

#### 23 July 2025

Updated Donald Project Economics

## Summary

- Astron has taken a further important step towards a Final Investment Decision (**FID**) for the Donald Project by completing updated project economics.
- The Donald Project FID is currently planned for late 2025, with first production expected in Q4 2027.
- Financial analysis of Donald Project Phase 1 indicates a pre-tax real NPV<sub>8</sub> of \$837 million over a 42-year mine life with an IRR of 22.1%.
- Phase 1 utilises only 17% of Astron's total estimated Mineral Resources (including Astron's 100% owned Jackson Rare Earth and Mineral Sands Project).
- Phase 2 of the Donald Project involves duplication of the Phase 1 mining and mineral processing operations. Phase 2 is expected to be funded by operating cashflow and materially enhance the NPV and economics of the project.
- Phase 1 total estimated capital expenditure is \$439 million (real March 2025), including a contingency of \$31 million, with 94% of the estimate based on tendered or market prices.
- Expected average annual revenue of \$291 million and average annual EBITDA of \$118 million over the ~42-year Phase 1 mine life.
- Average annual production estimate remains consistent with the Definitive Feasibility Study – 229ktpa of heavy mineral concentrate (HMC) over the Phase 1 life of mine (LOM) (252ktpa over the first five years) and 7.2ktpa of rare earth element concentrate (REEC) LOM (8.6ktpa over the first five years).
- Average annual HMC production is equivalent to 43kt of zircon, 99kt of ilmenite.
- Average annual REEC is expected to contain ~900t of neodymium and praseodymium, as well as strategic heavy rare earths including 129t of samarium, 92t of dysprosium and 16t of terbium, representing 250%, 34% and 23% of annual U.S. requirements respectively.
- Key regulatory approvals are in hand, including *Environment Protection and Biodiversity Conservation Act 1999* approval, Environmental Effects Statement, Mining Licence and the Victorian Work Plan.
- Engineering design significantly progressed through Early Contractor Involvement, with engineering services group Sedgman, with 96% at a preliminary design stage or better.

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- Further value optimisation initiatives being investigated to reduce both capital and operating expenditure.
- Operating expenditure estimates for key contractors based on tendered pricing.
- Market dynamics shifting favourably towards key heavy rare earth elements dysprosium and terbium providing upside and optionality for the Company.

#### Note:

- All dollar values are expressed in Australian Dollars, in real March 2025 terms and on a 100% Project basis, and may be rounded, unless otherwise stated.
- All figures in this announcement are sourced from internal Astron management information and analysis unless otherwise stated.
- Quarters are expressed on a calendar year basis.
- For a summary of the Donald Project Definitive Feasibility Study see ASX announcement released 26 April 2023.

Astron Corporation Limited (ASX: ATR) (**Astron** or the **Company**) is pleased to announce the release of updated project economics for Phase 1 of the Donald Project (**Donald Project** or **Project**) following the advancement of key Project activities throughout 2025 and the receipt of major regulatory approvals, including the Victorian Government's Work Plan approval in June 2025.

The updated Project economics have been completed to an AACE Class 2 estimate standard and provide further confidence that the Project continues to represent a financially robust investment. Significant progress has been made on engineering and design, value optimisation initiatives, pre-production drilling, land access arrangements and prospective debt financier engagement.

Phase 1 of the Donald Project is expected to deliver robust economics with a pre-tax real NPV<sub>8</sub> of \$837 million at an IRR of 22.1% (post-tax NPV<sub>8</sub> of \$522 million at an IRR of 17.6%) on a 100% basis. The Phase 1 Project is forecast to generate \$3.4 billion of free-cash flows, \$12.1 billion of revenue and \$4.9 billion of EBITDA over its 42-year mine life. Over the first phase of its operations, the Project is expected to contribute \$2.2 billion to western Victoria's Gross Regional Product providing employment opportunities and re-investment in the local area.

The Updated Economics Study Summary report (Report) is appended to this announcement.

Astron Managing Director, Tiger Brown commented:

"The updated Donald Project economics highlight the financial and technical viability of what will be a major new Australian source of critical minerals. The financial characteristics of the Project, considering current rare earth market conditions, illustrate the resilience of the Project and its expected ability to withstand market challenges with its dual revenue stream providing a defensive element in terms of commodity price cycles.

The Project is expected to enter the market at a time when the demand for heavy rare earth elements dysprosium and terbium is likely to be high due to the scarcity of economic resources around the globe. This scarcity, and the ready-made path to market through our joint venture and 100% rare earth elements concentrate offtake agreement with Energy Fuels, underpins the updated Project economics and strengthen the case for near-term commencement of construction. Further, with many major existing zircon sources now maturing and entering a depletion phase, and global urbanisation proving to be an increasingly strong influence on the market, the Project is well placed to benefit from improved zircon market dynamics.

Following approval of the Work Plan in June, and completion of updated project economics, the Company is looking forward to concluding discussions with prospective lenders in the second half of the year ahead of the final investment decision."

## Donald Rare Earth and Mineral Sands Project

The Donald Project is a globally significant rare earth and mineral sands project with the potential to become a long-term supplier of critical rare earth elements, including neodymium (**Nd**), praseodymium (**Pr**), dysprosium (**Dy**), and terbium (**Tb**), as well as zirconium and titanium minerals. The Project is being developed in two phases. The first phase has an estimated mine life of approximately 42 years and the second phase, which is planned for development as soon as practically feasible after Phase 1 reaches steady-state operations, is expected to extend production life to at least 58 years. The Project is being developed as an incorporated joint venture between Astron and Energy Fuels Inc. (**Energy Fuels**). Energy Fuels has the right to earn up to 49% of the joint venture by funding the bulk of Phase 1 project equity. Astron is the joint venture manager and will retain a 51% interest. Astron was issued with US\$3.5 million of Energy Fuels' stock on the joint venture becoming effective in September 2024 and will be issued a further US\$14 million in Energy Fuels stock upon a positive FID.

### **Project Overview**

The Project area contains 825 million tonnes of Ore Reserves at 4.4% heavy mineral (**HM**) grade and over 1.8 billion tonnes of Mineral Resources at 4.6% HM grade. The Project is contained within two adjoining licences (mining licence 5532 (**MIN5532**) and retention licence 2002 (**RL2002**)) which have a combined area of approximately 272km<sup>2</sup> (refer Figure 1). The joint venture agreement with Energy Fuels covers both MIN5532 and RL2002.

Astron also owns an adjourning tenement – the Jackson Rare Earth & Mineral Sands Project (**Jackson Project**) which is located to the southwest of the Donald Project. The project contains 823 million tonnes of Mineral Resources at 4.8% heavy mineral grade. The Jackson Project also has additional exploration potential outside of the current Mineral Resource area and within EL8516. Combined, Astron's Wimmera deposits have the fourth largest rare earth resource ex-China, and the largest zircon in-situ resources globally.

The Phase 1 Project will be carried out on MIN5532 and is expected to have an average annual production of 7,200 tonnes per annum of REEC (8,800 tonnes per annum during the first five years of production) and 228,700 tonnes per annum over first five years of production) over its 42 year life.

It is envisaged that Phase 2 of the Project will be developed on RL2002, with operations to the north and south of MIN5532. Following Phase 2 Project commissioning, combined HMC production from Phases 1 and 2 is expected to increase to between 400,000 and 500,000 tonnes per annum, and combined REEC production is expected to increase to between 13,000 and 14,000 tonnes per annum.

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Figure 1 – Donald Project tenement location map



#### Summary financial and operational metrics

Key Donald Project Phase 1 financial and operational metrics are outlined in Table 1:

#### Table 1 - Summary Donald Project Phase 1 financial and operational characteristics

Metric	Unit	Phase 1
Pre-tax NPV <sub>8</sub> (FID)	\$m	837
Pre-tax IRR	%	22.1
Post-tax NPV <sub>8</sub> (FID)	\$m	522
Post-tax IRR	%	17.6
Payback period from commencement of operations	years	5.0
Execution capital cost	\$m	439
Cumulative free cash flow	\$m	3,436
Life of mine	years	41.8
Ore processing throughput	Mtpa	7.5
Average ore grade	%	4.4
Average strip ratio	Ratio	1.7

The average annual Phase 1 financial and production metrics for the first five years and over the 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	\$m	302.0	291.2
EBITDA	\$m	123.3	117.6
Sustaining capital	\$m	12.9	4.4
Average post-tax free cash flow	\$m	82.9	82.3
REEC average production	ktpa	8.6	7.2
HMC average production	ktpa	251.9	228.7

#### **Product pricing assumptions**

The financial analysis of the Project has used the following price assumptions:

- REEC pricing based on Cost, Insurance, and Freight (**CIF**) U.S. using an average of the Q3 2024 forecasts sourced from Adamas Intelligence and Argus Consulting. Long-term pricing from 2041 onwards is maintained at the same real price as 2040;
- HMC pricing is based on CIF China in real Q3 2024 terms provided by TZ Minerals International Pty Ltd (**TZMI**). Long term pricing from 2033 onwards is based on TZMI long term inducement pricing on a real 2024 basis;

REEC offtake pricing is derived from the underlying individual rare earth commodity prices and the relative rare earth composition of the REEC, adjusted to provide for the offtaker's processing costs and margin to produce final marketable rare earth products.

The rare earths market suffered significant price drops in 2023 due to disappointing recovery from COVID-19 lockdowns and global economic headwinds. These price drops are apparent in the chart below which illustrates the movement in underlying Nd pricing from 2021 through to 2024 and the forecast pricing used in the financial analysis.

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The decrease in forecast rare earth prices from the DFS to the updated project economics are also illustrated in the chart below and have contributed to a decrease in pre-tax Project NPV of approximately \$536.1 million.



Figure 2 – Nd price assumption (Source: Argus, Adamas Intelligence)

The primary assumptions underpinning REEC pricing reflect an increase in demand for light rare earths (Nd/Pr) through to 2030 which will result in higher cost production sources coming online and a challenging supply demand balance for heavy rare earths (Dy/Tb) due to their scarcity.

Following recent industry announcements, substituting a Nd/Pr price of US\$110 per kilogram (real 2025) for the LOM would result in a reduction of Project pre-tax NPV to \$735.1 million and a pre-tax IRR of 21.0%.

From a HMC pricing perspective, the updated economics are underpinned by a long-term LOM real 2025 price of US\$1,778 per tonne for premium zircon and US\$234 per tonne for sulphate ilmenite, against a current spot price of ~US\$1,800 per tonne for premium zircon and US\$260 to US\$290 per tonne of sulphate ilmenite.

### **Cost competitiveness**

Along with the low CAPEX requirement of \$439 million, OPEX for Phase 1 of the Donald Project is also relatively low at \$736 per tonne of product produced (against average revenue per tonne of \$1,235). The chart below provides a comparison of the Project's OPEX and CAPEX as it relates to total rare earth oxides (TREO) produced:



Figure 3 – OPEX and CAPEX comparison – rare earth projects (Source: Argus Consulting)

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Further to the above cost competitiveness of the Project, the chart below illustrates the margins available to the Project throughout the first twenty years of mine life assuming that HMC revenue is used a credit to REEC unit costs:



*Figure 4 – REEC revenue & cost comparison per kg TREO (Source: Astron analysis)* 

### **Sensitivity Analysis**

Due to its dual product streams, The Project is expected to be resilient to down-cycles in one or more markets. The Project's break-even on an operating cash cost basis is Nd Pr Oxide US\$32 / kg, Dy Oxide US\$252 / kg and Tb Oxide of US\$623 / kg, cementing the Project's forecast position as a first quartile rare earth producer.

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





### **Funding requirements**

The Project's forecast total funding requirement is \$536.3 million (in nominal terms) including capital expenditure, start-up working capital and indicative finance costs, fees and interest during construction period. A 50% debt:50% equity financing structure is targeted, with any equity shortfall to be funded on a pro-rata basis by the joint venture partners following completion of the balance of Energy Fuels' \$183 million earn-in contribution (expected to be approximately \$140 million at commencement of construction).

### **Estimation methodology**

The Phase 1 Project capital expenditure estimate is underpinned by:

- 95.47% of the capital estimate calculated on a design basis of preliminary design or stronger; and
- 94.05% of the capital estimate being based on market tested pricing.

The above factors illustrate that the estimate meets the requirements for an AACE Class 2 estimate under the American Association of Cost Engineers Cost Estimate Classification System with an expected range of accuracy of -5% to +15%.

### **Project Schedule**

A high-level Project schedule showing key development inputs (and assuming a positive FID in late 2025) is shown below:



Figure 6 – Project schedule

### **Looking forward**

Astron expects to build on Donald Project development progress with a view to reaching a positive FID in late 2025. Key activities to be concluded prior to FID include:

- finalisation of the Project's Phase 1 financing package;
- resolution of mining and transport & logistics tenders;
- finalisation of total cost estimate for the process plant engineering, procurement and construction contract;
- completion of water pipeline construction (see ASX announcement dated 17 July 2025); and
- finalisation of earthworks design and tender for construction.



This announcement is authorised for release by the Board of Directors of Astron.

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#### **About Astron**

Astron Corporation Limited (ASX: ATR) is an Australian-based company listed on the ASX. With over 35 years of operating history, Astron has been involved in mineral sands processing, downstream product development, and the marketing and sales of zirconium and titanium related products. Astron's prime focus is the development of its large, long-life Donald Rare Earth and Mineral Sands Project in regional Victoria, Australia. In addition to its Australian assets, the Company also conducts a mineral sands trading operation based in Shenyang, China and a mineral separation facility processing mineral concentrate products into final products, in Yingkou, China.

#### **Cautionary Statements**

The updated project economics are based on the material assumptions set out in this document (incorporating the appended Report), including regarding availability of funding. While Astron considers all material assumptions to be based on reasonable grounds (including the key assumptions set out in Section 2.1 of the Report), there is no certainty that they will prove to be correct or that the range of outcomes set out in this document 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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accordance with the Australian Accounting Standards. No reliance should therefore be placed on any financial information, including non-IFRS financial information and ratios, included in this document. All financial amounts contained in this document are expressed in Australian dollars and may be rounded unless otherwise stated. Any discrepancies between totals and sums of components in tables contained in this document may be due to rounding.

#### **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, the owner of the MIN5532 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 Astron, the owner of the RL2002 and RL2003 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, the owner of the Ore Reserves. 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.

The Company confirms that it is not aware of any new information or data that materially affects the Mineral Resource and Ore Reserve estimates referenced in this document and that all material assumptions and technical parameters underpinning the Mineral Resource and Ore Reserve estimates continue to apply and have not materially changed.



# UPDATED ECONOMICS STUDY SUMMARY

Donald Rare Earth and Mineral Sands Project



23 JULY 2025

Donald Project Pty Ltd, trading as Donald Mineral Sands (DMS)

A joint venture between Energy Fuels & Astron

thedonaldproject.com.au

ASX:ATR

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# 1 Introduction

The Donald Rare Earth and Mineral Sands Project was discovered by CRA Exploration Ltd (**CRAE**) in the early 1980s in the Wimmera region, Victoria, Australia. It is the largest of the WIM-style deposits, characterised by its flat, shallow, and significant size with consistent grade. Zirtanium Pty Ltd (**Zirtanium**) acquired the tenements in 2000 and sold them to Astron Corporation Limited (**Astron**) (then called Astron Limited) in 2004. Since then, Astron has invested approximately \$100 million in the project's development, including exploration, mining, metallurgical studies, obtaining necessary regulatory approvals and acquiring farmland and water rights.

Astron plans to implement a phased development strategy for the Donald Rare Earth and Mineral Sands Project (**Donald Project** or **Project**). Phase 1 focuses on Mining Licence 5532 (**MIN5532**) with the goal of processing 7.5 million tonnes per annum (**Mtpa**) of ore to produce approximately 228,000 tonnes of heavy mineral concentrate (**HMC**) and 7,200 tonnes of rare earth element concentrates (**REEC**) per year. This phase is expected to support a project life of approximately 42 years. Phase 2 is expected to expand ore throughput to 15Mtpa and extend production life to at least 58 years, encompassing retention licence 2002 (**RL2002**) which surrounds MIN5532. Further development opportunities exist beyond the currently defined MIN5532 and RL2002 Donald Project Ore Reserves.

Astron established Donald Project Pty Ltd, trading as Donald Mineral Sands (**DMS**), in a joint venture with Energy Fuels Inc. (**Energy Fuels**) in June 2024. As part of the joint venture agreement, Astron Mineral Sands Pty Ltd (**AMS**), a wholly owned subsidiary of Astron, manages joint venture activities under a management agreement. Energy Fuels will invest \$183 million for 49% of DMS and has entered into a binding offtake for 100% of the Donald Project's REEC product with pricing linked to market prices and floor prices for key rare earth oxides. The joint venture aligns with the Australian and U.S. governments' critical minerals strategies, contributing to the diversification of global supply chains and creating a western-based rare earth supply chain.

For the HMC product, Astron intends to enter into an offtake agreement with DMS for 100% of the Project's HMC (which is a zircon and titanium minerals concentrate) with offtake contracts allocating 70% of the HMC to SuiXi JinDi Mining Limited (**JinDi**) and 30% to its own processing plant in China.

The Project operates under Australian and Victorian regulatory frameworks, with key mining and regulatory licences granted, and involves multiple contractual arrangements for mining, processing, and logistics.

Project tenements, MIN5532 and RL2002, cover 2,784ha and 24,371ha respectively. Surface rights include freehold farming land leased to local farmers, with additional land owned by Astron subsidiaries to support operations and rehabilitation. DMS either owns the land or has secured land-access agreements with landholders within the approved Work Plan area.

In addition to the Donald Project, Astron owns adjoining rare earth and mineral sands tenements to the southwest. The Jackson Rare Earth and Mineral Sands Project (**Jackson Project**), which is located on retention licence 2003 (RL2003) and exploration licence 8516 (EL8516) contains an additional 823 million tonnes of Mineral Resources at 4.8% heavy mineral grade with further exploration potential and upside. Combined, Astron's Wimmera projects (comprising both Donald and Jackson Rare Earth and Mineral Sands Projects) host the fourth largest rare earth resource ex-China, and the largest zircon resources globally.

DMS is subject to the rules and regulations of the *Mineral Resources (Sustainable Development)* Act 1990 and is regulated by Resources Victoria within the Department of Energy, Environment and Climate Action. Key approvals received by the Project include a Work Plan, Environmental Effects Statement (**EES**), Cultural Heritage Management Plan (**CHMP**), and radiation licences.

Project royalties, payable to the Victorian State Government, are set at 2.75% of the net market value of minerals. Additionally, environmental bonds are lodged, with rehabilitation plans approved and rehabilitation bond amounts to be finalised prior to construction commencement.

The Project plans to award a small number of large contracts through competitive tendering or justified sole sourcing to minimise risks and optimise management. Key contracts include water pipeline, earthworks, Engineering, Procurement and Construction (**EPC**), project management office (**PMO**), mining, and transport & logistics (**T&L**).

Global engineering services provider, Sedgman Pty Ltd has been engaged for Early Contractor Involvement (**ECI**) to develop the design and execution strategy for the process plant with a target cost estimate contract including pain/gain share mechanisms. Agilitus, an engineering, design, project delivery and advisory consultancy, has provided PMO services to the Project post finalisation of the Definitive Feasibility Study (**DFS**). These services include project planning, engineering management, procurement, quality, health, safety and environment (**HSE**), construction, and commissioning management under a performance-based contract. Post FID approval, DMS will establish an integrated PMO with external consultants overseen by experienced in-house project personnel.

The mining contract covers excavation, transport, and infrastructure, with negotiations continuing with qualified contractors. T&L contracts cover the full supply chain from mine to port, with initial terms of five to ten years.

The Project's capital cost has been estimated to be \$439 million on a real Q1 2025 basis. The total preproduction capital requirement for the Donald Project is estimated at \$536.3 million in nominal terms, including capital costs, working capital and finance costs (including fees and interest) throughout construction. The Project will be funded through a mix of debt and equity, with a target 50% gearing ratio. The financing structure is expected to include a Term Facility, Cost Overrun Facility, Working Capital Facility, and Bank Guarantee to satisfy the Victorian Government rehabilitation bond. Astron and Energy Fuels will contribute further equity to the Project on a pro-rata basis to meet any equity shortfall.

## 2 Investment Valuation

## 2.1 Financial Analysis

Financial analysis based on the latest operating and financial assumptions illustrates attractive economic returns and free cash flow generation over the 42 year mine life. Phase 1 pre-tax real NPV<sub>8</sub> of \$836.9 million with a pre--tax IRR of 22.1% and average annual real free post-tax cash flow of \$82.3 million. Given Phase 1 only encompasses 17% of Astron's Wimmera projects' total Mineral Resource, a phased development approach provides the potential for substantial additional value generation.

The key financial and operational metrics of Phase 1 of the Donald Project are outlined in Table 1.

rable i – Summary key imanelat and operational methos	Table 1 – Summa	ary key financia	l and operationa	l metrics
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Metric	Unit	Phase 1
Pre-tax NPV <sub>8</sub> (FID)	\$m	837
Pre-tax IRR	%	22.1
Post-tax NPV <sub>8</sub> (FID)	\$m	522
Post-tax IRR	%	17.6
Payback period from commencement of operations	years	5.0
Execution capital cost	\$m	439
Cumulative free cash flow	\$m	3,436
Life of mine	years	41.8
Ore processing throughput	Mtpa	7.5
Average ore grade	%	4.4
Average strip ratio	Ratio	1.7
REEC average production	ktpa	7.2
HMC average production	ktpa	229
Average revenue per annum	\$m	291.2
Average EBITDA per annum	\$m	117.6
Average post-tax free cash flow	\$m	82.3

The financial analysis is based on the following key assumptions:

- all product pricing assumptions stated on a real Q3 2024 basis;
- REEC pricing based on Cost, Insurance, and Freight (**CIF**) U.S. using an average of the pricing sourced from Adamas Intelligence and Argus Consulting based on forecasts from Q3 2024. Long-term pricing from 2041 onwards is maintained at the same real price as 2040;
- HMC pricing based on CIF China in real Q3 2024 terms provided by TZ Minerals International Pty Ltd (TZMI). Long term pricing from 2033 onwards is based on TZMI long term inducement pricing on a real 2024 basis;
- positive FID from Q4 2025;
- AUD/USD exchange rate of 0.66; and
- Phase 1 first production in Q4 2027 with first product sales in Q1 2028.

The discounted cash flow evaluation of the Project reflects the work completed in connection with the DFS issued by Astron in April 2023 and all engineering, design and other activities completed since the DFS up to the date of this Updated Economics Study Summary, including mining and processing data based on the tactical mining schedule, capital and operating costs (as outlined below), transportation costs based on the current product transportation routes, product recoveries based on metallurgical test work and environmental and rehabilitation costs arising from compliance with the Project's positively assessed EES.

## 3 Capital Expenditure Estimate

The total execution capital expenditure (**CAPEX**), on a real Q1 2025 basis, is estimated to an AACE Class 2 level of accuracy and is outlined in Table 2.

Capex area	\$m
Process plant	209.7
Earthworks	63.3
Onsite infrastructure	25.3
Project execution	41.5
Operational readiness	17.5
Offsite infrastructure	27.7
Other	23.2
Contingency	30.6
Total	438.8

#### Table 2 – Capital expenditure summary

The CAPEX estimate has been developed based on scope of work documents, detailed material take-offs and procurement package pricing from the market. The estimate reflects the packaging strategy, anticipated execution methodology and cost control management of the Project. Further, the CAPEX estimate is stated on a real Q1 2025 basis with no forward escalation included. Specifically, the CAPEX estimate has been developed from the following engineered, designed and tendered inputs:

- process plant Sedgman total cost estimate established from ECI activities;
- tailings storage facility (TSF) competitively tendered process in conjunction with the site wide earthworks tender based on detailed design developed by ATC Williams (ATCW);
- mining operations competitive tender pricing provided by potential suppliers;
- water supply infrastructure competitive tender in conjunction with Grampians Wimmera Mallee Water (**GWMWater**), approved issued for construction (**IFC**) drawings and scope of works;

- road upgrades for T&L route based on functional and detailed designs for road and intersection upgrades priced by regional contractors;
- earthworks engineered and detail designed by Agilitus to IFC definition and competitively tendered for the bulk and detailed earthworks for the process plant area and for site-wide bulk earthworks; and
- labour and Owner's Team (comprising DMS employees, AMS management and outsourced PMO) Costs – developed by Donald Project team in conjunction Agilitus project management support.

Contingency for the Project has been estimated on a line-by-line basis for each area and reflects an independent expert'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 \$30.6 million represents 7.0% of the total capital estimate and reflects the significant increase in the level of design and cost basis of the estimate, which includes a design status of greater than 95% at preliminary design or above and approximately 94% of cost which has been estimated using market or tendered pricing. The above factors illustrate that the estimate meets the requirements for an AACE Class 2 estimate under the American Association of Cost Engineers Cost Estimate Classification System with an expected range of accuracy of -5% to +15%.

# 4 Operating and Sustaining Expenditure Estimate

## 4.1 Operating Expenditure

The operating expenditure (OPEX) estimate encompasses:

- mine operations and rehabilitation;
- ore process plant operations and maintenance including mine borefield dewatering;
- tailings deposition and decant water return;
- product T&L;
- supply of consumables such as raw water from external utilities and site power generation;
- operating consumables including reagents and flocculants; and
- the personnel required to operate the mining and processing complex including administration and overhead costs.

The OPEX estimate has been derived using:

- outsourced mining operations for all earthmoving up to and including feed to the mining unit plant (MUP);
- processing plant details developed by the Donald Project team to reflect current assumptions, design
  and operational strategies. This includes the MUP, the wet concentrator plant (WCP), concentrate
  upgrade plant (CUP), tailings deposition and decant water return, ground water removal, HMC and
  REEC storage and loading / bagging facilities;
- outsourced T&L operations, where a contract T&L operator delivers HMC and REEC products from the mine site to the respective nominated Australian port destinations and onwards via international shipping to the final customer destinations; and
- first principles cost build-up cross referenced with recently available data on consumption rates, unit rates and unit costs with supporting information obtained from tenders.

The OPEX estimate assumes operating parameters shown in Table 3:

#### Table 3 – Operating parameters

Measure	Unit	Quantity
Run-of-mine throughput	Dry t/annum	7,500,000
Final REEC average production	Dry t/annum	7,166
Final HMC average production	Dry t/annum	228,650

#### **OPEX** estimates:

- are based on first principal cost build-up in Australian dollars;
- are based Q3 2024 prices with review and update conducted in Q2 2025 and shown in Q2 2025 real terms;
- are not adjusted for inflation and GST is excluded; and
- do not include any contingency allowance.

The OPEX estimate accuracy aligns with an AACE Class 2 estimate and total operating cash costs by category are summarised in Table 4.

#### Table 4 – Donald Project average operating cash costs per annum by category (real Q1 2025)

Operating area	Average expenditure (\$m)	Average expenditure (%)
Mining	79.1	45.6
Processing	30.7	17.7
Transport – Mine to Port	13.8	7.9
Transport – Port to Customer	28.7	16.5
Royalties	6.8	3.9
Labour – General & Administrative	5.1	3.0
Other operating expenses	9.4	5.4
Total	173.6	100.0

#### 4.1.1 **Operations Basis**

The OPEX estimate was developed based on the following operating scenario:

- the mining contract has an initial contract term of five years;
- the process plant has a baseline assumption of an average nominal throughput of 1,057t/h (dry) over 7,500 hours per annum;
- the process plant will be operated by DMS;
- the transport of Donald products (HMC and REEC) from mine site to customer will be undertaken via outsourced T&L contracts;
- sales and marketing activities will be undertaken by the Donald Project joint venture partners (Energy Fuels and Astron);
- Donald Project royalty charges are fixed at 2.75% of the net market value of product sales calculated as gross revenue less insurance, freight and marketing. As royalties are a government impost, they have been treated as a taxation charge and are included as such in the Donald Project financial analysis model; and
- as manager of the joint venture, AMS is entitled to charge the following management costs:
  - any direct labour costs incurred by AMS in its role as Manager of the joint venture; and

 management fees – based on 1.25% of total OPEX of the Project, charged on a monthly basis and paid in arrears (this is expected to cover Astron's corporate costs associated with the project);

#### 4.1.2 Scope of Operating Expenditure Estimate

The scope of the OPEX estimate is based on the following battery limits:

- mining activities undertaken via an outsourced mining contract;
- MUP, WCP, and CUP operations and maintenance undertaken by owner operations personnel;
- loading of HMC product by front end loader into half height shipping containers by the T&L contractor and transport of the HMC material to the Port of Portland (Victoria). Bulk loading to international shipping at Portland for transport to final customer destination (China);
- loading of REEC product into 2 tonne bulka bags and by forklift into shipping containers, and transportation of these containers by the T&L contractor to the Port of Adelaide (South Australia), and loading to international shipping at Adelaide for transport to final customer destination (U.S.);
- discharge of tailings initially in an external TSF and subsequently into in-pit tailings cells in synchronisation with the mining plan;
- decant water return initially from TSF and subsequently from in-pit tails cells;
- rehabilitation of the reclaimed tails cells to either native vegetation or agricultural use;
- high voltage power generation on-site using power generation (base case diesel);
- pre-mine dewatering via an arrangement of borefield pumps; and
- raw water from GWMWater supply system interconnection point.

## 4.2 Sustaining Capital

Sustaining capital expenditure (**SUSEX**) is necessary to maintain the operation, productivity, safety and efficiency of operations, without necessarily expanding capacity or improving efficiency. The sustaining capital costs are estimated in alignment with the expenditure of capital funds across the first 20 years of operations and extrapolated across the remaining Phase 1 mine life.

SUSEX for process plant equipment has been estimated based on the design life expectancy of each equipment item as determined by original equipment manufacturer (**OEM**) manufacturer and design engineers. Each equipment type has a nominal sustaining capital cost interval, at which time a proportion of the asset is either replaced or refurbished. These costs are additional to the regular maintenance costs estimated as part of the OPEX.

Several components make up the overall Donald Project SUSEX estimate, including pipe extensions to the tailings discharge and decant system, MUP and bore field pipeline extensions as they move further from the process plant. In the early years this also includes an upgrade of roads adjacent to MIN5532.

#### Table 5 - Donald Project SUSEX estimate per annum

	Annual SUSEX \$	Unit SUSEX cost \$/t ore
Project Sustaining Capital – Cost / Annum	4,718,419	0.65



Year

Figure 1 – Donald Project Sustaining Capital Costs forecast over 20 years

## 5 Environment and Approvals

Key environmental considerations for the Project include land use, vegetation, water, and regulatory compliance. DMS is committed to integrating robust environmental management practices into its project design and operations.

## 5.1 Existing Environment

The Project is located in the Wimmera region of Victoria which has mostly been cleared for farming, with native vegetation limited to scattered patches. The landscape includes low sandy rises, creating an undulating appearance and slopes gently from south to north. The main soil systems are Murra Warra, Kalkee, and Donald, with high levels of soluble salts and increasing salinity with depth.

The area experiences a semi-arid climate with cool, wet winters and hot, dry summers. Average annual rainfall is about 400mm. The Phase 1 Project area, MIN5532, is primarily used for broadacre agriculture, growing crops like wheat, barley, canola, legumes, and pulses, with sheep grazing on feed crops and stubbles. DMS and other Astron subsidiaries own most of the freehold land in the area approved under the Work Plan, with remaining titles contracted and to be settled upon successful FID.

The Work Plan area is divided between the Wimmera and Avon–Richardson catchments and lacks defined watercourses or bodies. It includes two decommissioned supply channels, with the closest waterways being the Richardson River (4 km east) and Dunmunkle Creek (2 km west), and Walkers Lake (35 km east) as the nearest major water body. Sheet flooding can occur after heavy rainfall. The main aquifer, Parilla Sands, is highly saline and has low yield, with mineral sand deposits located three to twelve meters below the water table. Groundwater salinity ranges from 14,000 to 35,000 mg/L total dissolved solids, making it unsuitable for agriculture. Groundwater depth is 11 to 15 meters below the surface, flowing northwest towards the Murray Basin.

A number of non-disturbance zones have been established on the Project site to preserve the remaining native vegetation and, where avoidance is not possible, biodiversity offset requirements have been determined and accounted for in project expenditure.

## 5.2 Naturally Occurring Radioactive Materials

Mineral sands containing heavy minerals, such as those in the Donald Project, originate from the erosion and weathering of rocks and are concentrated by wind, ocean currents, and wave action, typically found

near ancient coastlines. These sands primarily contain titanium-bearing minerals, zircon, and rare earth minerals (like monazite and xenotime), which include naturally occurring radioactive materials (**NORM**) such as uranium and thorium. While most of these radioactive materials are present in trace amounts, monazite contains higher concentrations. The mining and processing of these minerals can elevate radiation exposure, which is regulated under the *Victorian Radiation Act 2005* to protect workers and the public. The Project, classified as a radiation practice, has a Radiation Act Management Licence and implements a Radiation Management Plan to ensure negligible effects on the public, animals, and plants, with human radiation doses significantly below prescribed public dose limits. In addition, the Project has received a Section 113 Authority under the MRSD Act, which permits the excavation of naturally occurring radioactive materials under a prescribed limit.

## 5.3 Heritage

DMS collaborates with the Barengi Gadjin Land Council representing Traditional Owner custodians of the lands encompassing MIN5532, to protect cultural heritage, including scar trees, rock scatter, and stone artefacts. Together, the Project's CHMP was finalised in 2014. European heritage from early settlement in the 1830s is also preserved, with the only registered on-site non-indigenous historic site being protected from Project activities.

## 5.4 Secured Approvals

DMS has secured the major approvals necessary to commence mining, including a positive assessment of the EES, Commonwealth approval under the *Environmental Protection, Biodiversity and Conservation Act* 1999 (**EPBC Act**) and the Victorian Government Work Plan approval.

Work Plan approval under the *Mineral Resources (Sustainable Development) Act 1990* (**MRSD Act**) aims to regulate mining and exploration so that activities are conducted in a manner that is safe, environmentally responsible, and sustainable. The Project Work Plan details how DMS will undertake:

- Risk management identifying and mitigating risks associated with mining operations.
- Environmental protection through implementation of avoidance and mitigation measures for Project activities to prevent undue harm to the environment.
- Community engagement involving local communities and stakeholders throughout the Project life.
- Regulatory compliance meeting legal and regulatory requirements.

The Project Work Plan was approved in June 2025 for the defined area within MIN5532 (covering approximately 42% of the MIN5532 area), shown in Figure 2. The Work Plan area represents the first 19-years of Project operations.



Figure 2 – Work Plan area and CHMP boundary within MIN5532

Table 6 presents a summary of key approvals obtained by DMS for Phase 1, including primary and secondary approvals.

Table 6 – Approvals and licences held by DMS	S for the Donald Project
Table 0 = Approvals and decrees ned by Drive	

Legislation	Approval / Aspect	Date	Status
Environment Protection and Biodiversity	EPBC Act Approval (2005/2372) / Mining	2009	Approved under Bilateral Agreement with Victoria.
Conservation Act 1999			• Expiry date 13 March 2034.
(EPBC Act) (Commonwealth)		2016	<ul> <li>Variation to amend condition 9 of approval relating to the timeframe of the action to commence within 5 years.</li> </ul>
		2018	• Variation to extend period of effect to 2042, amend and revoke conditions of approval relating to Matters of National Environmental Significance species no longer expected to be impacted by the Project.
		2024	Approval transferred to joint venture entity, Donald Project Pty Ltd.
EPBC Act (Commonwealth)	Not applicable / Water pipeline	2025	<ul> <li>Self-assessment complete regarding water pipeline corridor finding referral to Department not required.</li> </ul>
EPBC Act (Commonwealth)	Not applicable / Nuclear installation	2025	• Self-assessment complete regarding Project meeting nuclear installation threshold, finding referral to Department of Climate Change, Energy, the Environment and Water not required, as detailed further below.

Legislation	Approval / Aspect	Date	Status
Environment Effects Act 1978 (EE Act) (Victoria)	EES (File: PLEP/ 13/0239) / Mining	2008	• Approval for mining and processing of mineral sands (HMC).
Environment Protection Act 2017	Permit No. P000301851 / Tailings Management	2025	• Discharge of tailings to an aquifer (A18 Discharge of waste to aquifer).
			• Expiry date 2030.
Radiation Act 2005 (Victoria)	Management Licence (300066740) / Radiation	2014	• Expiry date 2017.
. ,	management	2017	• Expiry date 2020.
		2020	• Expiry date 2023.
		2024	• Expiry date 2026.
Aboriginal Heritage Act 2006 (Victoria)	CHMP No. 11572 / First Nations heritage	2014	• CHMP covers an area of 1,625ha (including Work Plan area and DMS owned land).
	management		• Cultural heritage places within the Work Plan area have been cleared and disturbance can commence except surrounding three scarred trees that will be managed in consultation with the traditional owners' representative group, BGLC Corporation prior to disturbance works.
MRSD Act (Victoria)	Mining Licence	2010	Phase 1 Project.
	(MIN5532) / Mining		• Expiry date 2030.
	Work Plan Approval / Mining	2025	• Relates to 1,143ha within MIN5532, defined as the Work Plan area.
			• Expiry: upon expiration of the mining licence (2030).
	S 113 Authority	2025	• Permission granted under S 113 (4) of the MRSD Act.
			• Expiry: upon expiration of the mining licence.
Water Act 1989 (Victoria)	GWMWater allowance 6,975 megalitres (6.975 gigalitres)/ Water	2011	• Extension of Original Agreement by 25-year term on 18 July 2018.
Planning and Environment Act 1987	Yarriambiack Shire Council Planning Permit for native vegetation removal along Minyip- Banyena Road / Water pipeline	2024	Offsets secured relating to native vegetation clearing requirements for water pipeline corridor.
Heritage Act 2017	Heritage Victoria / European heritage management	2024	<ul> <li>Two historical heritage sites within the work plan area delisted from Heritage Inventory.</li> <li>A third site to be protected from mining activities.</li> </ul>

Where the approval relates to only part of the MIN5532 area, it has been noted in the table above.

## 5.5 Remaining Approvals

The remaining approvals to be secured for Phase 1 are listed in Table 7.

These approvals primarily relate to those required from local council and the local water authority, with known, relatively short, timeframes of assessment.

Variations to existing approvals are in varying stages of development, as per the following:

- Work Plan variation to accommodate an increase in use of onsite power generation. Owing to the approval challenges (duration) for development of the 70km-long powerline, and improvements in technology that provide more efficient combustion engines and more readily facilitate the inclusion of renewable energy sources, DMS is seeking to source 100% of its power from onsite power sources. DMS will be required to demonstrate that this approach concords with the 2008 EES level of impacts;
- Work Plan variation to accommodate recent design improvements to tailings storage facilities (external and in-pit) and surface water infrastructure. Engineering and environmental studies to support these project changes are currently underway; and
- EPBC Act approval variation to update the date for the commencement of mining (has lapsed), and to meet the condition of approval to have an established Biodiversity Offset Management Plan approved. As at the date of this Report, these approvals were expected imminently.

As outlined in section 5.4, Work Plan approval received in June 2025 represents the first 19 years of operations (Phase 1A). For mining beyond the initial 19 years (Phase 1B), a subsequent Work Plan variation is required (separate to and following the Work Plan variations described above). Additional inputs required to develop the Phase 1B Work Plan variation include a CHMP, Biodiversity assessments (incorporating field surveys) for the Phase 1B area, updated environmental assessments to identify potential impacts and controls, and development or update of relevant management plans including the rehabilitation and closure plans.

Field surveys are underway to determine whether there is potential for the proposed road upgrades to have a significant impact on protected matters. Should the potential be identified, Commonwealth approval for these works would also be required and is not yet considered in Table 7.

Approval / Agency	Primary requirements / status						
Rehabilitation Bond; Resources Victoria;	• Water pipeline installation can occur prior to assessment of mining bond calculations, with current bond in place deemed adequate for these works by the regulator.						
Earth Resources Regulator (ERR)	<ul> <li>Calculated bond will be formally assessed by ERR from mid July 2025, having already engaged extensively and addressed initial feedback.</li> </ul>						
Local planning approvals:	Road upgrades:						
· · · · · · · · · · · · · · · · · · ·	Local shire planning permit for native vegetation removal.						
Yarriambiack Shire	Upgrade works are exempt from requiring a local planning permit.						
oounon	Water pipeline:						
	<ul> <li>Local planning permit for the creation of an easement at the GWMWater flow meter compound. To be obtained upon flow meter compound construction.</li> </ul>						
	Discontinuance of roads:						
	Required for Council roads that exist within the work plan area.						
	6-month process upon notification to Council planned to commence July 2025.						
Mineral export permission;	The REEC product sits within the category of a 'controlled material' under Reg 9 of the <i>Customs (Prohibited Exports) Regulations 1958</i> based on the trigger:						
Commonwealth Department of	<ul> <li>"controlled ores or concentrates containing 500 ppm or more of uranium and thorium combined".</li> </ul>						
Industry, Science and Resources (DISR)	<ul> <li>Expect that permission will be issued ~10 days from when Australian Safeguards and Non-Proliferation Office has completed its arrangements with its U.S. counterparts.</li> </ul>						

Fable 7 – Summary o	of secondary approva	ls and licences required	for Phase 1 Donald Project
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Approval / Agency	Primary requirements / status						
Water licencing and	Developer works agreement, outlining terms of water pipeline construction, now finalised.						
agreements; GWMWater	Supply by agreement:						
	<ul> <li>Final stages of negotiation between DMS and GWMWater for terms to deliver water to the mine site.</li> </ul>						
	Anticipated to be finalised in Q3 2025.						
	Groundwater extraction (take and use licence):						
	Required prior to groundwater extraction for dewatering.						
	To be secured post FID approval.						
	Surface water capture (take and use licence):						
	<ul> <li>Required prior to capture of runoff from site and use for dust suppression or processing.</li> </ul>						

• To be secured post FID approval.

# 6 Community and Stakeholder Relations

The Donald Project is situated in the Wimmera Southern Mallee region, on the traditional lands of the Wotjobaluk, Jaadwa, Jadawadjali, Wergaia and Jupagulk peoples. The predominant industry and cultural identity is agricultural, with a burgeoning tourism industry. Mining has had a small but notable presence, with gold mining beginning at Stawell and St Arnaud in the 1850s.

The region's relationship with mineral sands mining is comparatively more recent. Exploration began in the 1980s, and the Douglas Mine, located near Balmoral, operated from 2006 to 2012. Aside from the Donald Project, two other mineral sands mines are proposed for development – the Avonbank Project (WIM Resources Pty Ltd) and the Goschen Rare Earths and Mineral Sands Project (VHM Ltd).

The re-emergence of mineral sands mining in the Wimmera has attracted considerable community and political interest. According to a 2022 assessment by Deloitte, the Donald Project is estimated to boost gross regional product by \$2.2 billion over its ~42-year lifespan, and create over 500 jobs annually. There have also been concerns raised by the community. Some are specific to the Donald Project, although most appear aimed at the mineral sands industry generally, or more widely still at the collection of proposed mining, renewable energy, and transmission line projects in the region.

Community engagement and stakeholder relations are critical to project success as is the extent to which social risk translate into investment risk. 'Social risk' refers to risks to the Project arising from community activities, and vice versa. This question involves two main components: (a) the nature and extent of the social risks; and (b) the Project team's capability to manage and mitigate such risks.

DMS's overall assessment is that it does not foresee barriers to final investment decision arising from community and stakeholder relations. The Project will face social risks that need to be carefully managed over life-of-mine. Based on community engagement to-date, and Astron's involvement in the community over the last 20 years, the key areas of concern are:

- rehabilitation;
- water management;
- radition/radioactive materials;
- house and service availability;
- local employment and procurement;
- community benefit-sharing;
- land access; and
- loss of community identity/cumulative impact of emerging new industries.

Managing these risks, and the community's interaction with them, will require careful and ongoing attention over life-of-mine. At the same time, such risks are usual, expected, and manageable in the ordinary course of community engagement.

DMS's activities to date demonstrate the team's capability to carry out a robust program of community engagement. The Community Engagement Plan (**CEP**) for MIN5532 has already received regulatory approval under the work plan. AMS has built internal capacity by recruiting an experienced community engagement and communications team, which has direct reporting accountability to leadership.

Finally, significant expressions of support for the Project are evident. The Donald Project aligns with significant policy investment at both Federal and State levels (viz., the federal Critical Minerals Strategy and the Victorian Critical Minerals Roadmap). DMS continues to build productive working relationships with local government. In civil society, the peak development organisation Wimmera Southern Mallee Development (**WSMD**) has publicly recognised the mineral sands industry as a pathway to regional economic diversification. DMS is a financial member of WSMD's multilateral mining collaboration workshop, and has partnered in specific WSMD initiatives, having invested in Wimmera Housing Innovations Pty Ltd to address housing shortages in the region.

# 7 Health, Safety & Environmental Management

DMS is committed to establishing and maintaining a robust and fully integrated Health, Safety, and Environmental Management System to uphold the highest standards of safety, sustainability, and operational excellence throughout its mining operations.

To date, DMS has developed two key components: a H&S Management System and an Environmental Management Framework. Both reflect current regulatory obligations and operational needs, and together they form the foundation for a fully integrated system to be completed ahead of construction activities.

The H&S Management System is governed by a policy that prioritises the wellbeing of employees, contractors, and visitors. It sets out strict procedures covering critical areas such as risk management, emergency response, training, and incident reporting. Risks and opportunities are systematically tracked through a dedicated register, ensuring accountability and proactive management.

The Environmental Management Framework ensures compliance with the *Victorian Environment Protection Act 2017* and DMS's General Environmental Duty. It incorporates detailed risk identification, mitigation strategies, and monitoring, with approved stand-alone management plans addressing key environmental aspects such as water, air, tailings, biodiversity, radiation, cultural heritage, and rehabilitation.

For construction, DMS has developed a draft Construction Environmental Management Plan, setting out minimum environmental requirements. Principal contractors will be required to implement their own compliant HSE systems, aligned with DMS's standards, and certain site-specific procedures will be centrally managed to ensure consistency and control.

To deliver a truly integrated HSE Management System, DMS has outlined a clear plan covering assessment, policy development, risk management, training, operational controls, and continuous improvement. This integration will streamline processes, strengthen compliance, enhance communication, and support a proactive safety and sustainability culture across the Project and its contractors.

Through this commitment, DMS aims to protect people and the environment while delivering a responsible, high-performing mining operation.

## 8 Geology

## 8.1 Geology and Geological Interpretation

The Donald deposit is located 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 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-grained micaceous quartz sands, minor clays, silts and gravels, representing sediments deposited below the wave base that show friable laminated and truncated mineralised beds. LP2 is the principal fine-grained heavy mineral (**HM**) target throughout the Murray Basin and contains the majority of the mineralisation in the Donald deposit; and
- 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 which 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 mineralisation is shown in Figure 3.

Figure 3 – Cross section 5,961,300mN looking north through the deposit showing geological units and drillholes coloured by total HM% grade (x30 vertical exaggeration)

## 8.2 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 method and NQ rods with a nominal drill bit diameter of 82mm.

Geological logging information from all historical drilling campaigns has been used to inform geological interpretation for resource modelling of the MIN5532 area. The 2022 Mineral Resource Estimation (**MRE**) 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 MRE (within Area 1 which covers 97% of MIN5532) with the exception of land that was inaccessible during the 2022 drilling campaign (Area 2). The drillholes used for the 2022 MRE, which informs this study, are summarised in Table 8.

Table 8 - Summary of drilling information used for the MIN5532 estimate modelli	ing
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Company	Year	Number of drillholes	Metres drilled	Comment
CRAE	1982-89	91	2,250	Used for geological interpretation only.
Zirtonium	2000	1	19	Used for geological
Zirtanium -	2002	14	327	interpretation only.

Company	Year	Number of drillholes	Metres drilled	Comment
	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.
	2010	167	3,969	Used for geological
DMS/Astron	2015	102	2,777	interpretation. Assay data (total HM, slimes and oversize) used for grade estimation in Area 2.
-	2022	245	6,358	All geological, assay and mineral assemblage data used for Area 1.
Total		845	20,667	

The spatial relationship of the these drillholes relative to the MIN5532 area is shown in Figure 4 for HM% estimation holes (holes with HM assay data by drilling year) and Figure 5 for mineralogy % estimation holes (holes with mineral assemblage data).



Note: Area 1 denoted by blue background and Area 2 denoted by grey background. MIN5532 is shown by red outline. Dots primarily represent Air Core drillholes, colour coded for year of drilling program.

Figure 4 – Plan of drillholes by drilling program



Note: Area 1 is denoted by a blue background and Area 2 is denoted by a grey background. MIN5532 is outlined in red. In Area 1, the red dots represent Air Core hole samples used to determine mineralogy. Similarly, in Area 2 the grey dots are Air Core hole samples used in determining mineralogy.

Figure 5 – Plan of drillholes with mineral assemblage data

## 8.3 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 undertaken by collecting the entire 1m interval sample and later riffle splitting the dried sample down to size for analysis.

In 2022, sub-samples 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' heavy liquid separation (**HLS**) sink fractions down hole based on the presence of heavy mineral (>1.5% total HM) even though the 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.

## 8.4 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 1mm. Slimes are

categorised as the -20 $\mu$ m fraction, oversize are categorised as the +1mm fraction and total HM is measured in the +20 $\mu$ m/-250 $\mu$ m 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, Western Australia and Titanatek Lab in Ballina, New South Wales.

## 8.5 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 undertaken in parent blocks of 100mE by 200mN by 1mRL. Sub-cells to a minimum dimension of 25mE by 50mN by 0.25mRL were used to represent volume.

Geological interpretation and wireframe surface creation was performed using both Datamine Studio and Surpac software. The MRE 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 valuable heavy mineral (**VHM**) assemblage, as a percentage of total HM, above a 1% total cutoff 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 (**MT**) has shown a reliable recovery of this material.

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

							% <b>o</b>	f total HM		
Classification	Tonnes (Mt)	НМ (%)	Slimes (%)	Oversize (%)	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 9 - Total MIN5532 Mineral Resource with VHM assemblage above a 1% HM cut-off

						% of to	tal HM	
Classification	Tonnes (Mt)	HM (%)	Slimes (%)	Oversize (%)	TiO₂	ZrO₂+HfO₂	CeO₂	Y₂O₃
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

#### Table 10 – Total MIN5532 Mineral Resource with product values above a 1% HM cut-off

Notes for Table 9 and Table 10:

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).

- 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<sub>2</sub>, leucoxene: 50 to 95% TiO<sub>2</sub>, ilmenite: 30 to 50% TiO<sub>2</sub>.
- 5. TiO<sub>2</sub>, ZrO<sub>2</sub>+HfO<sub>2</sub> and CeO<sub>2</sub> from XRF and Y<sub>2</sub>O<sub>3</sub> 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.

## 8.6 Resource Modelling and Reporting – Outside MIN5532

While resource modelling and reporting for the Donald Project has primarily focused on MIN5532, historical drilling and MRE information on RL2002 (Donald Project) and RL2003 (Jackson Project) are of relevance. These tenements represent future expansion opportunities and the geological information from historical drilling programs has informed the MIN5532 geological modelling interpretation.

The MRE for RL2002 and RL2003 (which then included RL2006 which has since been amalgamated with RL2003) was completed by AMC Consultants Pty Ltd (**AMC**) 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 MRE was based on drill hole data from CRA, Zirtanium and prior Astron drill campaigns. All drill holes were sampled for HM at 1m 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 MRE for HM, 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:  $BD = 1.65 + (0.01 \times HM\%)$ .

The 2022 drilling and MRE resulted in a change to the bulk density determination methodology for MIN5532. The mineral resource estimate bulk density determination for all other DMS-Astron tenements remain as most recently reported.

The mineral resource was estimated using OK and block modelling.

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

Table 11 – Total mineral resource where VHM data available not including MIN5532, above a 1% H	ΗМ
cut-off	

	Tonnes	нм	Slimes	Oversize		% of total HM			
Classification	(Mt)	(%)	(%)	(%)	Zircon	Rutile+ Anatase	Ilmenite	Leucoxene	Monazite
Within RL2002 excluding MIN5	532								
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 Mineral Resource 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 11:

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) – Table 1 and cross-sectional data, see ASX announcement dated 7 April 2016, available at <a href="https://announcements.asx.com.au/asxpdf/20160407/pdf/436cjyqcg3cf47.pdf">https://announcements.asx.com.au/asxpdf/20160407/pdf/436cjyqcg3cf47.pdf</a>.

## 8.7 Grade Control Drilling

Grade control drilling was carried out in Q1 and Q2 of 2025 and designed with Air Core drill holes spaced on a 100m x 100m grid to cover the first eight mining blocks, which equates to approximately the first two years of mining production. Drill lines were designed to infill between existing drill lines but the regular grid pattern also provides standalone coverage. Drill holes had a designed average depth of 27m and drilled to intersect the Geera Clay by one metre.

The grade control drilling program also expanded outside of the grid pattern to infill some nearby areas that were unavailable during the 2022 drilling campaign and areas planned to be covered by long term soil stockpiles and drainage infrastructure after commencement of earthworks.

A further ten Air Core holes were also drilled as twins of existing Air Core holes from the 2025 program with the only difference being that sample from the drill rig's cyclone was split with a rotary splitter.

A program of ten Sonic holes was designed in tandem with this program to act as twin holes verifying the Air Core drilling recovery, geology and sampling. These Sonic twins were also used to collect further bulk density samples using the Lexan Liner sampling technique.



Figure 6 – 2025 pre-production grade control drilling program, including Air Core and Sonic twin holes

The Air Core drilling in the 2025 grade control program and ten Sonic twin holes are summarised in Table 12 and shown in Figure 6.

Drill Type	Year	Number of Drillholes	Metres Drilled	Comment
Air Core	2025	133	3,387	Grade control Air Core drilling including QA/QC Air Core holes. In-size HM range is +20/-250 $\mu$ m. The assay results from this drill program have not been received as at the date of this Report.
Sonic	2025	10	250.5	6" Sonic QA/QC twins – part of 2025 grade control
Total		143	3,637.5	

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Table 17 -	2025 Pre-pr	ndliction gra	ne control	arilling nrog	ram includin	9 AIR CORE	and Sonic	noies
		oudouon siu						

The pre-production grade control program was completed in March and April 2025. Drill site rehabilitation has been completed. Samples and Sonic core have been logged and where required sent for assay to ALS Global Metallurgy (**ALS**) in Perth, Western Australia, with assay results expected in September 2025.

Work on creating a grade control geological block model has begun using field collected information. When all assays are returned from the current program at ALS, a grade control block model will be created which will be used for short term mining planning.

## 8.8 Bulk Density

Bulk density sampling was performed with Geotechnical Investigation Sonic drilling in 2024. These samples were analysed by the ACTW Laboratory using the Australian Standard test for Bulk Density (AS1289.6.4.1).

Data for bulk density of soil types and the Shepparton Formation clays (0-10m below surface) was also gathered from surface test pitting work as part of soil profile investigations in 2024. The resulting data combined is shown in Table 13.

Further bulk density sampling was also carried out during the 2025 grade control drilling program. After compilation of this data an official change to the Donald deposit bulk density values for resource tonnage determination will be made and applied to future MRE reporting.

	Nu	mber of samp	oles	Average dry density (t/m³)		
Geological unit	All 2024 Data	2022 Resource	Increase	All 2024 Data	2022 Resource	% Change
Shepparton Formation – SS	60	-	60	1.30	-	-
Shepparton Formation – OB	10	3	7	1.50	1.45	104%
Loxton Sand – LP1	25	5	20	1.86	1.81	103%
Loxton Sand – LP2	27	5	22	1.74	1.74	100%
Loxton Sand – LP3	1	1	0	1.57	1.57	100%

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## 8.9 Further Geological Activities post 2022 MRE

The following additional studies have been completed post the publishing of the 2022 MRE:

- to simulate the scrubbing action of the MUP that is part of the processing flowsheet and used in the metallurgical testing by MT, a series of tests were conducted at BV in Adelaide using Sonic and Air Core samples. The hypothesis being tested was that extra HM from drill samples, either from indurated material or from sand-clay agglomerates were not sufficiently broken down by the soaking and agitation steps at the laboratory and these could be recovered. Ultimately a clear correlation showing an increase in the in-size material proportion could be seen, however a clear relationship and upgrade in the HM% grade could not be seen. The results were within the accuracy range of the geological model;
- as part of the assaying requirements for the 2022 MRE, Air Core sample heavy liquid sink products were composited together before being sent for analysis. To investigate the possible effect of 'smoothing', a program of 130 individual 1m samples that were used in the composting of the 2022 resource model were re-processed though the heavy liquid sink procedure at BV. The MRE Competent Person review concluded that the 1m sample data results are within 5% of the average grade estimated using the 2022 data from the composite samples;
- as part of due diligence work required for NI43-101 and SK-1300 reporting standards, work was commissioned on 21 samples which were submitted for re-assay using the same methods as in 2022. The results of the re-testing were deemed acceptable and in line with the original results; and
- further investigation into indurated layers and discrete clay layers within MIN5532 were conducted during the 2025 grade control drilling program. A small number of isolated hard but thin (<0.2m) layers were encountered. Whilst these layers provided resistance for the Air Core drill rig, they would not prove problematic for earthmoving equipment. Discrete clay layers, outside of the LP3 and Geera Clay units where clay is definitive, were also not seen in Sonic or Air Core drilling in this drill program and therefore the risk that encountering clay lenses that may adversely impact the first 8 mining blocks is considered low.

# 9 Mining

Mining will be undertaken within MIN5532 using a conventional truck and excavator method. 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. This approach aligns with the 2008 EES and reflects several years of technical development and modelling, including the DFS completed by AMC in collaboration with Snowden Optiro in March 2023.

Mining operations are scheduled to support a processing rate of 7.5Mtpa of ore over an approximate 42year mine life. Ore reserves are reported at 309Mt, with 263Mt classified as Proven and 46Mt as Probable under the JORC Code (2012). Ore and overburden will be mined in benches, with ore transported to an expit ROM stockpile for processing. Average annual production rates are detailed in Table 14 below.

Material	Unit	Average annual rate
Topsoil/Subsoil	BCM	1,224,398
Topsoil/Subsoil	t	1,775,377
Overburden	BCM	5,780,337
Overburden	t	9,127,152
Overburden Rehandle	m³	990,018
Overburden Rehandle	t	1,250,590
Overburden to Tails Dam Wall	BCM	988,438
Overburden to Tails Dam Wall	t	1,560,743
Ore	BCM	4,267,102
Ore	t	7,360,750

#### Table 14 – Average annual production rates

A structured scheduling approach has been adopted. Initially, a series of high-level strategic mine schedules were developed to test various revenue factor shells and cut-off grades. This allowed for evaluation of mine life, production profiles, and financial performance across different scenarios. A hybrid strategy was selected as the base case, employing a higher cut-off grade in the first five years to enhance early cash flow. Following this selection, a detailed tactical mine schedule was developed. This schedule used detailed pit and bund designs, in-pit tailings sequencing, and haulage modelling to create an executable mine plan.

A value per ore tonne heatmap was created as shown in Figure 7. The value per tonne of ore heatmap is a good indicator of value per time. As the ore is processed at a near constant rate, the higher value contours will return higher profit per period. The heatmap was used to determine the ore mining sequence to ensure the highest free cash flows per period are achieved as early in the schedule as possible.



Figure 7 – DFS mining blocks with value per ore tonne heatmap

The mining layout utilises a strip-mining method, with each block measuring 500m by 250m and strips up to 2km long. Mining proceeds progressively, enabling the backfilling of tailings and overburden in a sequential manner that supports final landform requirements and ongoing rehabilitation. Initial tailings deposition will occur in an external TSF, transitioning to in-pit disposal as voids become available. The mine design incorporates in-situ and constructed bunds to manage tailings and minimise environmental risks as shown in Figure 8.


Figure 8 – Pit design

Post-DFS refinements using 3D-Dig software have enabled reductions in overburden rehandle volumes by approximately 26.5 million cubic metres across the first ten years of operation, supporting improved efficiency and reduced cost. Additional analysis of alternative cut-off grades did not yield improved economic outcomes, confirming the hybrid base case as the preferred approach.

A competitive mining tender process resulted in two preferred contractors being shortlisted. Tender outcomes were incorporated into the OPEX model, with estimated mining costs reflecting market-tested pricing. The mining strategy includes opportunities for further optimisation, such as relocating the MUP inpit to reduce haul distances and adjusting stockpile locations. Key risks identified include reduced equipment productivity under wet pit conditions and tailings consolidation delays, which could impact overburden backfill timing.

# 10 Metallurgy

The Donald Project resource is mineralogically different to traditional heavy mineral sand resources as a result of a longer geological depositional period which resulted in additional geological alterations in the mineral. In particular, 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.

WIM-style heavy minerals are finer grained than traditional, dunal or 'strand-style' heavy mineral resources. The WIM-style heavy minerals have a D50 of around 57 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 D50 of between 40 microns to 55 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 new-age separation spirals confirmed the resolution of this historical challenge. Recovery rates achieved by Astron with its WIM-style project are now comparable to recoveries seen in more 'traditional', coarse grained mineral sands operations.

## **10.1 Historical Test Work**

In the early 1990s, due to the fine-grained characteristics of the WIM-style deposits, CRAE undertook significant research and development on mineralogical separation methods amenable to recover these minerals into products. CRAE developed a flotation regime in collaboration with Lakefield Research at its 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 CRAE's merger with Rio Tinto, Rio Tinto relinquished the WIM200 and WIM250 deposits, now known as the Jackson and Donald deposits respectively.

Technological developments associated with the development of fine-grained mineral spirals have changed the long-term economic outlook of WIM-style 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 heavy minerals such as tourmaline, hematite, magnetite and garnet. 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.





The pilot plant consisted of a trommel and vibrating screen to remove oversize material, desliming cyclones to remove slimes and two stages of fine material spiral separators to produce 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 refining the process flowsheet.

## **10.2 Laboratory 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 was 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 finding enabled design of a smaller plant footprint than originally anticipated, with consequential 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<sub>2</sub>, ZrO<sub>2</sub>, CeO<sub>2</sub> of 60.4%, 94.6% and 92.6% respectively were achievable when concentrating up to a 90% HM grade raw HMC product.



Figure 10 – Typical Ore Profile – 2015 Drilling Programme

## 10.3 Pilot-scale Test Work

In 2018, following a further test-pit excavation, the flowsheet configuration consisting of predominantly separation spirals in the WCP was tested at pilot-scale by processing 1,000 tonnes of ore through a pilot concentrator plant (scaled at 1:121) using full-scale spirals. Recovery of VHM was achieved at 85% and 95% HMC grade respectively, confirming earlier laboratory-scale test results. This test work 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 11 – Mineral Technologies and Astron joint pilot concentrator plant in operation, 2018

## **10.4 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 used for fine- and coarsegrained deposits), the final separation of HMC to final products of zircon, titanium and REEC posed additional technical challenges.

The main technical issues were associated with the recovery of the rare earth minerals within the HMC. Unlike traditional separation methods, such as electro-magnetic and electro-static separators which separate mineral 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, degrading 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.

These technical challenges 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, the flowsheet would require significantly more process equipment with the commensurate adverse implications for both CAPEX and OPEX, as well as the sacrifice of zircon quality attributes.

In 2020, Astron, with the assistance of MT, commissioned flotation specialists, Australian Minmet Metallurgical Laboratories Pty Ltd, 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 REEC. One flotation test, with a longer attrition period, resulted in a rare earth recovery level of over 95%.

This flotation approach was tested on a pilot scale. In 2021, eight tonnes of HMC produced from Donald ore excavated from the test pit was separated into a REEC and a zircon and titanium HMC. The REEC produced had a total rare earth oxide of over 60%, and NdPr of over 20% of the total rare earth basket. Very high recoveries of the rare earth minerals meant that the subsequent zircon and titanium products were significantly lower in radioactivity. This work increased Astron's confidence that it could commercially produce an REEC and a RE-free HMC suitable for sale and further processing by third parties to final products.



Figure 12 – Continuous REEC 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 5 becquerel/gram (**Bq/g**). This radiation level is within the 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.

#### **10.5 Metallurgical Recoveries**

Extensive test work associated with fine grained mineral sands over close to two decades, conducted by Astron and specialist consultants, has enhanced and simplified DMS's mineral separation process and provided 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 low technical risk.

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

Stage Wise Recovery and Grade Parameters	MUP Recovery %	WCP Recovery %	CUP Reco	overy	Overall Recovery to HMC %
From	ROM Ore	WCP Feed	Raw HI	ЧС	ROM Ore
То	WCP Feed	Raw HMC	НМС	REEC	HMC / REEC
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
TiO2 (in THM; in size)	99.4	70.7	99.2	0.6	69.7
ZrO2 (in THM; in size)	99.6	94.3	99.0	1.0	93.0
CeO2 (in THM; in size)	99.5	94.5	1.9	97.5	91.7
Y2O3 (in THM; in size)	99.5	94.5	2.2	97.2	91.4
THM Grade	6.3	94.3	97.0	99.0	-

Table 15 – MIN5532 recovery performance (-0.25+0.02mm Total Heavy Mineral (THM))

# 11 Engineering Development

## **11.1 Processing Summary**

MT has been engaged on the Donald Project for several years, providing metallurgical testing services and process plant engineering services during the DFS stage, including developing process plant flow sheets which aligned to the metallurgical test work.

An ECI contract was awarded to Sedgman in March 2024 to progress the engineering and design of the following:

- MUP;
- trommel and cyclone/filter/thickening plant;
- WCP;
- HMC storage; and
- CUP including REEC packing plant.

The processing facilities included in the ECI design development and CAPEX are as summarised below:

Production	Plant System	Plant Unit Processes
		Front end loader feeds into static grizzly
ROM throughput of 7.5Mtpa	MUP	Scrubbing / Screening
		Pump slurry to WCP
		Surge bin
	Fines Scrubber, ROM Screens and WCP Surge Bin	Deslime cyclones
		Fines screens
Estimated production of 250,000 tpa		Desliming
HMC Product		Screening
	WCP	Spiral separation
		Tails handling
		HMC storage and loadout
		Surge bin
Estimated production of 8,000 tpa REEC product		Attritioners
	COF	Conditioners
		Flotation cells
		REEC product belt filter
	REEC Product Loadout	Bulka bag filling
		Flocculant and Reagent

#### Table 16 – Processing facilities

#### **11.2 Overall Processing Area Layout**

The overall processing area design has been developed 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 process plant area. There is a single main access point to the site, with a locked gate for heavy plant and equipment access.

Figure 13 shows the general plant layout, depicting the access point, ponds, bunds and process plant. The mining contractor area is planned for the furthest west side of the process plant site area.



Figure 13 – Processing area layout

## 11.3 Process plant design

The process plant has been designed in accordance with the parameters included in Table 16 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 advancement in engineering included revising the mass balance, process flow diagrams (PFDs), piping and instrumentation diagrams (P&IDs), mechanical equipment list (MEL), 3D models, single line diagrams (SLDs) and producing a preliminary line list, value list, load list, technical data sheets and general arrangement drawings (GA).

The ECI included value optimisation (VO) and construction risk mitigation exercises including a modular constructability review and advanced modularisation design development, both of which have been completed.

The process plant design is at a level of maturity sufficient to support the development of a capital cost estimate for this scope to an AACE Class 2 level.



Figure 14 – Process plant layout

# 11.4 Mining Unit Plant

The MUP is located away from the WCP and is responsible for scrubbing and screening the ROM ore 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 15 – Mining unit plant

## 11.5 ROM Screen, Tails Dewatering Cyclones and Thickening

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 WCP 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 16 – 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 Lyons Feed Control Unit (**LFCU**) (WCP surge bin/ROM surge bin) is a MT designed 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.



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 18 – Thickener and process water ponds

## **11.6 Wet Concentrator Plant**

The WCP is where the heavy minerals are separated from the screened and deslimed ore, primarily using MT's spiral (gravity separation) technology, including MG-12 and HG-10i spirals. The MG-12 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, and Tronox's Namakwa Sands. The HG-10i spiral is used specifically in the recleaner spiral stage, where the feed to the spirals is high grade material.

The WCP plant is designed to be constructed using mechanical frames for the ground floor and then modules for the remaining sections that are prefabricated 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 19 – WCP with wind protection cladding

## **11.7 Concentrate Upgrade Plant**

The CUP 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, causing them to adhere to bubbles produced in the float cells, while suppressing the hydrophobicity of other minerals. The REE float to the surface of the float cell with the froth, while the remaining heavy minerals sink to the bottom.



#### Figure 20 – CUP flow diagram

Process risk review identified that open-top float cells could be susceptible to contamination and interference from rain and wind. The CUP will be fully enclosed to limit personnel access and time spent in proximity to the REEC 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 21 – CUP with REE circuit enclosed

## 11.8 REEC Handling and Bagging Plant

The REEC is dewatered and stored in the REEC product bin, which has a capacity of 30 tonnes (~16 hours of operation) which feeds the bagging plant.

The bagging plant is a fully automated system that loads the REEC into product containers, then seals and washes the outside surface of the bag to remove any trace of REEC. These are then labelled and loaded into shipping containers and stored prior to being transported off site. The REEC will be classified as Class 7 Radioactive Material for international transport, fully marked, labelled, placarded, and shipped in accordance with International Atomic Energy Agency regulations.



Figure 22 – REEC belt filter, product bin and drum loading facility

### 11.9 HMC Storage

The HMC storage facility is located in a separate structure where the HMC is dried and loaded into shipping containers using a front-end loader. 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 under a roof and clad on three sides to protect the product from wind and rain.



Figure 23 – 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.

# 11.10 Process Plant Equipment Testing

As a result of a comprehensive review of previous test work, design criteria, and flowsheets for the Donald Project, several key unit operations were identified as requiring additional test work to quantify expected performance and reduce process risk. The testing was supervised by Sedgman and results were incorporated into the flowsheet design.

The following tests were conducted in 2024 with favourable results:

- scrubbing McLanahan conducted the additional scrubber test work confirming the ECI selection is appropriate for derisking the feed rate to the plant and the loss of agglomerated HMC to oversize while maintaining standard equipment sizes;
- thickening Metso was engaged to carry out the additional thickener test work which showed good results indicating that the 45m diameter thickener is suitable for the duty with an appropriate level of margin;
- screening Landsky was engaged to carry out the screening test work which confirmed the design basis for the current screening configuration;
- filtration Roytec was selected to carry out the filter test work of the HMC and REEC with excellent results confirming the equipment selection; and
- desliming Proprietary vendor simulation software was used for assessing the desliming cyclone performance, with all simulations providing a good recovery of THM, with varying degrees of slimes rejection.

# 12 Non-Process Infrastructure

Non-process infrastructure (NPI) is categorised into three key areas:

- onsite NPI;
- offsite NPI; and
- mining NPI.

### **12.1 Onsite Non-Process Infrastructure**

Onsite NPI includes:

- site wide earthworks;
- external TSF;
- power distribution;
- information and communication technology (ITC);
- facilities; and
- buildings such as main office complex , warehouses, laydown areas, workshops, and laboratory.

#### 12.1.1 Site Wide Earthworks

Site wide earthworks cover mining infrastructure development, bulk earthworks for the process plant, mining area establishment, and water management systems. Key activities include:

- Construction of the process plant pad for handover to the EPC contractor the process plant area earthworks include pads, ponds, stormwater catchments, and detailed sequencing to support construction. The process plant pad is on the critical path for EPC contractor access, with sealed roads for also needed for construction logistics.
- Mining infrastructure area construction for handover to the mining contractor The MUP pad is designed for the MUP and supporting infrastructure including tanks, pumps and power. The MUP pad includes provision for ore dumping and loading.
- Construction of the external TSF the external TSF, located south of the process plant, measures approximately 750m by 1,150m with 5.9m high side walls and a 14m central discharge platform, designed for approximately nine months of start-up tailings storage. Construction includes embankments, seepage and drainage systems, an emergency spillway, dirty water dams, monitoring instrumentation, and tailings/flocculant mixing and pipeline systems.

Tailings are initially deposited in the external TSF, then redirected to mined-out blocks starting six months after commissioning.

- Development of the ROM earthworks pad.
- Development of the mine starter pit (Mining Block 1) overburden from Block 1 will be used to construct the external TSF embankments, enabling early ore access.
- Mining and stockpiling of ROM ore in readiness for process plant load commissioning topsoil and subsoil will be stripped and stockpiled for rehabilitation, with mapped volumes integrated into earthworks contracts.
- Construction and maintenance of mining haul roads haul roads are developed for mining and light vehicle traffic, including drainage and culvert installations, enabling safe circulation around mining pits and stockpiles. These roads are part of bulk earthworks.

- Development of the site wide water management system expenditure covers primary dams (plant dam, western dam, TSF north and south dams), while sustaining capital includes additional dams constructed as mining progresses eastward.
- Site access points and roads western access supports logistical transport of HMC, REEC, reagents, and deliveries. Eastern access is dedicated to mining contractor heavy equipment, aligned with local road intersections.

#### 12.1.2 External TSF Enabling Works and Infrastructure

Supporting works include tailings deposition systems, pipelines, TSF certification under Australian Standards, and removal of existing farm buildings on the TSF footprint.

Tailings deposition systems have been designed by ACTW for tailings distribution into the external TSF. The external TSF is designed to handle nine months of tailings before rediverting the plant's tailings to the in-pit storage starting from mining block one, then progressing in sync with mining.

The tailings deposition system is the network of pipelines, pumps and distribution mechanisms used to transport the tailings deposit to the TSF including a flocculant line, tailings distribution pipework and valves and flocculant dilution pump and pipeline.

Once the external TSF has been used and tailings deposition has transitioned to within mined out blocks, the external TSF will be decommissioned and rehabilitated.

#### 12.1.3 Power Distribution

It is anticipated that power will be supplied via a hybrid microgrid using a mixture of solar, battery and diesel power generation within the NPI area.

#### 12.1.4 Information and Communications Technology

The project establishes site-wide ICT infrastructure including:

- fibre optic cabling and terminations;
- network equipment (personal computers, servers, switches, routers);
- external internet connection via Starlink (no permanent fibre during CAPEX); and
- site-wide TETRA radio system with private network and Australian Communications and Media Authority licences.

#### 12.1.5 Facilities

Facilities include:

- potable water system water is trucked onto site and reticulated within the process plant and mining contractor areas;
- sewage disposal includes reticulation to a 50kl central tank serviced bi-daily by specialist waste contractors for removal and disposal off site;
- CCTV installation of cameras at key locations with network video recording;
- light vehicle wash bay drive-through wash bay with high-pressure jets and oily water separator;
- site water management dams and pumping and piping systems to manage return water from catchment dams and dust suppression, integrating surface water into the process plant water balance; and
- waste management all construction and operations waste removal for off site treatment by specialist contractors.

#### 12.1.6 Buildings

The following buildings and amenities will be constructed:

• main office and amenities – designed for operational needs with reception, offices, meeting rooms, lunchroom, ablutions, first aid, and accessible facilities;

- process plant amenities ablutions block with toilets and showers near processing facilities for operational staff;
- MUP field operations building a relocatable skid-mounted unit providing break room, crib area, and toilet facilities;
- warehouse and workshop:
  - warehouse: modular design using double-height shipping containers under a dome shelter, with pallet racking, vehicle and pedestrian separated entries, lighting, fire detection, and hazardous materials storage;
  - workshop: single-height container dome shelter with equipment for mechanical fitters, high bay lighting, and fire detection but no suppression system; and
- laboratory modular container-based laboratory for onsite sample preparation and sample analysis including XRF, PSD, and HLS testing.

#### **12.2 Offsite Non-Process Infrastructure**

Offsite NPI includes:

- operations accommodation support;
- access road and intersection upgrades; and
- raw water supply infrastructure.

#### 12.2.1 Operations Accommodation Support

The Project's accommodation strategy is split between a construction and operations strategy:

- construction personnel receive a living away from home allowance (**LAFHA**) to source accommodation locally. LAFHA allowance has been included in the CAPEX estimate; and
- operations personnel will receive accommodation and relocation support based on recruitment location. Initial recruitment of operational personnel will be included in the CAPEX estimate whilst ongoing accommodation and relocation are included in the OPEX estimate.

For the purposes of the CAPEX estimate, the Project has assumed that approximately 50% of operations workforce will be sourced from within a 70km radius from the mine site. The CAPEX estimate also includes upgrades to Project-owned houses for temporary accommodation during the construction period.

#### 12.2.2 Access Road and Intersection Upgrades

DMS has committed to completing upgrades for key roads and intersections along the transport route in accordance with its EES and Ministerial recommendations, as follows:

- stage 1 works will be exectued in parallel with construction and included in initial CAPEX:
  - maintenance and upgrades on Minyip-Rich Avon Road;
  - Six Ways intersection upgrade;
  - Minyip Bypass upgrades from Six Ways intersection to Johnson Road and C Leach Road leading up to the Donald – Murtoa Road intersection including works to the rail crossing; and
  - C Leach Road/Donald-Murtoa Road intersection.
- stage 2 works will be completed post-Project commissioning and include:
  - Road widening of the existing Minyip Rich Avon Road; and
  - resealing of 14km along Minyip-Rich Avon Road from the mine site to the Six ways intersection.

#### 12.2.3 Raw Water Supply Infrastructure

The raw water demand for the Project will be provided from the GWMWater 6,975 megalitre Headworks Water Allowance in accordance with the contract initially executed in December 2011 and re-executed in September 2024.

The primary water pipeline infrastructure has been designed to draw water from the Wimmera Mallee Pipeline, immediately upstream of the Minyip Pumping Station and supply the Donald Project via a 14km route along Gun Club Road.

It is proposed that the pipeline infrastructure and associated assets from the Minyip Pumping Station to the edge of the mining lease will be transferred to GWMWater for no consideration following preliminary acceptance and a two-year defects period.

The tie-in to the GWMWater main line was completed in November 2024 with construction works on the primary pipeline scheduled to start September 2025 and complete by early December 2025.

Finally, onsite raw water storage has been designed for three days of supply disruption (7.2 megalitres).

#### **12.3 Mining Non-Process Infrastructure**

Mining NPI includes the installation of ground water dewatering systems. Ground dewatering is planned post stripping and stockpiling of the topsoil and subsoil across each of the mining blocks with the dewatering field being installed post stripping and before mining. The mine dewatering systems are installed ahead of mining block commencement and water is stored within the process water dam constructed as part of the process plant earthworks.

Ground dewatering has been modelled by hydrologists to inform the Donald Project team's design, equipment selection and layout design for drilling of the bore field to extract the ground water ahead of mining operations. Block 1 includes 34 bores and blocks 2 & 3 include 27 bores with mechanical equipment reused as new bores are constructed.

Further, a pump test was conducted in Q1 2025 to improve the accuracy of anticipated groundwater volumes and further confirm equipment quantities.

It is anticipated that borefield equipment on the mining pit perimeter will remain in place for tailings consolidation and internal bore spearpoint equipment will be relocated ('leapfrogged') as mining progresses.

The CAPEX estimate has allowed for borefield installation (drilling and equipment, bore pumps, compressors and pipe work) for the first three mining blocks.

# 13 Tailings Management

The tailings management strategy for the Project has been defined through the DFS conducted in collaboration with ACTW. The strategy involves an initial use of an above-ground external TSF followed by a transition to in-pit tailings disposal as mining progresses and voids become available.

Tailings will be deposited as a modified co-disposed slurry (a flocculated sand-slimes mix). The external TSF has been designed using a central thickened discharge arrangement with sufficient capacity to manage approximately 8.4 months of tailings deposition (~4.45Mt). Once voids become available, tailings will be placed in purpose-built in-pit tailings cells, designed to remain two metres below the natural ground surface to allow for final rehabilitation.



Figure 24 – Proposed external TSF layout



Figure 25 – Typical external TSF embankment cross sections

Extensive geotechnical, hydrological and hydrogeological investigations have been undertaken since 2015. These include shear strength testing, consolidation modelling, and permeability analyses of foundation and embankment materials. The selected site for the external TSF is underlain by low-permeability Shepparton Clay, suitable for limiting seepage. Groundwater is deep (13m below surface), saline, and poorly recharged, reducing potential environmental risks.

The tailings management design incorporates both operational and post-closure considerations. External TSF embankments will be constructed to full height before tailings placement, with an internal decant system for water recovery. In-pit cells will use a combination of in-situ and compacted embankments, with bunds constructed between cells to manage water and provide operational safety. The average tailings beach slope has been estimated at 3.7% for design purposes.



Figure 26 – Layout of mining / in-pit tailings cell configuration

Seismic, stability, and dam break assessments have been completed. Although both the external and in-pit TSFs were rated with low and significant consequence categories respectively, design parameters for a higher 'High C' consequence classification were applied for additional contingency. All embankments meet or exceed Australian National Committee on Large Dams and Global Industry Standard on Tailings Management safety factors.

The project-wide water balance model supports the operational and stormwater management needs of both TSF types. Seepage modelling confirms minimal risk due to low permeability foundation materials. The external TSF includes a spillway designed for the 'probable maximum flood', providing over 2.1m of total freeboard.

Stockpiles of Shepparton Clay and LP1 overburden will be constructed on the eastern extent of the Work Plan boundary and used for backfilling tailings cells. Stability analyses confirm compliance with minimum required safety factors.

# 14 Product Logistics

The Donald Project's location in the Wimmera region benefits from existing transport infrastructure which will support both construction and operational logistics. The mine site is near major arterial roads connecting to the Port of Portland and the Western Highway which connects Melbourne and Adelaide.

In developing the Donald Project's underlying T&L strategy, DMS 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 Transport Working Group and Community Reference Group.

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

## 14.1 REEC logistics

The Code for the Safe Transport of Radioactive Material dictates that material with a radiation concentration limit over 10Bq/g is classified as Class 7. The transport of Class 7 materials involves increased regulations and reporting requirements. The HMC product will be below the 10Bq/g limit threshold and can therefore be handled as general cargo. However, the Donald REEC product will be classified as a Class 7 material. Astron engaged TAM International, a full-service expert in the global transport of radioactive material, to develop and advise DMS on the process and regulations related to shipping and handling Class 7 materials.

Based on executed Offtake Agreement terms, REEC will be transported in either drums or two tonne bulka bags (super-sacks) with a heat-sealed top spout or drums to ensure no product will be lost or spilled during transport. After filling, bulka bags or drums will be loaded into twenty-foot equivalent containers and

lashed. These containers will also be secured and placarded before being transported from the mine processing area to the Port.

The Port of Adelaide has been selected as the departure point for Donald REEC due to its ease of movement and frequent shipping schedules to the west coast of the United States. The Port of Adelaide has ample experience in handling Class 7 materials, with 100% of exported Australian uranium departing from its facilities. Furthermore, shipping schedules from 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.

Transport options include the shipment via truck to the Wimmera Intermodal Freight Terminal (**WIFT**) at Dooen, and railed to the Port of Adelaide or trucked directly to the Port of Adelaide's hazardous material storage area at the port, where it will await a vessel.

For REEC export, the working assumptions for Incoterms is CIF to the Port of Seattle. Transportation from Seattle to Energy Fuels' site in Blanding Utah, U.S. will be managed by Energy Fuels.

### 14.2 HMC logistics

Donald HMC will be loaded into custom built containers using front-end loaders. Once 28 tonnes of HMC has been loaded into a half height container, the container will be sealed with steel lids and moved to the container storage area. As product is shipped, reach stackers will replace filled containers with empty containers. DMS proposes trucks containerised HMC to the WIFT operating 12 hours per day. Daytime transport is proposed to minimise nighttime noise pollution.

All operations at the WIFT will be undertaken by its operator Specialised Container Transport Logistics Pty Ltd (**SCT**). Containers will be removed from trucks and placed into storage awaiting train arrival. Upon arrival, full containers will be loaded onto the train and empty containers loaded onto trucks for return to the mine site. The containers will be railed via the ARTC's rail lines to the Port of Portland. ARTC has confirmed necessary upgrades of the Maroona to Portland line will be complete prior to the start of Donald Project operations.

The Port of Portland has been selected as the preferred point of export for Donald HMC due to the availability of bulk storage and HMC ship loading infrastructure. At the Port of Portland, containers will be transferred from the train siding, via shuttle trucks, into the Port's transfer sheds. HMC will be stored in bulk at the port before being loaded by mobile ship loaders onto vessels for export to China. The project assumes that 38,000 deadweight tonnage (**DWT**) vessels will be used, with a maximum vessel size of 55,000 DWT. For HMC export, the working assumption for Incoterms is CIF to ZhanJiang / Dalian, China.

## 14.3 Road Upgrades

DMS has committed to road upgrades of local roads, including Minyip-Rich Avon Road, Six Ways intersection, Minyip Bypass, and C Leach Rd / Donald -Murtoa Rd intersection. These upgrades are outlined in the Transport Management Plan. DMS is in discussions with Yarriambiack Shire Council and the Department of Transport and Planning on the exact road upgrade requirements for Council and State roads along the haul route. Discussions also include exploring whether alternate routes to the WIFT with better road conditions may be agreeable, with a notable example being the Donald-Murtoa Road and the Wimmera Highway.

#### 14.4 Port Infrastructure

As outlined above, HMC export will be via the Port of Portland, Victoria. Shuttle trucks will cart loose bulk product from the train to the Mineral Sands Storage Shed for the creation of a 38,000t stockpile. Additional storage is available at transfer sheds 1, 2 and 5 (TS1, TS2 & TS5). All material will be stored in enclosed sheds. Bulk carrier vessels will be loaded at berth 5 with mobile ship loaders. The Port of Portland has extensive experience loading mineral sands products for export, notably, Iluka's HMC products from the WRP and Douglas mines.



Figure 27 – Aerial photo of Port of Portland

REEC will be railed to the Port of Adelaide, and the facility's 'Outer Harbour' area will be used to load REEC product onto general cargo container vessels by the port's ship to shore cranes.

# 15 Market Analysis

The Donald Project will produce two high-value mineral concentrate products:

- HMC, containing zircon and titanium feedstock minerals; and
- REEC, containing monazite and xenotime with a significant heavy rare earth content.

These products target distinct but complementary markets: the established mineral sands industry and the rapidly growing rare earth sector. Both markets are experiencing structural shifts that support robust long-term demand and tightening supply.

#### **15.1 Mineral Sands Market**

The mineral sands industry supplies two primary value streams: zircon sand and titanium feedstocks. Both are essential to modern industrial supply chains and urban development.

Zircon is a critical raw material for ceramics – tiles, sanitaryware and glazes – which together account for more than half of global zircon demand. Other uses include foundry casting, refractories for steel and glass, and specialty chemicals.

Zircon has unique physical and chemical properties – no direct substitutes exist that offer the same heat resistance, chemical stability and opacity. Furthermore, zircon cannot be economically recycled, so demand relies on fresh supply.

Demand for zircon tracks urbanisation trends and rising living standards, with India and Southeast Asia expected to lead future demand growth. TZMI forecasts global zircon demand will grow by around 2.8% per year through to 2033.

Zircon supply is increasingly constrained. Many historic sources, including Iluka's Jacinth-Ambrosia deposit in South Australia, are maturing and depleting with no obvious large-scale replacement discoveries. Without significant new projects like Donald, global zircon supply is projected to fall short of demand by nearly 300,000 tonnes by 2033. The Donald deposit is among the largest undeveloped zircon-rich resources globally, containing over 2 million tonnes of recoverable zircon in its mining licence area alone. Metallurgical testing confirms a highgrade concentrate with premium whiteness and very low impurity levels – highly valued by the ceramics industry. Independent testing by Chinese end-users indicates Donald zircon meets or exceeds stringent quality and radioactivity standards for ceramic applications.



Donald Premium ZirconCompetitor 1Competitor 2Competitor 3

Figure 28 – Ceramics buttons produced using DMS Zircon vs. Competitor Zircons

Product	Brightness	Red – green scale	Yellow – blue scale
Donald Premium Zircon	94.84	0.12	3.86
Competitor Premium Zircon 1	94.39	1.02	4.08
Competitor Premium Zircon 2	93.57	0.86	3.82
Competitor Premium Zircon 3	94.32	0.23	4.22

#### Table 17 – Premium zircon quality – CIE test results

#### **15.2 Titanium Feedstocks**

Titanium feedstocks produced from HMC are used primarily to produce titanium dioxide ( $TiO_2$ ) pigment – the world's dominant white pigment used in paints, coatings, plastics and paper. Titanium dioxide pigments provide the opacity, brightness and durability demanded by construction, automotive and consumer goods sectors.

Titanium feedstocks are also used to produce titanium metal, prized for its strength, lightness and corrosion resistance in aerospace, defence and high-performance industrial applications.

The pigment market is forecast to grow steadily at 2-3% per annum, underpinned by rising disposable incomes, urban expansion and infrastructure spending, especially in Asia. Feedstock supply will require new sources as mature deposits deplete. Donald's high TiO<sub>2</sub> content concentrate is expected to be a valuable blend feed for chloride slag production; a key input for the chloride pigment process that dominates Western economies and is being increasingly adopted in China for its lower environmental impact compared to sulphate-based processes.

Independent smelter studies confirm that Donald's titania product can deliver high-yield, low-impurity slag with competitive processing characteristics when blended appropriately.

## 15.3 Rare Earth Market

REE are a group of 17 metals essential for modern clean energy, electronics and advanced manufacturing. They are used in everything from smartphones and catalytic converters to wind turbines and electric vehicle (**EV**) motors.

Light rare earth (**LREE**) such as Nd and Pr are key inputs for permanent magnets used in electric vehicle drive motors and direct-drive wind turbines, being applications forecast for rapid growth as the energy transition accelerates.

Heavy rare earth (**HREE**) like dysprosium (**Dy**) and terbium (**Tb**) are critical for high-performance magnets that retain strength at high temperatures (a requirement for EVs and wind turbines operating in harsh conditions).

While LREE supply is relatively diversified, heavy rare earth supply remains heavily concentrated in China and Myanmar, creating significant supply risk for Western manufacturers. Donald's mineralogy – with a uniquely high xenotime content – has the potential to provide an independent source of HREE supply.

Independent forecasts indicate severe HREE shortfalls through to 2030 and beyond, with limited new projects targeting commercial HREE production. Donald Project's planned REEC output is expected to supply both magnet light rare earth and valuable heavy rare earth, directly supporting the global transition to renewable energy and electrification.

The Donald Project's entire REEC output is committed under a binding offtake agreement with the Project's joint venture partner Energy Fuels, a USA-based producer working to develop secure, traceable REE supply chains for North American and European end-users. This partnership strengthens market certainty and ensures that the Project's rare earth production is aligned with Western ESG standards and supply chain transparency requirements.

### **15.4 Strategic Positioning**

The Donald Project is entering the market at an opportune time:

- established global supply of zircon and premium titanium feedstocks is declining while end-use demand continues to expand;
- rapid electrification and decarbonisation are driving sustained rare earth demand, with secure non-Chinese supply sources increasingly prioritised by Western policymakers and manufacturers;
- Donald Project's proven resource scale, confirmed high product quality, and transparent index-linked pricing structures are expected to provide customers with long-term supply certainty; and
- binding offtake agreements cover 100% of the REEC, and advanced offtakes covering the HMC which also maintains processing optionality through Astron's own downstream facilities.

#### Table 18 – Donald forecast production volumes for first five years

Final product production (tonnes)	2028	2029	2030	2031	2032
НМС	197,059	263,968	254,836	260,686	252,878
REEC	6,340	8,878	8,895	9,165	8,863

The Donald Project is well positioned to become a long-life, strategic source of critical minerals for industries that underpin urbanisation, decarbonisation and advanced manufacturing. Its premium zircon, valuable titanium feedstock and high-value rare earth streams provide diversified exposure to two essential, resilient markets delivering robust demand outlooks, tight supply fundamentals and secure, transparent customer channels for decades to come.

# 16 Project Execution

AMS, a wholly owned subsidiary of Astron, is the manager of the Donald Project joint venture and will oversee the development, execution and operations of the Project. Project decisions will ultimately rest with the joint venture board of DMS. All key contracts, notably mining, logistics, EPC, earthworks, and power will be submitted to the DMS board for approval.

The Donald Project will be led in execution by a dedicated project team, consisting of project personnel and a dedicated outsourced PMO. Astron's corporate team will assist in environmental, planning and social, operational as well as financial functions. In addition, Base Resources, a wholly owned subsidiary of Energy Fuels, with extensive mineral sands operating experience, will assist on technical matters providing guidance on areas related to project design and construction.

Specialist engineering services will be provided by consultants engaged during Project development and detail design; an integrated Owner's Team will manage the interfaces between packages to ensure effective project outcomes.

The broader Western Victoria region has a significant industrial base. DMS has a local procurement policy and local procurement will be utilised where practical and economically viable. Where not practical, the Project's contractors will be encouraged to award contracts for its own subcontractors to local providers.

Ultimately, the project packages will be awarded on a performance driven specification, with the focus of the Owner's Team on ensuring achievement of target performance. Design and execution contractors will be held accountable and responsible for contract delivery, including financial incentives tied to Project success.

The Project Scope is summarised in Table 19 below:

Activity	Area	Description
	On-Mine Permits and Approvals	Primary approvals to commence activities on the MIN5532, including Work Plan development and approval, land acquisitions, council and water rates, and rehabilitation bond.
	Off-Mine Permits and Approvals	Additional approvals required for scope that supports the mining and processing. This includes environmental and planning approvals required for product trucking routes, the development of water pipeline, and any works for the power supply.
	Project Financing	Development of Project debt funding activities.
Project Development	Corporate	Development of corporate and site policies, plans, and procedures, establishing environmental management frameworks for the site, cultural heritage and community engagement.
	Project Management	Overall management of the delivery of the Donald Project by the PMO.
	Operational Readiness	Activities associated with preparing both people and systems to safely and efficiently transition from the project phase to operations phase. This includes the recruitment of operations personnel, personnel training, purchase of operational spares, purchase of site equipment and vehicles, development of operations policies, procedures and systems.
Process Plant	Process Plant	Engineering, construction and commissioning of the process plant located on MIN5532. The process plant processes the ROM feed slurry into HMC and REEC. The process plant includes a WCP, CUP, product handling and storage facility, process utilities infrastructure, reagents building and infrastructure, a MUP, and associated electrical and control system.

#### Table 19 – Project scope summary

Activity	Area	Description
	Site-wide Earthworks	The bulk earthworks and civil works for preparing the site for mining and activities and the establishment of the process plant, NPI, and mine industrial area. This also includes the removal of existing farm fencing around MIN5532, establishment of site fencing, and establishment of the site stormwater management system.
	Site Roads	Development of the roads and carparks located on site.
	External TSF	Establishing a TSF used to store process and mining waste material.
Onsite Infrastructure	Dams	Establishing dams used for supporting plan operation, surface water management and dust suppression.
	Power Distribution and Power Station	Establishing the electrical infrastructure and power station used to power the site.
	ICT	Establishing site radio system, IT server infrastructure and network, and site internet connection.
	NPI	Establishing the potable water system, sewerage disposal system, CCTV, light vehicle wash bay, site water management system and waste management system.
	Buildings	Establishing site offices, warehouse, workshop and site laboratory.
Offsite	Access Road Upgrade	Upgrade of several roads and intersections along the designed road freight route.
Infrastructure	Water Supply Infrastructure	Establishment of the water supply pipeline to the site.
Product T&L	Product T&L	Developing agreements with specialist transport and logistics operators for the transport of product from site to port and ship loading.
	Mining	Establishing the mining contractor on site including the mobilisation of personnel and equipment.
	Mine Development and Drilling	Drilling activities associated with obtaining samples for development of geological and mining models required for mine planning.
Mining	MUP Pipeline	Establishing the pipelines between the MUP and process plant.
	Mine Dewatering System	Establishing the ground dewatering system to lower the groundwater of mining cells to allow mining of ore to commence.
	Mine Industrial Area	Establishment of the mine industrial area including the mining contractor offices, ablutions, crib rooms, muster sites, workshops, wash-down facilities, diesel storage and hazardous material storage.
Port Facilities	Port Facilities	Developing agreements with port authorities and contractors for the use of port storage and loading facilities for final ship loading of product.

Project execution methodology reflects a 'work breakdown structure' approach, wherein scoped items will be managed and monitored both individually and wholistically throughout the life of the Project.

The Donald Project contracting strategy is based on awarding a small number of large contract packages to reputable and established suppliers. The largest fixed asset package, namely the process plant, will be delivered using a single EPC contract. The preferred EPC contractor has been engaged under an ECI contract, which has now completed. ECI works included provisions to ensure that the final EPC contract is well-defined, estimated, and planned. Other major packages are well-advanced.

Construction activities across various contractors will be sequenced by the Owner's Team. Generally, the construction sequence is as follows:

- establishment of the water pipeline;
- site bulk earth works and civil works;
- preparation of mine area including top-soil, sub-soil stripping and dewatering;
- mobilisation of the mining fleet, early ore mining and stockpiling;
- establishment of the process plant, mine industrial area, and non-process infrastructure;
- connection of the power supply;
- construction verification and commissioning;
- hand-over and performance testing; and
- operations.

# 17 Operations Management and Operational Readiness

#### **17.1 Operations Management**

Donald Project operations will be managed by AMS led by a General Manager of Operations, with plant, technical, dewatering, tailings and maintenance functions managed by DMS employees. The AMS management team will be predominantly site based, assisted by a small support services team based in Astron's Melbourne office.

Mining and delivery of ore to the MUP and finished product transport (HMC and REEC) from site to customers will be performed by the selected mining and T&L contractors respectively.

Technical support for production activities will be provided by the DMS Technical Services team, supplemented by relevant consultants on an intermittent basis, and resourced to deliver mine planning and mine management functions. The Technical Services team also includes regulatory, community and stakeholder relations management.

Transportation of HMC and REEC products from mine site to Australian seaport destinations, and associated logistics for onwards international shipping will be outsourced through the T&L contract and supported by DMS contract management and operations interface functions.

The Donald operations organisation structure has been developed with experience gained from similar sized mineral sands operations. The Donald operations team staffing count totals 85 persons.



Figure 31 – Donald operations organisational chart

The operations team will be established post-FID approval to support scheduled activities, culminating in the commissioning of the process plant, by which time all roles will be filled. A recruitment schedule has been developed to support project activity timelines. The operations team will receive appropriate operational and H&S training prior to each stage. Fatality prevention training will be a key component, with appropriate team familiarisation with the mine site and high-risk task training occurring prior to operations commencement.

Key to the establishment of the operations team is timely recruitment. Equally important is ensuring that all operations readiness activities are fulfilled to enable and empower a well-prepared operations team to:

- safely and efficiently transition care, custody and control of the plant from the EPC contractor, once wet commissioning conditions have been satisfied; and
- to lead the load commissioning and ramp up of the process plant.

Safety is a core value of Donald operations and is the responsibility and accountability of every individual. Everyone will be responsible for their own actions with the expectation to support the actions of their team members.

Recent and relevant compensation information, based on existing enterprise agreements (**EA**), has been used to develop Donald Project rates of pay, including:

- Iluka Resources Ltd South Australia and Murray Basin EA 2023-2027;
- Iluka Resources Ltd Western Australia EA 2022-2026;
- CHS Group Horsham EA 2022-2026;
- Siemens Wind Farms EA 2022-2026 ; and
- Hays Salary Survey 2024/2025 including Victorian mining roles where relevant.

The abovementioned EAs cover employees working in production and maintenance job classifications, specifically; Operator, Operator Advanced, Supply Operator, Technician Electrical, Technician Mechanical, Technician Advanced Electrical, Technician Advanced Mechanical, and Technician Laboratory.

The resultant annualised rates, used for costing of award-covered roles, include base pay rate plus allowances for roster, on call and additional overtime, as applicable.

The Donald operations organisation structure and shift rotations are based on DMS's strong preference for a residential workforce, with team members residing locally within daily commute distance from site. Horsham, a well-serviced regional centre, is located 70km from site, approximately a 50-minute drive along sealed main roads.

Front line operational leaders will be supported and empowered to provide team leadership across all normal support functions including safety, environment, training and development.

Functional professionals will provide fit for purpose policies and procedures designed to underpin successful operations and ensure regular reviews and audits to assess implementation compliance. These functional leaders also provide specific or specialist support as and when needed.

### **17.2 Operations Readiness**

Operations readiness entails the development of an entire suite of operating systems, processes and procedures to support the Donald Project, with objectives that include:

- no harm to people or environment;
- risks identified and managed effectively;
- production ramp up achieved;
- unit costs controlled;
- quality of product achieved;
- on-time deliveries accomplished;
- reputation and regulatory and social licence to operate remain intact; and
- return on investment realised.

The operations readiness plan focuses on all operational areas including:

- MUP;
- WCP;
- CUP;
- reagents area;
- raw and process water systems;
- power distribution systems;
- laboratory;
- warehouse and inventory management;
- workshop and maintenance management systems;
- pre-mining ground water dewatering;

- tails deposition, consolidation and dewatering via decant water return; .
- rehabilitation management; and
- mine planning and geology services. •

The operations readiness plan is based on key organisational categories. These categories, shown in Table 20, form the basis of the overall plan structure.

#### Table 20 – Operations readiness plan categories

Operations readiness plan categories	
Leadership	Maintenance
Safety	Inventory & warehousing
Environment	Contractor & procurement management
Training	Process
People	Enterprise Resource Planning

- People
- Commercial
- Asset management
- Operations

- Enterprise Resource Planning
- Facilities
- ICT and Operations Technology
- Mining services, mine planning and geology

# 18 Schedule

The Project master schedule has been developed by integrating various schedules to provide an overall project development timeline and links the respective principal contractors' schedules, ensuring the key interfaces are identified and managed.

Project scheduling has been developed using the following key inputs:

- installation of raw water pipeline (contract awarded July 2025, with completion expected December 2025);
- bulk earthworks associated with preparation of the process plant earthworks pads, ponds and . drainage, roads and external TSF;
- construction of the process plant; .
- mining, including mine development works associated with dewatering;
- NPI including: buildings, potable water supply and sewage storage and disposal, site wide electrical distribution, and site wide water management;
- off-site road upgrades;
- installation of on-site power generators (subject to approval of deviation from Work Plan); and
- operational readiness.



Figure 32 – Development summary

## 18.1 Project Delivery Strategy

Key packages are awarded to principal contractors responsible for their scopes and schedules, with the Owner's Team managing overall contracts and interfaces. Principal packages include earthworks, process plant EPC, power station, non-process infrastructure, road upgrades, and mining operations.

The critical interfaces are detailed in Table 21 below:

#### Table 21 – Critical interfaces

Critical Activity	Dependence
Land acquisition	Access to Work Plan area
Final approvals (rehabilitation bond)	Funding agreements
Process plant area earthworks	Completion of water pipeline
Start site-wide earthworks (mining) and external TSF construction	Completion of water pipeline
Start groundwater dewatering of mining block 1	Completion of process plant earthworks (process water dam)
Start of process plant concrete works	Completion of process plant earthworks
Start of process plant structural mechanical piping works	Completion of process plant concrete works
Power station	Completion of process plant earthworks
Ore mining	Completion of MUP commissioning and power station
Process plant ore Commissioning	Completion of MUP commissioning and power station
First product	Completion of process plant commissioning

#### **18.2 Schedule Durations**

Forecast schedule durations are based on the following:

- engineering & design sourced from Sedgman (the process plant EPC contractor) and developed through the ECI phase. The water pipeline and process plant earthworks design is complete and at 'issued for construction' stage;
- procurement sourced from Sedgman as developed through the ECI phase and based on durations provided by suppliers selected during the ECI phase. All major vendor supply packages have been shortlisted to preferred suppliers. Shipping and transport based on detailed route survey in Australia with Adelaide identified as the preferred port for module transport to the mine site;
- modularisation developed by Sedgman and MT (sub-contractor to Sedgman) for the majority of the process plant including the MUP. Tenders from three module yards in China have provided input into the fabrication, construction, trial assembly and dismantling of modules;
- construction concrete and SMPE&I (structural mechanical piping electrical & installation) sourced from Sedgman as developed through the ECI phase and based on durations provided by specialist construction contractors across all disciplines. The earthworks schedule has been developed by a contractor with local knowledge and experience and based on tender submissions and shortlisted mining contractors. The earthworks contractor has been shortlisted to two contractors and a final contractor will be selected pre-FID to progress earthworks ECI and detailed planning. The mining contractor selction will be finalised pre-FID and awarded shortly after FID;
- commissioning a commissioning schedule has been developed by Sedgman based on in-house commissioning expertise; and
- contingency a Monte Carlo schedule analysis has been performed using Oracle Primavera Risk Analysis. From the results produced, the P70 contingency was added to the schedule to calculate the final estimated schedule duration.

#### 18.3 Key Milestones

The proposed schedule includes key milestones as outlined in Table 22 below:

#### Table 22 – Key milestones

Key Milestone	Period
Starting milestone – FID approval	December 2025
Water pipeline completion and commissioning	December 2025
Process plant EPC contract awarded	December 2025
Process plant earthworks contract awarded	December 2025
Access to site	January 2026
Mining contract awarded	January 2026
Earthworks contractor mobilises to site	January 2026
Process plant hard stand complete	June 2026
Process plant EPC package site works commence	July 2026
Power station commissioning complete	August 2027
Process plant no load commissioning commences	September 2027
External TSF ready for commissioning	September 2027
Ore available for process plant commissioning	November 2027
Process plant load commissioning complete	December 2027
First products produced – HMC and REEC	December 2027

## **18.4 Critical Path Activities**

The critical path represents the longest uninterrupted sequence of dependent activities that collectively determine the minimum duration required to complete the project. The critical path has been analysed through integrated schedule modelling, with particular attention paid to interdependencies across work packages.

Table 23 outlines activities which are critical path activities for the Project:

#### Table 23 – Critical path activities

Critical Path
Project FID approval date – start
Award process plant EPC contract
Raw water pipeline commissioning complete
Process plant EPC full contract awarded
Plant area earthworks contract awarded
Process plant EPC access to process plant pad
Stage 1 commissioning – construction verification
Stage 2, 3 and 4 commissioning – pre, no load & wet commissioning
Stage 5 commissioning – load commissioning (ore)

### **18.5 Schedule Risks and Opportunities**

#### 18.5.1 Risks

Schedule risks primarily relate to interdependencies between key activities such as:

- raw water pipeline completion impacting earthworks, which in turn would delay commencement of process plant construction;
- availability of ore and tailings storage for commissioning; and
- availability of power for commissioning including power supply approval.

#### 18.5.2 Opportunities

The Project has completed a significant amount of pre-construction activities including the process plant ECI which included constructability reviews, operations input and a preliminary HAZOP study.

A primary opportunity is the pre-FID award of separable portions for earthworks mobilisation and purchasing EPC vendor data to enable detailed design to start.

Further opportunities involve the acceleration of module yard fabrication and overlapping earthworks and concrete construction.

# 19 Risk Management

DMS has implemented a comprehensive, structured risk management framework to proactively identify, assess, and manage risks throughout the lifecycle of the Donald Project. The framework aligns with AS/NZS ISO 31000:2018 Risk Management Guidelines, ensuring industry best practice in systematically reducing risk exposure to acceptable levels and supporting the Project's objectives.

DMS's approach aims at ensuring that:

• risks to personnel across all Project phases are identified, minimised, and controlled to levels 'as low as reasonably practicable';

- potential losses across the project lifecycle are managed using cost-benefit principles and clear stakeholder communication;
- project design, construction, and operations are undertaken safely, sustainably, and with minimal impact on people, property, and the environment; and
- threats and opportunities are considered, maximising value and minimising potential impacts to the Project's success.

The Project Risk Management Plan (DMS1-01600-PM-PLN-0003) details how risks are continually identified and managed across planning, approvals, engineering, construction, and commissioning, and outlines the transition of relevant risks to ongoing operational management after handover.

The risk management process covers a wide range of categories, including health and safety, environment, quality, scope, cost, schedule, procurement, commercial, reputation, security, and ICT systems. Risks are identified through workshops with key stakeholders and analysed using a consistent 5x5 risk matrix based on consequence and likelihood, ensuring a clear, prioritised approach to treatment.

Treatment strategies follow a clear hierarchy of controls and may include risk avoidance, removal, reduction, transfer, or informed retention. Risks are tracked through live, project-specific risk and opportunity registers, which are regularly reviewed and updated via quarterly workshops. These processes ensure new risks are captured, existing risks reassessed, and mitigation actions progressed under defined ownership.

Additional layers of control include:

- probabilistic cost risk assessments using Monte Carlo simulation to support robust contingency planning;
- schedule risk assessments for critical contract packages to identify and manage timeline impacts;
- design risk management through safety in design, hazard identification and hazard and operability study workshops to embed safety and operability into project engineering;
- rigorous construction risk management processes, requiring contractors to develop site-specific plans and risk assessments before mobilisation; and
- an independent technical review by RPM Global, providing a third-party perspective on production-critical risks and recommended mitigations, all of which have been actioned and closed out.

Through this comprehensive and collaborative approach, DMS aims to ensure that all Project risks – from personnel safety and environmental compliance to cost, schedule, and technical performance – are effectively managed, delivering a safe, sustainable, and reliable outcome.
## 20 Glossary

Acronym	Definition
\$ or A\$ or AUD	Australian Dollars
μm	Micrometre
AACE	Association for the Advancement of Cost Engineering
ALARP	As low as reasonably practicable
ALS	ALS Global Metallurgy
AMC	AMC Consultants Pty Ltd
AMS	Astron Mineral Sands Pty Ltd, a 100% subsidiary of Astron
ARTC	Australian Rail Track Corporation
AS1289	Australian Standard 1289 – Methods of Testing Soils
ASX	Australian Stock Exchange
AS/NZS ISO 31000	Australian/New Zealand Standard for Risk Management
Astron	Astron Corporation Limited
ATCW	ATC Williams
BCM	Bank Cubic Metre
BD	Bulk Density
BGLC	Barengi Gadjin Land Council
BV	Bureau Veritas Australia
Bq/g	Becquerel/gram
CAPEX	Capital Expenditure
CCTV	Closed-Circuit Television
CEP	Community Engagement Plan
СНМР	Cultural Heritage Management Plan
CIE	Commission Internationale de L'éclairage
CIF	Cost, Insurance and Freight
CRAE	CRA Exploration Ltd
CUP	Concentrator Upgrade Plant
DFS	Definitive Feasibility Study
DISR	Department of Industry, Science and Resources
DMS	Donald Project Pty Ltd, trading as Donald Mineral Sands
Donald Project or Project	Donald Rare Earth and Mineral Sands Project
DWT	Deadweight Tonnage
Dy	Dysprosium
EA	Enterprise Agreement
EBITDA	Earnings before interest, tax, depreciation & amortisation
ECI	Early Contractor Involvement
EE Act	Environment Effects Act 1978
EES	Environment Effects Statement
EL8516	Exploration Licence 8516
Energy Fuels	Energy Fuels Inc.
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
EPC	Engineer, Procurement, Construct
ERR	Earth Resources Regulator

ESG	Environmental, Social, and Governance
EV	Electric Vehicle
FID	Final Investment Decision
GA	General arrangement drawings
GST	Goods & Services Tax
GWMWater	Grampians Wimmera Mallee Water
HAZOP	Hazard and operability study
HLS	Heavy Liquid Separation
НМ	Heavy Minerals
HMC	Heavy Mineral Concentrate
HREE	Heavy Rare Earth Element
HSE	Health, Safety, and Environment
ICP-MS	Inductively Coupled Plasma Mass Spectrometry
ICT	Information and Communications Technology
IFC	Issued for Construction
IRR	Internal Rate of Return
ISO	International Organization for Standardization
ITC	Information and Communication Technology
Jackson Project	Jackson Rare Earth and Mineral Sands Project
JinDi	SuiXi jinDi Mining Limited
JMS	Jackson Mineral Sands
JORC Code (2012)	Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves, 2012 Edition
JV	Joint Venture
JVA	Joint Venture Agreement
ktpa	Kilotonne per annum
LAFHA	Living-away-from-home allowance
LCFU	Lyons Feed Control Unit
LREE	Light rare earth
LREE	Light Rare Earth Elements
MEL	Mechanical equipment list
MIN5532	Mining Licence 5532
MRE	Mineral Resource Estimation
MRSD Act	Mineral Resources (Sustainable Development) Act 1990
Mtpa	Million tonnes per annum
Mt	Million tonnes
MT	MineralTechnologies
MUP	Mining Unit Plant
NdPr	Neodymium-Praseodymium
NI43-101	Canadian mineral resource reporting standard
NORM	Naturally occurring radioactive material
NPI	Non-Process Infrastrcture
NPV	Net Present Value
NSW	New South Wales
OEM	Original Equipment Manufacturer
OHS	Occupational Health & Safety

ОК	Ordinary kriging
OPEX	Operating Expenditure
РМО	Project Management Office
P&ID	Piping and Instrumentation Diagram
QEMScan	Quantitative Evaluation of Minerals by Scanning Electron Microscopy
QLD	Queensland
RCAC	Reverse circulation Air Core
REE	Rare Earth Element
REEC	Rare Earth Element Concentrate
REO	Rare earth oxide
RL2002	Retention licence RL2002
RL2003	Retention licence RL2003
RMG	RMG (AUS) Pty Ltd
ROM	Run of Mine
SCT	Specialised Container Transport Logistics Pty Ltd
SG	Specific Gravity
SLD	Single Line Diagram
Sm	Samarium
SUSEX	Sustaining Expenditure
T&L	Transport and logistics
Tb	Terbium
ТНМ	Total Heavy Minerals
ТМР	Transport Management Plan
t/m <sup>3</sup>	Tonnes per cubic metre
TMPWG	Tailings Management Plan Working Group
TREO	Total rare earth oxide
TS	Transfer Shed
TSF	Tailing Storage Facility
TZMI	TZ Minerals International Pty Ltd
U.S.	United States of America
USD	United States Dollar
VHM	Valuable Heavy Minerals
VIC	Victoria
VO	Value Optimisation
WA	Western Australia
WCP	Wet Concentrator Plant
WHIMS	Wet high intensity magnetic separators
WIFT	Wimmera Intermodal Freight Terminal
WIM	Wimmera-style mineral sands deposit
WSMD	Wimmera Southern Mallee Development
XRF	X-ray Fluorescence
Zirtanium	Zirtanium Pty Ltd



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