# **Quarterly Activities Report**

For the quarter ending 31 December 2022



# HIGHLIGHTS

- The key milestone for the quarter an updated Mineral Resource Estimate for the Donald Rare Earths and Mineral Sands Project (Donald Project) mining licence area, MIN5532 was completed.
- The updated Mineral Resource of 525 Mt @ 4.0% total HM corresponds to a 25% increase in in-situ heavy minerals, and a 60% increase in in-situ rare earth minerals.
- A significant xenotime resource, containing the valuable heavy rare earth elements of dysprosium and terbium, was identified in the project area.
- Confirmatory metallurgical test work of mine path bulk samples demonstrated further mineral recovery improvements.
- Recoveries of rare earth minerals, of up to 90.7%, and of zircon, of 94.3% and 99.0% at the WCP and CUP stages respectively, were demonstrated.
- A Memorandum of Understanding was executed with Yarriambiack Shire Council in relation to the proposed development of the Donald Project.
- An Economic Impact Assessment for Phase 1 of the Donald Project shows that the project is expected to contribute \$2.2 billion to the Gross Regional Product of the project area and will create an average annual 536 full-time equivalent employment opportunities in the area.
- The Donald test-pit has been successfully rehabilitated and returned to farming use.

## **Activities Summary**

During the quarter, Astron announced an updated Mineral Resource Estimate (MRE) for the mining licence area, MIN5532, the site for Phase 1 of the Donald Project. The updated MRE is 525 million tonnes (Mt), at a heavy mineral (HM) grade of 4.0% (Table 1). Relative to the 2016 estimate, the in-situ heavy mineral resource estimate increased by 25% to 21 Mt. The mining licence area MIN5532 now constitutes approximately 20% of the Donald Project's total in-situ heavy mineral resource.

The updated MRE also demonstrates a 60% increase in the rare earth minerals resource to 511 thousand tonnes (kt) and a 5% increase in the in-situ zircon resource to 3.4 Mt within MIN5532. The increase in rare earth minerals reflects an 18% increase in the in-situ monazite resource to 378 kt and the addition of a 135 kt xenotime resource. The finalisation of the MIN5532 resource estimate takes the Company one step closer to the completion of Donald Project Phase 1 Feasibility Study (FS).

Confirmatory metallurgical test work for mine path bulk sample materials concluded during the quarter. The metallurgical results demonstrated further improvement in mineral recoveries.

Other major work streams in relation to the Donald Project FS are being progressed. These include a revised mining study, incorporating the updated MRE; final designs of the process plant and tailings handling facilities; and basic design of key infrastructure such as the powerline, the water pipeline, the construction worker accommodation village and road upgrades. An updated Ore Reserves estimate for MIN5532 is scheduled for completion in Q1 2023.

In November, the Company executed an updated Memorandum of Understanding (MOU) with Yarriambiack Shire Council (YSC) in relation to the development of the Donald Project. The MOU provides for Astron and YSC to work cooperatively and collaboratively to maximise mutually beneficial community and economic outcomes from the development and operation of the Donald Project.

During the Quarter, Astron engaged Deloitte Access Economics to conduct an economic impact assessment for Phase 1 of the Donald Project. The report concluded that, over the first 30-years of the Phase 1 project, Donald will generate significant economic impacts for the local project



region and beyond. Phase 1 of the Donald Project is forecast to contribute \$2.2 billion in present value terms to the gross regional product (GRP) of the local area, a 1.8% annual increase relative to baseline forecasts. The study also found that Phase 1 of the Donald Project will provide 150 full time equivalent (FTE) direct employee and contractor opportunities and lead to an increase of 536 FTE employment opportunities in the region on average over project life.

During the quarter, the Company completed the following capital raising activities:

- On 17 October 2022, the Company announced the completion of a \$5 million capital raising to new and existing institutional and sophisticated investors via a \$4 million placement and a \$1 million director loan conversion. The placement was strongly supported by the Directors, who subscribed to \$2.4 million of the placement, and director loan conversion.
- On 18 November, the Company announced it had raised \$891,000 from 70 securityholders, representing 13% of all eligible holders, through the Company's Securities Purchase Plan (SPP).

The funds generated through the capital raising will be used to progress the Feasibility Study.

## **Donald Rare Earth & Mineral Sands Project**

#### Description

The Donald Project is a tier-1 rare earth and mineral sands project located approximately 300 kilometres north-west of Melbourne in regional Victoria. Given its resource size, the Donald Project has the potential to become a globally significant, long-life supply of the rare earth elements neodymium, praseodymium, dysprosium and terbium, plus zirconium and titanium minerals.

The Donald Project comprises the Donald deposit, which is contained within Retention Licence RL2002 (which includes MIN5532), and the Jackson deposit, which is contained within Retention Licence RL 2003. The project tenements cover a total area of 506 km<sup>2</sup>.

#### **Project Configuration**

Due to the size and scale of the resource, Astron plans to develop the Donald Project in a phased manner. Phase 1 is located on the granted Mining Licence MIN5532, which contains 17% of the total Donald Project resource and 20% of the in-situ HM.

During Phase 1, conventional truck and shovel mining will produce 7.5 million tonnes per annum (Mtpa) of ore for delivery to the process plant which will produce a rare earth element concentrate (REEC) product, containing monazite and xenotime minerals, and a valuable heavy mineral concentrate (HMC) product, containing zircon and titanium bearing minerals.

Phase 1 of the Donald Project is the only rare earth or mineral sands project in Victoria that has the benefit of a positively assessed Victorian Government Environmental Effects Statement (EES), a concluded Commonwealth Government Environmental Protection Biodiversity Conservation (EPBC) approval and a granted Mining Licence (MIN5532). In addition, Astron owns water rights which are sufficient to meet the demands of the project for many years and land holdings covering a significant portion of the Phase 1 project area.

Subsequent phases are planned to involve, at a minimum, the doubling of production throughput and an on-site mineral separation plant (MSP) for further processing of the HMC. In addition, consideration will be given to further down-stream product processing, such as synthetic rutile production or rare earth cracking facilities.

#### **Geological Assessment**

On 1 December 2022, Astron announced an updated Mineral Resource Estimate (MRE) for the Mining Licence area MIN5532. The 2022 MRE update is shown in Table 1 below.



## Table 1. Donald Deposit MIN5532 – 2022 Mineral Resource above a 1% total HM cut-off<sup>1</sup>

| Classification | Tonnes | Slimes | Oversize | НМ  | Zircon | Rutile | Leucoxene | Ilmenite | Monazite | Xenotime |
|----------------|--------|--------|----------|-----|--------|--------|-----------|----------|----------|----------|
| Classification | (Mt)   | (%)    | (%)      | (%) | (%HM)  | (%HM)  | (%HM)     | (%HM)    | (%HM)    | (%HM)    |
| Measured       | 394    | 16     | 10       | 4.2 | 16     | 7.4    | 24        | 21       | 1.8      | 0.66     |
| Indicated      | 110    | 24     | 11       | 3.5 | 15     | 5.9    | 18        | 19       | 1.7      | 0.61     |
| Inferred       | 20     | 22     | 14       | 2.3 | 13     | 6.9    | 20        | 19       | 1.4      | 0.55     |
| Total          | 525    | 18     | 10       | 4.0 | 16     | 7.1    | 23        | 21       | 1.8      | 0.65     |

#### Notes:

- 1. Mineralisation reported above a cut-off grade of 1.0% total HM
- 2. The Donald deposit 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, leucoxene, monazite and xenotime) are presented as percentages of the total HM component, as determined from grain counting, QEMSCAN, XRF and Laser Ablation-ICPMS 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 50–95% TiO<sub>2</sub>, ilmenite 30–50% TiO<sub>2</sub>
- 5. A dry density of the LP1, LP2 and LP3 geological sub-units of the Loxton Sand (1.81 t/m<sup>3</sup>, 1.74 t/m<sup>3</sup> and 1.57 t/m<sup>3</sup> respectively
- 6. All tonnages and grades have been rounded to reflect the relative uncertainty of the estimate, thus sum of columns may not equal

The revised MRE is based on a 245 Reverse-Circulation Air Core (RCAC) drillhole programme which was completed in March 2022 and covered 97% of the area of MIN5532. Analysis, which included assaying, sizing, heavy liquid separation (HLS) and mineralogy, was completed in October 2022. The MRE is classified and reported in accordance with the guidelines of the JORC Code (2012 edition).

The March 2022 drilling and sampling programme was designed to estimate the valuable heavy minerals (VHM) resource within the known mineralisation of MIN5532 which had not been previously analysed for specific valuable heavy minerals, using a 1% HM cut-off. The programme also included analysis for xenotime, which had not been previously sampled, and estimation of the 20 to 38 micron ( $\mu$ m) HM size fraction of the resource which is known to contain rare earth minerals and zircon and has been shown to be recoverable using current processing technology.

The previous MRE was determined in 2016. A comparison of the 2022 MRE for MIN5532 with the 2016 MRE is shown in Table 2. The key features include:

- The total Mineral Resource has increased by 66% to 525Mt
- The total in-situ heavy mineral resource has increased by 25% to 21Mt.
- The in-situ valuable mineral resources have increased as follows:
  - o zircon by 5% to 3.4Mt,
  - o monazite by 18% to 376kt, and
  - o a 3% increase in the titanium minerals.
- An in-situ xenotime resource of 136kt has been added.

<sup>&</sup>lt;sup>1</sup> For Mineral Resource Estimate JORC Table 1 section 1 and section 2, refer to ASX announcement, 'Donald Rare Earth & Mineral Sands Project – Mineral Licence Mineral Resource Update', 1 Dec 2022



# Table 2: Comparison of 2016 and 2022 Mineral Resources within MIN5532 and the VHM domain reported above 1% HM

| 2016 Mineral Resource within MIN5532 and VHM domain |        |       |         |            |         |                 |              |           |          |  |  |  |
|---|--------|-------|---------|------------|---------|-----------------|--------------|-----------|----------|--|--|--|
| Classification                                      | Tonnes | Total | Slimes  | Oversize   |         | 9               | 6 of total H | м         |          |  |  |  |
| Classification                                      | (Mt)   | HM %  | %       | %          | Zircon  | Rutile/Anatase  | Ilmenite     | Leucoxene | Monazite |  |  |  |
| Measured  | 264    | 5.4   | 14      | 12         | 18.7    | 7.0             | 31.3         | 22.3      | 1.8      |  |  |  |
| Indicated   | 49     | 4.9   | 14      | 12         | 20.3    | 7.1             | 33.3         | 21.7      | 2.0      |  |  |  |
| Inferred  | 5      | 4.2   | 14      | 11         | 22.0    | 7.2             | 35.8         | 19.5      | 2.7      |  |  |  |
| Total   | 317    | 5.3   | 14      | 12         | 19.0    | 7.1             | 31.7         | 22.1      | 1.9      |  |  |  |
| 2022 Mineral Resource within MIN5532                |        |       |         |            |         |                 |              |           |          |  |  |  |
|   | Tonnes | Total | Slimes  | Oversize   |         | 9               | 6 of total H | м         |          |  |  |  |
| Classification                                      | (Mt)   | HM %  | %       | %          | Zircon  | Rutile          | Ilmenite     | Leucoxene | Monazite |  |  |  |
| Measured  | 394    | 4.2   | 16      | 10         | 16.3    | 7.4             | 21.0         | 23.6      | 1.8      |  |  |  |
| Indicated   | 110    | 3.5   | 24      | 11         | 14.8    | 5.9             | 19.2         | 18.2      | 1.7      |  |  |  |
| Inferred  | 20     | 2.3   | 22      | 14         | 13.2    | 6.9             | 19.4         | 19.6      | 1.4      |  |  |  |
| Total   | 525    | 4.0   | 18      | 10         | 16.0    | 7.1             | 20.6         | 22.5      | 1.8      |  |  |  |
|   |        |       | % Diffe | rence in 2 | 022 MRE | with 2016 MRE R | esults       |           |          |  |  |  |
| Measured  | 49%    | 17%   | 64%     | 23%        | 2%      | 24%             | -22%         | 24%       | 18%      |  |  |  |
| Indicated   | 125%   | 59%   | 294%    | 103%       | 16%     | 33%             | -8%          | 34%       | 37%      |  |  |  |
| Inferred  | 300%   | 122%  | 560%    | 429%       | 34%     | 114%            | 20%          | 123%      | 17%      |  |  |  |
| Total   | 66%    | 25%   | 106%    | 42%        | 5%      | 26%             | -19%         | 27%       | 18%      |  |  |  |

A summary table of the contained Mineral Resources for the entire Donald Project area following the 2022 MRE update for MIN5532 is shown in Table 3.

| Table 3.            | Contained | Mineral | Resources | within | the | VHM | domain | reported | above | 1% | ΗМ |
|---------------------|-----------|---------|-----------|--------|-----|-----|--------|----------|-------|----|----|
| (2022) <sup>2</sup> |           |         |           |        |     |     |        |          |       |    |    |

| Pasauraa             | Tonnes | Slimes | Oversize | НМ  | Zircon | Rutile | Leucoxene | Ilmenite | Monazite | Xenotime |
|----------------------|--------|--------|----------|-----|--------|--------|-----------|----------|----------|----------|
| Resource             | (Mt)   | (%)    | (%)      | (%) | (%HM)  | (%HM)  | (%HM)     | (%HM)    | (%HM)    | (%HM)    |
| MIN 5532             | 525    | 18     | 10       | 4.0 | 16     | 7      | 23        | 21       | 1.8      | 0.65     |
| RL 2002 <sup>1</sup> | 1,286  | 16     | 9        | 4.8 | 18     | 8      | 18        | 33       | 2.0      | N/A      |
| RL 2003              | 823    | 17     | 5        | 4.8 | 19     | 9      | 17        | 32       | 2.0      | N/A      |
| Total                | 2,634  | 17     | 8        | 4.6 | 18     | 8      | 18        | 31       | 2.0      | N/A      |

Note: for detailed breakdown of contained Mineral Resources see Appendix A Table B.

1. For the purposes of Table 3, RL2002 refers to the area of RL2002 excluding MIN5532

# **Mining Studies**

The completion of the 2022 MRE provided the foundation for the next stage of mining study development. During the quarter, Astron evaluated a number of cut-off grade options to optimise project economic performance against the payback period. The current phase of the mining study will include a 'first-principles' build up mining costs that will be incorporated into the feasibility study.

An updated Phase 1 project Ore Reserve for MIN5532 is expected to be completed in Q1 2023, following the conclusion of the current phase of the mining study.

# **Tailings Management**

ATC Williams commenced test-work of the material properties of the deposit's Loxton-Parilla 1 (LP1) and Loxton Parilla 2 (LP2) sand formations to determine their tailings characteristics. During the quarter, the preliminary designs of the above-ground tailings storage facility were completed. The next stage of design for the tailings storage facility and in-pit tailings management are underway. These will be incorporated into the feasibility study.

<sup>&</sup>lt;sup>2</sup> The table includes corrections to typographical errors included in Table 3 of the ASX Announcement, "Donald Rare Earth & Mineral Sands Project – Mineral Licence Mineral Resource Update', 1 December 2022



## **Metallurgical Studies**

In Q2 2022, Astron conducted a 27-hole sonic drilling programme over portion of MIN5532. The objectives included refinement of bulk density determinations, for the purposes of mine planning, and preparation of mine path bulk samples for the purposes of confirmatory process metallurgical studies.

An 8.5 tonne bulk sample, which was split into three sections reflecting the planned Phase 1 mine path for mine-year 1, mine-years 2-5, and mine-years 6 and beyond, was provided to Minerals Technologies for metallurgical testing. Each sample was screened and processed through MG-12 spirals to produce a combined heavy mineral concentrate (HMC). The HMC sample was subsequently processed, in accordance with the process flowsheet, through froth flotation to produce a valuable heavy mineral concentrate (VHMC) bulk sample containing zircon and titanium feedstock minerals, and a rare earth element concentrate (REEC) bulk sample, containing xenotime and monazite.

This test work confirmed the Donald Project processing approach and delivered some improvements to recoveries. Recoveries of the rare earth minerals (using CeO2 as a tracer) through the wet concentrator (WCP) and concentrate upgrade plant (CUP) were 94.5% and 96.5% respectively. The improvement in recoveries was the result of better attrition which will be incorporated into the plant engineering designs. Recoveries of zircon and titanium minerals to the HMC also saw a marked increase, with ZrO2 recoveries through the WCP and CUP at 94.3% and 99.0% respectively, and  $T_iO_2$  recoveries at 70.7% and 99.2% respectively.

The metallurgical test work was successful in confirming the viability of the current flowsheet and provided information that will be used to enhance plant design and performance. The test work also produced product samples which will be provided to customers for the purposes of advancing off-take discussions.

## **Process Plant Engineering**

Mineral Technologies commenced Definitive Feasibility Study level engineering for the Donald process plant during the quarter. Work is expected to conclude in Q1 2023, with capital expenditure and operating expenditure estimates to be incorporated into the feasibility study.

#### Infrastructure Design

Basic design work for project infrastructure continues to progress. A preliminary route for the 66kV over-head powerline from Horsham sub-station to the mine-site has been selected; detailed design will commence during Q1 2023. Road upgrade and water pipeline designs are also progressing.

In Q4 2022, Astron appointed consultants to assist with basic layout for the construction worker accommodation village.

#### **Regulatory Approvals**

The key regulatory approval remaining for the Donald Project is the Victorian Work Plan. Work streams to progress the Work Plan are advanced and regulatory personnel visited the mine-site during the Quarter. Technical studies and test-work required for the Mining Work Plan were also advanced; these included further groundwater modelling, surface water management design, and radiation management studies.

Astron is on track to submit the mining Work Plan to Victorian government authorities in mid-2023.



#### Economic Impact Assessment

Astron commissioned Deloitte Access Economics to conduct an economic impact assessment (EIA) of Phase 1 of the Donald Project and evaluate the project's economic impact at both the project area level as well at the State of Victoria level. It concluded that Phase I offers significant benefits at the project and state levels and presents a clear opportunity to develop Australia's capability in rare earths and critical minerals in alignment with Australian government's *Critical Minerals Strategy*.<sup>3</sup>



As the Project will be developed in regional Victoria, it is expected to contribute to increased economic activity and employment in the region, promoting jobs and economic growth. The Donald Project provides an opportunity to support Government objectives of transforming the Wimmera Region of Victoria into a critical minerals hub.

The study estimated the economic impact of the Donald Project on the local and the state economies using Deloitte Access Economics' computable general equilibrium (CGE) modelling framework. CGE modelling is the best practice methodology for estimating the economic impact of a project across the economy, and the preferred method for most major Commonwealth and State Government agencies.

In Victoria, Donald Phase 1 is estimated to deliver \$1.7 billion in additional Gross State Product (GSP). The contribution to the state economy is less than that on the local area due to the 'crowding out' effect, where factors of production will be reallocated from other parts of the state to the Project Area to support the development and operations of the Donald Project. However, the overall project is expected to contribute significantly to the state economy, at an average GSP increase of \$142 million per year, or an average annual increase of 0.02% to the GSP.

The impact on the local economy is measured through the impact of the project on the Project Area. The Project Area is defined as the (ABS Statistical Area 3) regions of Maryborough-Pyrenees, Loddon-Elmore, Murray River-Swan Hill and Grampians. The results indicate that the Donald Project has the potential to deliver a significant increase to economic activity and provide additional employment opportunities for residents of the Project Area, while diversifying local economic opportunities. Donald Phase 1 is expected to present a \$2.2 billion value change in the Gross Regional Product (GRP) of the Project area, reflecting a 1.8% per annum additional increase of GRP to the base case. Donald is also estimated to support an additional 536 full-time equivalent (FTE) employment opportunities in the Project Area, on average, over the 30 year evaluation period.

<sup>&</sup>lt;sup>3</sup> Australian Government Department of Industry, Science, Energy, and Resources, 2022 Critical Minerals Strategy, <u>https://www.industry.gov.au/sites/default/files/2022-09/2022-critical-minerals-strategy\_0.pdf</u>



## **Community Engagement**

The Donald Project Phase 1 is primarily located in the Yarriambiack Shire in Western Victoria. During the quarter, Astron executed an updated Memorandum of Understanding (MOU) with the Yarriambiack Shire Council (YSC). The MOU provides for Astron and YSC to work co-operatively and collaboratively to maximise mutually beneficial community and economic outcomes from the development and operation of the Donald Project. A signing ceremony was held at the Shire's Council Chambers in Warracknabeal in November.



Astron Chairman Mr George Lloyd and Managing Director Mr Tiger Brown signing the MOU with Yarriambiack Shire Council Mayor Cr Kylie Zanker (centre) and Chief Executive Officer Ms Tammy Smith (right)

Ongoing Community Engagement included the second meeting of the DMS Community Reference Group, one-on-one meetings with landowners, and a site visit by representatives of government agencies responsible for further approvals.



Representatives of approval authorities inspecting the proposed transport route for the Donald Project during the November 2022 site visit.



# Donald Project Test-pit Site Rehabilitation

Astron developed a test mine pit for the purpose of recovering a 1,000-tonne bulk sample. The test-pit site was rehabilitated in 2019. In 2022, the test-pit area was sown to barley and crop growth was independently monitored. The monitoring has shown crop yields at the same levels as in the surrounding area, validating the success of the approach taken to site rehabilitation.



The area including the Donald Project test-pit, located on RL2002, having been fully rehabilitated and returned to farmland. The area demonstrated favourable yields during the 2022 harvest.

#### **Customer Engagement**

Engagement with potential customers for off-take arrangements are on-going. During the quarter, the Astron team provided samples of Donald's rare earth element concentrate (REEC) product to a number of rare earth processors to determine suitability for their proposed separation processes. The high xenotime assemblage of the Donald rare earth elements, and the associated higher concentrations of dysprosium and terbium, makes the Donald REEC an attractive product when compared to typical monazite feedstocks.

Heavy mineral concentrate product samples were supplied to mineral separation processors in China and Southeast Asia for the purposes of advancing off-take arrangements.

The Company is engaged in discussions with several parties in relation to offtake of its HMC and REEC products and is planning to execute a number of agreements by Q3 2023.

#### **Financial Analysis**

All work streams contributing to the feasibility study will be completed and the results compiled by the end of Q1 2023. The Feasibility Study report will be released to shareholders during Q2 and. will include revised Mineral Resources and Ore Reserves estimates for MIN 5532.

#### Expenditure Summary

No commercial production was recorded during the quarter.

| Expenditure Summary (\$) | Q4 2022 | YTD 2023  |
|--------------------------|---------|-----------|
| Production activities    | -       | -         |
| Development activities   | 739,912 | 2,686,932 |
|                          |         |           |

Note: the development activities expenditure includes procurement, design and consulting.



# **Niafarang Mineral Sands Project**

#### Description

The Niafarang Project is located within a 397 square kilometres exploration licence on the Casamance coast of Senegal, West Africa. Astron owns a licence issued under Order Number 09042/MIM/TMG through its subsidiary company, Senegal Mineral Resources (SMR). Environmental and mining licences were granted to SMR in 2017 and a Small Mining Licence (SML), expiring on 30 May 2022, was granted in 2017. A mining licence renewal application was submitted to the Senegal Mines Department on 30 March 2022, within the prescribed re-application time frame. Astron is continuing to work with the relevant authorities for the renewal of the Mining Licence.

#### Engineering & Design

The Niafarang project design criteria remain unchanged from its earlier 2012 concept. Opportunities for further improvement of existing processes have been identified. However, work to evaluate these opportunities is on hold pending the Mining Licence renewal.

#### Stakeholder & Community Consultation

Engagement programmes with local, regional and federal government representatives are continuing. During the quarter, a select number of local chiefs visited SMR in Dakar. A meeting seeking to advance the project was scheduled to be held with local stakeholders in Zuiguichor at the direction of the Minister of Mines. However, this meeting was delayed due to a local election and ceremonial festivals.

Localised support is evolving with youth delegations and youth groups seeking career opportunities through engaging with SMR. The company is committed to supporting sustainable development objectives within the project area.

#### Expenditure Summary

No commercial production was recorded during the quarter.

| Expenditure Summary (\$) | Q4 2022 | YTD 2023 |
|--------------------------|---------|----------|
| Production activities    | -       | -        |
| Development activities   | 42,149  | 100,389  |

Note: the development activities expenditure includes procurement, design and consulting.



# **Chinese Operations**

#### Description

In Yingkou, Liaoning, the company operates a mineral separation plant with 150,000 tonnes per year capacity. The company has production and intellectual property capabilities in a range of minerals processing areas including the production of pure, hafnium-free zirconia; a method for reducing various impurities in zircon; fine rutile recovery and agglomeration; and the production of nuclear grade zirconium and zirconium oxychloride.

The Yingkou mineral separation plant currently undertakes two main commercial operations. These are the processing of mineral concentrates and various middlings (including zircon middlings and rutile middlings) to final products of zircon and rutile, as well as the use of speciality agglomeration technology to produce pelletised rutile from fine rutile feedstocks and chloride slag fines products.

#### **Operations Update**

China production was low for the reporting period. Efforts were made to further recover  $T_iO_2$  from middlings and tailings into rutile and discussions were undertaken with potential feedstock suppliers. Preventative maintenance, training and development programmes, making use of the time available due to the lower operational throughput, were priorities for the period. Pilot trials and metallurgical performance testing were conducted on a number of selected feedstock samples at the company's laboratory facility in Yingkou.

#### Production

| Product        | Q4 2022 | YTD 2023 |
|----------------|---------|----------|
|                |         |          |
| Rutile Agg.    | -       | 231      |
| Rutile         | 644     | 1,188    |
| Premium Zircon | -       | -        |
| Zircon - Other | -       | 362      |

#### **ASX Additional Information**

ASX listing rule 5.3.5 – Payment to related parties of the entity and their associates as per Appendix 5B, Section 6.1 – Description of payments:

Total Directors remuneration for the quarter - \$161,255 (includes superannuation)

This announcement is authorised by the Managing Director of Astron Corporation Limited.

#### For further information, contact:

Tiger Brown, Managing Director +61 3 5385 7088 tiger.brown@astronlimited.com

Joshua Theunissen, Australian Company Secretary +61 3 5385 7088 joshua.theunissen@astronlimited.com



## 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 Rare Earth and zircon assemblage Donald Mineral Sands Project in regional Victoria. Donald has the ability to represent a new major source of global supply in rare earths and mineral sands. The company conducts a mineral sands trading operation based in Shenyang, China; operates a zircon and titanium chemicals and metals research and facility in Yingkou, China; and is the owner of the Niafarang Mineral Sands Project in Senegal.

#### **Competent Persons Statement**

The information in this report that relates to Exploration Results, Mineral Resources and Ore Reserves for the Donald Mineral Sands and Rare Earth 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 report that relates to the MIN5532 Mineral Resource estimate is based on information and supporting documentation compiled by Mrs Christine Standing, a Competent Person who is a Member of the Australasian Institute of Mining and Metallurgy and the Australian Institute of Geoscientists. Mrs Standing is a full-time employee of Optiro Pty Ltd (Snowden Optiro) and is independent of Astron Corporation, the owner of the Mineral Resources. Mrs Standing has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mrs Standing consents to the inclusion in the report of the matters based on her information in the form and context in which it appears.

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

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



| Schedule 1: Donald Mineral Sands and Rare Earth Project Interests in Tenen | nents |
|--|-------|
|--|-------|

| Location           | Tenement | % held | Holder                       |
|--------------------|----------|--------|------------------------------|
| Victoria Australia | RL 2002  | 100    | Donald Mineral Sands Pty Ltd |
| Victoria Australia | RL 2003  | 100    | Donald Mineral Sands Pty Ltd |
| Victoria Australia | MIN5532  | 100    | Donald Mineral Sands Pty Ltd |
| Victoria Australia | EL5186   | 100    | Donald Mineral Sands Pty Ltd |



# Figure 1: Donald Project Tenements map



# Schedule 2 – Donald Rare Earths & Mineral Sands Project Mineral Resources

Astron Corporation previously reported the Mineral Resource on 7<sup>th</sup> April 2016 in accordance with JORC 2012. 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 deposit and for RL2003, RLA2006 (since been amalgamated into RL2003) of the Jackson 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.

Mineral resources only using heavy liquid separation analysis estimated tonnes, HM, slimes and oversize were estimated in 2016 using a 1% total HM cut-off grade by AMC as shown in Table A below.

| Classification         | Tonnes          | НМ  | Slimes | Oversize |
|------------------------|-----------------|-----|--------|----------|
|                        | (Mt)            | (%) | (%)    | (%)      |
| Within 5532            |                 |     |        |          |
| Measured               | 394             | 4.2 | 15.5   | 10.1     |
| Indicated              | 110             | 3.5 | 23.8   | 10.9     |
| Inferred               | 20              | 2.3 | 22.3   | 13.9     |
| Subtotal               | 525             | 4.0 | 17.5   | 10.4     |
| Within RL2002 outside  | of MIN5532      |     |        |          |
| 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 De | posit (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 D | eposit (RL2003) |     |        |          |
| Measured               | -               | -   | -      | -        |
| Indicated              | 1,903           | 2.8 | 19.0   | 5.8      |
| Inferred               | 584             | 2.9 | 16.7   | 3.3      |
| Subtotal               | 2,487           | 2.9 | 18.5   | 5.2      |
| Total Donald Project   |                 |     |        |          |
| Measured               | 737             | 4.1 | 17.8   | 9.1      |
| Indicated              | 2,846           | 3.0 | 18.4   | 8.3      |
| Inferred               | 2,199           | 3.2 | 16.0   | 5.4      |
| Total                  | 5,783           | 3.2 | 17.4   | 7.2      |

#### Table A: Mineral Resource (HM) at a 1% cut-off<sup>4</sup>

Notes:

1. MRE is based on heavy liquid separation (HLS) analysis only.

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: 10M for tonnes, one decimal for HM, Slimes and Oversize.

5. 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

6. www.asx.com.au/asxpdf/20160407/pdf/436cjyqcg3cf47.pdf

<sup>&</sup>lt;sup>4</sup> The table includes corrections to typographical errors included in Table 3 of the ASX Announcement, "Donald Rare Earth & Mineral Sands Project – Mineral Licence Mineral Resource Update', 1 December 2022



The 2022 MIN5532 Mineral Resources are shown in Table B. They are combined with the 2016 Mineral Resource estimates using VHM data to update the total Donald Project Mineral Resources shown in Table B.

|                  |                |           |               |                 |        |                    | %        | of total HM |          |          |  |  |  |  |
|------------------|----------------|-----------|---------------|-----------------|--------|--------------------|----------|-------------|----------|----------|--|--|--|--|
| Classification   | Tonnes<br>(Mt) | HM<br>(%) | Slimes<br>(%) | Oversize<br>(%) | Zircon | Rutile/<br>Anatase | Ilmenite | Leucoxene   | Monazite | Xenotime |  |  |  |  |
| Within 5532      |                |           |               |                 |        |                    |          |             |          |          |  |  |  |  |
| Measured         | 394            | 4.2       | 16            | 10              | 16     | 7.4                | 21       | 24          | 1.8      | 0.66     |  |  |  |  |
| Indicated        | 110            | 3.5       | 24            | 11              | 15     | 5.9                | 19       | 18          | 1.7      | 0.61     |  |  |  |  |
| Inferred         | 20             | 2.3       | 22            | 14              | 13     | 6.9                | 19       | 20          | 1.4      | 0.55     |  |  |  |  |
| Subtotal         | 525            | 4.0       | 18            | 10              | 16     | 7.1                | 21       | 23          | 1.8      | 0.65     |  |  |  |  |
| Within RL2002 c  | outside of MIN | 15532     |               |                 |        |                    |          |             |          |          |  |  |  |  |
| 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        |          |  |  |  |  |
| Total within Don | ald Deposit (  | RL2002)   |               |                 |        |                    |          |             |          |          |  |  |  |  |
| Measured         | 579            | 4.6       | 17            | 9               | 18     | 8.0                | 25       | 22          | 1.9      |          |  |  |  |  |
| Indicated        | 564            | 4.1       | 17            | 13              | 17     | 6.8                | 31       | 19          | 2.0      |          |  |  |  |  |
| Inferred         | 667            | 4.8       | 15            | 6               | 18     | 9.0                | 33       | 17          | 2.0      |          |  |  |  |  |
| Subtotal         | 1,811          | 4.6       | 16            | 9               | 18     | 7.8                | 30       | 19          | 1.9      |          |  |  |  |  |
| Total within Jac | kson Deposit   | (RL2003)  |               |                 |        |                    |          |             |          |          |  |  |  |  |
| Measured         | -              | -         | -             | -               | -      | -                  | -        | -           | -        |          |  |  |  |  |
| Indicated        | 668            | 4.9       | 18.1          | 5.4             | 18     | 9                  | 32       | 17          | 2        |          |  |  |  |  |
| Inferred         | 155            | 4.0       | 15.1          | 3.1             | 21     | 9                  | 32       | 15          | 2        |          |  |  |  |  |
| Subtotal         | 823            | 4.8       | 17.6          | 5.0             | 19     | 9                  | 32       | 17          | 2        |          |  |  |  |  |
| Total Donald Pro | oject          |           |               |                 |        |                    |          |             |          |          |  |  |  |  |
| Measured         | 579            | 4.6       | 17            | 9               | 18     | 8.0                | 25       | 22          | 1.9      |          |  |  |  |  |
| Indicated        | 1,232          | 4.5       | 18            | 9               | 17     | 8.1                | 31       | 18          | 2.0      |          |  |  |  |  |
| Inferred         | 822            | 4.7       | 15            | 5               | 18     | 9.0                | 33       | 17          | 2.0      |          |  |  |  |  |
| Total            | 2,634          | 4.6       | 17            | 8               | 18     | 8.2                | 31       | 18          | 2.0      |          |  |  |  |  |

#### Table B: Mineral Resource (HM) where VHM Data is available as at a cut-off of 1% HM

#### Notes

1. MRE is based on heavy liquid separation analysis and where valuable heavy minerals (VHM) have been determined.

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, rutile + anatase, monazite and whole numbers for slimes, oversize, zircon, ilmenite, leucoxene, leucoxene, monazite and two decimals for xenotime.

- 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.

 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/436cjygcg3cf47.pdf



# Schedule 3 – Donald Rare Earths & Mineral Sands Project 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.

|                   |                |           |               |                 | % of total HM |                    |          |           |          |
|-------------------|----------------|-----------|---------------|-----------------|---------------|--------------------|----------|-----------|----------|
| Classification    | Tonnes<br>(Mt) | HM<br>(%) | Slimes<br>(%) | Oversize<br>(%) | Zircon        | Rutile/<br>Anatase | Ilmenite | Leucoxene | Monazite |
| Within MIN 5532   |                |           |               |                 |               |                    |          |           |          |
| Proved            | 170            | 5.3       | 14            | 12              | 19            | 7.1                | 31       | 22        | 1.9      |
| Probable          | 24             | 4.9       | 13            | 12              | 20            | 6.7                | 33       | 21        | 2.0      |
| Total             | 194            | 5.3       | 14            | 12              | 19            | 7.0                | 32       | 22        | 1.9      |
| Within RL2002 ou  | utside of MIN  | 15532     |               |                 |               |                    |          |           |          |
| Proved            | 140            | 5.6       | 19            | 7               | 21            | 9.6                | 31       | 18        | 1.8      |
| Probable          | 268            | 4.0       | 16            | 14              | 17            | 7.5                | 32       | 19        | 1.6      |
| Total             | 408            | 4.5       | 17            | 12              | 19            | 8.4                | 32       | 19        | 1.8      |
| Total within Dona | ald Deposit (  | MIN5532 & | RL2002)       |                 |               |                    |          |           |          |
| Proved            | 310            | 5.4       | 16            | 10              | 20            | 8.2                | 31       | 20        | 1.8      |
| Probable          | 292            | 4.1       | 16            | 14              | 17            | 7.4                | 32       | 20        | 1.6      |
| Total             | 602            | 4.8       | 16            | 12              | 19            | 7.9                | 32       | 20        | 1.7      |

#### Table C: Ore Reserves for MIN 5532 and RL 2002 at February 2021

Notes

1. The ore tonnes have been rounded to the nearest 1mt and grades have been rounded to two significant figures.

 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.