

18 August 2022

Notice to the Australian Securities Exchange

Donald Mineral Sands and Rare Earth Project Project Configuration and Feasibility Study Update

Astron Corporation Limited (ASX: ATR) provides an update on the review of the project configuration for the Donald Mineral Sands and Rare Earth Project.

The Donald Project is a tier-1 mineral sands and rare earth project located approximately 300 kilometres north-west of Melbourne in regional Victoria. Given its resource scale, the phased development of the Donald Project has the potential to represent a globally significant, long-life supply of the critical mineral elements of zirconium, titanium, neodymium and praseodymium (rare earth elements).

Project Review – Rationale

As previously advised, the Board of Astron considered it appropriate to undertake a comprehensive review of project parameters of the Donald Project as part of defining the final parameters for the Feasibility Study, scheduled for completion at the end of the first quarter of 2023.¹

The review was undertaken with a view to establishing the least risk path towards the commercialisation of the Phase 1 development of the Project on Mineral Licence 5532 (MIN5532), while maintaining flexibility to deliver the value that the development of the broader tenement resources is expected to represent.

This review has had several objectives, including:

- Aligning the Phase 1 Project configuration, including physical infrastructure and site services, with the requirements of the Environmental Effects Statement (EES), so as to minimise the risks and time involved in securing the remaining regulatory approvals (most notably, the Work Plan);
- identifying opportunities to improve the capital-efficiency of the Project;
- mitigating project execution risks, particularly in terms of the sourcing and procuring of long lead time items; and
- maintaining the flexibility for subsequent phases of the Project to recover the remaining Resource base and/or enable higher production output, including by consideration of the on-site production of final mineral sands products (subject to further regulatory approvals at a later stage).

Project Review – Principal Outcomes

The main review outcomes include:

- Reduction in ore throughput to 7.5 million tonnes per annum (Mtpa) from 12.5 Mtpa, resulting in a roughly proportionate decrease in HMC and finished product production;
- production on-site of two product streams: a rare earth element concentrate (REEC) and a valuable heavy mineral concentrate (HMC), instead of the separation of the HMC on-site to produce zircon and titania (66% TiO₂ content) final products;
- the elimination of an on-site Wet High Intensity Magnetic System (WHIMS) plant and a dry mineral separation plant;

¹ ASX Release, 2 May 2022, March Quarterly Activities Report

- off-site processing of the HMC product to final zircon and titania products by either a third-party separation facility, or (subject to further evaluation) at the Company's minerals processing facilities at Yingkou, China – or a combination of both; and
- reduction in the scale of the footprint of the processing plant and associated facilities with an attendant reduction in materials required during the construction phase.

A preliminary estimate of average annual production for Phase 1 operations over 35 years is between 250 – 300 thousand tonnes per annum (ktpa) of HMC and 7–10 ktpa of REEC.

As detailed below, these preliminary estimates are subject to refinement associated with further geological analysis of the March 2022 drilling programme data, which addressed a finer +20–38 micron fraction of the ore body and, in turn, the total valuable heavy mineral (VHM), as well as rare earth element (including xenotime), component of the ore body. This analysis, which is expected to result in an updated Mineral Resource Statement in the fourth quarter of 2022, provides the potential for an increase in both the volume and value of minerals recovered in the production process.

Staged Development Approach

The Donald Project is based on the staged development of the mineral resources contained within the retention licences RL2002 and RL2003 (See Appendix 1 – Donald Project Tenement Map). Phase 1 of the Project will be undertaken on the Mining Licence MIN5532 which is contained wholly within RL2002. MIN5532 contains VHM Resources of 317 Mt at an average HM grade of 5.3%. At the proposed ore production rate of 7.5 Mtpa, this will support a mine-life of approximately 35 years.

Phase 1 development is planned to access approximately 13% of the total Ore Resources for the Donald and Jackson tenements within the total licence areas. RL2002 and RL2003 contain a combined Mineral Resources of 2.4 billion tonnes at a heavy mineral (HM) grade of 4.8%. At a zircon assemblage of 19%, Phase 1 of the Donald Project contains in-situ zircon resources of 22.1 Mt, representing the largest undeveloped zircon deposit globally.²

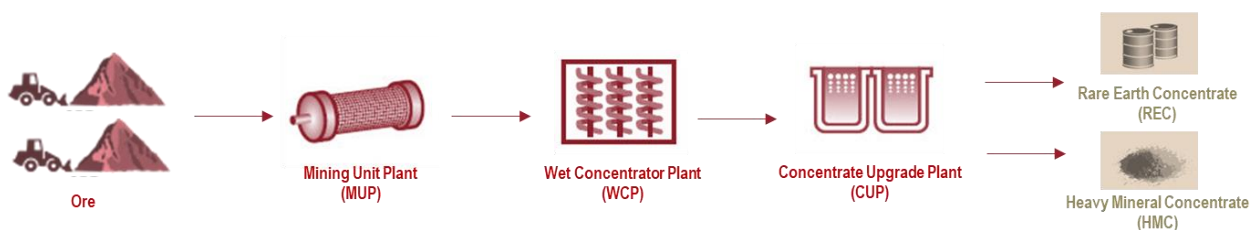
Future potential phases of mine development on RL2002 and RL2003, including the on-site separation of HMC into its constituent zircon and titania products, are under consideration. It is expected that decisions to progress further production outcomes will be taken after Phase 1 operations are underway and will be subject to further regulatory approvals. Astron expects the phased development approach will deliver material, long-term value.

Project Configuration and Mining Approach

Revision to the process flow sheet includes the removal of the on-site WHIMs plant and the dry separation plants, previously referred to as the Mineral Separation Plant (MSP) component of the Project. The Concentrate Upgrade Plant (CUP) has been retained to enable the production of a REEC on-site, providing the Company with flexibility in terms of off-take arrangements for rare earth end-markets. The revised process flow-diagram is shown below.

Figure 1. Revised Simplified Flow Diagram

Simplified Process Flow Diagram



² Refer ASX Announcement, 7 April 2016, *Donald Mineral Sands Mineral Resource Update*

The Phase 1 operation will include:

- Conventional truck and shovel mining by an independent contractor to produce 7.5 Mtpa of ore fed to a Mining Unit Plant (MUP) located adjacent to the pit;
- Separate stockpiling of topsoil and overburden for return to mined areas, as part of progressive mine rehabilitation;
- Combining tailings with sand (modified co-disposal or 'ModCod') and initially pumping to an ex-pit tailings storage facility and then subsequent pumping to the mine pit for disposal, as part of progressive rehabilitation of mined areas;
- Replacing topsoil and overburden according to the original soil configuration, followed by revegetation and return to farmland;
- Concentration of ore using gravitational separation via a wet concentration plant (WCP);
- HMC processing in a concentrate upgrade plant (CUP), where the rare earth elements will be separated from the titanium and zircon concentrate by flotation;
- REEC will be made available for sale to other parties; and
- HMC will be transported in containers to a Victorian port for bulk export.

For further information on mining and the mining sequence, refer Appendix 2.

Production Profile

The production profile of Phase 1 of the Project, based on the revised configuration, is displayed below.

Table 1. Indicative Production Profile For Phase 1 Operation		
On-Site Products	Avg. of first 5 years	Avg. over life of Phase 1
REEC	~9 ktpa	~8 ktpa
HMC	~285 ktpa	~250 ktpa

The production profile is subject to change following the incorporation of the results of the 2022 Mineral Resource update. Refer Appendix 4 for details on product attributes.

The future on-site separation of HMC into final products will be evaluated during the early stage of Phase 1 operations. If feasible, on-site separation into final mineral sands products will require investment in a dry mineral separation plant, involving magnetic and electrostatic separation, and be subject to additional regulatory approvals.

Revenue Composition

Based on current geological analysis and pricing assumptions, it is expected that the REEC production stream will constitute approximately 50% of total Phase 1 project revenues. REEC represents a higher proportion of revenue when compared to previous estimates, reflecting the rapid increases in rare earth prices over late 2021 and 2022. The HMC, comprising zircon and titania, makes up the balance of revenue, with approximately 80% of the HMC revenue attributable to zircon and 20% to titania.

The HMC product stream pricing reflects the zircon and titania assemblages and the estimated costs involved in transportation and processing to final products. Based on long term zircon and titanium dioxide (as a chloride ilmenite feedstock) forecast prices of circa US\$1,700 per tonne and circa US\$320 per tonne respectively, the HMC price is currently estimated to be in the range of US\$325 to US\$450 per tonne (US\$/t FOB real (2022)).³ The REEC price, based, on its neodymium and praseodymium content, is estimated to be around US\$11,000 per tonne.⁴

Based on the foregoing, the average annual revenue over the life of Phase 1 of the Project is estimated to be approximately US\$200 million (A\$285 million). Refer Appendix 6 for details on the material assumptions in respect of these numbers.

³ Sourced from *Astron Limited Market Study by TZMI*, Aug 2022

⁴ Sourced from *Ruidow Market Study*, Aug 2022

2022 Drilling Programme

The revised project configuration and associated production profile is based upon the current⁵ Ore Reserves and Mineral Resource estimate for MIN5532. This estimate was prepared in 2016 based on a number of historical exploration programmes.

A 2022 air core drilling programme on MIN5532 was designed to:

- Delineate the +20–38 micron fraction of the valuable heavy mineral (VHM) component of the deposit;
- provide a more detailed analysis of the rare earth minerals in the deposit, including the xenotime component, and
- establish VHM assemblage data for portions of the resource for which this data is not currently available.

The +20–38 micron fraction of VHM is not included in the current geological model of the Resource as it was assumed not to be recoverable. Astron's subsequent metallurgical test work, including pilot plant recovery of bulk samples, has provided confidence in the recovery of this material. It is expected that the incorporation of this material will increase the size of the VHM resource in MIN5532.

Astron's metallurgical test work also demonstrated that the rare earth mineral xenotime was recoverable in commercial quantities. At present, the rare earth product stream is valued on a monazite, light-rare earth only basis. The recovery of xenotime will make a valuable contribution to the rare earth product by the addition of the heavy rare earth minerals of dysprosium and terbium. Other fine-grained WIM-styled deposits with similar geological characteristics to the Donald deposit are reported to have approximately 0.6% xenotime in the HM.⁶

Following completion of the analysis of the results of the 2022 drilling programme, revised Mineral Resources and Ore Reserves estimates will be prepared for MIN5532, which will be incorporated into a revised mine plan for inclusion in the Feasibility Study.

It is expected that the results of this analysis will make a material contribution to the ultimate production profile of Phase 1 of the Project, without any significant affect upon the project configuration or capital costs. Appendix 5 contains further contextual information about the current resource evaluation.

Market Outlook

A key feature of the mineral sands market is the maturation and decline of the main sources of supply, predominantly located in Southern Africa and Australia, and the emergence of new potential producers whose projects are small in scale and have a relatively short mine life. While necessary as part of the immediate to near-term supply equation, in Astron's assessment the new supply sources represent only part of the likely solution to an emerging major global supply issue, particularly of zircon. The Donald Project, as one of the first of the fine-grained WIM-style sources of production – and with its inherent characteristics of scale and long-life production – has the opportunity to establish itself as core source of both zircon and titania (titanium dioxide) supply over several decades.

Zircon

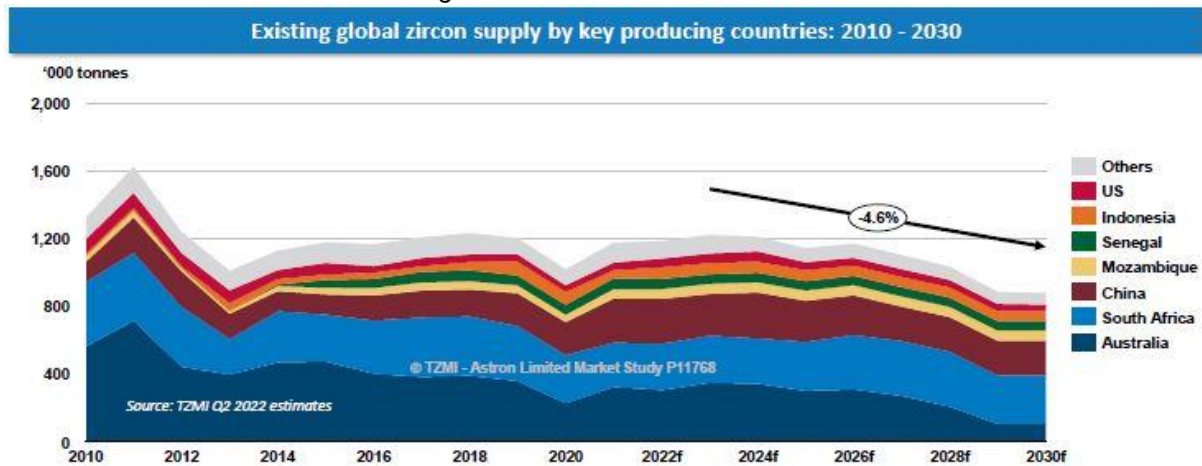
Zircon typically represents the lower assemblage component of most, if not all, mineral sands deposits. This factor, favourable demand characteristics and the maturation of the current, major sources of global supply (principally Iluka's Jacinth-Ambrosia deposit), presents a supply challenge.

⁵ The current Mineral Resource and Mineral Resource estimate is 2021. See announcement dated 18 February 2021, available at ASX's website at: https://cdn-api.markitdigital.com/apiman-gateway/ASX/asx-research/1.0/file/2924-02342880-2A1281171?access_token=83ff96335c2d45a094df02a206a39ff4

⁶ For example, the WIM resources Pty Ltd Avonbank deposit and Iluka Resources' WIM50 and WIM100 deposits, all of which are located in the vicinity of the Donald and Jackson tenements.

TZ Minerals International (TZMI), a global independent consulting company, forecasts that global zircon supply will peak in 2023 at about 1.2 Mtpa before declining (in the absence of new supply) to close to 900 ktpa by 2030. The demand for zircon is forecast to increase at a compound annual rate of 6.7% per year over the same period, potentially leading to a widening supply gap to be met by new production sources. In this regard, the Donald Project, as a large, WIM-style deposit, is well placed.

Figure 2. Global Zircon Demand

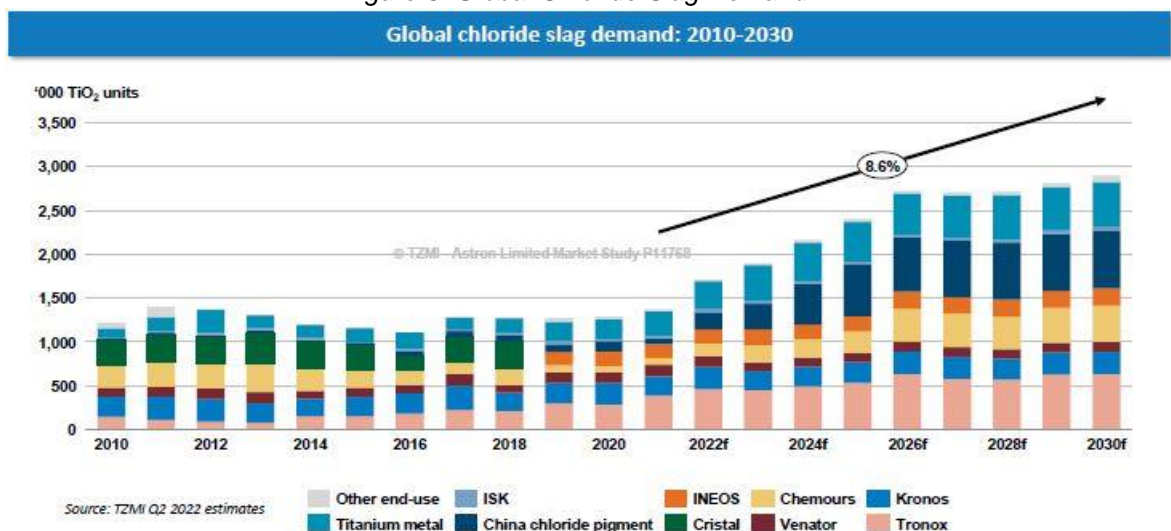


Source: TZMI Market Analysis Prepared for Astron Corporation, July 2022

Titania

Donald titania is expected to be a suitable feedstock for the production of chloride slag (a feedstock for chloride pigment production). The market for chloride slag has been growing rapidly, with TZMI forecasting demand in the period from 2021 to 2024 to grow by over 130%. This is largely associated with the accelerated adoption of the chloride slag production process in China at a time when traditional sources of chloride slag supply are in decline.

Figure 3. Global Chloride Slag Demand



Source: TZMI Market Analysis Prepared for Astron Corporation July 2022

Due to the fineness of the mineral, Donald titania may require agglomeration to be acceptable to some chloride slag users. Astron owns and applies a TiO₂ agglomeration process at its Yingkou, China facility where it upgrades fine TiO₂ feedstocks for sale to slag producers (see Appendix 4 – Product Attributes).

Astron expects that China will represent the major market for Donald's mineral sands products. In this regard, given the Company's established processing and marketing presence in China, it will work closely with the processor/s chosen to handle Donald HMC in terms of both HMC processing, product recovery and product quality, but also in terms of market placement of finished products.

Rare Earth Market

Rare-earth elements are increasingly important for power generation, energy storage, electronic and superconductor applications, which are essential to the next stages of economic growth. The rare earths market has displayed strong growth over the past four years.

China is the leading market for and processor of rare earth minerals. In addition, western nations (including Australia) are developing rare earth processing facilities to enable them to diversify from China as the main supplier. Market research company, Ruidow, reports that Chinese domestic consumption of neodymium-praseodymium oxide increased from 50,616 tonnes in 2017 to 74,043 tonnes in 2021, a CAGR of 10%, and, despite domestic production of rare earth minerals, China's imports grew by more than 200% over this period. Robust demand growth is forecast to continue.

Astron's plans to produce a REEC product on-site and market it from Australia, enabling the company to service rare earth markets globally.

Financial Metrics

The Donald Project Phase 1 Feasibility Study is scheduled for completion in the first quarter of 2023. It will incorporate a revised Mineral Resources and Ore Reserves estimate for MIN5532. Given the centrality of the Mineral Resource analysis to the completion of the Feasibility Study, it is premature to release a detailed financial analysis of the Project at this stage.

Based on average annual ore production of 7.5 Mt for Phase 1 operations and HMC production in the range 250 to 300 ktpa and 7–10 ktpa of REEC, average annual revenue of approximately US\$200 million (A\$285 million) in real terms is expected to be generated over the 35 year life of Phase 1. The material assumptions on which these numbers are based are set out in Appendix 6.

Capital expenditure is estimated to be approximately A\$350 million with an anticipated total funding requirement of approximately A\$400 million.

Work Streams

The main work streams leading to completion of the Feasibility Study, and an investment decision by the Board of Astron, include:

- An updated geological model, including a revised Mineral Resource and Ore Reserve Statement incorporating an analysis of finer fraction for VHM and the rare earth mineral of xenotime;
- refinement of the mine plan, informed by the foregoing analysis and receipt of tenders;
- tailings design, including the design of tailings storage arrangements;
- confirmatory metallurgical test work on sonic drilling samples;
- a Value Engineering process to determine optimal capital expenditure, timing of commitment and ensuring maximum flexibility in relation to operability and operational expansion;
- market engagement with processors for HMC processing arrangements;
- engagement with REEC processors for off-take arrangements;
- environmental technical studies and risk workshops to progress the Work Plan;
- continued stakeholder, community and landowner engagement through community reference meetings, community events, information days, etc; and
- further key appointments to management and operational teams.

Indicative Project Timeline

Milestones	Time Frame
Revised Mineral Resource Statement for MIN5532	Q4 2022
Ore Reserve and Mineral Resource Statement	Q1 2023
Feasibility Study completion	Q1 2023
Work Plan for Victorian Regulatory Submission	Q4 2023
FID and construction commencement	Q1 2024
Commissioning	Q3 2025
Production	Q4 2025

This announcement is authorised by the Board of Directors of Astron Corporation Limited.

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About Donald Project

The Donald Project tenements comprise Mineral Retention Licences RL2002 and RL2003, representing the Donald and Jackson deposits respectively. The area comprises arable, mixed-use land which will be either leased and/or acquired from landowners before mining activities commence. The mine site is close to established infrastructure, including water supply, power, roads, and a railway line to the Port of Geelong.

RL2002 and RL2003 contain a combined Mineral Resources of 2.4 billion tonnes at a heavy mineral (HM) grade of 4.8%. The Project represents access to the largest undeveloped zircon resource globally with 22.1 million tonnes (Mt) of in-situ zircon resource, as well as a major rare earth resource, with 2.32 Mt of in-situ monazite resource. The scale of the monazite resource and the expected presence of xenotime in the deposit, as demonstrated through metallurgical test work, provides the potential for the Project to be a major source of critical mineral elements, such as neodymium and praseodymium.

Phase 1 of the Donald Project operations will be carried out on the granted mining licence MIN5532 which is wholly contained within RL2002 with Mineral Resources currently estimated to be 317 Mt at an average HM grade of 5.3% which will support an operational life of approximately 35 years. The MIN5532 Mineral Resource estimate is subject to revision to incorporate the results of the 2022 drilling programme.

About Astron

Astron Corporation Limited (ASX: ATR) is an ASX listed company, with over 35 years of experience in mineral sands processing technology and downstream product development, as well as the marketing and sales of zircon and titanium dioxide products. Astron's prime focus is on the development of its large, long-life and attractive zircon assemblage Donald Mineral Sands and Rare Earth Project in regional Victoria. Donald has the ability to represent a new major source of global supply in mineral sands. The company conducts a mineral sands trading operation based in Shenyang, China and owns and operates a zircon and titanium chemicals and metals research and facility in Yingkou, China, which includes a mineral separation facility processing titanium feedstocks into a high-grade agglomerated product sold to both Chinese and western chloride pigment producers. Astron owns and has the rights to a dunal mineral sands deposit, the Niafarang Mineral Sands Project, in Senegal.

Competent Persons Statement

The information in this report that relates to Exploration Results and Mineral Resources for the Donald Project is based on information first reported in previous ASX announcements by the Company, as listed in this announcement. The Company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcements and that all material assumptions and technical parameters underpinning the estimates in the original announcements continuing to apply and have not materially changed.

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

The information in this document that relates to the metallurgical performance and outcomes of testwork is based on information compiled by Mr Ross McClelland, a Competent Person who is a Member of the Australasian Institute of Mining and Metallurgy. Mr McClelland is the principal metallurgist and director of Metmac Services Pty Ltd. Mr McClelland has been involved with the metallurgical development of the Wimmera-style mineral sands resources for more than 30 years. He has provided metallurgical consultation services to DMS for more than 7 years. He qualifies 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 been materially modified from the relevant original market announcement.

Cautionary Statement

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.

The information contained in this document is not investment or financial product advice and is not intended to be used as the basis for making an investment decision. Please note that, in providing this document, Astron has not considered the objectives, financial position or needs of any particular recipient. Astron strongly suggests that investors consult a financial advisor prior to making an investment decision.

This document may include "forward looking statements" within the meaning of securities laws of applicable jurisdictions. Forward looking statements can generally be identified by the use of the words "anticipate", "believe", "expect", "project", "forecast", "estimate", "likely", "intend", "should", "could", "may", "target", "plan", "guidance" and other similar expressions. Indications of, and guidance on, future earning or dividends and financial position and performance are also forward-looking statements. Such forward-looking statements are not guarantees of future performance and involve known and unknown

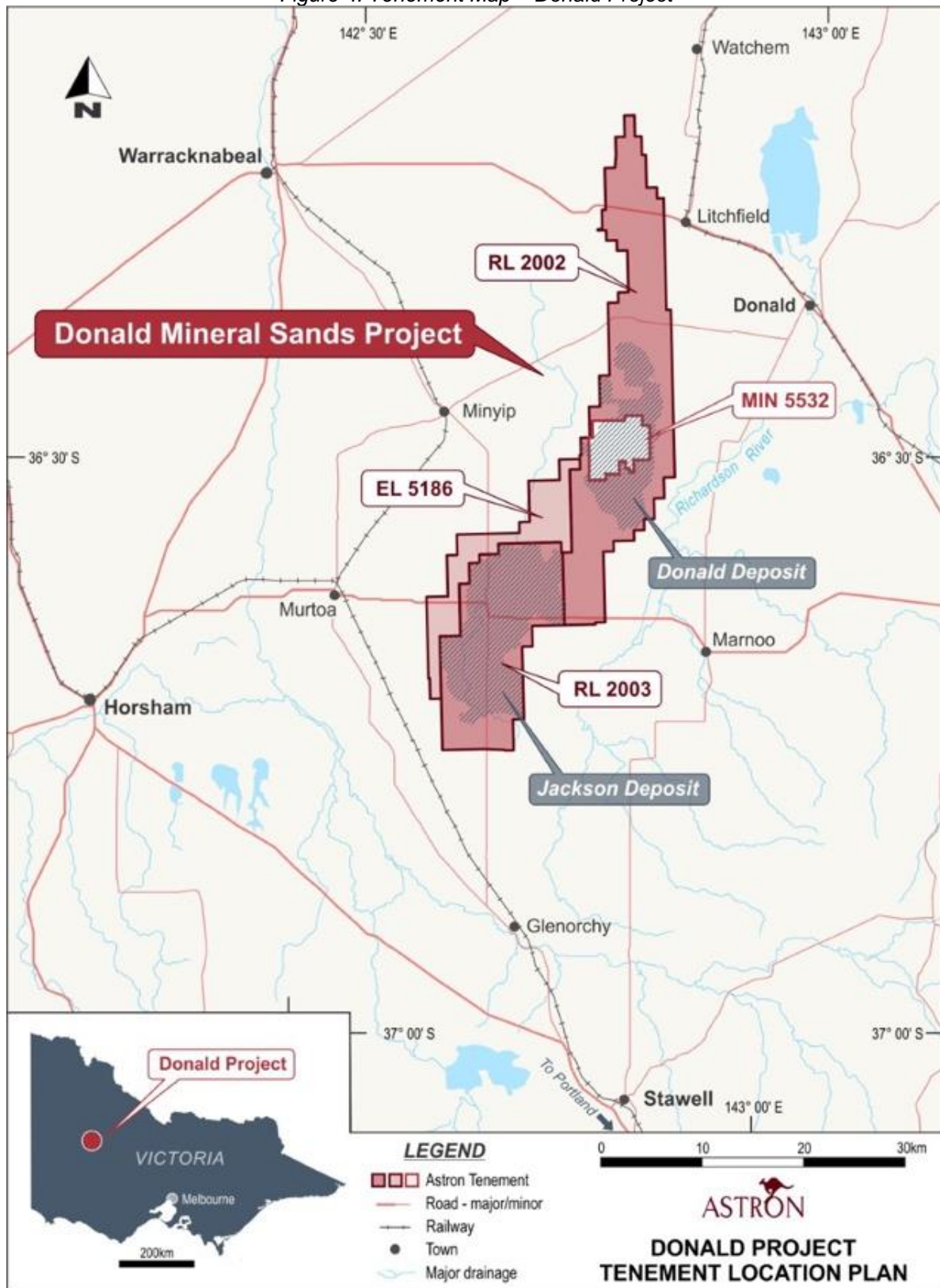
risks, uncertainties and other factors, many of which are beyond the control of Astron and its related bodies corporate, together with their respective directors, officers, employees, agents or advisers, that may cause actual results to differ materially from those expressed or implied in such statement. Actual results, performance or achievements may vary materially from any forward-looking statements and the assumptions on which those statements are based. Readers are cautioned not to place undue reliance on forward looking statements and Astron assumes no obligation to update such information. Specific regard should be given to the risk factors outlined in this document (amongst other things).

This document is not, and does not constitute, an offer to sell or the solicitation, invitation or recommendation to purchase any securities and neither this document nor anything contained in it forms the basis of any contract or commitment. Certain financial data included in this document is not recognised under the Australian Accounting Standards and is classified as 'non-IFRS financial information' under ASIC Regulatory Guide 230 'Disclosing non-IFRS financial information' (RG 230). This non-IFRS financial information provides information to users in measuring financial performance and condition. The non-IFRS financial information does not have standardised meanings under the Australian Accounting Standards and therefore may not be comparable to similarly titled measures presented by other entities, nor should they be interpreted as an alternative to other financial measures determined in 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.

APPENDICES

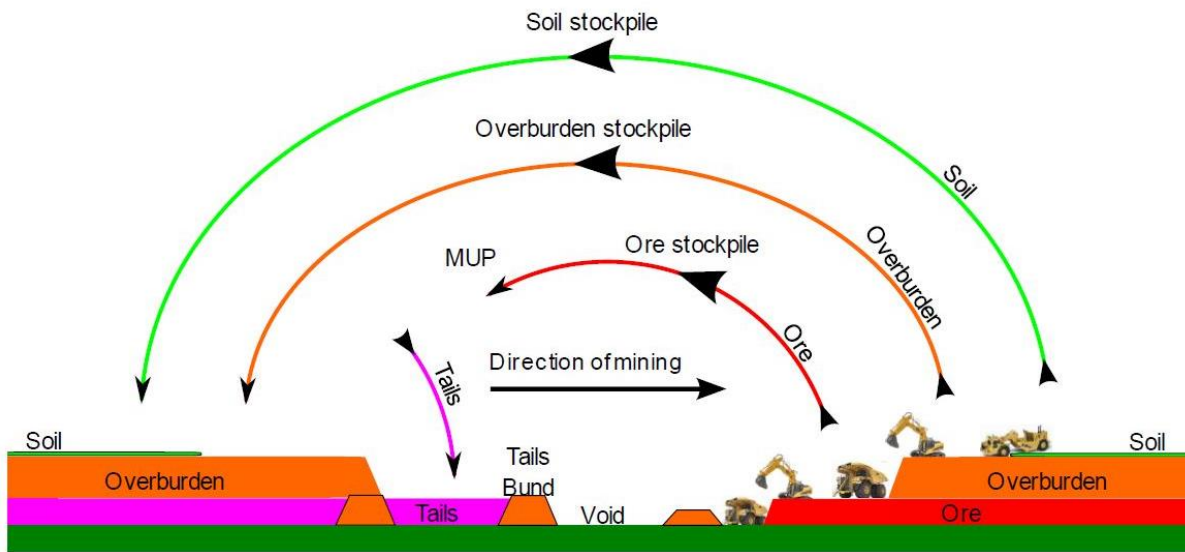
Appendix 1. Tenement Map – Donald Project (Fig.4)

Figure 4. Tenement Map – Donald Project



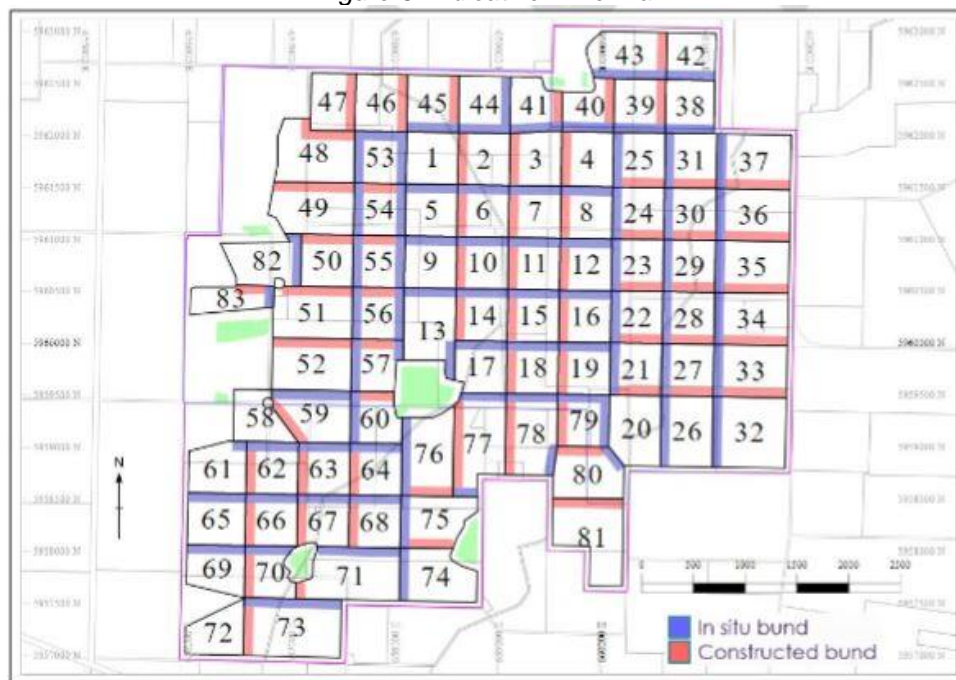
Appendix 2. Project Description – Mining Approach

Figure 5. Mining Schematic



The indicative mine path for Phase 1 operations is shown in Figure 6.

Figure 6. Indicative Mine Plan



Mining is planned to commence in block 1, approximately 1 kilometre east of the site for the process plant in the north-western section of the Mining Licence. For reference, blocks 1 to 19 are expected to represent 8 years of mining at a mining rate of 7.5 Mtpa. MIN532 represents approximately 5% of the total Donald Project Mineral Licence area, and approximately 14% of the total VHM resource. Mining will commence in MIN532, with an average stripping ratio of 1.9:1 over the first four years of operation. Stripping ratios will gradually increase as mining activity progresses to the west. The average stripping ratio over MIN532 is expected to be 2.2:1.⁷ Mining, tailing deposition and progressive rehabilitation will be undertaken in blocks of 500 by 500 metres.

⁷ As indicated, the final mine plan and stripping ratios will be informed by the full analysis of the results of the 2022 drilling results on MIN532. As such, these ratios may change.

Appendix 3. Process Metallurgy and Mineral Recoveries

Astron has undertaken extensive metallurgical test work over the last 3 years. In 2019 Astron processed 1,000 tonnes of ore through a pilot WCP and produced 24 tonnes of HMC. This HMC formed the basis of subsequent metallurgical test work including lock-cycled mineral separation test work running HMC through a pilot scale flotation plant continuously over 24-hour periods to produce a rare earth concentrate. Metallurgical recoveries of the various valuable heavy mineral components to achieve a REEC and a HMC of 95% HM, are displayed in Table 2.

Assemblage	Feed Prep (FPP)¹⁰	Wet Concentrator (WCP)	Concentrate Upgrade (CUP)	Total
TiO₂	98.1%	76.9%	99.5%	75.0%
ZrO₂	96.9%	92.2%	99.5%	88.9%
CeO₂	97.9%	92.2%	95.0%	85.8%

In summary, 75.0%, 88.9%, 85.5% of titania (using TiO₂ as a tracer), zircon (using ZrO₂ as a tracer) and rare earths (using CeO₂ as a tracer) respectively, have been recovered to HMC and REEC.¹¹ It should be noted that there has been a revision to the recoveries at the WCP stage. This is due to the difference in producing an HMC product containing 95% HM (previously 85%), where the higher-grade product has slightly lower recoveries. Notwithstanding this, there has only been a small difference in the recoveries of CeO₂ and ZrO₂ between the two figures, reflecting minimal losses in VHM when targeting a higher HMC grade. While there are greater losses of TiO₂ during this upgrade process, from test work it can be confirmed that the lost particles are largely titano-silicates of little or no value and with limited end market application.

Metallurgical recoveries are 62.9% of HM into the HMC product, and 85.8% of monazite into the REEC product.¹² The 62.9% HM recovery to HMC reflects the optimisation of the HMC production process to capture the valuable zircon and titania products and reject low value heavy minerals such as titano-silicates. In this way shipping, handling and downstream processing costs of HMC are reduced.

The off-site separation of HMC into final products of premium zircon, standard zircon and a 66% TiO₂ titania product will be undertaken either at Astron's Yingkou mineral separation facilities in China or through a third-party processor. Of the zircon reporting to HMC, 71.9% will be recoverable as a premium product and 13.6% as a secondary product suitable for the chemical market. Of the TiO₂ reporting to HMC, 86.0% is expected to report to the final product of titania. Refer to appendix 4 for product attributes.

⁸ Results are derived from Mineral Technologies Report analysis conducted for Astron Corporation Ltd.

⁹ Refer ASX Announcement, 16 May 2021, *Metallurgical Testwork Update Further Updated Announcement*

¹⁰ Refer ASX Announcement, 15 May 2020, Astron completes significant Wet Concentrator piloting works for its Donald Project

¹¹ Refer ASX Announcement, 16 May 2021, *Metallurgical Testwork Update, Further Updated Announcement* for information regarding Table 1 Section 3 of the test-pit sample for which the recoveries are derived.

¹² See ASX Release, 14 May 2021,

Appendix 4. Product Attributes

During Phase 1, Astron intends to provide HMC to an external processor for separation into final products. An evaluation will be made as to the benefits of expanding the Company's mineral processing facilities in Yingkou, China to process Donald HMC. The final processing arrangements will be determined following engagement with third-party processors and an evaluation of the additional capital costs and economics if Astron were to undertake final product processing at its China facilities.

HMC Attributes

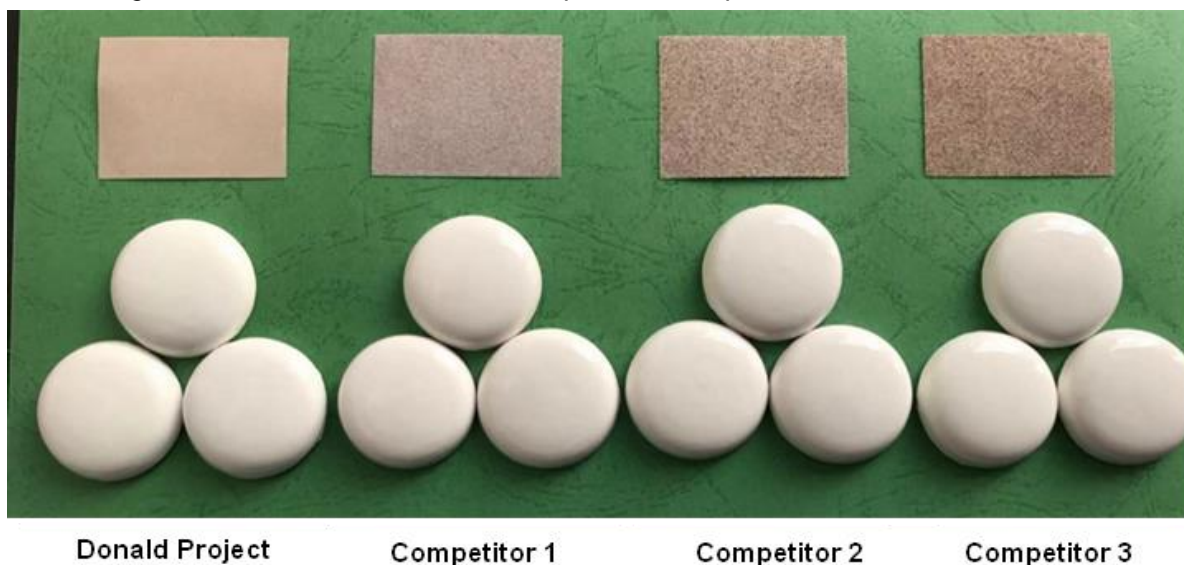
The attributes of the HMC, including its grade and removal of the rare earth element component, significantly improves the external processing and recovery process. The planned HM grade for the HMC (95% compared with prior 85%). This, and the removal of the rare earth elements, are expected to enhance the value and market acceptance of the Donald HMC.

Astron has a depth of experience operating in the Chinese mineral sands market, including the operation of a mineral separation plant at Yingkou which has processed zircon middlings, as well as undertaking the agglomeration and sizing of high-grade titanium dioxide feedstocks.

Astron has undertaken HMC separation test work both at its laboratories in Yingkou, as well as through Mineral Technologies in Australia. The culmination of metallurgical test work provides Astron with confidence in both HMC product recoverability and final product quality. The decision to be made relates to the economic merits of the use of its own facilities, as opposed to initial third party toll or contracted processing.

Zircon Attributes

Figure 7. Donald Premium Zircon Compared to Competitor Premium Zircon Products



Final products derived from HMC will be relatively fine-grained. In the case of zircon products, this is not considered a market acceptance issue and, in fact, may be an advantage in reducing the zircon milling costs to those customers that produce an opacifier by the grinding of zircon sand.

The Donald premium zircon has been analysed as having low chemical impurities. Testing of the premium zircon produced from the Donald deposit has demonstrated that it has characteristics which are highly desirable for the ceramics market. This has been verified by testing conducted by the Foshan Ceramics Institute (a leading Chinese ceramics institute). As shown by the whiteness testing conducted at the Company's laboratories, Donald premium zircon rates favourably in terms of whiteness compared to competitor products. Whiteness is a highly desirable characteristic for the main ceramics end use market, which represent approximately 50% of the annual zircon demand. A secondary zircon containing over 65% ZrO₂ will also be produced. This will have application in the chemical zircon market, with its range of attendant end-uses.

Titania Attributes

The testing and market work undertaken by Astron has confirmed that the Donald Project titania is desirable as a feed source in the production of slag, as used as a feedstock for the production of both chloride and sulphate pigment. As a 66% TiO₂ product with low calcium content, it has an application as a 'sweetener' (or higher titanium dioxide content feed) to existing slag feeds, which tend to be lower TiO₂ content ilmenites.

The recent development of hallow-electrode furnace technology means that the fineness of the Donald project titania is not expected to represent an issue in terms of a direct feed material. For previous generation slagging facilities, Astron is able to make available its proprietary titanium product agglomeration technology to enable the production of appropriately sized titania as a chloride slag feedstock (demonstrated in Figure 2 which shows pelletised high grade TiO₂ feedstocks produced by Astron in China).

Figure 8. Pelleted Donald Titania

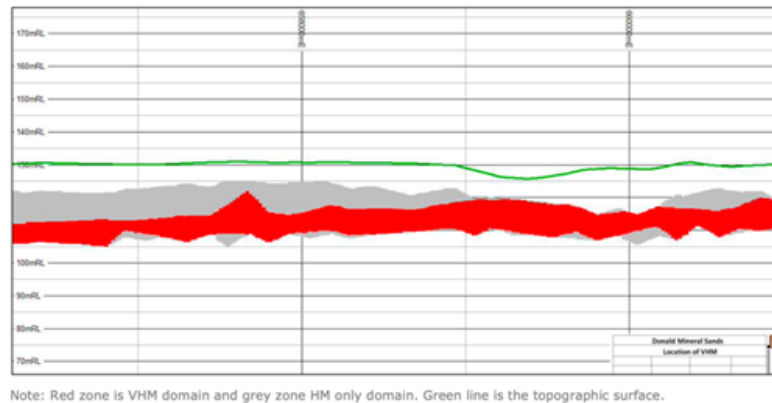


Appendix 5. Contextual Information Relating to Mineral Resource Evaluation

The 2016 Mineral Resource estimate for MIN5532, at a cut-off grade of 1% HM, reported according to the JORC Code, is 454 Mt at a 4.4% HM grade.¹³ Contained within this Mineral Resource estimate, but only within the area where composited samples have been taken and analysed for valuable heavy minerals (VHM), is the VHM Mineral Resource. The VHM Mineral Resource, reported as a percentage of HM, is 317 Mt at a 5.1% HM grade.¹⁴

The difference between the HM Resource and the VHM Resource is illustrated in the schematic of the west-east cross-section of MIN5532 below. The HM Mineral Resource comprises the grey and red sections and the VHM Mineral Resource the red only area. The green line is the topographic surface.

Figure 9. Schematic West-East Cross-section of MIN5532 showing VHM & HM only areas



The difference in the VHM and total HM content becomes more noticeable in schematics of HM grade versus VHM grade, and calculated value per tonne of ore, generated from recent mining studies. When comparing the cross sections showing HM grade and where chemical assemblage data is available, it is apparent that there exists material amounts of HM above and below the current VHM resource that is may be VHM. Using the cross section across 5961500mN as an example, there exist a section that contains significant VHM grade material above the existing zone of ore, denoted through the black line.

Figure 10. Cross-section showing HM grades at 5961500 mN

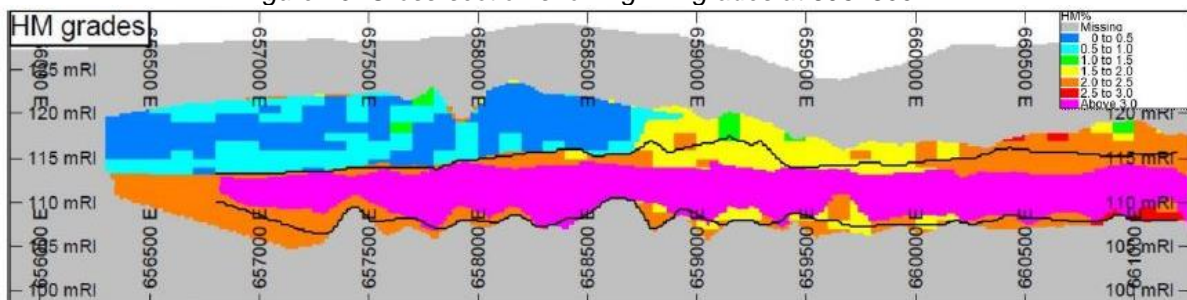
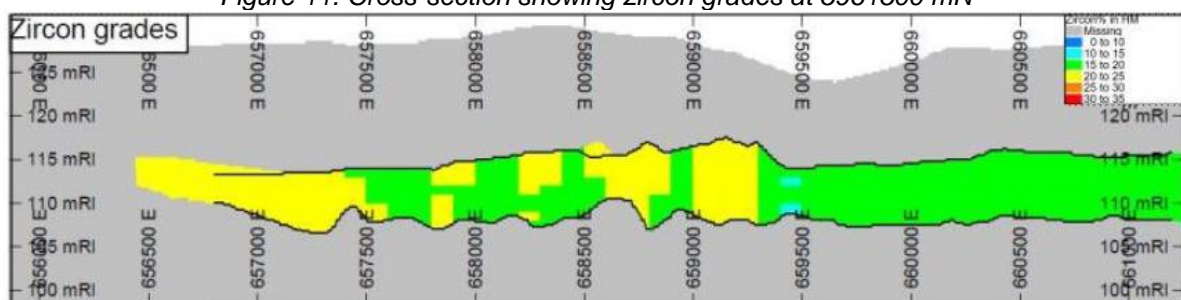


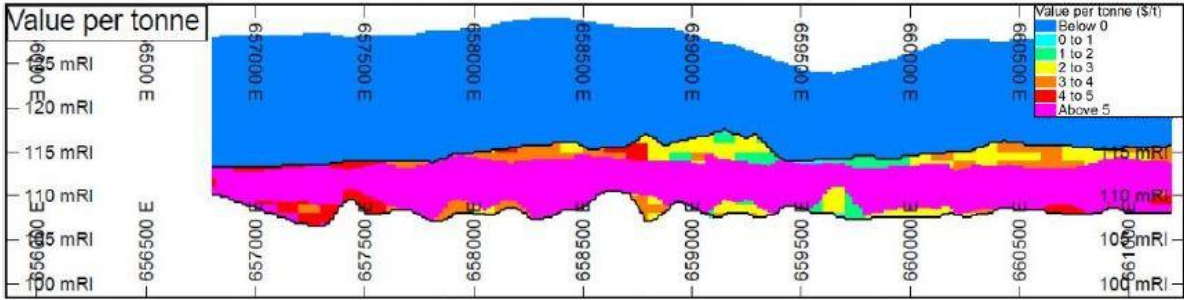
Figure 11. Cross-section showing zircon grades at 5961500 mN



¹³ Refer to ASX Release, 7 April 2016, Donald Mineral Sands Project – Mineral Resource Update

¹⁴ Refer to ASX Release, 7 April 2016, Donald Mineral Sands Project – Mineral Resource Update

Figure 12. Cross-Section showing calculated value at 5961500mN



Incorporation of VHM assemblage data from the 2022 drilling programme for the portions of the Resource for which only HM data existed previously, will enable the revised Mineral Resource and Mineral Reserve estimates to incorporate VHM assemblage data for the full extent of the orebody. It is expected that this may lead to an increase in the estimate of VHM Mineral Resources and Ore Reserves contained within the orebody, with a consequent potential for increase in the VHM and rare earth production levels from the Phase 1 mining and ore processing. In addition, it may lead to a lower stripping ratio over the entire resource, with an attendant reduction in mining costs per tonne of ore.

Appendix 6. Material Assumptions

Parameter	Unit / Description
Mine Type	Open pit
Mining Method - Ore	Conventional Truck and Shovel
Mining Method - Overburden	Conventional Truck and Shovel
Mining Rate - Ore	7.5 Mtpa
Mining Rate – Overburden	To suit ore
Strip ratio	2.2:1
Products	Heavy Mineral Concentrate (HMC) Rare Earth Element Concentrate (REEC)
Mineral Recoveries	HM to HMC: 62.9% RE to REEC 85.8%
Production HMC	250-300 ktpa
Production REEC	7-10 kpta
Product Transport	Road and Rail
Product Price Basis	Free On Board (FOB) Melbourne Port
Financial Estimates	2022 Real
Exchange Rate AUD:USD	0.70

APPENDIX 7: DONALD DEPOSIT ORE RESERVES & MINERAL RESOURCES STATEMENTS

Ore Reserves

Based on the supporting mine planning completed, pit inventories to support an Ore Reserve Estimate, in accordance with JORC 2012 are shown in Table 1.1. Ore has been classified as Proven Ore Reserve, based on Measured Mineral Resource and Probable Ore Reserve, based on Indicated Mineral Resource. The results of the Ore Reserve estimate reflect the Competent Person's view of the deposit.

Note that the Mineral Resources are reported inclusive of the Ore Reserve.

Table 1.1 Donald Mineral Sands Ore Reserve for RL 2002 at February 2021

Classification	Tonnes (mt)	Slimes (%)	Oversize (%)	HM (%)	Ilmenite (%HM)	Leucoxene (%HM)	Rutile (%HM)	Zircon (%HM)	Monazite (%HM)
Within ML5532									
Proved	170	14.2	11.9	5.3	31.4	22.1	7.1	18.8	1.9
Probable	24	13.4	12.5	4.9	33.2	21.3	6.7	20.2	2.0
Total	194	14.1	12.0	5.3	31.6	22.0	7.0	19.0	1.9
Within RL2002 Outside of ML5532									
Proved	140	19.1	7.1	5.6	31.0	18.4	9.6	21.2	1.8
Probable	268	15.8	14.4	4.0	32.3	19.5	7.5	17.0	1.6
Total	408	16.9	11.9	4.5	31.8	19.0	8.4	18.8	1.8
Total within Donald Deposit (RL2002)									
Proved	310	16.4	9.8	5.4	31.2	20.4	8.2	19.9	1.8
Probable	292	15.6	14.2	4.1	32.4	19.7	7.4	17.3	1.6
Total	602	16.0	11.9	4.8	31.7	20.1	7.9	18.8	1.7

Note

1. The ore tonnes have been rounded to the nearest 1mt and grades have been rounded to one decimal place.
2. The Ore Reserve is based on indicated and Measured Mineral Resource contained with mine designs above an economic cut-off. The economic cut-off is defined as the value of the products less the cost of processing
3. Mining recovery and dilution have been applied to the figures above.

The JORC Code 2012 Table 1, Section 4 to support the Ore Reserve Estimate is included in Appendix B of the Donald Project Ore Reserve Statement released 18 February 2021. The Ore Reserve estimates have been compiled in accordance with the guidelines defined in the 2012 JORC Code.

Mineral Resources

Astron Corporation last reported the Mineral Resource on 7th April 2016 in accordance with JORC 2012. Below is an exact of the AMC report (AMC 115075) prepared to support the Mineral Resource. The Mineral Resource estimate was reported in accordance with the JORC Code for the heavy minerals (HM) and valuable heavy minerals (VHM) Content for MIN5532 and RL 2002 of the Donald Heavy Mineral Sands Deposit and for RL2003, RLA2006 (since been amalgamated into RL2003) of the Jackson Heavy Mineral Sands Deposit.

The Mineral Resource estimate was reported in accordance with the JORC Code for the heavy minerals (HM) and valuable heavy minerals (VHM) content has been used for the preparation of the Ore Reserve. Only the resource containing valuable heavy minerals (VHM) content has been used for the preparation of the Ore Reserve.

Table 1.2 Mineral Resource at a 1% Cut-off

Classification	Tonnes (mt)	HM (%)	Slimes (%)	Oversize (%)
Within ML5532				
Measured	372	4.5	14.4	12.8
Indicated	75	4.0	13.8	13.1
Inferred	7	3.5	13.5	10.6
Subtotal	454	4.4	14.2	12.8
With RL2002 Outside of ML5532				
Measured	343	3.9	19.8	8.1
Indicated	833	3.3	16.2	13.5
Inferred	1,595	3.3	15.7	6.0
Subtotal	2,771	3.4	16.4	8.5
Total within Donald Deposit (RL2002)				
Measured	715	4.2	17.0	10.6
Indicated	907	3.4	16.0	13.4
Inferred	1,603	3.4	15.7	6.0
Subtotal	3,225	3.6	16.1	9.1
Total within Jackson Deposit (RL2003)				
Measured	0	0.0	0.0	0.0
Indicated	1,903	2.8	19.0	5.8
Inferred	584	2.9	16.7	3.3
Subtotal	2,497	2.9	18.5	5.2
Total Donald Project				
Measured	715	4.3	18.1	11.1
Indicated	2,811	3.0	17.9	8.2
Inferred	2,187	3.3	16.4	5.5
Total	5,712	3.2	16.9	7.3

Note

1. The total tonnes may not equal the sum of the individual resources due to rounding.
2. The cut-off grade is 1% HM.
3. The figures are rounded to the nearest: 10M for tonnes, one decimal for HM, Slimes and Oversize.
4. For further details including JORC Code, 2012 Edition – Table 1 and cross sectional data, see previous announcements dated 7 April 2016, available at ASX's website at:
www.asx.com.au/asxpdf/20160407/pdf/436cjqcg3cf47.pdf

Table 1.3 Mineral Resource where VHM Data is Available at a Cut-off of 1% HM

Classification	Tonnes (mt)	Slimes (%)	Oversize (%)	HM (%)	Ilmenite (%HM)	Leucoxene (%HM)	Rutile (%HM)	Zircon (%HM)	Monazite (%HM)
Within ML5532									
Measured	264	14.2	12.2	5.4	31	22	7	19	2
Indicated	49	13.6	12.1	4.9	33	22	7	20	2
Inferred	5	13.5	10.2	4.2	36	20	7	22	3
Total	317	14.1	12.1	5.3	32	22	7	19	2
Within RL2002 Outside of ML5532									
Measured	185	19.1	7.3	5.5	31	19	9	21	2
Indicated	454	15.9	13.2	4.2	33	19	7	17	2
Inferred	647	15.2	5.8	4.9	33	17	9	18	2
Total	1,286	16.0	8.6	4.8	33	18	8	18	2
Total within Donald Deposit (RL2002)									
Measured	448	16.2	10.2	5.4	31	21	8	20	2
Indicated	503	15.7	13.1	4.3	33	20	7	18	2
Inferred	652	15.2	5.8	4.9	33	17	8	18	2
Total	1,604	15.6	9.3	4.9	32	19	8	18	2
Total within Jackson Deposit (RL2003)									
Measured									
Indicated	668	18.1	5.4	4.9	32	17	9	18	2
Inferred	155	15.1	3.1	4.0	32	15	9	21	2
Total	823	17.6	5.0	4.8	32	17	9	19	2
Total Donald Project									
Measured	448	16.2	10.2	5.4	31	21	8	20	2
Indicated	1,171	17.1	8.7	4.6	32	18	8	18	2
Inferred	807	15.2	5.3	4.7	33	17	9	19	2
Total	2,427	16.3	7.0	4.8	32	18	8	19	2

Note

1. The total tonnes may not equal the sum of the individual resources due to rounding.
2. The cut-off grade is 1% HM.
3. The figures are rounded to the nearest: 1mt for tonnes, one decimal for HM, Slimes and Oversize and whole numbers for zircon, ilmenite, rutile + anatase, leucoxene and monazite.
4. Zircon, ilmenite, rutile + anatase, leucoxene and monazite percentages are report as a percentage of the HM.
5. Rutile + anatase, leucoxene and monazite resource has been estimated using fewer samples than the other valuable heavy minerals. The accuracy and confidence in their estimate is therefore lower.
6. For further details including JORC Code, 2012 Edition – Table 1 and cross sectional data, see previous announcements dated 7 April 2016, available at ASX's website at www.asx.com.au/asxpdf/20160407/pdf/436c1yqcg3cf47.pdf