Donald Rare Earth and Mineral Sands Project
Phase 1 Definitive Feasibility Study

HIGHLIGHTS – TIER 1 GLOBAL SOURCE OF CRITICAL MINERALS SUPPLY

- Financial analysis supports a Phase 1 project with an after tax NPV of $852 million, (8% real cost of capital) over 41.5-year mine life and accessing 17% of total project Mineral Resource
- Project execution capital expenditure of $364 million, including a 12% contingency
- Forecast total funding requirement of $392 million including working capital and start-up costs
- Base case demonstrates an internal rate of return (IRR) of 25.8%, payback of 3.75 years
- Final Investment Decision planned for Q1 2024 with first production in H2 2025
- Average annual revenue $314 million over Phase 1 life of mine, consisting of 58% from rare earth elements concentrate (REEC) and 42% from heavy mineral concentrate (HMC)
- Average annual operating cost $167 million, revenue to cash cost (R:CC) ratio of 2:1
- Average annual production of 7,200 tonnes of REEC containing >60% TREO and including both light and heavy rare earth elements
- Average annual production of 228,700 tonnes of HMC containing final product equivalents of 42,500 tonnes of zircon and 152,000 tonnes of titania
- Scoping study for Phase 2, which is planned to commence five years after Phase 1 production and include further processing of the HMC into final products of zircon and titania (titanium feedstock) on-site, has been completed. A Pre-Feasibility Study and further Ore Reserves update release for Phase 2 development is planned within the current quarter

Note: Unless otherwise stated, all dollar values are expressed in real Q1 2023 Australian Dollars

Astron Corporation Limited (ASX: ATR) (‘Astron’ or ‘Company’) is pleased to announce the release of its Definitive Feasibility Study (DFS) for Phase 1 of the Donald Rare Earth and Minerals Sands Project, (‘Donald Project’ or ‘Project’) based on the Donald and Jackson heavy mineral (HM) deposits, located in regional Victoria. The DFS has been completed to an AACE Class 2 estimate standard and provides confidence that the project will represent a financially robust investment, significantly de-risked by the selection of conventional mining excavation techniques, extensive metallurgical test work and engineering evaluation as well as advanced regulatory approvals.

Phase 1 of the Donald Project is located on mining licence (MIN5532) and has a positively assessed Victorian Government Environmental Effects Statement. It is the most advanced project of its type within Victoria.

The Phase 1 project is expected to deliver compelling economics with a post-tax real NPV_8 of $852m at an IRR of 25.8% (pre-tax NPV_8 of $1,294m at an IRR of 33.9%). It is forecast to generate $4.3 billion of free-cashflows, $13.0 billion of revenue and $6.1 billion of EBITDA over its 41.5-year mine life. The Project has strong community support and is expected to contribute $2.2 billion to the Gross Regional Product (GRP) over the first phase of its operations, providing employment opportunities and re-investment to the local area.

The mine development and processing approach is scalable and allows value-accretion through further downstream processing. Subsequent phases of the project are planned to encapsulate more project value with Phase 2 planned to commence approximately five years following the commencement of Phase 1 operations. A scoping study has been completed for Phase 2, which will include a duplication of the Phase 1 project on the present retention licence RL2002 and the addition of a mineral separation plant (MSP) to take the HMC to final zircon and titanium mineral products. A Pre-feasibility Study (PFS) and Ore Reserves Update for RL2002 is planned prior to the end of the current quarter.

Astron Managing Director, Tiger Brown commented:

"The Donald Project Detailed Feasibility Study attests to the robustness, financially and technically, of what will be a major new source of critical minerals. It is expected to provide a long-life source of mineral sands and rare earths, with its dual revenue stream providing an attractive margin structure and defensive element in terms of commodity cycles.

The Project has been designed to be expandable, through higher production and downstream processing, funded from operational cash flows. The extended evaluation period for the Project has meant that detailed evaluation and de-risking work has been undertaken, while advanced regulatory approvals and strong community support have been secured.

The Project is expected to enter the market at a time when the supply of the high-value products of premium zircon and higher titanium dioxide ilmenite, is challenged, based on the maturation of the mainstays of historical supply. The rare earth component, and in particular the weighting to the heavier rare earth elements, can be expected to find a ready place in this fast growing and expanding market. The project represents a generational opportunity for market supply, the communities and workforce that will be involved, and represents a highly attractive investment proposition for investors."

Project Description

The Donald Project has the potential to represent a globally significant, long-life supply of the critical mineral elements of zirconium, hafnium, titanium, as well as rare earth elements including neodymium, praseodymium, dysprosium, and terbium. The Donald Project contains over 2,634 million tonnes of Mineral Resource at 4.4% heavy mineral (HM) grade and comprises of two adjoining deposits, the Donald deposit (which constitutes the area covered by MIN5532 and RL2002) and the Jackson deposit (RL2003). The mining licence area covered by the tenement MIN5532, which is contained within the Donald deposit, is the site of the Phase 1 project and the subject of this definitive feasibility study evaluation (refer to Section A for a detailed summary of the DFS).

The remaining Donald deposit, as covered under the retention licence RL2002 is the subject of the scoping study which demonstrated considerable economic upside. The Phase 2 project will be the subject of a subsequent Ore Reserves announcement and PFS, which is planned shortly.

The Jackson deposit, which contains Mineral Resources of 823 million tonnes at 4.8% HM may potentially represent further upside beyond the scope of these studies.[1]

The Phase 1 development of the Donald Project is within MIN5532, which contains approximately 17% of the total Donald Project Mineral Resource. Key components of the Project include the following:

- initial Phase 1 development involving conventional truck and excavators, spiral concentrating and rare earth flotation will produce a heavy mineral concentrate (HMC) containing zircon (80% of which is premium quality) and titanium minerals, as well as a rare earth element concentrate (REEC), containing significant valuable heavy rare earth elements bearing xenotime minerals in addition to valuable light rare earth elements bearing monazite minerals;
- two distinct concentrate revenue streams supplying different customers for varying end-use applications, providing diversification in revenues and reduced cyclicality when compared to a single commodity deposit;
- over the first five full years of production, the mineral sands HMC will contribute between 44% to 47% of total revenues, with the REEC contributing between 53% to 56% of the estimated revenue;
- the main financial and operational metrics for Phase 1 of the Donald Rare Earth and Mineral Sands Project are provided in Table 1.

[1] *See ASX Announcement, Donald Mineral Sands Project Mineral Resource Update, 7 Apr 2016*

Summary financial and operation metrics

The primary financial and operational metrics for Phase 1 of the Donald Project are outlined in Table 1 below:

Table 1 – Summary Financial Characteristics – Donald Project

Metric	Unit	Phase 1
Post-tax NPV_8 (FID)	[A$m]	852
Post-tax IRR	[%]	25.8%
Pre-tax NPV_8 (FID)	[A$m]	1,294
Pre-tax IRR	[%]	33.9%
Payback period from commencement of operations	[years]	3.75
Execution capital cost	[A$m]	364
Cumulative free cash flow	[A$m]	3,869
Life of Mine	[years]	41.5
Ore processing throughput	[Mtpa]	7.5
Average ore grade	[HM%]	4.4%
Average strip ratio	[Ratio]	1.6

The annual average financial and production metrics for both the first five years of Phase 1 and life of mine are outlined in Table 2 below:

Table 2 – Annual average financial and production metrics

Metric	Unit	First 5 years	Phase 1
Revenue	[A$m]	347.7	314.4
Operating costs	[A$m]	193.5	166.6
EBITDA	[A$m]	154.2	147.8
Sustaining capital	[A$m]	2.2	3.6
Free cash flow	[A$m]	110.4	103.1
HMC Production	[ktpa]	260.4	228.7
Premium zircon	[ktpa]	42.1	35.6
Standard zircon	[ktpa]	8.1	6.8
Titania	[ktpa]	173.8	152.0
REEC Production	[ktpa]	9.0	7.2

Sensitivity analysis of key project parameters demonstrates that the project is robust and able to withstand significant market fluctuations. Sensitivity test results are summarised in the following tornado chart which illustrates the positive and negative impacts of changes to key project parameters:

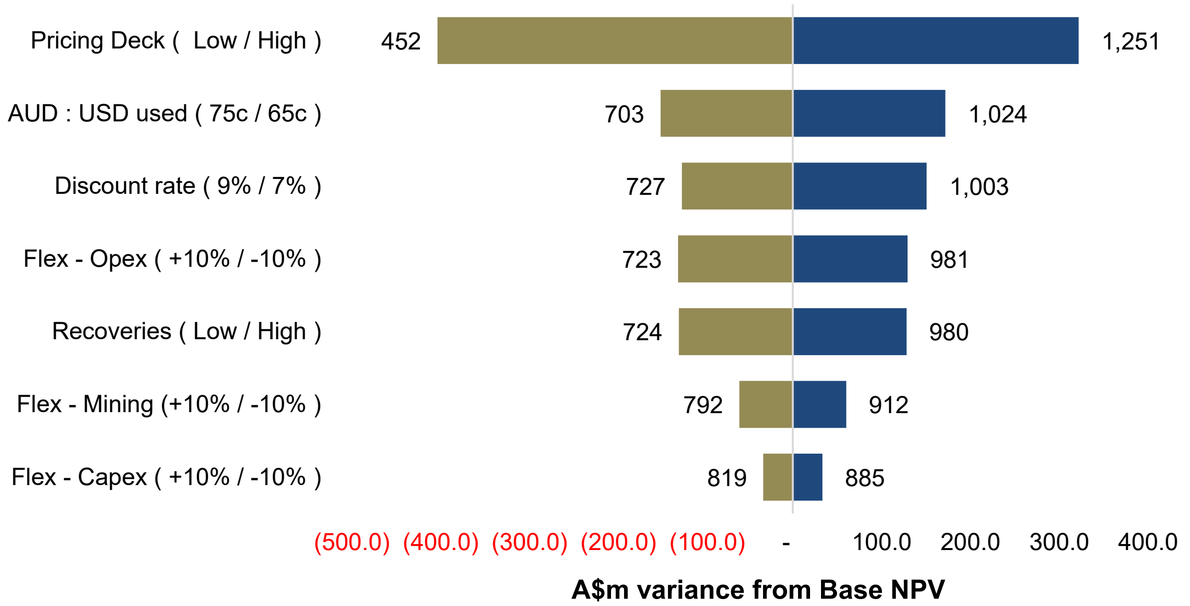

Figure 1 – Sensitivity analysis of key assumptions

In conjunction with mine planning for the Phase 1 project the Ore Reserves for the mining licence MIN5532 were estimated. Ore Reserves are summarised below in Table 3 and shown in greater detail in Section 5.6:

Table 3 – Donald Project MIN5532 Ore Reserve for MIN5532 at March 2023[2]

Classification	Tonnes (Mt)	Total HM %	Slimes %	Oversize %	% of total HM					
					Zircon	Rutile[1]	Ilmenite	Leucoxene	Monazite	Xenotime
Proved	263	4.4	15.4	9.8	16.7	5.5	21.6	25.9	1.8	0.67
Probable	46	4.1	19.7	11.1	15.3	5.5	21.3	20.1	1.8	0.64
Total	**309**	**4.4**	**16.1**	**10.0**	**16.5**	**5.5**	**21.6**	**25.1**	**1.8**	**0.66**

Notes for Table 3:

1. *The ore tonnes have been rounded to the nearest 1mt and grades have been rounded to two significant figures.*
2. *Rutile includes rutile and anatase minerals. Refer to Table 19 for further notes*

[2] *See ASX announcement, Donald Project MIN5532 Ore Reserves Update, 31 Mar 2023*

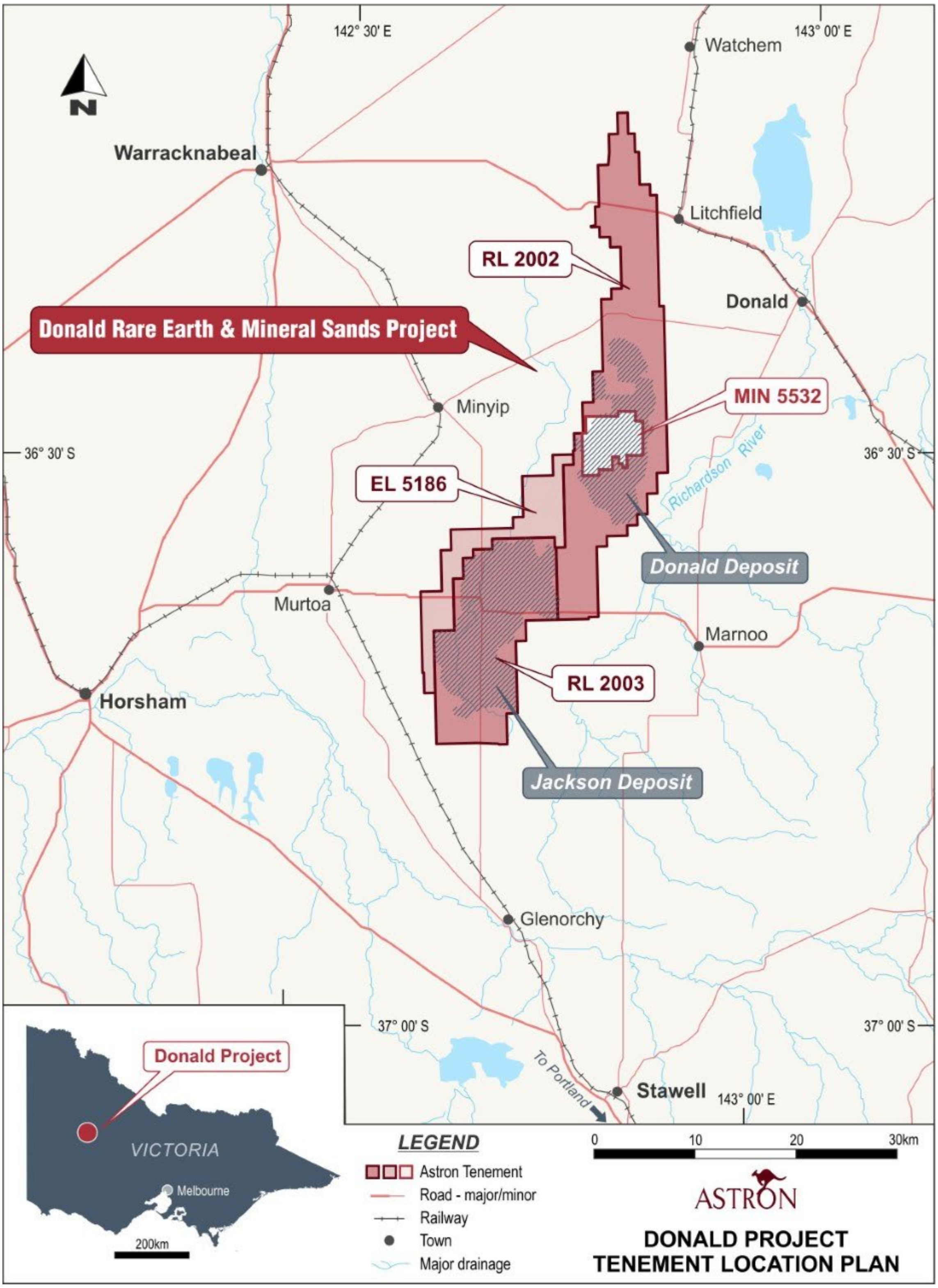

Figure 2 – Donald Rare Earth & Mineral Sands Project Map

Confidence/Accuracy

The Phase 1 DFS is underpinned by independent technical reports undertaken by reputable and experienced external consultants, including:

- Mineral Technologies – metallurgical test work, process plant design engineering, capital and operating cost estimation
- AMC consultants – mine planning, Ore Reserve and Mineral Resource estimation, capital and operating cost estimation
- Snowden Optiro – Mineral Resource estimation
- ATC Williams – Tailings handling and storage
- AECOM – Environmental and approval support
- TAM International – Rare earths shipping and handling
- TZMI – Mineral sands product pricing and market analysis
- Adamas Intelligence – Rare earth product pricing and market analysis
- Powercor – 66 kV overhead power-line routing and design
- ProjectWorx – General project engineering and management

The Company is confident that it has met the requirements necessary for the classification of AACE level 2 standard under the Cost Estimate Classification System (CECS) for its DFS with a range of -10%/+15%.

Prior to the final investment decision (FID), Astron will continue to work towards the achievement of:

- final project approvals, including the mining Work Plan and other secondary approvals;
- project financing, an independent technical review for the feasibility study with a credible third-party consultant group and the appointment of a debt advisor;
- off-take agreements for its Phase 1 forecast production; and
- front-end engineering design (FEED) and the next phase of pre-construction engineering design, which include tendering for the mining, transport and logistics, engineering procurement & construction (EPC), and other principal packages.

Astron is targeting a final investment decision (FID) for the Donald Project in the first quarter of calendar year 2024. With an expected 18-month construction period, commissioning and concentrate production is targeted for Q3 2025 with first shipments shortly thereafter.

Phase 2 operations are subject to additional permitting requirements and market conditions. Construction for Phase 2 is planned to commence in Q1 2029, and commissioning is planned for Q3 2030. A PFS for the Phase 2 project is expected to conform to the requirements of an AACE level 4 standard under the CECS system and will have an expected accuracy range of -20%/+30% is expected shortly.

Figure 3 – Donald Project Phase 1 Development Timeline

This announcement is authorised for release by the Board of Astron

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About Astron

Astron Corporation Limited (ASX: ATR) is an ASX listed company, with over 35 years of experience in mineral sands processing and downstream product development, as well as the marketing and sales of zircon and titanium dioxide products. Astron's prime focus is on the development of its large, long-life and attractive zircon assemblage Donald Rare Earth and Mineral Sands Project in regional Victoria. Donald has the ability to represent a new major source of global supply in mineral sands and rare earths. The company also conducts a mineral sands trading operation based in Shenyang, China; operates a zircon and titanium chemicals and metals research and facility in Yingkou, China; and is the owner of the Niafarang Mineral Sands Project in Senegal.

Cautionary Statements

The DFS is based on the material assumptions set out throughout the DFS, including regarding availability of funding. While Astron considers all material assumptions to be based on reasonable grounds (including the key assumptions set out in Table 7), there is no certainty that they will prove to be correct or that the range of outcomes set out in the DFS will ultimately be achieved.

Certain sections of this document contain forward looking statements that are subject to risk factors associated with, among others, the economic and business circumstances occurring from time to time in the countries and sectors in which the Astron group operates. It is believed that the expectations reflected in these statements are reasonable, but they may be affected by a wide range of variables which could cause results to differ materially from those currently projected.

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This document may include "forward looking statements" within the meaning of securities laws of applicable jurisdictions. Forward looking statements can generally be identified by the use of the words "anticipate", "believe", "expect", "project", "forecast", "estimate", "likely", "intend", "should", "could", "may", "target", "plan", "guidance" and other similar expressions. Indications of, and guidance on, future earning or dividends and financial position and performance are also forward-looking statements. Such forward-looking statements are not guarantees of future performance and involve known and unknown risks, uncertainties and other factors, many of which are beyond the control of Astron and its related bodies corporate, together with their respective directors, officers, employees, agents or advisers, that may cause actual results to differ materially from those expressed or implied in such statement. Actual results, performance or achievements may vary materially from any forward-looking statements and the assumptions on which those statements are based. Readers are cautioned not to place undue reliance on forward looking statements and Astron assumes no obligation to update such information. Specific regard should be given to the risk factors outlined in this document (amongst other things).

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Competent Person's Statement

The information in this document that relates to the estimation of the MIN5532 Mineral Resource is based on information and supporting documentation compiled by Mrs Christine Standing, a Competent Person who is a Member of the Australasian Institute of Mining and Metallurgy and the Australian Institute of Geoscientists. Mrs Standing is a full-time employee of Optiro Pty Ltd (Snowden Optiro) and is independent of Astron Corporation, the owner of the Mineral Resources. Mrs Standing has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. The Company confirms that the form and context in which the Competent Persons' findings are presented have not materially modified from the relevant original market announcement.

The information in this document that relates to the estimation of the RL2002 and RL2003 Mineral Resources is based on information compiled by Mr Rod Webster, a Competent Person who is a Member of the Australasian Institute of Mining and Metallurgy and Australian Institute of Geoscientists. Mr Webster is a full-time employee of AMC Consultants Pty Ltd and is independent of DMS, the owner of the Donald Project Mineral Resources. Mr Webster has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. The Company confirms that the form and context in which the Competent Persons' findings are presented have not materially modified from the relevant original market announcement.

The information in this document that relates to the estimation of the Ore Reserves is based on information compiled by Mr Pier Federici, a Competent Person who is a Member of the Australasian Institute of Mining and Metallurgy. Mr Federici is a full-time employee of AMC Consultants Pty Ltd and is independent of Astron. Mr Federici has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. The Company confirms that the form and context in which the Competent Persons' findings are presented have not materially modified from the relevant original market announcement.

CONTENTS

1 Project Overview

The Donald Rare Earths & Mineral Sands Project (Donald Project) is a globally significant rare earth and mineral sands project located in the Wimmera region of Victoria, approximately 300kms Northwest of Melbourne.

1.1 Background

The Donald and Jackson deposits were historically known as WIM250 and WIM200 respectively. They represent two of six WIM-styled deposits that were initially discovered by CRA in the early 1980s. These tenements were acquired by Astron in 2004 and have since been subject to extensive evaluative and de-risking test work, notably, additional geological drilling, metallurgical test work and environmental studies which allowed for key environmental permits such as the positively assessed Environmental Effects Statement (EES) to be obtained.

The Donald Project is the only critical minerals project in Victoria that has the benefit of the positively assessed EES, a federal EPBC licence and a granted mining licence. The development of the Donald resource likely represents the advancement of the first of the fine-grained or WIM-style deposits to a production stage.

The Donald and Jackson deposits formed in the Tertiary period, approximately 4.5 million years ago in what were the historical near shore areas of the Murray-Basin inland sea. As such, these deposits are flat, shallow, extensive and consistent (in terms of grade and assemblage). The Donald Project covers a large area of over 426 square kilometres (42,636 Hectares), stretching 60km north to south, and at its widest, 10 km east to west.

1.2 Donald Project Tenements

Astron Corporation Limited holds its Donald Project mineral tenements through its wholly owned subsidiary Donald Mineral Sands (DMS) Pty Limited. The breakdown of the total licence area by mineral licence is shown in Table 4:

Table 4 – Donald Project Tenements

Licence No.	Area [ha]	Expiry date
MIN5532	2,784	19 August 2030
RL2002	24,371	9 October 2029
RL2003	15,481	Pending renewal
Total	**42,636**	

1.3 Proposed Operations

Donald is one of the world’s most significant critical mineral resources. Following the most recent Mineral Resource update, Donald is the world’s largest undeveloped zircon project containing over 22.1mt of in-situ zircon. For context, the global zircon demand in 2021 was 1.2mt. In addition, the Donald Project contains significant rare earth minerals in the form of monazite and xenotime. With over 2.4mt of monazite, the Donald Project is the third largest rare earth project outside of China. A summary of the contained mineral resources and mineral assemblage is reported in Table 5:

Table 5 – Summary Contained Mineral Resources within the VHM domain reported above 1% total HM (2022)[3]

Resource	Tonnes (Mt)	Slimes (%)	Oversize (%)	HM (%)	Zircon (%HM)	Rutile (%HM)	Leucoxene (%HM)	Ilmenite (%HM)	Monazite (%HM)	Xenotime (%HM)
MIN5532	525	18	10	4.0	16	7	23	21	1.8	0.65
RL2002	1,286	16	9	4.8	18	8	18	33	2.0	N/A
RL2003	823	18	5	4.8	19	9	17	32	2.0	N/A
Total	2,634	17	8	4.6	18	8	18	31	2.0	N/A

Notes to Table 5:

1. *The material tonnes have been rounded to the nearest 1mt and grades have been rounded to two significant figures.*
2. *Rutile includes rutile and anatase minerals. Refer to Table 15 for further notes.*

Astron plans to undertake the development of Donald over a number of phases, with the first phase (Phase 1) accessing 309mt of ore at 4.4% HM within the mining licence MIN5532. A summary of the Ore Reserves for MIN5532 is shown in Table 6 below:

Table 6 – Donald Project MIN5532 Ore Reserve for MIN5532 at March 2023[4]

Classification	Tonnes (Mt)	Total HM%	Slimes %	Oversize %	% of total HM					
					Zircon	Rutile[1]	Ilmenite	Leucoxene	Monazite	Xenotime
Proved	263	4.4	15.4	9.8	16.7	5.5	21.6	25.9	1.8	0.67
Probable	46	4.1	19.7	11.1	15.3	5.5	21.3	20.1	1.8	0.64
Total	**309**	**4.4**	**16.1**	**10.0**	**16.5**	**5.5**	**21.6**	**25.1**	**1.8**	**0.66**

Notes for Table 6:

1. *The ore tonnes have been rounded to the nearest 1mt and grades have been rounded to two significant figures.*
2. *Rutile includes rutile and anatase minerals. Refer to Table 19 for further notes.*

Phase 1 proposed operation involves:

- conventional truck and shovel operated by an independent contractor to produce 7.5Mtpa of ore fed to a mining unit plant (MUP) located adjacent to the pit, and separately stockpile topsoil, subsoil and overburden
- concentration of ore using gravitational separation spirals via a wet concentration plant (WCP);
- further processing through a concentrate upgrade plant (CUP), where the rare earth elements will be separated from the titanium and zircon concentrate by flotation;
- REEC product drummed and made ready for sale to other parties;
- HMC trucked in half-height containers to Dooen intermodal rail terminal before railing to a Victorian port for bulk export;
- sand tailings mixed with slimes as a part of modified co-disposal (ModCod) and initially deposited in an above ground surface tailings storage facility (TSF) during start-up and commissioning, and subsequently, directly returned to mine pit as a part of progressive mine rehabilitation; and
- replacing topsoil according to the original soil configuration, followed by revegetation and return to farmland or native vegetation (usually within 3-5 years of excavation);

Refer to Figure 4 for a simplified process flowsheet of Phase 1 operations.

[3] *See ASX announcement, Donald Project Mining Licence Mineral Resource Update, 1 Dec 2022*
[4] *See ASX announcement, Donald Project MIN5532 Ore Reserves Update, 31 Mar 2023*

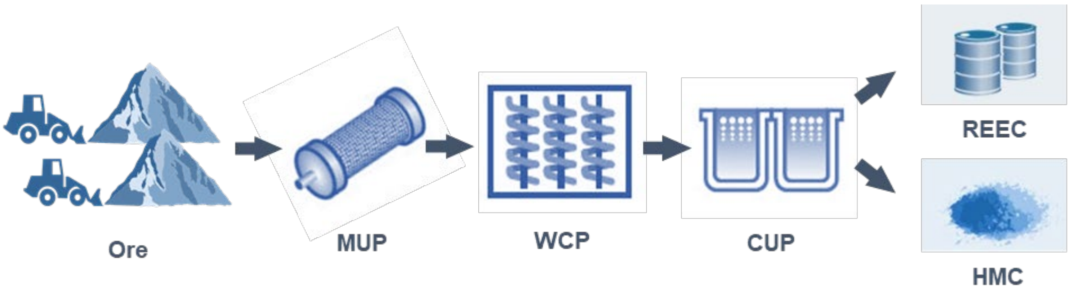


Figure 4 – Summary of Proposed Phase 1 Operations

1.4 Donald Project Schedule

Astron has developed a project execution schedule that recognises the current status of the project and the general short-term commodity market supply demand outlook. The Final Investment Decision (FID) for Phase 1 operations is scheduled in Q1 2024 and production is scheduled to commence in Q3 2025. Phase 1 will have a development period of 27 months (including a construction period of 18 months).

Astron recognises its obligations to sustainable development and defines sustainable development to entail consideration of the people, the environment and the economy. As the Donald Project progresses from concept towards operation, Astron plans to adopt the highest sustainability principles and practices, recognising the importance of the social licence to operate. Over the Project's history, Astron has continued to maintain a strong relationship with local stakeholders, and enjoys strong community support, including an executed Memorandum of Understanding (MOU) with the Yarriambiack Shire. During phase 1 operations, Astron will employ ~150 FTE employees & contractors bringing jobs and corresponding opportunities to the local project area.

2 Financial Analysis

The DFS financial analysis illustrates attractive economic returns and free cash flow generation over a 40 year plus mine life. Phase 1 post-tax real NPV_8 of $852 million with a post-tax IRR of 25.8% and average annual real free cash flow of $103.1 million. Given Phase 1 only encompasses 17% of the total Mineral Resource, a phased development approach provides the potential for substantial incremental value generation.

The main financial and operational metrics of the Donald Rare Earth and Mineral Sands Project are outlined in Table 7 below:

Table 7 – Summary Financial Characteristics – Donald Project Phase 1

Metric	Unit	Phase 1
Post-tax NPV_8 (FID)	[A$m]	852
Post-tax IRR	[%]	25.8%
Pre-tax NPV_8 (FID)	[A$m]	1,294
Pre-tax NPV_8	[%]	33.9%
Payback period from commencement of operations	[years]	3.75
Execution capital cost	[A$m]	364
Cumulative free cash flow	[A$m]	4,279
Life of Mine	[years]	41.5
Ore processing throughput	[Mtpa]	7.5
Average ore grade	[%]	4.4
Average strip ratio	[Ratio]	1.6
REEC average production	[ktpa]	7.2
HMC average production	[ktpa]	228.7
Average revenue per annum	[A$m]	314.4
Average EBITDA per annum	[A$m]	147.8
Average post-tax free cash flow	[A$m]	103.1

The financial analysis is based on the following key assumptions:

- all product pricing assumptions stated on a real 2023 basis;
- REEC pricing based on CIF USA provided by Adamas Intelligence in February 2023. Long-term pricing from 2035 onwards are maintained at the same real price as 2034;
- HMC pricing based on CIF China provided by TZMI in Q1 2023. Long term pricing from 2030 onwards is based on TZMI long term inducement pricing on a real 2022 basis;
- FID from Q1 2024;
- AUD/USD exchange rate of 0.70;
- Phase 1 first production in Q3 2025 with first product sales in Q4 2025.

The discounted cash flow evaluation of the project reflects the work completed in this DFS, and includes mining and processing data based on the tactical mining schedule, capital and operating costs (as outlined in 2.1 and 2.2 below), product recoveries based on metallurgical test work and environmental and rehabilitation costs arising from compliance with our positively assessed EES.

2.1 Capital Expenditure

Phase 1 comprises a MUP, WCP, CUP and associated on-site non-process infrastructure (NPI) and off-site infrastructure including road, electricity and water supply upgrades. The total execution capital, on a real 2023 basis, is estimated to an AACE Class 2 level of accuracy and is outlined in Table 8 below:

Table 8 – Capital estimate – Donald Project Phase 1

Project Area	A$m
Mining Unit Plant	20.5
Wet Concentrator Plant	70.0
Concentrate Upgrade Plant	38.1
On-site non-process infrastructure (on-site road, electricity and water upgrades)	33.6
Overhead 66kv powerline supply	27.6
Water supply upgrade	11.9
Off-site road upgrades	13.9
Other off-site infrastructure	10.0
Project engineering and technical services	47.9
Construction In-directs	26.9
Land acquisition	13.4
Other	11.6
Contingency (@12%)	39.2
Total	**364.7**

The capital estimate is based on the contributions of external, independent consultants and cover the detailed design and engineering of the associated mining and processing plant, on and off-site infrastructure and includes all capital, on a real 2023 basis, required to complete the construction of the Project in preparation for operations. No forward escalation or environmental bond costs has been included in the capital estimate.

Specifically:

- the capital estimate for MUP, WCP and CUP were estimated by Mineral Technologies using the current design to establish material take-offs for structural steel and platework, mechanical equipment, civil and earthworks, electrical and instrumentation and other materials and obtaining quotes from suppliers or using pricing from recently delivered or tendered project pricing;
- a non-binding capital estimate for 66kv overhead powerline was provided by Powercor in September 2022, based on a build start date of July 2024;
- off-site water supply upgrades to site have been compiled by W3 Plus Consulting based on current Grampians Wimmera Mallee Water (GWM Water) projects and are experienced in construction and installation of water reticulation projects in the region;
- Driscoll Engineering provided a cost estimate in March 2023 for all road upgrades; and
- BM Projects have provided a conceptual design and cost estimate for accommodation facilities to be built near the Minyip township.

Further, the capital estimate is based on the assumption that the construction for the MUP, WCP and CUP will be completed by an Engineering, Procurement and Construction (EPC) contractor engaged by the Company. Estimates for other on- and off-site infrastructure such as the earthworks, overhead powerline, road and water upgrades etc have been compiled from various independent consultants on the basis that the work will be completed by dedicated specialist contractors.

The capital estimates have been benchmarked against both recent and future projects using similar proven designs both in Australia and Internationally and have been assessed as competitive.

The contingency for the Project has been estimated on a line-by-line basis for each area and reflects the Project's view of the risk to the capital estimate of each individual area, including potential for changes in current design and/or engineering of key infrastructure. The contingency of $39.2 million represents 12.0% of the total capital estimate.

2.2 Operating Expenditure

The annual operating expenditure estimate completed for the DFS has been derived from a first principles build-up of operating costs and benchmarked against other similar projects in Australia. Offsite operating expenditure (such as transport) has been derived from other specialist consultants and service providers.

The key assumptions used in the evaluation of operating expenditure are:

- run of mine throughput of 7.5 million tonnes of ore per annum;
- average final REEC production of approximately 7.2kt per annum;
- average final HMC production of approximately 228.7kt per annum;
- based on a first principle cost build-up – no formal tenders have been issued for any operating expenditure included in the financial model;
- shown in 2023 real terms and therefore not adjusted for inflation;
- contemplates the tactical mine schedule and therefore takes into account variations in grade, ore content, overburden, strip ratios and final REEC and HMC products;
- inclusive of transport costs from Australian port to USA & China in accordance with CIF pricing.

The average operating expenditure and proportion of overall expenditure are shown in Table 9 below:

Table 9 – Average annual operating expenditure – Donald Project Phase 1

Operating area	Average Expenditure A$M	Average Expenditure %
Mining costs	65.9	39.5
Processing costs	23.9	14.4
Transport – mine site to port	13.3	8.0
Transport – port to customer	28.7	17.2
Royalties	7.5	4.5
Labour	17.9	10.7
Non-process operating and maintenance costs	6.1	3.7
Accommodation camp costs	2.0	1.2
Other operating expenses	1.3	0.8
Total	**166.6**	

Mining costs are estimated on a contractor mining basis by AMC Consultants Pty Ltd (AMC) using a cost estimate model developed over the past 15 years. Variable costs are estimated by calculating individual equipment hours of designated mobile mining fleet according to mine physicals (tactical mine schedule) and time-usage assumptions (productivity and available engine hours). Inputs using projected assumptions are used to estimate unit operating costs for each item of equipment (generally per engine hour), to develop an overall cost estimate. Fixed costs are estimated on a periodic basis pro-rated to the duration of each period in the mine schedule. The model also includes an average contractor margin of 15%. These costs were also benchmarked against AMC database and are within reasonable limits.

Processing costs have been estimated by Mineral Technologies (MT) based on process flow sheets and DFS level engineering design to a confidence level of AACE Class 2. Pricing for material processing inputs such as reagents, electricity, diesel and water has been estimated using the latest available pricing. These estimates have been reviewed internally by MT and benchmarked against similar projects.

Transport costs have been estimated for both pit to port and port to customer due to the pricing basis selected for the financial model. Road and rail transport of HMC and REEC is based on current freight pricing for these methods of transport. Sea freight for transport for HMC from the Port of Melbourne or the Port of Geelong has been estimated using current bulk shipping cost estimates. Sea freight for transport of REEC from Port of Melbourne or Port of Adelaide is based on current container shipping rates for Class 7 materials.

An operational organisational structure has been developed for similar operations in order to determine project staffing positions and working rosters. Labour costs included in the financial model include the salary, wages and associated on-costs of the organisational structure and the labour plan for efficient operations.

There is no contingency or forward escalation included within the operating expense estimates and they are based on commencement of the project in Q3 2025 and operations at nameplate capacity in Q4 2025.

3 Environment & Social

3.1 Licences and Approvals

Astron and DMS strive for excellence all areas of environmental awareness and protection in order to minimise potential impacts on the environment. Astron is committed to high standards of environmental protection and continuous improvement.

Key stakeholders identified early in the project development process, from commencement of the Environment Effects Statement (EES) application in 2005, have been regularly consulted to ensure that the project delivers sustainable outcomes benefitting the community.

Positive assessment of the EES, conditional approval to proceed to licencing, and the Environmental Protection, Biodiversity and Conservation (EPBC) approval are major steps allowing Donald Project to proceed to construction and operation.

Since the EES was positively assessed in 2008, there have been amendments to regulations governing mining and environmental protection, and this, in addition to updates to the project design for more efficient processing and capital efficacy, have resulted in Donald Project having to update certain impact assessments. Crucially, as the Project remains largely as described and positively assessed in 2008, a new assessment is not required – rather, these updated assessments will form part of the Work Plan submission to Earth Resources Regulation (ERR) in Q3 2023.

Following the 2008 EES, Astron through DMS obtained the following permits and licences for continued advancement of the Project:

Table 10 – Summary of approvals and licences currently held

Year	Approval / License Granted
2009	EPBC approvals granted (varied, and renewed in 2018 to 2042)
2010	Mining License (MIN 5532) granted
2011	Water supply rights purchased (6.975Glpa bulk water entitlement)
2014	Cultural Heritage Management Plan (CHMP) approved for Workplan area of MIN 5532
2015	Radiation license obtained (now renewed to 2026)
2016	Heavy Mineral Concentrate (HMC) export license obtained (will require renewal)[5]

Table 11 provides a summary of the further approvals and licences required prior to commencement of construction and operations:

Table 11 – Summary of approvals and licences required

Approval required	Relevant Regulatory Agency	Primary compliance requirements
Work Plan	Earth Resources Regulation (ERR)	• ERR guidelines • EES Ministerial Assessment requirements • Environmental Protection Act (2017) (EP Act) requirements general environmental duty (GED) and other specific requirements • 2017 Department of Energy, Environment and Climate Action (DEECA) vegetation removal and offset requirements
Planning and approvals for off-MIN infrastructure	Department of Transport and Planning (DTP), Local Shire(s)	• Compliance with local planning requirements • Assessment of impacts • EES Ministerial Assessment requirements
Approved Transport Management Plan	Shire, DTP and emergency response agencies	• EES Ministerial Assessment requirements
Secondary licenses and permits	Various agencies	• EPA (A18) Permit(s) to remove, use and return tailings to in-pit tailings storage and/or mining void • License to construct and operate dams / tailings storage facility • Renewal of export licence • Permit to remove vegetation (DEECA) • EPA development licence or permitting for sewerage treatment (depending on sewage disposal design) • Approval of radiation management plans (DHS)

3.1.1 Work Plan

The mine Work Plan combines all intentions and obligations relating to mining activity on tenements issued under Mineral Resources Sustainable Development Act 1990 and consists broadly of a project

[5] The HMC export licence obtained in 2016 expired in 2021 and is in the process of being renewed under the terms and conditions of the original licence.

description, risk assessment, risk management plan that addresses risk minimisation, community engagement plan and rehabilitation plan. Several other standalone management plans, such as the CHMP, radiation and flora and fauna offsets are also incorporated into the Workplan.

A risk based Workplan, in accordance with guidelines issued by ERR, and the requirements of the Mineral Resources Regulations, is currently being developed and will incorporate recommendations made in the Ministerial Assessment under the EE Act.

The only significant update to project design since positive assessment of the EES in 2008 relates to the addition of the rare earth flotation plant and the removal of the previously proposed wet high intensity magnetic separation (WHIMS) plant. This change is considered to have minimal effect on project environmental impacts and risks, and with proposed changes to handling and storage of the project products, is expected to in fact reduce overall environmental risk.

Prior to submission of the Workplan a document comparing the impacts from the current project design with those assessed in the 2008 EES will be submitted to ERR for regulatory assessment and confirmation that project impacts and risks have not materially changed.

3.1.2 Off-Mining Licence Approvals

The Company will seek planning approval for all separate infrastructure components including:

- any vegetation/biodiversity or cultural heritage matters encountered that are not able to be avoided, minimised or offset may require infrastructure redesign or route realignment;
- Powercor (Victorian power reticulation body engaged under the Australian Energy Regulator's connection charge guidelines for electricity retail customers and the requirements in Chapter 5A of the National Electricity Rules) will develop the 66kV overhead power-line from Horsham to the mine (approximately 70 km) and will also undertake approvals for the powerline;
- other works – water infrastructure, road upgrades and the accommodation village will be approved at local council level following completion of design and impact assessments, provided no planning scheme amendments are required.

Planning consultants are assisting the Company to finalise approval documentation, and in securing easements as required.

The Company regularly holds discussions with the community and relevant organisations and authorities to ensure that relevant stakeholders are well informed of the progress of critical infrastructure and its impact on the local community.

3.2 Economic Impact Assessment

To support community engagement and interaction with all levels of Government, Astron commissioned Deloitte Access Economics to undertake an updated Economic Impact Assessment (EIA) in 2022, using current project, regional and State data. The report concluded that, over the first 30-years of the Phase 1 project, the Donald Project will generate significant economic impacts for the local project region and beyond. Phase 1 of the Donald Project is forecast to contribute $2.2 billion in present value terms to the gross regional product (GRP) of the local area, a 1.8% annual increase relative to baseline forecasts. The study also found that Phase 1 of the Donald Project will provide 150 full time equivalent (FTE) direct employee and contractor opportunities and lead to an increase of 536 FTE employment opportunities in the region on average over project life.

3.3 Community engagement

Astron has focussed strongly on community engagement throughout development of the project, guided by a Community Engagement Plan specifically developed for the project.

Community engagement activities include:

- Employment of a dedicated Community Liaison Officer who is resident in the region
- Development of community engagement materials such as newsletters and fact sheets
- Provision of regular updates to all stakeholders via a variety of face to face and on-line methods
- Formation of a Community Reference Group (CRG), which has met three times (up to Q1 2023) with further quarterly meetings to be held in the future
- Formation of a Transport Management Plan Working Group which includes representatives from key stakeholders such as Yarriambiack, Buloke and Northern Grampians Shires representatives, Victorian Police, Department of Transport and Planning, Country Fire Authority, Ambulance Victoria, and State Emergency Service

Significantly, the Donald Project has entered into a Memorandum of Understanding (MoU) with the Yarriambiack Shire Council (YSC), the Shire within which the project will largely be operated. The MoU provides the Donald Project and YSC to work cooperatively and collaboratively to maximise mutually beneficial community and economic outcomes from development and operation of the project.

3.4 Land Rehabilitation

Phase 1 operations will occur within MIN5532 which comprises arable, mixed-use farming land. The Company currently owns 4 blocks of land for a total of 829 hectares within MIN5532, with two further properties totalling approximately 790 hectares to be purchased (or agree land use terms) in order to access for commencement of operations. Discussions with these remaining land holders has been positive and no significant issues are expected to arise.

The Company also owns land outside MIN5532 which is leased to local farmers to actively farm. This provides for options regarding offering alternative land for farming whilst land within MIN5532 is mined, prior to rehabilitation.

In accordance with the mining method and with similar operations globally, the disturbed area will be progressively rehabilitated as mining of discrete blocks are completed. Effectively, tails from the processing facility are pumped back to the mining pit to fill the void. Following dewatering and consolidation, overburden will be placed over the top of tails followed by replacement of subsoil and topsoil. Finally, rehabilitation of the mining block is completed to return the disturbed area back to its original landform and farm cropping usage. The cost of rehabilitation is borne by the Company and has been included in the financial model.

Astron developed a test mine pit for the purpose of recovering a 1,000-tonne bulk sample to assist in completion of metallurgical test work used in the compilation of this DFS. This test pit area rehabilitation was started in March 2018 and returned to farm usage thereafter. The 2022 barley crop harvested from the test-pit area was independently monitored, showing crop yields at the same levels as in the surrounding area, validating the success of the approach taken to site rehabilitation.

4 Resource

4.1 Geology and Geological Interpretation

The Donald deposit is within the Murray Basin, which comprises flat-lying Cenozoic sediments that unconformably overlie Proterozoic and Palaeozoic basement rocks. The mineralisation is contained within the Tertiary aged Loxton Sand, a sequence of marine sands representing a range of environments including deep-water (offshore), near shore, tidal, beach and back dunal sediments.

The mineralisation at Donald is contained within the marine sequence of the Loxton Sand. The marine sequence of the Loxton Sand unit can be subdivided into three sub-units:

- LP1 – fine to very coarse friable quartz sands and minor silty, clay and gravel beds representing dunal, foreshore and surf zone sediments;
- LP2 – near-shore, very fine silty micaceous quartz sands, minor clays and gravels, representing sediments deposited below the wave base that show friable laminated and truncated HM

mineralised beds. LP2 is the principal fine-grained heavy mineral target throughout the Murray Basin and contains the majority of the mineralisation in the Donald deposit.

- LP3 – represents deep water sedimentation containing higher silt and clay material than LP2.

Within the Donald deposit area, the Loxton Sand is underlain by the Geera Clay. The Geera Clay typically consists of black, grey, green or yellow brown plastic clays, with minor silts and is interpreted to have formed in a shallow water, marginal marine, lagoonal or tidal flat environment.

The Loxton Sand is overlain by the fluvio-deltaic Shepparton Formation which consists of clay and silt. A typical east-west cross section of the geology and mineralisation is shown in Figure 5.

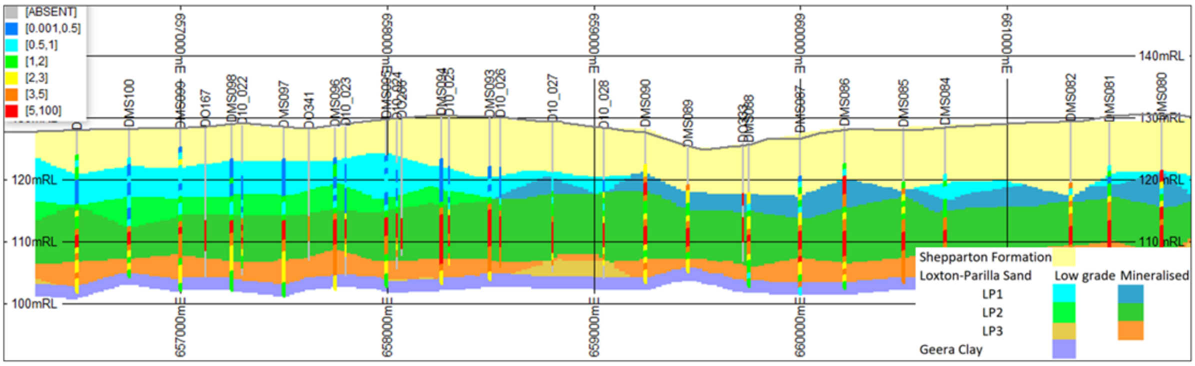


Figure 5 – Cross section 5,961,300mN looking north through the deposit showing geological units and drillholes coloured by total HM% grade (x30 vertical exaggeration)

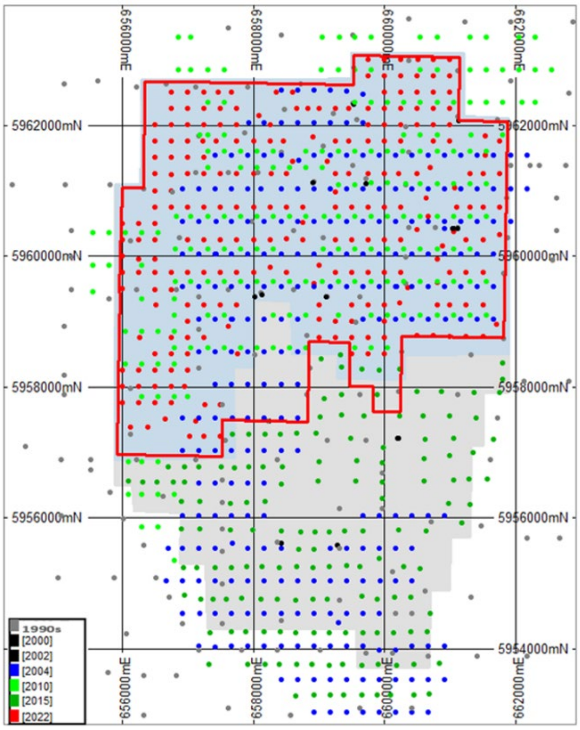
4.2 Project drilling summary

There have been multiple drilling campaigns conducted across the Donald deposit since the early 1980s All drilling since 1987 has been conducted by licensed and trained drillers from Wallis Drilling using the reverse circulation Air core (RCAC) method and NQ rods with a nominal drill bit diameter of 82mm. In total, across all tenements, there are 2,028 drillholes for total drilling of 51,745m. Table 12 below outlines the drilling information for MIN5532.

Table 12 – Summary of drilling information used for the MIN5532 estimate modelling

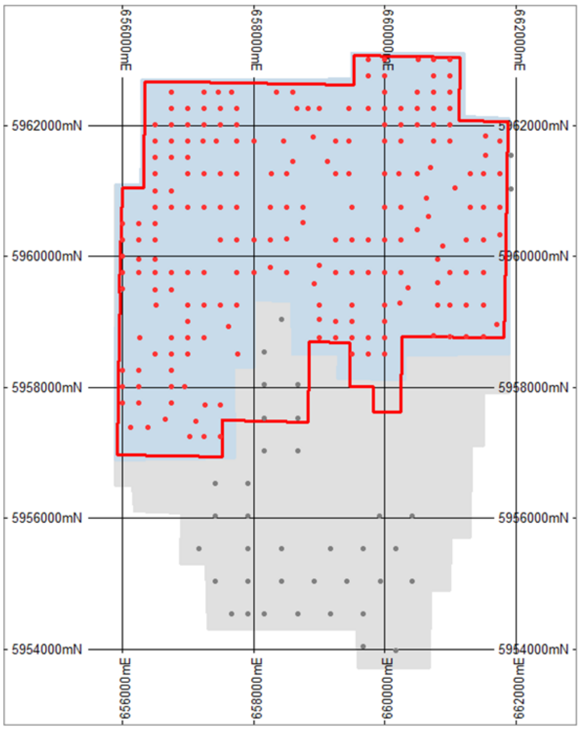
Company	Year	Number of drillholes	Metres drilled	Comment
CRA Exploration	1982-89	91	2,250	Used for geological interpretation only.
Zirtanium	2000	1	19	Used for geological interpretation only.
	2002	14	327	
	2004	225	4,967	Used for geological interpretation. Assay and mineral assemblage data used for Area 2 where total HM data is from +38µm to 90µm fraction.
DMS / Astron	2010	167	3,969	Used for geological interpretation. Assay data (total HM, slimes and oversize) used for grade estimation in Area 2.
	2015	102	2,777	
	2022	245	6,358	All geological, assay and mineral assemblage data used for Area 1.
Total		**845**	**20,667**	

Geological logging information from all historical drilling campaigns (Mason, February 2004) has been used to inform the resource modelling geological interpretation for the MIN5532 area. The 2022 Mineral Resource Estimation has been divided into two areas (Area 1 and 2) based on drilling coverage. Sample assay data derived from the 2022 drilling program has primarily been used for the 2022 Mineral Resource Estimation (within Area, 1 which covers 97% of MIN5532) with the exception of where land was unable to be accessed during the 2022 drilling campaign (Area 2). The drillholes used for the 2022 Mineral Resource Estimation, which informs this study, are summarised in Table 12. The spatial relationship of the these drillholes relative to the MIN5532 license area is shown in Figure 6 for HM% estimation holes (holes with HM assay data by drilling year) and Figure 7 for mineralogy % estimation holes (holes with mineral assemblage data).



Area 1 denoted by blue dots, Area 2 denoted by grey dots and MIN5532 by red dots and outline

Figure 6 – Plan of drillholes by drilling program



Area 1 denoted by blue dots, Area 2 denoted by grey dots and MIN5532 by red dots and outline

Figure 7 – Plan of drillholes with mineral assemblage data

4.3 Sampling and sub-sampling techniques

All sampling for total HM, slimes and oversize content has been carried out on 1m intervals down hole. Sampling from 2000 to 2015 was by collecting the entire 1m interval sample and later riffle splitting the dried sample down to size for analysis.

In 2022, subsamples were collected directly from a drill rig mounted rotary splitter netting on average 1.6kg (dry) with the remainder of the sample interval also being collected for recovery analysis.

Composite samples prior to 2022 were created by grouping samples' HLS sink fractions down hole based on the presence of heavy mineral (>1.5% total HM) even though the Mineral Resource (MRE) models were quoted using a 1% total HM cut-off grade. In 2022 mineralogy composites were created by grouping samples' HLS sink fractions across multiple adjacent holes and also down hole within the same geological domain (where total HM is >1%). These composites were analysed by XRF, optical grain counting and QEMSCAN methods prior to 2022 and additionally by laser ablation ICP-MS in 2022.

4.4 Sample Analysis Method

All of the samples from the 2022 drilling program were prepared and analysed by Bureau Veritas Minerals Pty Ltd (BV) at their Adelaide laboratory. The samples were screened at 20µm, 250µm and 1 mm. Slimes is the -20µm fraction, oversize is the +1mm fraction and total HM was measured in the +20µm/-250µm fraction and reported as a percentage of the whole sample.

For assay analysis work done prior to 2022, different in-size fractions have been used for defining analysis of the total HM contents of the whole sample processed post break up and splitting. Zirtanium in 2000 and 2002 used the +38µm to -1mm fraction for the determination of total HM%, and adjusted for the decrease in weight for the mineralogy and the XRF data to determine the +38µm to -90µm fraction.

Zirtanium in 2004 used the +38µm to -1mm for the determination of total HM% and then subsequently adjusted for the decrease in weight to determine the in-size +38µm to -90µm mineralogy and XRF results. Astron used the same process in 2010 and 2015 as Zirtanium in 2004.

All samples used for the 2022 Mineral Resource estimate were analysed for total HM content within the stated size ranges by the heavy liquid separation technique (TBE 2.96 S.G.).

HLS analysis prior to 2022 was predominantly carried out by Western Geolabs Pty Ltd in Perth, WA and Titanatek Lab in Ballina, NSW.

4.5 Resource Modelling and Reporting – MIN5532

Snowden Optiro was commissioned to carry out the 2022 MRE. Total HM, slimes and oversize block grades were estimated using ordinary kriging (OK). Mineral assemblage components were estimated using an inverse distance cubed technique. Variogram analysis was undertaken to determine the kriging estimation parameters used for OK estimation of total HM, slimes and oversize.

Block dimensions were selected from kriging neighbourhood analysis. Grade estimation was into parent blocks of 100 mE by 200 mN by 1 mRL. Sub-cells to a minimum dimension of 25 mE by 50 mN by 0.25 mRL were used to represent volume.

Geological interpretation and wireframe surface creation was performed using both Datamine Studio and Surpac software. The Mineral Resource estimation was completed using Datamine Studio software whilst geostatistical data analysis was performed using Snowden Supervisor software.

Bulk density for tonnage reporting was based on laboratory test work of Sonic core samples drilled in 2022.

Snowden Optiro reported the mineral resource for total HM and the VHM assemblage, as a percentage of total HM, above a 1% total cut off grade.

For this MRE the definition of HM is minerals that sink in a heavy liquid (TBE >2.96 specific gravity) with an in-size range from 20µm to 250µm. For all previous MREs of the Donald Project the HM in-size range was reported as 38µm to 90µm. This change was made to estimate fine HM quantities in the 20-38µm size range and also to align the upper limit of the resource in-size range with projected processing infrastructure (250µm screen). Very fine HM in the 20µm to 38µm size range was historically thought to be commercially unrecoverable however test work by Astron and Mineral Technologies has shown a reliable recovery of this material.

The Measured Mineral Resource component of the resource estimate is based on continuity of mineralisation in grade and along strike; and sufficient drill data density. Other resource classification categories have been applied to estimates area with less confidence due to lower drill density (model Area 2).

Table 13 – Total MIN5532 resource with VHM assemblage above a 1% HM cut-off

Classification	Tonnes	HM	Slimes	Oversize	% of total HM					
	(Mt)	(%)	(%)	(%)	Zircon	Rutile+ Anatase	Ilmenite	Leucoxene	Monazite	Xenotime
Measured	394	4.2	16	10	16	7	21	24	1.8	0.66
Indicated	110	3.5	24	11	15	6	19	18	1.7	0.61
Inferred	20	2.3	22	14	13	7	19	20	1.4	0.55
Subtotal	**525**	**4.0**	**18**	**10**	**16**	**7**	**21**	**23**	**1.8**	**0.65**

Table 14 – Total MIN5532 resource with product values above a 1% HM cut-off

Classification	Tonnes (Mt)	HM (%)	Slimes (%)	Oversize (%)	% of total HM			
					TiO_2	ZrO_2+HfO_2	CeO_2	Y_2O_3
Measured	394	4.2	16	10	34	10.9	0.51	0.28
Indicated	110	3.5	24	11	29	9.9	0.48	0.26
Inferred	20	2.3	22	14	30	8.9	0.40	0.23
Subtotal	**525**	**4.0**	**18**	**10**	**33**	**10.7**	**0.50**	**0.27**

Notes for Table 13 and Table 14:

1. *Mineralisation reported above a cut-off grade of 1.0% total heavy minerals (HM).*
2. *The Mineral Resource has been classified and reported in accordance with the guidelines of the JORC Code (2012).*
3. *Total HM is from within the +20 µm to -250 µm size fraction and is reported as a percentage of the total material. Slimes is the -20 µm fraction and oversize is the +1 mm fraction.*
4. *Estimates of the mineral assemblage (zircon, ilmenite, rutile and leucoxene) and are presented as percentages of the total HM component, as determined from grain counting, QEMScan, XRF and laser ablation analysis. QEMScan data was aligned with the grain counting data and the following breakpoints are used for used definition of the titania minerals: rutile >95% TiO_2, leucoxene: 50 to 95% TiO_2, ilmenite: 30 to 50% TiO_2.*
5. *TiO_2, ZrO_2+HfO_2 and CeO_2 from XRF and Y_2O_3 from laser ablation data are presented as percentages of the total HM component. All tonnages and grades have been rounded to reflect the relative uncertainty of the estimate, thus the sum of columns may not equal.*

4.6 Resource Modelling and Reporting – Outside MIN5532

Whilst the scope of this DFS is limited to the MIN5532 license area, historical drilling and resource estimation information on the total Donald Project including RL2002 and RL2003 are of relevance. These other tenements represent future expansion opportunities and the geological information from historical drilling programs has been used in forming the geological modelling interpretation with MIN5532.

The most recent Mineral Resource Estimate for RL2002 and RL2003 (which then included RL2006 which has since been amalgamated with RL2003) was completed by AMC Consultants Pty Ltd in 2016 based on the drilling program completed in 2015. AMC prepared a resource block model and Mineral Resource Estimates of HM, slimes and oversize. The mineral resource estimate was based on drill hole data from CRA, Zirtanium and prior Astron drill campaigns. All drill holes were sampled for HM at one-metre intervals. VHM samples were generally composited down hole over the interval of higher grade HM in mineralised drill holes (>1.5% HM), so not all drill holes were assayed for VHM. Where VHM data were available, AMC prepared a resource block model and a Mineral Resource Estimate for heavy mineral, oversize (greater than 1mm) slimes, zircon, rutile (inclusive of anatase), leucoxene, ilmenite and monazite.

Bulk density was based on a correlation between bulk density and HM% using the following accepted formula:

- BD = 1.65 + (0.01 x HM%)

The bulk density determination methodology has been changed for within MIN5532 associated with the 2022 drilling and resource update. The mineral resource estimate bulk density determination for all other DMS / Astron tenements remain as most recently reported.

The mineral resource was estimated using ordinary kriging and block modelling.

Resources for the Donald Deposit (outside of MIN5532 and inside of RL2002) and Jackson Deposits (RL2003) were reported to the ASX on the 7 April 2016. Resources for these tenements are shown in Table 15 separate from the MIN5532 resource.

Table 15 – Total mineral resource where VHM data available for the Donald Project not including MIN5532, above a 1% HM cut-off

Classification	Tonnes (Mt)	HM (%)	Slimes (%)	Oversize (%)	% of total HM				
					Zircon	Rutile+ Anatase	Ilmenite	Leucoxene	Monazite
Within RL2002 excluding MIN5532									
Measured	185	5.5	19	7	21	9	31	19	2
Indicated	454	4.2	16	13	17	7	33	19	2
Inferred	647	4.9	15	6	18	9	33	17	2
Subtotal	**1,286**	**4.8**	**16**	**9**	**18**	**8**	**33**	**18**	**2**
Jackson Deposit (RL2003)									
Measured	-	-	-	-	-	-	-	-	-
Indicated	668	4.9	18	5	18	9	32	17	2
Inferred	155	4.0	15	3	21	9	32	15	2
Subtotal	**823**	**4.8**	**18**	**5**	**19**	**9**	**32**	**17**	**2**
Total Donald Project excluding MIN5532									
Measured	185	5.5	19	7	21	9	31	19	2
Indicated	1,122	4.6	17	9	18	8	32	18	2
Inferred	802	4.7	15	5	19	9	33	17	2
Total	**2,109**	**4.8**	**17**	**7**	**18**	**8**	**33**	**18**	**2**

Notes to Table 15:

1. *MRE is based on heavy liquid separation analysis and mineralogy by XRF and optical methods*
2. *The total tonnes may not equal the sum of the individual resources due to rounding.*
3. *The cut-off grade is 1% HM.*
4. *The figures are rounded to the nearest: 1Mt for tonnes, one decimal for HM, whole numbers for slimes, oversize, zircon, rutile + anatase, ilmenite, leucoxene and monazite (outside MIN5532).*
5. *Zircon, ilmenite, rutile + anatase, leucoxene, monazite and xenotime percentages are reported as a percentage of the HM.*
6. *Rutile + anatase, leucoxene and monazite resource has been estimated using fewer samples than the other valuable heavy minerals outside MIN5532. The accuracy and confidence in their estimate is therefore lower.*
7. *For further details including JORC Code, 2012 Edition – Table 1 and cross-sectional data, see previous announcements dated 7 April 2016, available at ASX's website at www.asx.com.au/asxpdf/20160407/pdf/436cjyqcg3cf47.pdf*

4.7 Future opportunities

4.7.1 Grade control drilling

Grade control drilling in mining areas will be carried out over the Donald ore deposit prior to and during mining operations. Grade control holes are expected to be drilled on a 100x100m grid pattern to be determined by an initial grade control drilling trial commencing in early 2024.

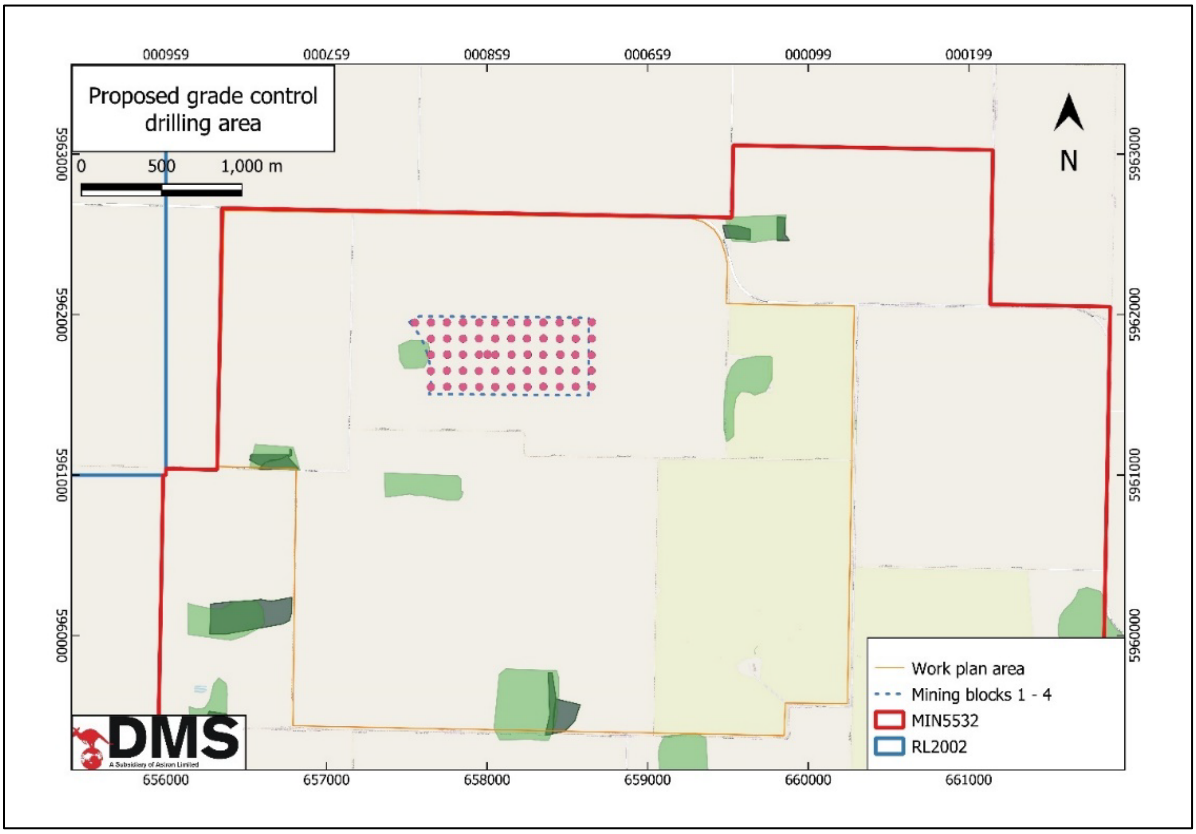


Figure 8 – Planned location of initial grade control trial drill program

The grade control drilling trial is projected to commence in February 2024 consisting of 61 Air core drilling holes. Fundamental features of this program such as drilling method, hole size, drilling contractor used and data collection methods will be kept the same as for previous drilling programs to allow the new data to be used with the old data in grade control modelling. A grade control geological block model will be produced from sampling taken from this grade control program. Learnings about program design and implementation have been gained from the 2022 Air core program and these will be incorporated into the grade control drilling trial program.

4.7.2 Metallurgical Test Work versus Resource Estimate

In recent metallurgical test work performed on Sonic drilling core samples, discrepancies in HM% and oversize% as well as mineralogy grades were seen. Further test work is currently being performed on samples from 2022 Air Core drilling program, which informed the resource estimation, to isolate the source of these discrepancies. Currently it is believed that a difference in the sample preparation technique used for the metallurgical test work, one where additional scrubbing was applied to the sample, is responsible for increased liberation of heavy mineral from oversize material or sample agglomerates. The difference in the results seen is of significance but it is important to note that metallurgical test results report higher values, with the resource estimation representing a more conservative outlook for the Donald Project.

5 Mining

The Donald Project is a WIM-style deposit consisting of a solitary or composite broad, lobate sheet-like body of considerable aerial extent, highly sorted and associated with fine-grained quartz micaceous sand. These deposits are thought to represent accumulations formed below the active wave base in a near shore environment, possibly representing the submarine equivalent of the strand-line style deposits. The WIM style deposits are typically much larger in tonnage and lower in grade than strand line deposits. WIM-style deposits are known to be free-digging (i.e. no blasting required) with fine grain characteristics the latter of which has been factored into the processing methodology selected for the Project.

As shown in Figure 9, the Donald Project will utilise an open pit dry mining operation where ore and waste will be mined using excavators and trucks. Run of Mine (ROM) ore will be stockpiled at the MUP and fed via front end loader into the MUP where it will be scrubbed, screened, slurried and pumped to the WCP. The MUP is designed to be relocated as it moves along the designated mining path.

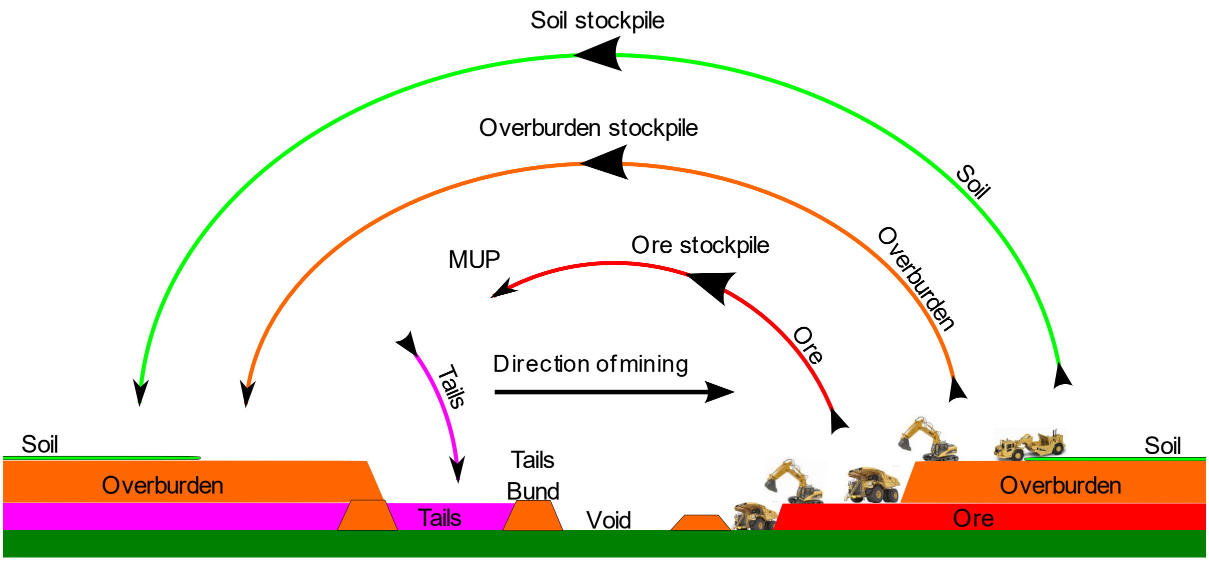


Figure 9 – Schematic cross-section mining method

Following the completion of the Mineral Resource update in 2022, Astron engaged AMC Consultants to develop an updated detailed mine plan that best aligned to the 2008 EES. Work included:

- the development of a strategic mine schedule within the MIN5532 to DFS accuracy;
- review and assess truck and excavator mining equipment to be used in mine design;
- determine updated production rates based on the 2022 Mineral Resource estimate update;
- detailed design of mining blocks including in-situ bunds, constructed bunds, backfilled tails cells and backfilled overburden dumps;
- prepare first principle mining costs model build-up using AMC's in-house developed OPMinCost model; and
- update the Ore Reserve estimate within MIN5532 in accordance with JORC 2012.

5.1 Pit optimisation

As the entire mining licence area is economic, mining activities will commence in an area close to the processing plant location, in the north-western corner of MIN5532. Due to the tailing requirements, mining will be undertaken in 500m by 250m blocks. The mine schedule has been optimised using the Lerchs-Grossman (LG) pit-optimisation analysis. This was conducted using Measured and Indicated classified materials contained within the mining licence area. The mine pit will initially progress from west to east for eight blocks before returning to the area immediately to the south of the first block. See mining sequence in Figure 10 below.

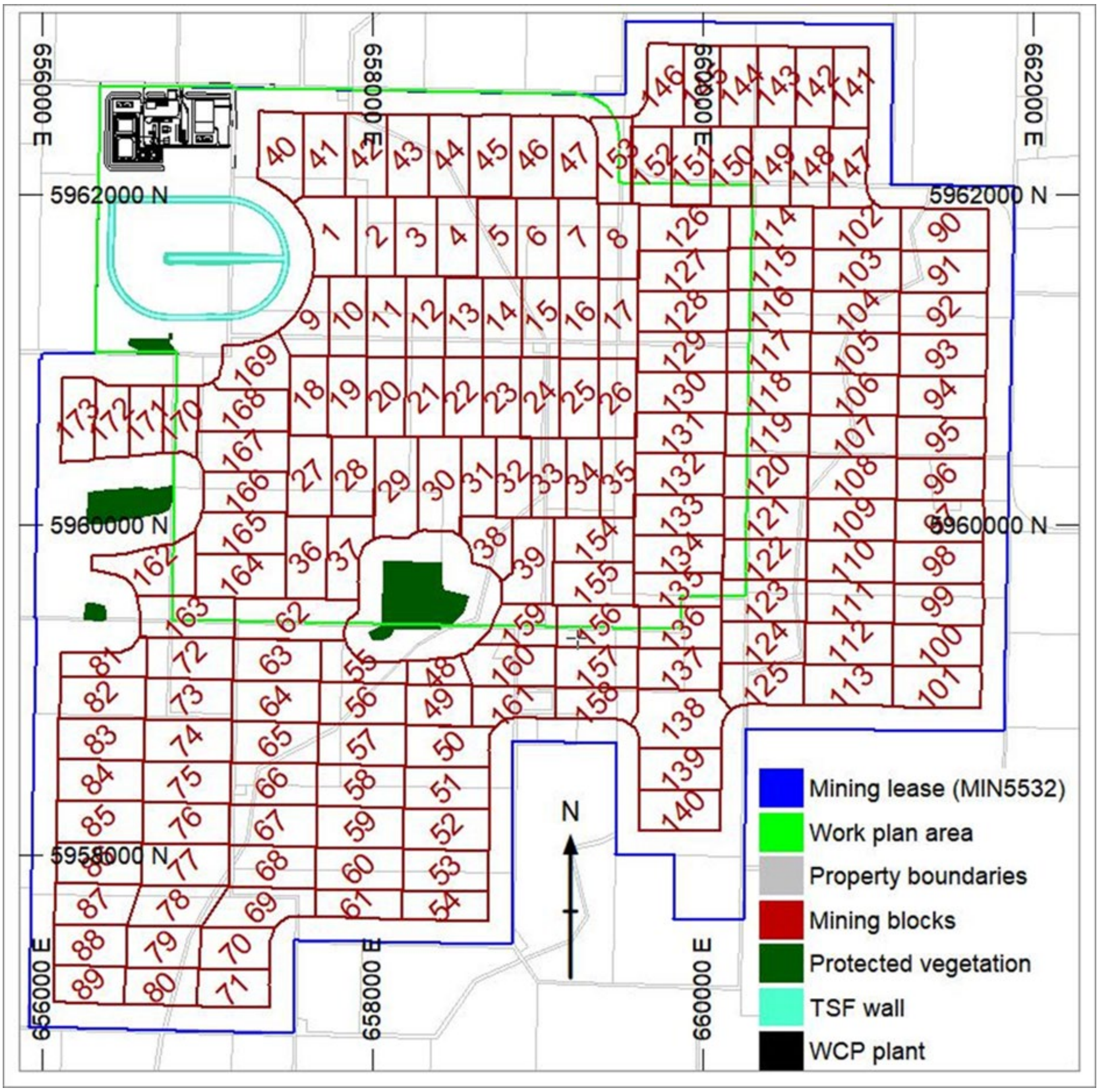


Figure 10 – DFS Tactical Schedule Mining Block Sequence

Areas with cultural heritage and protected vegetation have been sterilised from the mine plan. Post-start-up, the mine path will enter a higher-grade zone. For context, the mining of blocks 1 to 8 will take about two years. The LG optimisation undertaken by AMC informed the development of an initial strategic mine schedule based on cash flows and associated operating costs.

5.2 Pit Design

The mining lease boundary was chosen as the basis of the mine design, with an offset of 100 meters from the boundary to the crest of excavation. The base of the mine has been restricted to the surface generated by the LG optimisation. A slope of 1:2 was projected from the crest to the base of mine surface based on geotechnical input from ATC Williams.

The mining blocks were designed based on the strategic mine schedule with adjustment based on the pit boundary and the size of the tails cells. The mining blocks are constructed with topsoil, subsoil, overburden, and waste. To contain the backfilled tails, in-situ ore bunds are left either side of the mining block (in between strips) to ensure future mining would not intersect consolidated tails. The mining blocks follow a progressive sequence within a strip before shifting to a new strip. This mining methodology is selected to maintain short hauls of overburden to final dumps and ensure a downstream embankment exists between the active tailings block and active mining block.

To constrain the tails returned to the mining void, tails cells are contained within sets of constraining bunds. There are two types of bunds that will be used: in-situ bunds and constructed in-pit bunds. The height of the bunds is based on 1 m freeboard above the contained tails. The tails cells have been based on a 500 m x 250 m footprint. The bunds have a crest width of 15 m to accommodate construction equipment, and post-construction safety bunds, pipework, and equipment.

Topsoil and subsoil stockpiles will be constructed adjacent to the mining block they are mined from. Overburden stockpiles will be constructed in central locations over the mine life. The LP1, Shepparton, and LP2 stockpiles will need to be retained separately to be used for the construction of the tailings storage facility (TSF) embankments.

5.3 Tactical Mine Schedule

Following the LG optimisation and completion of the pit design, a tactical mine schedule was developed based on detailed pit designs, tailings storage facility voids, in-situ and constructed in-pit bunds, and inventory stockpiling. The scheduling software Deswik was used to prepare and run the tactical mine schedule. The schedule involved sequencing of blocks according to the strategic mine schedule, and incorporating key dependencies between soil stripping, overburden and ore mining, in-pit bund construction, tailings cell filling, backfilling of overburden and soil, and stockpiling.

The tactical mining schedule assumptions included equipment productivities and operating hours, shift calendar, defined sequencing of mining and backfilling of blocks, constraints to restrain open areas, dependencies between soil, overburden, and ore mining, and between construction of in-pit bunds and mining ore blocks. Several operational delays were incorporated into the schedule, including pre-stripping of topsoil and subsoil six months ahead of mining overburden in the same block, only allowing overburden to be mined four blocks ahead of the current ore mining block to maintain a limited open area, and a three-month delay between starting to fill a tailings in-pit cell and backfilling overburden on top to allow for settlement.

The sequence of mining followed the strategic mine schedule, starting at block 1 and finishing at block 173 (as shown in Figure 10 above). Each block was mined top down (topsoil, subsoil, overburden, and ore), and after construction of the in-pit bund was filled bottom up (pumped tails, overburden, subsoil, topsoil). Inventories were prepared based on detailed pit designs, and additional voids for tailings and overburden backfilling were also designed and used for material destination scheduling. Dumps were designed for overburden to be placed over the top of the in-pit tails up to and above the original topography. Stockpiles were included in the schedule for topsoil, subsoil, overburden, and run of mine ore. Haulage profiles were prepared and applied for the calculation of haulage hours for overburden and ore.

5.4 Mining equipment and production rates

Table 16 outlines the volume of material to be moved throughout the life of mine in both tonnes and bcm:

Table 16 – Life of mine material to be mined

Mining Activity	Total Tonnes (Mt)	Total BCM (Mbcm)
Ex-pit ore	309	179
Ex-pit waste	448	286
Ore rehandle to MUP	309	19
Overburden rehandle	86	68
Subsoil rehandle	30	21
Topsoil rehandle	8	5
Total	**1,189**	**739**

Based on a production rate of 7.5Mtpa of ore and an average of 10.4Mtpa of waste and overburden, the primary mining fleet will include 250 tonne excavators matched with 150 tonne haul trucks for the mining of overburden, 250 tonne excavators matched with 95 tonne haul trucks for the mining of ore, and 130 tonne front end loaders to rehandle and feed the MUP. The primary mining fleet will be supported by an auxiliary fleet, all undertaken by a mining contractor. The proposed mining fleet is shown in Table 17 below.

Table 17 – Mining Equipment Fleet

Description	Nominal Equipment Model	#
Ore Mining Excavator 250 t	CAT6020B	1
Ore Mining Haul Truck 95 t	CAT777(05B)	2
Overburden Mining Excavator 250 t	CAT6020B	2 to 4
Overburden Mining Haul Truck 150 t	CAT785D	3 to 13
Ore rehandle to MUP	CAT993K FEL	2
Dozers	CAT D10T	2
Dozer	CAT D9R	1
Grader	CAT 16M	1
Support Excavator	CAT 345GC (45t)	1
Water Truck	CAT 777WT	1
Water Truck	CAT 745WT	1
Support FEL	CAT 980M	1
Service Truck	Light Highway service truck	1
Soil compactor	CAT CP76	1
Lighting Plants	Allight	6
Scraper	CAT 657G	1
Bus	Toyota	1
Grade Control Drill	FlexiROC D65	1
Light Vehicles	Toyota 4WD	11

Loading unit and haul truck operating hours were estimated in order to develop mining fleet requirements and compare to the AMC benchmark database, which includes significant data relating to availability, utilisation and operating hours.

5.5 *Mining Costs*

Mining costs were based on a combination of contractor inputs, general assumptions and AMC benchmarks. A first principle mining cost estimate was undertaken by AMC using an in-house proprietary tool.

The AMC in-house proprietary tool takes into consideration various factors such as equipment selection, fuel and other consumable consumption, operating and capital costs, infrastructure, and contractor management. Haulage travel times and fuel consumption were estimated using retard curve engine load factors. Fixed haulage cycle time assumptions and time-usage models were modelled independently of the tactical mine schedule. The tactical mine schedule physicals and haulage times were used as the basis of the mining cost estimate.

The key assumptions used in mining unit cost estimation include the mining contractor's operating strategy, equipment productivity, fuel price, salaries, contractor margin, and interest rate. The estimate also covers haul road construction, mine rehabilitation, miscellaneous operational overheads, and contractor mobilisation and demobilisation costs.

Table 18 illustrates the average mining cost per annum and average mining cost per volume of ex-pit ore and waste over the life of mine:

Table 18 – Mining Costs

Operating area	Average Expenditure A$M	Average cost per tonne ex-pit $A
Mining – Ore	8.6	0.47
Mining – Overburden	22.9	1.26
Rehandle – Ore & Overburden	12.0	0.66
Ancillary Fleet	14.0	0.76
Dewatering	3.7	0.20
Overheads and labour	3.6	0.19
Other	1.1	0.06
Total	**65.9**	**3.61**

Note: The ancillary fleet includes dozers, graders, water trucks, light vehicles and other support equipment required for mining support operations and infrastructure.

In comparison to the AMC Benchmark Database mining costs, the Donald Project mining cost is in the mid to low range as shown in Figure 11. Note that drill and blast costs have been excluded from benchmark operating costs. This shows the cost in the lower portion of the benchmark, and a slight reduction compared to the PFS estimate.

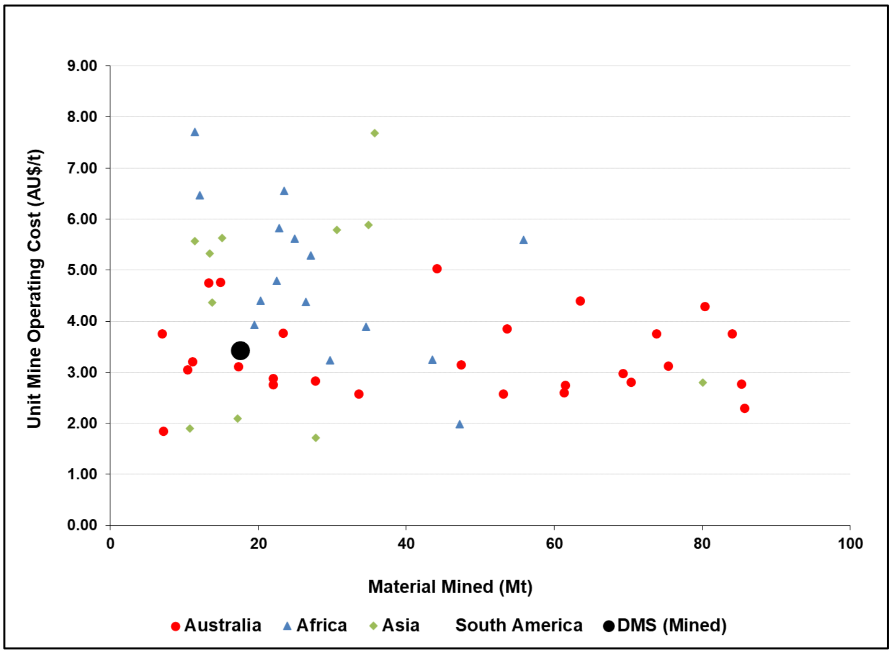


Figure 11 – Donald Project unit mining cost against AMC benchmark

5.6 Ore Reserves

The Ore Reserve is the part of the Mineral Resource that is able to be economically mined using the selected mining methods. Mineral Resources included within MIN5532 classified as Measured were categorised as Proved Ore Reserves after adjustment for all mining, metallurgical, social, environmental, statutory and economic aspects of the Donald Project. Mineral Resources included within MIN5532 classified as Indicated were categorised as Probable Ore Reserves after adjustment for all mining, metallurgical, social, environmental, statutory and economic aspects of the Donald Project.

The mineralised orebody is continuous higher-grade strata without pockets of lower grade and therefore no additional dilution of the Mineral Resource model was included.

A summary of the Ore Reserves for MIN5532 is found in Table 19.

Table 19 – Donald Deposit MIN5532 – 2023 Ore Reserve

Classification	Tonnes (Mt)	Total HM %	Slimes %	Oversize %	% of total HM					
					Zircon	Rutile	Ilmenite	Leucoxene	Monazite	Xenotime
Proved	263	4.4	15.4	9.8	16.7	5.5	21.6	25.9	1.8	0.67
Probable	46	4.1	19.7	11.1	15.3	5.5	21.3	20.1	1.8	0.64
Total	**309**	**4.4**	**16.1**	**10.0**	**16.5**	**5.5**	**21.6**	**25.1**	**1.8**	**0.66**

Notes:

1. *The ore tonnes have been rounded to the nearest 1Mt and grades have been rounded to two significant figures.*
2. *The Ore Reserve is based on Indicated and Measured Mineral Resources contained within mine designs above an economic cut-off.*
3. *A break-even cut-off has been applied defining any material with product values greater than processing cost as Ore.*
4. *Mining recovery and dilution have been applied to the figures above.*
5. *The area is wholly within the mining licence (MIN5532).*
6. *The rutile grades are a combination of rutile and anatase minerals.*

6 Geotechnical & Tailings Management

ATC Williams Pty Ltd (ATCW) were engaged to undertake a DFS on the initial external Tailings Storage Facility (TSF) and subsequent in-pit tailings cell construction and deposition. This DFS builds on previous work completed by ATCW in September 2022.

Numerous geotechnical investigations have been undertaken since 2015 by Douglas Partners, GHD and ATCW with the most recent site work completed by ATCW in 2022 to obtain disturbed and undisturbed samples for laboratory testing. Laboratory testing was undertaken to identify suitable material parameters for inclusion in the design of the tailings facilities.

These various investigations indicated the construction and use of an initial external TSF facility is NPV positive for the project. Based on this analysis, the DFS design progressed considering a modified co-disposed tailings slurry (mix of sand and slimes) that is initially hydraulically placed within an external TSF until sufficient in-pit void space has been generated through the mining operation to allow tailings to be deposited within in-pit tailings cells.

The mine blocks have been sized with nominal dimensions of 250 m x 500 m to allow better control over the tailings rate of rise which is linked to the overall settled density of the tailings (i.e. lower rate of rise generally equates to an improved final settled density).

6.1 External TSF

The external TSF is proposed to be located immediately south of the proposed process plant as shown in Figure 12 below. Based on ANNCOLD Guidelines, the external TSF has been assigned a consequence category of ‘HIGH C’ as it is an above ground facility located upstream of the nearby process plant.

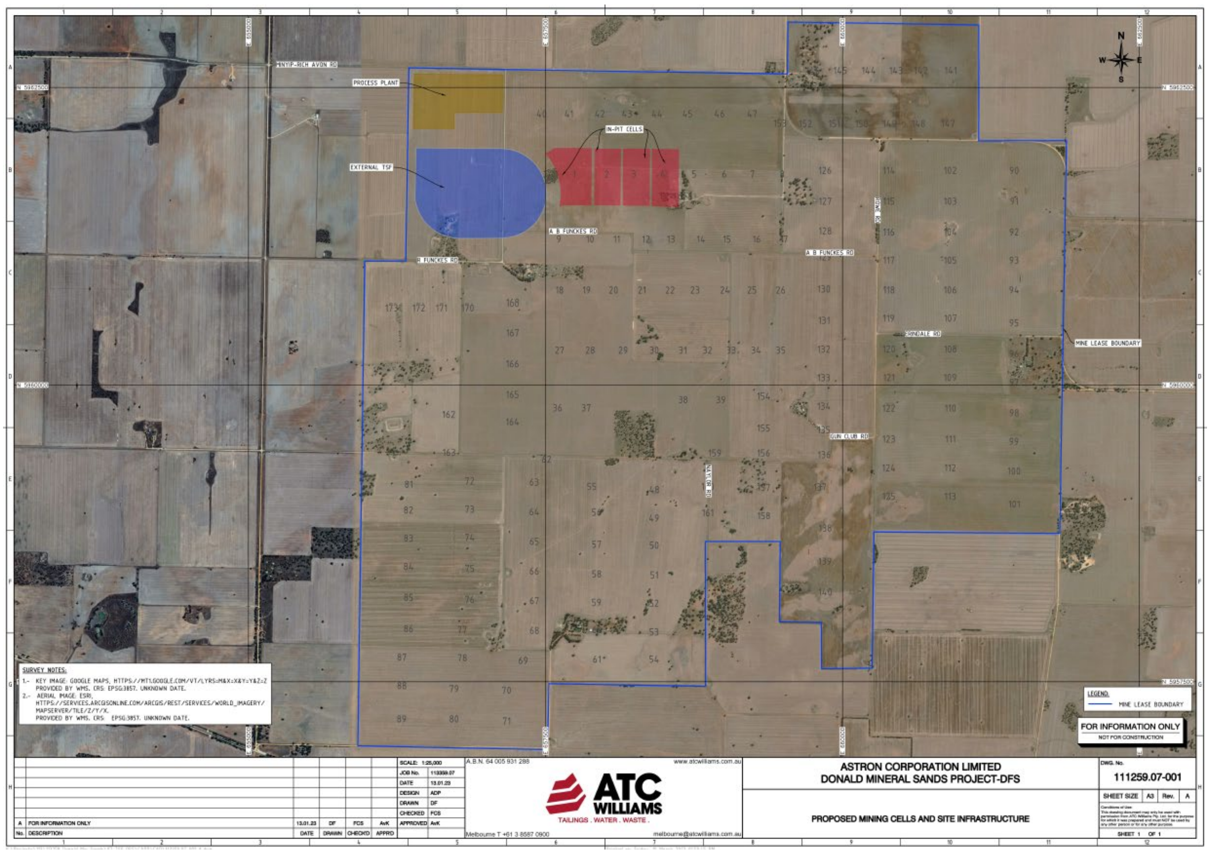


Figure 12 – External pit TSF Location

The external TSF has been configured as a modified Central Thickened Discharge type arrangement. The facility geometry is roughly oval in shape to account for tailings deposition from a central spine constructed 14.5 m high. The confining embankments will be constructed to approximately 5.5 m high with the decant pond located in the north-western corner of the facility.

The embankments will be constructed using Unit 3a/LP1 material with a low permeability facing (Unit 2/Shepparton clay) in the area of the normal operating pond. Embankment crest widths will be 20 m with upstream and downstream slope being approximately 2:1 (H:V). The results of the stability analyses completed (static and post seismic) achieve the minimum required factor of safety or higher.

The external TSF will be founded on low permeability Unit 2 material and hence drainage through the base of the facility will be slow. A seepage collection sump has been included in the design to allow accumulated seepage removal and minimise seepage through the embankment walls.

The water balance results indicate an average operating decant pond of approximately 0.7 m deep. The facility has been sized to consider the required storm storage volumes as defined in the ANCOLD guidelines for a "High C" facility.

Water return will be undertaken via a skid mounted pump located on an access ramp in the decant pond area. The pump can then be relocated up the ramp as the tailings and decant pond level increases.

A dam break assessment has been undertaken for the external TSF. The assessment provided an approximate alignment of the diversion bund that will tie-in with the noise bunds surrounding the processing plant. It should be noted that the current study only assessed extent and alignment of the bund and future works will include assessing the necessary engineering requirements for the bund.

A high-level closure concept landform has been developed for the external TSF considering the current EES requirements of the final facility being approximately 5 m above the current natural surface. Final closure landform design (including capping requirements) for the external TSF will be undertaken during the detailed design phase of the project.

The proposed TSF design is shown in Figure 13 below.

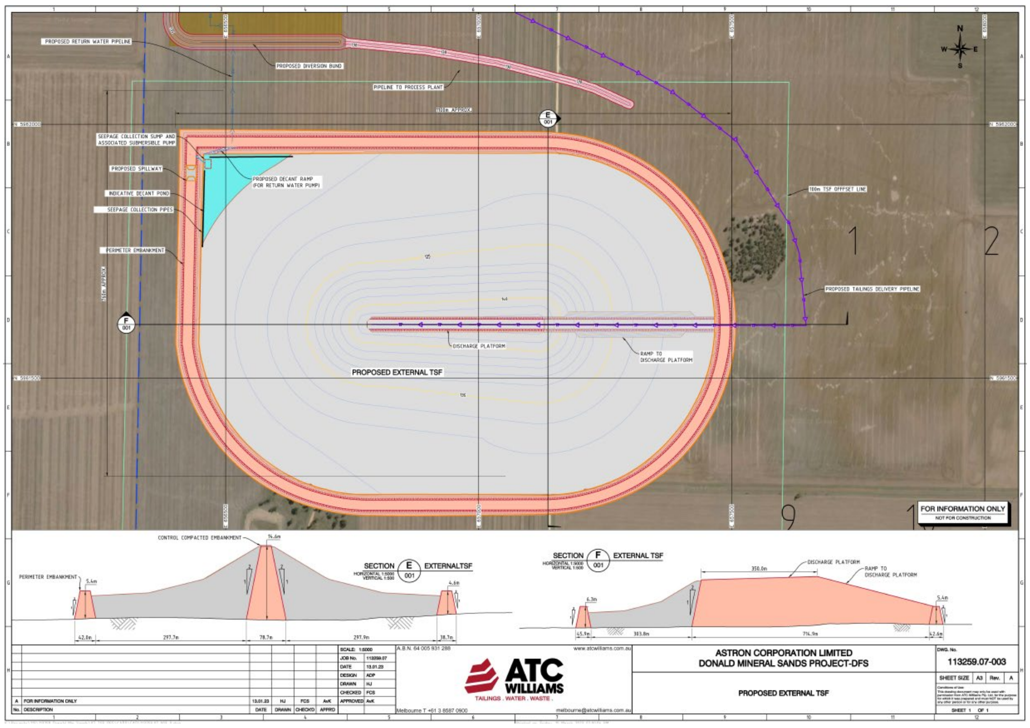


Figure 13 – Proposed External TSF

6.2 In-pit Tailings Management

Once sufficient in-pit void space is available, tailings deposition will take place within the pit. The DFS only considered a typical in-pit cell as all subsequent in-pit cells will be constructed and operated in a similar manner. The cells will be constructed below the natural ground surface (i.e. final tailings elevation to be no higher than 2 m below the natural surface to account for closure requirements).

The cells will be approximately 250 m by 500 m and will be constructed using a combination of in-situ and controlled compacted embankment. It is important to note that the active in-pit cell and the active mining face will be separated by an empty cell. See Figure 14. A consequence category assessment has identified the in-pit cells to be "Significant".

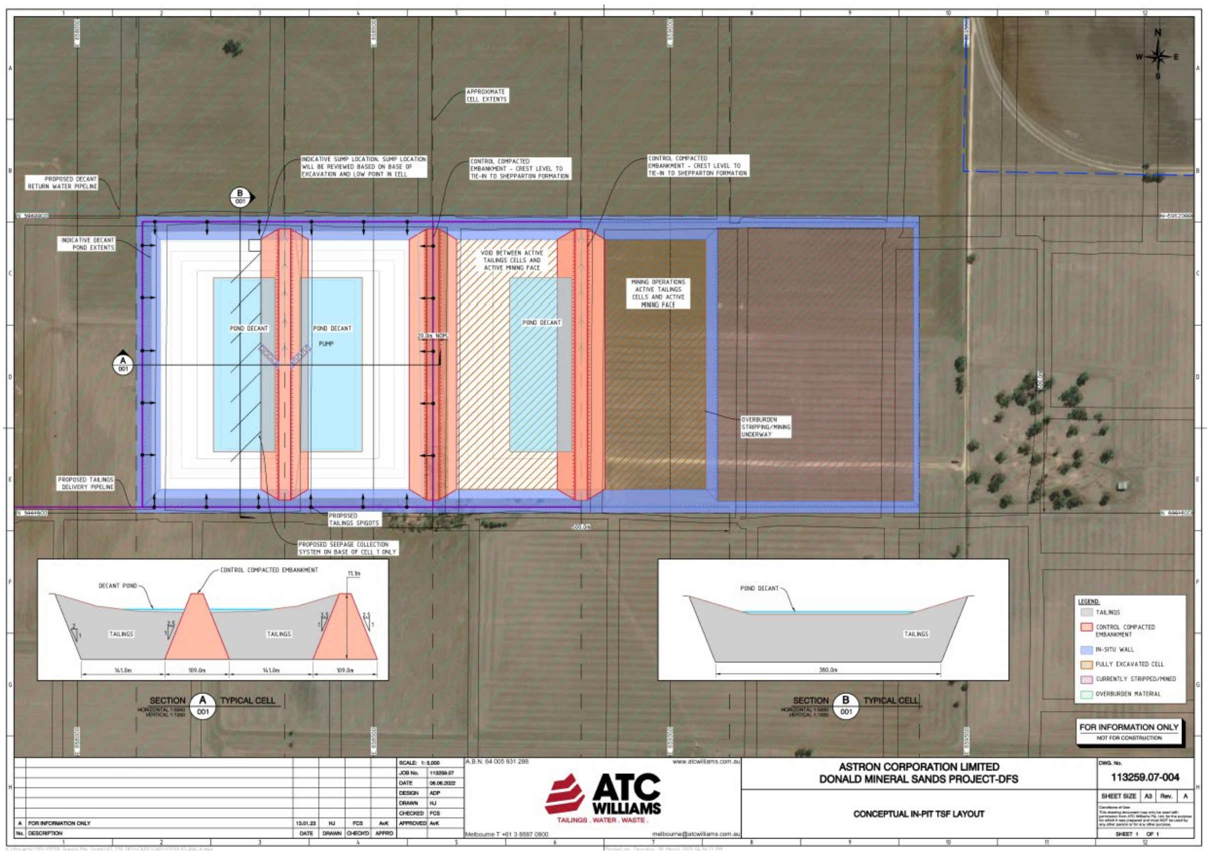


Figure 14 – In-Pit TSF

Similar to the external TSF, the cross-pit embankments will be constructed using Unit 3a/LP1 material with a 1.5 m thick (measured horizontally) low permeability facing in the areas where the normal operating pond will be located. The embankments will be constructed with a 20 m wide crest with 2.5:1 (H:V) side slopes. The marginally flatter slopes have been required due to the increased height of the embankments for the in-pit TSF (in comparison with the external TSF).

Return water will be dealt with in the same manner as the external TSF (i.e. access ramp and skid mounted pump). For Cell 1, tailings deposition will take place from the northern, western and southern embankments, while deposition for Cell 2 will take place from the northern, eastern and southern cells. The decant pond will therefore form in the middle of the cell with access from the dividing embankment.

It is anticipated that each cell will be operational for approximately three months. It should be noted that the filling rate will be highly dependent on a number of items including:

- Cell depth (i.e., base of excavation based on depth of mineralisation) where shallower cells will fill up quicker

- The performance of the thickener (including secondary flocculation performance)
- Tailings deposition operations

High-level consolidation modelling undertaken by AMC and a final landform design has been developed as part of the mine planning studies completed for the DFS. This information can be used to assess the progressive rehabilitation requirements for the project.

A final landform design was developed during the DFS by AMC. Detailed closure landform design including surface water and sediment modelling will be undertaken for the mined pit during the detailed engineering phase of the project.

A pit slope stability assessment was completed under the assumption that pit dewatering will be undertaken prior to and during the mining operation and pit dewatering continues within the operational in-pit cell until such time as the tailings level has surpassed the historic phreatic surface elevation (approximately 14 m below the natural ground surface). Based on this stability assessment, ATCW recommended a final pit slope of 2:1 (H:V). Future refinement of the final in-pit slope will be investigated and implemented if possible.

7 Metallurgy

The Donald resource is mineralogically different to the traditional heavy mineral sand resources. These differences are the result of natural complex geological deposition and alterations – in summary, the two key metallurgical characteristics are the relative fine particle size distribution and the comparatively high degree of mineralogical alteration due to geological processes that have impacted ore bodies.

All the WIM-style heavy minerals are finer grained than traditional, dunal or 'strand-style' heavy mineral resources. The WIM-styled heavy minerals have a D50 of around 53 microns, which is finer than traditional heavy minerals which generally fall in the size range from 100 microns to 300 microns. Notably, the higher valued minerals of zircon, monazite and xenotime, are even finer, and have a D-50 of between 40 microns to 50 microns. For context, according to the geological classification convention into the late 1990s, minerals finer than 38 microns were classified as clay slimes or considered to be so fine that particles would suspend in water almost indefinitely. Thus, prior to the development of new-age separation spirals, the concentration and separation of 'finer' products posed a challenge using traditional, 'conventional' separation methods, such as electrostatics and magnetics.

Since the acquisition of the Donald Project, Astron, with the help of industry leaders, MT, through test work initially at lab-scale and subsequently at pilot scale using newer-age separation spirals confirmed the resolution of this historical challenge. Recovery rates achieved by Astron with its WIM-styled project are now comparable to recoveries seen in more 'traditional', coarse grained mineral sands operations.

7.1 Historical Test Work

In the early 1990s, due to the fine-grained characteristics of the WIM-styled deposits, CRA undertook significant research and development on mineralogical separation methods amenable to recover these minerals into products. CRA developed a flotation regime in collaboration with Lakefield Research at their laboratories in Canada, which was subsequently tested at a pilot facility developed on the WIM150 orebody. The flotation flowsheet involved extensive attrition, which was convoluted and costly, and required significant capital investment. Subsequent to CRA's merger with Rio Tinto, Rio Tinto relinquished the WIM200 and WIM250 deposits, which have become the Jackson and Donald deposits respectively.

Technological developments associated with the development of fine-grained mineral spirals changed the long-term economic outlook of WIM-styled deposits. Namely, in the late 1990s, MT developed a new spiral model called the FM-01, which proved to be effective for separating heavy minerals down to around the 20-micron particle size. The FM-01 had unique characteristics, such as shallower spiral contours which allowed it to better separate the valuable heavy minerals which had higher specific gravity (SG) from the lighter quartz of gangue.

The first pilot-scale test work FM-01 spirals on fine minerals were undertaken by Astron, on the Donald Project test-pit excavated in 2005, where 2,000 tonnes of ore were mined and processed in a pilot plant.

Figure 15 – Donald Historical Wet Concentrator Pilot Plant in 2005

The pilot plant consisted of a trommel and vibrating screen to remove oversize material, de-sliming cyclones to remove slimes and two stages of fine material spiral separators to produce a HMC containing 19.9% HM, with an overall HM recovery of 84.8% and a zircon recovery of 91.2%. While the 2005 plant demonstrated initial success, the material was processed through an intermediary WHIMs plant to achieve a 90% heavy mineral grade, raw HMC product. In 2007, lab-scale test work confirmed the possibility of the elimination of the intermediary WHIMs circuit and achieved a 90% HMC grade product, thus propelling Astron to focus its efforts on further investigating separation spirals and refine the process flowsheet.

7.2 Lab-scale Test Work

In the early 2010s, MT applied learnings from the FM-01 spirals to develop its next iteration of spirals. Specifically, the medium grade (MG-12) spirals demonstrated better results for fine mineral separation than the FM-01 spirals. In 2012, the first test-work of MG-12 spirals were undertaken using Donald ore, and results demonstrated that by using the MG-12 spirals, the separation stages required could be reduced from five to four. This would enable a smaller plant footprint with consequent flow-on capital and operational expenditure savings.

In 2015, confirmatory test-work using six tonnes of Sonic-drilled bulk sample materials from the mine-path, found that recoveries of TiO_2, ZrO_2, CeO_2 of 60.4%, 94.6% and 92.6% respectively were achievable when concentrating up to a 90% HM grade Raw HMC product.

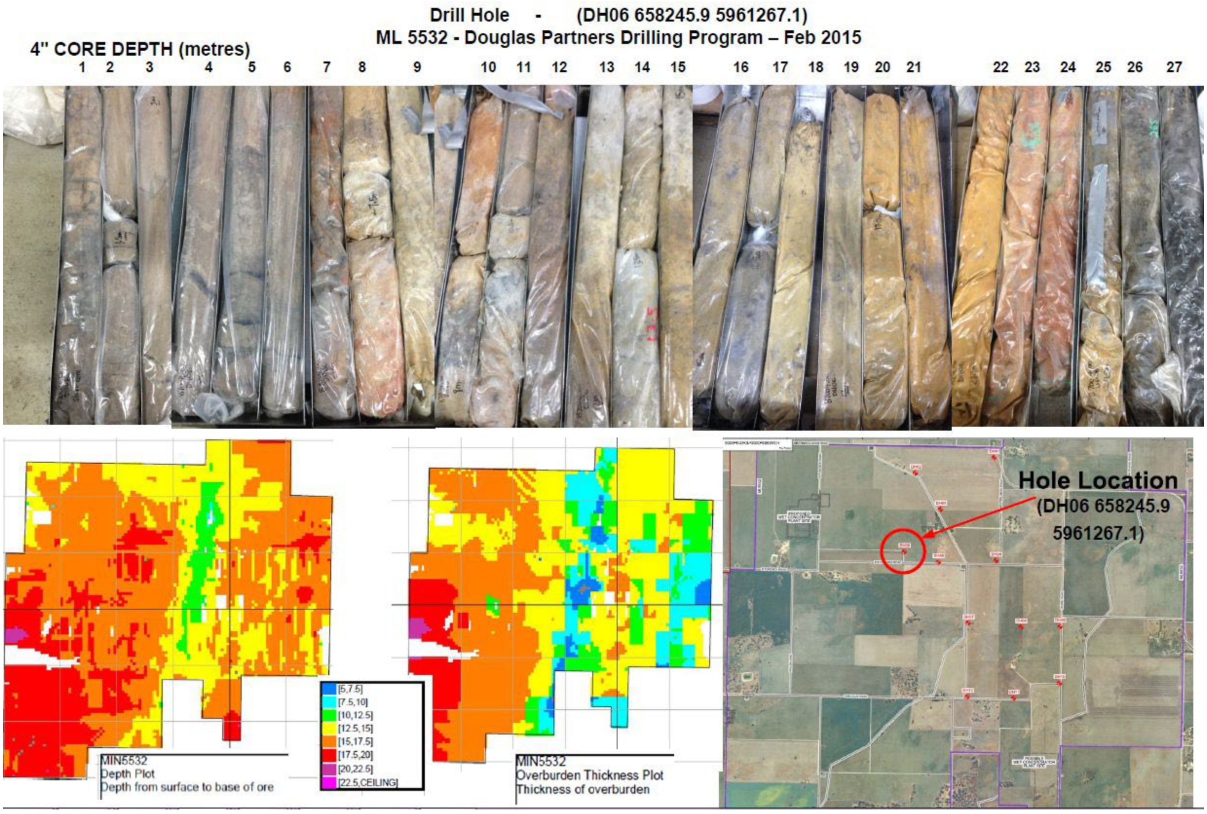


Figure 16 – Typical Ore Profile – 2015 Drilling Programme

7.3 Pilot-scale Test Work

In 2018, the flowsheet configuration consisting of predominantly separation spirals in the WCP was tested at pilot scale. A further test-pit excavation enabled the processing of 1,000 tonnes of ore through a pilot concentrator plant (scaled at 1:121), using full-scale spirals. Recovery of valuable heavy mineral (VHM) was achieved at 85% and 95% HMC grade respectively, confirming earlier laboratory-scale test results. The testwork demonstrated that the initial challenges associated with achieving commercial recovery levels of fine minerals to concentrate had been resolved and Astron had developed a fit-for-purpose flowsheet for the WCP.

Figure 17 – Mineral Technologies and Astron JV WCP Pilot Plant in Operation, 2018

7.4 Rare Earth Flotation

While concentration of ore to HMC was resolved with the development of the FM-01 and MG-12 spirals (with the knowledge gained from this work now incorporated into spiral designs able to be used for both fine- and coarse-grained deposits), the final separation from HMC to final products of zircon, titanium and rare earth element concentrate posed additional technical challenges.

The main technical issues were associated with the recovery of the rare earths minerals within the HMC. Unlike traditional separation methods, such as electro-magnetic and electro-static separators which separate minerals sands into zircon (non-magnetic and non-conductive) and titania-bearing products (magnetic in different degrees) the fact that monazite and xenotime are both partly magnetic and partly conductive, makes their separation from the mineral sands component difficult. Using conventional electro-static and electro-magnetic separation would result in monazite and xenotime “reporting” across the entire final product mix. This would, in effect, degrade the quality of the final mineral sands products. In particular, the zircon stream could be associated with unacceptably elevated levels of radioactivity from the rare earth minerals.

This led to the trial of flotation techniques in a two-stage process of separation of the raw HMC. Astron had adopted flotation for mineral separation purposes in 2016, when a flowsheet comprising sequential flotation of zircon and rare earth minerals leaving the residual titania-bearing minerals was developed and tested. While this flowsheet demonstrated acceptable recoveries, the ultimate separation of zircon and rare earth minerals still presented challenges which entailed, at that stage, the use of additional separation stages. It was determined that, in a commercial production setting, this would require significantly more process equipment with the commensurate adverse implications for both capital and operating costs, as well as sacrifice zircon quality attributes. (For context, Astron could only achieve a 65.5% ZrO_2 grade in zircon from flotation alone)

In 2020, Astron, with the assistance of Mineral Technologies, commissioned flotation specialists, AMML, to study the flotation of rare earth minerals from the HMC. In total, six flotation tests were undertaken at laboratory scale, all of which demonstrated recoveries of over 90% of a rare earth element concentrate (REEC). One flotation test, with a longer attrition period, resulted in a rare earth recovery level of over 95%.

This flotation approach was tested at pilot scale. In 2021, 8 tonnes of HMC produced from Donald ore was separated into a REEC and a zircon and titanium HMC. The REEC produced had a total rare earth oxide (TREO) of over 60%, and Nd/Pr of over 20% of the rare earth basket. Very high recoveries of the rare earth minerals meant that the subsequent zircon and titanium products were not ‘contaminated’ by the rare earth element radioactivity. This work provided Astron with the confidence that it could commercially produce both an REEC and an RE-free mineral sands HMC which would be most suitable for sale and further processing by third parties to final products.

Figure 18 – Continuous REC flotation pilot plant at Nagrom in Western Australia

In pilot scale test work, following the flotation of REEC, the residual HMC had a natural radioactivity of approximately 6 becquerel/gram (Bq/g). This radiation level is acceptable in end product usages for zircon, including tile manufacture, and is within the allowable regulatory limits in Victoria for the transportation of materials with elevated background radiation levels. The separation of the HMC into the zircon and titanium products uses conventional electromagnetic and electrostatic separation techniques in a simplified flowsheet with high, commercially viable recoveries to final products.

7.5 Metallurgical Recoveries

Extensive test work associated with fine grained mineral sands over close to two decades, conducted by Astron and specialist consultants, has enabled Astron's mineral separation process to be enhanced and simplified, with the confidence that the processes tested are applicable in a commercial production setting. The hybrid processes to be used in relation to spirals and rare earth flotation are well-understood, widely adopted and present relatively little technical risk.

The results from test work also provide confidence that, in subsequent phases of the Donald Project, Astron can move to the processing of HMC into final products, while the company also investigates its options and the economic case for an involvement in the processing of the rare earth concentrate stream.

Table 20 – MIN5532 Recovery Performance (-0.25+0.02mm THM)

Stage Wise Recovery and Grade Parameters	MUP Recovery %	WCP Recovery %	CUP Recovery %	CUP Recovery %	Overall Recovery to HMC %
From	ROM Ore	WCP Feed	Raw HMC	Raw HMC	ROM Ore
To	WCP Feed	Raw HMC	HMC	REC	HMC, REC
Oversize (+0.25mm)	6.4	0.0	0.0	0.0	-
Slimes (-20um)	17.4	0.0	0.0	0.0	-
Sand (+20um-0.25mm)	78.6	-	95.7	3.0	-
Mass Yield	61.6	5.2	95.7	3.0	-
THM (+2.85 SG; in size)	89.0	77.9	96.1	3.2	66.7
TiO_2 (in THM; in size)	99.4	70.7	99.2	0.6	69.7
ZrO_2 (in THM; in size)	99.6	94.3	99.0	1.0	93.0
CeO_2 (in THM; in size)	99.5	94.5	1.9	97.5	91.7
Y_2O_3 (in THM; in size)	99.5%	94.5%	2.2	97.2	91.4
THM Grade	6.3	94.3	97.0	99.0	-

8 Processing Plant Engineering

MT has been engaged on the Project for a number of years, providing metallurgical testing services and process plant engineering services. The process plant flow sheet development has been closely aligned to and informed by the metallurgical test work and results.

Value optimisation work completed in 2022 in collaboration with MT, including constructability and modularisation initiatives and alignment with the 2008 EES, finalised the metallurgical flowsheet as follows:

- Throughput was reduced to a nominal 1,000tph ore feed operating for 7,500 hours per annum to still process an equivalent ore mining rate of 7.5Mtpa
- MUP
- Rationalised Cyclone / filter / thickening plant
- WCP

- CUP including REEC packing plant
- HMC storage and packing plant

Engineering development included the heat and mass balance, process flow diagrams, piping and instrumentation diagrams, material takes offs, single line diagrams, 3D models etc all of which informed the plant design and the development of both capital and operational cost estimates to an AACE Class 2 estimate level (see Section 2)

A summary of the inputs/production rates is shown in Table 21 below:

Table 21 – Process plant design

Production	Plant Area
ROM throughput of 7.5 Mtpa **Estimated Production of 37 tph HMC Product (280,000 tpa)**	Mining Unit Plant (MUP) • Front end loader feeds into static grizzly • Scrubbing / Screening Fine Scrubber, ROM Screens and WCP Surge Bin • Deslime cyclones • Fine screens • Surge bin Wet Concentrator Plant (WCP) • Desliming • Screening • Spiral Separation Circuit • Tails Handling and Water Recovery HMC Storage and loadout
Estimated Production of 2tph REEC Product (15,400tpa)	Concentrate Upgrade Plant (CUP) • Surge bin • Attritioners • Conditioning tanks • Flotation cells Rare Earth Element (REE) – Product Loadout • REE product cyclone • REE product belt filter • Drum loading • Flocculant and Reagent Plants

8.1 Processing plant design

The process plant has been designed in accordance with the parameters included in Table 21, along with a nominal ROM feed grade of 5.1% HM and a range of 4.0% to 6.5% HM. At minimum feed grade, the feed rate is maintained at 1,000tph however at the maximum feed grade the feed rate is constrained to 900tph due to higher concentrate production rates at the back end of the plant.

The constructability of the plant was also considered within the DFS plant design, particularly with respect to offshore steel fabrication and off-site pre-assembly of modular sections of the plant prior to transport to the mine site.

The MUP is located away from the WCP and is responsible for scrubbing and screening the ROM before pumping it to the WCP for further processing. The MUP is designed to be relocated periodically as it moves along the designated mining path, with each move extending installed infrastructure such as piping and power cables.

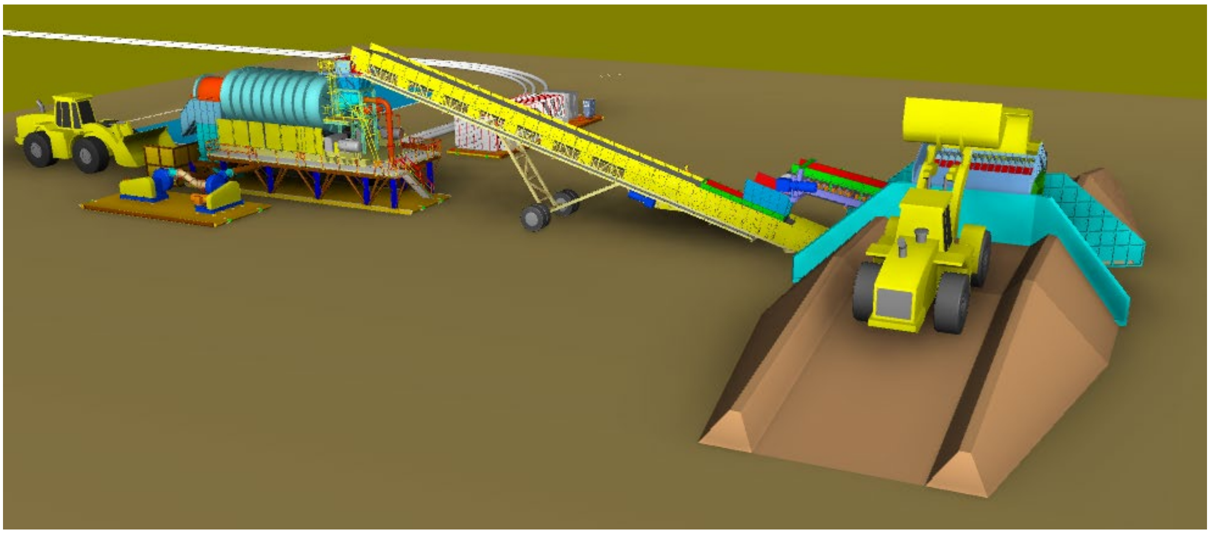


Figure 19 – Mining Unit Plant

The ROM screen is designed to remove coarse (+1mm) gangue particles from the scrubbed and screened ROM material pumped from the MUP, which protects the wet concentrator plant from wear caused by these particles. Tails dewatering cyclones are used to control the density of the tailings being pumped to the mine void and to recover a large proportion of the contained water for reuse within the WCP circuit.

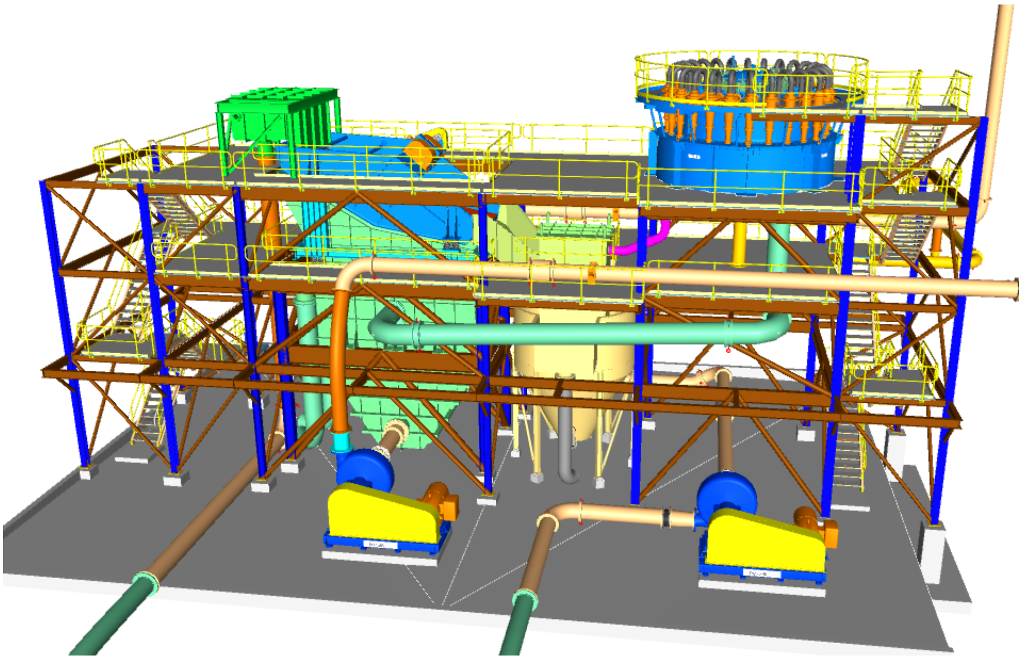


Figure 20 – ROM Screen and tails cyclones

Desliming cyclones are used to remove fine slimes from the ore slurry prior to entering the WCP surge bin, which provides surge capacity at the head of the WCP and enables up to two hours down time of the MUP prior to needing to shut down the WCP.

The LCFU (WCP surge bin / ROM surge bin) is a MT design 13.8m diameter unit. The LFCU is designed as a "mass flow" bin, so discharge of slurry can be readily restarted, even if the bin is full of solids.

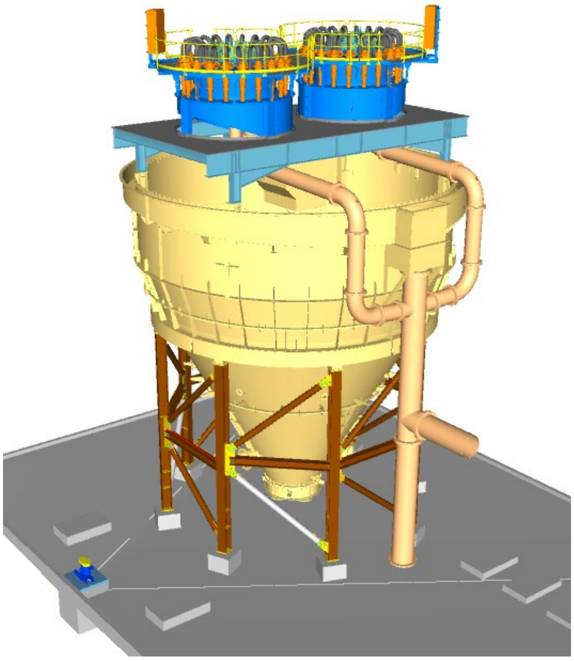


Figure 21 – ROM surge bin

The slimes thickener processes overflow from the deslime cyclones and WCP surge bin, as well as internal dilution water, and has been located adjacent to the settling ponds to reduce pipework and allow for gravity flow from the thickener to the settling pond. The slimes thickener consists of deslime cyclone and WCP surge bin overflow as well as internal dilution water.

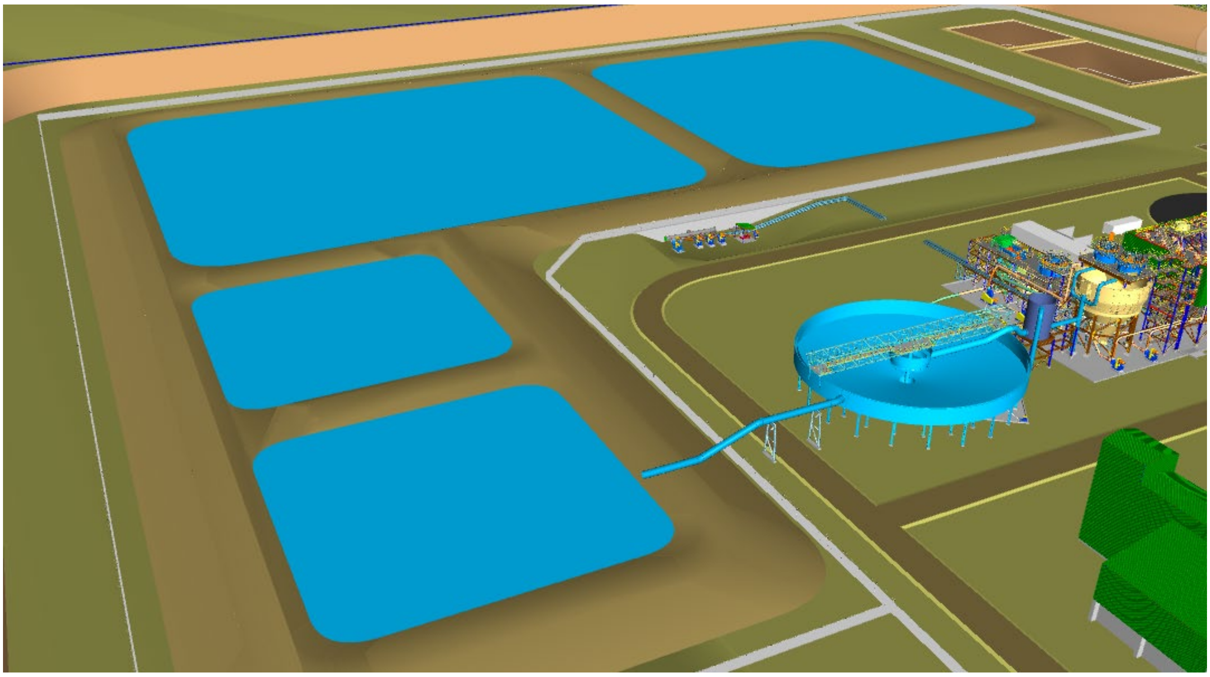


Figure 22 – Thickener and process water ponds

The wet concentrator plant is where the heavy minerals are separated from the screened and deslimed ore, primarily using MT's spiral (gravity separation) technology, including MG12 and HG10i spirals. The MG12 spiral is highly efficient and the best-performing spiral separator that MT has produced; it has been commercialised and operated in the mineral sands industry for almost 10 years at projects such as Iluka's Eneabba, Eramet's Grande Cote, Tronox's Namakwa Sands and new projects such as Strandline's Coburn and Sheffield's Thunderbird. The HG10i spiral is used specifically in the recleaner spiral stage, where the feed to the spirals are fed with high grade material.

The WCP plant is designed to be constructed using a combination of stick build steel erection and pre-assembled modular and flat-packed sub-assemblies that can be pre-fabricated off-site and transported to the construction location. Further, the WCP plant is designed to be cladded around the spiral level of the building to mitigate the impact of high winds on product recovery.

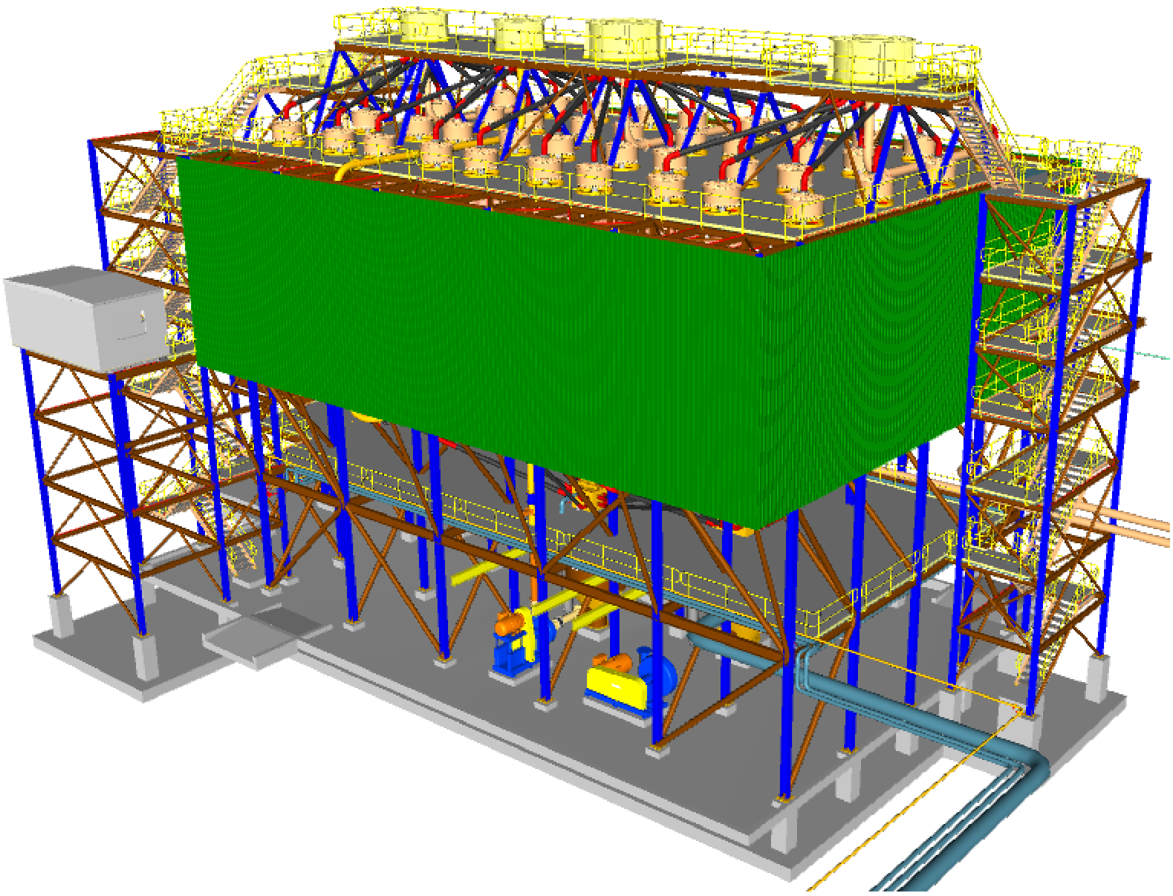


Figure 23 – WCP plant with wind protection cladding

The CUP (Figure 25) is used to separate minerals containing rare earth elements (REE) from the raw HMC produced in the WCP. The process involves first attritioning the HMC to expose all mineral surfaces, followed by a flotation process that collects the rare earth minerals into the REEC. Chemical reagents are used in the flotation process to affect the surface chemistry and hydrophobicity of the REE minerals, causing them to adhere to bubbles produced in the float cells, while suppressing the hydrophobicity of other minerals. The REE minerals float to the surface of the float cell with the froth, while the remaining heavy minerals sink to the bottom.

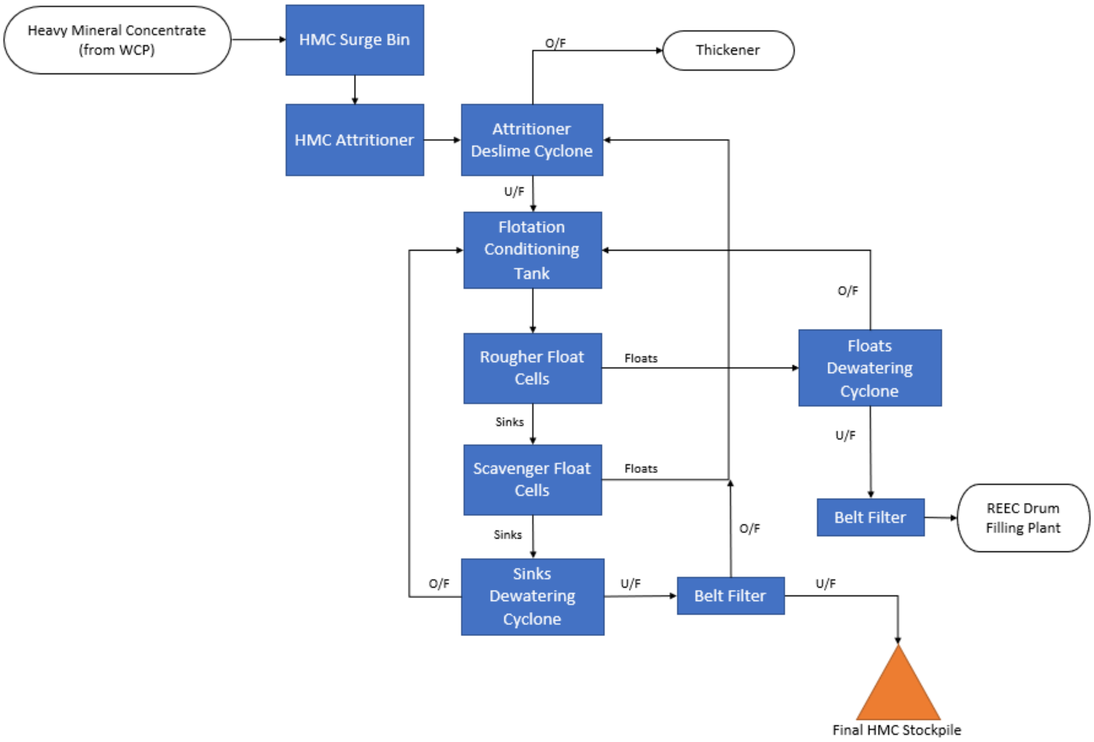


Figure 24 – CUP Flow Diagram

A process risk was identified with the open-top float cells that they could be susceptible to contamination and interference from rain and wind. Hence, the CUP will be fully enclosed to limit personnel access and time spent in proximity to the REE product, to provide a securable facility, and eliminate the risk of contamination from external sources. The CUP surge bin, similar to the WCP surge bin, is used to provide surge capacity between the WCP and the CUP.

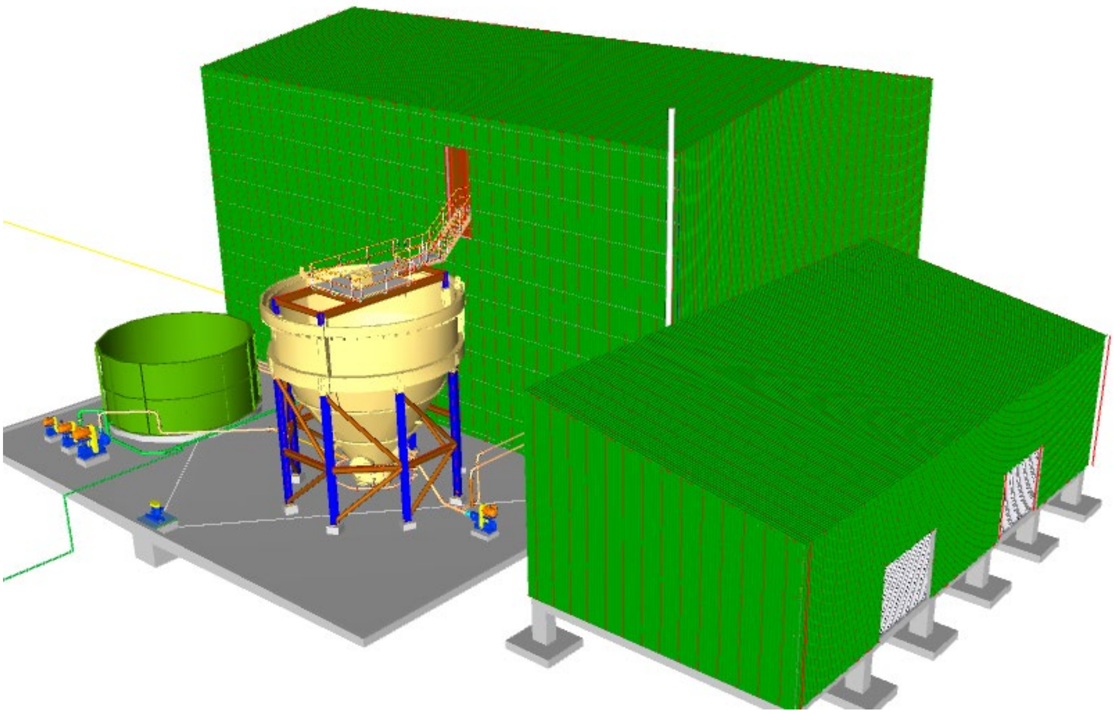


Figure 25 – CUP with REE Circuit enclosed

The REEC is dewatered and stored in the REEC product bin, which has a capacity of 30 tonnes (~16 hours of operation) before being loaded into metal drums using a fully automated system that fills, samples, seals, and washes the drums before being labelled and loaded into shipping containers. The drums are then classified as a Class 7 Radioactive Material for international transport, fully marked, labelled, placarded, and shipped in accordance with IAEA regulations.

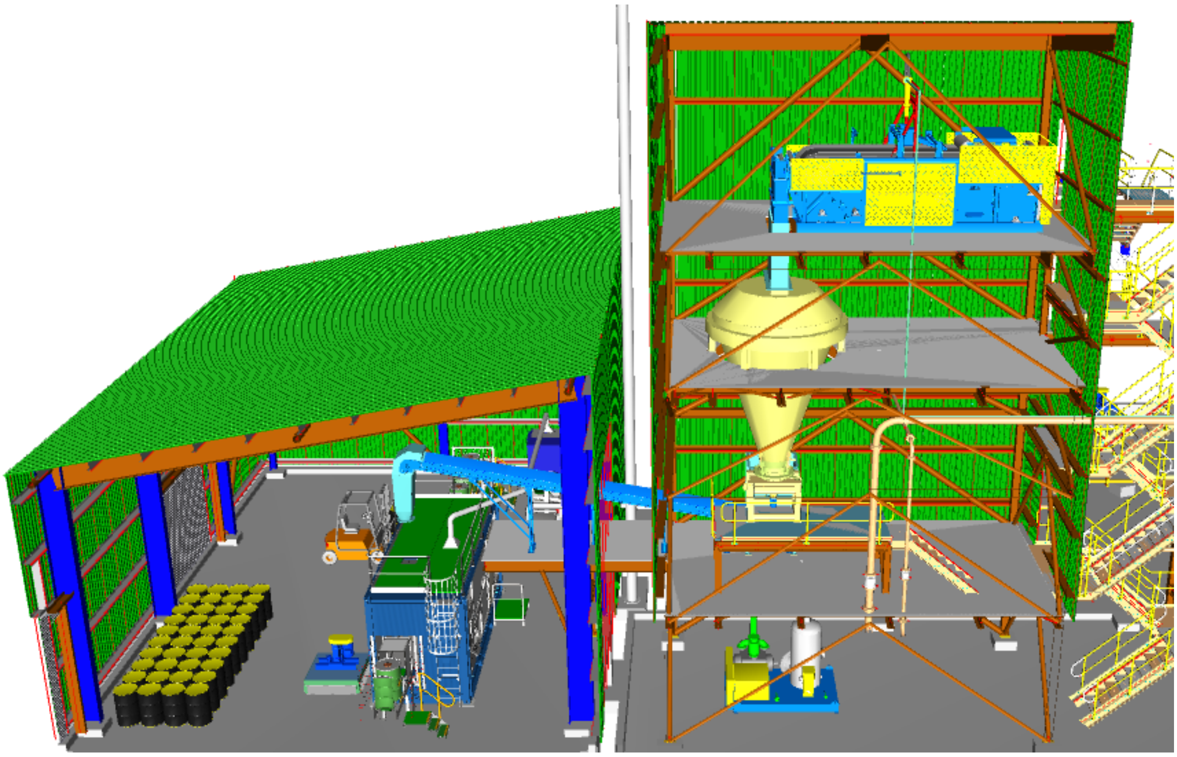


Figure 26 – REEC belt filter, product bin and drum loading facility

The HMC storage facility (Figure 27) is located in a separate structure where it is dried and loaded into shipping containers using a front-end loader (FEL). The final HMC is pumped from the CUP facility to the final HMC belt filter, washed and dewatered, and then deposited onto a reversible discharge conveyor that discharges into one of two concrete walled bunkers. The structure is clad to protect the product from wind and rain, and two roller doors allow access for a FEL to enter and exit.

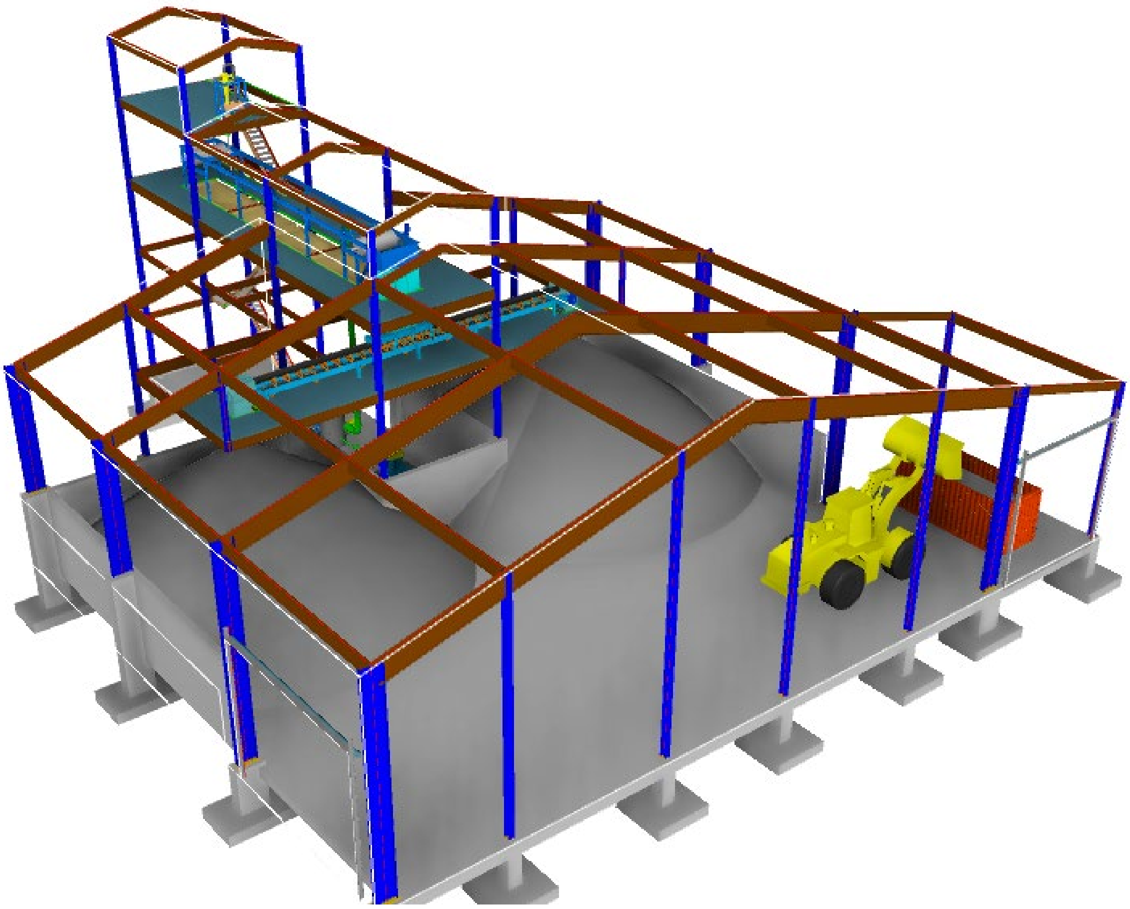


Figure 27 – HMC Storage and Loadout (sheeting removed for internal view of building)

The process plant also includes a reagents storage and dosing facility and a flocculant storage and preparation plant that allows for the preparation of various chemical reagents used in the CUP process.

8.2 Overall site layout

The overall site design has been developing by taking into consideration operations, constructability, and interactions between heavy vehicles, plant equipment, and personnel. The layout provides access for construction and maintenance, while keeping heavy vehicles and plant equipment separate from the main plant area. There are three main access points to the site, with the western access point for general personnel and light vehicle access, the central access point for logistical transport and deliveries, and the eastern access point for heavy plant and equipment access. The HV power substation/switch yard is located in the north-eastern corner for easy access and segregation from the main operations.

Figure 28 shows the general plant layout, depicting the setting ponds to the left, east side of the site, the WCP and thickener in the centre, and the CUP to the right, west-side of the site. A mining contractor lay-down pad is planned for on the furthest west side of the Processing Plant site area.

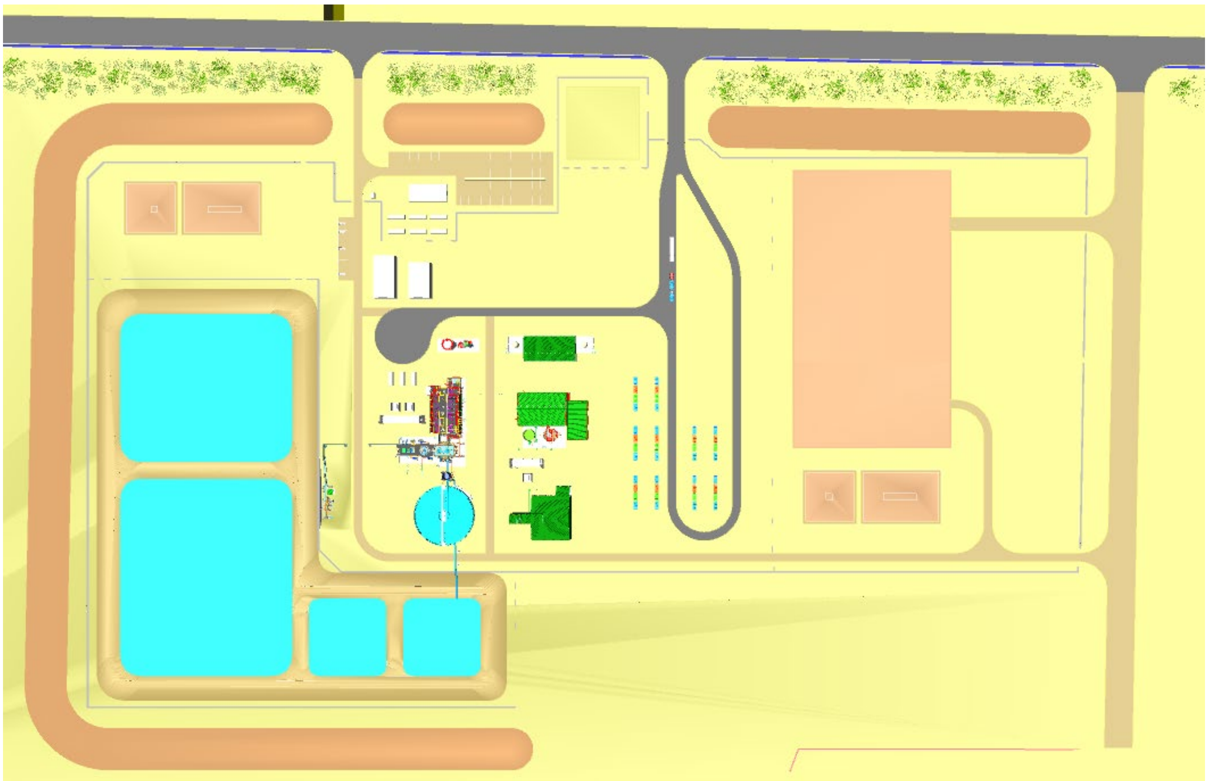


Figure 28 – Donald Project Plant Layout

8.3 Processing unit costs

Table 22 outlines the cost of processing ore based on the process plant design and flowsheet and conforms to an AACE Class 2 estimate:

Table 22 – Average annual processing costs

Operating area	Average Expenditure A$M	Average cost per tonne of ore $A
Mining Unit Plant	6.5	0.86
Wet Concentrator plant	12.8	1.71
Concentrate Upgrade Plant	4.7	0.62
Total	**23.9**	**3.19**

The processing costs outlined above are based on the following assumptions:

- costs of direct plant equipment used in the process flow sheet;
- consumable volumes based on metallurgical test work; and
- consumable prices based on the latest prices either through quoted supplier pricing or from recent similar project benchmarking.

No labour costs associated with processing of ore and raw HMC are included in the above analysis.

8.4 Radiation

Deposits of mineral sands containing heavy or dense minerals originate from erosion and weathering of rocks and occur in certain locations as a result of the concentrating effects of wind, ocean currents and wave action. These deposits are therefore found in the vicinity of present or ancient coastlines, the latter the case with the Donald Project.

The main heavy mineral constituents of these sands are titanium-bearing minerals, zircon, and the rare earth bearing minerals, monazite and xenotime.

Uranium and thorium are also present in these minerals. The concentrations of uranium and thorium are generally in trace amounts except for monazite, which typically contains 5% to 7% thorium and 0.1% to 0.3% uranium, generally associated with the xenotime. As a combined concentrate such as the REEC, these individual minerals are diluted by each other and an amount of other minerals.

The mining and processing of heavy mineral ores has the potential to cause elevated radiation exposures to both workers and the public. Therefore, certain radiation control measures will be required to provide for an adequate degree of protection for both employees and the public.

At approximately 195 bq/gram (Class 7 material), REEC is at the lower end of the radioactive spectrum and is harmful only if inhaled or ingested. Provided sensible precautions are taken to avoid inhalation or ingestion, it will not present a health hazard to people handling it.

Eliminating risk is rooted in proper planning and execution. To this end, radiation management plans are being developed for the operational phase and will include the transportation of the REEC.

Operationally, the transport of REEC introduces no marginal risk. Dedicated forwarders, carriers, and agents who are involved in radioactive transportation have amassed the required experience to execute shipments without issue. In addition, these entities are required to successfully complete specific Class 7 training and maintain emergency response plans.

9 Off-site Infrastructure Engineering

9.1 Power supply

Power will be supplied by Powercor via a 66kV overhead powerline connected to the Horsham substation. The powerline route is shown in Figure 29 and includes the upgrade of existing powerlines from 22kV to 66kV and the construction of a new section of 66kV powerline.

The network connection will terminate at a substation on the Project mine site and then be stepped down in a 66/11kV substation. This network connection enables the Project to purchase renewable energy for process plant operations.

Powercor have provided a non-binding estimate of the capital cost for a 66kV connection to the mine which has been included (along with contingency) in the capital estimate in section 2.1. This has now progressed to a Specification & Design Services Contract which is expected to be received in May 2023.

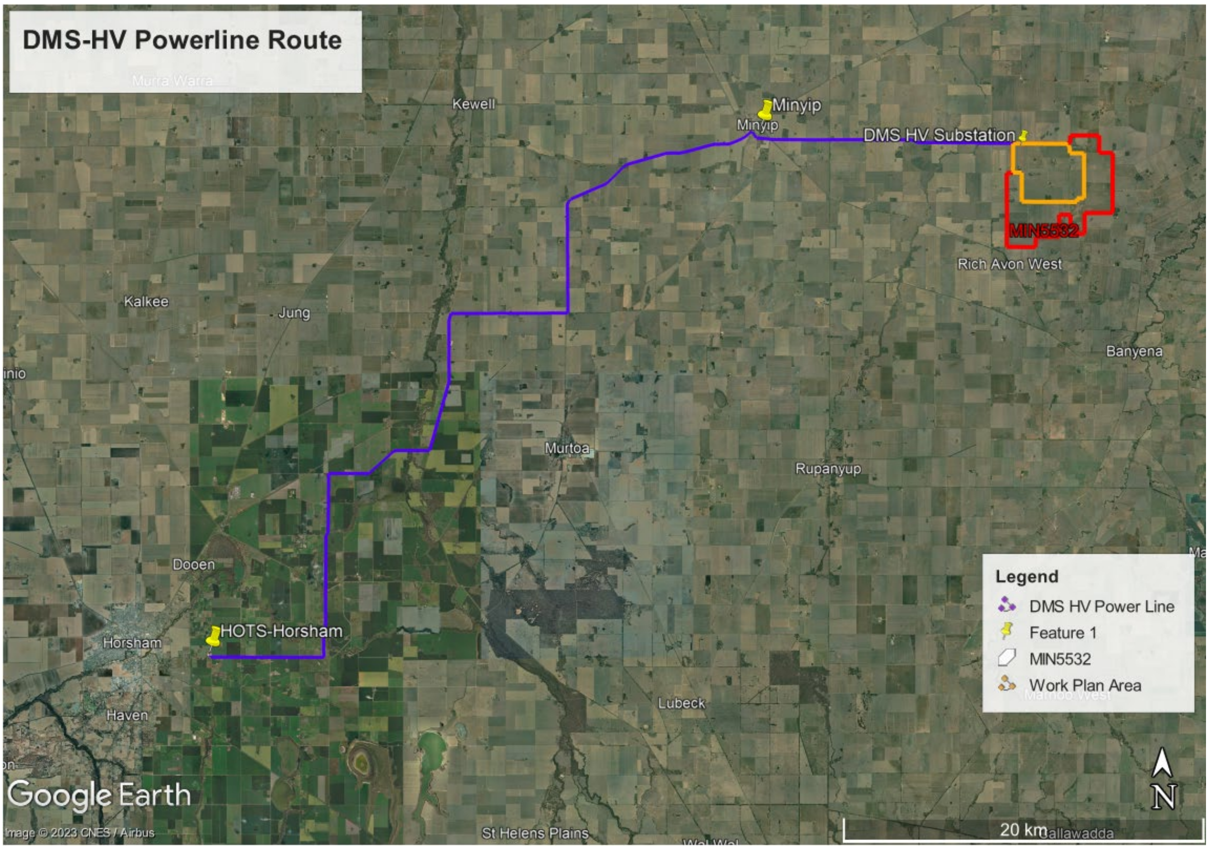


Figure 29 – High Voltage Powerline route

9.2 Water supply

The Project will use a combination of groundwater, surface water and raw water supply for mining and processing operations.

The raw water supply will be drawn from the Company's GWM Water Headworks Water allowance of 6.975 GL (currently stored in Taylors Lake, outside Horsham) which was acquired in 2011. The Company engaged W3Plus to develop various options to transmit water from Taylors Lake to the mine site.

Upgrade of the existing water reticulation systems was selected over the construction of a new pipeline due to the significant cost impact and potential regulatory approval issues that a new pipeline may entail. Upgrades to the existing water infrastructure (as shown in Figure 30 below) include:

- construction of a new pump station at Golton Road, between Taylors Lake and Lubeck pump stations;
- upgrade Lubeck pump station;
- connect a new pipeline to the Donald Project mine site upstream of the Minyip Pump Station;
- provide pressure reducing valves on spur pipelines as required

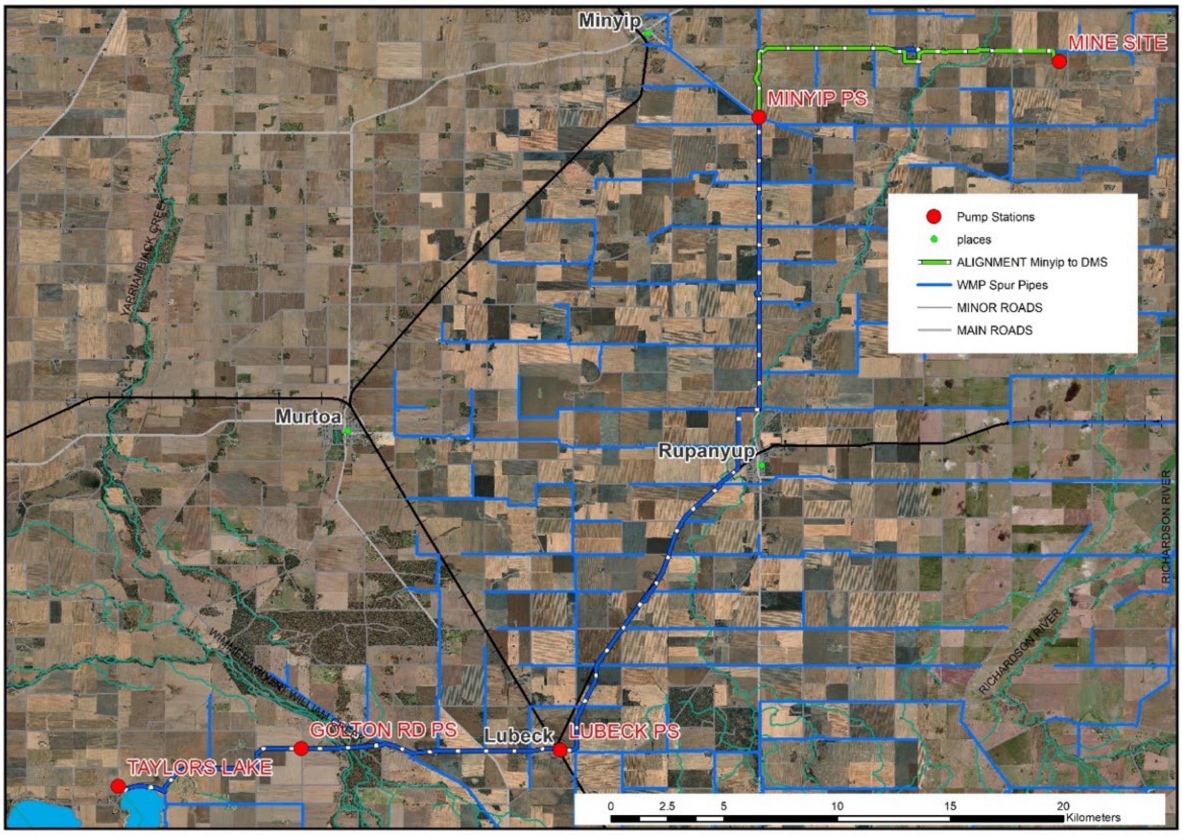


Figure 30 – GWM Water Reticulation Upgrade Overview

W3Plus have been engaged to developed detailed design and planning application documents to support a submission to GWM Water for approval of the proposed upgrade.

9.3 Public Roads

Ministerial conditions of the 2008 EES imposed a number of conditions relating to roads, traffic and transport including the upgrade of roads to be funded by the Company and the implementation of a Transport Management Plan (TMP).

The Company has formed a Transport Working Group (TWG) (see Section 3.3) which includes various key stakeholders and will play a critical role in the development of the TMP for the Project.

Road upgrades are to be completed to both Yarriambiack Shire Council and VicRoads requirements including 2 x 3.3m wide sealed lanes, 1.5m gravel shoulders with verge rounding and table drains on both sides. The scope of the public road works includes:

- upgrade to the Minyip-Rich Avon Road from R Funckes Road to the Stawell-Warracknabeal Road;
- Construction of a Minyip bypass road along Johnston Road and C Leach Road from Stawell-Warracknabeal Road to Donald-Murtoa Road; and
- Henty Highway intersection upgrade

Driscoll Engineering have been engaged to provide road design services including legislative searches, various surveys and other investigations. Based on these surveys, detailed concept alignment plans and road cross sections were developed (see Figure 31 below) and integrated into the preliminary 66kV overhead powerline route. The plans informed the detailed capital and operating cost estimates to an AACE Class 2 level of estimate.

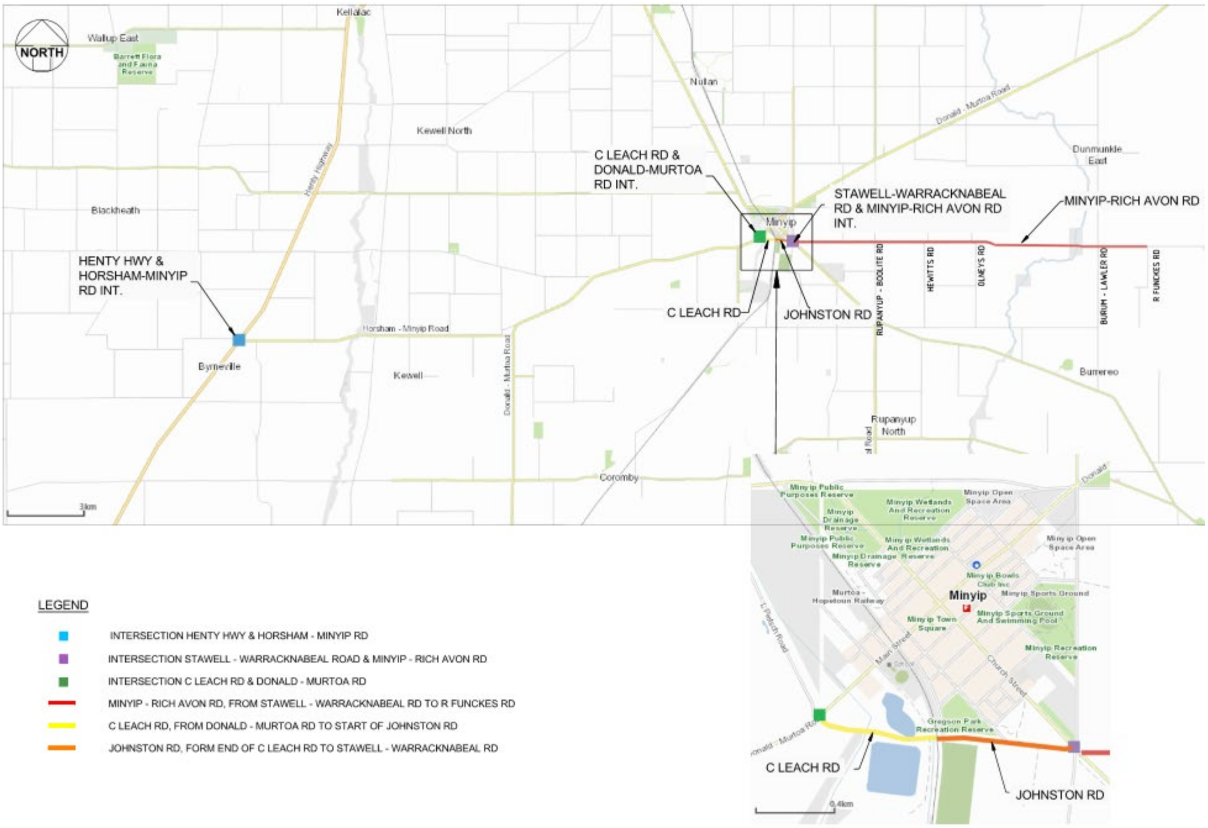


Figure 31 – Public Road Upgrade Scope

9.4 Accommodation

Due to the limited availability of local accommodation and the expected peak in construction workforce of approximately 120 during the estimated 9-month process plant construction period, the Company is proposing to build a 60-person accommodation facility in Minyip.

The level of accommodation required throughout the construction period will be mitigated by using local contractors where possible. Other contractors have indicated they will be self-sufficient with respect to construction accommodation. Where the workforce accommodation requirements exceed the accommodation facility capacity, various accommodation in Minyip, Donald, Murtoa, Horsham and Warracknabeal will be used.

The accommodation facility in Minyip will be used to house construction and initial operations personnel. The Company's preferred option is for a residential workforce to support the local communities. As such, the Project is not planning to build permanent housing stock but rather work with local parties to jointly develop solutions, utilising existing housing stock in the area.

The Company has identified a suitable location (which includes a functioning house) on the outskirts of Minyip and is in negotiations to lease the land for an appropriate period. BM Projects were engaged in December 2022 to provide recommendations for location, size and regulatory requirements which have been included in the overall capital estimate.

9.5 Other off-site infrastructure

Based on the public road upgrade, a railway crossing on C Leach Road will need to be upgraded including removal of vegetation, replacement of timber sleepers and rails at the level crossing and increasing the width of the road to 8m.

The Project will also establish a two-way radio system that covers the entirety of MIN5532 and IT infrastructure to support mining and processing operations.

10 Logistics

The Donald Project's location in the Wimmera region benefits from excellent existing transport infrastructure which will support both construction and operational logistics, with minimal upgrades or capital investments required. The mine site is in close proximity to major arterial roads such as the Western Highway which connects Melbourne and Adelaide.

Further, with farming being the predominant local industry, all aspects of the required logistics solutions are in existence and operational in some form or another – bulk commodities, reagents and chemical deliveries, large equipment movements etc. There are regular movements in the local area of large trucks, often B-doubles, transporting farming products such as fertilisers and crops. The local road network is capable of the regular movement of oversize (as per Victorian Department of Transport specifications) equipment / trucks (loads are wide and long) for farming equipment such as combined harvester headers as well as self-propelled sprayers.

In developing the Project's underlying transport and logistics strategy, the Company engaged with various stakeholders and regulators including several full-service supply chain logistics providers, Port Authorities, stevedores, Australian Rail Track Corporation (ARTC), Invest Victoria, the Donald Project TWG and Community Reference Group.

The optimal logistics solution is largely driven by port selection and the mitigation of high shipping costs, whilst also having the flexibility to adjust allocated volumes and negotiate with shipping lines to accommodate vessel routes, market fluctuations and demand.

REEC is classified as a Class 7 material due to its radioactivity. The Company engaged TAM International, a full-service expert in global transport of radioactive material and other high consequence cargo, who have developed a firsthand understanding of the nuclear industry and the process and regulations related to shipping and handling Class 7 materials.

10.1 REEC logistics

In accordance with process plant design, REEC will be packed into 450kg drums (Figure 32) using the automated REEC packaging plant. These drums will be loaded into twenty-foot equivalent containers which will be lashed, secured and placarded prior to being picked up at the mine and trucked from the mine process area directly to a domestic customer port facility at either Melbourne or Adelaide and placed directly onto the vessel or stored in the hazardous material storage are at the port awaiting a vessel.

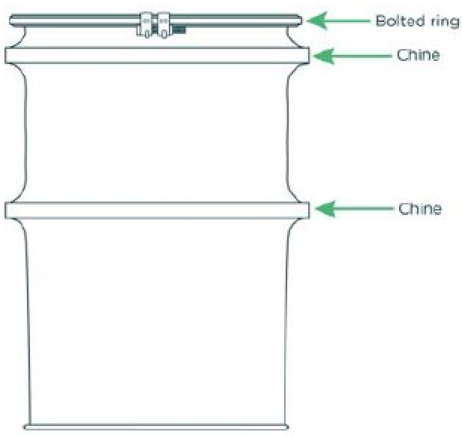


Figure 32 – REEC packaging drums

Final port selection will be driven by availability, efficiency, ease of movement, shipping schedules and cost. The Port of Adelaide has significantly more experience in handling Class 7 materials with 100% of Australian uranium shipping presently routed through Adelaide. Shipping schedules from Melbourne and Adelaide are generally consistent and can be secured three to six weeks ahead of sailing with three shipping lines offering consistent Class 7 services to North America. However, there are no regular shipping services of Class 7 materials to China.

To meet maximum load limits, REEC containers being shipped to China have a maximum load of 20 tonnes of product whilst the USA has a maximum load of 19 tonnes of product. Based on estimated production levels, the operation will require one full truck to depart the mine every two days.

Container transport within Australia will be handled in accordance with the Victorian Department of Health regulations.

10.2 HMC logistics

The proposed transportation and logistics plan for HMC production includes trucking from the mine site to the Wimmera Intermodal Freight Terminal (WIFT) at Dooen, where it will be loaded onto dedicated trains consisting of approximately 100 half-height containers per trip. The trains will transport the HMC to the Port of Geelong for export to China.

The logistics operator will use four skeleton HMC container trucks to transport two half-height containers in the loaded direction and potentially four in the empty direction (double stacked). The trucking operation takes place 12 hours per day (16 full trucks per day plus the same number returning empty) to minimize noise pollution during the night. Full HMC containers will be stored at WIFT awaiting loading onto a train. Empty containers will be removed from the train at WIFT and placed directly onto the waiting truck or into storage for transport to the mine.

Figure 33 – Half-height mineral sands container

The WIFT has existing rail sidings and storage facilities, and can connect by rail to Melbourne, Geelong, Adelaide, Brisbane, and Perth, among other Australian ports.

The Port of Geelong has been selected as the preferred point of export for HMC due to the availability of bulk storage and ship loading infrastructure. Further, the Port of Geelong has direct rail access for unloading and reloading of containers directly from dedicated trains.

HMC will be stored in bulk at the Port of Geelong before being loaded onto a vessel for export to China. The project assumes that a 30,000 DWT vessel will be used, with a maximum vessel size of 55,000t able to be loaded. For HMC export, the working assumptions of Incoterms is Cost Insurance and Freight (CIF) to Dalian, China.

10.3 On-site logistics infrastructure

The design of the processing plant site contains three road access points, all providing access to the Minyip-Rich Avon Road. The central access point is dedicated to the transport of final HMC and REEC products, along with receipt of deliveries of various consumables required for effective processing and plant operation. Mobile container handling equipment will be used to lift empty containers off trucks and place them in storage. This equipment will also place the lids onto full half-height containers and load these onto trucks. The logistics operator will also source, maintain and manage the full and empty half height containers.

A weighbridge will be built at the mine site and weigh bridge results and other required documentation will be electronically ‘stapled’ to each container to provide an audit trail to the port product stockpile.

11 Market overview

11.1 Rare Earth Elements

11.1.1 Rare Earth Elements market overview

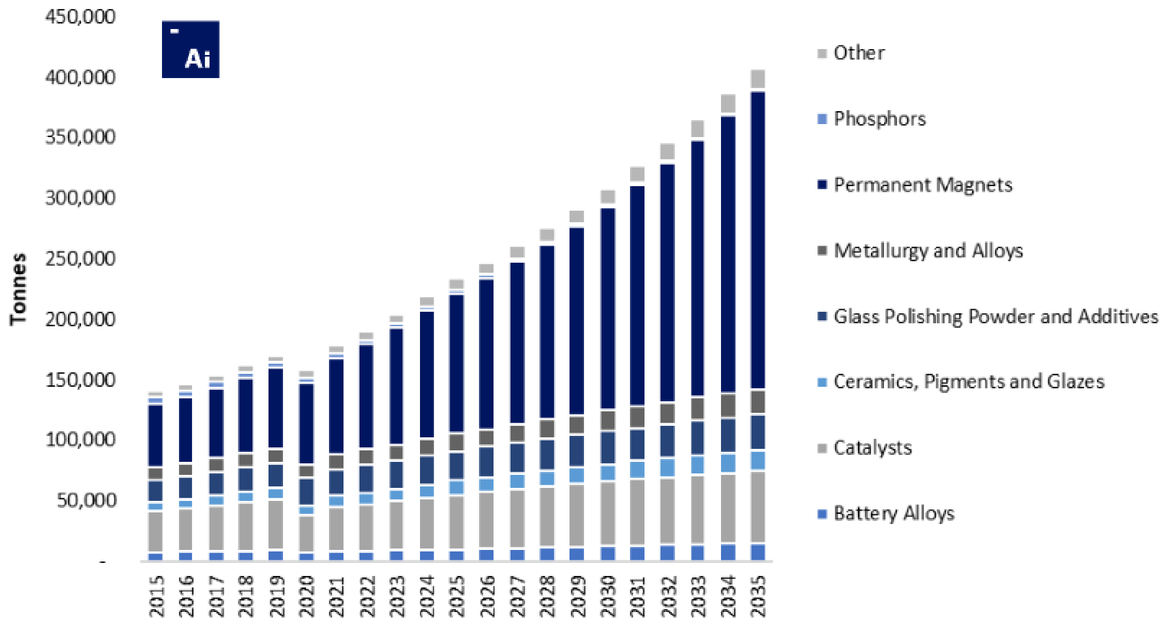
Rare earth elements (REE) are a group of 17 metallic elements that have become critical components in many technological applications due to their unique properties such as exceptional magnetic and conductive qualities. The classification of REE as "critical minerals" highlights their commercial and strategic importance in various industries, including consumer products, medical, defense, and clean energy.

REEs are classified as light rare earth elements (LREE) or heavy rare earth elements (HREE) based on their atomic weights. LREEs, including lanthanum, cerium, praseodymium, neodymium, and promethium, are more abundant than HREEs, which include terbium and dysprosium.

There are eight primary categories of REE end-uses, including battery alloys, ceramics, pigments and glazes, metallurgy and alloys, permanent magnets, phosphors, glass polishing powders and additives, and catalysts. Of these end-uses, permanent magnets and catalysts accounted for over 65% of global Total Rare Earth Oxides (TREO) consumption in 2021. However, the use of less abundant HREEs (terbium and dysprosium) in permanent magnets made up more than 95% of the value of TREO consumption.

11.1.2 Rare Earth Elements supply and demand

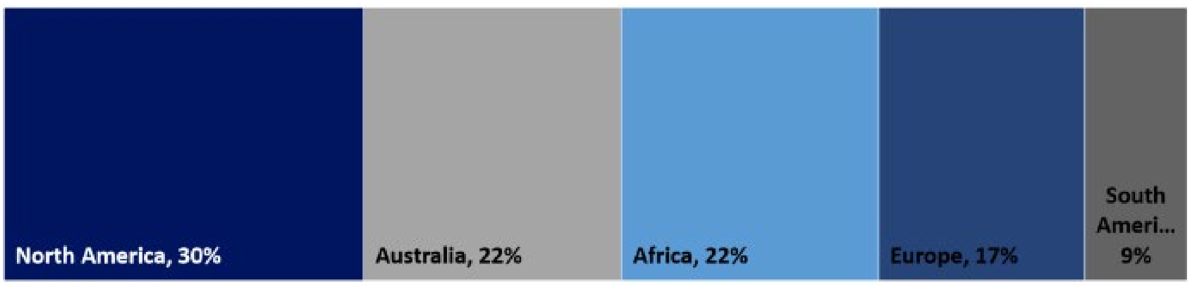
TREO demand is forecast to increase from 2022 to 2035 at a CAGR of 6.0%, from 190,500tpa to 407,500tpa. This is driven by the expanding permanent magnet sector, with increasing demand for electric vehicles, wind turbines and general automotive applications. TREO demand for electric vehicle traction motors and e-mobility applications is forecast to grow at a 14% CAGR to become the largest demand factor by 2035. TREO demand for wind power generation is expected to increase at a CAGR of 13.0%, as power generation shifts towards renewable energy. In 2035, permanent magnets will drive 60% of global TREO demand volume and 95% of TREO value. Due to their use in permanent magnet applications, neodymium, praseodymium, dysprosium and terbium comprise the majority of the current global REE market value and have higher forecast growth rates. Specifically, electric vehicle traction motors and generators use high-temperature-performance graders of permanent magnets that contain higher volumes of dysprosium and terbium, which is expected to contribute to more than 50% of total dysprosium and terbium demand.



Source: Adamas Intelligence, data as at Q1 2023

Figure 34 – Rare Earth Market Demand forecast to 2035

China has historically dominated production and processing of REE, accounting for 54% of global REE mining production and 85% of refined REE processing in 2021. With the increase in demand and pricing for REE over the last decade, exploration, evaluation and development of rare earth deposits has become more economical. Outside of China, there are estimated to be 46 mining projects aiming to reach production before 2033. Half of these projects have completed early-stage economic assessment of a potential mine development. A further six of these projects have completed preliminary feasibility studies, while 14 (including the Donald Project) have completed definitive feasibility studies. Only three projects have commenced production. Regional locations of projects are shown in Figure 35.



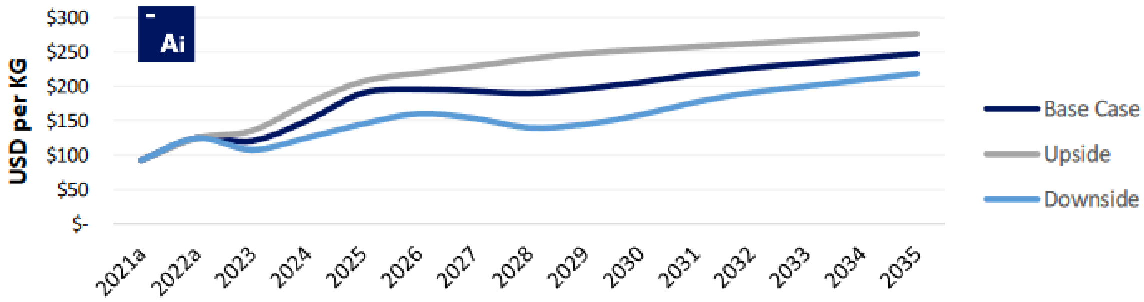
Source: Adamas Intelligence, data as at Q1 2023

Figure 35 – Location of Prospective Rare Earth Projects

Supply from these developing projects is not expected to come online in time to meet forcast demand in the short to medium term. Specifically, neodymium and praseodymium demand is expected to be 8,000 tonnes higher than production, depleting historical inventories and creating supply shortages from 2026 onwards. For dysprosium, supply shortages are expected from 2024 onwards whilst for terbium supply shortages could be experienced as early as 2023.

11.1.3 Rare Earth Element Pricing

Based on these factors, rare earth market specialist company, Adamas Intelligence, (Adamas) forecasts steady increases in permanent magnet rare earth pricing from 2022 to 2025. Adamas' base case pricing forecasts for 2025 to 2029 show a plateau in magnet rare earth pricing as supply shortages may contribute to lower electric vehicle market growth during this period. From 2029, Adamas forecasts that the electric vehicle market will return to an unconstrained growth profile.



Source: Adamas Intelligence, data as at Q1 2023

Figure 36 – Forecast Price of Nd/Pr Oxide Price to 2035

11.2 Mineral sands

11.2.1 Mineral sands overview

The mineral sands industry comprises of two primary product streams – titanium feedstocks and zircon sand. The current global consumption is approximately 1.2 million tonnes of zircon and 7.3 million tonnes of TiO_2 equivalent units. Sales and marketing arrangements involve both contractual and spot sales with either end users or intermediate product processors, however there is no quoted market for these products and thus pricing is more opaque that other widely traded commodities.

11.2.1.1 Zircon

Zircon sand is used in various industries and applications, with ceramics being the major end-use. Zircon demand is influenced by urbanisation trends and personal consumption factors and has experienced steady market growth during the 21st century. Zircon has no substitutes with the same or superior product qualities and cannot be recycled or reused. There are five main end-uses for zircon, which are ceramics, foundry casting, steel refractory, glass refractory, and specialised materials and chemicals. The quality characteristics of zircons influence their application in each end-use.

11.2.1.2 Titanium feedstock

Titanium feedstocks are primarily used in the production of TiO_2 pigment, which has a wide range of applications, including paint, plastics, and coatings. Titanium metal is another important application of TiO_2 feedstocks, as it is known for its lightness, strength, and corrosion-resistant properties.

There are several types of naturally occurring titanium feedstocks, including ilmenite, leucoxene, rutile, and anatase, which vary in TiO_2 content. Ilmenite is the most common feedstock and can be further classified into sulphate and chloride ilmenite, depending on the mineral composition and suitability for different production processes. The chloride and sulphate pigment production processes are the two main methods used to produce TiO_2 pigment.

To meet the technical and feedstock requirements of these production processes, naturally occurring titanium feedstocks are processed into intermediate products, such as titanium slag, synthetic rutile, and upgraded slag. These intermediate products have higher TiO_2 content and are suitable for use in either the chloride or sulphate pigment production process.

Currently, the chloride pigment process is dominant in western economies, while China's pigment production base is mainly sulphate-based. However, China is rapidly adopting chloride pigment process technologies to mitigate the adverse environmental effects of sulphate-based production and provide an indigenous source of chloride pigment for higher-end applications.

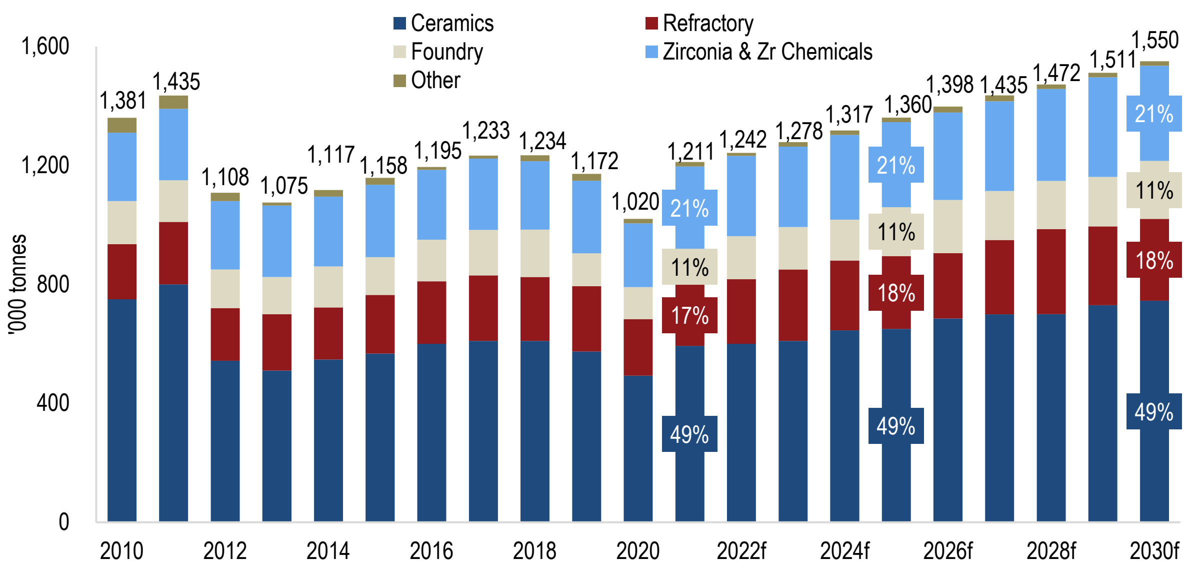
According to mineral sands and pigment specialists, TZ Minerals International (TZMI) Pty Ltd, global pigment demand for TiO_2 is expected to grow by 2.1% annually between 2021 to 2030, with demand for chloride pigment process feedstocks exhibiting a 3.2%pa growth from 3.3 Mt to 4.3 Mt by 2030. The majority of the growth in chloride pigment demand will come from China, where chloride pigment capacity is forecast to grow at 10% pa with an estimated 913,000 tonnes of capacity installed by 2030. This trend has major implications for titanium feedstock supply into China, which will increasingly demand higher grade, chloride-based titanium dioxide feedstocks.

11.2.2 Mineral sands supply and demand

11.2.2.1 Zircon

Historically, demand for zircon has increased with economic growth in China and other developing countries), which has led to significant increases in global zircon prices. The major sources of zircon supply over the past decade are now maturing with limited reserves. Extensive exploration has not identified a replacement for these deposits. Furthermore, the burgeoning zircon market has ensured that zircon pricing is less influenced by the dynamics of the titanium market than it was in the past. As the zircon market grows due to global urbanization trends and increasing end applications, the supply situation poses challenges that the Donald Project could help solve.

TZMI is forecasting an increase in global demand from 1.21mt in 2021 to 1.55mt in 2030, a compound annual growth rate of 2.8%. Whilst the ceramics end-use segment is expected to remain the largest, representing 49% of total zircon demand, foundry and refractory segments are expected to grow at a faster rate, reflecting high-end industrial use in renewable energy applications.

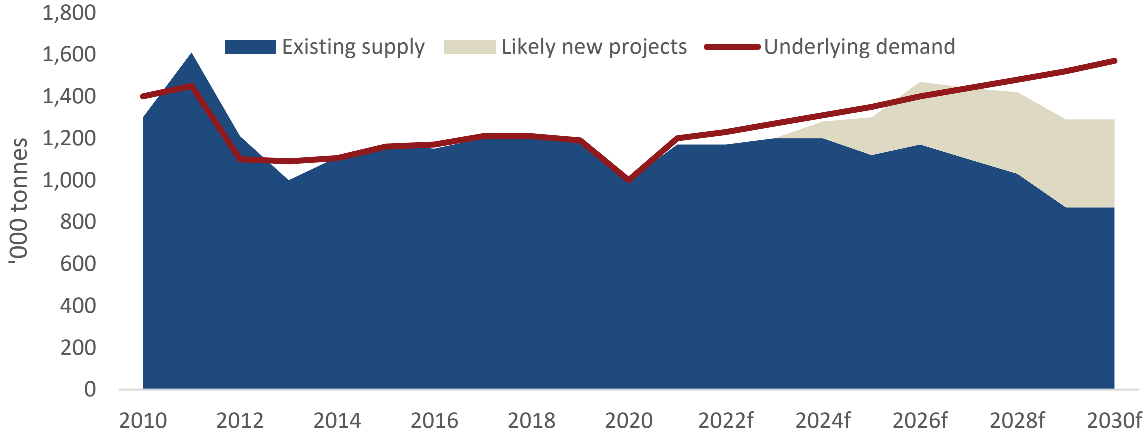


Source: TZMI market study, data as at Q2 2022

Figure 37 – Global Zircon Demand by end-use applications: 2010–2030

China is expected to remain the dominant market for zircon consumption to 2030, representing approximately 48% of total demand, however India is expected to grow from 8% in 2021 to 11% in 2030.

Despite the expected growth in demand outlined above, supply of zircon is expected to decline in the short-to-medium term due to the depletion of current sources and a lack of major new projects coming online.



Source: TZMI market study, data as at Q2 2022

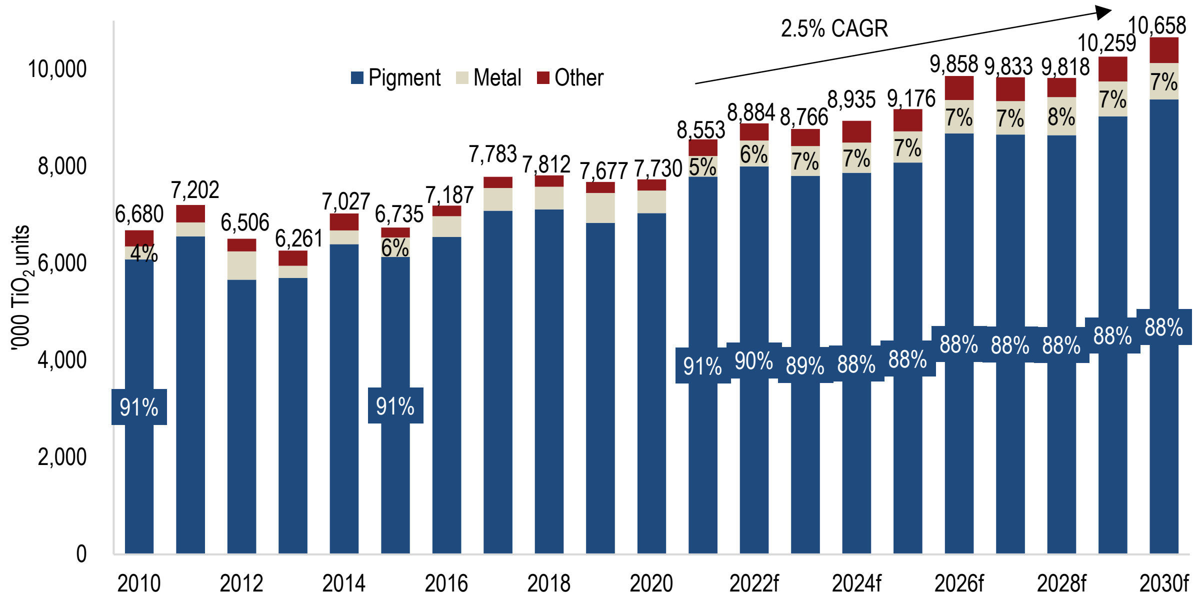
Figure 38 – Global Zircon Supply / Demand Balance: 2010–2030

Historically, zircon supply has been relatively concentrated among a few key players which accounted for about 60% of global supply. However, due to the maturation and/or grade decline, these suppliers only accounted for 45% of global zircon production in 2021. This is a significant transformation in zircon supply and underscores the imperative for new, material and long-life sources of supply to maintain the global supply equation.

In this context, a fundamental change in supply dynamics is occurring, with more typical coarse-grained operations being replaced by fine-grained deposits such as the Donald Project. The surety of supply from Donald over several decades can be seen as a significant factor for consideration by major customers, especially in China, in sourcing future supply. The scalable nature of the Donald Project also provides Astron with the potential to continue to grow its market presence, supplying both higher volumes and final products and providing zircon customers with the confidence of a longer-term source of reliable supply.

11.2.2.2 Titanium Feedstock

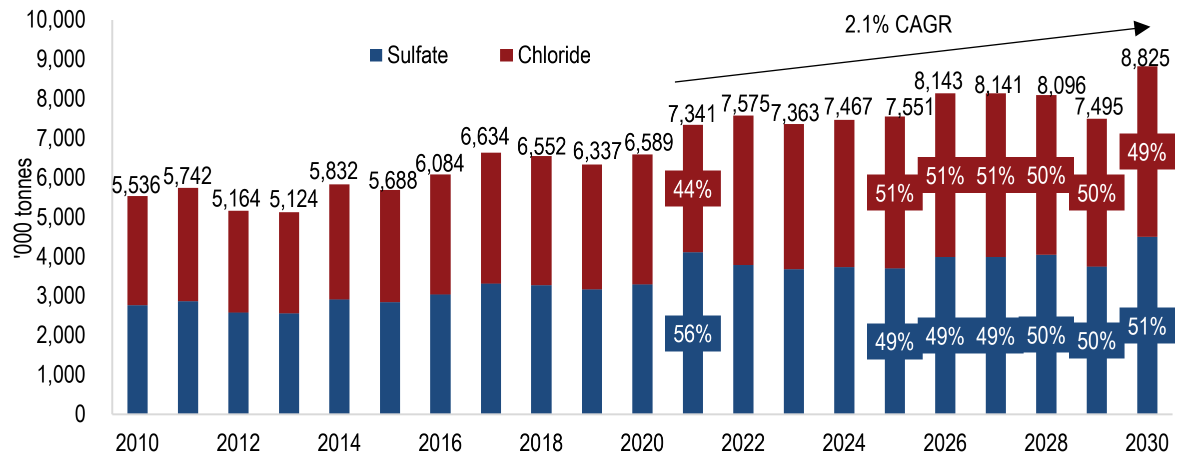
The pigment industry consumes the majority of titanium dioxide feedstocks, and therefore titanium feedstock demand has typically been linked to the underlying demand characteristics of the pigment market. Historically, the consumption of pigment has shown a close correlation with GDP growth.



Source: TZMI market study, data as at Q2 2022

Figure 39 – Global Titanium Feedstock Demand by End-use Segments: 2010-2030

Over the past five years, the TiO_2 pigment industry has experienced rapid growth due to macroeconomic factors such as urbanization and increased consumer consumption. This growth was especially prevalent in 2020 and 2021 as a result of COVID-19 government stimulus and increases in home renovation.



Source: TZMI market study, data as at Q2 2022

Figure 40 – TiO_2 Pigment Supply by Production Process 2010–2030

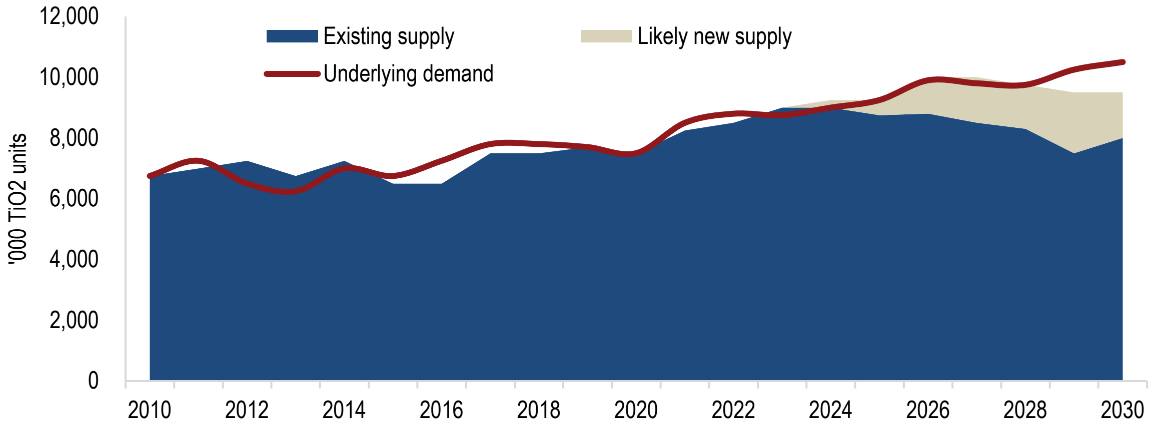
One of the primary factors in TiO_2 pigment demand growth relates to the increase in chloride pigment capacity in China, which is replacing or supplementing sulphate pigment production due to environmental concerns and quality issues.

The increasing trend for chloride pigment capacity is favorable to the demand for higher TiO_2 grade chloride feedstocks, typically based on chloride ilmenite in the form of chloride slag. As natural rutile, a key input in some western chloride plants, becomes scarcer, chloride ilmenite will assume greater importance as a feed source for the production of chloride slag suitable for chloride process pigment producers.

For slag producers targeting supply to chloride pigment producers, an ilmenite feed with a TiO_2 content of between 57% and 67% is typically required. Chloride ilmenites present the best possible feed for the production of a chloride slag suitable for Chloride process pigment producers. Some new mineral sands projects are sulphate ilmenite based, with TiO_2 content below these levels, and are expected to be suitable as a feed source for the sulphate pigment process only. In fact, TZMI identifies the insufficient availability of chloride feedstock as a significant risk for the titanium market balance. The Donald titania production stream is expected to be a favorable source of supply to chloride slag producers and chloride pigment producers, particularly in China, due to its TiO_2 content of approximately 66%.

TZMI is forecasting that global chloride slag demand will increase by an 8.6% CAGR to 2030, influencing demand for high-quality ilmenite or ilmenites suitable to be processed through to chloride slag grade at an opportune time for the Donald Project to come online.

In contrast to favourable medium to long-term demand, global supply remains restricted. In 2021, there was a notional supply deficit of 300,000 TiO_2 units, a trend which continued in 2022 with producers struggling to meet demand from downstream sectors.



Source: TZMI market study, data as at Q2 2022

Figure 41 – Global Titanium Feedstock Supply Demand Balance:2010–2030

TZMI forecasts that underlying demand for titanium feedstocks will only be met if all potential new supply sources come into production by the forecast start dates. In their absence, supply constraints may endure in the short-to-medium term.

The existing supply of sulphate ilmenite is expected to decline by 1.9% per annum over the next ten years from 3.90 million TiO_2 units in 2021 to 3.22 million TiO_2 units by 2030. The expected decrease in suitable chloride ilmenite is even greater at 3.7% per annum from 741 thousand units of TiO_2 in 2021 to 526 thousand units of TiO_2 by 2030. Further, resource depletion for current producers will likely cause a long-term structural deficit in the natural rutile market.

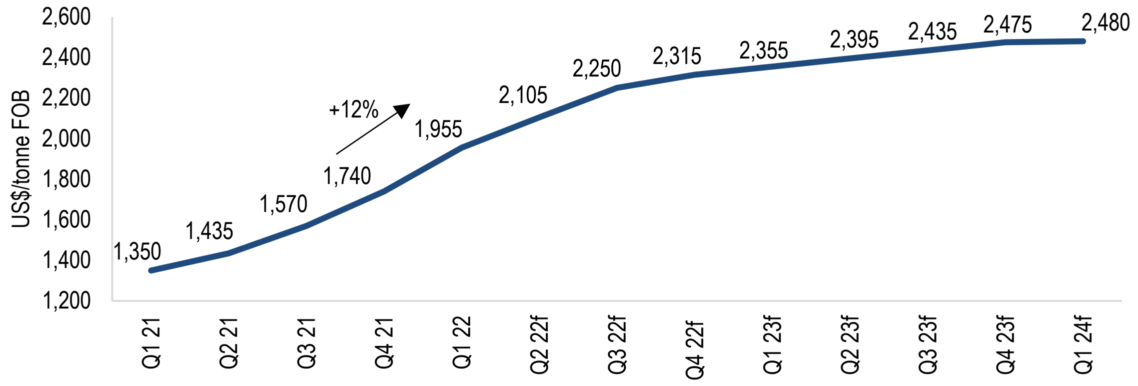
The Donald Project, with a Phase 1 production rate of 100,000 TiO_2 units per annum, has the potential to supply the market as a chloride ilmenite feed source in what may be a constrained supply market. In accordance with the shift towards chloride pigment production, new chloride slag production capacity is critically needed, with TZMI forecasting a market deficit in excess 400,000 TiO_2 from 2026 onwards in the event of no new supply.

11.2.3 Mineral sands pricing

11.2.3.1 Zircon

In the last five years, the weighted average zircon price (dependent on quality characteristics) has increased steadily based on favourable demand dynamics, including an increase in demand for ceramics during the COVID-19 period associated with an increase in home improvement and renovation activities. During the COVID-19 pandemic, the price of zircon in the Chinese market rose sharply from US$1,350 per tonne in March 2021 to peak at over US$2,250 per tonne by early 2022.

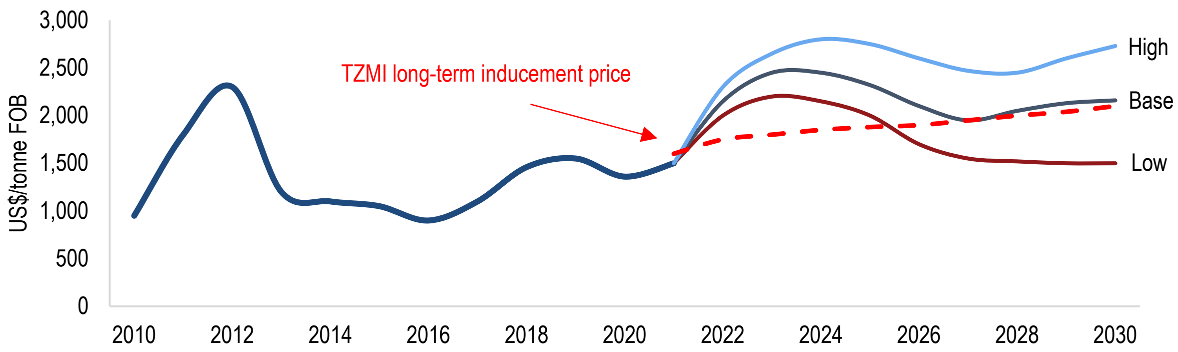
TZMI forecasts zircon prices to rise to US$2,480 per tonne by the first quarter of 2024, reflecting supply constraints and increased economic activity in China post COVID-19 restrictions, and remain above US$2,000 per tonne FOB over the medium term.



Source: TZMI market study, data as at Q2 2022

Figure 42 – TZMI Zircon Weighted Average Price Forecast

Beyond 2024, TZMI forecasts a decline in zircon pricing to US$1,607 per tonne FOB (real 2021 dollars) by 2027. This forecast is based on inducement analysis (that is, the long term zircon price required to induce a market participant to develop an operation). TZMI's base case, high case and low case zircon pricing assumptions to 2030 are shown in the following chart.

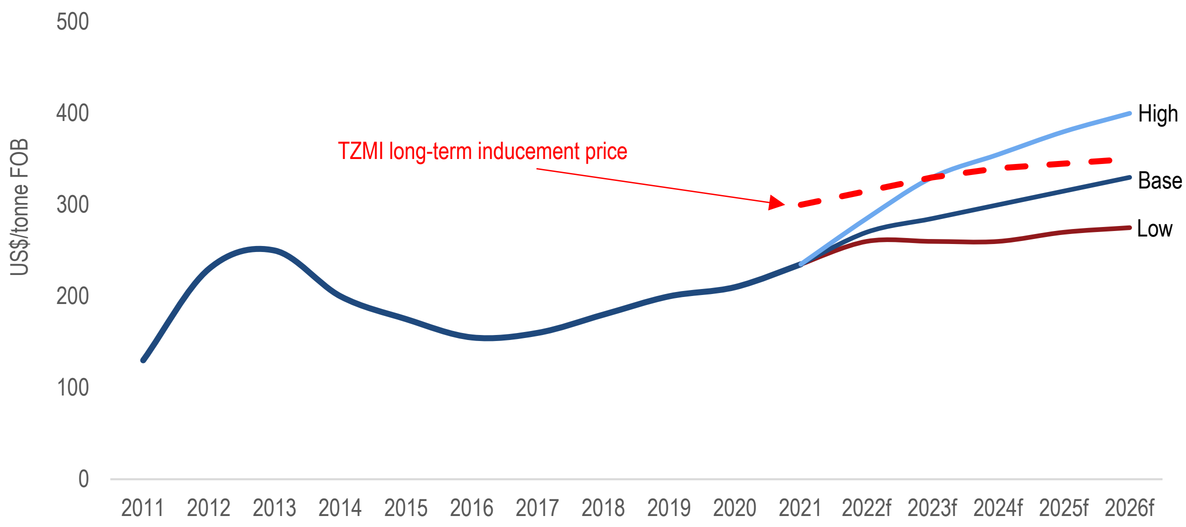


Source: TZMI market study, data as at Q2 2022

Figure 43 – TZMI Nominal Zircon Price Forecast to 2030

11.2.3.2 Titanium feedstock

Despite the robust supply-demand characteristics outlined above, the forecast trend in chloride ilmenite prices is somewhat subdued. This reflects Chemours being the principal purchaser of chloride ilmenite, typically based on long-term contracts. TZMI forecasts that chloride ilmenite prices will increase over the next decade from US$250/t in 2021 to US$350/t in 2030 (in 2021 real USD terms).



Source: TZMI market study, data as at Q2 2022

Figure 44 – Global Weighted Average Chloride Ilmenite Price Forecast to 2030

12 Product Attributes & Sales Plan

12.1 Product Attributes

The Donald Project will produce two products during Phase 1; a heavy mineral concentrate (HMC) comprising zircon and titanium minerals, and a rare earth element concentrate (REEC) comprising rare earth element bearing minerals monazite and xenotime. Test work has determined a favourable mix of high-quality products, with uses in premium grade applications in end markets.

12.1.1 REEC

The Donald Project rare earths content is associated with monazite, which is rich in light rare earth elements neodymium and praseodymium, and xenotime, which is a source of heavy rare earth elements dysprosium and terbium.

A key feature of the Donald mineral resource is its high heavy rare earth element assemblage, illustrated by a xenotime to monazite ratio of greater than approximately 0.3:1. As such, the Donald Project represents a globally significant, long-life source of rare earth element (REE) production and, in particular, a source of the high value and high demand heavy rare earth elements (HREE).

REEC products to be produced from the Donald Project have the following basket assemblage.

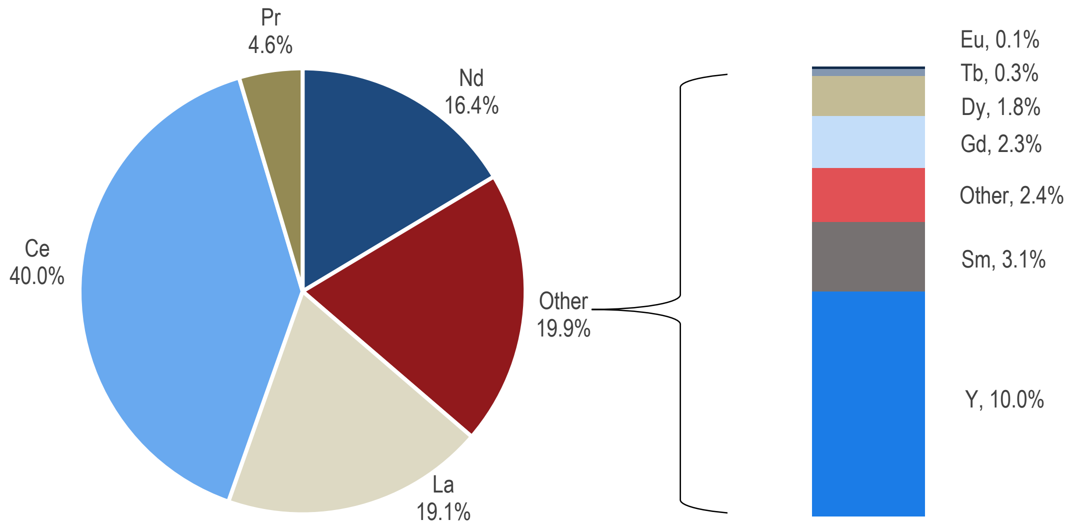
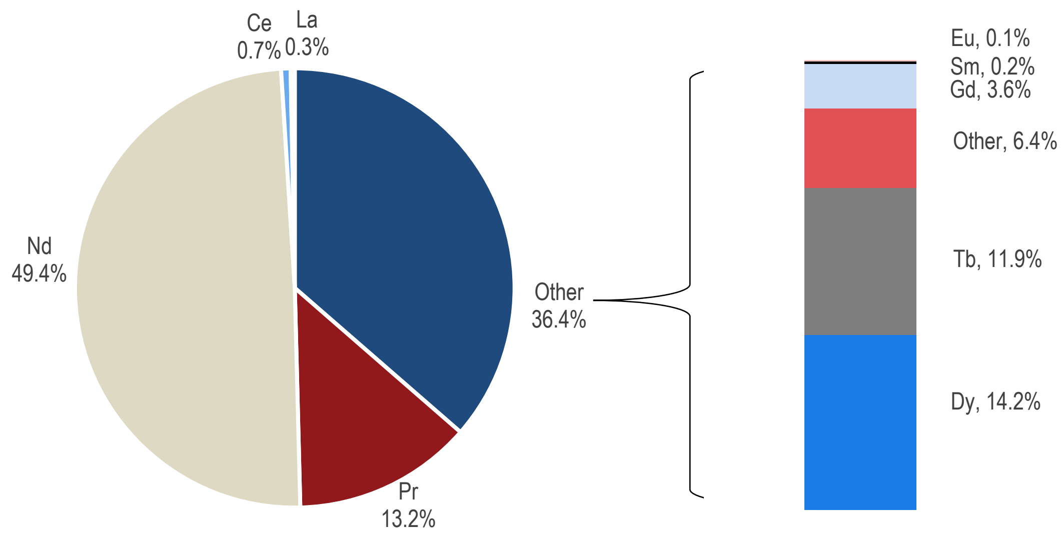


Figure 45 – Relative Distribution of Rare Earth Oxides in Donald Mineral Concentrate

By volume, the four critical magnet rare earth elements (neodymium, praseodymium, dysprosium and terbium) comprise 23.1% of the TREO contained in the Donald Project's REEC. However, when assessed by contribution to total REEC value, the four elements comprise 88.7% of total REEC value.



Source: Adamas Intelligence, data as at Q1 2023

Figure 46 - REO Contribution to Total Donald REEC Value, 2035

12.1.2 HMC

Extensive metallurgical testwork undertaken by Mineral Technologies has determined the specifications for the Donald HMC product. Following removal of the monazite and xenotime, the Project will target a 95% heavy mineral grade, resulting in a higher proportion of valuable minerals with lower waste. Further, given the favourable zircon assemblage, it is expected that the HMC will contain a considerably higher zircon dioxide (ZrO_2) concentration than competitor HMC, increasing its value to mineral sands processors.

The Company has undertaken separation testing of HMC into final products at both laboratory and pilot plant scales resulting in 85.5% recovery of ZrO_2, with 71.9% recovered as a premium zircon product and 13.6% as a secondary zircon product. Recovery of combined titania product was 86.0%. The test work demonstrates the ability to achieve commercial recoveries of final products from Donald's HMC product.

12.1.2.1 Zircon attributes

As outlined above, metallurgical test work undertaken on HMC produced by the Donald Project indicates a high proportion of premium grade zircon can be commercially recovered.

Both internal and independent test work undertaken on zircon contained in HMC produced by the Donald Project shows high whiteness levels, and low levels of impurities, which provide an advantage over its competitors. Testing of the optical properties of the Donald premium zircon involved grinding the zircon to an ultra-fine flour and applying it to a ceramic glaze plate, which was then calcined at high temperatures. Comparisons were made with three other zircon products from industry competitors, which demonstrated that Astron's premium product is noticeably whiter, finer, and contains fewer coloured crystals, see Figure 47, Figure 48 and Figure 49.[6]

Ceramic buttons produced in Yingkou, coated with Donald Premium Zircon

100x microscope image of Donald zircon grains. The zircon is seen as translucent white particles, with an absence of colour stains

Figure 47 – Donald Project premium zircon quality

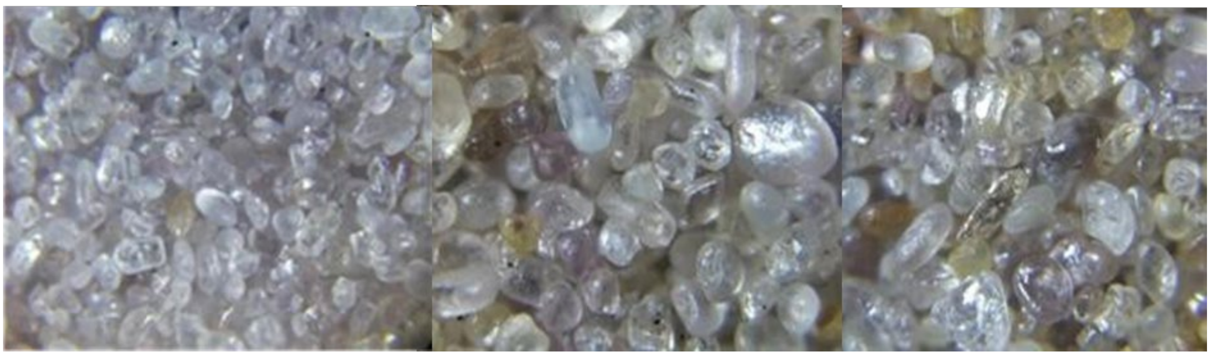
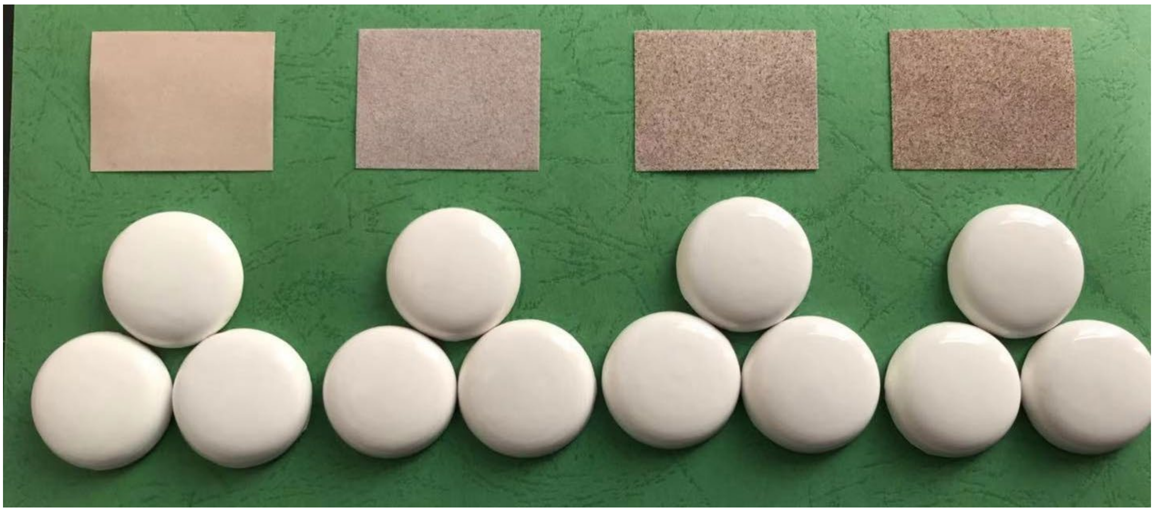


Figure 48 – Competitor premium zircon grains under a 100x microscope

[6] *See ASX Announcement, Updated Donald Project Premium Zircon Test Results, 12 May 2021*



Donald Premium Competitor 1 Competitor 2 Competitor 3

Figure 49 – Comparison of button glazes made from Donald and competitor premium zircons

The zircon grains from the Donald Project are significantly finer than those from other zircon resources, providing it with an advantage over coarser-grained materials. This results in downstream grinding time and energy consumption being reduced, and the final product surface being smoother.

Any zircon used in the Chinese market for ceramics must comply with radioactivity standards stipulated by the Chinese authorities. Independent analysis undertaken by Foshan Ceramics Institute, a leading ceramics research institute located in China, has shown that Donald zircon meets the requirements in relation to radiation levels for its use in the Chinese market, and prospective customer product testing has confirmed its technical suitability for usage in ceramics manufacture.

12.1.2.2 Titanium feedstock attributes

Test work completed by Mineral Technologies indicates that 86.0% of the TiO_2 from the Donald HMC (heavy mineral concentrate) can be recovered to a titanium feedstock product with a TiO_2 content of 66%, making it a high-quality feedstock for the chloride pigment process.

However, the presence of impurities in the Donald titania means that whereas it may not be suitable as a direct feed to the chloride or pigment production processes, it is suggested that it could be used as a blended feed for chloride slag production, where its high TiO_2 content would be advantageous, as a 66% TiO_2 concentrate requires less energy to be upgraded than other ilmenites with lower TiO_2 content.

Donald titania also indicates elevated levels of chromium however this is not expected to be an issue for chloride pigment producers as the chromium component can be separated in the production process. The fine particle size of the Donald titania will also not be an issue for Chinese chloride processors, but it may not be suitable for Western chloride pigment producers who operate on a continual basis.

The Company has a patented process to produce agglomerated ilmenite balls that could potentially also make the Donald titania a suitable feed source for some Western pigment producers. A desktop smelter simulation study completed by TZMI indicated that a product with the Donald titania characteristics should be capable of producing a >88% TiO_2 slag product. The level of impurities in the Donald titania could be addressed by blending it with other TiO_2 feedstocks, such as hard-rock ilmenite which exhibits elevated levels of CaO and low MgO.

12.2 Sales Plan

12.2.1 REEC

Historically, the main market for these minerals has been China where Astron is familiar with the major industry participants. Currently, rare earth cracking facilities are also being constructed outside of China, including Iluka's refinery at Eneabba in Western Australia, Arafura's Nolans refinery in the Northern Territory and the Lynas facility at Kalgoorlie.

The Donald REEC product is suitable for most of these processes. Given its high HREE assemblage, the REEC is expected to be an attractive 'sweetener' product. Astron has provided REEC samples to several processors and with encouraging feedback. Subject to financing conditions, Astron's plan is to diversify customer supply into separate off-take arrangements. Astron's objective will also be to align with the Donald Project with the Australia Commonwealth Government's Critical Minerals Strategy.

12.2.2 HMC

There is an active market for HMC product with Chinese concentrate processing facilities. In Phase 1 of the Donald Project, the Company is planning to sell approximately 70% of its HMC product to third party processors and retain approximately 30% for processing into final products at its own mineral processing facilities in Yingkou, China. The mineral separation plant at Yingkou was constructed with a feed capacity of 150ktpa, and a final product production capacity of 40ktpa. Subject to further evaluation, it is expected that adjustments to the plant will enable the capacity to process up to 90ktpa of Donald HMC, representing approximately 30% of Phase one production. Astron has engaged with potential Asian and European counterparties for supply and processing arrangements. This is a key area where Astron can leverage established relationships and market experience.

13 Project Execution Strategy & Schedule

13.1 Project execution strategy

The project execution strategy has been developed in accordance with the following principles:

- project delivery capability will be primarily outsourced to competent project delivery organisations, of which there are a number in Australia;
- project delivery will be complimented by a core Donald Project owners team, supported by a growing Astron owners team who will ultimately assume operational control of the project;
- project scope will be packaged horizontally and vertically so that the owner has interfaces to coordinate and manage;
- project delivery risk will be assigned to the party best suited to manage the risk and the requirements of particular relevant entities and authorities, such as Powercor, GWM Water and the DTP;
- the largest portion of capital expenditure will be delivered by an EPC vendor which suits the owners project capability mentioned above - enabling operational readiness to be developed in parallel with project execution and for the process plant to ramp-up with transfer to operations to follow clear performance milestones and metrics;
- mining outsourced to capable specialists - there are a number of specialist contractors within Australia, including Victoria; and
- transport & logistics outsourced to capable specialists - there are a number of specialist contractors within Australia, including Victoria.

Broadly, the scope of the Project is summarised below in Table 23:

Table 23 – Project scope summary

Activity	Area	Description
Approvals	On-MIN5532	• Primary approval to commence activities on the Mineral License 5532 granted by ERR and other regulators for works and plans detailed in the Workplan
	Off-MIN5532	• Separate approvals required for scope that supports mining and processing i.e., 66kV Overhead Powerline, Water Supply pump station and pipeline, road upgrades and accommodation village
Construction	Land Purchases, easements and Neighbor Agreements	• Purchasing / leasing land initially within the Workplan area, executing agreements with sensitive receptors and easements for power and water
	Earthworks	• Initial earthworks to construct the pad for the process plant, dams (process water, fresh water, sediment control), above ground TSF, initial bunding and fencing
	Process Plant	• The complete processing facilities including the substation to connect power from the 66kV Overhead Powerline, WCP, CUP, MIA, NPI, water treatment, reagents systems and access control including the accommodation facility sited in Minyip. Scope includes full process commissioning, ramp-up, performance testing and initial operational support
	Dewatering and surface infrastructure	• Establishing initial dewatering infrastructure ahead of mining, electrical reticulation, piping reticulation and decommissioning existing services with-in MIN5532
	MUP	• Delivery of the MUP ahead of mining. This could be supplied by the mining contractor, process plant EPC or the owners / project team
	66kV Power Supply	• Overhead powerline from Horsham terminal to mine site
	Fresh Water Supply	• New pump station, pressure management systems, new pipeline to freshwater dam
	Road Upgrades	• Various road upgrades including highway intersections, Minyip bypass and upgrade of road from Minyip to mine gate
Operations	Mining Contractor	• Mobilisation of mining contractor to undertake contract mining activities across MIN5532
	Transport & Logistics	• Logistics contractor(s) to manage containers on mine site, delivery of containers to customers / unloading of HMC containers at port and onward shipping in bulk to overseas customers • Freight forwarding agent(s)
	Process and Infrastructure Operations	• Operational readiness, operational team recruitment, HSEC systems, operating / maintenance systems, Standard Operating and Isolation Procedure (SOP / SIR) development and commissioning support • Ongoing operational support services

The planned project delivery is summarised below in Table 24:

Table 24 – Project delivery summary

Area	Comments	Summary Delivery
Approvals	• Various consultants, specialists and legal input managed by the Owners Team to deliver the Workplan, permit applications and licensing requirements	**Consultants managed by Owners Team**
Land Purchases, easements and Neighbor Agreements	• Strategy development by legal team, negotiations with landholders and neighbors managed by Owners Team • 66kV Overhead Powerline landholder engagement managed as part of Powercor scope	**Owners Team / Powercor**
Earthworks	• Design, specification, tender documentation, tender adjudication, contract management and construction technical supervision by specialist engineering consultant (ATC Williams) • Construction by specialist earthworks contractor	**Schedule of Rates**
Process Plant	• Tender documentation, tender adjudication, contract management managed by specialist consultant • Mineral Technologies DFS package along with power substation and accommodation facility added to scope for engineering, construction, commissioning, ramp-up and performance testing by an EPC contractor	**EPC**
Dewatering and surface infrastructure	• Design, specification, tender documentation, tender adjudication, contract management and construction technical supervision of various infrastructure scopes to manage interface between mining and processing by PMO / EPCM. • Construction by specialist contractors	**EPCM**
MUP	• Specification, tender documentation, tender adjudication, contract management managed by owners team • Delivered as bespoke package or supplied by mining contractor or supplied by process plant EPC	**Owners Team / Mining Contractor**
66kV Power Supply	• Detailed design and construction of turnkey package by Powercor including permitting and landholder negotiations	**Design & Construction**
Fresh Water Supply	• Basic design, specification, tender documentation, tender adjudication, contract management and construction technical supervision by specialist engineering consultant (W3Plus) • Detail design, construction and commissioning of water delivery scope by specialist contractor	**Design & Construction**
Road Upgrade	• Design, specification, tender documentation, tender adjudication, contract management and construction technical supervision by specialist engineering consultant (Driscoll Engineering). • Construction by specialist contractor	**Fixed price with schedule of rates**
Mining Contractor	• Tendering schedules developed by specialist mining consultant (AMC) with mining tender management and adjudication by specialist mining contract consultancy • Mining contractor reimbursed for mobilisation costs and then paid on unit rates	**Schedule of Rates with Day works provision**

Area	Comments	Summary Delivery
Transport & Logistics	• Tendering schedules developed by specialist logistics consultant along with tender management and adjudication. • Services provided by multiple logistics solution contractors, coordinated by freight forwarder specialist	**Schedule of Rates**
Process and Infrastructure Operations	• Operational readiness plan and detailed operating / maintenance plans by specialists (or process plant EPC), managed and coordinated by owners team	**Owners Team**

The Company will establish a project execution team consisting of Company personnel supported by a project management office (PMO), EPC contractor entities, external consultants and installation contractors.

The core project team will have a dual responsibility in the project execution phase as well as preparing and transitioning into the operational phase. The need for site construction coordinators will be dependent on the level of capability and site ownership provided by the construction contractors. This will not be known until after tenders are released and contractor selection is underway.

The final make-up of the Project and Operations teams will be confirmed early in the execution phase as the recruitment process develops.

13.2 Project execution schedule

The Project execution schedule has been developed primarily from indicative timeframes for completion of primary approvals and delivery of long-lead time items following discussions with regulators, potential EPC contractors and suppliers of other equipment and infrastructure required for commencement of mining activities.

The summary execution schedule is outlined in Figure 50:

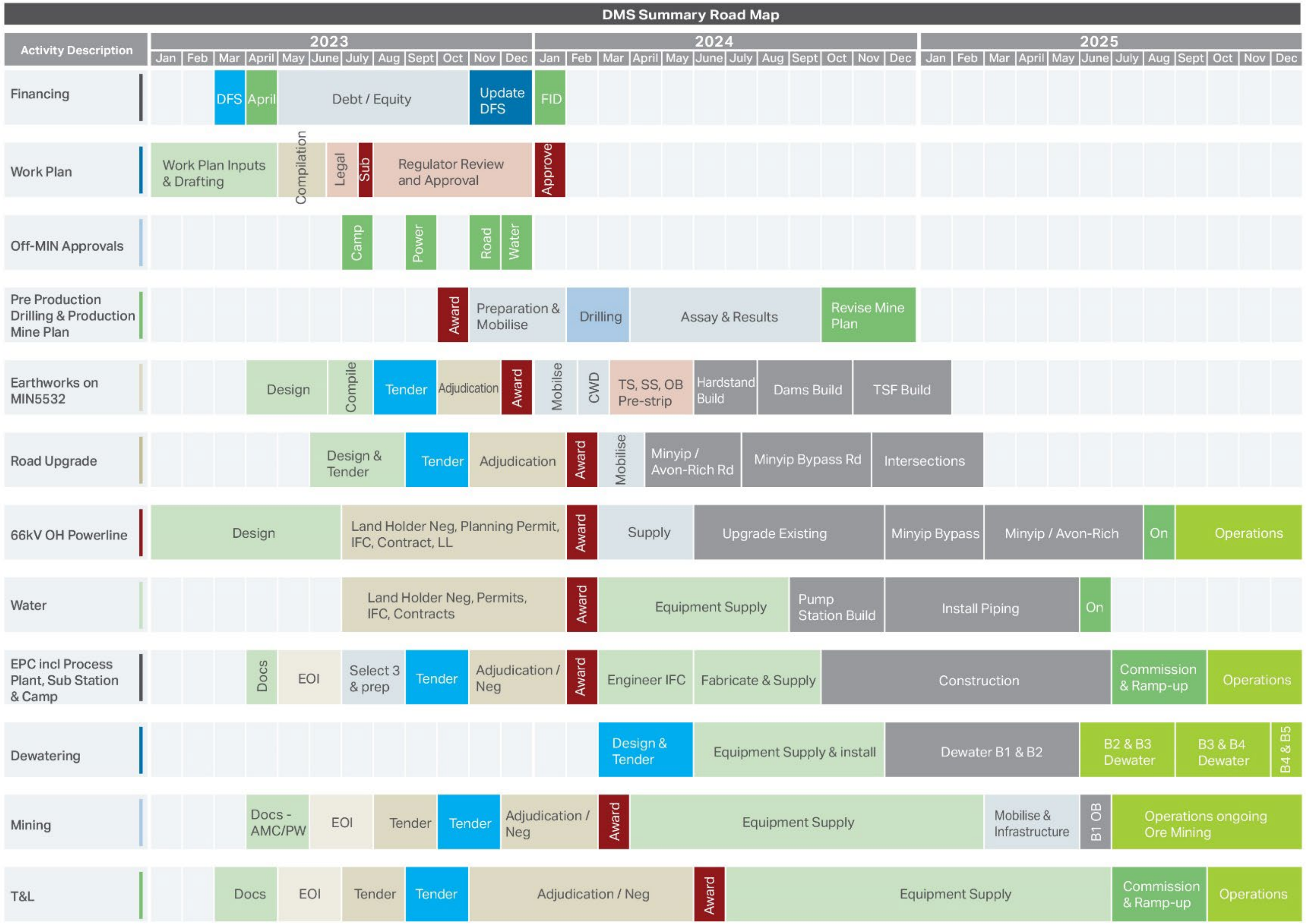


Figure 50 – Project execution schedule

The key milestones for project execution are outlined in Table 25 below:

Table 25 – Key project milestones

Activity	Key Date
Design & Tender Completion (Infrastructure & Mining)	Dec 2023
Final Investment Decision (FID)	Q1 2024
WorkPlan Approval Granted	Q1 2024
Process Plant EPC Award	Q1 2024
Earthworks commenced	Q1 2024
Ordering of Long Lead Equipment Supply	Q1 2024
Construction Complete	Q3 2025
Commissioning & Ramp Up Complete	Q4 2025
Product Shipment Start	Q4 2025

Specifically, the primary critical path items that will have the greatest impact on project delivery are:

- Approvals (both On-MIN5532 and Off-MIN5532)
- Final Investment Decision
- Construction of 66kV overhead powerline

There are also some project items with limited float that could become the critical path items including:

- Construction of the accommodation facility
- Completion of the earthworks program
- De-watering of the initial mining blocks
- Water storage dams
- External tailings storage facility

To mitigate the above critical path (and limited float) items, "front end loading" of certain critical path activities will be completed, subject to available funding. These include "design for procurement" across multiple packages focussing on critical path items and commencing procurement and placing orders for vendor engineering of long lead items such as overhead power poles, cables and insulators, accommodation facility and earthworks contractor.

The current schedule is high level and requires further inputs that will become available in the lead up to FID including completing tender processes for many discrete packages within the Project. The length of the tender process is subject to change based on the final defined scope of each tender package.

14 Risk & Opportunities

During the course of preparing the DFS, the residual risk profile of the Project was assessed. The 2023 DFS integrated design basis was used to develop the current risk profile, including studies and field activities currently in progress on the development of the Work Plan and Off-MIN5532 infrastructure scope.

The risk assessment was undertaken using the matrix shown in Figure 51 and is based on a multiplication of the factors of consequence and likelihood. Each risk identified was evaluated for these two factors to assess the overall risk ranking. Current and future controls and mitigations were then assessed and, where applicable, ratings for consequence and likelihood were reduced based on the impact of these controls and mitigations. Each risk has been assigned an owner to take responsibility for management of the risk and development of future controls and mitigations.

Consequence		Likelihood	Rare	Unlikely	Possible	Likely	Almost Certain
			1	2	3	4	5
Major	5		5	10	15	20	25
Significant	4		4	8	12	16	20
Moderate	3		3	6	9	12	15
Minor	2		2	4	6	8	10
Negligible	1		1	2	3	4	5

Figure 51 – Risk assessment matrix

The key risks identified through the risk assessment and a discussion thereon is shown in Table 26 below:

Table 26 – Key project risks

Activity	Dependency
Resource ***Low Risk***	The Resource is well defined and supported by the 2023 Resource definition drilling (Air core and Sonic) and laboratory programme using QEMSCAN, XRF and laser ablation analysis. The Mineral Resource has been classified in accordance with the guidelines of the JORC Code (2012) and has been reported above a cut-off grade of 1% total Heavy Mineral. Measured = **75%** (304Mt of 525Mt) Indicated = **21%** (110Mt of 525Mt) Inferred = 4% (20Mt of 525Mt)
Reserves ***Low Risk***	Based on the DFS tactical mine planning completed, pit inventories to support an Ore Reserve Estimates in accordance with JORC Code (2012) have been calculated. The Ore Reserve has been classified as Proven based on Measured Mineral Resource, and Probable based on Indicated Mineral Resource. Proved = **85%** (263Mt of 309Mt) Probable = **15%** (46Mt of 309Mt) A break-even cut-off has been applied defining any material with product values greater than the processing cost as Ore. Mining recovery and dilution have been applied to the Reserve. The ore zones have a moderate slimes content, although high in places.
Mining ***Moderate Risk***	The key mining risks identified as part of the DFS are the ability to meet scheduled material movements due to pit trafficability (groundwater related), ability to execute effective rehabilitation and Surface Mobile Equipment (SME)/SME/Light Vehicle (LV) interaction. The residual risk ranking of the risks listed above is moderate, after application of existing and proposed controls. Generally, the top of ore surface is consistent with the modelled groundwater table, meaning most of the orebody lies below the water table. Initial groundwater modelling including spear point dewatering wells has indicated pit dewatering is achievable in a reasonable timeframe (up to 6 months). The model relies on a range of empirical and theoretical inputs and carries some risk relating to the accuracy of the inputs. Further modelling and assessment are expected to increase the level of confidence in these inputs. Risk mitigation measures developed as part of the DFS include downsizing ore haul trucks to increase trafficability in difficult conditions and inclusion of a 6-month pre-strip buffer for

Activity	Dependency
	topsoil and subsoil to allow installation of on path dewatering bores. Actions identified to further reduce pit trafficability risks include a groundwater pump test (to improve model input confidence levels), groundwater model update, and geotechnical trafficability assessment. Mining blocks in the base case mine plan follow a consistent sequence comprising of pre-strip, ore mining, tailings, and rehabilitation. As such, all areas of the deposit will effectively be tailings facilities requiring contouring and capping prior to subsoil/topsoil replacement. Effective rehabilitation of tailings facilities back to productive cropping use is complex and site specific. Factors that influence effective rehabilitation include compaction, subsidence, erosion and soil/stockpile management. The existing tactical mine schedule does not detail specific rehabilitation requirements for all areas of the mine site (and is not expected to for a DFS level of definition). Actions identified to further reduce rehabilitation risks include detailed soil mapping and analysis (underway), development of a detailed rehabilitation management plan (underway), development of a site-specific rehabilitation procedure, updating existing consolidation modelling, develop a detailed final landform design and surface water management plan, and updating the medium term mine plan to account for detailed rehabilitation requirements. The mine plan calls for multiple SME fleets operating simultaneously hauling material both to/from pit and stockpiles. There will be considerable interaction between SME and light vehicles due to general pit traffic (inspections, maintenance crews, technical personnel, supervision) both day and night. The proposed controls are considered industry standard and include a site-specific traffic management plan, SME/LV mine site specification requirements, competency assessments for all SME operators, “Pit Pass/License” for personnel to operate LVs on haul roads or in the pit, and haul road/stockpile/pit design taking into account selected SME (e.g., road widths, road camber, bund heights, intersection designs etc.). Another risk mitigating factor is that the MUP will be located out of pit.
Processing ***Moderate Risk***	Significant metallurgical test work has been carried out by a number of laboratories including by Mineral Technologies in 2021 and 2022, with the later using Sonic drill core samples that represent the first few years of mining in accordance with the tactical mine plan, with some key equipment items tested at commercial scale (gravity spirals, cyclones). The process plant design includes allowances for scale-up of remaining equipment and an engineering/operational design envelope. This is supported by the inclusion of process performance monitoring and control equipment. Although the ore has a fine grain characteristic, mineralogy is reasonably simple. Product specifications/grades proposed are supported by the metallurgical test work. Water supply through a drought situation remain High, even after applying mitigations. The drive to reduce capital costs further beyond the DFS plant size, scope and functionality through aggressive equipment specification reduction, is a risk that needs managing during detailed design and procurement. The financial modelling shows that CAPEX has a limited impact on project viability, but recovery and OPEX has a material impact over the life of mine.
Service and Utilities ***Low Risk***	Electricity supply from Powercor is considered low risk with the connection at Horsham on a 220kV ring main supplying very high reliable power. The new power-line to the mine is expected to provide reliable power. Connection to the Victorian grid enables purchasing ‘green power supply’. Water supply is considered low risk as water has been purchased for stage 1 and the supply will use the existing water reticulation.
Infrastructure ***Low Risk***	The site is well situated, centrally in Western Victoria with well-developed roads and rail systems. Access to the site via existing roads is good and will be improved by the planned road upgrade.
Product Transport & Logistics ***Low / Moderate Risk***	Astron has implemented the Transport Working Group which is engaged to provide in-put to and approve the Transport Management Plan which being developed. HMC is currently trucked around Victoria in reasonable quantities.

Activity	Dependency
	REEC U+TH equivalents are routinely shipped in significant quantities out of Adelaide port. Final destinations and transport routes need to be developed before FID.
Environmental / Approvals ***Moderate Risk***	The following On-MIN5532 approvals are in hand: 2008 – Environmental Effects Statements was favorably assessed 2009 – EPBC approvals granted (varied, and renewed in 2018 to 2042) 2010 – Approval for the ML (MIN5532) 2014 – CHMP (Cultural Heritage Management Plan) approval 2015 – Radiation license obtained (now renewed to 2026) Inclusion of the flotation plant within the scope of the Workplan submission carries a moderate risk, which can be ameliorated through changes to the project scope if required. The moderate risk associated with approvals is primarily schedule risk due, in the main, to regulator capacity to timeously review and provide feedback. Punitive regulatory conditions applicable to operations are not expected. Off-MIN approvals risk is moderate, with the overhead power-line a risk due to its length (70km), and hence impact on a large number of stakeholders.
Social/Community Issues ***Low Risk***	A community consultation process has been well established from the early exploration stage and continues to this day, enabling any community concerns to be managed in a timely manner. Astron holds regular community liaison meetings and maintains a community complaints register along with a transparent, communicative and responsible attitude to community concerns.
Capital Costs ***Moderate Risk***	The capital cost has been based on engineering development that supports a AACE Class 2 estimate. Prior to and during DFS, value optimisation has been carried out ensure the scope and functionality is fit for purpose and to a degree can be modularised or assembled off site, and is supported, in part, by low cost country sourcing. The excessive capital escalation seen over the past 18 months is seen as having peaked with global efforts to tighten money supply in play and freight costs continuing to drop and starting to revert to pre COVID-19 levels.
Operating Cost ***Moderate Risk***	The financial model operating cost estimates for the main processing units are generally considered reasonable and were determined from first principles. The main area of risk is in the estimation of labour costs, which is an issue across the Australian mining sector. However, the Donald Project benefits from its location close to Horsham and Melbourne without the need for a fly-in-fly-out workforce. Potential changes to labour laws being proposed by government could impact personnel operating costs.
Project Implementation ***Moderate Risk***	Building a mining project is always subject to some risk even in favorable environments. Astron has put considerable effort into the development of the project and has employed staff and consultants with strong expertise in all necessary fields. The selection of the EPC / EPCM partner with a proven industry project delivery record will mitigate risk associated project delivery.
Production Schedule and Ramp Up ***Moderate Risk***	The project execution strategy has a reasonable ramp up and proving period. Commissioning will be done on a rolling basis with specialist commissioning expertise. The operations team will be on-boarded early to be involved during ramp-up to develop familiarity with the plant.
Market ***Moderate Risk***	Astron is well positioned to take advantage of growing demand for both the HMC and the REEC through its long history and international presence, name recognition, and excellent reputation with key customers for quality products. REEC demand is projected to grow significantly, and the process plant configuration enables Astron to take advantage of this. Off-take agreements are being negotiated and will be in place before FID.

Activity	Dependency
Management ***Low Risk***	Astron will progressively build a management team utilizing existing skills within the company. The operations team will be recruited at an early stage and supported by existing global Astron operations expertise.

15 Glossary

Term	Definition
µm	Micron
$ or A$ or AUD	Australian dollars
Adamas	Adamas Intelligence
ARBN	Australian Registered Business Number
AMC	AMC Consultants Pty Ltd
ARTC	Australian Rail Track Corporation
Astron or the Group	The Company and its controlled entities
Astron Titanium	Astron Titanium Yingkou Company Limited
ASX	Australian Securities Exchange
ATCW	ATC Williams Pty Ltd
Board	The board of directors of the Company
Bq/g	Becquerel/gram
BV	Bureau Veritas Mineral Pty Ltd
CDI	CHESS Depositary Interest
CECS	Cost estimate classification system
CeO_2	Cerium dioxide
CHMP	Cultural Heritage Management Plan
CIF	Cost, insurance and freight
Company	Astron Corporation Limited ARBN 154 924 553, Hong Kong Company Number 1687414
CRA	CRA Exploration Pty Ltd
CRG	Community reference group
CUP	Concentrate upgrade plant
DEECA	Victoria Department of Energy, Environment and Climate Action
DFS	Definitive feasibility study for Phase 1 of the Donald Project
DHS	Victoria Department of Health Services
director	A member of the Board
DMS	Donald Mineral Sands Pty Ltd
Donald Project	The Donald Rare Earth & Mineral Sands Project
DTP	Department of Transport and Planning
EES	Environmental Effects Statement
EIA	Economic Impact Assessment
EPBC	Environmental Protection Biodiversity Conservation
EP Act	Environmental Protection Act 2017
EPC	Engineering, Procurement & Construction
ERR	Victoria Earth Resources Regulation
FEL	Front-end loader
FID	Final investment decision
FTE	Full-time equivalent
GED	General environmental duty
GRP	Gross Regional Product
GSP	Gross State Product
GWM Water	Greater Wimmera Mallee Water Corporation
HLS	Heavy liquid separation
HM	Heavy mineral
HMC	Heavy mineral concentrate
HREE	Heavy rare earth elements
IRR	Internal Rate of Return
JORC Code	The Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves
kt	One thousand tonnes
Laser Ablation ICPMS	Laser ablation inductively coupled plasma mass spectrometry
LG	Lerchs-Grossman pit-optimisation analysis
LP1	Loxton-Parilla 1 sand formation
LP2	Loxton-Parilla 2 sand formation
LP3	Loxton-Parilla 3 sand formation
LREE	Light rare earth elements
mm	Millimetre
MIN5532	Victorian mining licence 5532
ModCod	Modified co-disposal tailings deposition method
MOU	Memorandum of Understanding

MRE	Mineral resource estimate
MSP	Mineral separation plant
Mt	Million tonnes
MT	Mineral Technologies
MUP	Mining unit plant
NPI	Non-process infrastructure
PFS	Pre-feasibility study for Phase 2 of the Donald Project
Phase 1	The first phase of the Donald Project proposed over the granted mining licence MIN5532
Phase 2	The second phase of the Donald Project proposed over the retention licence RL2002
PMO	Project management office
PPE	Property, plant and equipment
PRC	People’s Republic of China
QX 202X	X quarter of calendar year 202X
QEMSCAN	Quantitative evaluation of minerals by scanning electron microscopy
OK	Ordinary kriging
R:CC	Revenue to cash-cost ratio
Raw HMC	Combined rare earth and heavy mineral concentrate
RCAC	Reverse-Circulation Air Core
REE	Rare earth elements
REEC	Rare earth element concentrate
RL2002	Victorian retention licence 2002
RL2003	Victorian retention licence 2003
ROM	Run of Mine
RMB	Chinese yuan
SG	Specific gravity
SME	Surface mobile equipment
SOP	Standard operating procedure
TiO_2	Titanium dioxide
TMP	Transport management plan
TREO	Total rare earth oxide
TSF	Tailings storage facility
TWG	Transport Working Group
TZMI	TZ Minerals International Pty Ltd
VHM	Valuable heavy minerals
WCP	Wet concentrator plant
WHIMs	Wet high intensity magnetic separator(/-ion)
WIFT	Wimmera Intermodal Freight Terminal
XRF	X-ray fluorescence
YSC	Yarriambiack Shire Council
Zirtanium	Zirtanium Pty Ltd, historical owner of the Donald Project
ZrO_2	Zirconium dioxide