations. An assessment of the likely pit dewatering will be carried out as part of the hydrogeological investigations.

7.3.8 Dust Suppression Around Site

Dust suppression water requirements vary significantly considering road material, climate, traffic type and frequency. While difficult to estimate accurately, dust suppression requirement is estimated between 20 to 100 kL/day per km of haul road depending on net evaporation rate through the year (averaging about 50 kL/day per km of road). Allowance per 15 km of haul roads, including pit and waste dumps, the FE1 project dust suppression needs are in the order of 0.3 GL/year.

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7.3.9 Moisture Content in Ore

The Project will be targeting unweathered magnetite in crystalline formations. There is unlikely to be any significant water contained in the ore.

7.3.10 Moisture Contained in Magnetite Concentrate

The final magnetite product will target a contained moisture content of 7%, and as such will retain 0.050 GL per year for 720,000 tpa of concentrate produced.

7.3.11 Construction Water

During construction, the Project will need a water supply for dust suppression, soil compaction and concrete batching. Actual measured volumes of construction water consumed during construction of the Thunderbox and Gruyere mine projects were 0.3 GL over a 12-month period, which equates to roughly 27 water truck movements a day (30 kL loads). The Byro Iron Project is not as large as either of these two. It is anticipated the project would need 0.2 GL/year for construction (i.e., equivalent to 16 water truck movements a day).

While most of the construction water used for dust suppression and soil compaction can be of almost any salinity, the project needs at least 100 kL/day for concrete batching and black top construction, which must be low salinity (less than 2000 mg/L). This is unlikely to be a significant issue since most of the groundwater in the tenements is indicated to be low salinity by DWER and pastoral records.

7.4 SIGNIFICANT COMMENTS AND ADDITIONAL WORK REQUIRED

Significant Comments: -

- A greater understanding of the Yarra Yarra paleochannel is required, specifically hydrogeology and hydraulic parameters of the channel.
- Precision bore location within the bore field area will require completion and analysis of a TDEM geophysical survey.
- The final cost estimate for development of the bore field to a Definitive Study level will be refined on completion of test and production bore drilling and ground water modelling.
- The total water demand for the project is based around the processing model. As part of a definitive study this will be reassessed in more detail, with better estimates made for water losses through evaporation and process inefficiency.
- Exploration to date has identified the Yarra Yarra paleochannel as a likely water source. The availability of water supply from the paleochannel is yet to be determined from an exploration program designed to prove up 5% of the total water demand.

The following additional work is required: -

- TDEM geophysical survey
- Completion of test and production bore drilling
- Completion of a hydraulic test program
- H3 Hydrogeological Study
- Ground water modelling and dewatering development
- Feasibility and impacts assessment report
- Completion of reporting for water licences conforming with Department regulations.
- Completion of hydrogeological reporting associated with groundwater well licensing.

7.5 POWER SUPPLY

Power generation for the project will be provided under a Build, Own & Operate (BOO) contract for supply, installation, and operation of a hybrid gas/solar farm with battery storage power station.

Pacific Energy have provided a budget proposal that indicates an all-inclusive charge of $0.3181 per kWhr for power consumed. This all-inclusive charge includes an annual fixed charge of $6.2M with the balance being a variable charge related to kWhr per tonne treated.

To meet the requirements for a reliable source of power over the contract term of 15 years, Pacific Energy's proposal includes the following plant configuration to provide the Hybrid Power Station: -

Thermal Plant: -

- 7 x CAT G3512H @ 1,500 kW each (gas fueled) or equivalent.
- 2 x Cummins KTA50 @ 850 kW each (diesel fueled).

Solar Farm: -

- Rated at 7.15 MWdc.
- Single-axis tracking.

BESS: -

- 2,600 kWh power BESS.

7.6 NON-PROCESS INFRASTRUCTURE

Administration, warehouse/stores, and workshop buildings have been included in both capital and operating costs.

7.7 ACCOMMODATION

A permanent camp for 180 personnel has been included in the costs.

8 Capital Cost Estimate

8 Capital Cost Estimate

8.1 INTRODUCTION

The capital cost estimates presented in the study relate to capital works to construct and commission a new magnetite processing plant and support infrastructure facilities. Design criteria and the flowsheet for the process and infrastructure costs are based on the metallurgical testwork results as detailed in Section 4 Metallurgy.

In addition to the processing facilities, allowances have been made within the estimates for the construction of infrastructure that will be required to support the processing plant. Included in these allowances are tailings disposal pumping, and reticulation system, tailings return water pumping system, plant buildings, plant process and potable water supplies, site access road and site drainage system.

Budget estimates were obtained for the capital and operating costs for the following: -

- Mine site laboratory.
- A BOO (Build, Own & Operate) hybrid Power Station utilising gas generation plus solar power.

An estimate was obtained for a permanent 180 bed camp.

8.2 EQUIPMENT

Budget quotes were obtained for the major items of processing equipment.

8.3 BASIS OF ESTIMATE

8.3.1 Estimate Accuracy

The capital cost estimate has been prepared to an accuracy of +/-30%

8.3.2 Base Date

The base date for capital cost estimate is December 2023.

8.3.3 Estimate Currency

The base currency for capital estimate is Australian Dollars ($A)

8.3.4 Earthworks, Structural, Steel, Equipment & Piping

Costs for these were all factored from the March 2023 GRES review of Capital and Operating cost for a 2.4 Mtpa magnetite processing plant.

8.3.5 Electrical and Instrumentation

Electrical and Instrumentation costs were factored from the direct costs.

8.4 ESTIMATE SUMMARIES

The scope of the study was to develop a process to treat the high-grade FE1 magnetite ore to produce a high-grade coarse magnetite concentrate of 70% Fe for sale into the steel making industry, based on the production of a coarse -150um magnetite concentrate at a process feed rate of 2.4 Mtpa.

This is indicated to deliver an average of 720,000 dry tonnes per year of concentrate. (Actual wet concentrate will be closer to 770k wet tonnes.)

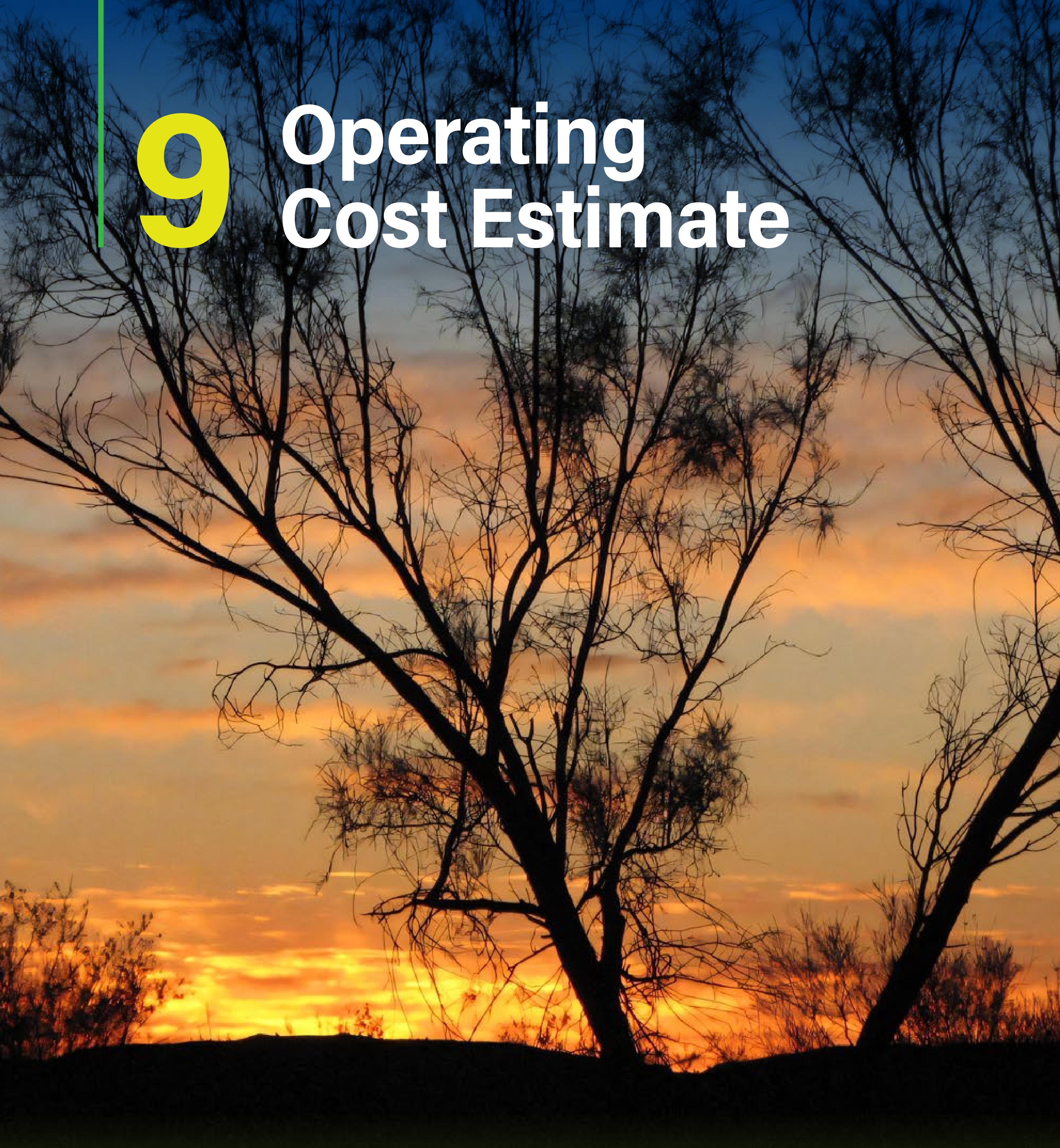
The capital cost has been estimated to be $111 Million.

A summary of the estimated capital cost for a process plant for Steel Making concentrate is given in Table 8-1.

Table 8-1: Capital Cost Estimation

Cost Centre	Description	Total Cost $A
Direct Costs		
AREA 200 -	Plant Site Bulk Earthworks	5,774,355
AREA 310 -	Crushing	15,538,833
AREA 320 -	Ore Storage	9,275,219
AREA 330 -	Primary Grinding, Classification, Cobber LIMS	5,636,543
AREA 331 -	Secondary Grinding, Classification	4,421,054
AREA 332 -	Rougher & Cleaner LIMS	610,2216
AREA 339 -	Plant Piping	6,480,984
AREA 342 -	Concentrate Treatment	9,623,676
AREA 360 -	Reagents	622,804
AREA 370 -	Power & Reticulation	6,412,022
AREA 390 -	Water Supply	1,308,447
AREA 400 -	Tailings	1,891,589
AREA 420 -	Compressed Air	433,349
AREA 430 -	Administration Buildings	1,151,457
AREA 440 -	Workshop / Stores	935,776
AREA 460 -	Laboratory (One-Time Mobilisation)	204,405
AREA 480 -	Permanent Camp	19,252,107
AREA 804 -	Construction Equipment	4,028,537
Total Direct Costs		**$93,601,372**
Indirect Costs		
AREA 500 -	Engineering	12,786,845
AREA 510 -	Commissioning	709,470
AREA 600 -	Preliminaries & General	3,776,224
Total Indirect Costs		**$17,272,540**
Total Capital Estimate (+/-30%)		$110,873,912

9 Operating Cost Estimate



9 Operating Cost Estimate

9.1 PROCESS AND ADMINISTRATION

The process operating costs are representative of and cover all processing from retrieving ore from ROM ore stockpiles to concentrate storage prior to transport to Geraldton.

All personnel associated with the AHN management of operations and the site are also incorporated in these costs. This includes AHN mining personnel.

The costs have been broken down into five discrete cost centres (operating consumables, maintenance materials, labour, power, and general & administration). The operating costs were developed to achieve an accuracy of +/-30% and are based upon pricing obtained during the second half of 2023.

9.1.1 2.4 Mtpa Steel Concentrate

This "Process Plant Operating Cost Estimate" has been prepared for the process to produce -150um concentrate for sale into the Steel Making Industry.

The following production criteria was used to produce an annual average of 720 thousand tonnes of concentrate: -

- Production Throughput. 2.4 Mtpa
- Feed Grade. 26.5% Fe (17M tonnes mined).
- Concentrate Grade. 70.0% Fe
- Concentrate Fe Recovery 79.07%

The operating costs to an accuracy of +/-30% associated with producing a -150 micron magnetite concentrate from ROM ore is calculated to be $38.9M pa.

This equates to $16.19 per tonne of ROM ore milled and is shown in Table 9-1 and $54.04 per tonne of concentrate produced as shown in Table 9-2:

Table 9-1: Site Operating Costs - $/t Milled.

Byro 2.4 Mtpa Plant for -150um Concentrate	Total Cost		% Fixed	Fixed		Variable	
	A$/a	A$/t milled		A$/a	A$/t milled	A$/a	A$/t milled
Operating Consumables	5,981,105	2.49	0.0%	0	0.00	5,981,105	2.49
Maintenance Materials	4,658,045	1.94	24.3%	1,133,038	0.47	3,525,007	1.47
Labour	10,139,400	4.22	100.0%	10,139,400	4.22	0	0.00
Power	10,577,023	4.41	59.2%	6,239,676	2.60	4,337,347	1.81
General & Administration	7,498,756	3.12	100.0%	7,498,756	3.12	0	0.00
Total	**$38,854,329**	**$16.19**		**$25,010,870**	**$10.42**	**$13,843,459**	**$5.77**

Table 9-2: Site Operating Costs - $/t Conc Produced

Byro 2.4 Mtpa Plant for -150um Concentrate	Total Cost		% Fixed	Fixed		Variable	
	A$/a	A$/t con		A$/a	A$/t con	A$/a	A$/t con
Operating Consumables	5,981,105	8.32	0.0%	0	0.00	5,981,105	8.32
Maintenance Materials	4,658,045	6.48	24.3%	1,133,038	1.58	3,525,007	4.90
Labour	10,139,400	14.10	100.0%	10,139,400	14.10	0	0.00
Power	10,577,023	14.71	59.2%	6,239,676	8.68	4,337,347	6.03
General & Administration	7,498,756	10.43	100.0%	7,498,756	10.43	0	0.00
Total	**$38,854,329**	**$54.04**		**$25,010,870**	**$34.79**	**$13,843,459**	**$19.26**

Total operating cost is split between a fixed component at 64.4% and variable of 35.6%.

9.2 PROCESS OPERATING COSTS

9.2.1 Consumables

Consumption of bulky items like crusher liners, mill liners, screen decks, etc. were estimated from vendor quotations, while consumption rates of consumables not quoted were estimated from the GRES 2023 review study. Minor items were estimated from previous studies.

The breakdown of the five discrete cost centres (operating consumables, maintenance materials, labour, power, and general & administration) for a process plant treating 2.4 Mtpa of high-grade ore to produce a coarse -150-micron magnetite concentrate (suitable for Steel Making) are summarised in Appendix 2.

The annual consumable costs are summarised in Table 9-3.

Table 9-3: Consumable Cost Estimate

Consumable Summary	Total A$	A$/t milled
CRUSHING		
Primary Crusher - Fixed & Moving Jaw Liners	154,000	0.064
Secondary Crusher - Mantle & Liners	110,000	0.046
Tertiary Crusher - Mantle & Liners	132,000	0.055
Apron Feeder - Wear Liners	2,063	0.001
Scalping Screen – Screen Decks	3,093	0.001
PROCESS PLANT		
Primary Ball Mill – Steel Liners	1,072,500	0.447
Primary Ball Mill – Grinding Media	1,425,600	0.594
Double Deck Screen – Top & Bottom Screen	9,902	0.004
Secondary Ball Mill – Steel Liners	594,000	0.248
Secondary Ball Mill – Grinding Media	997,920	0.416
Secondary Reflux Classifier	82,500	0.034
Flocculant – Concentrate	9,221	0.004
Flocculant - Tailings	161,709	0.067
Mill Lubricants	160,000	0.067
General Supplies	72,000	0.030
Operator Consumables	8,800	0.004
Mobile Equipment (fuel)	985,797	0.411
TOTAL CONSUMABLES	**$5,981,105**	**$2.492/t milled**
		$8.319/t Concs

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9.2.2 Maintenance Materials

All maintenance cost estimates have been calculated by applying factors against the various processing units within the capital equipment costs as detailed in Section 8.

Table 9-4: Maintenance Materials Cost Estimate

Area	Capital Supply Cost $	Factor	Total A$	$A/t milled
Plant Site Bulk Earthworks	5,774,355	3.0%	173,231	0.072
Crushing	15,538,833	6.0%	932,330	0.388
Ore Storage	9,275,219	6.0%	556,513	0.232
Primary Grinding, Classification, Cobber LIMS	5,636,543	6.0%	338,193	0.141
Secondary Grinding, Classification	4,421,054	6.0%	265,263	0.111
Rougher & Cleaner LIMS	610,216	5.0%	30,511	0.013
Plant Piping	6,480,984	3.0%	194,430	0.081
Concentrate Treatment	9,623,676	5.0%	481,184	0.200
Reagents	622,804	3.0%	18,684	0.008
Power & Reticulation	6,412,022	3.0%	192,361	0.080
Water Supply	1,308,447	3.0%	39,253	0.016
Tailings	1,891,589	3.0%	56,748	0.024
Compressed Air	433,349	3.0%	13,000	0.005
Administration Buildings	1,1151,457	3.0%	34,544	0.014
Workshop / Stores	935,776	5.0%	46,789	0.019
Laboratory (One-Time Mobilisation)	204,405	5.0%	10,220	0.004
Permanent Camp	19,252,107	2.75%	529,433	0.221
Construction Equipment	4,028,537	2.5%	100,713	0.042
Mobile Equipment			481,213	0.201
Contract Labour (Crusher Liners)			90,000	0.038
Contract Labour (Mill Liners)			73,433	0.031
TOTAL MAINTENANCE MATERIALS	**$93,601,372**	**5.0%**	**$4,658,045**	**1.941/t milled**
				6.479/t Concs

9.2.3 Labour

Labour costs include costs associated with employment of all Athena site personnel in management, administration, mining, processing, engineering, stores and purchasing, safety, environment, and security. The AHN estimate does not include operational or management personnel associated with the contract mining operations.

- Site crews would be employed on 14 days on and 7 days off roster.
- Employees would be sourced from FIFO and the local mid-west Geraldton area.
- Most plant operations and maintenance personnel would work a 12-hour day / night roster, while some operators like crusher/ROM loader and engineering personnel would work 12-hour dayshift.
- On costs are 29.0% of base salaries and include superannuation, workers compensation, payroll tax and long service leave.

Camp accommodation and airfares, etc. are included in General & Administration.

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Table 9-5: AHN Labour Cost Estimate

Position	Num.	Base $/person	Total inc. on Costs/person	Total A$	Roster
ADMINSTRATION					
General Manager	1	250,000	322,500	322,500	Days 14: 7
Secretary/Receptionist	2	80,000	103,200	206,400	Days 14: 7
Senior Accountant	1	120,000	154,800	154,800	Days 14: 7
Hr./Training/Environment Officer	2	100,000	129,000	258,000	Days 14: 7
Admin, Mining & Met Clerk	3	80,000	103,200	309,600	Days 14: 7
Purchasing / Warehouse Officer	3	95,000	122,550	367,650	Days 14: 7
Security Officer	3	95,000	122,550	367,650	Days 14: 7
Sub-Total	**15**			**$1,986,600**	
PROCESS					
Process Operations					
Process Superintendent	1	200,000	258,000	258,000	Days 14: 7
Senior Metallurgist	1	165,000	212,850	212,850	Days 14: 7
Shift Supervisor	3	145,000	187,050	561,150	Day/Night 14:7
Crusher/FEL Day-shift Operator	3	120,000	154,800	464,400	Days 14: 7
Grinding Shift Operator	3	120,000	154,800	464,400	Day/Night 14:7
LIMS & Classifier Shift Operator	3	120,000	154,800	464,400	Day/Night 14:7
Concentrate Area Shift Operator	3	120,000	154,800	464,400	Day/Night 14:7
Conc Storage/Loading Operator	3	120,000	154,800	464,400	Day/Night 14:7
Day Crew	3	95,000	122,550	367,650	Days 14: 7
Sub-Total	**23**			**$3,721,650**	
Process Maintenance					
Maintenance Superintendent	1	190,000	245,100	245,100	Days 14: 7
Plant Maintenance Planner	1	145,000	187,050	187,050	Days 14: 7
Electrical Supervisor	1	160,000	206,400	206,400	Days 14: 7
Mechanical Supervisor	1	160,000	206,400	206,400	Days 14: 7
L/H Electrician	1	140,000	180,600	180,600	Days 14: 7
L/H Mechanic	1	145,000	187,050	187,050	Days 14: 7
Electrician/Instrument Technician	2	140,000	180,600	361,200	Days 14: 7
Mechanical Fitter	2	140,000	180,600	361,200	Days 14: 7
Boilermaker/Welder	3	140,000	180,600	541,800	Days 14: 7
Trades Assistant	3	95,000	122,550	367,650	Days 14: 7
Sub-Total	**16**			**$2,476,800**	
MINING					
Mining Operations (Athena Staff)					
Mining Manager	1	210,000	270,900	270,900	Days 14: 7
Geology Manager	1	170,000	219,300	219,300	Days 14: 7
Mine Production Planning Eng	1	120,000	154,800	154,800	Days 14: 7
Graduate Mining Eng (Design/Project)	1	85,000	109,650	109,650	Days 14: 7
Drill & Blast Engineer	1	120,000	154,800	154,800	Days 14: 7
Senior Geologist	1	140,000	180,600	180,600	Days 14: 7
Mine Geologist	1	125,000	161,250	161,250	Days 14: 7
Field Tech (Incl Ore Spotters)	2	75,000	96,750	193,500	Days 14: 7
Senior Mine Surveyor	1	125,000	161,250	161,250	Days 14: 7
Mine Surveyor	1	110,000	141,900	141,900	Days 14: 7
Mine Tech/Survey Assistant	2	80,000	103,200	206,400	Days 14: 7
Sub-Total	**13**			**$1,954,350**	
Total	**67**			**$10,139,400**	
				$4.225	Cost/tonne milled
				$14.103	Cost/tonne Concs

Table 9-6: Summary AHN Labour Cost Estimate

Section	People	Total A$M	$A/t milled	$A/t Concs
Administration	15	$1.99	0.828	2.763
Operations	23	$3.72	1.551	5.177
Maintenance	16	$2.48	1.032	3.445
Mining (Excluding Contractor)	13	$1.95	0.814	2.718
Total	**67**	**$10.1**	**$4.225**	**$14.103**

9.2.4 Power

Power consumption for individual items of equipment have been calculated from required installed power as included in vendor quotations. Individual equipment consumptions were summed and multiplied by the area operating hours to give a consumption estimate.

The installed and consumed power data has been reviewed by Pacific Energy who have provided a quote to provide a Build, Own & Operate (BOO) hybrid solar/gas power station. These costs are included in the overall power costs.

The cost for power consumed has been calculated by Pacific Energy at $0.3181 per kWh.

Table 9-7: Power Cost Estimate

AREA	Installed kW	Consumed kW	Annual Usage kWH	Annual Cost $
Crushing – Dayshift Only 12hrs	1,339	995	3,981,174	1,266,411
Fine Ore Storage	44	28	220,617	70,178
Primary Grind, Classifier & Cobber LIMS	1,763	1,746	13,971,536	4,444,346
Secondary Grind, Classifier & LIMS	1,629	1,574	12,591,898	4,005,483
Concentrate Thickening & Filtration	191	76	605,472	192,601
Tailings Disposal	132	56	446,137	141,916
Reagent Area	14	7	55,043	17,509
Water Services	304	123	987,875	314,243
General Services	74	27	214,378	68,194
Administration, Workshop & Store	9	6	45,461	14,461
Laboratory	6	5	37,438	11,909
Infrastructure	18	12	93,595	29,773
Total Process Plant	**5,521**	**4,654**	**33,250,623**	**10,577,023**

Table 9-8: Power Cost Summary

	Distribution	Annual Power $
Fixed Power Charges	59%	6,239,676
Variable Power Charges	41%	4,337,347
Total Process Plant	**100%**	**10,577,023**

9.2.5 General and Administration

General and Administration costs have been estimated.

These include: -

- Travel and accommodation,
- Catering and camp costs,
- Consultant fees,
- Miscellaneous personnel costs including first aid & medical, safety clothing, recruitment, and training,
- Worker's transport,
- General office expenses,
- TSF expansion costs.

Table 9-9: General and Administration Cost Estimate

ITEM	Notes & Comments				Annual Cost $
Site Office	General Costs				50,000
Consultants	General				150,000
Personnel	First Aid & Medical Costs		$50	per person	3,350
	Safety Clothing		$500	per person	33,500
	Recruiting		0.40%	Of Labour Cost	40,558
	Training		$150	per person	10,050
Contracts	Workers Transport				150,000
	Assay – Site Laboratory		$230,341.50	ALS quote/mth	2,764,098
Camp & Travel	Total Travel FIFO & Accommodation				1,300,000
	Total Catering				1,747,200
TFS Expansion			$12.5 M	For 10 years	1,250,000
				Total	**$7,498,756**
				$4.166	**Per tonne Milled**
				$13.907	**Per tonne Concs**
Supporting Calculations					
Camp & Travel					Annual Cost $
Travel FIFO	Two trips per week		$12,500	per trip	1,300,000
Catering	43,680 mandays pa		$40	per man-day	1,747,200
Camp Catering Nos					
Total Personnel	Days On	Days Off	Days On pa	Mandays pa	
180	14	7	242.7	43,680	

9.2.6 Mobile Equipment

The GRES review of the 5 Mtpa Process Plant included a list of mobile equipment, including vehicles, FEL, forklift, various trucks, generators, compressors, etc., but not including the mining contractor, and produced two cost centres as follows: -

- Fuel costs of $767,405 were allocated to Consumable Costs.
- Total maintenance costs of $418,015 which were allocated to Maintenance Costs.

A similar list of has been produced for the 2.4 Mtpa Process Plant. The following amounts are included in this scoping study: -

- Fuel costs of $985,798 allocated to Consumable Costs.
- Total maintenance costs of $481,213 allocated to Maintenance Costs.

10 Iron Ore Pricing and Forecast

10 Iron Ore Pricing and Forecast

10.1 STEELMAKING

10.1.1 Construction Steel Pricing

The most prolific use of Australian Iron Ore is in the production of Steel in China for the construction industry.

The most quoted pricing for this product is the $IODEX_{62}$ which is the price in US$ for one tonne of Iron Ore with a 62% Fe content, delivered to Qingdao in South China. This is some 5,000 nautical miles from Geraldton, and the shipping costs are in the order of US$15 per tonne.

The price for Iron Ore is a combination of the value of the Fe units, the penalty for impurities and a quality adjustment. Based on historic data the calculation of the value of different grades expressed as a multiple of the IODEX62 approximates to that show below.

Table 10-1: Estimated IODEX Ore Value by Fe Grade

Grade	60%	62%	64%	65%	66%	68%	70%
% of $Iodex_{62}$	91	100	112	119	127	148	175

The $IODEX_{62}$ has averaged approximately US$120 per tonne over the past five years and during that time has ranged between US$100 and US$200 per tonne.

Using an IODEX62 of US$120 per tonne CFR China we predict the following prices.

Figure 10-1: Selling Price based on concentrate Grade (US$)

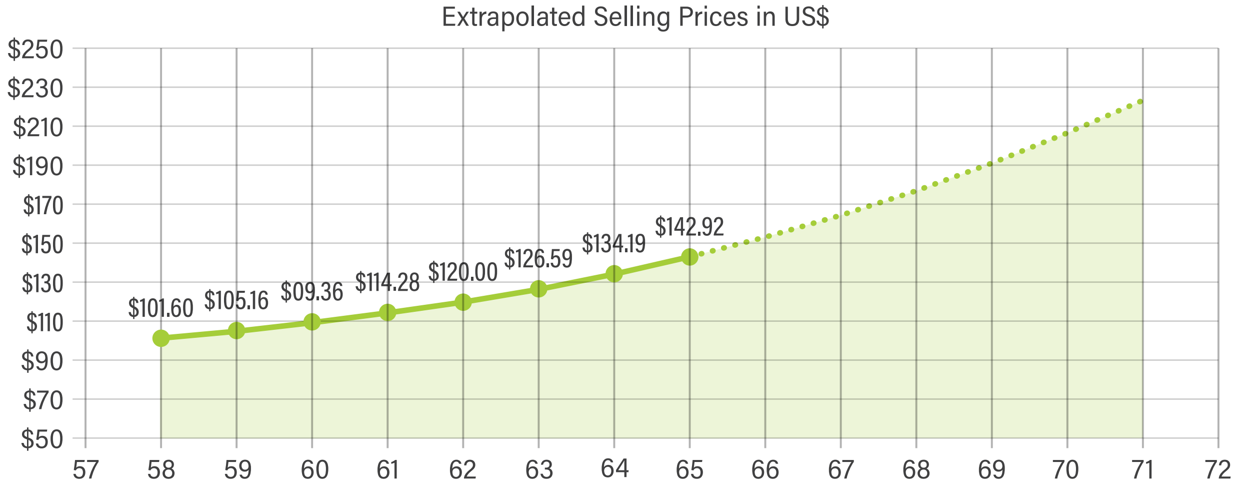


Table 10-2: Estimated CFR China Ore Value by Fe Grade

Grade	60%	62%	64%	65%	66%	68%	70%
CFR China	US$109	US$120	US$134	US$143	US$153	US$178	US$210

Adjusting for Freight and associated costs we would expect a 70% concentrate to sell for US$195 per tonne FOB Geraldton.

10.1.2 Manufacturing Steel

To a lesser extent there is a market for iron ore with low impurities to produce high-quality steel used in the manufacturing industries. Pricing for high quality iron ore is greater than that for construction quality steelmaking.

10.1.3 Green Steel

The subject of "Green Steel" is one of constant speculation and discussion. Green steel refers to the process or processes whereby CO2 emissions are significantly reduced or ultimately eliminated. The world's iron and steel industries account for approximately 8% of total annual global CO2 emissions.

Blast furnace steel making relies on the burning of coal, (fossil fuel) to make coke to be further burnt to create carbon monoxide (a reductant), to remove the oxygen from the iron ore in the blast furnace, Pulverised coal, fuel oil, natural gas, and pulverised plastics are all fuels used in heating the blast furnace, all contributing to CO2 emissions.

The Direct Reduction (DR), iron making process generates less CO2 emissions per ton of iron produced. Coal/coke can be a reductant source, but hydrogen, reformed from natural gas, is another 'preferred' reductant source. (As a fossil fuel, natural gas is not considered green).

A draw-back for the DR iron making process is that for efficient production, the iron ore source needs to be very high grade, (low impurities) and in the form of pellets. Magnetite concentrate as planned from Bryo, is the preferred feedstock for DR pellets. DR iron production is considered Green when compared to Blast Furnace (BF), production.

The Green credentials of DR iron production are enhanced by using hydrogen produced by hydrolysing water using renewable power, with the renewable power also used for 100% of the DR process electricity.

The economics of this Green approach have yet to be tested as no Green DR production facilities currently exist. However, there are projects under construction in Europe to test this process.

DRIVING INFLUENCES

Current Green Steel technology is considerably more expensive to produce steel than traditional Blast Furnace Steel. However, the international political will to reduce CO2 emissions is significant. With a combination of government incentives and penalties, this will ensure Green Steel has a place in the market despite the current cost differential.

For example from 2026, steel exported to the EU from all other jurisdictions will need to surrender a European Carbon Credit (currently ~70EUR) for every tonne of CO2 under the CBAM legislation enacted in November 2023. That is approximated US$150 per tonne of steel and may increase as carbon credits continue to rise in value.

In addition to steel exported to the EU, from 2026, the Union Customs Code defines several special procedures including the import of raw materials for processing and re-export of products. "Inward processing" means that a good imported for processing, may be subject to the CBAM reporting and payment obligations. This means that iron ore imported into the EU could be subject to CBAM penalties, effectively increasing the iron ore price!

Price disrupter: Climate Change- Fossil Fuels

The number one cause of climate change is acknowledged as the burning of fossil fuels. Iron and steel production account for approximately 8% of global CO2 emissions, driven primarily by the burning of fossil fuels.

The United Nations Climate Change conference, COP28 (Dubai December 2023), concluded with a historic agreement to transition away from fossil fuels, triple renewable energy and increase climate finance for the most vulnerable countries. The COP28 agreement aims to keep alive the goal of the Paris Agreement to try to limit long-term global average near-surface temperature to 1.5°C above the pre-industrial era.

It was generally acknowledged that the agreement at COP28 was historic in that – for the first time – it recognized the need to transition away from fossil fuels for the first time. The need to urgently reduce production and consumption of fossil fuels and speed up the transition to renewables was acknowledged in the COP28 Agreement.

There is concern that CO2 emissions keep reaching record levels year-on-year, meaning that temperatures will continue to rise in the coming decades.

It is reasonable to conclude that there will be increasing global pressure to dramatically reduce CO2 emissions from iron and steel making. Development of Green Steel technologies, potentially using hydrogen as a fuel and reductant.

Australian Energy and Climate Minister Chris Bowen has indicated the government would consider replicating Europe's planned carbon border adjustment tariff on imports from countries that are not cutting emissions, in response to industry angst that a domestic emission cap and carbon price would disadvantage trade-exposed firms and shift pollution and jobs offshore.

As a result of this the feedstock for a Direct Reduction facility needs to be no less than 68% Fe, which is a rare commodity.

Blending with the Athena concentrate of 70% Fe would bring to life 66% and 67% ores which would otherwise be unsuitable for DRI.

The Athena processing plant, and prior testwork indicated a concentrate grade of 71% Fe is achievable. The grade increase above 70% does not inherently lose any Fe units in the process, so whilst a few less tonnes of concentrate are produced, the total Fe is relatively unchanged while the processing cost of the ore incurs a marginal increase.

This lends itself to significant opportunities for product blending prior to the pelletising process required for a DRI plant.

Blending 65% with 71% at, say, $140 per tonne and $210 per tonne respectively provide the same combined cost as 68% and has the huge advantage of bringing value to a producer of 65% while providing suitable feedstock for a DRI producer.

Athena is in discussion with Green Steel WA (GSWA) who are evaluating the potential for locating a pelletising plant and subsequently a DRI plant in Mullewa.

AHN modelling suggests iron ore can be delivered from Byro to GSWA's facility in Mullewa at the required grade and at a price that ensures economic viability of both projects individually and collectively.

10.2 COAL WASH MATERIAL

Despite best efforts to phase out coal use in general and particularly metallurgical coking coal, this is unlikely in the next decade or so.

A process now employed to reduce the environmental impact of the combustion of coal is the 'washing' of coal to remove ash and particulate contamination. This increases the efficiency of the coal burnt, thereby reducing the total quantity of carbon dioxide produced for a given power output.

The market is relatively minor compared to that of steelmaking and it only requires about 1kg of Magnetite concentrate to "wash" a tonne of coal.

Current market indications are that Coal Wash grade Magnetite is fetching between A$350 and A$400 per tonne delivered to site. This equates to approximately A$260 to A$310 per tonne FOB Geraldton. This is consistent with the US$195 per tonne being used for the base case.

10.3 OTHER INDUSTRIAL USES

Other specialty uses exist for high-quality Magnetite, but these markets require significant test samples which will not be available until the plant is operational.

At that time these potentially high value but small markets will be explored in detail.

- Iron Powder and Industrial Components
- Automotive and industrial machinery
- Aerospace applications
- Water filtration and purification
- Ammonia and Gas to Liquid conversion
- High Density Concrete
- 3D printing consumables
- Paint Pigments

10.4 PRICING FORECAST

Price expectation is based on an expected $Iodex_{62}$ (concentrate grade of 62% Fe) of US$120 per tonne CFR and with an expectation of a price floor created by the alternative Coal Wash Material and Green Steel markets.

Based on the higher quality and grade of the 70% Fe Byro concentrate, this financial model uses a FOB Geraldton basis of US$195 per tonne being approximately A$300 per tonne at an exchange rate of US$0.65 to one Australian Dollar.

10.5 IODEX TO A$ BY GRADE RANGE

Table 10-3: IODEX FOB Geraldton Estimates

IODEX 62		US$110	US$120	US$130
Calculated 70%		US$192	US$210	US$227
Freight		US$15	US$15	US$15
FOB Geraldton ->		US$175	US$195	US$215
A$ equivalent at 0.6500/USD		$270	$300	$330

11 Financial Analysis

11 Financial Analysis

11.1 MODEL INPUTS

The following parameters have been utilised for the determination of the financial assessment of the project.

Table 11-1: Financial Analysis Inputs

Iodex62 – 62% Magnetite Conc.	US$120
Selling Price FOB Geraldton – 70% Magnetite Conc.	US$195
Exchange Rate USD:AUD	0.6500
Proportion of product sold for DRI pelletising locally	50%
Concentrate stocks	1 week's production
Port stocks	6 weeks deliveries

Ore Stocks are the cumulative effect of mining less drawn for processing.

Physicals and costings are based on monthly data for the first 24 months, quarterly data for the next year and annual data the balance of the project.

In each case a proportionate monthly value has been derived to produce the output on a monthly basis which has then been summarised into Calendar Years.

11.2 PROJECT SUMMARY

The following Table 11-2 is a summary of the overall project physical and economic assessment for the base case scenario of the FE1 scoping study assessment based on an annualised process throughput of 2.4 Mtpa.

All currency is Australian Dollars unless noted otherwise.

Rounding of figures may result in minor differences for some totals.

Table 11-2: Project Summary

Athena FE1 Scoping Study

	Stage 1 Pit	Stage 2 Pit	Total
MINING PHYSICALS			
TOTAL Tonnes mined	32.5 Mt	36.0 Mt	68.5 Mt
WASTE mined	-25.7 Mt	-25.8 Mt	-51.6 Mt
ORE to ROM Pad	**6.8 Mt**	**10.2 Mt**	**17.0 Mt**
Indicated Ore	5.82 Mt	9.77 Mt	15.60 Mt
Inferred Ore	0.94 Mt	0.43 Mt	1.36 Mt
TOTAL ORE	**6.76 Mt**	**10.20 Mt**	**16.96 Mt**
Fe GRADES		**% Fe**	
Waste	5.40%	3.74%	4.57%
Indicated Ore	25.63%	27.04%	26.52%
Inferred Ore	22.31%	20.71%	21.81%
CONTAINED Fe UNITS		**Tonnes '000**	
Waste	1,390	966	2,356
Indicated	1,492	2,643	4,135
Inferred	209	88	297
	3,091	3,697	6,788
Tonnes to ROM Pad and Grade		**16.96 Mt**	**26.14%**
Overall, Fe to ROM Pad			**4.43 Mt**
Units to Concentrate		Rec.@ 79.07%	3.51 Mt
Concentrate Produced		**@ 70.0% Fe**	**5.01 Mt**

Site Cost Estimate Summary - Base Case Scenario

	Fixed	Variable	Total
TOTAL COSTS	**$ M**	**$ M**	**$ M**
Mining	62.22	254.66	316.88
Processing	179.32	97.82	277.15
	241.54	**352.48**	**594.03**
UNIT COST - Per Tonne of Ore Mined			
Mining	3.67	15.02	18.68
Processing	10.57	5.77	16.34
	14.24	**20.78**	**35.03**
UNIT COST - Per Tonne of Concentrate			
Mining	12.43	50.86	63.28
Processing	35.81	19.54	55.35
	48.24	**70.39**	**118.63**

11.3 OPERATING PROFIT

The summarised Profit and Loss Account is shown in Table 11-3:

Table 11-3: Profit & Loss Estimate (AUD)

Sales	**Tonnes 000's**	**Per Tonne Concentrate**	**A$ 000's**
Sales - DRI Feed	2,504	$ 300.00	751,087
Sales - Export	2,504	$ 300.00	751,087
Total Sales	5,007		**1,502,173**
Cost of Sales			
Royalties	5,007	**$ 16.50**	82,619
Mining - Fixed	5,007	$ 12.43	**62,219**
Mining - Variable	5,007	**$ 50.86**	254,657
Processing - Fixed	5,007	$ 35.81	**179,324**
Processing - Variable	5,007	**$ 19.54**	97,825
Transport - Mullewa	2,504	**$ 37.50**	93,886
Transport - Geraldton	2,504	**$ 50.00**	125,181
Storage and Shipping	2,504	**$ 15.00**	37,554
Road Maintenance	5,007	$ 7.99	**40,000**
Total Costs	5,007	**$ 194.38**	**$973,266**
Profit	5,007	**$ 105.62**	**$528,907**

11.4 NET PRESENT VALUE

Net Present Value of $195m is of the movement in Bank Balances as shown in Appendix 4 and has a start date of the beginning of Year1 which is the commencement of construction.

A Discount Rate of 8% has been applied as the accepted risk free cost of capital.

The Internal Rate of Return of 32% is the Discount rate which gives a zero NPV.

The Net Present Value comprises an NPV on the operating cash flow (adjusted for working capital requirements) of $321M less an NPV on Capital Expenditure and pre production outflows of $127M.

11.5 SENSITIVITY ANALYSIS

11.5.1 NPV

Figure 11-1: Project Sensitivity - NPV

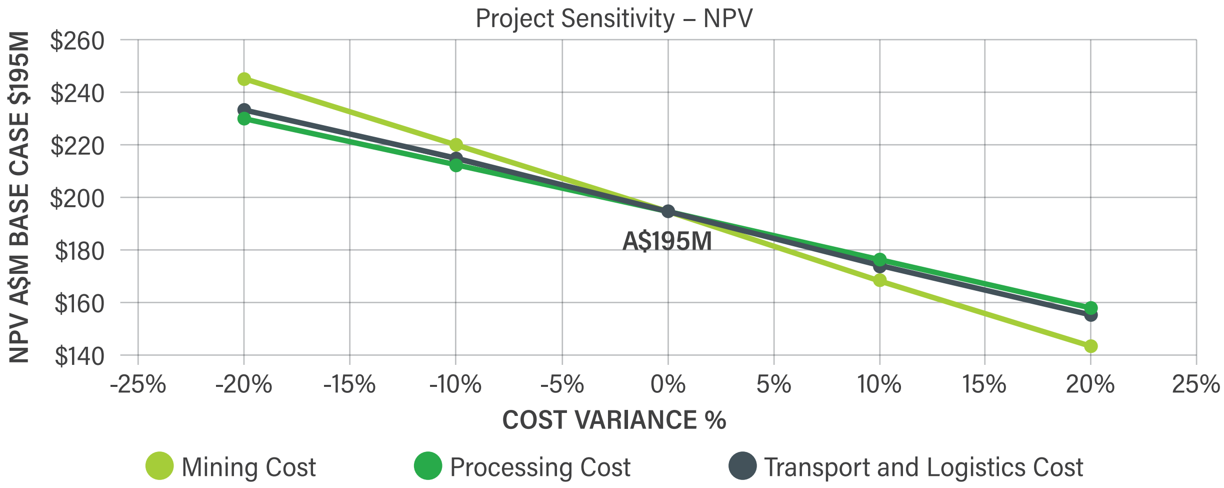


Table 11-4: NPV Sensitivity Values

NPV ($M)	-20%	-10%	0	10%	20%
Mining Cost	245	220	195	169	144
Processing Cost	231	213	195	176	158
Transport and Logistics Cost	233	214	195	175	156

Figure 11-2: NPV Impact - Sales Market Variation

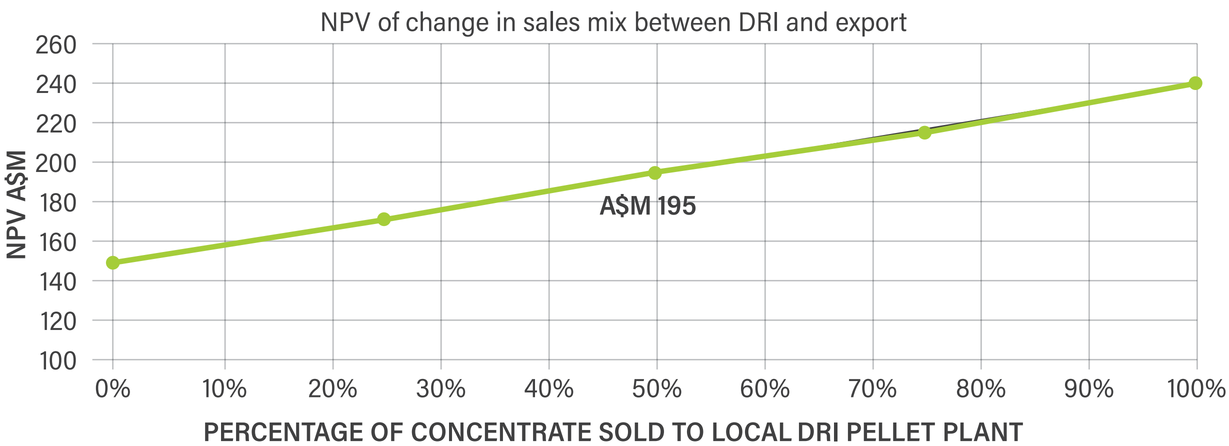


Figure 11-3: NPV Sensitivity 10% Variance to major inputs (A$000)

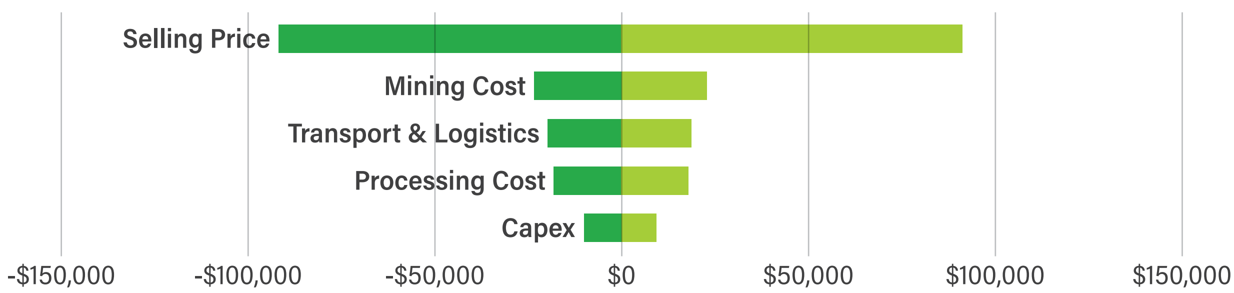


Table 11-5: Selling Price and Exchange Rate Sensitivity on NPV

	US$175	US$195	US$215
0.5850	191.9	296.6	401.2
0.6500	100.4	**194.6**	288.7
0.7150	25.5	111.1	196.7

There is a reasonably strong historic correlation between Iron Ore prices and the A$ US$ exchange rate, in that a higher Iron Ore price reflecting greater world demand for commodities will usually result in a stronger Australian Dollar.

To that extent the effect of fluctuating US$ Iron Ore prices is generally insulated by the changing USD:AUD exchange rate.

11.5.2 EBITDA

Figure 11-4: Project Sensitivity - Profit

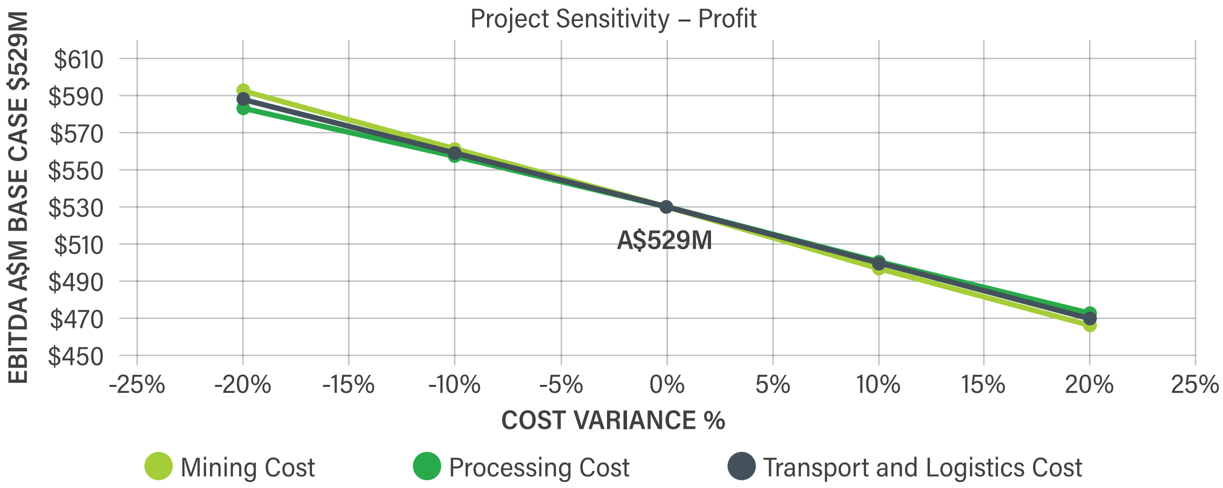


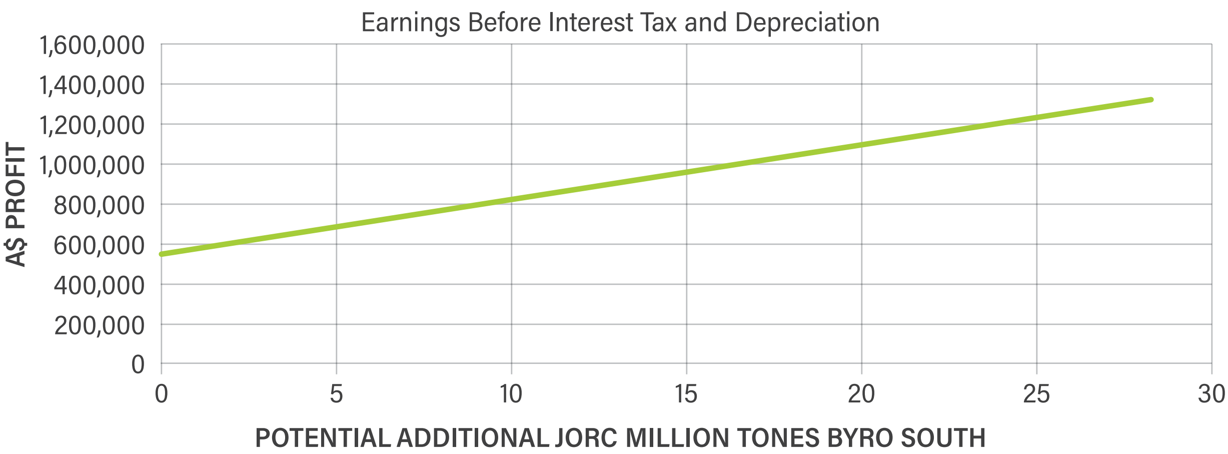
Table 11-6: EBITDA Sensitivity Values

EBITDA	-20%	-10%	0	10%	20%
Mining Cost	592	561	529	497	466
Processing Cost	584	557	529	501	473
Transport and Logistics Cost	588	559	529	499	470

There are a number of resources within the Byro Project area that have the potential to provide additional process feed tonnes and extend the project life from that used for the base case scenario.

Given capital costs are sunk costs and using the base case process capacity of 2.4Mtpa.the following graph indicates the potential impact on EBITDA of extending the project life past 8 years.

Figure 11-5: EBITDA Impact – Additional Process Feed



11.5.3 IRR

Figure 11-6: Project Sensitivity - IRR

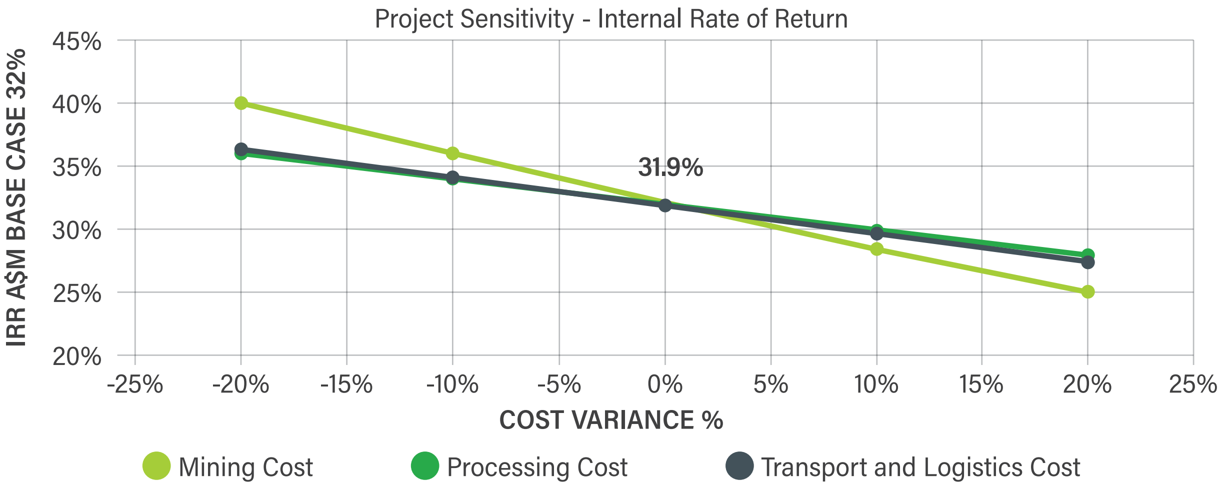


Table 11-7: IRR Sensitivity Values

Internal Rate of Return	-20%	-10%	0	10%	20%
Mining Cost	40.0%	35.8%	31.9%	28.3%	24.8%
Processing Cost	36.1%	34.0%	31.9%	29.8%	27.7%
Transport and Logistics Cost	36.3%	34.1%	31.9%	29.7%	27.5%

11.6 PROJECT FUNDING

To achieve the outcomes as indicated in this Scoping Study, it is estimated that pre-production funding of approximately AUD $150M including additional studies and before working capital will be required.

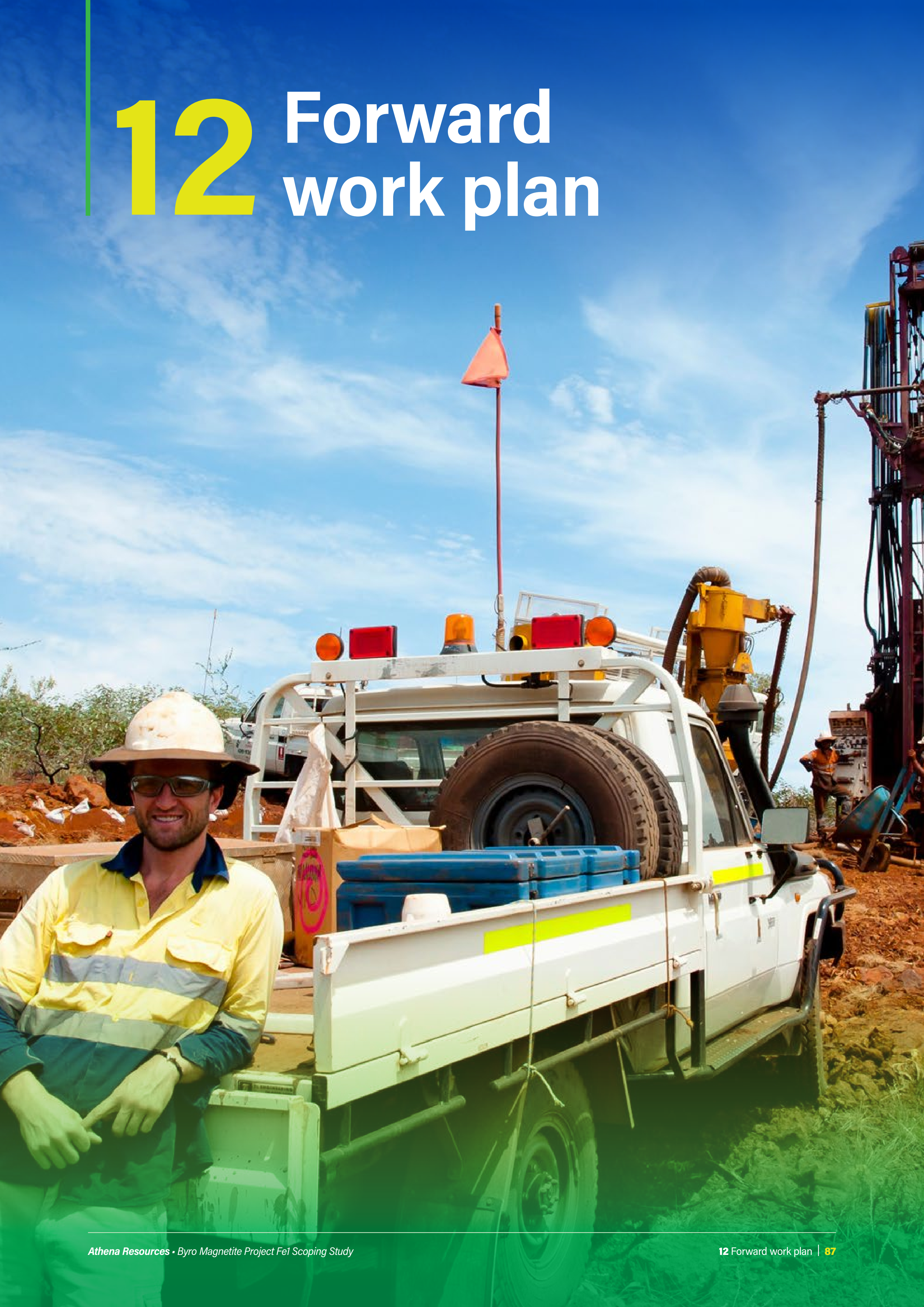
The Company considers that there is a reasonable expectation that the quality of the concentrate forecast to be produced will assist in the securing of funding and has undertaken a number of preliminary discussions with various parties.

Those preliminary discussions and the positive outcomes indicated by the Scoping Study provides confidence to the Board of the Company that there is a reasonable basis to assume the necessary funding for the Project will be obtained as and when required, through conventional mining project financing methods that may include a combination of debt and equity, joint venture or partial sale of the Company's interest in the project, subject to the delivery of key development milestones.

However, the normal risks for the raising of capital will apply and at this time there is no certainty that the Company will be able to source the necessary development funding when required. It is possible that such funding may only be available on terms that are dilutive to or otherwise affect the value of the company's existing shares.

Given the uncertainties involved, investors should not make any investment decisions based solely on the results of the scoping study.

12 Forward work plan



12 Forward work plan

12.1 STOCKPILE & RECLAIM TO REPLACE STATIC FINE ORE BIN

The current Process Flow Diagram includes a 7,500 tonne live capacity Fine Ore Bin ahead of the Primary Ball Mill. This is a carryover from the GRES study review where two 7,500 tonne live capacity Fine Ore Bins were included in the 5 Mtpa process plant. While the single FOB has an estimated capacity of 33hours, it could be a liability as it does not provide storage in the event the crushing section is out of service for any length of time.

There needs to be provision for an emergency feeding system or better still a Fine Ore Stockpile with reclaim conveyors instead of the static 7,500 tonne FOB.

A review by Sedgman calculates the estimated capital cost for Stockpile (51 hours capacity) with reclaim tunnel and two reclaimers is $7 million which compared very well with the capital cost of $5,787,742 to provide the 7,500 tonne FOB. The extra $2million capital will provide a significantly better emergency fine ore supply.

12.2 REFLUX CLASSIFIER

The Reflux Classifier is operated at many mining projects around the world with Rio Tinto IOC having 21 units in operation, beneficiating within a -300um to +75um size range. The units are capable of a coarser split between -1.00mm and +0.20mm. Piloting in iron ore has shown sizing capabilities to split at -20um. While the units have demonstrated sharp separation efficiencies across a wide range of cut points and have also found excellent scaling between laboratory and full scale, Byro FE1 ore has not be tested in the laboratory. Therefore, it is recommended FE1 ore be tested at FLSmidth's Brisbane laboratory. Tests are estimated at approximately $5,000 per sample. It is recommended $50,000 be set aside for testwork.

12.3 INVESTIGATE CAPEX UNIT COST BENEFITS OF INCREASED MILL THROUGHPUT

The MRE and associated mine design for the Byro FE1 prospect indicates a capability to support the annual throughput of 2.4 Mtpa for a seven-year mine life. There would appear to be logistical limitations to the mining of FE1 should there be a desire to increase process capacity beyond the 2.4 Mtpa.

Byro does have several other magnetite resources that would appear to have the capability to add to FE1 as process feed should delineation and definition prove positive.

Initial calculations indicate increasing mill throughput capacity by 50% from 2.4 Mtpa to 3.6 Mtpa would require a Capex increase of 27.5%. That is a Capex of $111 million for 2.4 Mtpa increases to a Capex of $141 million for 3.6 Mtpa.

The above calculation is derived from the following formula to estimate Capex at various higher throughputs: -

- *New Capital = Old Capital x (New tpa / Old tpa)*$^{0.6}$

There are obviously additional economy of scale benefits for a higher processing scenario apart from the reduced capital cost/tonne (based on availability of additional resources). Focused attention on delineation of these additional resources with the objective of both supplementing feed from the FE1 mining operations and/or extending the total mine life of the project should be considered.

12.4 INVESTIGATE OPEX UNIT COSTS BENEFITS OF INCREASED MILL THROUGHPUT

Once a higher mill throughput has been determined investigate the benefits of reducing the operating cost per tonne milled.

12.5 CARRYOUT IN-FILL DRILLING AT BYRO SOUTH

- Carryout In-Fill Drilling at Byro South to determine MRE.
- Carryout metallurgical testwork on Byro South composites samples.

Appendices

Appendices

Financial appendices are show to the whole A$. This should not be taken as an implication of the level of precision attached to the forecasts.

APPENDIX 1 - Byro Fe1 Project – Annualised Physicals

PHYSICALS	Year 1 tonnes	Year 2 tonnes	Year 3 tonnes	Year 4 tonnes	Year 5 tonnes	Year 6 tonnes	Year 7 tonnes	Year 8 tonnes	Year 9 tonnes	Total
MINING										
Ore	0	1,415,000	2,407,000	2,403,000	2,400,000	2,400,000	2,950,000	2,367,299	617,299	16,959,597
Waste	4,100,000	11,781,000	9,981,000	9,513,000	9,250,000	5,400,000	1,150,000	342,593	42,593	51,560,187
Total	4,100,000	13,196,000	12,388,000	11,916,000	11,650,000	7,800,000	4,100,000	2,709,891	659,892	68,519,784
Ore produced		1,415,000	2,407,000	2,403,000	2,400,000	2,400,000	2,950,000	2,367,299	617,299	16,959,597
Grade		22.53%	25.37%	26.23%	26.55%	26.79%	27.10%	26.92%	25.34%	26.14%
Fe Units		318,820	610,549	630,270	637,248	642,918	799,459	637,189	156,417	4,432,870
Ore Stockpile - tonnes of Ore										
Opening		0	357,685	367,991	367,685	367,685	367,685	920,991	884,983	0
Mined		1,415,000	2,407,000	2,403,000	2,400,000	2,400,000	2,950,000	2,367,299	617,299	16,959,597
To processing		-1,057,315	-2,396,694	-2,403,306	-2,400,000	-2,400,000	-2,396,694	-2,403,306	-1,502,282	-16,959,597
Closing		357,685	367,991	367,685	367,685	367,685	920,991	884,983	0	0
Ore Stockpile - tonnes of Fe units										
Opening Fe units		0	81,505	97,023	95,920	99,309	97,665	252,793	234,753	0
Mined		318,820	610,549	630,270	637,248	642,918	799,459	637,189	156,417	4,432,870
To processing at average		-237,315	-595,031	-631,373	-633,860	-644,562	-644,331	-655,228	-391,170	-4,432,870
Closing Fe units		81,505	97,023	95,920	99,309	97,665	252,793	234,753	0	0
PROCESSING										
Product		268,064	672,130	713,181	715,990	728,079	727,818	740,127	441,856	5,007,245
Tails		789,251	1,724,564	1,690,125	1,684,010	1,671,921	1,668,877	1,663,178	1,060,426	11,952,352
Total		1,057,315	2,396,694	2,403,306	2,400,000	2,400,000	2,396,694	2,403,306	1,502,282	16,959,597
Concentrate Stockpile										
Opening		0	12,963	15,122	15,019	15,541	15,293	15,750	15,356	0
From processing		268,064	672,130	713,181	715,990	728,079	727,818	740,127	441,856	5,007,245
Transported to Geraldton		-127,550	-334,986	-356,642	-357,734	-364,164	-363,680	-370,261	-228,606	-2,503,622
Transported to Mullewa		-127,550	-334,986	-356,642	-357,734	-364,164	-363,680	-370,261	-228,606	-2,503,622
Closing (1 week of production)		12,963	15,122	15,019	15,541	15,293	15,750	15,356	0	0
Port Stockpile										
Opening		0	38,889	45,365	45,056	46,622	45,878	47,250	46,068	0
From Site		127,550	334,986	356,642	357,734	364,164	363,680	370,261	228,606	2,503,622
Sold		-88,662	-328,510	-356,951	-356,167	-364,908	-362,308	-371,443	-274,674	-2,503,622
Closing (6 weeks of deliveries)		38,889	45,365	45,056	46,622	45,878	47,250	46,068	0	0

APPENDIX 2 - Byro Fe1 Project – Annualised Costings

MINING	Year 1 $	Year 2 $	Year 3 $	Year 4 $	Year 5 $	Year 6 $	Year 7 $	Year 8 $	Year 9 $	Total $
OPERATING COSTS										
Mine Management	4,250,704	8,554,334	8,458,454	8,368,913	8,347,038	7,162,911	5,869,726	5,077,057	2,197,557	58,286,694
Contract Mining	2,176,135	691,040	224,000	224,921	224,000	168,000	112,000	84,000	28,000	3,932,096
Load and Haul										
Loading	2,565,686	8,927,066	8,143,401	7,810,704	7,444,235	4,917,574	2,627,663	1,729,394	430,236	44,595,959
Hauling	4,832,377	18,023,295	19,181,170	17,408,178	18,733,362	13,411,806	7,903,031	5,507,527	1,439,916	106,440,662
Drill and Blast										
Drilling	1,215,332	4,560,924	4,845,337	3,752,778	4,498,339	3,446,887	1,750,453	1,281,802	430,237	25,782,088
Blasting	1,642,392	5,590,667	5,661,530	4,896,532	5,319,742	3,935,756	2,202,413	1,617,432	537,506	31,403,970
Mine Support Fleet	4,472,281	13,983,927	14,426,719	13,631,913	14,419,709	9,102,174	3,802,959	2,615,885	716,657	77,172,223
Total Costs	21,154,907	60,331,253	60,940,610	56,093,939	58,986,425	42,145,107	24,268,245	17,913,097	5,780,108	**347,613,692**
Fixed Costs	6,426,839	9,245,374	8,682,454	8,593,834	8,571,038	7,330,911	5,981,726	5,161,057	2,225,557	62,218,790
Variable Cost	14,728,068	51,085,879	52,258,156	47,500,105	50,415,387	34,814,196	18,286,519	12,752,040	3,554,552	285,394,902
	21,154,907	60,331,253	60,940,610	56,093,939	58,986,425	42,145,107	24,268,245	17,913,097	5,780,108	**347,613,692**
Preproduction costs above	21,154,907	9,582,587	0	0	0	0	0	0	0	30,737,494
Cost of Ore to Stockpile	0	50,748,666	60,940,610	56,093,939	58,986,425	42,145,107	24,268,245	17,913,097	5,780,108	**316,876,198**
PROCESSING										
Fixed										
Maintenance Materials Fixed	0	571,175	1,131,477	1,134,599	1,133,038	1,133,038	1,131,477	1,134,599	754,324	8,123,727
Labour [All AHN] Fixed	0	5,111,369	10,125,435	10,153,365	10,139,400	10,139,400	10,125,435	10,153,365	6,750,340	72,698,109
Power Fixed	0	3,145,481	6,231,082	6,248,270	6,239,676	6,239,676	6,231,082	6,248,270	4,154,086	44,737,622
General & Adminstration Fixed	0	3,780,195	7,488,427	7,509,084	7,498,756	7,498,756	7,488,427	7,509,084	4,992,322	53,765,050
Total Operating Fixed Costs	0	12,608,219	24,976,421	25,045,318	25,010,870	25,010,870	24,976,421	25,045,318	16,651,072	179,324,508
Variable										
Operating Consumables Variable	0	2,634,964	5,972,867	5,989,343	5,981,105	5,981,105	5,972,867	5,989,343	3,743,878	42,265,474
Maintenance Materials Variable	0	1,552,935	3,520,152	3,529,862	3,525,007	3,525,007	3,520,152	3,529,862	2,206,481	24,909,457
Labour [All AHN] Variable	0	0	0	0	0	0	0	0	0	0
Power Variable	0	1,910,809	4,331,373	4,343,321	4,337,347	4,337,347	4,331,373	4,343,321	2,714,966	30,649,859
Gen & Adminstration Variable	0	0	0	0	0	0	0	0	0	0
Total Operating Variable Costs	0	6,098,708	13,824,392	13,862,527	13,843,459	13,843,459	13,824,392	13,862,527	8,665,325	97,824,790
Total Operating Costs	0	18,706,927	38,800,813	38,907,845	38,854,329	38,854,329	38,800,813	38,907,845	25,316,397	**277,149,298**
Feedstock cost	0	37,920,374	64,452,089	56,827,774	58,532,562	44,725,232	23,148,411	18,793,072	12,476,684	316,876,198
Processing Cost	0	18,706,927	38,800,813	38,907,845	38,854,329	38,854,329	38,800,813	38,907,845	25,316,397	277,149,298
Cost of Concentrate into Stockpile	0	56,627,301	103,252,902	95,735,619	97,386,891	83,579,561	61,949,224	57,700,916	37,793,081	**594,025,496**

APPENDIX 3 - Byro Fe1 Project – Annualised Profit & Loss Account

PROFIT & LOSS	Year 2 $	Year 3 $	Year 4 $	Year 5 $	Year 6 $	Year 7 $	Year 8 $	Year 9 $	Total $
Sales									
Gross Sales FOB Geraldton	26,598,537	98,552,941	107,085,273	106,850,132	109,472,332	108,692,514	111,432,876	82,402,107	751,086,712
Gross Sales Mullewa	38,265,122	100,495,767	106,992,569	107,320,119	109,249,107	109,104,056	111,078,210	68,581,763	751,086,712
Royalties	-3,567,501	-10,947,679	-11,774,281	-11,779,364	-12,029,679	-11,978,811	-12,238,110	-8,304,113	-82,619,538
	61,296,158	188,101,029	202,303,561	202,390,887	206,691,759	205,817,758	210,272,977	142,679,757	1,419,553,886
Cost of Sales									
Site									
Direct Mining Costs	50,748,666	60,940,610	56,093,939	58,986,425	42,145,107	24,268,245	17,913,097	5,780,108	316,876,198
Stockpile movement	-12,828,292	3,511,479	733,835	-453,864	2,580,125	-1,119,834	879,975	6,696,576	0
Mining Costs applicable to Sales	37,920,374	64,452,089	56,827,774	58,532,562	44,725,232	23,148,411	18,793,072	12,476,684	316,876,198
Processing Costs	18,706,927	38,800,813	38,907,845	38,854,329	38,854,329	38,800,813	38,907,845	25,316,397	277,149,298
Concentrate Stocks movement	-13,481,164	1,189,958	1,279,853	-472,603	1,458,999	1,561,883	673,009	7,790,064	0
Total Site costs	43,146,137	104,442,860	97,015,473	96,914,287	85,038,560	63,511,107	58,373,926	45,583,145	594,025,496
Total cost of Sales									
Geraldton - Site	16,201,662	52,608,724	48,994,200	48,269,721	43,069,636	32,329,025	29,451,756	26,088,024	297,012,748
Geraldton - Logistics	8,290,776	21,774,083	23,181,723	23,252,692	23,670,640	23,639,212	24,066,946	14,859,382	162,735,454
Mullewa - Site	16,201,662	52,608,724	48,994,200	48,269,721	43,069,636	32,329,025	29,451,756	26,088,024	297,012,748
Mullewa - Logistics	4,783,140	12,561,971	13,374,071	13,415,015	13,656,138	13,638,007	13,884,776	8,572,720	93,885,839
Road Maintenance per annum	5,000,000	5,000,000	5,000,000	5,000,000	5,000,000	5,000,000	5,000,000	5,000,000	40,000,000
	50,477,241	144,553,501	139,544,195	138,207,148	128,466,050	106,935,270	101,855,234	80,608,150	850,646,789
Net Profit	10,818,917	43,547,528	62,759,366	64,183,738	78,225,709	98,882,488	108,417,743	62,071,607	**528,907,097**
Ore Stockpile Valuation									
Opening Ore Stockpile	0	12,828,292	9,316,813	8,582,978	9,036,842	6,456,717	7,576,551	6,696,576	0
Mined	50,748,666	60,940,610	56,093,939	58,986,425	42,145,107	24,268,245	17,913,097	5,780,108	316,876,198
To processing at average	-37,920,374	-64,452,089	-56,827,774	-58,532,562	-44,725,232	-23,148,411	-18,793,072	-12,476,684	-316,876,198
Closing Ore Stockpile	12,828,292	9,316,813	8,582,978	9,036,842	6,456,717	7,576,551	6,696,576	0	0
Concentrate Stockpiles Valuation									
Opening Concentrate Stockpile Site	0	2,738,351	2,322,980	2,016,055	2,113,812	1,755,524	1,340,584	1,197,161	0
Processed	56,627,301	103,252,902	95,735,619	97,386,891	83,579,561	61,949,224	57,700,916	37,793,081	594,025,496
Transported to Geraldton	-26,944,475	-51,834,136	-48,021,272	-48,644,567	-41,968,924	-31,182,082	-28,922,170	-19,495,121	-297,012,748
Transported to Mullewa	-26,944,475	-51,834,136	-48,021,272	-48,644,567	-41,968,924	-31,182,082	-28,922,170	-19,495,121	-297,012,748
Closing Concentrate Stockpile Site	2,738,351	2,322,980	2,016,055	2,113,812	1,755,524	1,340,584	1,197,161	0	0
Opening Concentrate Stockpile Port	0	10,742,813	9,968,225	8,995,298	9,370,144	8,269,432	7,122,489	6,592,903	0
Transported from Site	26,944,475	51,834,136	48,021,272	48,644,567	41,968,924	31,182,082	28,922,170	19,495,121	297,012,748
Transport Costs	8,290,776	21,774,083	23,181,723	23,252,692	23,670,640	23,639,212	24,066,946	14,859,382	162,735,454
Cost of Sales	-24,492,439	-74,382,806	-72,175,924	-71,522,413	-66,740,275	-55,968,238	-53,518,702	-40,947,406	-459,748,202
Closing Concentrate Stockpile Port	10,742,813	9,968,225	8,995,298	9,370,144	8,269,432	7,122,489	6,592,903	0	0

APPENDIX 4 - Byro Fe1 Project – Annualised Balance Sheet

BALANCE SHEET	Year 1 $	Year 2 $	Year 3 $	Year 4 $	Year 5 $	Year 6 $	Year 7 $	Year 8 $	Year 9 $	Year 10 $
Fixed Assets										
Plant and Equipment	66,524,347	110,873,912	110,873,912	110,873,912	110,873,912	110,873,912	110,873,912	110,873,912	110,873,912	110,873,912
Pre-Production Mining	21,154,907	30,737,494	30,737,494	30,737,494	30,737,494	30,737,494	30,737,494	30,737,494	30,737,494	30,737,494
	87,679,254	141,611,406	141,611,406	141,611,406	141,611,406	141,611,406	141,611,406	141,611,406	141,611,406	141,611,406
Inventory										
Ore at Site	0	12,828,292	9,316,813	8,582,978	9,036,842	6,456,717	7,576,551	6,696,576	0	0
Concentrate at Site	0	2,738,351	2,322,980	2,016,055	2,113,812	1,755,524	1,340,584	1,197,161	0	0
Concentrate at Port	0	10,742,813	9,968,225	8,995,298	9,370,144	8,269,432	7,122,489	6,592,903	0	0
	0	26,309,456	21,608,019	19,594,330	20,520,797	16,481,673	16,039,624	14,486,640	0	0
Debtors										
Opening Balance	0	0	5,108,013	15,675,086	16,858,630	16,865,907	17,224,313	17,151,480	17,522,748	11,889,980
Sales	0	61,296,158	188,101,029	202,303,561	202,390,887	206,691,759	205,817,758	210,272,977	142,679,757	0
Receipts	0	-56,188,145	-177,533,957	-201,120,017	-202,383,610	-206,333,353	-205,890,592	-209,901,709	-148,312,525	-11,889,980
Closing Balance	0	5,108,013	15,675,086	16,858,630	16,865,907	17,224,313	17,151,480	17,522,748	11,889,980	0
Creditors										
Opening Balance	0	-7,306,605	-10,893,237	-11,654,339	-11,460,876	-11,594,468	-10,368,910	-8,874,435	-8,358,521	-5,510,126
Purchases - Capital	-87,679,254	-53,932,152	0	0	0	0	0	0	0	0
Purchases - Production	0	-76,786,697	-139,852,064	-137,530,506	-139,133,615	-124,426,926	-106,493,221	-100,302,250	-66,121,510	
Payments	80,372,650	127,132,216	139,090,963	137,723,970	139,000,023	125,652,483	107,987,696	100,818,164	68,969,905	5,510,126
Closing Balance	-7,306,605	-10,893,237	-11,654,339	-11,460,876	-11,594,468	-10,368,910	-8,874,435	-8,358,521	-5,510,126	0
Bank Account										
Opening Balance	0	-80,372,650	-151,316,721	-112,873,727	-49,477,680	13,905,907	94,586,777	192,489,673	301,573,217	380,915,837
Receipts	0	56,188,145	177,533,957	201,120,017	202,383,610	206,333,353	205,890,592	209,901,709	148,312,525	11,889,980
Payments	-80,372,650	-127,132,216	-139,090,963	-137,723,970	-139,000,023	-125,652,483	-107,987,696	-100,818,164	-68,969,905	-5,510,126
Closing Balance	-80,372,650	-151,316,721	-112,873,727	-49,477,680	13,905,907	94,586,777	192,489,673	301,573,217	380,915,837	387,295,691
Retained Earnings										
Brought Forward	0	0	-10,818,917	-54,366,445	-117,125,811	-181,309,550	-259,535,259	-358,417,747	-466,835,490	-528,907,097
This Year EBITDA	0	-10,818,917	-43,547,528	-62,759,366	-64,183,738	-78,225,709	-98,882,488	-108,417,743	-62,071,607	
Carried Forward	0	-10,818,917	-54,366,445	-117,125,811	-181,309,550	-259,535,259	-358,417,747	-466,835,490	-528,907,097	-528,907,097
	0	0	0	0	0	0	0	0	0	

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