ASX ANNOUNCEMENT

NOLANS PROJECT UPDATE

11 November 2022

- **Nolans NdPr Project is one of the only advanced ore to oxide projects of scale in the western world.**
- **Improved economics of the Project confirmed**
- **Base Case pricing scenario includes an average LOM NdPr pricing of US$130 per kg:**
  - **NPV_8 of A$2.4 billion (increase of 68%), IRR of 19.3%**
  - **Average EBITDA of A$573m (increase of 62%) over LOM of 38 years**
- **Upside Case pricing scenario includes an average LOM NdPr pricing of US$190 per kg:**
  - **NPV_8 of A$4.2 billion (increase of 198%), IRR of 24.1%**
  - **Average EBITDA of A$912m (increase of 158%) over LOM of 38 years**
- **Project pre-production capital cost estimated at A$1,394m plus A$196m contingency (representing 14%)**
- **Binding sales agreement with Hyundai and Kia validates Arafura's offtake strategy**
- **Excellent foundation for project financing, including debt process with Mandated Lead Arrangers Société Générale and National Australia Bank**
- **Strategic investor engagement continues with strong indicative demand**
- **Planning on track for long lead procurement and construction in early 2023**

ARAFURA'S SUSTAINABILITY GOAL

"Our goal is to be a trusted global leader and supplier of choice for sustainably mined and processed rare earth products, helping our customers deliver clean and efficient technologies. We are committed to delivering positive intergenerational economic, environmental and social benefits to our stakeholders."

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NdPr

NOLANS PROJECT UPDATE

Arafura Rare Earths Limited (**ASX: ARU**) (**"Arafura"** or the "**Company**") is pleased to provide a Project Update for its 100%-owned Nolans Neodymium-Praseodymium (NdPr) Project (**Nolans**) in the Northern Territory.

This update follows the recent execution of a binding offtake agreement with Hyundai Motor Company and Kia Corporation (*refer ASX Announcement dated 7 November 2022*) and strong progress with other prospective offtake partners, including GE Renewable Energy (*refer ASX announcement dated 12 July 2022).* This announcement also outlines the ongoing positive progress on project financing and updates the findings of the 2021 Feasibility Study Update (*refer ASX dated announcement 11 May 2021*).

Summary Project and Financial Information

Key project information and financial metrics from the Nolans Project Update are as follows:

Key Project Information		
Mining and Production		
Mine Life (years)	38	
NdPr Oxide (tpa)	4,440	
SEG/HRE Oxide (tpa)	474	
Phosphoric Acid (tpa 54% P_2O_5 MGA)	144,393	
Product Pricing		
US$/kg NdPr Oxide price – offtake period	125.50	
US$/kg NdPr Oxide price – LOM	130.10	
Financial	**US$**	**A$**
Capital Cost		
Pre-production Capital ($m)	995	1,394
Contingency ($m)	140	196
Total ($m)	1,135	1,590
Revenue		
Rare Earth Sales Revenue ($m/annum)	587	822
Phosphoric Acid Sales Revenue ($m/annum)	65	91
Operating Costs		
Mining Costs ($m/annum)	(31)	(44)
Processing Costs ($m/annum)	(138)	(193)
General and Administration Costs ($m/annum)	(26)	(36)
EBITDA ($m/annum)	409	573
KPI Analysis	**US$**	**A$**
Operating Cost $/kg NdPr	43.95	61.60
Operating Cost $/kg NdPr net of P_2O_5 credit	34.64	48.52
NPV_8 after tax ($m)	1,693	2,358
IRR after tax (%)	19.3%	

Note: Numbers may not compute because of rounding. Product prices during the offtake period refer to the first seven years of production when offtake agreements will include discounts and other contract mechanisms put in place to underpin project finance for up to approximately 85% of NdPr oxide production with averages calculated as the weighted average over the specified period. Average revenue, costs and EBITDA are calculated as the arithmetic annual average following the anticipated two year ramp up period and excluding the final years of production from low grade stockpiles.

Arafura Managing Director Gavin Lockyer said: "*This Update re-confirms Nolans as an exceptionally valuable world-class NdPr rare earths project, with the capacity to deliver strong financial returns over an initial long mine life of 38 years. With NdPr offtake progress at the binding contract stage and the opportunity for strategic investment, particularly from quality partners such as the Hyundai Motor Company, we anticipate that project financing will continue to gain momentum.*"

"*The Nolans NdPr Project is one of the only construction ready rare earth oxide projects of scale in the western world. The significant size of the Nolans deposit provides customers with improved security of supply for critical raw materials. Our "Ore to Oxide" process at a single site provides comfort that the product is being derived from processes aligned with those customers' ESG priorities. Forecast long-term sustained demand growth for NdFeB magnets, required to support the manufacture of electric vehicles and wind turbines, is being driven by global commitment to a net zero future. Also, given the lack of alternative NdPr sources outside of China, there is the rising imperative for nations to secure sustainable diverse supply chains. This market environment provides a supportive platform which positions Arafura as the next global rare earth oxide producer and the immediate impetus to move ahead with greater confidence than ever before.*"

Project Activities Ongoing

In parallel with offtake and funding activities, the Company has completed significant work to finalise the project definition and provide cost certainty of project outcomes, including:

- Front-end engineering and design (**FEED**) works on the hydrometallurgical plant with Hatch appointed in August 2021 (*refer ASX announcement dated 30 August 2021*), together with significant equipment procurement and pre-payments for certified vendor data.
- Tendering of the hydrometallurgical plant construction contract to two Tier One Australian construction contractors.
- Completion of updated beneficiation engineering study by GR Engineering Services.
- Tendering and FEED engineering for the sulphuric acid plant.
- Significant progress on the design of the non-process infrastructure (**NPI**) including earthworks, village, and borefields, followed by tendering of key contracts associated with early works construction activities.
- Tendering of key operational contracts, including power station, operational logistics and village operations, ready for execution.
- Continuation of minor metallurgical test work to support the detailed design.
- Finalisation and submission of the Project's Mine Management Plan for approval of the Authority to Mine from the Northern Territory Government.

The updated cost estimates and financial outcomes reported in this announcement, which are based on the previously announced Mineral Resources, Ore Reserves, and production scheduling (*refer ASX announcement dated 11 May 2021*), will now form the basis of discussions to finalise funding for Nolans, with Arafura targeting long-lead equipment procurement in early 2023, Final Investment Decision (**FID**) in March 2023 and Financial Close in mid-2023.

Next Steps

During November, SRK Consulting Limited, who were appointed to complete an independent technical review and provide input to the financier's due diligence (*refer ASX announcement dated 20 January 2022*), provided the mandated lead debt arrangers, Société Générale and National Australia Bank, with their report. This report, together with the economic modelling of the project, allows lenders to assess the credit worthiness of the project and the quantum of debt it can sustain. The Company has confidence in its risk assessment process given no new material risks have been identified in the report that were previously unanticipated by the Company as part of its risk review and mitigation process. These updated costings will now be incorporated into the Project Financing process.

Further detail on the Project Update follows this announcement.

-ENDS-

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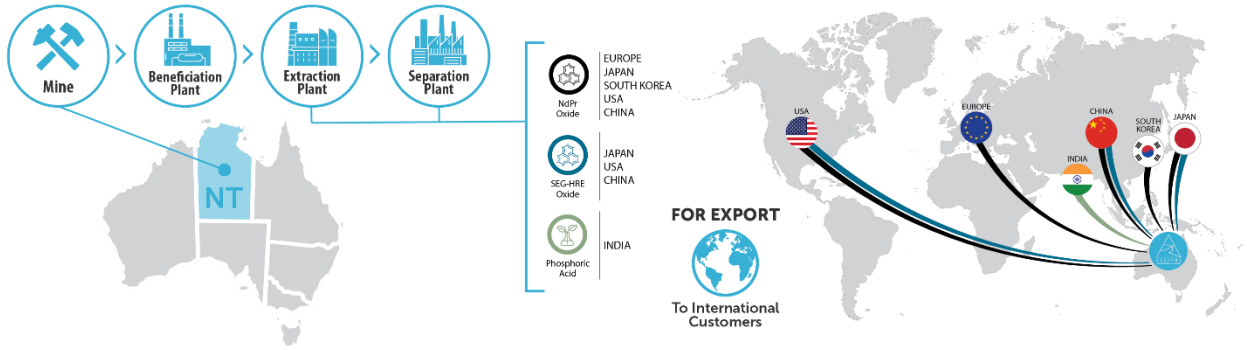
PROJECT SCOPE

The Nolans Project will encompass a mine, process plant (comprising beneficiation, extraction, and separation plants) with related infrastructure, to be constructed and located at the Nolans site, 135 kilometres north of Alice Springs in Australia's Northern Territory. The Project is underpinned by low-risk Mineral Resources that have the potential to supply a significant proportion of the world's NdPr demand. It is a globally significant and strategic NdPr project which, once developed, will become a major supplier of these critical minerals to the high-performance NdFeB permanent magnet market. That market is a key factor in driving the move to net zero greenhouse gas emissions, particularly through electric vehicles and wind power.

The Project will benefit from its Australian base and its proximity to transport, water, and energy infrastructure.

Figure 1: Offtake Strategy



ENVIRONMENT

The Nolans Project has been subject to Northern Territory and Australian environmental assessment processes administered by the Northern Territory Environment Protection Authority (**NT EPA**) and the Australian Government Department of the Environment and Energy (**DoEE**). The Company received environmental approval from the NT EPA in 2017 *(refer to ASX announcement dated 5 January 2018)* and from the DoEE in 2018 *(refer to ASX announcement dated 14 May 2018)*. These rigorous and lengthy processes included an assessment of the Company's ability to manage mine waste and process plant residues, as well as its capacity to progressively rehabilitate the site. This commitment has been fully costed into the Project Update.

Nolans is the only NdPr-focused project in Australia that has secured complete environmental permitting for mining, beneficiation, extraction and separation of rare earths, including the on-site management and disposal of attendant radioactive tailings, process wastes and progressive site rehabilitation.

COMMUNITY AND SOCIAL BENEFITS

The Project is expected to deliver substantial social and economic benefits to local, regional and national stakeholders. This will include indigenous and local employment opportunities, small and medium enterprise business opportunities, royalties and potentially shared infrastructure. The Company estimates the construction workforce will be 682 people with a steady state operating workforce, on and off site of 366. During steady state operations, most of the on-site workforce will reside at site. However, the Project has the potential to accommodate community friendly rosters considering its proximity to the communities of Alice Springs, Ti Tree and Laramba.

In recognition of the Project's national strategic significance the Australian Government renewed its Major Project Status in 2020 *(refer to ASX announcement dated 31 July 2020)*. Major Project Status provides a mechanism for coordinated access to a range of Australian Government services and programs which will assist in the Project development as well as delivering benefits for local and regional stakeholders.

MINING LICENCE AND PERMITTING

Australia's mining and mineral processing industry is both mature and well-regulated, having been developed for many decades under the stewardship of successive state and federal governments.

A Native Title Agreement (**NTA**) covering all parts of the Nolans Project has been executed with the site's Native Title Holders *(refer to ASX announcement dated 26 June 2020)*. This NTA provides for the on-going protection of the Native Title Holders rights, as well as allowing them to share in the long-term benefits of the Nolans Project.

Following the execution of the NTA the Northern Territory Government has granted the Project's Mineral Leases (**MLs**) *(refer to ASX announcements dated 22 July 2020 and 9 February 2021),* which provide Arafura tenure over the Nolans asset for 25 years and a licence to operate (subject to annual compliance reviews) for the same period.

In 2022, the Company completed compilation of the extensive Mine Management Plan (**MMP**) and associated environmental management plans which detail the specifics of how the Project will meet its environmental approval obligations. Draft versions of these plans have been reviewed by the Northern Territory Government Department of Industry, Tourism and Trade (**DITT**) preceding the submission of the final plans to government for approval and granting of the Project's mining authorisation.

In addition, the Company has submitted two groundwater extraction licence applications to the Northern Territory Government Department of Environment, Parks and Water Security (**DEPWS**), one for the dewatering of the Nolans orebody and the other for the main Project water supply from the Reaphook aquifer, some 25km south of the proposed processing facility. DEPWS has approved the licence for the orebody dewatering and it is currently reviewing the license application for the main Project water supply.

PROJECT UPDATE

The Nolans Project definitive feasibility study (**DFS**) was delivered in early 2019 (*refer to ASX announcement dated 7 February 2019*) demonstrating that Nolans is a world-class NdPr rare earths project which has the capacity to deliver robust economic outcomes at low unit operating costs over a life of mine (**LOM**) of 23 years. Further work on the processing of certain geological material types, along with additional mine optimisation, design and mine scheduling, resulted in the Ore Reserves being updated (*refer to ASX announcement dated 16 March 2020*). These updated Ore Reserves support a 33-year production life based on Ore Reserves only or a 39-year life based on the mining inventory. To optimise the Project production profile and economic outcomes, the updated mine scheduling also includes a minor increase in concentrate processing capacity in the proposed processing plant design.

In addition, since the release of the DFS, Arafura has completed the final phases of an extensive 4-year metallurgical pilot program and finalised the assessment and analysis of the results of this program *(refer to ASX announcement dated 21 January 2021)*. The completion of this metallurgical pilot program resulted in several process flowsheet modifications to incorporate the results of the testing and optimise the metallurgical performance of the circuit. The changes included the deferral of cerium production *(refer to ASX announcement*

dated 21 April 2021), to allow for the focus on the ramp-up of on-specification high value NdPr production and offset the risk of downward pressure on cerium price.

In January 2020 the Company formed an integrated project management team (**IPMT**) which consists of KBR, Wave International and Arafura's geological, metallurgical and project personnel (*refer to ASX announcement dated 23 January 2020*) to manage the Project's development through to production. This was followed in 2021 by the Company completing a Feasibility Study Update to incorporate the impact of the increased Ore Reserve and process flowsheet changes from the Project's DFS (*refer ASX announcement dated 11 May 2021*).

Since the release of the 2021 Feasibility Study Update, the Company commenced FEED engaging Hatch to complete the engineering design and procurement for the Hydrometallurgical Plant (*refer ASX announcement dated 30 August 2021*). Additionally, GR Engineering Services were engaged to carry out an updated engineering study on the beneficiation plant (*refer Quarterly Activities Report dated 25 July 2022*) and Wave International, as part of the IPMT, has completed significant engineering design on the Project's NPI.

This Project Update, building on the DFS and previous updates, has been completed primarily by Arafura's IPMT with key input from the following sources in various areas:

- TME Mine Consulting – Mine planning, design and scheduling along with updates to mining cost estimation.
- Hatch – Updates to hydrometallurgical plant and sulphuric acid plant design, material take-offs and equipment costing.
- GR Engineering Services – Updates to the beneficiation plant design and costing.
- Infinity Corporate Finance – Financial modelling.

In addition, advice and input was sought from a range of the consultants used in the DFS, as well as drawn from tenders received for various work packages for the execution of the Project to provide input into the updating of the design and costs. All material assumptions, unless otherwise noted in this report, are based on the assumptions reported either in the DFS (*refer ASX announcement dated 7 February 2019*), Updated Mining Study (*refer ASX announcement dated 16 March 2020*) or the 2021 Feasibility Study Update (*refer ASX announcement dated 11 May 2021*) and the Company confirms that these unaltered material assumptions continue to apply and have not changed.

Geology and Mineral Resources

This Project Update is based on the Mineral Resources for the Nolans Bore deposit (*refer to ASX announcement dated 7 June 2017*) which is unchanged from the Mineral Resources used in the DFS and previous updates. The Company confirms that it is not aware of any new information or data that materially affects the information included in this previous announcement of Mineral Resources and that all material assumptions and technical parameters underpinning this estimate continue to apply and have not materially changed. The Company is in the process of reviewing the geological model in preparation for detailed mine planning activities incorporating the results of the small 2019 drilling program (*refer ASX announcement dated 17 December 2019*), results of a downhole optical survey program (*refer Quarterly Activities Report dated 27 September 2021*), a review of the logging of the host rocks and the detailed gravity survey of the orebody completed in 2022 (*refer Quarterly Activities Report dated 27 October 2022*). The Company confirms that this additional work should not lead to a material change to the Mineral Resource estimate for the Project.

These resources are classified according to the 2012 JORC Code guidelines and shown in the Table 1.

Table 1: Nolans Bore Deposit Mineral Resources

Statement of Mineral Resources for the Nolans Bore Rare Earth Deposit Announced 7 June 2017 – 1% TREO lower cut-off grade				
Category	**Tonnes (Mt)**	**TREO (%)**	**P_2O_5 (%)**	**NdPr Enrichment (%)**
Measured	4.9	3.2	13	26.1
Indicated	30	2.7	12	26.4
Inferred	21	2.3	10	26.5
Total	**56**	**2.6**	**11**	**26.4**

Note: Numbers may not compute due to rounding. "NdPr Enrichment" is the proportion of TREO comprising neodymium oxide Nd_2O_3 and praseodymium oxide Pr_6O_{11}.

The stated TREO grade is based on the sum of the estimated grades for La_2O_3, CeO_2, Pr_6O_{11}, Nd_2O_3, Sm_2O_3, Eu_2O_3, Gd_2O_3, Tb_4O_7, Dy_2O_3, Ho_2O_3, Er_2O_3, Tm_2O_3, Yb_2O_3, Lu_2O_3 and Y_2O_3.

The JORC Code, 2012 Edition, Table 1 report with information relating to Mineral Resources is included as part of the ASX announcement "Major Increase in Mine Life for the Nolans Project" (*refer ASX announcement dated 16 March 2020*).

The Mineral Resources were further classified by geometallurgical material types based on logging and analysis. Details of the material classification are contained in the DFS.

Mining and Ore Reserves

The pit optimisations, mine designs, Ore Reserves and mining inventory are unchanged from the Updated Mining Study (*refer to ASX announcement dated 16 March 2020*). The Company confirms that it is not aware of any new information or data that materially affects the information included in this previous announcement of Ore Reserves and that all material assumptions and technical parameters underpinning this estimate continue to apply and have not materially changed.

The Ore Reserves are classified according to the 2012 JORC Code guidelines and shown in the Table 2.

Table 2: Nolans Project Ore Reserves

Nolans Project Ore Reserves Announced 16 March 2020				
Classification	**Tonnes (Mt)**	**TREO (%)**	**P_2O_5 (%)**	**NdPr Enrichment (%)**
Proved	5.0	3.0	13	26.2
Probable	24.6	2.8	13	26.5
Total	**29.5**	**2.9**	**13**	**26.4**

Note: Numbers may not compute due to rounding. "NdPr Enrichment" is the proportion of TREO comprising neodymium oxide Nd_2O_3 and praseodymium oxide Pr_6O_{11}.

The Ore Reserves include mining factors of 5% for ore-loss and 15% for dilution which leads to the marginal increase in Proved Reserves from Measured Resources.

Pit designs were undertaken using Surpac software, allowances were made for the recommended pit wall angles, and pit ramps suitable for the selected mining equipment were incorporated. As the final pit designs

were derived, Inferred Resources were included within the mining inventory. This material is excluded from the Ore Reserves and from mill feed in the Ore Reserves only production schedule for reporting purposes.

The Project, and the pit designs developed by Mining Plus, do not rely on the inclusion of Inferred Mineral Resources as mill feed in order to be feasible.

The JORC Code, 2012 Edition, Table 1 report with information relating to Ore Reserves is included as part of the ASX announcement "Major Increase in Mine Life for the Nolans Project" (*refer ASX announcement dated 16 March 2020*).

Production Scheduling

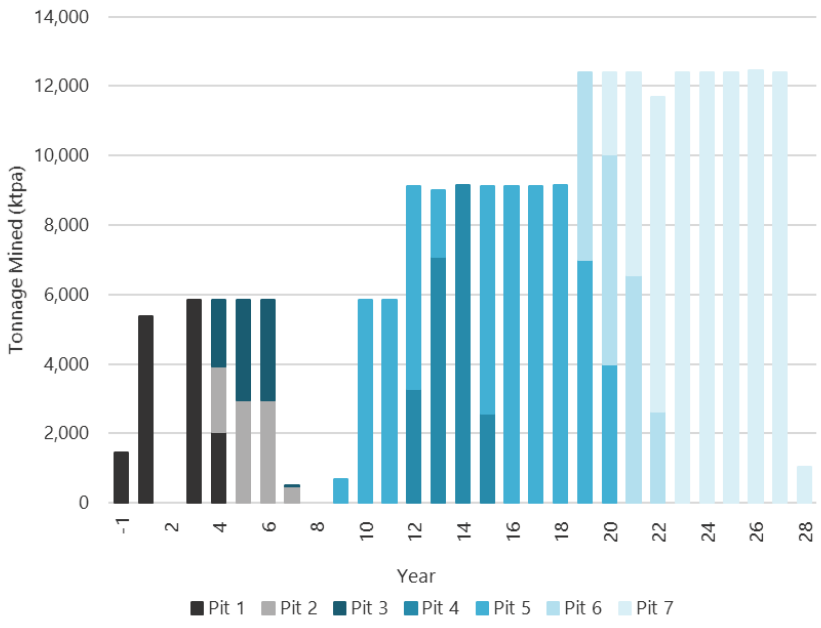
The mining and production scheduling for this Project Update have not been updated from the 2021 Feasibility Study Update (*refer ASX announcement dated 11 May* 2021) with all assumptions and constraints unchanged. All scheduling in this previous work was carried out in the same manner and using the same constraints, unless otherwise noted, and techniques as those used in the Updated Mining Study (*refer to ASX announcement dated* 16 March *2020*).

Mining Inventory Production Schedule

The mining inventory production schedule results in a LOM of 38 years, consisting of a two-year ramp period and a five-year period of processing stockpiled material off low-grade stockpiles at the end of the LOM.

Mining is completed over 28 years, with two up-front mining campaigns prior to commencing full-time mining in year nine (Figure 2).

Figure 2: Mining Inventory Mining Schedule



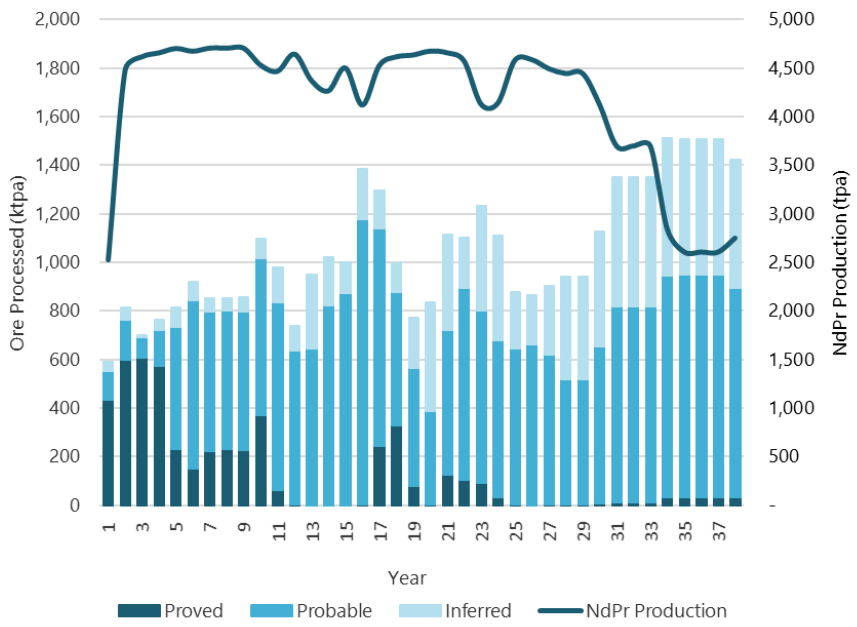
Processing tonnages, including the breakdown between Proved Ore Reserves, Probable Ore Reserves and Inferred Mineral Resources, over the 38-year LOM, with increase in the maximum processing rate in year 16 to accommodate lower head grades are shown in Figure 3. The overall proportions of Proved Ore Reserves,

Probable Ore Reserves and Inferred Mineral Resources are 12%, 62% and 26% respectively and it can be seen in Figure 3 the processing of Inferred Mineral Resources occurs predominately in the later stages of the LOM.

There is a low level of geological confidence associated with Inferred Mineral Resources and there is no certainty that further exploration work will result in the determination of Indicated Mineral Resources or that the production target itself will be realised.

Scheduling of the production results in an average NdPr oxide production of 4,440 tpa (Figure 3). The average production excludes the two-year ramp up period and the final five years of processing low grade material off long term stockpiles.

Figure 3: Mining Inventory Production Schedule

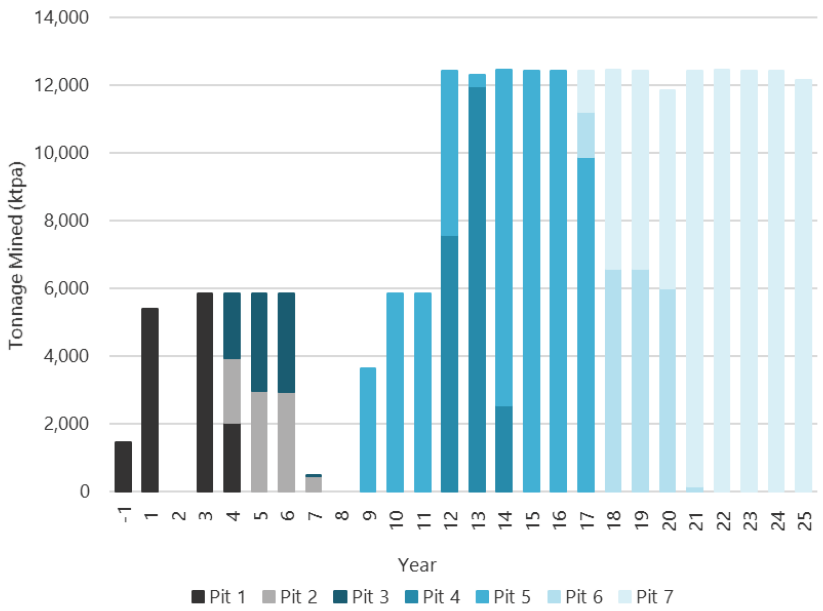


Ore Reserves Only Production Schedule

The Ore Reserves only production schedule, prepared to demonstrate the viability of the Project without inclusion of Inferred Mineral Resources, results in a LOM of slightly over 29 years, consisting of a two-year ramp period and approximately two-years of processing stockpiled material off low-grade stockpiles at the end of the LOM.

Mining is completed over 25 years, with two up-front mining campaigns prior to commencing full-time mining in year nine (Figure 4).

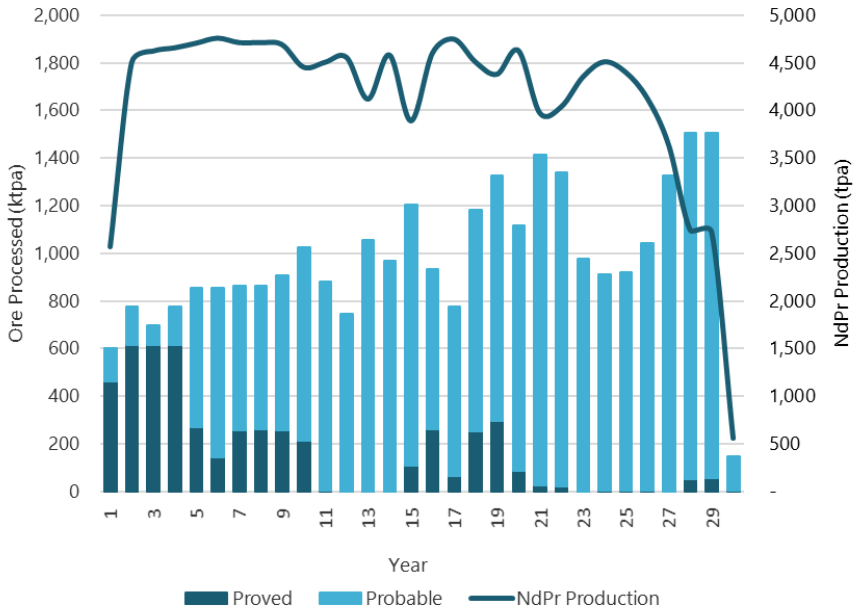
Figure 4: Ore Reserves Only Mining Schedule



Processing tonnages, including the breakdown between Proved and Probable Ore Reserves, over the 29-year LOM is shown in Figure 5, with an increase in the maximum processing rate in year 15 to accommodate lower head grades.

Scheduling of the production results in an unchanged average NdPr oxide production from the Mining Inventory (Figure 5). The average production excludes the two-year ramp up period and approximately two years of processing low grade material off long term stockpiles.

Figure 5: Ore Reserves Only Production Schedule



Mining Operations

For this Project Update, the use of contract mining operations was reviewed. It was determined that while contract mining operations offered a benefit in the early years of mining, there are significant operating cost savings possible by moving to an owner-operator model in the later years of the operation, once the mining operation had matured. As such it has been assumed that following commencement of mining using an external mining contractor for the campaign mining periods, through to Year 9 of operations, the operation will switch to an owner-operator model utilising leased mining equipment for the remainder of the life of mine.

Current Activities

Following the completion of the remodelling of the north-zone of the orebody the Company has engaged Mining Plus to carry out the following work:

- Peer review of the geological model and interpretation.
- Review of mining design parameters include ore loss and dilution.
- Development of grade control, ore blending and ROM management processes.
- Finalisation of mine planning and design guidelines.
- Development of the detailed pit and mine designs for the initial pit(s).
- Development of detailed mine schedules and supporting documentation for the two mining campaigns.
- Preparation of the contract mining request for proposal and tendering of the mining contract.

This work will continue during the first half of 2023 in advance of Financial Close.

Metallurgy and Process Plant

Since the completion of the DFS and metallurgical pilot test work program the Company has locked down the process flowsheet for the production of separated rare earth oxides from the Nolans ore, with the final high level process flowsheet shown in Figure 10.

Additionally, the Company has continued its technology program aimed at further de-risking of the Project through better definition and understanding of the required operating and design parameters and also through the effective incorporation of risk management measures throughout the design.

Metallurgical Test Work and Process Selection

The extensive metallurgical pilot program, which continued from the bench scale test work program, for the Nolans Project was carried out over four years with final analysis and completion of flowsheet development in 2020 (*refer ASX announcement dated 18 September 2020*).

Since the completion of the pilot program, metallurgical test work has continued on the Project with the focus being on de-risking the design of the processing facility, rather than the further optimisation of the process flowsheet. This work has included:

- Additional testing of the reagent scheme in the beneficiation circuit aimed at management of froth stability, impact of site water recycling and improvements to tailings and concentrate thickening performance.

- Extensive corrosion test work program over multiple phases to determine the optimum materials of construction for process equipment, tankage, and piping.
- Testing of materials of construction for the centrifuges to determine the best balance of erosion and corrosion protection including testing of fixing mechanisms.
- Vapour liquid equilibrium determination for the removal of chlorides from the cerium solvent extraction raffinate recycle stream, which would cause significant corrosion or material cost increases if recycled to the pre-leach circuit via recycle through rare earth extraction.
- Filtration testing on a number of duties through the flowsheet, including wash efficiency determination, where requested by, and in conjunction with, filtration equipment vendors.
- Testing of alternate equipment for acid mixing in advance of the sulphation bake.
- Investigations into the degradation of extractants in cerium solvent extraction.
- Investigation of the impact of alternate diluents in the solvent extraction circuits as the diluent used in the pilot testing is no longer commercially available.
- Testing of the vibratory shear enhanced processing (VSEP) for the purification of the phosphoric acid product. This technology has significant advantages to traditional nano-filtration as it allows the operation in the presence of solids which greatly simplifies the circuit and improves efficiency (see Figure 8).

Figure 6: Typical Hydrometallurgical Corrosion Coupon Test Rig and Operation

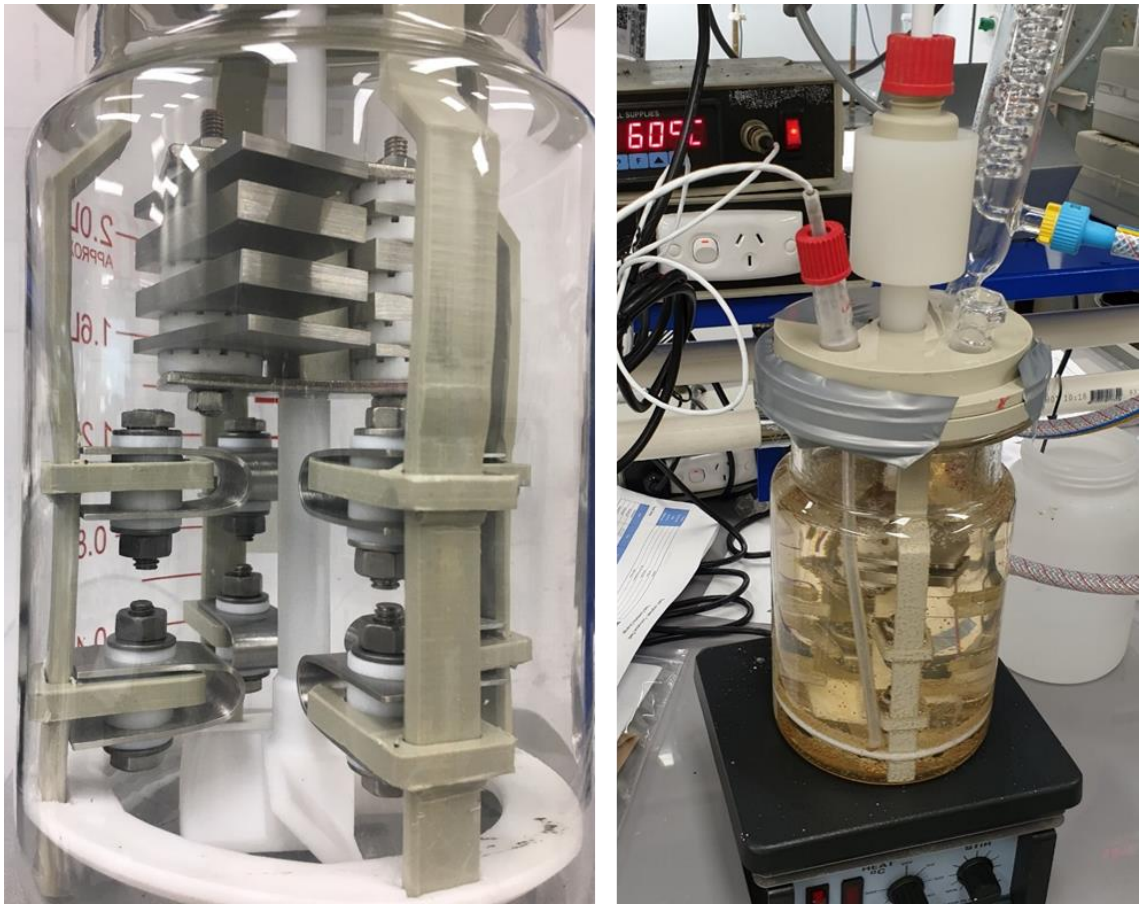


Figure 7: Sulphation Corrosion Testing

Figure 8: Testing of Phosphoric Acid Purification with VSEP

Processing

In April 2021 the Company updated its execution strategy for the project to incorporate a FEED phase (*refer ASX announcement dated 21 April 2021*). The advantages of this updated strategy included:

- Separation of the engineering and construction contracts for the major packages of the process plant to bring additional contractors resulting in a more competitive tendering process.
- Reduction in risk for construction contractors, which will reduce the risk premium payable by the Company, through the advancement of the design prior to tendering.
- Higher level of cost certainty for the Company at FID due to improved project definition and tendering, which will improve the confidence of project financiers.

Since this time the Company has significantly advanced the design across all areas of the processing plant as detailed below.

Beneficiation Plant

In order to update and optimise the design of the beneficiation plant GR Engineering Services Pty Ltd (**GRES**) were engaged to complete an updated engineering study for the beneficiation plant (*refer Quarterly Activities dated Report 25 July 2022*).

This optimisation included the following design improvements:

- Rationalisation of the run of mine bin design and crushing arrangement.
- Reduction in the size of the crushed ore bin.
- Significant reduction in the lengths and numbers of conveyors in the comminution circuit.
- Update of the flotation cell sizing to match the latest interpretation of the flotation test work.
- Rationalisation of the layout to reduce concrete and structural steel quantities.
- Reduction in the complexity of the reagents storage and mixing systems.

In addition to the updated design, GRES also provided an updated cost estimate for the beneficiation plant.

Hydrometallurgical Plant

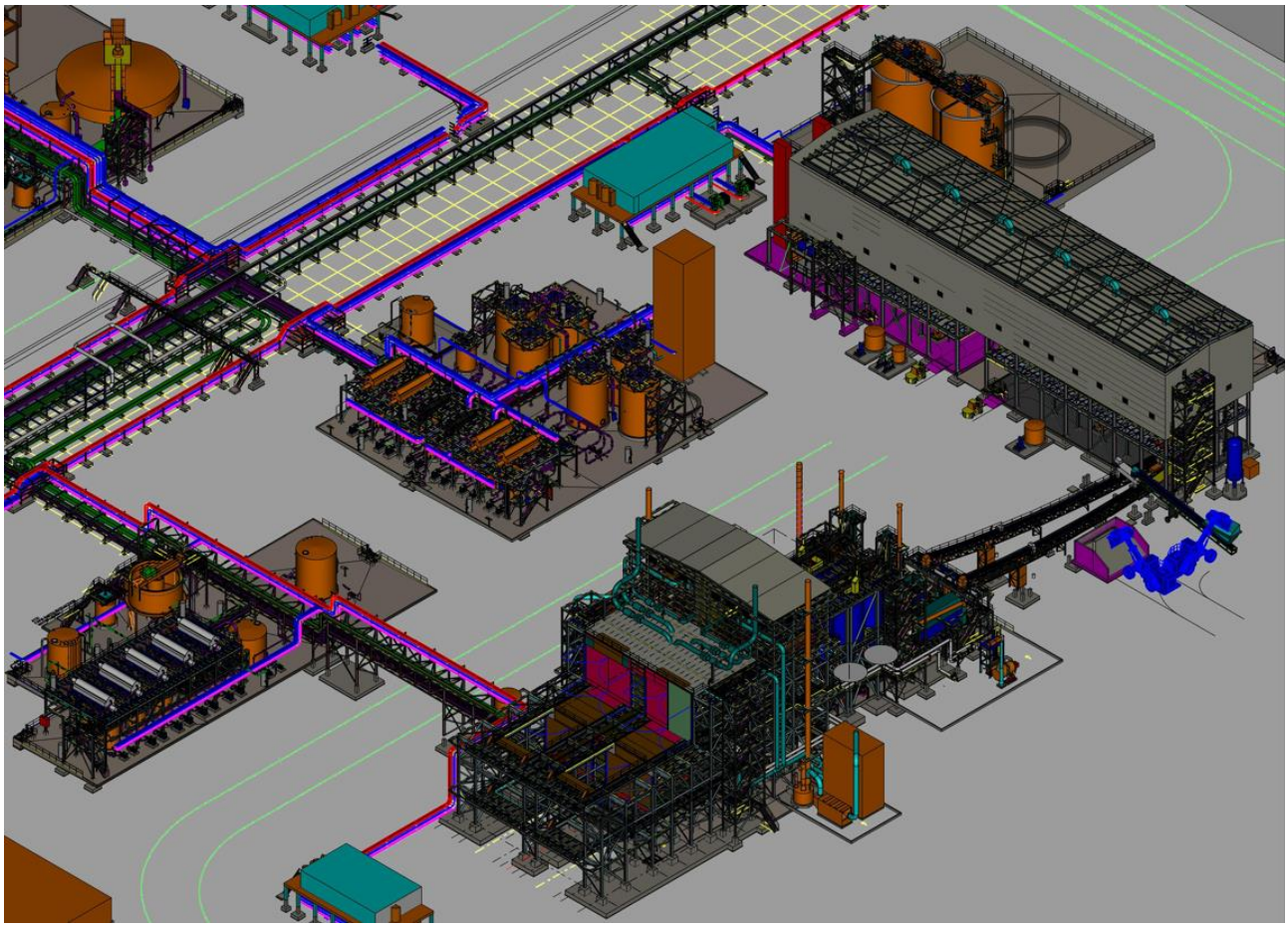
In August 2021, the Company appointed Hatch to complete the FEED for the hydrometallurgical plant (*refer ASX announcement dated 30 August 2021*). The overall aim of this FEED program was to develop the design of the hydrometallurgical plant to a level sufficient to tender the construction of the facility. As part of this the following work was included:

- Finalisation of the process design developing the metallurgical and process design criteria.
- Develop the process flow diagrams (**PFD**s), piping and instrumentation diagrams (**P&ID**s) and complete hazard and operability studies on the P&IDs.
- Develop the overall plot plan for the plant with integration with the beneficiation plant, sulphuric acid plant, power station and NPI.
- Develop specifications and commercial documentation to tender the long lead mechanical equipment followed by completion of tendering and adjudication of these tenders.
- Obtain suitable vendor data for all mechanical equipment, with placement of orders for certified vendor data where required, for incorporation into the design.
- Develop 3D models for the various plant areas incorporating the vendor equipment along with concrete, structural steel, piping and electrical designs.

- Complete discipline engineering suitable to develop material take-off for bulk materials.
- Deliver material take-offs for all bulk materials based on the design to provide the basis for the construction contract tendering.
- Produce a preliminary capital cost estimate for the facility.

This work has been substantially completed. Figure 9 shows the concentrate handling, pre-leach, sulphation drying, sulphation and water leach areas of the hydrometallurgical plant 3D model.

Figure 9: Nolans Hydrometallurgical Plant 3D Model showing the Concentrate Filtration, Pre-Leach, Sulphation Drying, Sulphation and Water Leach Areas



Following the engineering design, a tender package was issued to two Tier One Australian construction contractors to carry out a review of the design, construction schedule and preliminary estimate. From this review the two construction contractors then developed a cost estimate for the construction works and supply of bulk materials. These constructors' estimates will be used to select a preferred construction contractor and to provide input into the capital cost estimate in this Project Update.

As part of the FEED, Hatch has now commenced work, with the aim of completion by the end of 2022, on the finalisation of Approved for Detailed Design documentation and achieving "scope lock" on the hydrometallurgical plant. In parallel Hatch are also finalising procurement documentation for long lead mechanical equipment ready for placement of final orders in early 2023.

Sulphuric Acid Plant

For the sulphuric acid plant (**SAP**) Hatch was engaged as a variation to the hydrometallurgical plant FEED to provide FEED for the SAP. This involved development of the specifications for the SAP and tendering of the supply in addition to completion of preliminary engineering on the wrap around plant to incorporate the SAP into the overall processing facility.

This process has resulted in the Company selecting Chemetics' CORE-SO2 technology for the acid plant at the Project. This technology has several advantages, including:

- Very high turn-down capacity allowing greater flexibility in operations, including the ability to "idle" the plant without damage to the catalyst.
- Extremely low sulphur dioxide losses reducing emissions and sulphur consumption.
- High steam production.
- Low internal gas flows reducing the size and quantity of the ducting and vessels allowing a high degree of modularisation and greatly reducing installation effort required, and cost.

The CORE-SO2 technology requires the installation of an oxygen plant on-site. This addition slightly increases power consumption, however the savings in capital cost, including the cost of the oxygen plant will offset this disadvantage.

The commercial and technical contract is in the process of being conformed with Chemetics and, following successful execution, detailed design of the acid plant will commence in November 2022.

Production Forecast

The process plant has been designed for 1Mtpa of ore to produce 340,000 tpa of concentrate, which relates to a nominal 4,518 tpa NdPr oxide with a potential maximum of approximately 4,700 tpa depending on the mining schedule. Table 3 provides a breakdown of the specifications and average tonnages of the rare earth products.

Table 3: Nolans Rare Earth Products

Rare Earth Products			
Product	**TREO (%)**	**REO / TREO (%)**	**Average REO* (t)**
NdPr Oxide	>99.5%	>99.9%	4,440
SEG/HRE Oxide	>99.5%	>99.5%	474
Total			**4,914**

** Average production is calculated as the arithmetic annual average following the anticipated two year ramp up period and excluding the final years of production from low grade stockpiles.*

The by-product of the process will be P_2O_5 contained in merchant grade (MGA) phosphoric acid with an average annual production of 77,972 tpa P_2O_5 in 144,393 tpa of MGA phosphoric acid.

Production by operating year is provided in Table 4.

Figure 10: Metallurgical Process Flowsheet

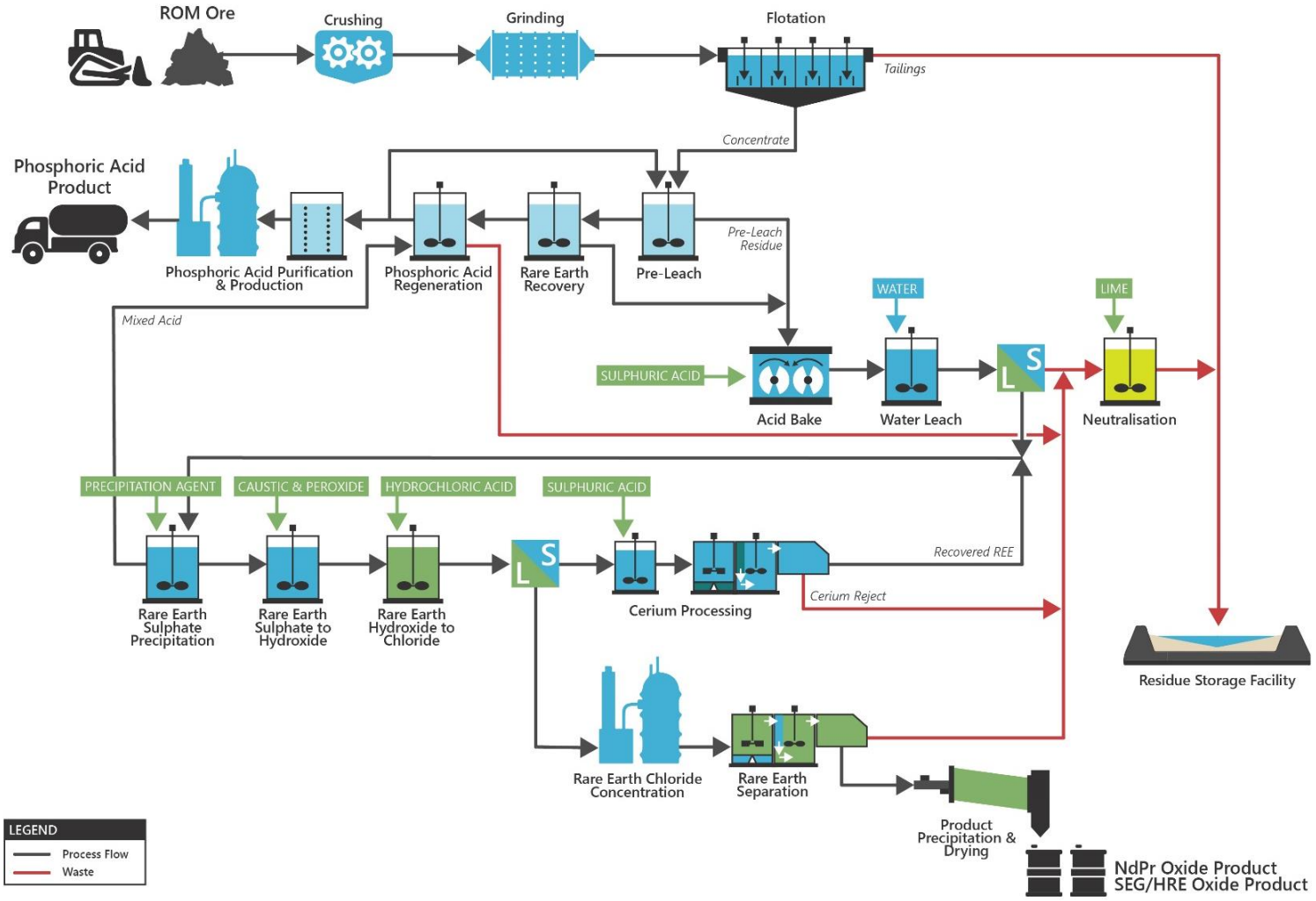


Table 4: Production by Operating Year

Year	yr.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Ore Processed	kt	590	814	699	765	814	919	853	853	854	1,098	980	740	947	1,020	999	1,384	1,296	998	771	835
Head Grade																					
P_2O_5	%	13.0	12.6	14.2	14.8	14.9	14.5	15.0	14.9	14.9	11.9	12.5	15.8	13.2	13.7	14.7	11.0	11.0	13.0	15.2	14.8
TREO	%	3.3	3.2	3.4	3.3	3.3	3.2	3.3	3.3	3.3	2.7	2.7	3.3	2.8	3.0	3.2	2.6	2.6	2.8	3.2	3.1
Beneficiation																					
P2O5 Recovery	%	68.8	78.7	85.7	84.1	80.9	75.6	77.0	77.0	77.0	76.1	83.2	87.7	80.3	68.6	67.3	61.9	67.6	78.9	86.4	80.8
TREO Recovery	%	66.5	75.8	83.5	79.0	74.9	67.0	70.2	70.3	70.3	67.2	74.9	82.6	72.4	59.0	59.4	49.8	57.9	71.4	81.2	75.5
Concentrate	kt	198	278	280	314	326	341	333	333	333	341	340	334	334	334	340	340	340	342	334	333
Final Production																					
NdPr Oxide	t	2,529	4,485	4,621	4,661	4,706	4,677	4,710	4,709	4,708	4,533	4,472	4,648	4,374	4,270	4,505	4,123	4,531	4,620	4,639	4,679
SEG/HRE Oxide	t	374	595	610	611	606	596	601	601	601	589	579	602	567	544	572	539	602	612	607	606
P_2O_5	kt	47	66	68	76	79	81	79	78	78	79	82	82	80	77	79	76	77	81	81	80
MGA Phos Acid	kt	88	123	126	141	145	149	146	145	145	147	151	152	147	142	146	140	143	150	150	148

Year	yr.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	TOTAL
Ore Processed	kt	1,116	1,101	1,232	1,111	879	864	901	940	940	1,125	1,351	1,351	1,351	1,511	1,506	1,506	1,506	1,423	**39,940**
Head Grade																				
P_2O_5	%	12.1	11.5	11.2	12.4	15.5	16.0	15.8	15.3	15.3	13.3	11.6	11.6	11.6	8.6	8.1	8.1	8.1	8.1	**490**
TREO	%	2.7	2.7	2.5	2.7	3.4	3.4	3.4	3.3	3.3	2.9	2.6	2.6	2.6	2.1	2.0	2.0	2.0	2.0	**110**
Beneficiation																				
P2O5 Recovery	%	73.4	74.8	69.9	70.6	72.4	72	69.1	68.7	68.7	64.6	59.5	59.5	59.5	57.9	57.5	57.5	57.5	57.5	**69.6**
TREO Recovery	%	65.3	66.9	56.9	58.3	65.3	65.0	61.1	59.8	59.8	53.1	44.9	44.9	44.9	39.0	37.8	37.8	37.8	37.8	**58.7**
Concentrate	kt	341	325	340	340	340	341	340	340	340	341	340	340	340	276	258	258	258	243	**12,147**
Final Production																				
NdPr Oxide	t	4,662	4,578	4,133	4,144	4,585	4,590	4,498	4,448	4,448	4,128	3,701	3,701	3,701	2,841	2,610	2,610	2,610	2,754	**157,946**
SEG/HRE Oxide	t	610	604	540	533	584	587	575	570	570	530	477	477	477	373	345	345	345	326	**20,480**
P_2O_5	kt	79	75	77	78	79	80	79	79	79	77	75	75	75	60	56	56	56	53	**2,813**
MGA Phos Acid	kt	146	139	143	144	146	147	146	146	146	143	138	138	138	112	104	104	104	98	**5,209**

Infrastructure, Operations and Logistics

Description of Facilities

The majority of the infrastructure included in the 2021 Feasibility Study Update for the Project is unchanged from that included in the DFS. Key changes from the DFS included in the current design include:

- Water demand, which is sourced from borefields located south-west of the process plant, has increased to a maximum of 4.8 GL/a although this change does not impact on the design of the borefields.
- Power requirements have increased to 38MW average demand and there has been in increase in the steam demand for the process plant. Power will be provided by gas fired reciprocating engines supplemented by a steam turbine driven by the high-pressure steam generated by the SAP. Low pressure steam for the process plant will be provided by gas-fired package boilers located close to the areas of high steam requirement.
- Due to the increased tonnage to be processed, the LOM residue storage facility (RSF) has been expanded by mirroring the facility to create additional storage cells of the same design. The up-front design to be constructed for first production is largely unchanged. A layout of the expanded LOM residue storage facility is shown in Figure 11.
- Realignment of the mine access road which has led to a shortening of the route by several kilometres with the updated route shown in Figure 12.
- Relocation of the explosives magazine from an area to improve surface water management issues with the previous location and provide flexibility on the location of the mining infrastructure. The updated location, which has necessitated application for an additional ancillary mineral lease, is shown in Figure 12.

Figure 11: LOM Residue Storage Facility Layout

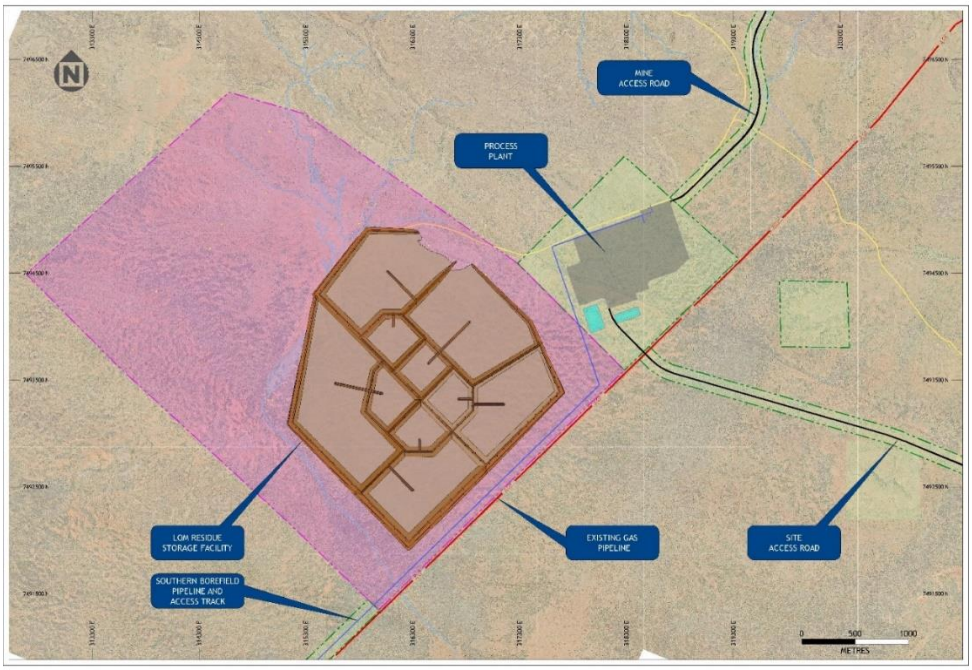
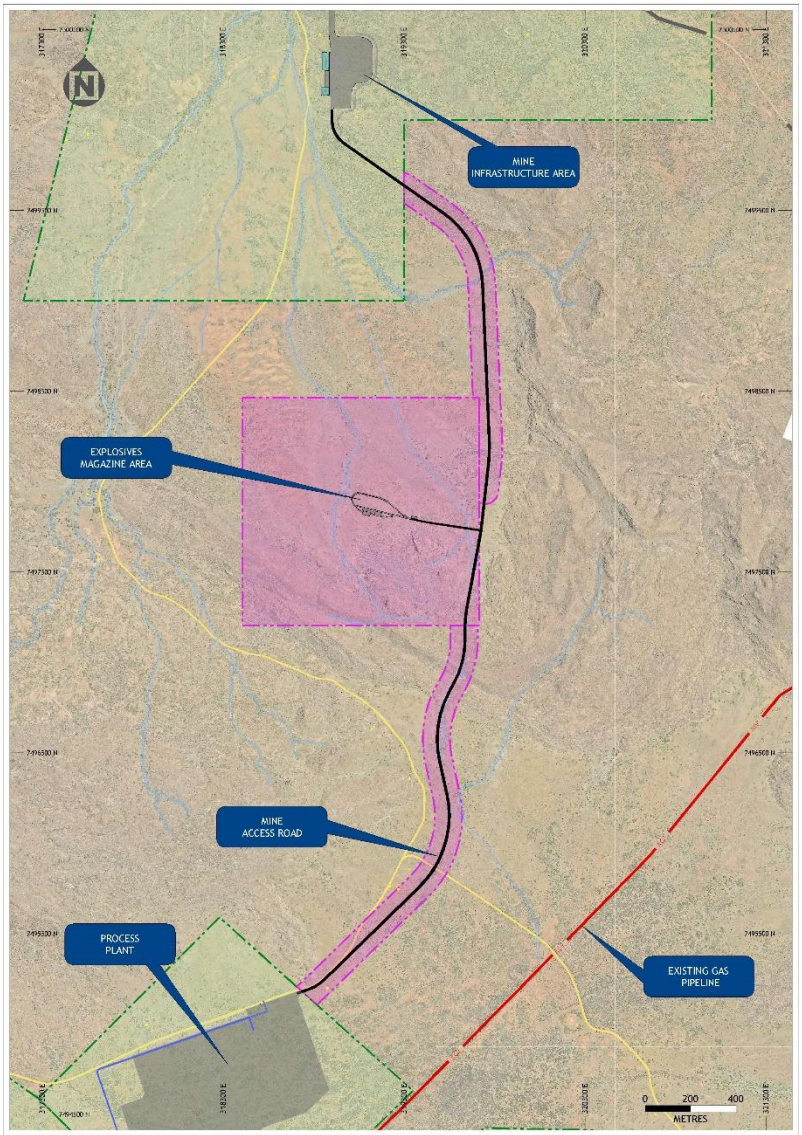


Figure 12: Realigned Mine Access Road and Relocated Explosives Magazine



Design and Tendering

The NPI FEED is being undertaken by Wave International managed by the IPMT with specialist support from groups such as Knight Piesold, residue storage facility, GHD, bore design, and Byrne Consultants, traffic management. The design work to date has focussed on the early works construction activities such as earth works, borefields, water supply, intersection with the Stuart Highway, accommodation village and site communications.

Based on the FEED designs, and other specifications developed by the IPMT and others, the key contract packages have been tendered for the NPI to the following levels of completion:

- Minor earth works and 48-person fly camp hire – tendered, adjudicated and letter of intent issued with an agreement executed for holding payments to secure access to the fly camp.

- 400-person construction camp hire – based on the previously announced agreement with NT Link Pty Ltd, a term sheet for hire has been agreed and an agreement executed for holding payments to secure the construction camp and transport the facilities to Alice Springs.
- Production water bore and monitoring bore drilling and pump testing – three separate contracts tendered to a range of local and interstate companies with the tender evaluation nearing completion.
- Temporary bore headworks and water storage tanks and pumps, to supply temporary construction water prior to the installation of the water supply pipeline – tendered and adjudicated ready for award.
- Permanent bore headworks and pipeline installation – tendered and final contractor clarifications being sought to finalise the evaluation.
- HDPE pipeline supply for the main borefields water supply – tendered, adjudicated and ready for award.
- Potable and wastewater treatment plants – options have been priced and are under evaluation.
- Bulk earthworks – prepared and ready for tender in November 2022.
- 250-person permanent accommodation village – prepared and ready for tender in November 2022.
- Concrete batch plant and concrete supply – prepared and ready for tender in November 2022.

In addition, the following key operational or build-own operate (**BOO**) contracts have been tendered to the following levels of completion:

- Operational logistics for the transport of incoming reagents to site and product to port (which remains largely unchanged from the DFS) – tenders received from three tier one logistics contractors and currently being adjudicated.
- Power station and steam generation BOO – currently out to tender with three independent power providers confirmed as tendering.
- Village operations – MOU agreed with Compass Group (ESS) and final contract currently being negotiated on an open book basis including waste management, security and personnel transport.
- Paramedic services – tendered and under evaluation.

Implementation

As previously outlined the Company has formed an integrated project management team and contracted KBR and Wave International as partners in this team (*refer ASX announcement dated 23 January 2020*). The IPMT or owners' team, has overall project management, project controls, and project delivery responsibility. In addition, the IPMT, through the design office at Wave International, will complete the detailed design for the NPI.

The process plant, by far the largest aspect of the Project, will be broken into several packages, being:

- Beneficiation plant.
- Hydrometallurgical plant.
- Sulphuric acid plant.
- Process control system.

By breaking the process plant into these packages Arafura will be able to select "right sized" and appropriately experienced contractors for each package and to select the appropriate contracting model to reflect the value and risk associated with each package.

The beneficiation plant will be let on a traditional engineering, procurement, and construction (**EPC**) basis which is reflective of the smaller scale, common nature of the facility and low technical risk. The SAP will be procured by the Company from the technology vendor with a suitable engineer providing engineering and procurement for the wrap around plant. The construction contract will be bundled with either the hydrometallurgical plant construction or the NPI general construction contract based on a competitive tender. The process control system will be delivered on a rates basis as it is required to bring together the input from the other process plant packages into a coherent process control system.

The hydrometallurgical plant, due to its complex and bespoke nature, will be delivered using a traditional detailed FEED model.

The main aspects of this FEED model for the hydrometallurgical plant are:

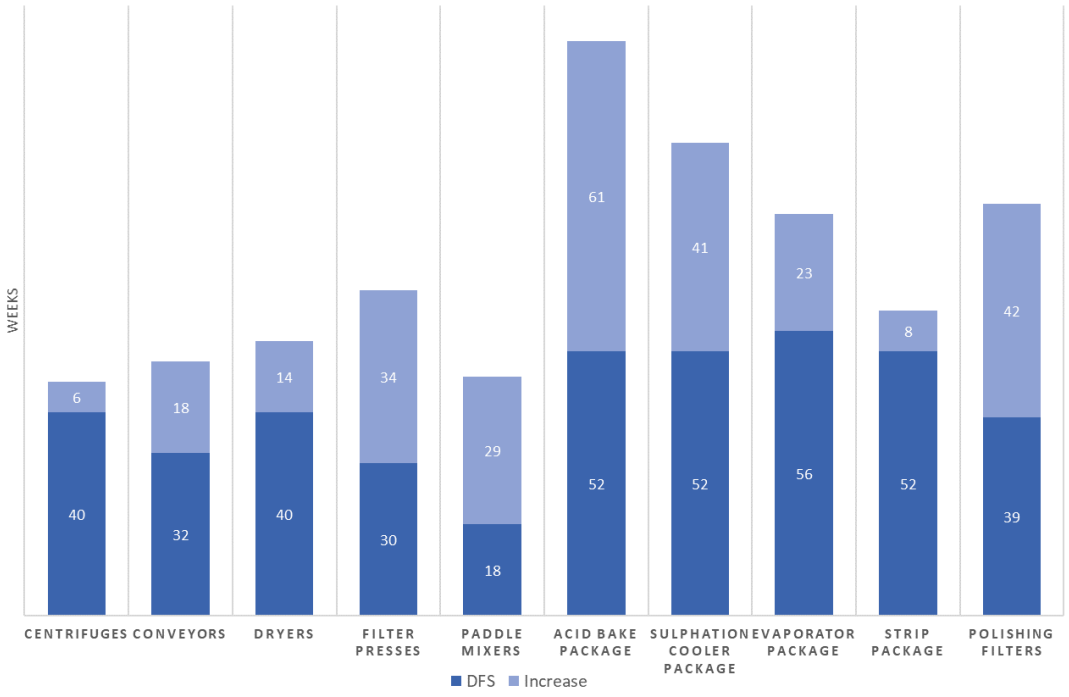
- Contracts for the engineering and procurement (engineering contractor) and the construction will be split.
- Significant tendering and procurement of equipment will be completed ready to place orders at the end of FEED which will include payment for some certified vendor data to support the engineering design.
- Engineering contract will be carried on rates to a target cost and will include performance and design warranties for the plant.
- Detailed FEED will be completed by the engineering contractor to approximately 50-60% of design completion prior to tendering of construction.
- Following tendering of the construction the preferred contractor will be engaged in an early contractor involvement phase to work with the engineering contractor and the IPMT to optimise the design with an aim to reducing cost and constructability and agree the sharing of risk with the Company to finalise the construction contract and pricing.
- Structure of the hydrometallurgical plant construction contract has been assumed to be a target cost, or similar, contract with risk and reward associated with re-measurable and reimbursable aspects as required although the final form of contract will be agreed following the early contractor involvement phase.
- Tendering of other contracts (beneficiation plant, acid plant and NPI) will be undertaken in parallel with FEED.

The NPI, which is designed by the IPMT, will be contracted in several small to medium packages using a contract model appropriate for each package. Typical NPI packages will include bulk earthworks, roads, village, site buildings, bore drilling, bore fit-out and water supply piping, fencing and communications etc. Sufficient detailed design and tendering of NPI packages will be undertaken in parallel with the FEED for the hydrometallurgical plant to commence early works construction immediately following FID and to meet schedule requirements.

The costs associated with the FEED phase of the project delivery, including any pre-payments for equipment, are considered sunk costs for the Project financial analysis.

As part the tendering of equipment for the hydrometallurgical plant it has become apparent that supply chain issues associated with the COVID-19 pandemic and other macro-economic impacts have caused significant increases in delivery times for key mechanical equipment for the Project. Figure 13 below shows graphically the increases in lead times from the DFS to those quoted in the FEED tendering process.

Figure 13: Key Equipment Lead Times



One of the key impacts of this increase in lead times has been to bring equipment procurement onto the project critical path. The Company, funding permitting, intends to commit to long lead equipment procurement in advance of FID and commencing early works construction. Financial Close for the project, when the project debt is closed and the full project equity is raised, will occur prior to commencement of main construction works during the completion of early works construction. This is hoped to minimise any construction schedule impacts.

The overall schedule for the Project is presented in Figure 14. Key dates include:

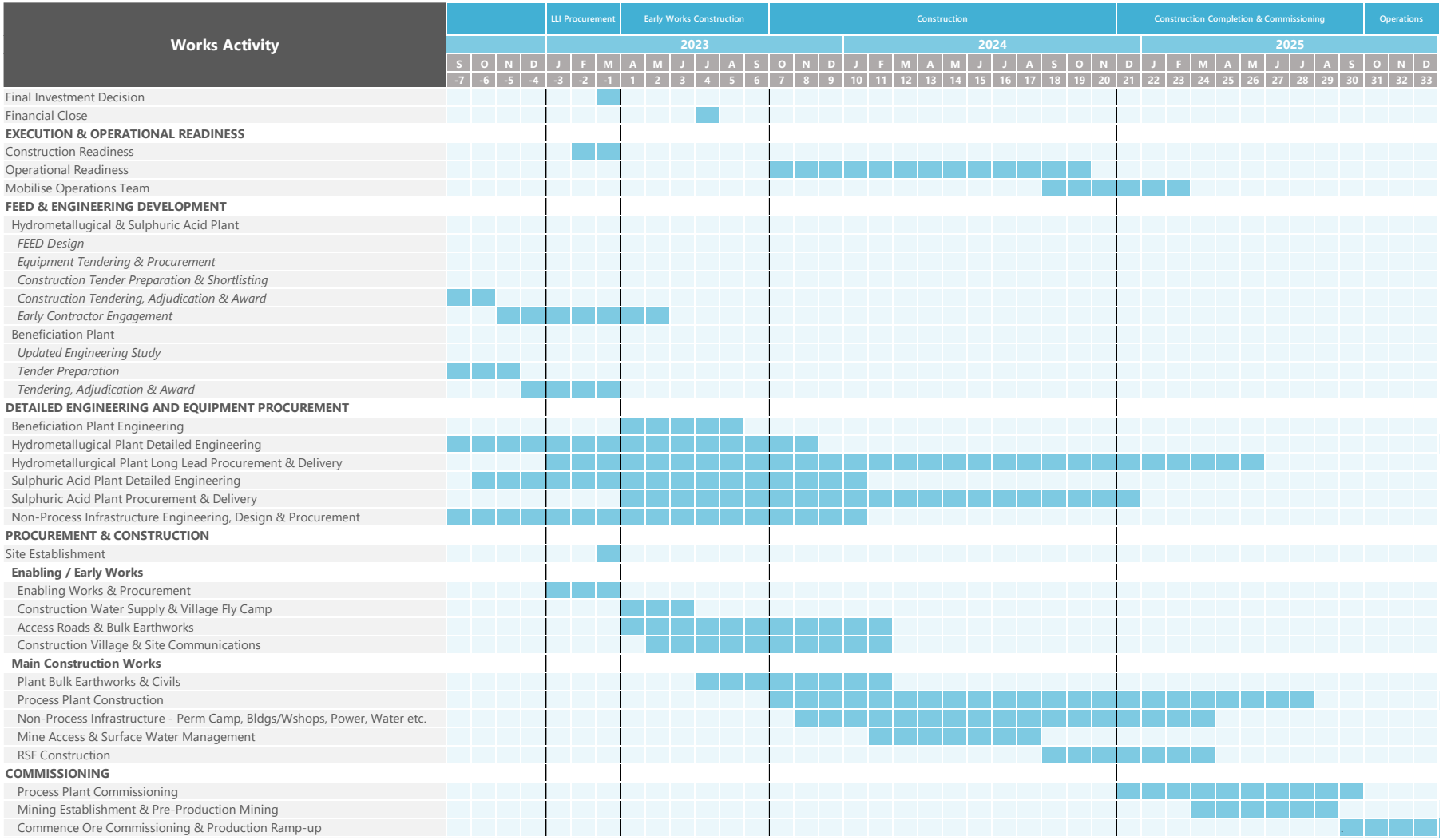
- Commencement of the ECI engagement with the construction contractor for the hydrometallurgical plant in November 2022.
- Commitment to long lead equipment procurement, particularly for sulphation equipment, with orders placed early 2023.
- FID in March 2023 allowing continuation of long lead equipment procurement and commencement of early works construction.
- Early works construction period of six month focussing on the construction accommodation village, construction water supply and process plant bulk earthworks.
- Financial Close of project funding mid-2023.

- Main construction period of 24 months from October 2023, with overlapping commissioning period of up to 10 months
- Mining contractor mobilisation in March 2025 and pre-production mining of four to five months prior to commencement of ore processing.
- First ore processing in late-September 2025 and first production towards the end of 2025.

All dates presented are contingent on securing funding for the activities as required.

NOLANS PROJECT UPDATE

Figure 14: Nolans Implementation Schedule



Capital Cost Estimate

Capital Cost Drivers

Since the completion of the DFS and 2021 Feasibility Study Update various macro-economic impacts have directly or indirectly impacted on the construction industry. This has included impacts driven by the COVID-19 global pandemic and conflict in Ukraine on supply chains for equipment, bulk materials and fabricated items, labour shortages impacted by travel restrictions and quarantine difficulties. There has also been an increase in construction activity, particularly in infrastructure, precipitated by government stimulus aimed at combatting the impact of the pandemic and other global events on world economies.

These impacts have influenced the following areas, all of which have been considered in the updated capital cost estimate:

- Cost and delivery times of mechanical and electrical equipment, with the delivery times also impacting of project schedule and consequent schedule associated costs.
- Supply cost of bulk materials (steel, plate work, piping, cable, valves etc.).
- Construction and professional labour costs and availability.
- Availability of second-hand village buildings.
- Fuel and construction consumable costs.
- Travel costs to and from site.

Basis of Estimate

The updated capital cost estimate has been developed to reflect the flowsheet, throughput, execution methodology outlined above and the market impacts on costs and rates since the previous capital cost estimate. It has been developed from first principles and not scaled or factored unless otherwise noted below.

The basis for the updated capital cost estimate is as follows:

- Beneficiation plant capital cost estimate has been developed from first principles by GRES as part of the updated engineering study based on a fixed price EPC delivery model. Contingency included in the beneficiation plant estimate has been aggregated with the remainder of the contingency for the Project.
- Equipment supply for most of the equipment has been tendered to provide either a fixed and firm price or budget price. Only minor equipment has been priced using the engineer's database costs.
- Material take-offs for bulk materials have been developed by the engineers based on the current status of the 3D model, preliminary layouts, and design (approximately 50-60% complete for the hydrometallurgical plant).
- Bulk materials supply and fabrication costs have been drawn from the hydrometallurgical plant tenders or from the engineer's database of recent costs.

- Wastage allowances have been included based on hydrometallurgical plant tenders or an engineer's estimate.
- Construction labour rates and productivity factors have been based on the hydrometallurgical plant tenders or engineer's database for other areas of the Project.
- Construction labour hours have been based on hydrometallurgical plant tender construction norms that were received, or those from the engineer's database for other areas of the Project, applied to the bulk material take-offs as well as an assessment of equipment installation hours based on the information received from equipment vendors collated into a level-of-assembly register.
- Construction indirect costs, including management, labour, equipment, consumables, and temporary facilities, have been developed from first principles as part of the hydrometallurgical plant tender process by the construction contractors, or from the engineer's first principles estimate for the other areas of the Project.
- Potential savings identified through the hydrometallurgical plant tender process and other engineering works have been taken into account based on a preliminary estimate of potential savings and then included in the quantitative risk assessment to allow additional contingency to cover the uncertainty around the preliminary estimates.
- The estimate has been compiled on the following execution basis:
  - Combination of engineering, procurement, and construction management (**EPCM**), design and supply, supply and install and EPC package execution as described above.
  - Asian supply and fabrication of structural steel and platework with rates provided by the construction tenderers for the hydrometallurgical plant.
  - Traditional field installation with equipment and bulk materials brought to the site, with the largest possible items able to be transported via standard gauge road transport.
- Major NPI rates and quantities have been based on designs and tender rates or updated budget quotations, with minor costs included based on typical rates.
- Engineering costs have been revised to suit the deliverables required as identified by the construction contractors in their tender submissions.
- Owner's costs have been updated by first principles based on the contract with KBR for the IPMT.
- Project indirect costs have generally been included based on detailed estimates and aligned with the execution plan and schedule.
- Sunk costs (at FID), deferred capital, pre-production costs, corporate project costs, working capital and escalation are excluded.
- Contingency has been developed based on a quantitative risk analysis totalling 14.1%.

The estimate is presented in Australian dollars but input into the financial model in native currencies with the forward exchange rate curves included in the financial model to determine the Australian dollar amount. The estimate is consistent with a ACCE Class 3 estimate.

The final updated capital cost estimate is presented in Table 5.

Table 5: Updated Capital Cost Estimate

Overall Project Capital Cost Estimate Summary by Area	
Description	**A$M**
Mining Infrastructure	7.4
Beneficiation Plant	55.8
Extraction Plant	555.0
Separation Plant	86.7
Reagents and Services	158.2
Non-Process Infrastructure	117.0
Total Direct Cost	**980.0**
Temporary Construction Facilities	58.8
Travel & Accommodation	49.5
Detailed Engineering & PCM	248.9
Mobile Fleet	5.5
Owner's Cost	49.6
Import Duties	2.8
Total Indirect Cost	**415.2**
Contingency	196.1
Forex Adjustment	(1.5)
Escalation	Excl.
Total	**1,589.8**

Note: Numbers may not compute due to rounding. Forex adjustment represents the adjustment to the total capital cost estimate when moving from the fixed estimate exchange rate to the variable exchange rate applied in the financial model over the construction period.

Debottlenecking, Deferred and Sustaining Capital

Debottlenecking capital has been allowed over the ramp up period, at A$20m during the first and second years of operation, to cover unforeseeable modification to the processing plant to reach the design capacity. In addition, A$11m is included in Years 13 and 14 of operations to increase the capacity of the beneficiation plant from Year 14 through the addition of a ball mill, additional flotation capacity and a larger tailings thickener to maintain production rates as ROM grade declines.

Deferred capital for the chlor-alkali plant totals A$42m scheduled to commence in the sixth year of production and come into operation at the beginning of the eighth year of production.

Sustaining capital has been estimated as a below-the-line item to cover the funding required over the life of the Project to replace equipment at the end of its useful life or planned expenditure to modify the plant as necessary to sustain operations at the rated capacity. General sustaining capital was estimated by applying factors to direct costs, excluding earthworks using the same factors as outlined in the DFS.

In addition, sustaining capital has been estimated based on first principles for the following:

- RSF lifts.
- Re-sheeting of unsealed roads and hardstand areas.
- Surface water management relating to the diversion of Kerosene Camp Creek around the mining area.
- Geological grade control.

Operating Cost Estimate

Operating Cost Drivers

As with the capital costs various global factors have impacted on the operating costs estimated for the Project since the DFS and 2021 Feasibility Study Update. These have included:

- High inflation, both in Australia and globally, through 2022 causing labour cost increases, impacting various cost areas, as well as reagent cost increases.
- Increased gas costs caused in part by the conflict in Ukraine and consequently high demand for seaborne liquified natural gas, and in-part by gas supply issues in the Northern Territory cause by poor performance of the gas field supplying the Northern Territory domestic gas market.
- Increased fuel costs caused by high oil prices driven by global market factors.

The Company has not included the costs associated with its commitment to net zero greenhouse gas emissions, however a program of work is currently underway to quantify any impacts.

Basis of Estimate

The operating costs presented have been reviewed and updated using the following methodology:

- Mining costs were inflated over those provided in budget mining contractor submissions in 2021. The average increase in mining costs is 8% on a contractor mining basis.
- Owner operator mining costs have been developed based on adjusting the contractor mining costs by removal of the estimated profit on labour and overheads with minimal adjustment to equipment costs to represent the leased equipment model.
- Labour costs were updated to allow for some increase in requirements as well as labour rates being increased by 18% based on an assessment of labour cost increases, including superannuation increases, between mid-2021 and the fourth quarter of 2022.
- Reagent consumptions were updated based on the latest process mass balance with pricing adjusted as follows:
  - Sulphur price was updated based on a long-term supply cost forecast from CRU, with shipping cost adjusted based on advice from a bulk shipping company.
  - Caustic soda, hydrochloric acid, oxalic acid, hydrogen peroxide prices were updated from domestic suppliers where reliable long-term pricing was available or based on an assessment of long-term pricing based on historical pricing.
- Consumables were re-estimated based on costs and anticipated usage/consumption supplied, where possible, from equipment suppliers, or using typical usage rates.
- Power generation costs were scaled based on a budget quotation for a power station installation on a BOO basis.
- Gas pricing was updated to A$8.00 per GJ based on advice regarding long term gas pricing from a gas consultant engaged by the Company to assist with the negotiation of the Project gas supply although sensitivity analysis to gas costing shows that an increase to A$12.00 per GJ would only result in a reduction in NPV of A$138m.
- Maintenance materials costs were factored from the updated mechanical and electrical equipment costs using typical industry factors.

- Laboratory costs were based on quotations received from laboratory service providers based on a BOO contract tender for the supply of equipment and operation of the laboratory at site.
- Transport and logistics rates, for both incoming and outgoing product freight, have been updated based on the tenders received for the operational logistics from three tier one logistics providers.
- Costs for the build-own-operate contract for the permanent village were included in general and administration costs based on advice from potential partners.

The accuracy of the operating cost estimate remains in line with an ACCE Class 3 estimate.

The overall average operating cost, derived from the financial model, is presented in Table 6.

Table 6: Updated Operating Cost Estimate

Project Operating Cost Estimate Summary		
Description	**A$M**	**US$/kg NdPr**
Contract Mining	38.4	6.18
Labour	36.9	5.93
Reagents	63.8	10.27
Consumables	14.2	2.28
Power & Gas	55.7	8.97
Transport & Logistics	34.1	5.49
Maintenance	13.9	2.23
Laboratory	5.7	0.92
General & Admin	10.6	1.70
Total Mine Gate Cost	**273.3**	**43.95**
Mine Gate Phosphoric Acid Credit	(57.9)	(9.31)
Mine Gate Cost net of Phosphoric Acid Credit	**215.4**	**34.64**

Note: Numbers may not compute because of rounding. Average costs are calculated as the arithmetic annual average following the anticipated two year ramp up period and excluding the final years of production from low grade stockpiles.

Marketing

Rare Earth Market

The Magnet segment represents 45% of the rare earths market and is expected to grow to 54% by 2032. Global demand for (NdFeB) permanent magnets is rapidly growing within China and advanced economies driven by multisector end use applications, Covid recovery and the introduction of supporting legislation for low carbon technologies in the US, EU, and China.

Demand for NdFeB sintered magnets is expected to increase from 208ktpa in 2022 to 353ktpa in 2032 supported by the upcoming energy transition and use in clean energy technology and e-mobility and forecast to grow at a compound annual growth rate (**CAGR**) of 5.4%. Production of NdFeB magnets is expected to expand rapidly in China along with new developments outside China to meet the growing demand for new energy vehicle (**NEV**) expected to make up 31% of the magnet market by 2032. This accelerated expansion of vehicle electrification will increase demand for NdPr oxide and use of NdFeB magnets in EV traction motors. EV drivetrain demand in magnets is forecast to grow at a **(CAGR)** of 11%.

Projected demand for NdPr oxide will create supply shortfalls in the foreseeable future with limited new supply entering the market over the forecast period. Supply is projected to expand through development of advanced rare earth projects and continued expansion of the Chinese domestic supply. China's supply will expand modestly to

meet its own requirements and will be constrained by environmental restrictions, resource protection, industry consolidation, and mining quota control. Supply growth of 47,000 tonnes per annum of NdPr oxide is required over the next decade to 2032.

Offtake Agreements

Arafura's offtake strategy for the Project has been to target automotive original equipment manufacturers (OEMs) and wind turbine manufacturers from geographic regions with supportive export credit agencies and the Company continues to receive strong interest from a range of parties that are aligned with its offtake and investment strategy.

A binding offtake agreement has been signed with Hyundai Motor Company (**Hyundai**) for the supply of NdPr over a seven-year term (*refer to ASX announcement dated 7 November 2022*). Hyundai can elect whether to be supplied with NdPr oxide or its equivalent in NdPr metal with contract volumes (per contract year) for NdPr oxide of 600 tonnes per annum in year one, increasing to 1,500 tonnes per annum in years four to seven to align with ramp up of the Project production. Pricing is determined using a formula-based mechanism referencing the NdPr price ex-works China price per tonne. Pricing includes various discount and other mechanisms to secure offtake terms suitable to underpin the Project financing.

The Company intends to secure 85% of its planned production as binding offtake agreements over the first seven years, with the remaining 60% now under negotiation with a range of multi-national companies, including GE Renewable Energy where a non-binding memorandum of understanding for collaboration was signed in July 2022 (*refer to ASX Announcement dated 12 July 2022*).

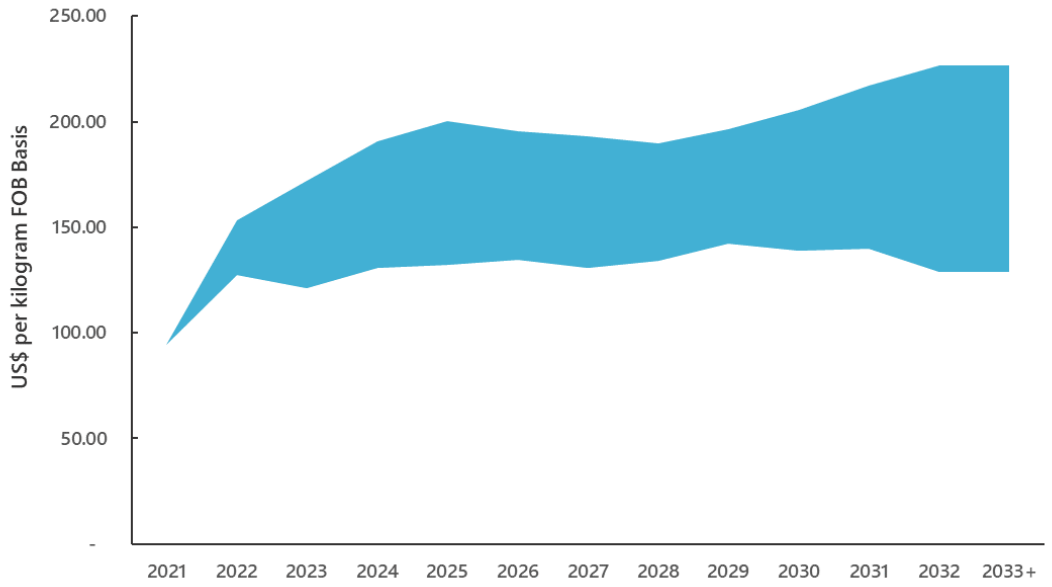
Rare Earth Price Forecast

Forecast prices have been sourced from two independent consulting groups, Wood MacKenzie and Adamas Intelligence, providing market supply and demand analysis and rare earth price forecasts. Both Groups provided rare earth market reports outlining price projections for NdPr oxide along with data analytics on the market supply and demand of NdFeB magnets and NdPr oxide. The analyst's reports provided long term price forecast beyond 2030 with various price scenarios linked to supply and demand projections.

The Company utilised base case price projections for NdPr oxide from 2022 to 2032 on a real basis inclusive of VAT from both Wood Mackenzie and Adams Intelligence applying a weighted average price of NdPr oxide between the two forecasts, based on 80% low and 20% high, on an excluded VAT basis in its financial evaluation of the Project.

Forecast prices for individual middle and heavy rare earth products are also supplied through the two independent agencies and the pricing mechanism is based on 35% realisable value of the contained value of the rare earth oxide composition in the Nolans SEGHRE oxide product. The same weighted average used for NdPr oxide between the two reports is applied to the SEGHRE oxide product.

Figure 15: NdPr Oxide Price



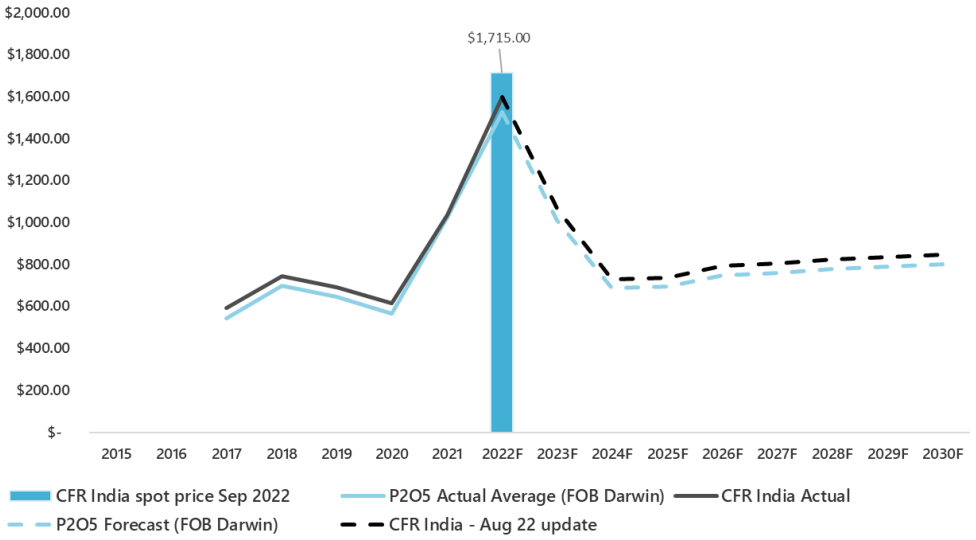
Note: Pricing data sourced from base case forecasts prepared by Wood Mackenzie, Global Rare Earths Outlook -Q3 2022 and Adamas Intelligence, Rare Earth Market Outlook to 2035, July 2022

Phosphoric Acid Forecast

Demand for phosphate-based fertilizers remained strong during 2021 and peaked in 2022 with higher prices recorded across all phosphate product groups. Medium and long-term phosphoric acid price projections from CRU through to 2032 predict prices declining from peak prices in 2022. Supply over the year was constrained by lower phosphoric acid Chinese exports, war in Ukraine and demand growth. Medium and long-term prices over the forecast period are anticipated to decline to more normal levels due to softening demand, demand destruction and greater supply capacity from major producers in Middle East and Morocco. The Indian fertilizer market remains the largest importer of wet phosphoric acid by region with supply mainly sourced from North Africa and the Middle East. Long term demand for phosphoric acid is expected to remain stable in the Indian fertilizer market and projected export prices are forecast to decline to normal levels from 2024.

The latest price forecast for phosphoric acid, on an FOB-Darwin basis from CRU is shown in Figure 16.

Figure 16: P_2O_5 Forecast Price



Note: CRU Consulting, Phosphate Fertiliser Market Outlook, August 2022, Phosphoric acid price Forecast

A summary of the pricing outcomes used the financial evaluation is shown in Table 7.

Table 7: Realised Product Pricing

Product Pricing Outcomes		
Description	**Offtake Period**	**Life of Mine**
US$/kg NdPr Oxide FOB Darwin	125.50	130.10
US$/kg SEG/HRE Oxide FOB Darwin	14.20	
Phosphoric Acid US$/t P_2O_5 FOB Darwin	828	

Note: Offtake period refers to the first seven years of operation when offtake agreements contain discounts and other contract mechanisms put in place to underpin the Project financing for up to approximately 85% of the forecast NdPr oxide production. Averages are calculated as the weighted average over the specified period.

Financial Analysis

The financial evaluation of the Project has been undertaken using a Discounted Cash Flow (**DCF**) analysis in Australian dollars. The evaluation includes only cash flows from the Project and excludes potential cash flows from exploration activities or other assets held by Arafura. A net present value (**NPV**) and internal rate of return (**IRR**) for the Project have been calculated over a 38-year operational period.

The DCF analysis and financial evaluation in this Project Update does not take into account the potential uplift for the cash flows from debt financing and assumes the Project is funded entirely through equity. Key activities and the status of the debt financing are covered in the Project Funding section of this report.

Methodology and Assumptions

The following has been used as the basis for the financial evaluation:

- Project construction and commissioning period of 29 months followed by a 38-year operation period, based on processing the mining inventory, including a two-year ramp-up period to full production and five years at the end of the LOM processing low grade material from long term stockpiles.
- Capital costs as presented above together with inclusions for working capital, pre-production costs, deferred capital for, chlor-alkali plant and beneficiation plant expansion.
- Operating costs as presented above have been applied to the mining schedule, with an allowance for additional labour, reagents, consumables, and consultants during the ramp-up period with an aim of reducing the ramp-up time.
- Sustaining capital distributed across the operating period from year six of operation and including A$20 million across years one and two of production to assist in debottlenecking and achieving production ramp-up.
- Closure costs have been developed in line with the mine closure plan included in the mine management plan for the closure and rehabilitation of the mining area, including waste rock dumps, and the RSF with the closure costs of the RSF included in the cash flow distributed across the LOM to reflect the staged closure of the facilities. Closure costs for the process plant and other infrastructure, such as the accommodation village, have been assumed to be offset by salvage value of the assets for financial modelling purposes.
- US$/A$ exchange rate of 0.71 average over the LOM based on data sourced from Deloitte Access Economics, June 2022.
- Discount rate of 8%, representing the estimated cost of capital, with post-tax NPV calculated at FID.
- Royalties have been included to allow for payments required under the Northern Territory *Mineral Royalty Act* and with payments to be made in accordance with the native title agreement executed with the native title holders of the Project area.
- Taxation has been based on the *Income Tax Assessment Act 1997* including allowance for a carry-forward income tax losses related to the Project of A$211m.
- Product pricing forecasts based on a weighted average between the two independent marketing reports prepared by Wood Mackenzie and Adamas Intelligence for rare earths and CRU for phosphoric acid as outlined above.
- Any other assumptions remain unchanged from the DFS report.

Financial Outcomes

An overview of the financial results is set out in Table 9 with the Project forecast to generate average sales revenue of A$864m (US$617m) per annum, net of selling expenses and royalties. Total revenue will include A$811m (US$579m) per annum of NdPr which will comprise approximately 89% of total revenue.

The NdPr oxide revenue is based on the pricing outlined above with an LOM average NdPr oxide price of US$130.10 per kilogram and US$125.50 per kilogram during the first seven years of operation when the offtake agreements are in place and discounts apply.

Table 8: Project Financial Overview

Financial Overview		
Description	**US$M/a**	**A$M/a**
Sales Revenue		
Rare Earth Products	587	822
Phosphoric Acid	65	91
Royalties & Selling Expenses	35	49
Net Revenue	**617**	**864**
Operating Expenditure		
Mining	31	44
Processing	138	193
General & Administration	26	36
Total Operating Expenditure	**195**	**273**
Product Transport	13	18
EBITDA	**409**	**573**

Note: Numbers may not compute because of rounding. Average revenue, costs and EBITDA are calculated as the arithmetic annual average following the anticipated two year ramp up period and excluding the final years of production from low grade stockpiles.

An overview of financial key performance indicators is set out in Table 9. After offsetting the MGA phosphoric acid by-product revenue, the Project's operating cost will be US$34.64 per kilogram of NdPr oxide.

The Project will have an NPV of A$2,358m (US$1,693m) at an 8% discount rate and an IRR of 19.3% on an after-tax basis, calculated over the LOM. The after-tax payback occurs in year five of operations.

Table 9: Project Financial Key Performance Indicators

KPI Analysis		
Description	**US$**	**A$**
Operating Cost $/kg NdPr (Average)	43.95	61.60
Operating Cost $/kg NdPr less Phosphoric Acid by-product (Average)	34.64	48.52
NPV_8 after tax (million)	1,693	2,358
IRR after tax (%)	19.3	
After tax payback (years of production)	4.8	

Note: Average costs are calculated as the arithmetic annual average following the anticipated two year ramp up period and excluding the final years of production from low grade stockpiles.

It should be noted that there is a low level of geological confidence associated with Inferred Mineral Resources included in the production target on which this financial analysis is partly based and there is no certainty that further exploration work will result in the determination of indicated mineral resources or that the production target itself will be realised.

Alternate Pricing Scenario Cases

In order to assess the sensitivity of the Project to various NdPr Oxide price forecasts the Project economics were assessed using a low-price scenario, based on the Wood Mackenzie September 2022 base price forecast, and a high-price scenario, based on the Adamas Intelligence July 2022 base price forecast, as presented above. The Project outcomes for these scenarios, and the base case scenario, are included in Table 10.

Table 10: Pricing Scenario Financial Key Performance Indicators

Pricing Scenario KPI Analysis			
Description	**Low**	**Base**	**High**
US$/kg NdPr Oxide FOB Darwin (Offtake Contract Period)	114.20	125.50	147.20
US$/kg NdPr Oxide FOB Darwin (LOM)	113.90	130.10	190.00
Average EBITDA (A$ per annum)	480	573	912
NPV_8 after tax (A$m)	1,780	2,358	4,184
Internal Rate of Return (%)	17.0	19.3	24.1

Note: Offtake contract period refers to the first seven years of operation when offtake agreements contain discounts and other contract mechanisms put in place to underpin the Project financing for up to approximately 85% of the forecast NdPr oxide production. Averages are calculated as the weighted average over the specified period. Average EBITDA is calculated as the arithmetic annual average following the anticipated two year ramp up period and excluding the final years of production from low grade stockpiles.

Reserve Only Case

The financial analysis was also carried out for the Ore Reserves only case to demonstrate that the Project viability is not reliant on Inferred Mineral Resources included in the mining inventory. This production schedule over 29-years, including a two year ramp up and approximately two years at the end of the LOM processing low grade material off long term stockpiles, delivers a A$2,137m NPV at 8% discount rate, and IRR of 19.3% based on an average LOM NdPr oxide price of US$129.80 per kg and average operating costs of US$36.36 per kg of NdPr net of phosphoric acid by-product credit.

Sunk Costs

Sunk costs have been excluded from the financial analysis. Since the commencement of FEED, a significant amount of costs has been expended by the Company which have reduced the capital cost used in the financial model of the Project by bringing expenditure forward prior to FID. Sunk costs are outlined in Table 11.

Table 11: Nolans Project Sunk Costs

Sunk Costs	
Description	**A$m**
Owners' Project Management	14.2
Engineering Design	34.2
Pre-contract Payments	2.1
Pre-payments for Equipment	15.8
Total	**66.3**

Note: Some sunk cost payments totalling A$27.3m have not yet been made but are forecast to be made prior to FID as outlined above based on availability of funding.

Sunk costs do not include corporate or other costs that do not contribute directly to developing the Nolans Project. Of the sunk costs identified approximately A$50m are costs that directly reduce the capital cost of the Project.

Project Funding Requirement

The total Project funding requirement has been calculated to be US$1,276m as shown in Table 12: Nolans Project Funding Requirement. Pre-production costs include mining, labour and inventories expended prior to first production. Working capital expenditure incorporates working capital for differences in trade terms along with the funding of forecast de-bottlenecking costs and any deferred capital over and above the projected revenue from

sales. Provision for capital escalation is calculated at of 2.0% per annum adjusted against the proposed capital expenditure drawdown over design and construction.

The funding shown in Table 12 excludes finance costs related to debt funding activities as well as any environmental or other bonds and securities that may be payable. The total Project funding also reflects movement in values as a result of exchange rate fluctuations during the construction period.

Table 12: Nolans Project Funding Requirement

Project Funding		
Description	**US$M**	**A$M**
Capital Expenditure (based on forecast exchange rates)	1,135.1	1,589.8
Pre-production Costs incl. mining, labour, spares & inventory	43.8	61.4
Corporate Project Costs incl. levies, insurances and other payments	3.5	4.9
Working Capital incl. funding debottlenecking, deferred capital	55.8	78.1
Capital Escalation	37.9	53.1
Project Funding	**1,276**	**1,787**

Project Financing

Arafura continues to progress negotiation of draft terms and due diligence for the debt financing facilities for the Nolans project with the mandated lead arrangers (**MLA**s), Société Générale and National Australia Bank (*refer ASX Announcement dated 28 April 2022*) together with Export Finance Australia (EFA) and the Northern Australia Infrastructure Facility (NAIF).

The two initial MLAs were engaged to arrange and syndicate a finance facility targeting debt funding in the order of 60% of the estimated total development cost of the project, including working capital and other credit facilities. Under the mandate the MLAs, subject to the terms of the mandate letter, will seek to arrange limited recourse debt finance of approximately US$510 million (inclusive of cost overrun facility). Arafura has commenced the preparation of a revised funding strategy incorporating the increased project funding requirement from the Project Update. There is no guarantee or certainty that the targeted debt funding package will be secured, and as a result of the increased project funding requirement it is expected that gearing for the Project will be less than the initial 60% target. The debt financing will be conditional on completion of a successful due diligence process, agreement of terms and conditions, credit approvals and entry into binding facility agreements. The Company will provide further details about its project financing arrangements for the development of the Project when financing has been secured and binding agreements have been entered into. Any binding agreements will remain subject to other milestones which may include offtake arrangements and securing the equity required to fully fund the Project.

The proposed debt funding package will comprise commercial bank facilities outlined above, additionally the Company has received letters of support from EFA and NAIF for senior debt facilities of up to A$200 million and A$100 million respectively for up to a 15-year facility term (*refer to ASX Announcements dated 7 May 2021 and 18 June 2021*). The letters are non-binding and subject to conditions that are typical for a financing of this nature, such as internal credit approval, negotiation of lender agreements and further due diligence enquiries.

In addition to the debt funding work stream, Arafura has been awarded grant funding of A$30m under the Federal Government's Modern Manufacturing Initiative *(refer to ASX Announcement dated 16 March 2022)* which will contribute to the funding of the construction of its rare earth separation plant.

Advancement and negotiation of the finance facilities are targeted to allow for FID in March 2023 with financial close on project financing to follow in mid-2023.

Forward Looking Statement

This report contains certain statements which may constitute "forward-looking statements." Such statements are only expectations or beliefs and are subject to inherent risks and uncertainties which could cause actual values, results, or performance achievements to differ materially from those expressed or implied in this report. No representation or warranty, express or implied is made by Arafura Rare Earths Limited that any forward-looking statement contained in this report will occur, be achieved or prove to be correct. You are cautioned against relying upon any forward-looking statement.

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Information in this report which is attributed to a third-party source has not been checked or verified by Arafura Rare Earths Limited.

Mineral Resources and Ore Reserves

The information in this report that relates to Mineral Resources is extracted from the Company's ASX announcement dated 7 June 2017 (Detailed Resource Assessment Completed) and was completed in accordance with the guidelines of the JORC Code (2012). The information in this report that relates to Ore Reserves is extracted from the Company's ASX announcement dated 16 March 2020 (Major Increase in Mine Life for the Nolans Project) and was completed in accordance with the guidelines of the JORC Code (2012). Arafura Rare Earths Limited 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 market announcements continue to apply and have not materially changed. Arafura Rare Earths Limited confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the original market announcements.

Production Targets and Forecast Financial Information

The information in this announcement that relates to production targets and forecast financial information is extracted from the Company's ASX announcement dated 11 May 2021 (Nolans Project Update). The production target is based on 12% Proved Reserves, 62% Probable Reserves and 26% inferred resources as reported in the Company's ASX announcement dated 11 May 2021. There is a low level of geological confidence associated with inferred mineral resources and there is no certainty that further exploration work will result in the determination of indicated mineral resources or that the production target itself will be realised. Arafura confirms that all material assumptions underpinning the production target and forecast financial information derived from the production target set out in the Company's ASX announcement dated 11 May 2021 (including any assumptions referred to in the Company's ASX announcement dated 11 May 2021 that were sourced from the DFS as set out in the Company's ASX announcement dated 7 February 2019 (Nolans Project Definitive Feasibility Study) or from the Updated Mining Study as set out in the Company's ASX announcement dated 16 March 2020 (Major Increase in Mine Life for the Nolans Project)), continue to apply and have not materially changed.