ASTRAL RESOURCES

MANDILLA GOLD PROJECT – KALGOORLIE, WA
POSITIVE SCOPING STUDY

SCOPING STUDY HIGHLIGHTS STRONG POTENTIAL TO DEVELOP A STANDALONE, LONG-LIFE GOLD OPERATION AT MANDILLA

- Positive Scoping Study completed for the potential development of the 100%-owned Mandilla Gold Project, located near Kalgoorlie in the Goldfields region of Western Australia.
- Mandilla is one of the largest undeveloped free-milling open pit gold development projects in the Kalgoorlie region.
- 2.5Mtpa CIL processing plant and associated infrastructure identified as the optimum commercialisation strategy for Mandilla.
- Life-of-mine (**LoM**) payable metal production target of **845koz** at an All-In Sustaining Cost (**AISC**) of approximately **$1,648** per ounce.
- Projected **average annual gold production target of approximately 100kozpa** at an average feed grade of **1.30g/t Au** over the first 7.4-year period, reducing to a projected average gold production target of approximately 41kozpa at an average feed grade of 0.50g/t Au when treating lower grade stockpiles over the remaining 3.4-year period.
- Total estimated pre-production capital of approximately $191 million, inclusive of:
  - Processing plant & non-process infrastructure CAPEX ($123 million); and
  - Pre-production mining and general & administrative costs ($68 million).
- Study generates compelling financials for Mandilla, using a A$2,750/oz gold price:
  - Free cash flow – $740 million
  - Net present value (8%) – $442 million
  - Internal rate of return – 73%
  - Payback period – 0.75 years
  - All-in sustaining costs – $1,648 per ounce
- Scoping Study based on the Mineral Resources defined at Mandilla only. Further upside from ongoing exploration at Mandilla targeting resource growth as well as the inclusion of the nearby Feysville Gold Project as a potential future satellite ore source.

Mandilla Gold Project - Scoping Study Investor Webinar

Friday 22 September 2023 – 9am AWST / 11am AEST

https://www.bigmarker.com/read-corporate/Astral-Resources-Investor-Webinar

Cautionary Statement

The Scoping Study (“**Study**”) referred to in this announcement has been undertaken by Astral Resources NL (**Astral** or the **Company**) to determine the viability of a standalone development, including open pit mining and processing at Astral’s Mandilla Gold Project (**Project** or **Mandilla**) in Western Australia.

The Study is a preliminary technical and economic assessment of the potential viability of the Project. It is based on low level technical and economic assessments, (+/- 35% accuracy) and is insufficient to support estimation of Ore Reserves or an investment decision. Further evaluation work and studies are required before Astral will be in a position to provide assurance of an economic development case at this stage, or to provide certainty that the conclusions of the Study will be realised.

The Study is based on JORC 2012 Code Indicated and Inferred Mineral Resources defined within the Project, with a production target comprising Indicated (70%) and Inferred (30%) Mineral Resources over the life of mine. Investors are cautioned that there is a low level of geological confidence in Inferred Mineral Resources and there is no certainty that further drilling will result in the determination of Measured or Indicated Mineral Resources, or that the production target will be realised.

Of the Mineral Resource tonnages scheduled for extraction in this Study’s production target plan during the first three years, approximately 80% is classified as Indicated and 20% as Inferred, incorporating the projected 0.75 year payback period (from commencement of production). Astral has concluded that the financial viability of the Project is not dependent on the inclusion of the Inferred Resources and Astral has concluded that it has reasonable grounds for disclosing a production target which includes Inferred Mineral Resource material.

The Study is based on the material assumptions outlined in this announcement, including assumptions about the availability of funding in the order of approximately $191 million. Astral considers that all material assumptions of this Study are based on reasonable grounds. However, investors should note that there is no certainty that Astral will be able to raise the required amount of funding when it is required. It is also possible that said funding may only be available on terms that may be dilutive to or otherwise effect the value of Astral’s shares. It is also possible that Astral could pursue other value realisation strategies such as a sale, partial sale or joint venture of the Project. This could materially reduce Astral's proportionate ownership of the Project. While Astral considers all the material assumptions to be based on reasonable grounds, there is no certainty that they will prove to be correct or that the range of outcomes indicated by the Study will be achieved.

Notwithstanding many components of this study, such as pit shell design, capital costs, processing operating costs and other amounts may be more accurate than +/- 35%, Astral has concluded it has a reasonable basis for providing the forward-looking statements included in this announcement and believes it has a ‘reasonable basis’ to expect it will be able to complete the development of the Project as outlined in the attached Study.

This announcement has been prepared in compliance with the JORC Code 2012 Edition (JORC 2012) and the ASX Listing Rules. All material assumptions on which the forecast financial information is based have been provided in this announcement and are also outlined in the attached JORC 2012 table disclosures.

Given the uncertainties involved and listed above, investors should not make any investment decision based solely on the results of the Scoping Study.

Astral Resources NL (ASX: AAR) (**Astral** or the **Company**) (ASX: AAR) is pleased to announce the results of a positive Scoping Study completed for its flagship Mandilla Gold Project (**Mandilla** or the **Project**). Mandilla is situated in the northern Widgiemooltha greenstone belt, 70 kilometres south of the significant mining centre of Kalgoorlie, in the Goldfields region of Western Australia (Figure 1).

The Mandilla Scoping Study (**Scoping Study** or **Study**) focuses on extraction of Mineral Resources located within the Mandilla tenements, which comprise two granted Mining Leases (M15/96 and M15/633).

Figure 1 – Mandilla and Feysville Gold Projects location map.

Astral Resources' Managing Director Marc Ducler said:

"We are pleased that the Mandilla Scoping Study has confirmed the potential for Mandilla to become a highly profitable standalone gold operation. Mandilla is situated in the premier Goldfields region of Western Australia and is firmly established as one of the best free-milling, open pit Resources in this district in both scale and quality of project.

"The Study outlines compelling financial metrics for a Mandilla development, with projected free cash-flows of approximately $740 million over a life-of-mine of 11 years and a payback period of less than a year for total pre-production capital expenditure of approximately $191 million.

"The Study financials have been modelled using a gold price assumption of A$2,750 per ounce, which is lower than the spot price has been for the past six months and using a five-stage open pit design based on a A$2,100 per ounce pit optimisation. This further highlights the potential upside for a Mandilla development.

"Astral continues to advance exploration and resource definition efforts at Mandilla, as well as at the Company's nearby Feysville Gold Project, while simultaneously progressing pre-feasibility studies as it seeks to deliver on its strategy of building another quality Western Australian mining operation."

Study Highlights

- 2.5Mtpa Carbon in Leach (**CIL**) processing plant incorporating a three-stage crush and ball mill configuration with associated infrastructure identified as the optimum commercialisation strategy for Mandilla.
- Projected average annual gold production target of approximately 100kozpa at an average feed grade of 1.30g/t Au over the first 7.4-year period, reducing to a projected average gold production target of approximately 41kozpa at an average feed grade of 0.50g/t Au when treating lower grade stockpiles over the remaining 3.4-year period.
- Five-stage open pit design based on a A$2,100/oz gold price pit optimisation.
- All-In Sustaining Costs (**AISC**) over the full Life-Of-Mine (**LoM**) average approximately $1,648/oz (payable metal), comprising:
  - LoM mining: $967/oz
  - LoM processing: $545/oz
  - LoM general and administrative (**G&A**): $40/oz
- Total pre-production capital and working capital of approximately $191 million, comprising:
  - Processing plant & non-process infrastructure of approximately $123 million; and
  - Pre-production mining and G&A costs approximately $68 million.
- Compelling financial outcomes, calculated using a A$2,750/oz gold price, reflect the quality of Mandilla:
  - Pre-tax and undiscounted free cash flow of approximately $740 million over the life of the Project.
  - Cumulative EBITDA of approximately $954 million over the life of the Project.
  - Pre-tax and undiscounted Net Present Value (**$NPV_{8\%}$**) of $442 million.
  - Pre-tax and unleveraged Internal Rate of Return (**IRR**) of approximately 73%.
  - Pre-tax and unleveraged payback period of approximately 0.75 years (from commencement of production).

Key Study Outcomes and Summary

The Company considered various options to develop the Project, determining that a 2.5 million tonne per annum (**Mtpa**) CIL processing plant and associated infrastructure located at Mandilla is the optimum commercialisation strategy. This option provides the lowest capital and operating cost across the LoM for Mandilla.

The financial model of the Project was completed on a 100% basis and incorporates the key assumptions set out in Table 1 below.

Table 1 - Key physicals assumptions

Assumptions	UOM	Input
Mining Duration	Years	7.8
Processing Duration	Years	10.8
Waste Mined	kt	160,520
Mineral Resource Mined	kt	26,476
Plant Throughput	ktpa	2,500
Mine Production Target		
Material Mined	kt	26,476
Au Grade	g/t	1.04
Au Ounces Contained	koz	883
Processing Physicals		
Material Processed	kt	26,476
Au Grade	g/t	1.04
Ounces Contained	koz	883
Ounces Recovered / Payable Metal	koz	845

At a gold price of A$2,750/oz, which is lower than the gold spot price over the past six months, the Project is forecast to generate an unleveraged and pre-tax IRR of 73%, an undiscounted and pre-tax free cash flow of A$740 million and an unleveraged and pre-tax $NPV_{8\%}$ of approximately A$442 million.

The financial summary for the project is presented in Table 2 below:

Table 2 – LoM Financial results summary

Key Financial Assumptions		
Gold Price Assumed	A$/oz	2,750
Discount Rate	%	8.00
Key Project Metrics		
Payable Metal	Koz	845
Gold Revenue	**A$M**	**2,325**
Mining Costs – Total	A$M	877
Mining Costs – Pre-Production *(capitalised)*	A$M	(59)
Mining Costs	A$M	818
Processing (including Maintenance, Transport, Insurance & Refining)	A$M	461
General and Administrative Costs	A$M	34
Royalty *(2.5% of gold revenue)*	A$M	58
Project EBITDA	**A$M**	**954**
Depreciation and Amortisation	A$M	234
Net Profit Before Tax (NPBT)	A$M	720
Capital		
Pre-Production Capital Expenditure	A$M	123
Pre-Production Costs - Mining/General & Administrative	A$M	68
Sustaining Capital	A$M	23
LoM Capital	**A$M**	**214**
Project Returns		
Project Free Cash Flow (undiscounted and pre-tax)	**A$M**	**740**
Project $NPV_{8\%}$ (unleveraged and pre-tax)	A$M	442
Project IRR (unleveraged, pre-tax, calculated on annual basis)	%	73%
Payback Period (unleveraged and post-tax)[1]	Years	0.75
Capital Intensity[2]	A$/oz p.a.	1,899
NPV (unleveraged and pre-tax)/Pre-production Capital	ratio	2.3

Notes:

[1] Payback period is calculated from the start of gold production.

[2] Capital intensity is calculated by dividing pre-production capital by average annual payable metal over the first 7.4-year period.

Production Target

The total payable (recovered) gold metal over the life of the Project is forecast to be approximately 845koz. A breakdown of the schedule of payable gold by Resource category (Indicated and Inferred) across the life of the Project is shown in Chart 1.

Approximately 80% of the materials scheduled for extraction in the first three years of the production target is classified as Indicated, with the balance classified as Inferred. With a project payback period of 0.75 years, this provides confidence in the Project being able to pay back the pre-development capital from the higher confidence Indicated category.

Over the LoM, approximately 70% of the production target is categorised as Indicated, with the remaining 30% classified as Inferred. The Inferred mineralisation is scheduled as late as possible in the production schedule.

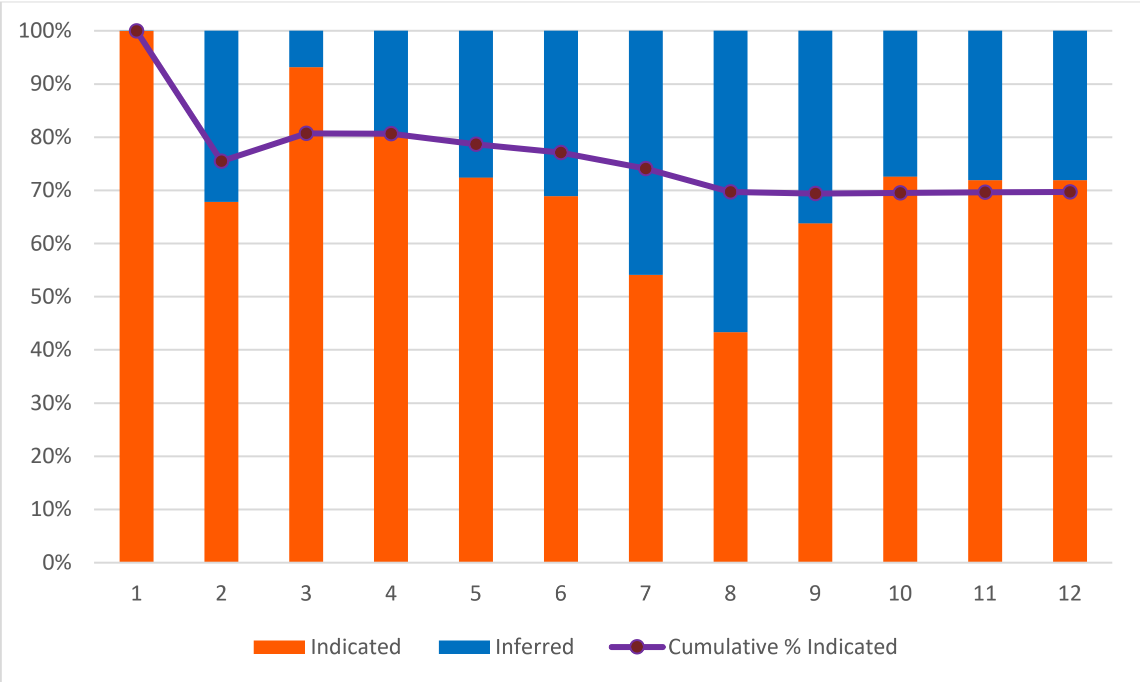

Chart 1 – Payable metals % by Resource category

The Study projects an average gold production target of approximately 100kozpa at an average feed grade of 1.30g/t Au over the first 7.4-year period, reducing to a projected average gold production target of approximately 41koz pa at an average feed grade of 0.50g/t Au when treating lower grade stockpiles over the remaining 3.4-year period. The projected annual processing throughput is displayed in Chart 2 below.

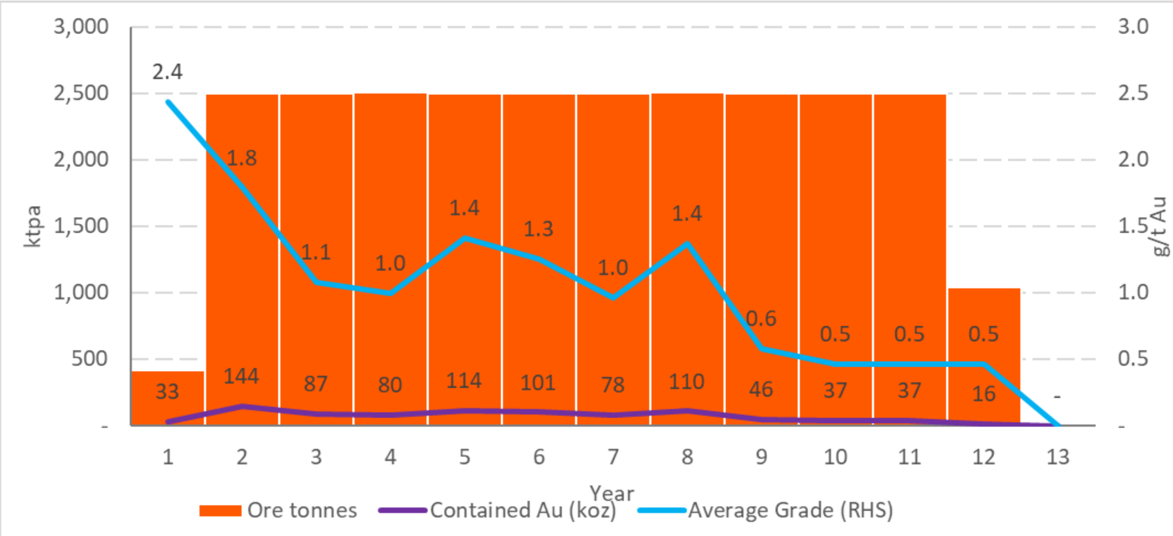

Chart 2 – Annual processing throughput

Theia Staged Design and Site Layout

Pit optimisation input parameters used were based on multiple sources. Mining and drill and blast costs were estimated by AMC Consultants on a first principles basis. Processing parameters were determined as a result of a study undertaken by Como Engineering in 2023. A gold sell price of A$2,100 was used for the open pit optimisations.

Figure 2 illustrates the proposed Theia pit design stages overlaid together. For perspective, note that the final Theia design has a total vertical depth of 330 metres.

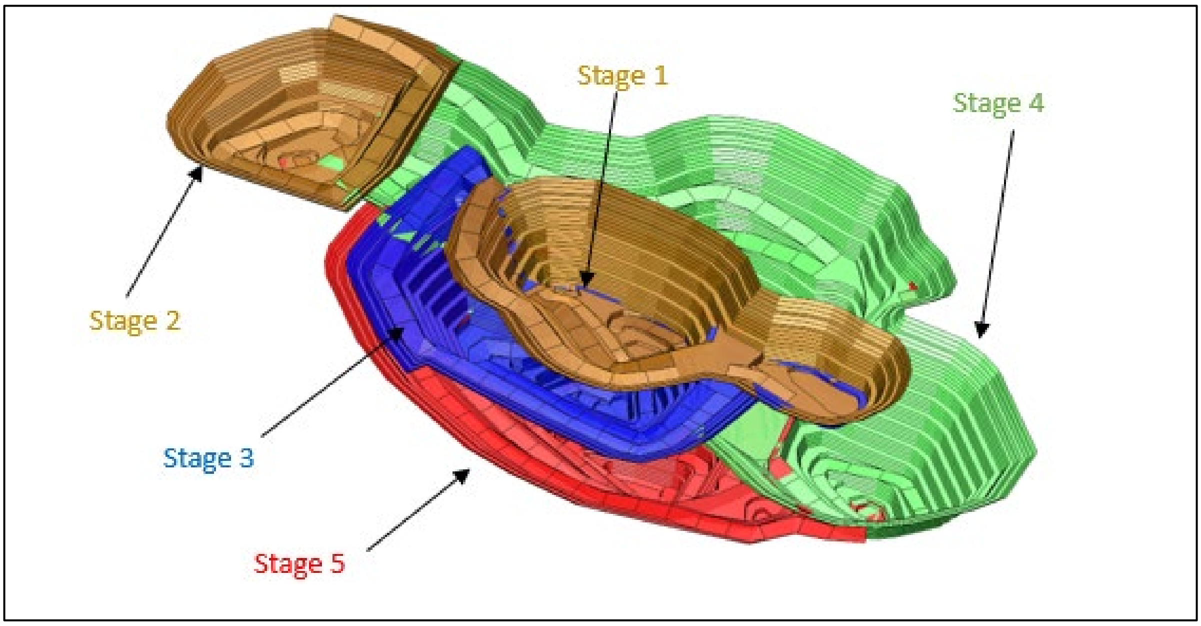

Figure 2 – All Theia designs overlaid – 3D view

Figure 3 illustrates the proposed site layout with the tailings storage facility intergrated into the Theia waste landform. A processing flowsheet and site layout for the process plant and non process infrastructure is provided in the appended Scoping Study report.

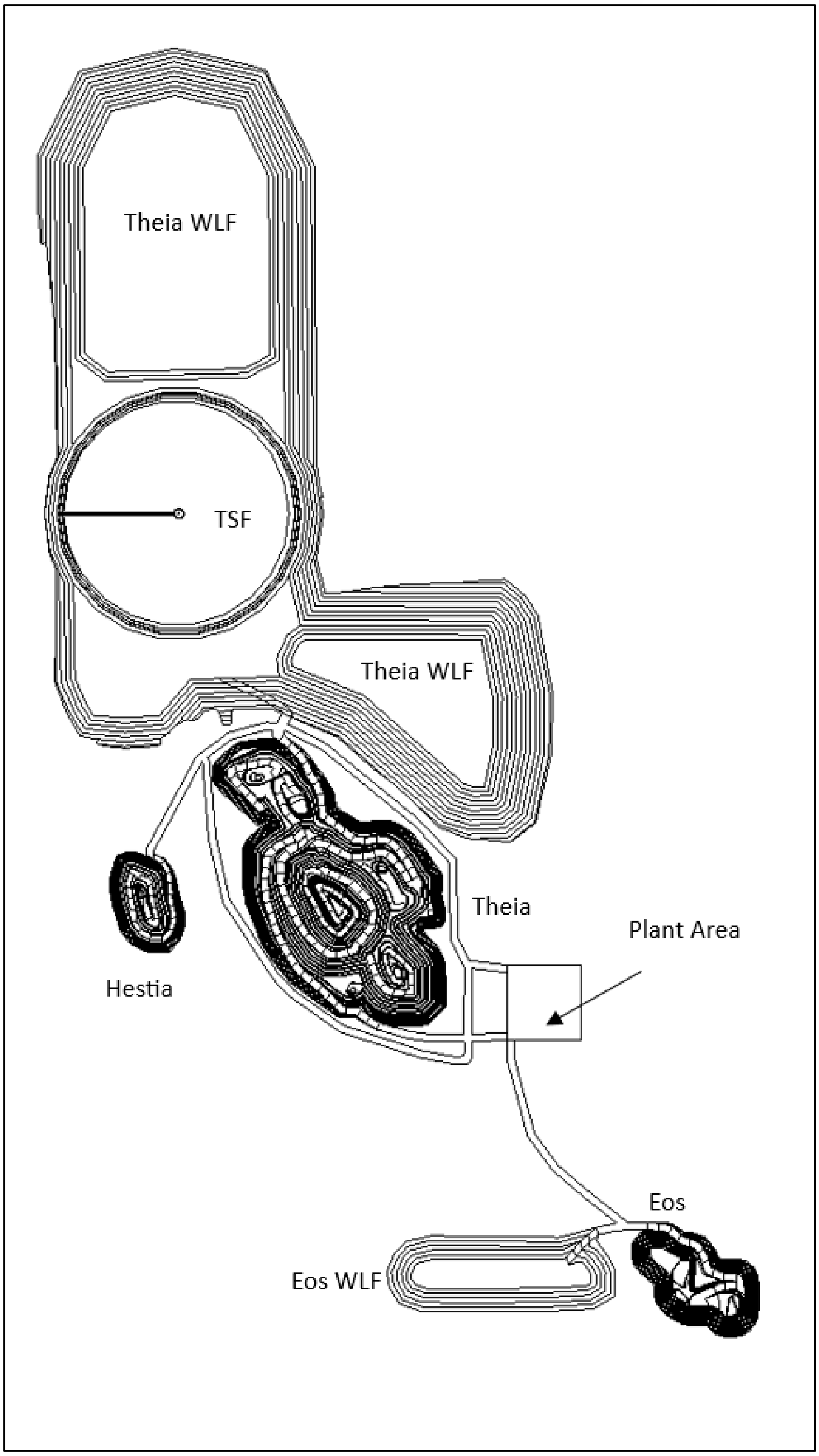

Figure 3 – Scoping Study site layout

Sensitivity Analysis

The Project is financially robust with a short payback period and strong free cash-flows. The Project's unleveraged and pre-tax NPV is most sensitive to changes in gold price and operating costs, while it is more resilient to changes in the discount rate, metal recovery and capital costs, as shown in Chart 3 below.

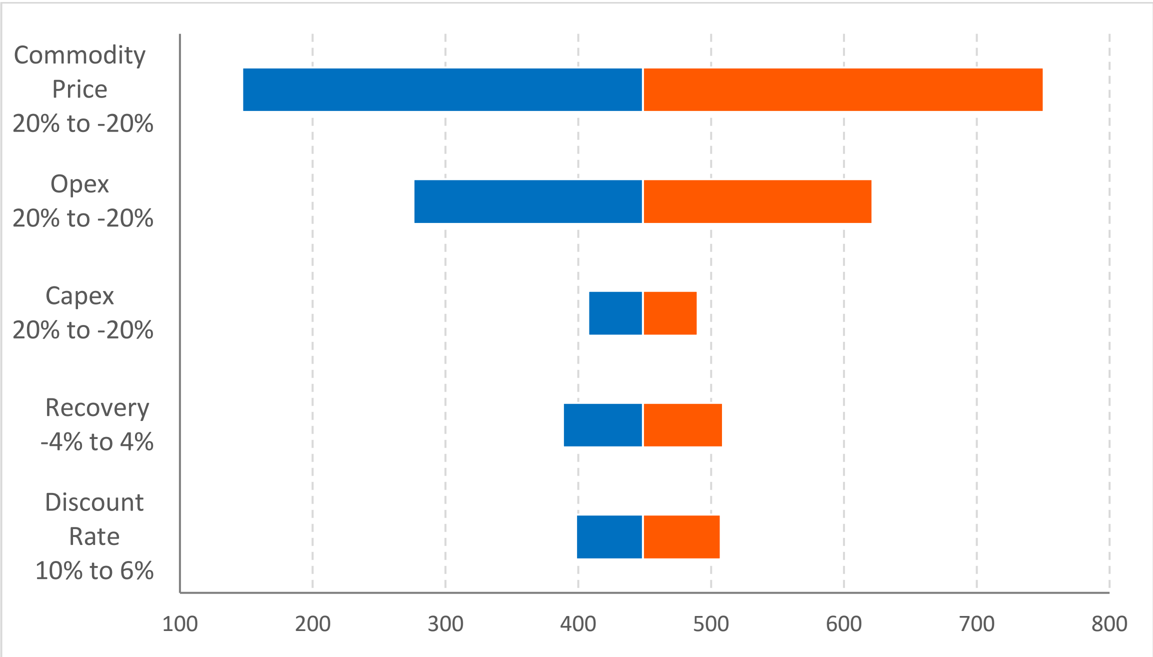

Chart 3 – NPV sensitivity analysis (unleveraged, pre-tax)

Changes to the Australian dollar gold price, either by US dollar gold price variation or AUD:USD exchange rate fluctuations, would have a direct impact on revenue and derived cash-flow. The forecast impact on key metrics across a range of Australian dollar gold prices is provided in Table 3 below.

Table 3 – Gold price sensitivity

				Base Case		
Gold Price	**AUD/oz**	**2500**	**2625**	**2750**	**2875**	**3000**
NPV Pre-Finance, Pre-tax	AUD m	305	374	**442**	511	579
Pretax IRR	%	54%	64%	**73%**	83%	92%
Payback	Years	0.83	0.75	**0.75**	0.67	0.67
Annual EBITDA	AUD m	69.6	79.2	**88.8**	98.4	107.9
LOM EBITDA	AUD m	748	851	**954**	1,057	1,160
Free Cashflow	AUD m	534	637	**740**	843	946

Capital Costs

Capital costs are derived from a number of sources including quotes and budget pricing from suppliers and estimates based on recent actual pricing from similar Western Australian mines, as detailed in Table 4 below. They include all pre-production site, process plant, tailings dam, and mining development costs as well as sustaining capital post-production start-up.

Table 4 – Capital cost requirement

Pre-Production Capital	Source	$m
Processing Facilities and Site Infrastructure	Como Engineers	91.3
Owner's Costs	Como Engineers	4.2
Tailings Storage Facility	Land & Marine Geological Services	8.1
Earthworks and Roads	In-house/other studies	5.0
Contingency	Como Engineers	14.4
Pre-Production Mining & G&A	In-house/AMC	68.4
Total Pre-Production		**191.4**
Sustaining Capital		**$m**
Processing Plant	In-house/other studies	9.0
Tailings Storage Facility	Land & Marine Geological Services	6.0
Mine Closure & Site Rehabilitation	In-house/other studies	7.6
Total Sustaining		**22.6**
Total LOM Capital		**214.0**

Operating Costs

Operating costs are derived from a number of sources including quotations and budget pricing supplied by suppliers, estimates based on similar WA mining operations, and pricing built up from processing plant suppliers scaled by accepted methods.

Table 5 – Operating costs summary

Operating Costs[1]	$ million	$/t Milled	$/oz
Mining[2]	$818	$30.88	$967
Processing (incl. Maintenance, Transport, Insurance & Refining)	$461	$17.42	$545
General & Administrative (Site)	$34	$1.27	$40
C1 Cash Cost[3]	**$1,313**	**$49.57**	**$1,552**
Royalties	$58	$2.19	$69
Sustaining Capital	$23	$0.87	$27
All-in Sustaining Cost (AISC)[4]	**$1,394**	**$52.63**	**$1,648**

Notes:

[1] Operating costs presented in the table above were calculated based on recovered gold.

[2] Excludes pre-production mining costs.

[3] C1 cash cost includes mining, processing (including transport, insurance and refining costs) and site general and administration costs.

[4] AISC per ounce payable includes C1 cash cost, royalties and sustaining capital costs. It does not include corporate costs, exploration costs and non-sustaining capital costs.

Funding

The Scoping Study estimates a funding requirement of approximately A$191 million to cover the capital and operating costs from the commencement of plant construction to the end of plant commissioning and the commencement of gold production. It is expected that the funding requirement will be met with a mixture of debt and equity, which will need to be raised prior to project construction commencing.

The Company considers there is a reasonable basis to conclude that the project funding will be available when required, on grounds including the following:

- The Project has strong technical and economic fundamentals which provides an attractive return on capital investment and generates significant free cash-flows at conservative gold prices (well below current spot gold price). This provides a strong platform to source debt and equity funding.
- The Company has a strong track record of raising equity funds as and when required to further the exploration and evaluation of the Mandilla Gold Project.

There is, however, no certainty that the Company will be able to source funding as and when required. Typical project development financing would involve a combination of debt and equity. It is possible that such funding may only be available on terms that may be dilutive to or otherwise affect the value of the Company's existing shares.

Conclusions and Recommendations

The Scoping Study provides justification that Mandilla is a commercially viable stand-alone gold mining operation and, accordingly, the Board of Astral is supportive of progressing the Project to a preliminary feasibility study, subject to ongoing funding.

Exploration and evaluation activities are continuing at both the Mandilla and Feysville Gold Projects. Exploration activities at Mandilla will include both in-fill drilling to convert Inferred Resources to Indicated Resources, together with ongoing exploration drilling targeting further resource growth.

Timing of project development is not yet determined due to the preliminary nature of the studies completed to date.

Authorised for Release

This ASX announcement has been approved for release by the Board of Astral Resources NL.

Contact

For further information, please contact:

Investors:
Marc Ducler
Managing Director
Astral Resources
+61 8 9382 8822

Media:
Nicholas Read
Read Corporate
+61 419 929 046

About Astral Resources

Astral is a gold-focused exploration company targeting the exploration, growth and development of its flagship Mandilla Gold Project (**Mandilla**), located 70km south of Kalgoorlie in Western Australia. Mandilla hosts a Mineral Resource Estimate (MRE) of **37Mt at 1.1 g/t Au for 1.27Moz** of contained gold.

Astral is also advancing exploration activities at its Feysville Gold Project (**Feysville**) which is located 14km south of the KCGM Super Pit in Kalgoorlie. Feysville hosts a MRE of **3Mt at 1.3 g/t Au for 116koz** of contained gold.

Astral also holds other tenement interests at its Carnilya Hill project in the Western Australian Goldfields.

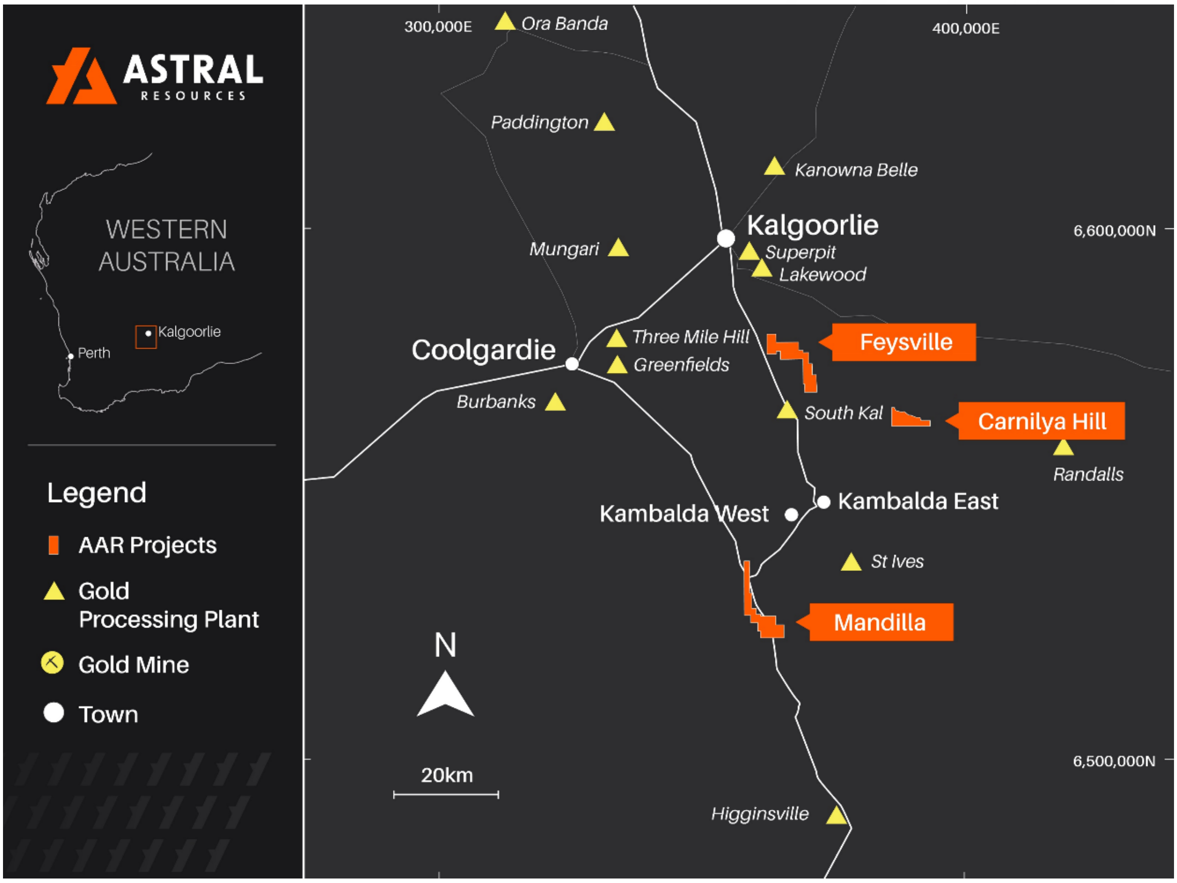

Figure 4 – Mandilla and Feysville Gold Projects location map.

Consolidated Mineral Resource Estimate

The Group's consolidated JORC 2012 Mineral Resource Estimate as at the date of this announcement is detailed in Table 6 below. The Mineral Resources for Mandilla are reported at a cut-off grade of 0.39 g/t and Feysville is reported at a cut-off grade of 0.50 g/t Au.

***Table 6 –** Consolidated JORC Mineral Resource Estimate*

Project	Indicated			Inferred			Total		
	Tonnes (Mt)	Grade (Au g/t)	Metal (koz Au)	Tonnes (Mt)	Grade (Au g/t)	Metal (koz Au)	Tonnes (Mt)	Grade (Au g/t)	Metal (koz Au)
Mandilla	21	1.1	694	17	1.1	571	37	1.1	1,265
Feysville	2.3	1.3	96	0.6	1.1	20	2.9	1.3	116
Total	**23.3**	**1.1**	**790**	**17.6**	**1.1**	**591**	**39.9**	**1.1**	**1,381**

Note:
The Mineral Resource Estimate for Feysville was disclosed by Astral on 8 April 2019 and the latest Mineral Resource Estimate for Mandilla was disclosed on 20 July 2023. Astral confirms that it is not aware of any new information or data that materially affects the information contained in these disclosures, and the material assumptions and technical parameters underpinning the Mineral Resources continue to apply and have not materially changed.

Forward Looking Statements

This announcement may include forward-looking statements. Forward-looking statements include, but are not limited to, statements concerning the Company's planned exploration program and other statements that are not historical facts. When used in this document, the words such as "could," "plan," "expect," "intend," "may", "potential," "should," and similar expressions are forward-looking statements. Although the Company believes that its expectations reflected in these forward-looking statements are reasonable, such statements involve risks and uncertainties and no assurance be given that further exploration will result in the estimation of a Mineral Resource.

Compliance Statement

With reference to previously reported Exploration Results and Mineral Resources, 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, in the case of estimates of Mineral Resources that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed. The Company 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.

Reasonable Basis for Forward-Looking Statements

No Ore Reserve has been declared. This ASX announcement has been prepared in compliance with the JORC Code (2012) and the ASX Listing Rules. All material assumptions on which the Scoping Study production target and projected financial information are based have been included in this announcement and disclosed in the Scoping Study.

Consideration of Modifying Factors in the format specified by JORC Code (2012), Section 4 is contained in Section 17 of the Scoping Study.

SCOPING STUDY
MANDILLA GOLD PROJECT

September 2023

Contents

1. Introduction

1.1. Project Location and Ownership

Astral Resources NL (**Astral or Company**) is the 100% owner of the Mandilla Gold Project (**Mandilla** or **Project**) which is situated in the northern Widgiemooltha greenstone belt, 70 kilometres south of the significant mining centre of Kalgoorlie and 20 kilometres west of Kambalda in Western Australia. The location of Mandilla in relation to Kalgoorlie and other nearby gold projects is set out in Figure 1.

Figure 1 – Project location map.

Mandilla is comprised of the tenements outlined in Table 1 below. The tenements are in good standing with the Western Australian Department of Mines, Industry Regulation and Safety (DMIRS).

Table 1 – Mandilla tenement schedule

Tenement Number	Beneficial Percentage Interest	Status	Title Registered to
M15/96	100% gold rights only	Granted	Mt Edwards Critical Metals Pty Ltd
M15/633	100% gold rights only	Granted	Astral Resources NL
E15/1404	100%	Granted	Astral Resources NL

Mandilla is covered by existing Mining Leases which are not subject to any third-party royalties other than the standard WA Government gold royalty.

1.2. Scoping Study

The Mandilla Scoping Study (**Scoping Study** or **Study**) focuses on extraction of Mineral Resources located within the Mandilla tenements which comprise of two granted mining leases (M15/96 and M15/633).

An options study was conducted prior to the Scoping Study aimed at identifying the capital and operating costs so as to select the most economical process. The three-stage crushing and ball mill option was selected due to lower capital and operating costs.

The Company has determined that a 2.5 million tonne per annum (**Mtpa**) carbon-in-leach (**CIL**) processing plant and associated infrastructure located at Mandilla is the optimum commercialisation strategy for the Project. This option provides the lowest capital and operating cost across the Life of Mine (**LoM**) for Mandilla. The financial model of the Project was completed on a 100% basis and was built on this option using the key assumptions in Table 2 below.

Table 2 - Key physicals assumptions

Assumptions	UOM	Input
Mining Duration	Years	7.8
Processing Duration	Years	10.8
Waste Mined	kt	160,520
Mineral Resource Mined	kt	26,476
Plant Throughput	ktpa	2,500
Mine Production Target		
Material Mined	kt	26,476
Au Grade	g/t	1.04
Au Ounces Contained	koz	883
Processing Physicals		
Material Processed	kt	26,476
Au Grade	g/t	1.04
Ounces Contained	koz	883
Ounces Recovered	koz	845

The Scoping Study referred to in this report is based on low-level technical and economic assessments and is insufficient to support the estimation of Ore Reserves or to provide any assurance of the economic development at this stage or that the conclusion of the Scoping Study will be realised. Ore Reserves have not been estimated for the Project. The Scoping Study supports the progress to developing a pre-feasibility level study on the Project. The term "ore" has been used in the report to identify mineralised plant feed material but is not intended to refer to a JORC Ore Reserve.

2. Study Team

The Scoping Study was prepared by the Company with technical input and review by a range of independent experts, as detailed in Table 3 below.

Table 3 - Study team

Area	Completed by
Geology	
Mineral Resource Estimate	Cube Consulting
Drillhole Database Management	In-house
Structural Review	In-house
Mining Technical	
Geotechnical Engineering	Entech Mining Engineering and Management
Open Pit Optimisations	In-house
Open Pit Designs	In-house
Open Pit Schedules	In-house
Metallurgy and Processing	
Metallurgical Testwork	ALS/Como Engineers
Process Plant Design	Como Engineers
Cost Modelling	
Power Supply Costing	Zenith Pacific
Processing Plant – Capital and Operating Costs	Como Engineers
Tailings Storage Facility – Capital & Sustaining Capital Costs	Land and Marine Geological Services
Mining – Open Pit	AMC Consultants
Other Site Infrastructure	Como Engineers
Site Administration	In-house
Accommodation & Messing	Shire of Coolgardie
Flights	Cobham Aviation
Heritage and Environment	
Permitting and Compliance Status	Austwide Legal
Flora	Native Vegetation Solutions
Fauna	Terrestrial Ecosystems
Heritage	Austwide Legal

3. Geology and Mineral Resource

3.1. Regional Geology

The Mandilla Gold Project is located within the south-west of the Lefroy Map Sheet 3235. It is situated in the Coolgardie Domain, on the western margin of the Kalgoorlie Terrain within the Wiluna-Norseman Greenstone Belt, Archaean Yilgarn Block.

The Project is between the western Kunanalling Shear, and the eastern Zuleika Shear. Project mineralisation is related to north-south trending major D2 thrust faults known as the "Spargoville Trend". The Spargoville Trend contains four linear belts of mafic to ultramafic lithologies (the Coolgardie Group) with intervening felsic rocks (the Black Flag Group) forming a D1 anticline modified and repeated by intense D2 faulting and shearing.

Flanking the Spargoville Trend to the east, a D2 Shear (possibly the Karramindie Shear) appears to host the Mandilla Project mineralisation along the western flank of the Emu Rocks Granite, which has intruded the felsic volcanoclastic sedimentary rocks of the Black Flag Group (Figure 2).

This shear can be traced across the region, with a number of deflections present. Where deflections are present, granite stockworks have formed significant heterogeneity in the system and provide structural targets for mineralisation. The Mandilla mineralisation is interpreted to be such a target.

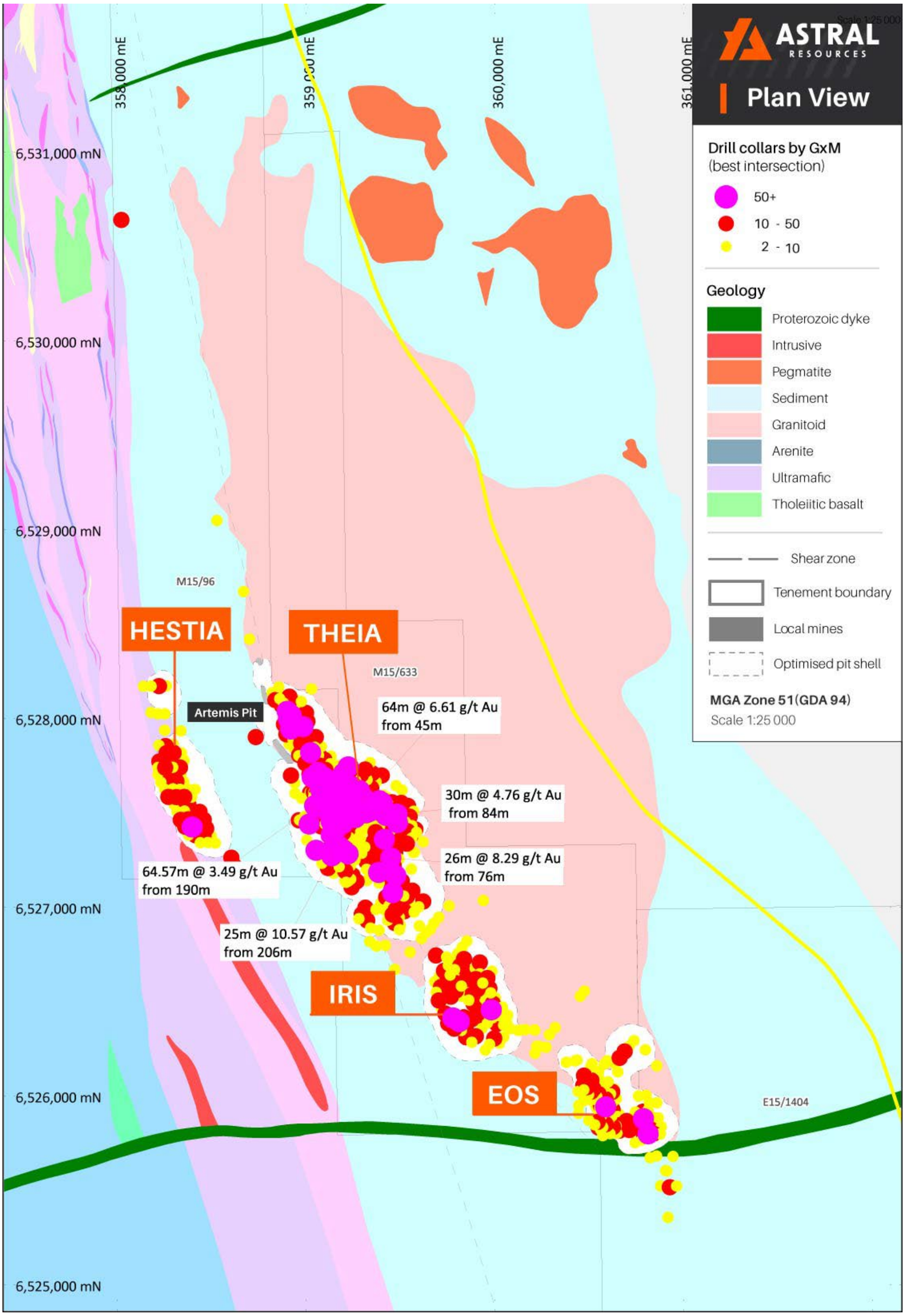

Figure 2 – Mandilla Gold Project – Geology, prospects and significant intersections.

3.2. Deposit Geology

The Mandilla prospect is located along the SE margin of M15/96 extending into the western edge of M15/633. It comprises an east and west zone, both of which are dominated by supergene mineralisation between 20 and 50 metres depth below surface. Only the east zone shows any significant evidence of primary mineralisation, generally within coarse granular felsic rocks likely to be part of the granite outcropping to the east. Minor primary mineralisation occurs in sediments.

Gold mineralisation appears as a series of narrow, high grade quartz veins with relatively common visible gold and grades over the width of the vein of up to several hundreds of grams per tonne. Surrounding these veins are lower grade alteration haloes. In places, these haloes can coalesce to form quite thick zones of lower grades (ten's of metres). The mineralisation manifests itself as large zones of lower grade mineralisation from ~0.5 – 1.5 g/t Au with occasional high grades of +5 g/t Au over one or two metres.

Distal alteration comprises pale orange/red matrix porphyritic syenite. The alteration style is characterised by good textural preservation with the colouration likely to be hematite dusting. Observable minerals are mainly feldspar phenocrysts with 5% dark green secondary amphibole clusters, and possibly actinolite also present. Quartz veining is generally absent in this alteration style; however, quartz veining has been noted.

Another example of distal alteration comprises dark grey-green moderate to strongly texturally destructive alteration, comprising at least one amphibole, epidote-clinozoisite, chlorite and magnetite. The alteration resembles dark-coloured fracture-controlled alteration seen elsewhere at Mandilla. Diopside was also noted. This alteration appears zoned around the gold mineralised segment of the hole, but there is ample evidence that quartz veining and associated gold-related alteration overprints what is probably an earlier high-temperature calc-silicate alteration phase (possibly fault/shear zone). Drill orientation appears to be parallel to the cross-cutting structures, hence a number of faults run at a high angle to the core axis.

The distal alteration is overprinted by grey-coloured, moderate texturally destructive silica and/or chlorite alteration which may form a halo to the gold mineralised zone. The zone can contain quartz veining similar to that seen within the core of gold mineralisation, but this veining generally lacks obvious alteration and is typically low in pyrite content. Early dark alteration fractures are preserved.

The gold related alteration shows a degree of diversity which reflects variation in vein density and proximity to possible structures in the core of mineralised zones. More intense alteration is white to pale grey, locally with a pale brown or pink tinge in vein haloes, and probably is dominated by silicaalbite. Textural destruction is moderate to strong with replacement mineralisation of black biotite or hornblende that is also disseminated through the altered rock. Dark fractures containing biotite or hornblende sub-parallel to veining are also regularly distributed through the strongly altered zone. An increase in pyrite content is observed mainly close to veins or as blebby inclusions throughout the altered wall rock.

Vein density increases from one per metre to two to three per metre in the core of the mineralised zones, with individual veins up to 15cm thick, but typically one to then centimetres in thickness. Visible gold is commonly observed within and on the margin of quartz veins, and rarely observed in wall rock. Individual grains of gold, or small aggregates of grains are observed and can be coarse grained over one millimetre in size.

In some areas, such as in MDRCD151, the feldspar phenocrysts are albitised, standing out as white in a darker matrix.

Zones of intense, thin (1-10 mm scale) quartz fractures are locally developed within strongly altered zones. Oriented core indicates the fractures dip moderately to the SW, which appears to mimic the gross orientation of the gold mineralisation envelopes at Mandilla prospect. Such fracture zones may represent brittle structures which exert some control on the distribution of the gold mineralisation.

Most mineralised quartz veins are sub-horizontal extension veins (dip up to about 20° from horizontal) and form due to fluid overpressure. Extension vein distribution is probably controlled by multiple small-scale structures within the syenite but could extend ten's of metres away from the structures, particularly into the hanging wall. It is likely small-scale structures (plus extensional veins) form an interlinked fault mesh pattern for allow for vertical fluid flow.

In addition to the granite-hosted mineralisation, a paleochannel situated above the granite/sediment contact contains significant gold mineralisation. The channel is about two kilometres in length, up to 50 metres wide, but only a few metres thick. Gold is contained within quartz sands and gravels, although is not consistently distributed throughout the paleochannel. An 800-metre stretch of the paleochannel was mined by Astral in 2006 and 2007, with gold production totalling 4,005 ounces, at a grade of almost 15 g/t Au (Fyfe, 2007).

The Project contains four discrete deposits (Figure 2) that are separated spatially and with differing geological characteristics:

- Theia is the main deposit and contains 81% of the gold ounces. The deposit is presently known to host gold mineralisation over a strike length of approximately 1,600 metres, is about 150 to 250 metres wide and extends to approximately 370 metres below the surface. The overall mineralisation at Theia strikes to the north-west at about 330°, with a sub-vertical dip. However, extensive structural logging from diamond core drilling of the quartz veins within the mineralised zones shows that majority dip gently (20° to 30°) towards SE to SSE (130° to 160°).

- The Iris deposit contains about 9% of the gold ounces of the Project and has a similar trend and orientation as Theia. The mineralisation is currently known to extends over a strike length of approximately 600 metres, is about 200 metres wide and extends to approximately 200 metres below the surface.
- Eos is at the southern boundary of the project and comprises paleochannel mineralisation that is currently interpreted to extend over a strike length of approximately 300 metres, is about 75 metres wide and up to 20 metres thick and occurs 40 to 50 metres below surface. Recent deeper drilling has also defined a zone of fresh rock mineralisation at Eos.
- Hestia is on the western edge of the Project, with mineralisation known to extend over a strike length of approximately 800 metres and up to approximately 200 metres below surface. The stacked lodes are between two metres and ten metres thick, and dip steeply (75°) towards the WSW (250°). The mineralisation style is very different to the other deposits and is associated with a shear zone adjacent to a mafic/sediment contact.

3.3. Resource Estimation

The latest Mineral Resource Estimate (**MRE**) for Mandilla, was prepared by independent consultants Cube Consulting in accordance with the JORC Code (2012 Edition) and was reported on 20 July 2023 (**July 2023 MRE**) in ASX announcement *"Mandilla Gold Resource Surpasses 1.25Moz – MRE Upgrade"*. The July 2023 MRE, which incorporates the Theia, Iris, Eos and Hestia deposits totals 37 million tonnes at 1.1g/t Au for 1.27 million ounces of contained gold.

The MRE was estimated using a 0.39g/t Au lower cut-off and is constrained within pit shells derived using a gold price of AUD$2,500 per ounce.

The MRE is summarised in Table 4 below, a detailed breakdown by deposit is provided in Table 5 and a grade and tonnage sensitivity by cut-off grade is provided in Table 6.

Table 4 – Mandilla Mineral Resource Estimate (July 2023)

Mineral Resource Estimate for the Mandilla Gold Project (Cut-Off Grade >0.39g/t Au)			
Classification	**Tonnes (Mt)**	**Grade (g/t Au)**	**Au Metal (koz)**
Indicated	21	1.1	694
Inferred	17	1.1	571
Total	**37**	**1.1**	**1,265**
The preceding statement of Mineral Resources conforms to the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code) 2012 Edition. All tonnages reported are dry metric tonnes. Minor discrepancies may occur due to rounding to appropriate significant figures.			

Table 5 – MRE (July 2023) by source

Deposit	Classification	Tonnes (Mt)	Grade (g/t Au)	Au Metal (koz)
Theia	Indicated	17	1.1	573
	Inferred	12	1.1	447
	Total	**29**	**1.1**	**1,021**
Iris	Indicated	0.4	0.8	11
	Inferred	4.0	0.8	103
	Total	**4.4**	**0.8**	**115**
Eos	Indicated	0.6	1.6	29
	Inferred	0.5	1.3	19
	Total	**1.0**	**1.5**	**48**
Hestia	Indicated	2.7	0.9	78
	Inferred	0.2	0.8	4
	Total	**2.9**	**0.9**	**82**
Total		**37**	**1.1**	**1,265**
All tonnages reported are dry metric tonnes. Minor discrepancies may occur due to rounding to appropriate significant figures.				

Table 6 – MRE (July 2023) by cut-off grade

Cut-off grade (g/t Au)	Tonnes (Mt)	Grade (g/t)	Au Metal (koz)
0.30	43	1.0	1,332
0.35	40	1.0	1,298
0.39	**37**	**1.1**	**1,265**
0.40	37	1.1	1,258
0.45	34	1.1	1,215
0.50	31	1.2	1,171
All tonnages reported are dry metric tonnes. Minor discrepancies may occur due to rounding to appropriate significant figures.			

Astral's Mineral Resource at the Feysville Gold Project of 3 million tonnes at 1.3 g/t Au for 116 koz of contained gold (0.6Mt at 1.1g/t Au for 20.2koz Indicated and 2.3Mt at 1.3g/t Au for 95.6koz Inferred), has not been included in this Scoping Study.

3.4. Resource Category Upgrades

The July 2023 MRE was the fifth MRE reported for Mandilla within 26 months. The significant growth achieved by each of the MRE's is displayed in Chart 1 below. Importantly the July 2023 MRE demonstrated Astral's ability to continue to grow its Mineral Resources whilst substantially increasing the geological confidence.

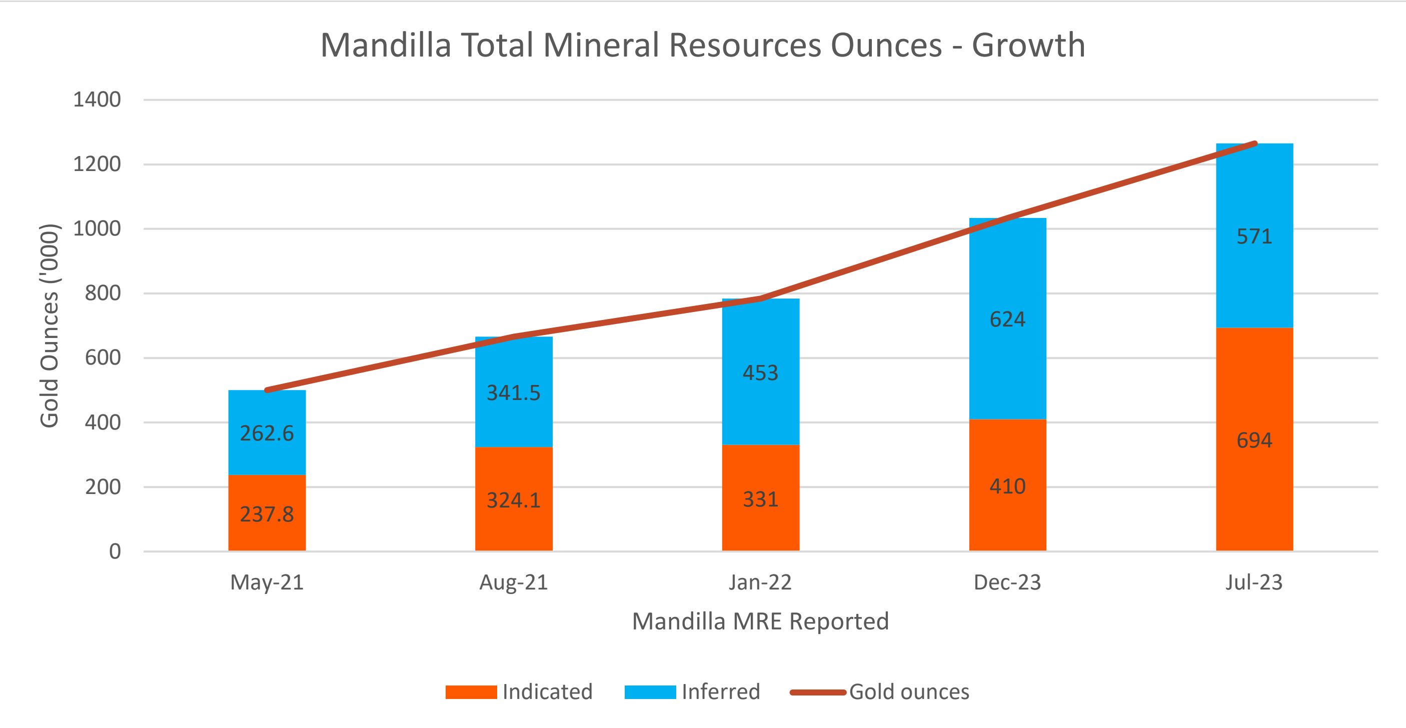

Chart 1 – Mandilla MRE growth by category & ounces

4. Geotechnical and Groundwater

Mining study geotechnical inputs were provided by Entech Mining based on dedicated geotechnical drilling, sampling, testing and analysis programs conducted primarily at the Theia deposit. Entech identify these studies as meeting the requirements to support a feasibility level of study for Theia. Geotechnical work at EOS and Hestia are in the early stages of development and as such the Theia results have been extrapolated for use in these deposits which share some similarities with respect to geological setting. Drilling to support estimation of geotechnical constraints for EOS and Hestia has commenced and will need to be adjusted into further stages of study based on the results of the related analysis.

4.1. Geotechnical

Two dedicated geotechnical drilling programs were designed by Entech to investigate ground conditions specific to the project. In addition, two dedicated geotechnical material properties testing programs were designed by Entech to capture information pertinent to characterising and understanding the mechanical behaviour of the different materials expected to be encountered during mining activities.

A total of 14 dedicated geotechnical diamond drill holes located in the vicinity of the proposed Theia and Iris pit walls and totalling 1879 metres were used for the collection of detailed geotechnical data, including rock mass and structure characterisation and oriented structure data. In addition, one resource geology diamond drill hole located in the vicinity of the proposed Iris pit walls and totalling 89 metres was used for the collection of detailed geotechnical data, including rock mass and structure characterisation.

Samples were selected from the drill core of the dedicated geotechnical diamond drill holes to perform material properties testing, including 14 particle size distribution (PSD), 14 Atterberg Limits, 14 consolidated undrained triaxial, 56 uniaxial compressive strength (UCS), 56 uniaxial tensile strength (UTS), 29 elastic constant (Young's Modulus and Poisson's Ratio) and 33 direct shear tests. In addition, a historical material properties testing program consisted of 14 UTS and 17 Hoek triaxial tests has been incorporated into the Study.

The confidence level of the geotechnical data for Theia and Iris is considered to be Definitive Feasibility Study-level and provides a good understanding of the implications for pit design and execution specific to the deposits.

4.2. Recommendation for Further Work

Ongoing collection of geotechnical data is required to further refine the geotechnical model at Theia and Iris, to confirm assumptions made as inputs in this assessment. This work includes:

- Routine/campaign geotechnical window mapping to determine rock mass and structural characteristics.
- Collection of structural orientation measurements in the field, and the collection of structure spacing and trace length data.
- Development of a 3D structural model to capture large scale (multi-bench) structures and assess their potential impact on slope stability.
- Development of 3D geological and alteration models.

Ongoing assessment of slope, bench and spill berm performance during operations is also required and should include:

- Review of pit design against as-builts for slopes, benches and spill berms.
- Assessment of crest loss and toe checks.
- Review of bench conditions.

4.3. Groundwater

Preliminary hydrogeological work has been undertaken across both Theia and Iris deposits by Groundwater Resource Management. Field work included a series of airlift tests on resource drillholes, with the results of these tests subsequently used as a basis for estimate of water inflow to the open pits. The Study identified that inflows are likely to be low though there may be short periods of moderate inflows.

5. Optimisation, Mine Design and Schedule

5.1. Pit Optimisation

Prior to any pit optimisations being performed, the July 2023 Resource model (mn230708m.dm) was first regularised to a 5mE x 6.25mN x 5mZ selective mining unit (**SMU**). This resulted in a more realistic SMU size and inherently introduced mining dilution and recovery factors into the model. These modifying factors, when the regularised model was compared against the original Resource model, calculated to approximately 4% of mining dilution and a 98% mining recovery.

The regularised model was then coded to include mining costs, geotechnical zones and independent rock types based on a combination of weathering profiles and material JORC classifications. The model was then imported into Whittle pit optimisation software.

5.2. Pit Optimisation Parameters

Pit optimisation input parameters used were based on multiple sources. Mining and drill and blast costs were estimated by AMC Consultants on a first principles basis. These costs were based on two 240 tonne excavators paired with 180 tonne rigid trucks fleets operated by mining contractor.

Processing parameters were determined as a result of a study undertaken by Como Engineering in 2023.

Geotechnical pit slopes were obtained from a recently completed feasibility study undertaken by Entech Mining Engineering and Management.

5.2.1. Slope Sets

Entech has completed a feasibility level geotechnical study on the Theia deposit and is currently in the process of completing geotechnical works on both the Hestia and Eos areas. Due to the Eos and Hestia works still being in their early stages this Study utilises the Theia slope parameters for all the deposits of the Mandilla Gold Project. Please refer to following figure and table for the specific slope parameters.

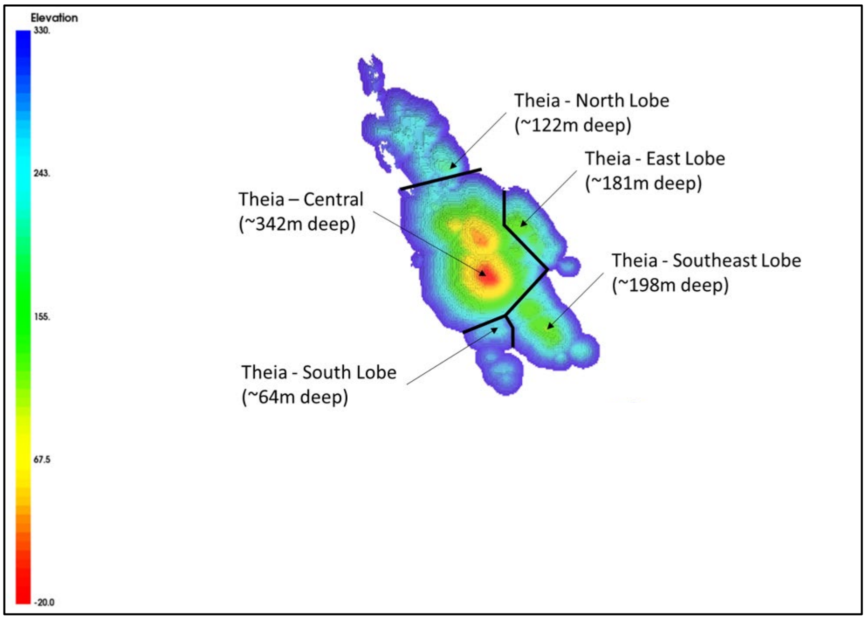

Figure 3 – Slope regions

Table 7 – Pit optimisation slope parameters

Geotechnical Domain	Material Type	Bench Height (m)	Bench Face Angle (°)	Spill Berm Width (m)	Inter-Ramp Angle (°)
Theia – Central, East Lobe & Southeast Lobe	Transported/Oxide	10	45	5	34
	Transitional	20	60	9	44
	Fresh	20	75	9	54
Theia – North Lobe & South Lobe	Transported/Oxide	10	45	5	34
	Transitional	20	60	9	44
	Fresh	20	80	9	58

5.2.2. Exchange Rates

All costs and revenues are in Australian dollars.

5.2.3. Processing Throughput

A processing throughput of 2.5Mtpa was used for the optimisation. This was based on an options study completed in June 2023 for a processing plant to be located at Mandilla.

5.2.4. Processing Recoveries

A processing recovery of 94% was used in the scoping study optimisations. Later metallurgical test results showed that the recoveries for the material at Mandilla would yield a recovery rate of at least 95.7%. This higher recovery figure was then used in the LoM schedule and financial results.

5.2.5. Processing Costs

A processing cost of $21.78/t was used for the optimisation work. This value is derived from the Como Engineering Scoping Study costs and includes an allowance for site general and administrative (**G&A**) costs.

5.2.6. Economic Cut-Off Grade (COG)

A calculated cut-off grade of 0.35g/t Au was utilised. This is based on the following cut-off grade formula, which is automatically calculated in Whittle.

$$\text{Cut-Off Grade} = \frac{\text{Mine Dilution x Process Cost}}{\text{Process Recovery x (Gold Price - Sell Cost)}}$$

5.2.7. Mining Costs

Mining costs were constructed by AMC using first principal. These costs were based on two 240 tonne excavator and 180 tonne truck mining fleets. $1.20/l for fuel was used for mining calculations. Drill and blast costs were also included into the mining cost.

The mining costs were coded into the Resource model by bench and then used in the optimisation. The average cost output from the optimisation resulted in $4.16/t.

5.2.8. Mining Dilution and Recoveries

The original Mineral Resource model was regularised from a variable block sized model to a 5mE x 6.25mN x 5mZ model. This resulted in a more realistic SMU size and inherently introduced mining dilution and recovery factors as a result. This regularisation resulted in an average of approximately 4% dilution and 98% recovery when both models were compared. As such, no mining dilution or recovery factors were used in the optimisation.

5.2.9. Commodity Price

A gold sell price of $2,100/oz was used for the base case.

5.2.10. Royalties

A 2.5% government royalty was used. No other royalties are in place with respect to the Mandilla Gold Project.

5.2.11. Discount Rate

A discount rate of 10% was used as a base case for the optimisation.

5.2.12. Input Summary

The table below shows a summary of the parameters used in the optimisation as per the above section.

Table 8 – Optimisation input summary

Item	Value	Unit	Comment
Mining			
Cost	4.16	t	Average output mining cost. Cost coded in BM by bench. Drill and blast included.
Dilution	4	%	Dilution introduced with the regularisation of model
Recovery	98	%	Recovery factor introduced with the regularisation of model
Processing			
Cost	$21.78	t	Includes processing, G&A and grade control
Recovery	94	%	Recent met testing provided an average gold recovery of 95.7%
Throughput	2.5	Mtpa	Planned plant throughput size
Selling			
Price	$2,100.00	oz	
Selling Cost	$50.00	oz	Based on 2.5% government royalty
Discount Rate	10	%	

The assumptions outlined above were used for pit optimisation purposes. Separate assumptions were used in the Scoping Study more reflective of the estimated LoM costs and current gold prices.

5.3. Optimisation Results

The following tables and figures show the results from the optimisations used above.

Please note that the data in the tables and figures combine all three deposits included in this study – Theia, Hestia and Eos – as these were optimised all as one model.

Revenue factor refers to the varied base gold price of $2,100/oz used to generate the different pit shells. For the Project revenue factor 1 shell was selected as the basis for design.

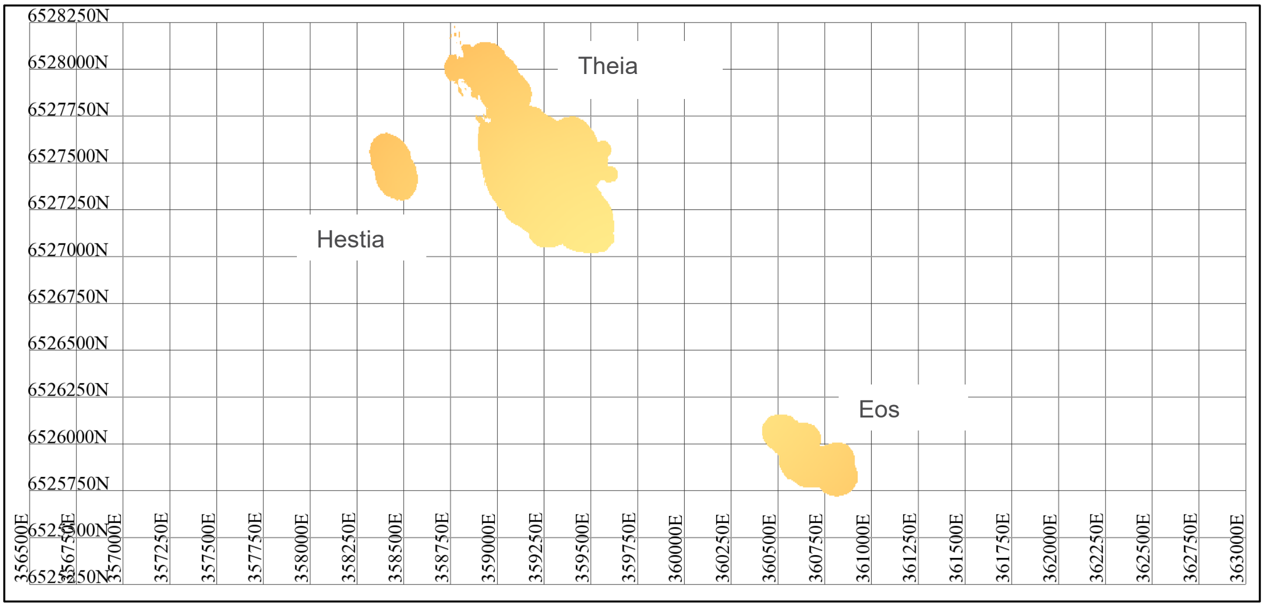

Figure 4 – $2,100 gold price Mandilla shell output

Table 9 – Pit by pit table output

Pit Number	Revenue Factor	Open Pit Disc. Cashflow - Worts Case	Open Pit Undisc. Cashflow - Worts Case	Input Tonnes	Waste Tonnes	Grade Input	Ounces Input
1	0.30	$17,483,783	$17,615,990	197,597	513,382	2.01	12,757
2	0.32	$18,535,277	$18,685,894	212,283	561,131	1.99	13,596
3	0.34	$35,057,602	$35,627,418	422,910	1,662,112	2.00	27,139
4	0.36	$35,212,140	$35,789,270	426,429	1,668,999	1.99	27,283
5	0.38	$73,812,407	$77,059,963	1,129,392	4,492,621	1.74	63,036
6	0.40	$128,495,540	$140,840,842	2,406,256	8,351,744	1.55	119,913
7	0.42	$133,720,858	$147,101,542	2,541,404	8,677,364	1.54	125,667
8	0.44	$155,748,263	$172,572,132	3,108,969	10,394,484	1.50	149,834
9	0.46	$168,087,666	$187,786,104	3,433,234	11,776,460	1.49	164,909
10	0.48	$171,017,931	$191,540,564	3,523,829	12,076,134	1.49	168,581
11	0.50	$196,750,604	$226,109,271	4,236,776	16,129,604	1.50	204,323
12	0.52	$199,882,509	$231,102,165	4,403,701	16,463,741	1.48	209,825
13	0.54	$201,565,861	$233,634,393	4,469,632	16,749,945	1.48	212,679
14	0.56	$282,286,712	$368,143,734	9,183,089	31,261,747	1.28	377,026
15	0.58	$284,021,344	$371,817,106	9,324,350	31,637,027	1.27	381,626
16	0.60	$297,814,501	$401,707,057	10,267,214	36,783,753	1.27	420,546
17	0.62	$299,147,104	$404,751,845	10,416,514	37,037,984	1.27	424,652
18	0.64	$301,300,591	$410,331,664	10,649,927	37,948,621	1.26	432,798
19	0.66	$302,321,143	$413,664,724	10,813,385	38,514,959	1.26	437,702
20	0.68	$307,856,427	$426,865,510	11,268,915	42,740,119	1.26	457,952
21	0.70	$310,436,742	$437,942,982	11,846,521	45,460,270	1.25	476,855
22	0.72	$312,918,719	$446,765,199	12,253,528	48,439,481	1.25	492,450
23	0.74	$313,011,353	$449,855,645	12,467,948	49,182,362	1.24	498,261
24	0.76	$317,731,048	$479,305,769	14,494,830	57,951,127	1.20	560,156
25	0.78	$317,470,990	$483,309,668	14,809,464	59,286,189	1.20	569,458
26	0.80	$317,527,583	$487,096,735	15,087,551	61,229,742	1.19	578,696
27	0.82	$315,689,798	$502,750,521	16,270,206	70,104,822	1.19	622,488
28	0.84	$312,453,964	$507,205,306	16,784,815	72,128,976	1.18	636,241
29	0.86	$303,998,535	$518,108,734	18,118,031	78,836,389	1.16	673,962
30	0.88	$301,872,854	$521,155,705	18,504,669	81,383,415	1.15	685,965
31	0.90	$300,888,348	$522,017,624	18,667,023	82,064,777	1.15	690,183
32	0.92	$296,003,624	$529,997,179	20,232,942	89,146,070	1.13	733,118
33	0.94	$285,891,226	$534,770,952	21,335,822	98,507,839	1.12	771,022
34	0.96	$284,757,338	$535,121,160	21,475,585	99,211,755	1.12	774,692
35	0.98	$278,950,790	$535,816,625	21,970,087	101,925,640	1.12	787,585
36	1.00	$256,038,500	$536,670,925	26,559,963	124,623,212	1.06	908,574
37	1.02	$246,203,818	$536,180,173	27,286,689	128,225,373	1.06	925,538
38	1.04	$207,482,654	$531,102,582	30,147,794	145,869,650	1.03	996,414
39	1.06	$203,142,608	$530,279,750	30,469,780	148,088,988	1.03	1,004,117
40	1.08	$197,832,106	$528,869,424	30,946,241	150,184,740	1.02	1,014,844
41	1.10	$190,712,793	$525,516,204	31,641,315	154,725,188	1.02	1,033,569
42	1.12	$186,174,714	$523,299,458	31,974,720	157,295,429	1.01	1,042,403
43	1.14	$184,590,193	$522,634,116	32,080,192	157,961,664	1.01	1,044,810
44	1.16	$171,977,299	$514,889,951	32,935,810	165,193,116	1.01	1,069,500
45	1.18	$148,762,109	$503,322,478	34,335,720	175,112,869	1.00	1,103,919
46	1.20	$139,976,091	$496,532,885	34,997,268	179,948,434	1.00	1,120,688

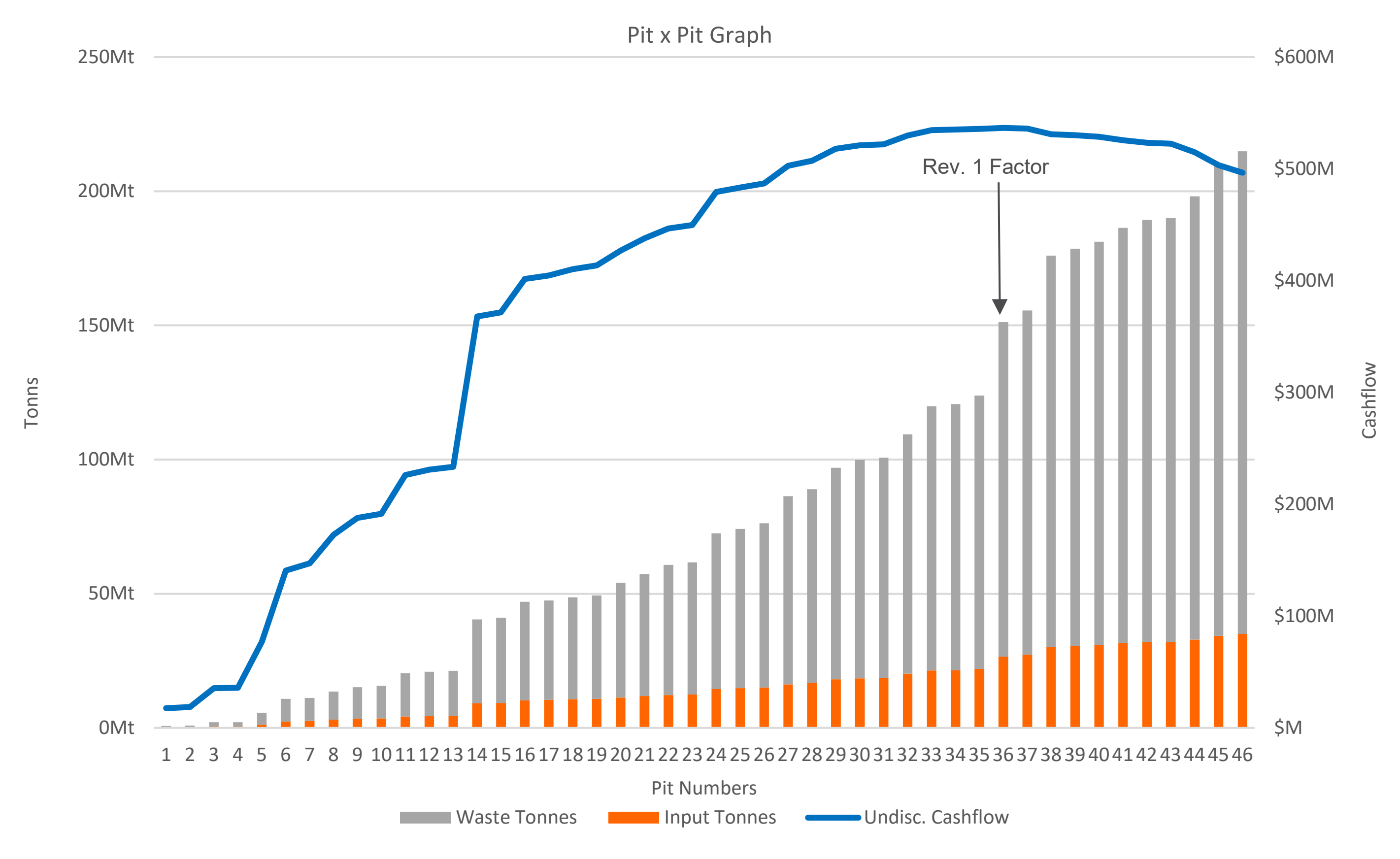

Chart 2 – Pit by pit graph

5.4. Sensitivity Analysis

A sensitivity analysis was performed on Mandilla. The sensitivities were carried out on the base case optimisation parameters.

The following sensitivity analyses were examined:

- Sell price variations at -20%, -10%, +10% and +20%
- Processing cost variations at -20%, -10%, +10% and +20%
- Mining cost variations at -20%, -10%, +10% and +20%

As the following sensitivity graphs illustrate, the cashflow and material movements of the project vary proportionally to the independent variable. This would suggest that, should operating costs or metal sell price change, a linear outcome from materials mined to cashflow can be expected.

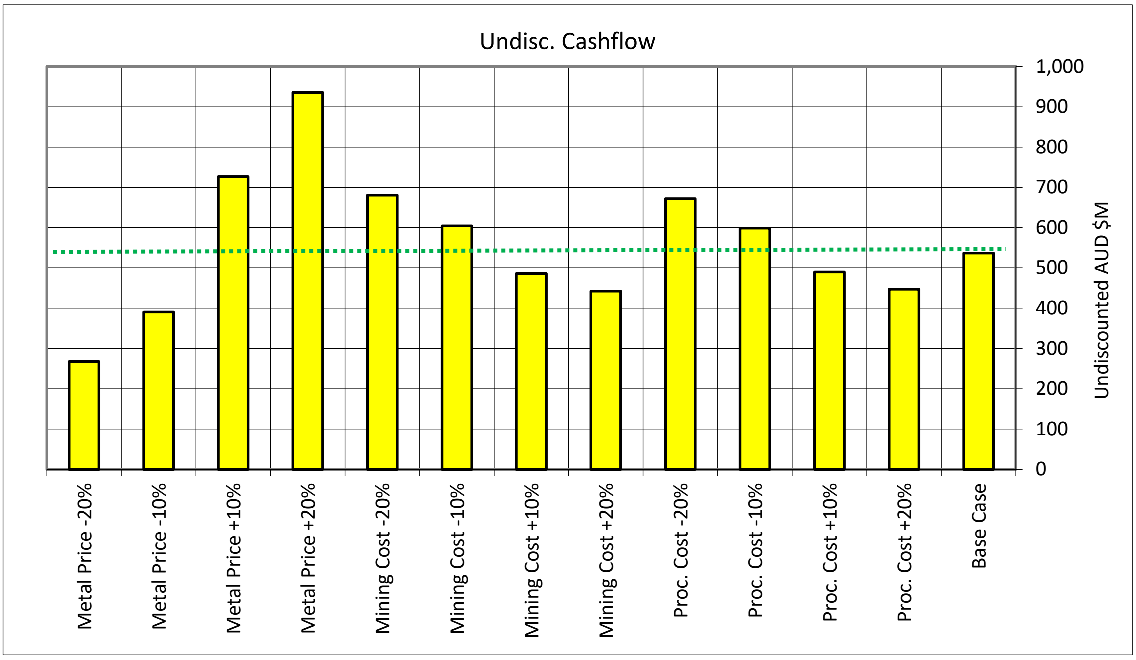

Chart 3 – Undiscounted cashflow sensitivity analysis

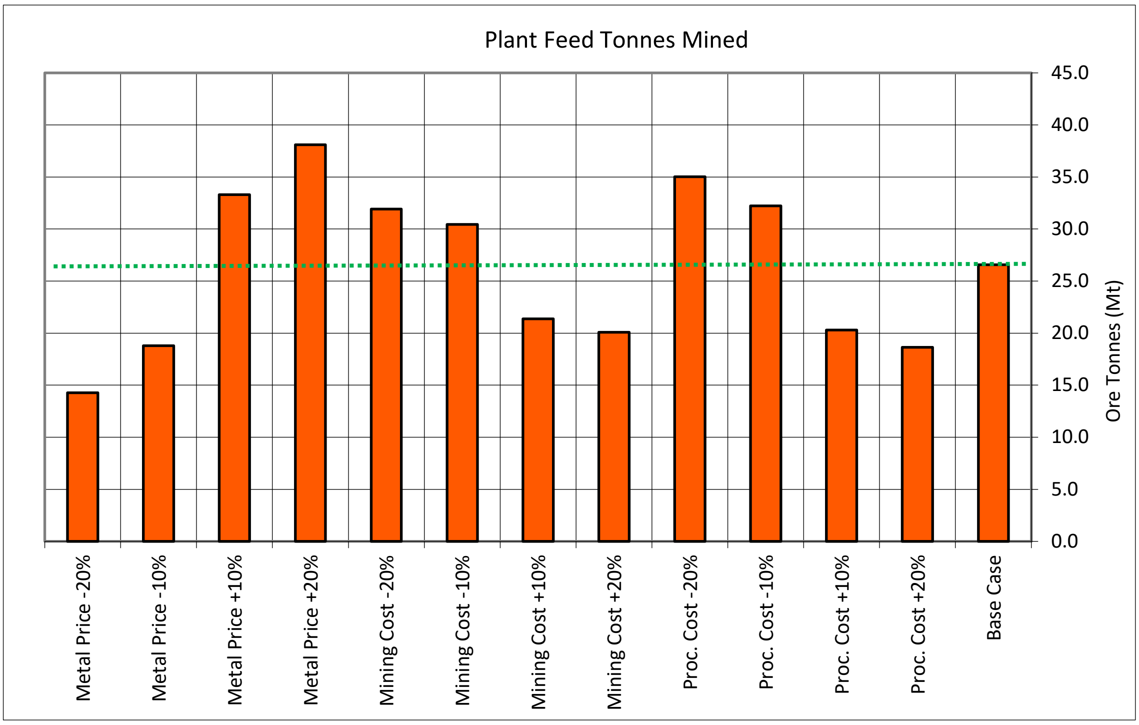

Chart 4 – Plant feed tonnes sensitivity analysis

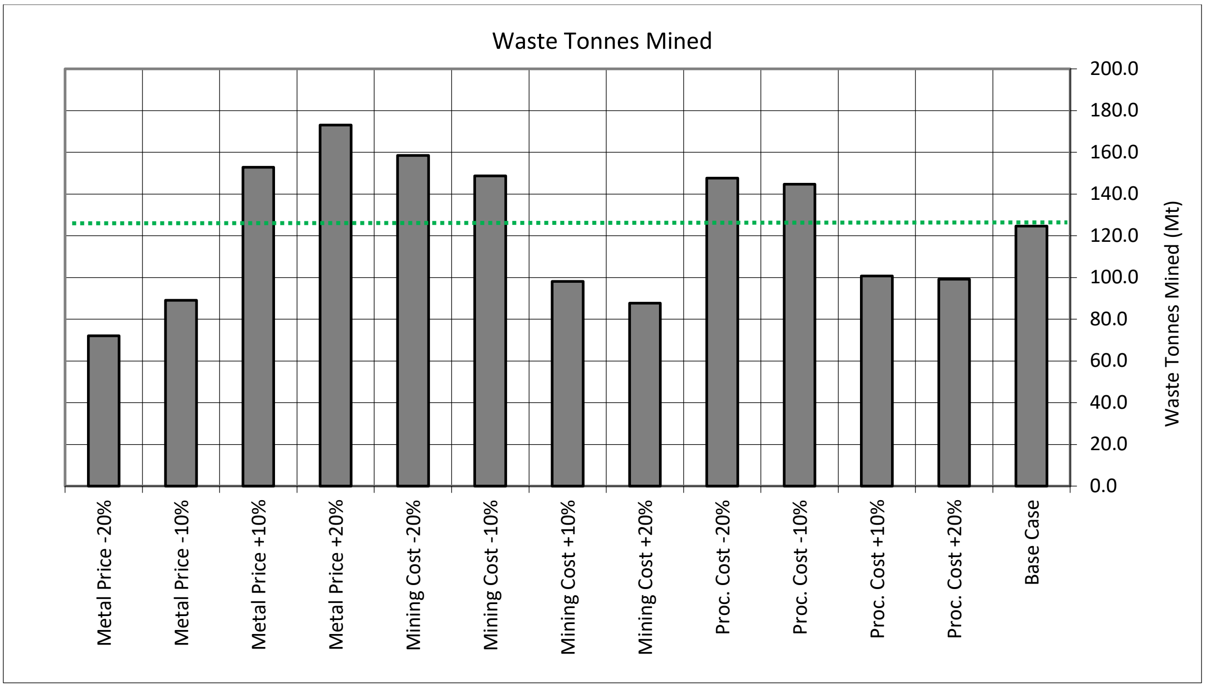

Chart 5 – Waste tonnes sensitivity analysis

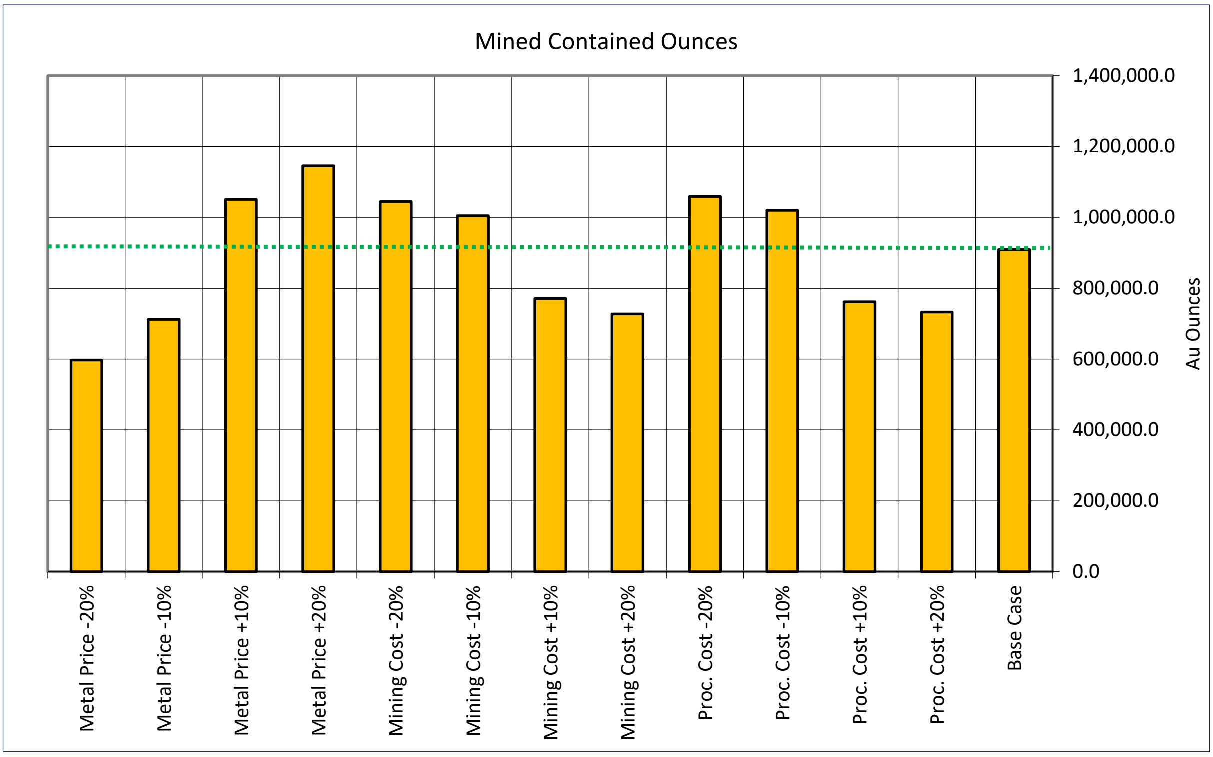

Chart 6 – Mined contained gold sensitivity analysis

5.5. Pit Designs

The following pit designs are based on the parameters outlined above. The pit shapes were created based on the revenue 1 factor output shell. The designs utilise ramp widths of 30 metres for dual lanes and 20 metres for single lanes. These widths were chosen to accommodate the larger 180 tonne truck mining fleet.

The staged pit design locations for Theia were chosen to optimise the throughput to the processing plant and to minimise fleet interactions bearing in mind that two mining fleets will be continuously mining throughout most of the Project's life cycle.

The table below shows the material included in the pit designs. A cut-off of 0.35g/t Au was used for plant feed tonnes.

Table 10 – Design material outputs

Design Output Material						
Area	Plant feed Tonnes (Mt)	g/t	Ounces (Koz)	Waste Tonnes (Mt)	Total Tonnes (Mt)	Strip
Theia	24.6	1.03	818	141.3	165.9	5.7
Eos	0.73	1.43	33	10.7	11.4	14.7
Hestia	1.1	0.88	32	8.5	9.6	7.6
Total	26.5	1.04	883	160.5	187.0	6.1

5.5.1. Theia Stage 1 Design

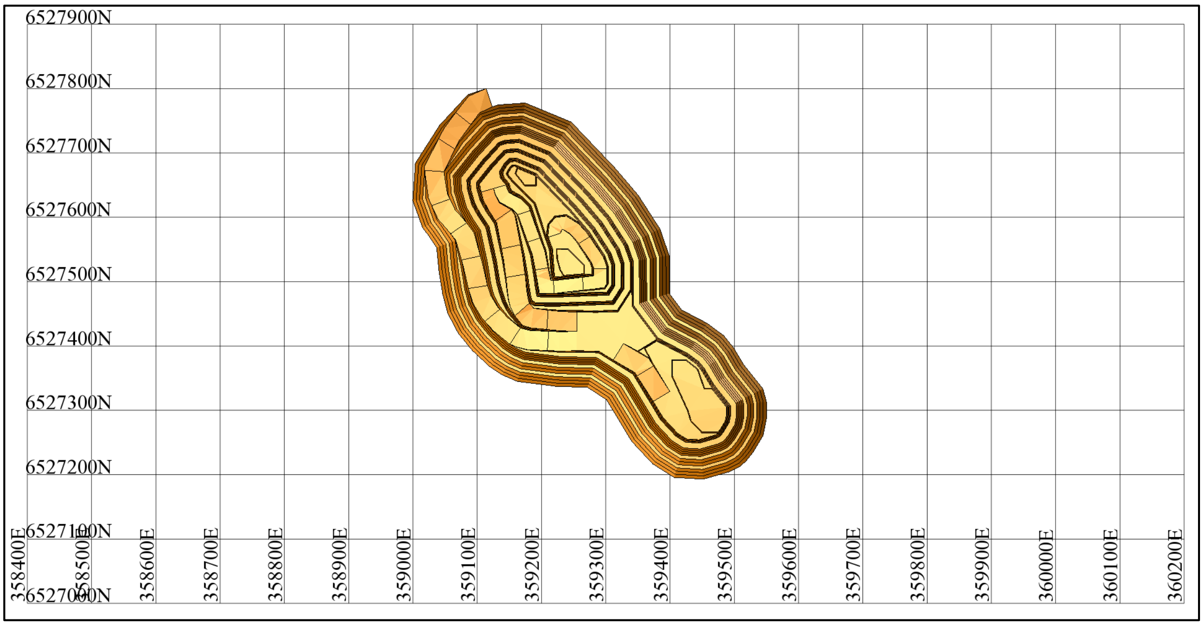

Figure 5 – Theia stage 1 design – Plan view

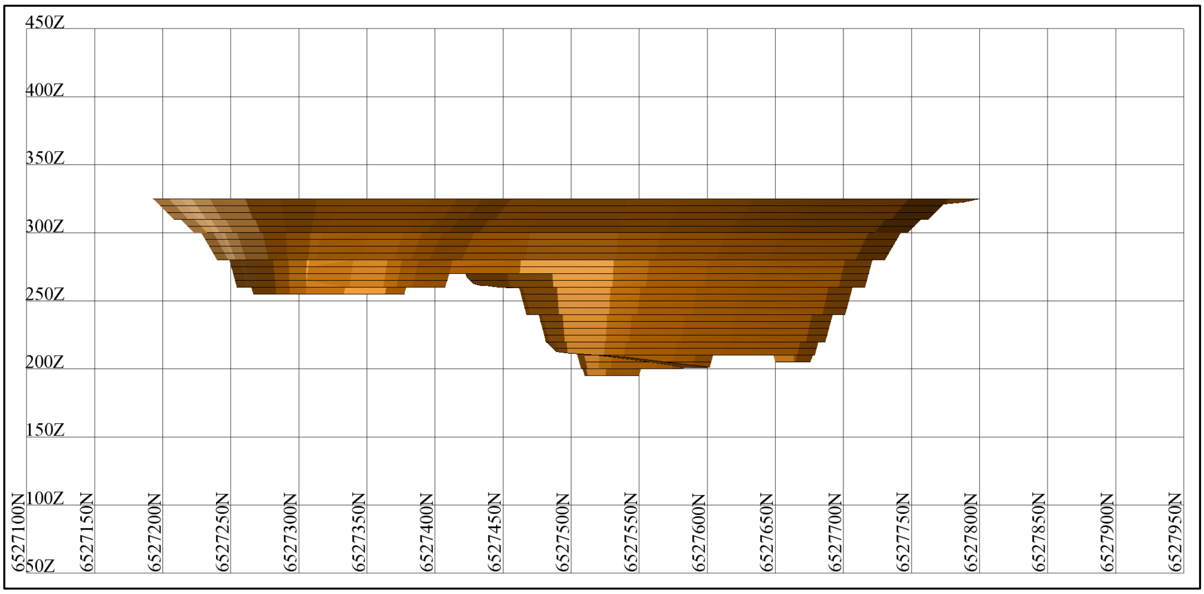

Figure 6 – Theia stage 1 design – Long section view

5.5.2. Theia Stage 2 Design

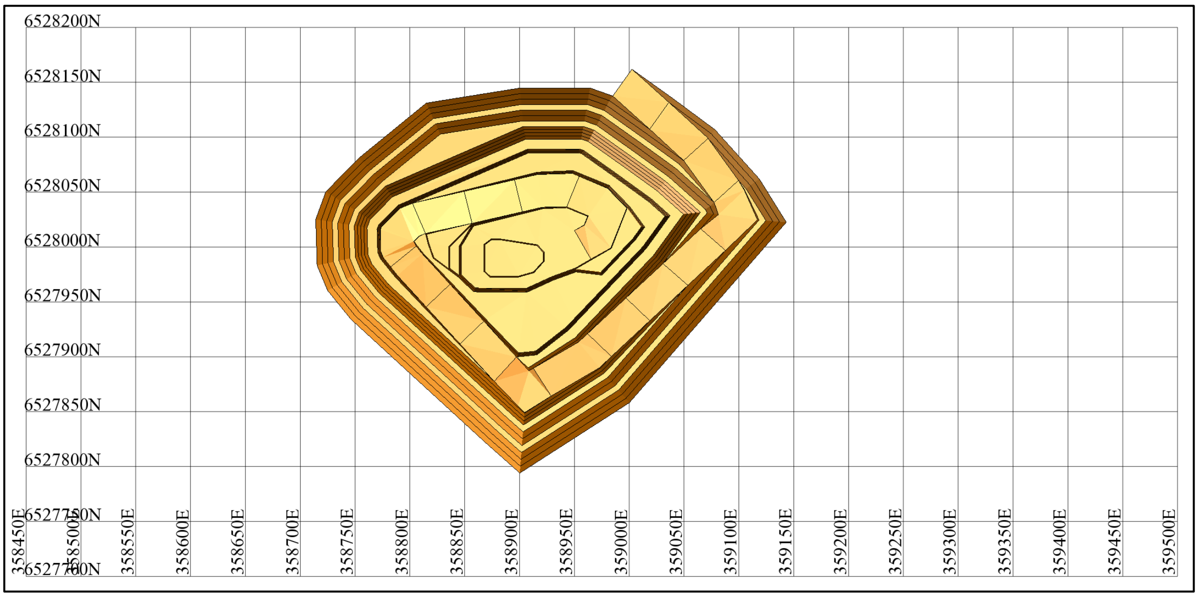

Figure 7 – Theia stage 2 design – Plan view

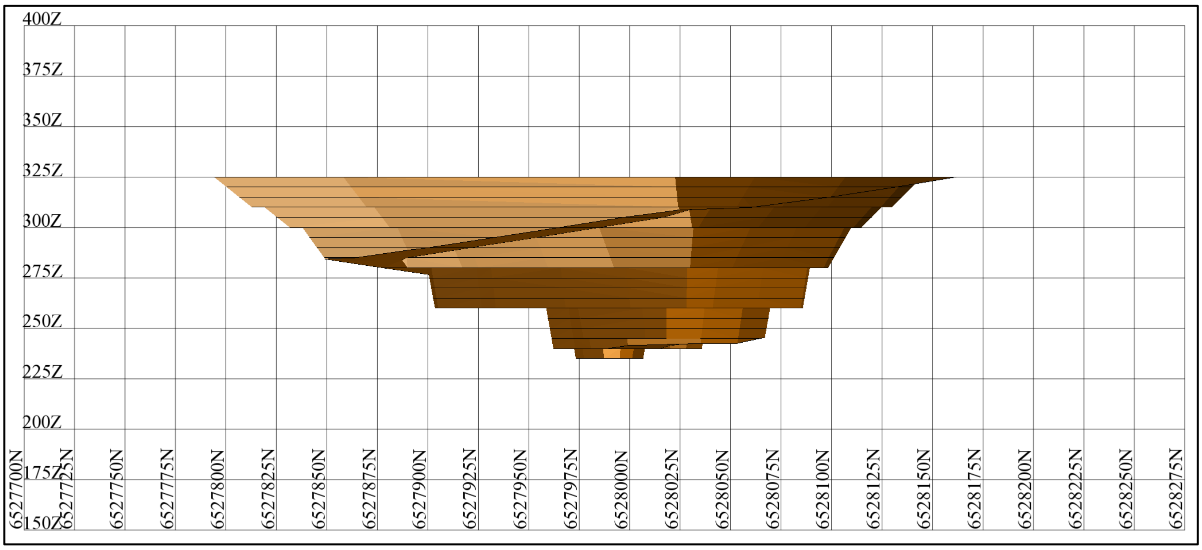

Figure 8 – Theia stage 2 design – Long section view

5.5.3. Theia Stage 3 Design

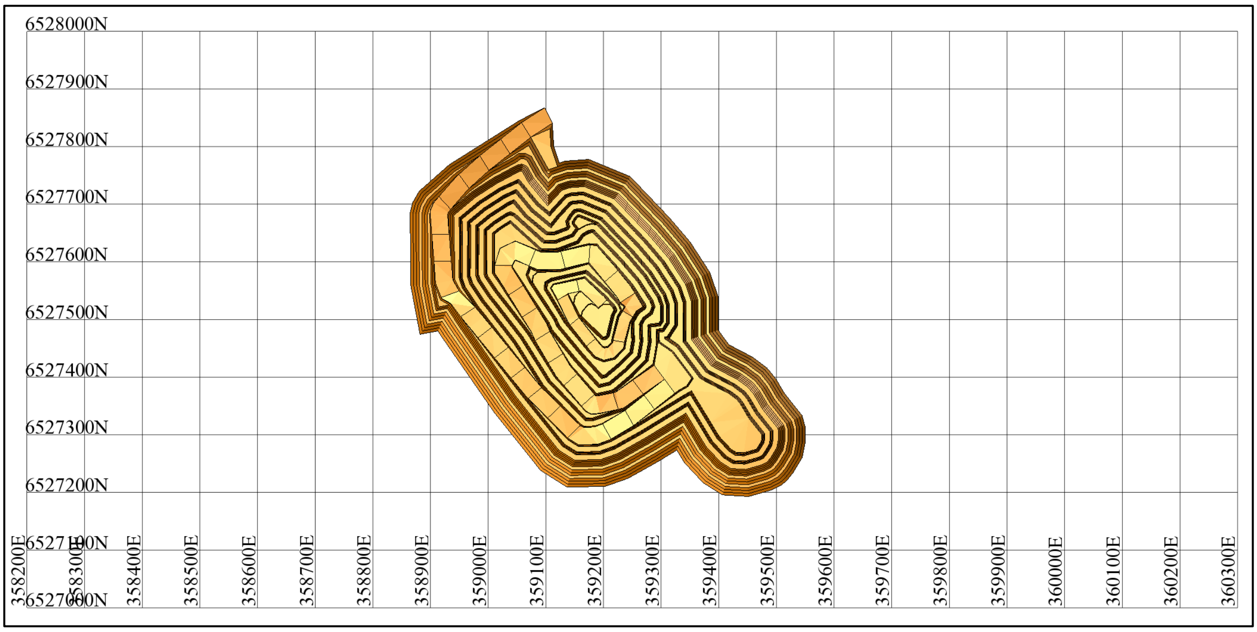

Figure 9 – Theia stage 3 design - Plan view

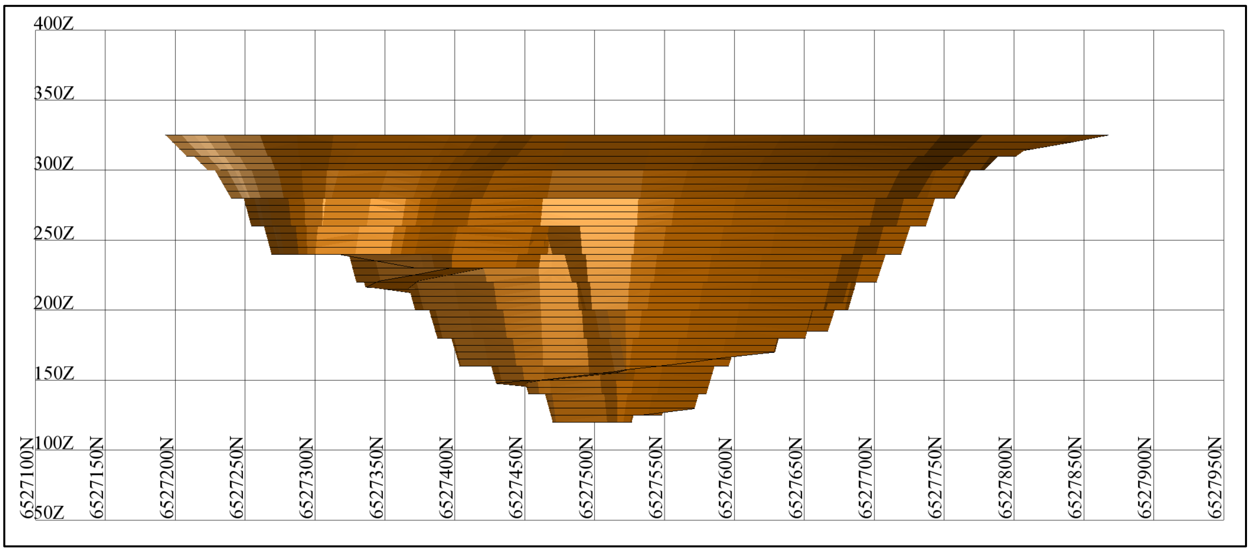

Figure 10 – Theia stage 3 design – Long section view

5.5.4. Theia Stage 4 Design

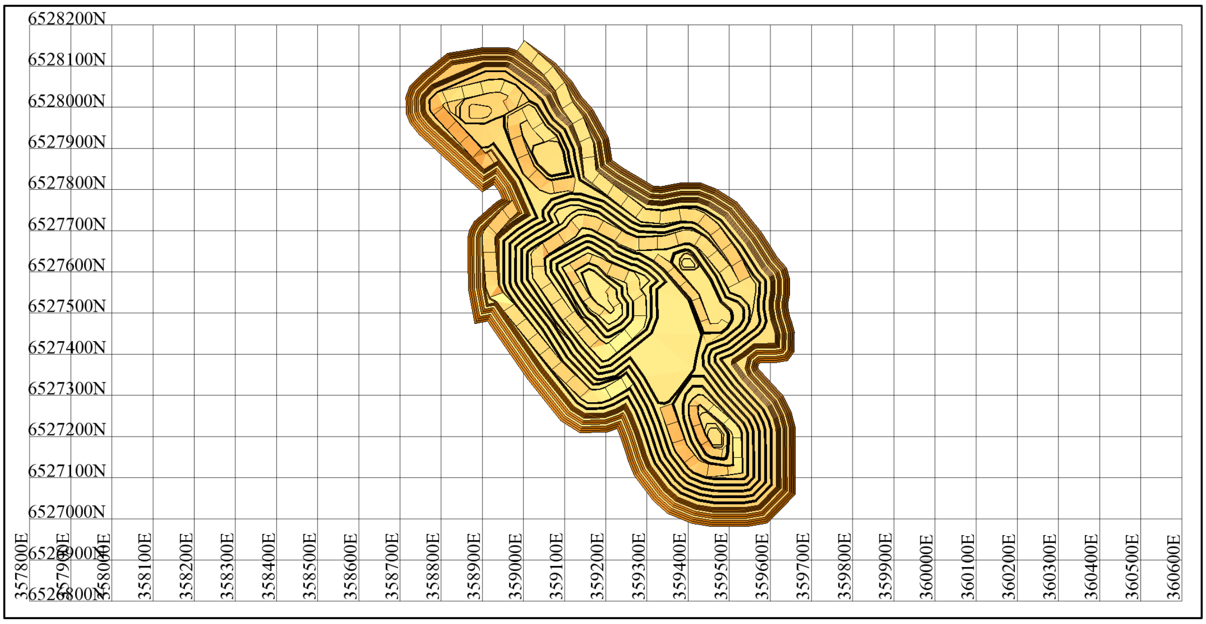

Figure 11 – Theia stage 4 design - Plan view

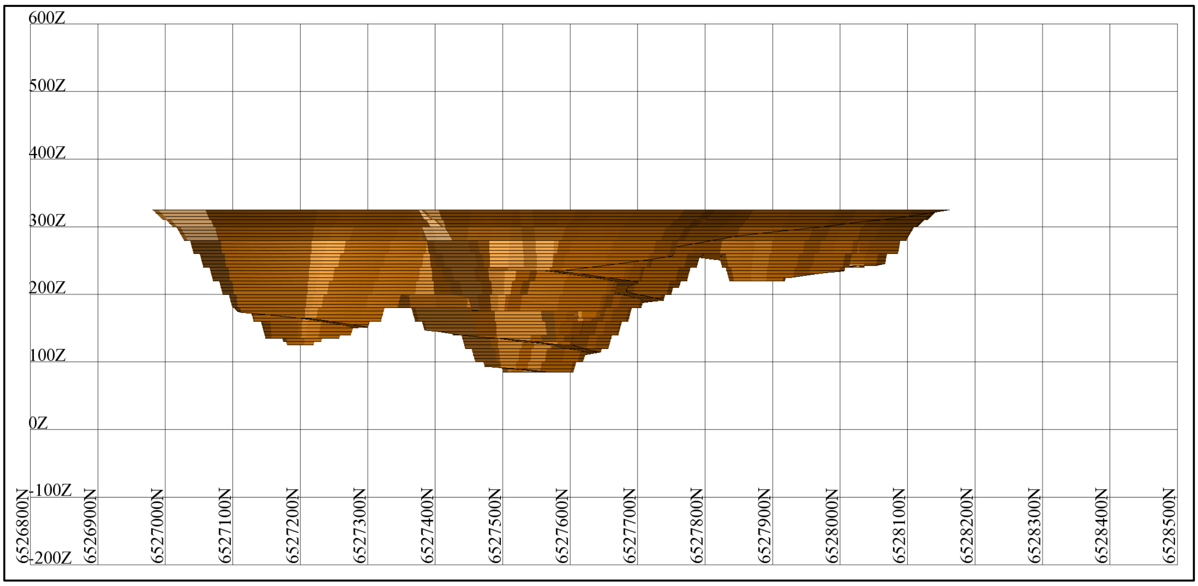

Figure 12 – Theia stage 4 design – Long section view

5.5.5. Theia Stage 5 Design

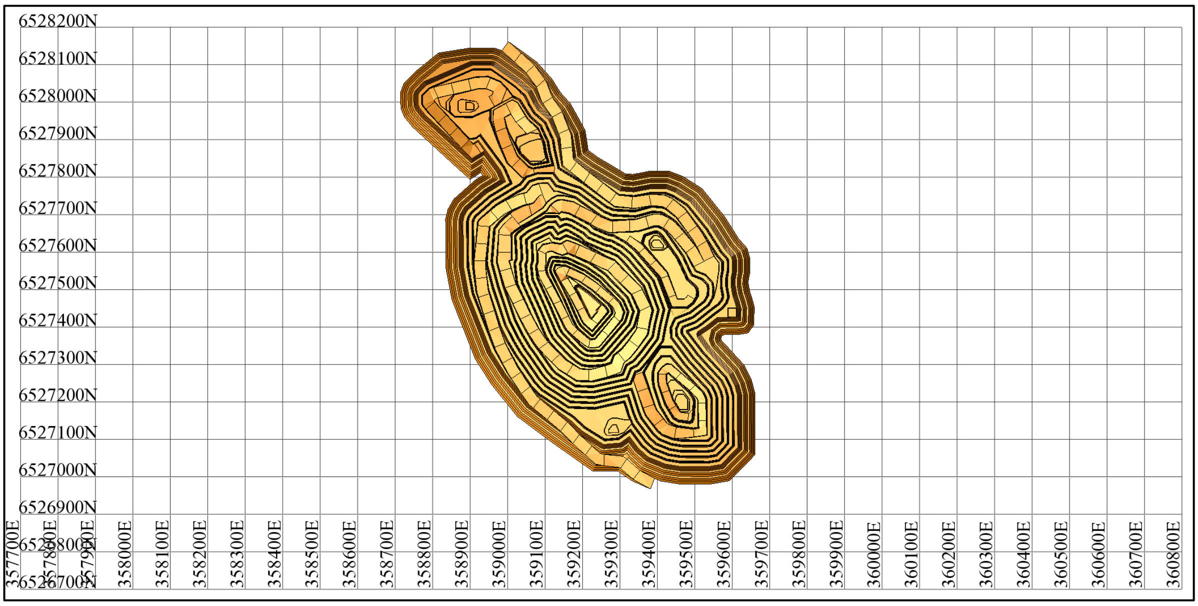

Figure 13 – Theia stage 5 design – Plan view

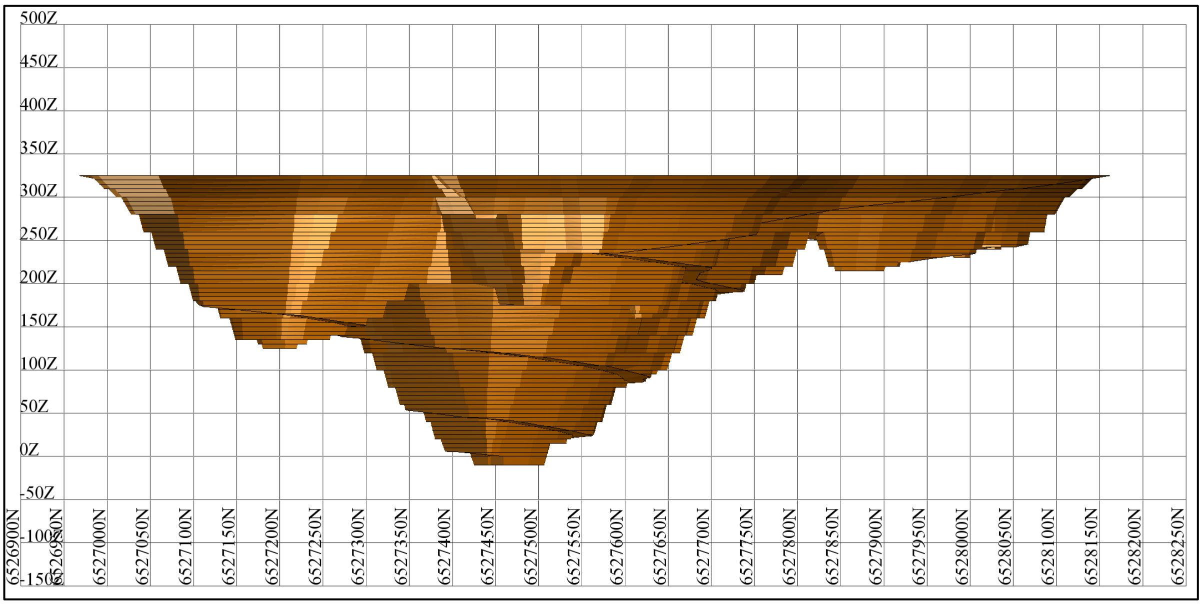

Figure 14 – Theia stage 5 design – Long section view

The following figures illustrate all of the Theia stages overlaid together. For perspective, note that the final Theia design has a total vertical depth of 330 metres.

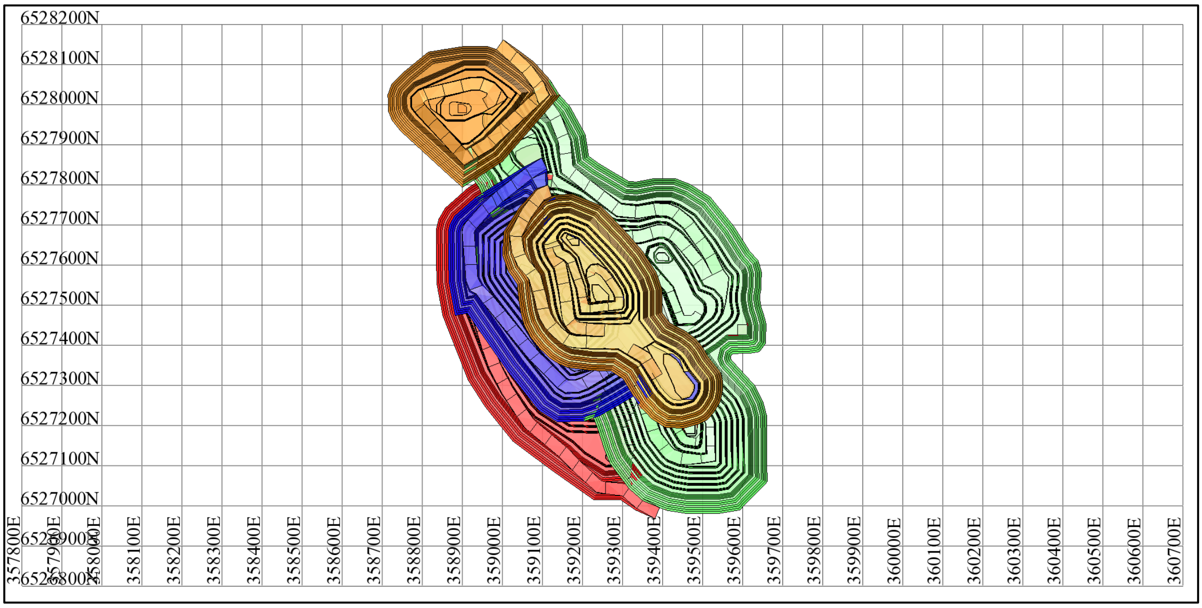

Figure 15 – All Theia designs overlaid – Plan view

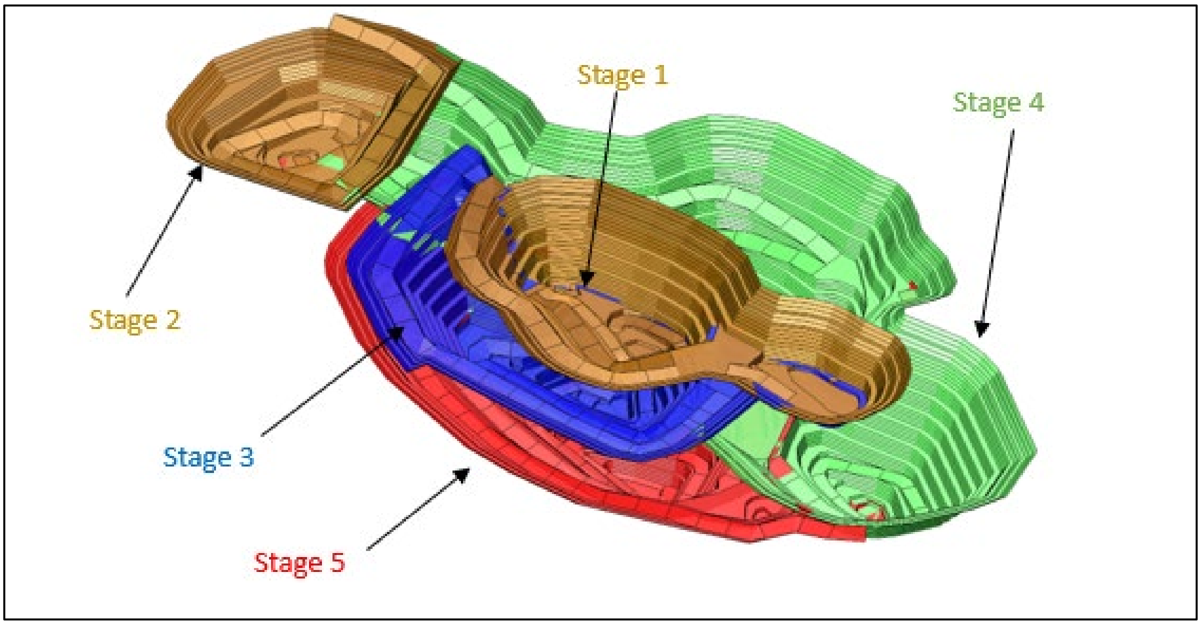

Figure 16 – All Theia designs overlaid – 3D view

5.5.6. Eos Design

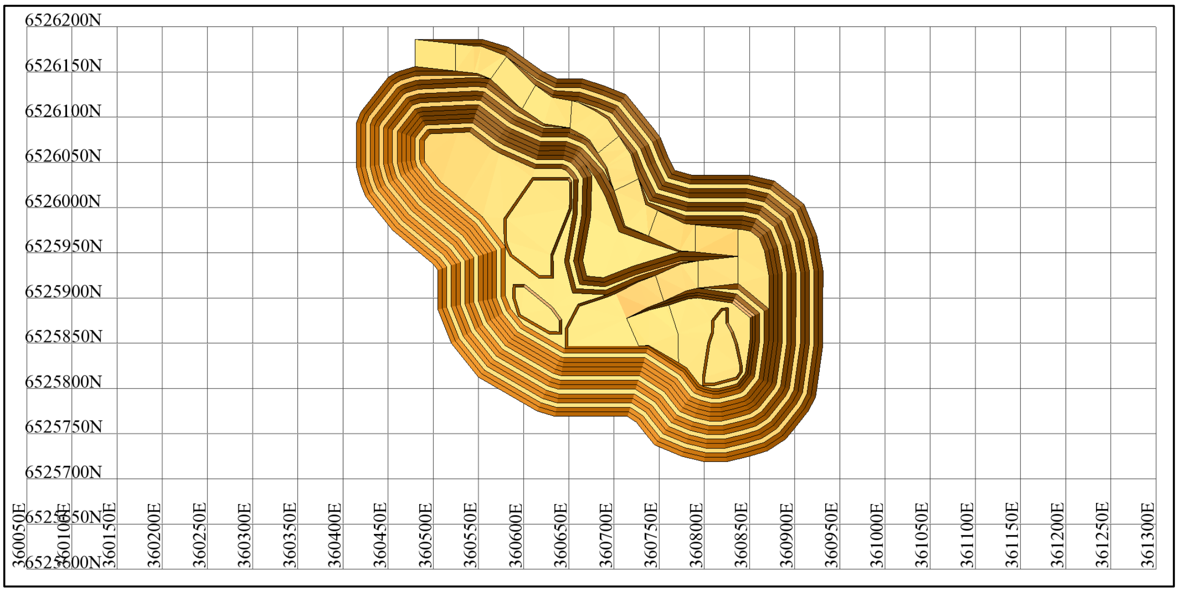

Figure 17 – Eos design – Plan view

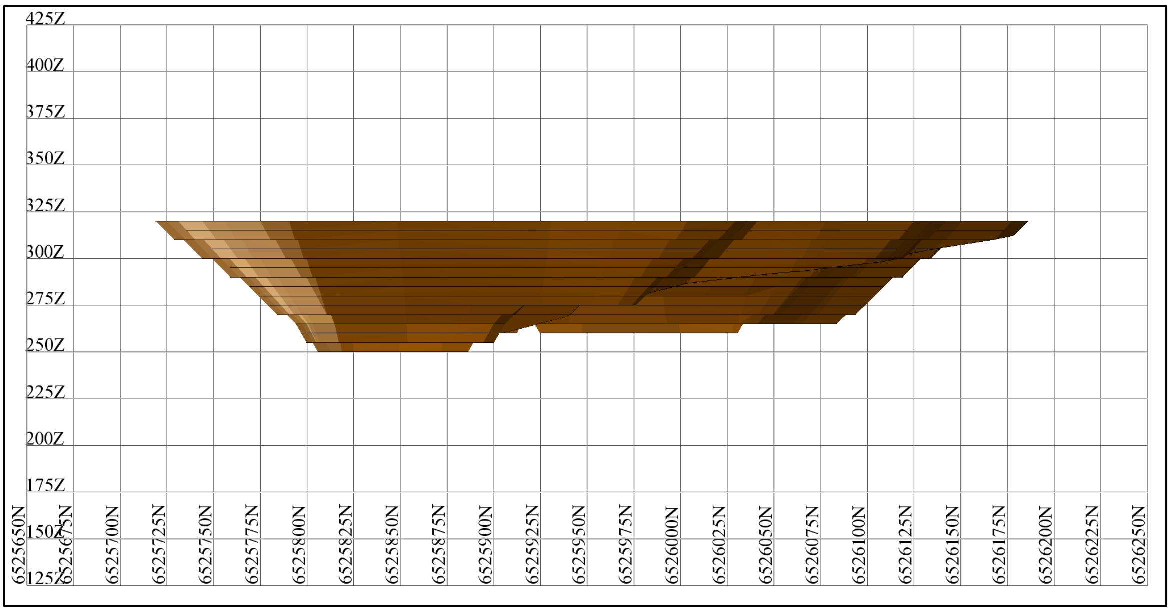

Figure 18 – Eos design – Long section view

5.5.7. Hestia Design

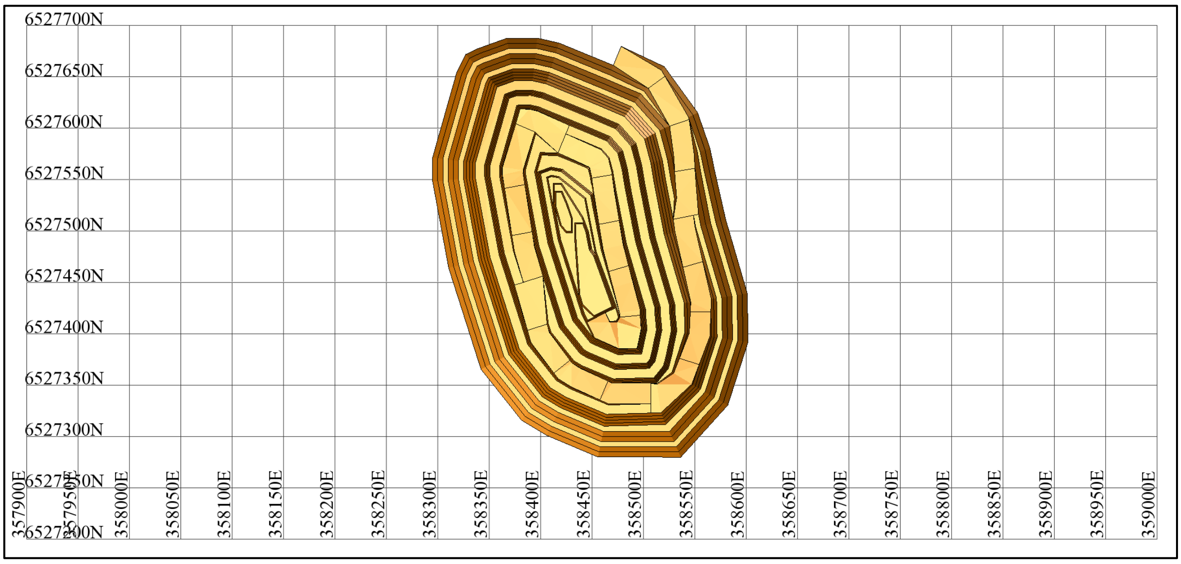

Figure 19 – Hestia design – Plan view

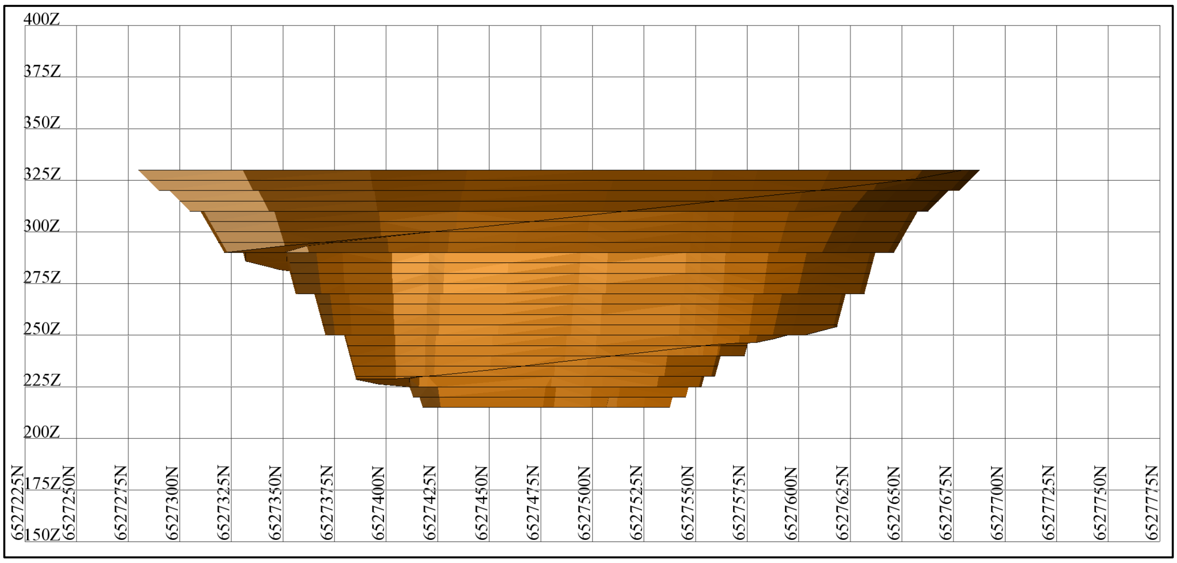

Figure 20 – Hestia design – Long section view

5.6. Life of Mine (LoM) Schedule

The mining and processing schedule considered the practicalities of the mining sequence as well as other considerations such as multiple fleet interactions and ore delivery.

Main points of the LoM:

- Two 240 tonne excavators and 180 tonne trucking fleets mining throughout the life of the project
- Each fleet is scheduled to mine 14,000bcm per day. This is based on a 24-hour production roster.
- Apart from the first year of the schedule, both fleets will run independently of each other in different stages / areas.
- Mining is expected to be completed by contractor within eight years with processing continuing until all low-grade stockpiles have been depleted.
- Eos and Hestia are mined at the end of the schedule with Eos taking priority.
- Processing throughput is set to a rate of 2.5Mtpa.
- Processing does not start until the final quarter of the first year of mining. This ensures that enough material is available to satisfy the mill throughput on startup and for the following periods.
- Total Indicated to Inferred material split is 70% to 30%.

- Mineral Resource material is split into the following grade bins with the highest available grade material prioritised for milling:

Ore	Grade Bin
HG	>1.2g/t
MG	0.8-1.2g/t
LG	0.6-0.8g/t
MW	0.35-0.6g/t

As shown in the following tables and charts, except for year one when ore is only delivered to the plant in the final quarter, the throughput limit of 2.5Mtpa is achieved throughout the LoM. Low grade stockpiled material is held over for processing once mining is completed.

Table 11 – LOM mined material

Total Mined	Total	Mining Years							
		1	2	3	4	5	6	7	8
Plant Feed (Mt)	**26.5**	1.9	5.7	2.5	2.5	4.3	2.6	1.7	5.2
Waste (Mt)	**160.5**	18.9	20.2	22.0	24.4	21.8	22.1	21.2	10.0
Grade (g/t)	**1.04**	1.26	1.02	0.93	0.94	1.04	1.2	1.19	0.95
Contained Au (koz)	**883**	77.4	185.0	75.6	77.1	142.7	98.5	66.4	160.7
Strip Ratio (x)	**6.1**	9.9	3.6	8.7	9.6	5.1	8.6	12.2	1.9

Table 12 – Total processed material

Total Ore Processed	Total	Processing Years											
		1	2	3	4	5	6	7	8	9	10	11	12
Plant Feed (Mt)	**26.5**	0.4	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	1.0
Grade (g/t)	**1.04**	2.44	1.79	1.08	1	1.41	1.26	0.97	1.37	0.58	0.47	0.47	0.47
Contained Au (koz)	**883.3**	32.9	144.0	86.6	80.5	113.5	100.9	77.7	110.3	46.4	37.4	37.5	15.6

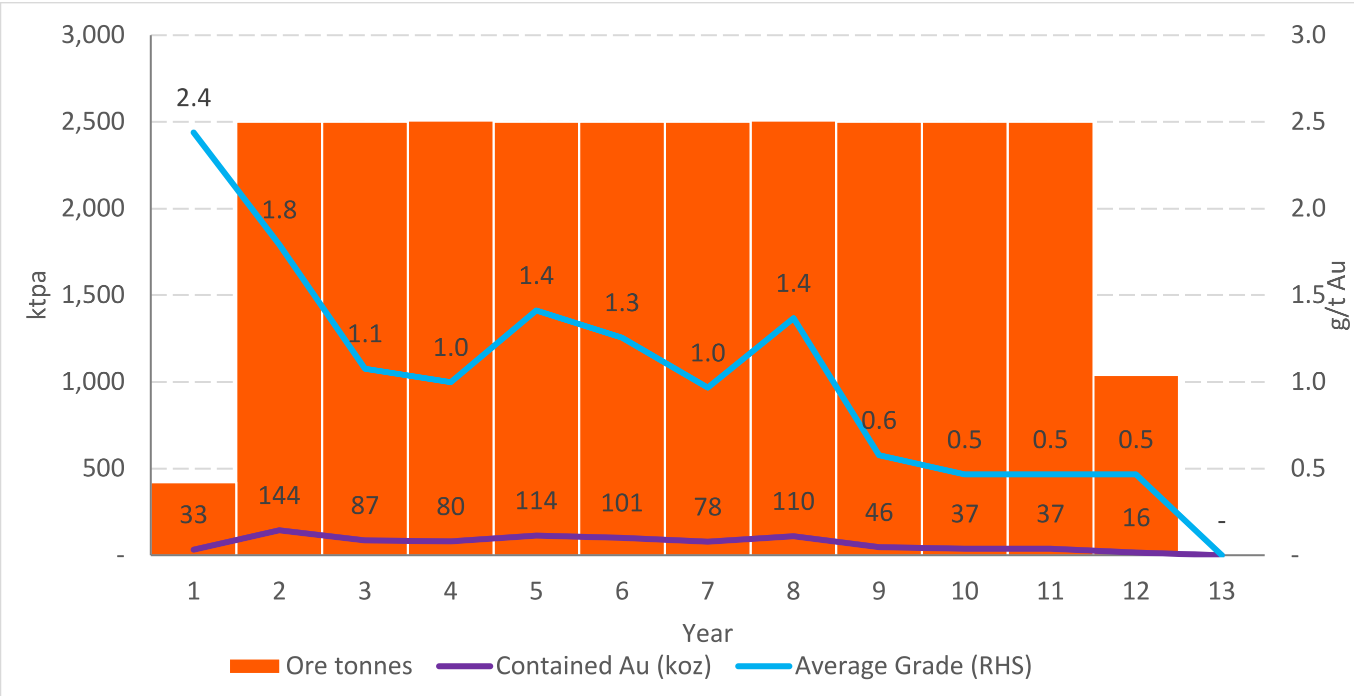

Chart 7 – Annual processing throughput

6. Metallurgy and Processing

Como Engineering was commissioned by Astral to conduct a Scoping Study to estimate capital and operating costs for a CIP/CIL Gold plant designed to treat 2.5 Mtpa of gold material from Mandilla.

Testwork to support the Scoping Study was supervised by Como Engineering and conducted by ALS in Perth, with interpretation of the SMC parameters undertaken by JKTech.

6.1. Metallurgy

Testwork samples of each lithology type were selected from mineralised intersections located within the Mandilla deposit. The testwork for these samples is summarised below:

- Phase 1: ALS metallurgical testwork. Report number A21668, May 2021
    - Testwork conducted includes head assay analysis, gravity and gravity tails direct cyanidation, SMC test, optical mineralogy on Knelson concentrates, and sequential CIP. All tests were conducted on oxide and fresh samples. Half-core and quarter-core samples were taken from NQ2 DD holes MDRCD151, MDRCD228 and MDRCD236 for the Phase 1 testwork.
- Phase 2: ALS metallurgical testwork. Report number A23176, July 2022
    - Testwork conducted includes head assay analysis, gravity and gravity tails direct cyanidation, coarse crush bottle roll, Bond Ball Mill Work Index (**BWi**), Bond Rod Mill Work Index (**RWi**), Bond Abrasion Index, lime demand test on Mandilla site water and St. Ives site water, and variability testwork (gravity and gravity tails cyanidation) on fresh samples. Half-core samples were taken from HQ3 and NQ2 DD hole MDRCD512 for the Phase 2 testwork.

Phase 1 and phase 2 metallurgical testwork was completed on samples of oxide and fresh core from Mandilla. The location of the diamond drill holes used in the metallurgical testwork are shown in Figure 21 below.

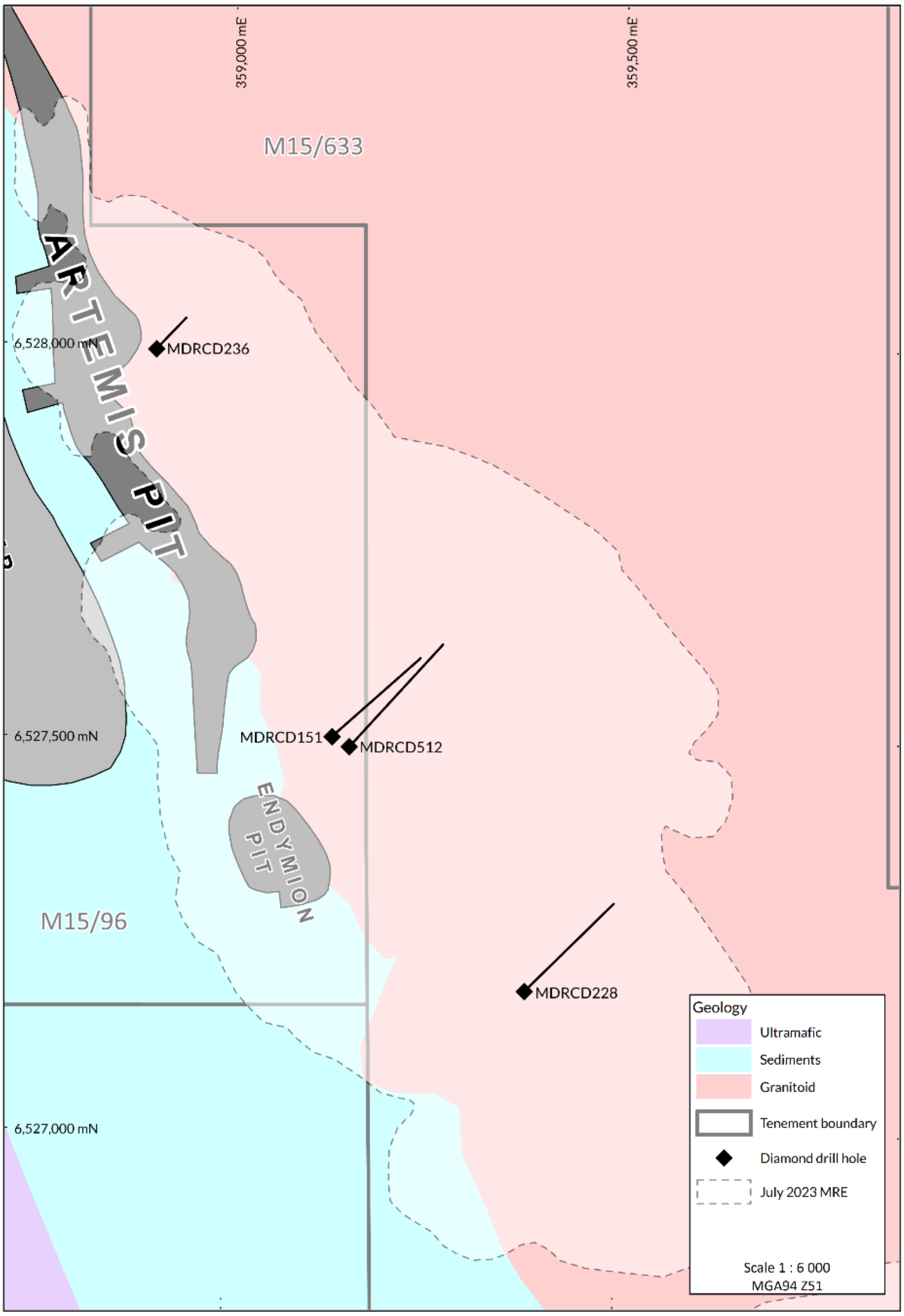

Figure 21 – Location of diamond drill holes used for Theia metallurgical testwork.

Key observations from the testwork are:

6.1.1. Head Assay

- Head assays ranged from 0.18 to 2.18 g/t Au. Phase 1 and phase 2 averages are 0.8 and 0.7 g/t Au respectively compared to design LoM grade of 1.04 g/t Au.
- Significant variation in gold assays indicates coarse gold in the sample. This is verified by high gravity recovery.
- Arsenic and sulphides concentrations are low in the samples, suggesting that potential gold locked in pyrite/arsenopyrite is low.
- The levels of organic carbon tested on the samples are at a low level where preg-robbing is unlikely to occur.

6.1.2. Comminution Testwork

- The fresh ore is very competent and in a semi-autogenous grinding mill would likely result in a high proportion of pebbles, which would require a pebble crusher.
- The average RWi for both apertures are the same at 19.9 kWh/t. Higher RWi compared to BWi at 150 µm aperture indicates that there will be higher proportion of critical size materials.
- The 80th percentile BWi at 150 µm aperture of 14.3 kWh/t is used as design value to account for more competent ore in the deposit.
- Both oxide and fresh ore are highly abrasive. The average abrasion index for the composite sample is 0.477 and is used as the design value.

6.1.3. Site Water

- The Mandilla bore water is hypersaline and the total dissolved solids (**TDS**) measured between 187,400 (phase 2) to 305,400 ppm (phase 1). The samples also contain a significant amount of magnesium, which determines the buffer point in lime demand testwork.
- The St. Ives bore water is better quality with a TDS equivalent to sea water of approximately 35,000 ppm. Lime demand in phase 2 testwork indicates that the Mandilla bore water had a pH buffering around 9.0 and consumed more than 15 kg/t of lime. The St. Ives bore water on the other hand used much less lime to achieve a pH level of 10, consuming approximately 3.5 kg/t of lime. Based on these results, St Ives bore water was used for the phase 2 leach testwork.

6.1.4. Gravity and Leaching

- Gravity recoveries range from 27.5% to 92.6%, with an average gravity recovery of 70.1%. Lower gravity component in some samples is due to lower head grade.
- Gravity recovery of 70% has been selected as the design value.
- The combined gravity and leach gold extraction results from Phase 1 are excellent, with 24-hour extraction ranging from 94.7% (150µm) to 99.2% (75µm).
- For Phase 2 combined gravity and leach gold extraction results were also excellent, with 24-hour extraction ranging from 94.5% (212µm) to 99.2% (125µm).
- Based on the grind-recovery relationship from both Phase 1 and Phase 2 testwork, the design value P80 selected is 150 µm.
- Overall gold recovery for the purposes of the scoping study is 95.7%.

6.1.5. Reagents

Design values for cyanide consumption:

- Oxide is 0.32 kg/t, taken as an average from phase 1 and 2.
- Fresh is 0.25 kg/t, also taken as an average from phase 1 and 2, excluding two outliers showing 0.89 and 0.90 kg/t from phase 1 testwork. Subsequent master composites and variability testwork did not indicate any high cyanide consumptions.

Design values for lime consumption are only based on phase 2 testwork. Phase 1 testwork using Perth tap water is not representative of site water and, therefore cannot be used.

- Oxide is 4.21 kg/t, fresh is 3.62 kg/t, taken as an average from phase 2 testwork.

Oxygen Uptake

- Oxygen uptake tests were conducted on Phase 1 samples.
- Oxygen consumption for both oxide and fresh composites are low.
- Oxygen sparging is not required.

6.1.6. Metallurgical Testwork Gaps

The following further testwork covering all lithology domains and ore depths throughout the entire mine pit shell is recommended for progress to a feasibility level of study:

- CIL optimisation:
  - Grind size vs Gravity-CIL recovery testwork on composites from the main ore sources to select the optimum grind size and confirming the recovery of the selected optimum grind size.
  - Cyanide concentration optimization.
  - Dissolved oxygen optimisation. Oxygen uptake shows oxygen consumption is low, compare gold extraction with air sparging and oxygen sparging.
- Pulp viscosity testing for agitator sizing.
- Thickener flocculant screening and dynamic settling tests in site water are required for sizing of the tailings thickener.
- Tailings solution cyanide speciation and potential cyanide detoxification.
- Variability testing for comminution.

6.2. Processing Design Criteria

Design criteria have been prepared to provide the key design parameters for equipment selection and engineering for a three-stage crush single-stage grinding option. The design criteria incorporate the main details for the ore and the processing plant. A summary of the key design criteria is shown below.

Table 13 – Process design criteria

DESCRIPTION	Units	VALUE
Operating Schedule		
Annual Throughput	tpa	2,500,000
Plant capacity	t/h	312.5
Design Feed Grade - Gold	g/t	1.1
Design Gold Recovery	%	95.7
Design CIP Recovery	%	85.8
Design Gravity Recovery	%	70.0
Nominal Gold Production	kozpa	84.6
Physical Ore Characteristics		
Ore Source		Multiple Open Pits
Bond Ball Work Index - design	kWh/t	14.3
Crushing		
Circuit Type		Three-Stage Crushing
Primary Crusher		Jaw
Secondary & Tertiary Crushers		Cone
Feed Size F100	mm	600
Product Size P80	mm	12
Grinding		
Circuit Type		Ball Mill
Feed Size F80	mm	12
Product Size P80	µm	150
Grinding Mill Power Installed	kW	5,200
Leach Circuit		
No of Tanks	#	2
Leach Circuit volume total	m^3	3,000

Leach Circuit residence Time	hr	6
Adsorption Circuit		
No of Tanks	#	6
Adsorption Circuit volume total	m^3	9,000
Adsorption Circuit residence Time	h	18
Elution and Electrowinning		
Carbon Elution Process		Pressure Zadra
Design Capacity (Carbon)	t	4.0
Carbon Regeneration		
Reactivation Kiln Type		Horizontal Diesel Fired
Capacity	kg/h	200

6.3. Process Description

The Mandilla processing plant has been designed based on processing 2,500,000 tpa of gold ore.

The design crushing throughput rate is 375.5 tph, equating to 76% availability (day and nightshift operation).

Design milling rate is 312.5 tph based on availability of 91.3% to process 2.5Mtpa. The following process plant description is based on the Process Design Criteria and flowsheets. The processing circuit includes the following major equipment areas:

- Primary jaw crusher
- Secondary cone crusher
- Tertiary cone crusher
- Screening
- Cyclone classification
- Milling and gravity separation
- Gravity concentration and intensive leaching of gravity concentrate
- Leaching and adsorption
- Elution circuit and carbon regeneration
- Tails thickening
- Services and reagents

An overall process flow diagram is presented below.

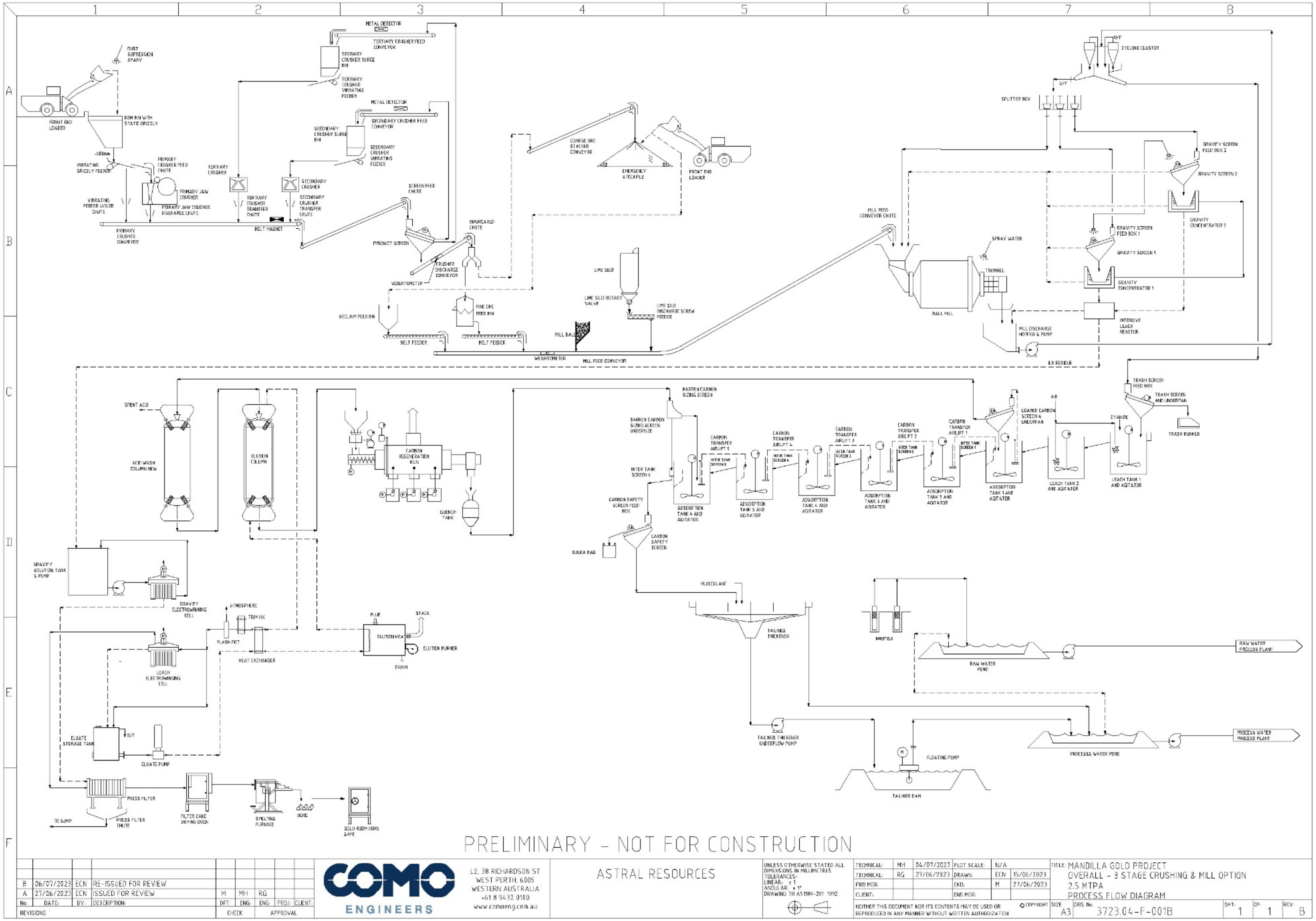

Figure 22 – Mandilla Gold Project Process Flow Diagram

6.3.1. Crushing

The three-stage crushing circuit will produce a crushed product of nominally 80% passing (**P80**) 12mm as feed for the ball milling circuit.

The nominal crushing rate is 375.5 tph with double shift operation and 76% crusher runtime. The fine crushed ore is stored in the feed bin with a live capacity of 4,000 t.

Modelling by AggFlow for the crushing circuit is illustrated in the figure below.

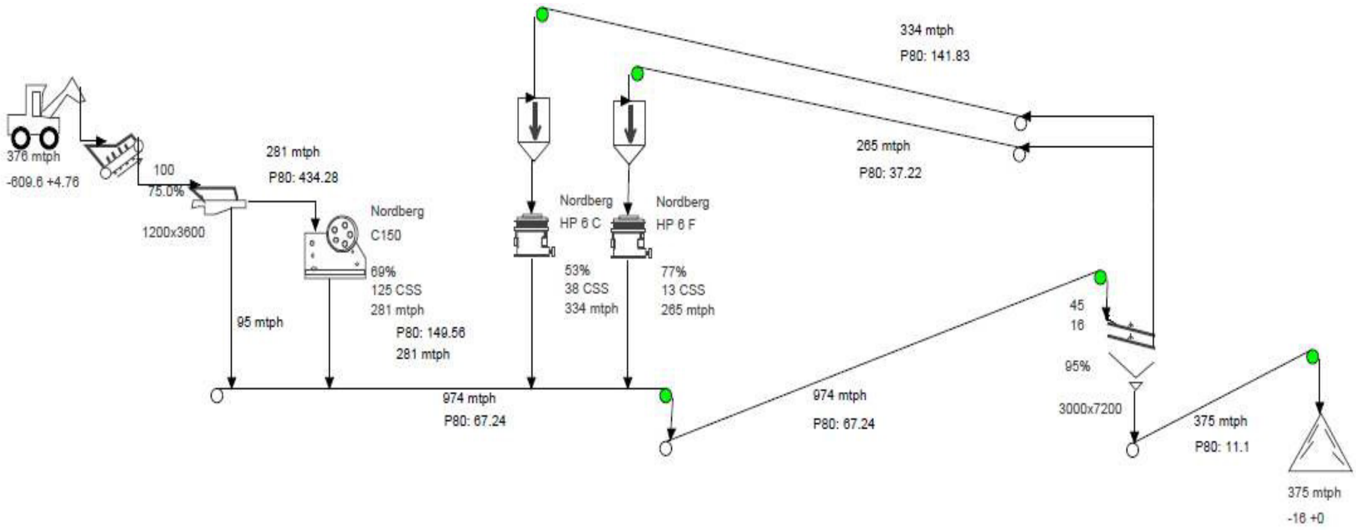

Figure 23 – AggFlow model of the three-stage crushing circuit

All conveyors in the crushing circuit are fixed speed and equipped with:

- belt scrapers
- belt ploughs
- belt underspeed detection
- belt drift detection
- local emergency stop button
- local isolation
- conveyor pull wires.

In addition, the primary sacrificial conveyor and screen feed conveyor are also fitted with belt rip detection.

Walkway access is provided on one side of the conveyor to the head pulleys on the secondary and tertiary crusher feed conveyors. The fine ore emergency stacker is also provided with walkway access.

All conveyor transfer chutes are fitted with blocked chute detectors which are interlocked to stop the respective conveyor drive if a high level alarm is triggered.

6.3.1.1. Primary Crushing

Ore is fed by front-end loader to the 80 cubic metre capacity run of mine (**ROM**) bin which is fitted with parallel grizzly scalping bars at 600 mm spacing to prevent oversize entering the ROM bin. The width of the ROM bin is sized to allow a front loader with a bucket width of three metres to dump directly to the bin.

The ROM bin is equipped with dump/no dump lights to regulate feeding ore to the bin. The ROM bin dump point incorporates a concrete pad with integrated tyre bump stop.

Ore is withdrawn from the ROM bin at a controlled rate by a variable speed apron feeder, feeding the vibrating grizzly to remove any undersized material before feeding the oversized to the primary crusher and controlled from the crusher control room.

The primary crusher is a single toggle 47” x 55” or equivalent jaw crusher.

Ore passing through the jaw crusher falls onto the heavy-duty Primary Sacrificial Crusher Discharge Conveyor. This conveyor also receives crushed product from the secondary and tertiary crushers and is fitted with an overhead magnet to remove tramp metal. The Primary Sacrificial Crusher Discharge Conveyor discharges to the Screen Feed Conveyor.

From the primary crusher, crushed ore feeds onto a double deck screen which sizes the crushed ore into mill feed and secondary/tertiary crusher feeds. The transfer chute onto the screen is designed to ensure even distribution of material across the screen. Additional screening capacity has been allowed in the screen size selection.

The screen undersize (nominally 80% minus 12 mm crushed product) is fed to the Fine Ore Bin via the Fine Ore Stacker Conveyor and Product Conveyor.

6.3.1.2. Secondary Crushing

Top-deck oversize from the product screen is fed to the secondary crusher surge bin by the secondary crusher feed conveyor. A metal detector is fitted to detect any tramp metal on the conveyor.

The secondary crusher feed bin is fitted with a level element transmitter. Ore is withdrawn from the crusher feed bin by a vibrating feeder fitted with a variable speed drive (**VSD**) to allow the feed rate to the crusher to be controlled.

The crusher feed rate can be automatically controlled by the level indicator installed above the crusher feed bowl. Level control allows choke feeding of the crusher to ensure efficient operation and minimise power and wear.

The secondary crusher has adjustable closed side setting, which can be changed using the vendor supplied hydraulic adjustment pack.

6.3.1.3. Tertiary Crushing

Bottom-deck oversize from the product screen is fed to the tertiary crusher surge bin by the tertiary crusher feed conveyor. A metal detector is fitted to detect any tramp metal on the conveyor.

The tertiary crusher feed bin is fitted with a level element transmitter. Ore is withdrawn from the crusher feed bin by a vibrating feeder fitted with a VSD to allow the feed rate to the crusher to be controlled.

The crusher feed rate can be automatically controlled by the level indicator installed above the crusher feed bowl. Level control allows choke feeding of the crusher to ensure efficient operation and minimise power and wear.

The tertiary crusher has adjustable closed side setting, which can be changed using the vendor supplied hydraulic adjustment pack.

6.3.1.4. Fine Ore Bin

The Fine Ore Bin has a live volume of 4,000 t, equating to 12.8 hours of production. Fine ore is withdrawn by a vibrating pan feeder onto the Mill Feed Conveyor.

A weightometer is fitted to the Mill Feed Conveyor to provide the instantaneous and totalised crusher tonnage rate.

The speed of the belt feeders is controlled by a process loop to the weightometer located on the Mill Feed Conveyor. The mill feed rate is automatically controlled to the selected mill feed rate.

A lime silo and feeder are located above the mill feed conveyor. Bulk lime is delivered to site and pneumatically transferred to the lime silo. The lime is fed by a variable speed screw feeder onto the Mill Feed Conveyor at a rate controlled by a pH meter in the first leach tank.

6.3.2. Milling, Classification and Gravity Separation

6.3.2.1. Milling and Classification

The milling circuit comprises a single stage 5,200 kW ball mill, fitted with rubber liners, discharge trommel and operating in closed circuit with cyclone classification. Mill feed has a P80 sizing of 12mm. The mill discharge density is controlled by water addition to the mill feed chute, regulated using a flowmeter and flow control valve. The mill discharge slurry flows through the trommel screen into the mill discharge hopper fitted with a level indicator. The slurry level in the mill discharge hopper is maintained constant by a level control loop to the VSD on the Cyclone Feed Pump motor.

The mill discharge slurry is pumped to a cluster of 15 cyclones for classification to overflow (product which is at the targeted size for the leach circuit) and coarse undersize. Operation of the cyclones is monitored by a slurry flowmeter and gamma density gauge. The cyclone feed density is regulated by water addition to the mill discharge hopper using a signal from the gamma density gauge.

The cyclone underflow (coarse fraction) flows to a Gravity Circuit Splitter Box feeding two Knelson Concentrators, the tails from which gravitate back to the ball mill feed chute.

6.3.2.2. Gravity Circuit

A fraction of the cyclone underflow slurry (maximum 50%) is diverted from a splitter box to two horizontal vibrating Gravity Concentrator Feed Screens. Oversize from the screens is directed to the mill feed chute. Undersize from the Gravity Concentrator Feed screens (nominally minus 2 mm) flows into two batch centrifugal concentrators, justified by the high gravity recovery.

The gravity concentrators maintain fluidised beds using raw water added at constant flow rates which is controlled by flowmeters and flow control valves. The concentrators and feed screens can be bypassed if required for maintenance or operational purposes.

The gravity concentrators are operated semi-continuously by local programmable logic controllers (**PLC**). Concentrate from the batch centrifugal concentrators is periodically discharged to a secure hopper feeding the intensive gravity leach unit.

Tailings from the gravity concentrator and the gravity screen oversize are discharged into the mill feed chute.

The milling area is equipped with a manually operated sump pump.

6.3.3. Leaching and Adsorption

The cyclone overflow will gravitate to a horizontal trash screen, which has a 0.8mm aperture polyurethane deck. The oversize trash will fall into a trash bunker and be periodically removed by front end loader for disposal.

Trash screen undersize will flow into the leach tank.

The leach circuit will comprise two 1,500 cubic metre leach tanks, followed by six 1,500 cubic metre adsorption tanks. A pH probe is installed in the first leach tank and controls the lime addition rate to the mill circuit to maintain a pH level above 9 depending on the quantity of soluble magnesium in the process water and corresponding pH buffering experienced.

Cyanide is added to the leach tanks at a set rate controlled using a flowmeter and flow control valve.

Air is added to the leach tank sparges at a rate manually controlled using a flow control valve and monitored using a flowmeter. The air addition rate is adjusted to target the required dissolved oxygen levels as measured by the dissolved oxygen probe installed in the first leach tank.

Barren eluate from the elution circuit is returned to the first leach tank in a controlled manner.

Carbon is added to the adsorption tanks to collect the gold from solution and is pumped counter current to the direction of slurry flow using airlift pumps. Carbon concentration in the adsorption tanks will typically be 10 - 15 g/L. The granular activated carbon adsorbs the dissolved gold from solution as it travels counter current to the slurry flow. Carbon is retained within each tank by mechanically agitated cylindrical wedge wire inter-tank screens as the slurry flows through the screens and overflow launders.

Barren carbon is added to the last adsorption tank and is successively moved up the tank train using air lifts, as the carbon loads with gold.

The loaded carbon is recovered from the first adsorption tank by a pump to the horizontal vibrating Loaded Carbon Screen, where it is washed by sprays and then flows to the acid wash circuit.

The tailings slurry flow from the last adsorption tank will gravitate to a linear vibrating Carbon Safety Screen having a screen aperture of 0.6mm. This screen will collect any carbon in the

0.6mm - 0.8mm size range together with any coarser carbon if there is a leaking intertank screen on the last absorption tank. The undersize from the carbon safety screen will flow to the Tailings Hopper. Allowance has been included to feed the carbon safety screen from either adsorption tank number 5 or 6, for periods when one tank is offline.

6.3.4. Elution and Goldroom

The elution circuit design allows for a four-tonne pressure Zadra circuit. The carbon elution column has been sized to accommodate future expansion and allow for periods when gravity gold recovery is reduced. The circuit includes separate acid and elution columns, electrowinning cell, thermal heater, and a carbon regeneration kiln. The elution process is automated by a PLC system.

The loaded carbon screen recovers and washes the loaded carbon, while the slurry underflow gravitates back to Adsorption Tank number 1.

6.3.4.1. Acid Wash

The loaded carbon on the screen is washed and gravitates into the acid wash column.

Once the acid wash column is full, the drain valve is closed and a mixture of raw water and hydrochloric acid (to a concentration of 3% HCl) is pumped up through the column before discharging to the tailings hopper.

After a single bed volume of dilute acid has been pumped through the column, the carbon bed is then flushed with two bed volumes of potable water to remove residual acid and increase pH. The spent acid solution and rinse solution are sent to the tailings hopper.

After completing the acid washing and rinsing, the column is pressurised and the carbon is hydraulically transferred to the elution column.

The acid wash bund is equipped with a manually operated sump pump discharging to the tails hopper.

6.3.4.2. Elution

Once full of carbon, the elution column is drained of excess water before being pressurised and placed in a closed loop with the eluate tank, heater, heat exchanger and electrowinning cells.

To recover gold, a caustic/cyanide solution is pumped from the eluate tank and heated up to 90ºC by passing through the reclaim heat exchanger. The solution is then further heated to 135ºC in the direct fired heater.

To prevent boiling, the pressure of the system is maintained above the vapour pressure of water at 135ºC.

The hot, pressurised solution is pumped through the elution column via tube screens at the base. The hot caustic eluate causes the gold and silver to release from the carbon back into solution as a cyanide complex.

The solution then exits the column at the top via tube screens, flows through the cold side of the reclaim heat exchanger and then into a flash pot to lower the pressure to atmospheric levels.

The gold bearing solution flows to the dual electrowinning cell where the precious metals are plated onto the cathodes.

The barren solution discharging the electrowinning cells gravitates back to the eluate tank, thus completing the circuit.

Fresh eluate is prepared by filling the tank with potable water and adding cyanide and caustic.

After carbon stripping and electrowinning is completed, the elution column is rinsed with water to cool the carbon and remove excess caustic.

The elution column is then re-pressurised with raw water and the now barren carbon is transferred to the regeneration kiln feed hopper.

The elution area is equipped with a manually operated sump pump discharging to the leach tanks.

6.3.4.3. Carbon Regeneration

The barren carbon from the elution column is hydraulically transferred to the regeneration kiln feed hopper across a static dewatering screen.

Once the regeneration kiln feed hopper is full, carbon is added at a controlled rate using the VSD on the kiln screw feeder. Water entering the kiln with the wet carbon creates a reducing atmosphere and prevents burning of the carbon.

Carbon is heated to 750ºC in the horizontal regeneration kiln, with the temperature regulated by a burner control loop. The high temperature removes volatiles (diesel, oils, grease etc.) and regenerates the carbon surface to near its new adsorption capability.

The regenerated carbon discharges from the kiln into a quench tank and is then pressure transferred to the barren carbon dewatering/ sizing screen above the last adsorption tank.

The barren carbon dewatering screen is a static sieve bend screen which is used to dewater the carbon before it enters the adsorption circuit. The underflow from the dewatering screen is sent to the Carbon Safety Screen. The regeneration area is equipped with a manually operated sump pump that can be directed to the carbon safety screen or the carbon dewatering screen.

6.3.4.4. Gold Room

Gold-bearing concentrate from the centrifugal concentrators is stored in the Concentrate Collection Cone to be treated in the intensive leach reactor. The intensive leach reactor dissolves gold recovered in the gravity concentrate by using a high concentration cyanide solution with added LeachAid. After leaching the gold, solids are allowed to settle, and the clarified solution is then transferred to a loaded solution tank for recovery by electrowinning. Gold is recovered as sludge from the electrowinning cathodes and after drying can be smelted separately for reconciliation.

The loaded cathodes from the electrowinning cells are periodically removed and gold sludge washed from the stainless-steel mesh using a high-pressure washer. The sludge is pumped to the gold sludge filter press, from where the sludge cake is recovered and dried in the drying oven. The drying oven is positioned beneath an extraction hood which vents external to the goldroom.

After drying, the gold sludge is mixed with fluxes and smelted in the diesel fired tilting Barring Furnace at ~1,100ºC. The Barring Furnace is positioned beneath an extraction hood which vents external to the goldroom. Once the contents of the barring furnace are fully molten, it will have separated into two phases: reduced metal and slag. The molten contents are then poured into moulds, the heavier metal remaining in the base of these moulds and the slag flowing over the top.

6.3.5. Tailings

Tailings slurry from the Carbon Safety Screen will flow into the Tailings hopper and be pumped to the Tailings Thickener. The slurry level in the tails hopper is maintained constant by a level control loop to the VSD on the Tails Pump motor and the thickened slurry is pumped to the tailings storage facility (**TSF**).

Return water will be recovered from the TSF central decant using a Decant Return Pump. The tailings area in the process plant is equipped with a manually operated sump pump.

6.3.6. Reagents

6.3.6.1. Quicklime

Quicklime will be delivered to site in bulk and transferred to the Lime Silo, located over the mill feed conveyor. Lime is dosed from the Lime Silo by the Lime Silo Rotary valve into the Lime Silo Discharge Screw Feeder and drops onto the mill feed conveyor. The lime feed rate is controlled via a variable speed drive in a control loop to the leach tank pH.

6.3.6.2. Cyanide

Liquid cyanide will be delivered by road train and transferred to holding tanks fitted with level indicators. Cyanide solution is pumped to the leach circuit using a variable speed dosing pump. The variable speed dosing pump is interlocked to LL level in the tank to prevent the pump running dry. The cyanide area is equipped with a manually operated area sump pump.

6.3.6.3. Diesel

Diesel fuel for the elution circuit, barring furnace and kiln will be pumped from a day-tank which will be filled from the site diesel fuel supply system. Diesel for the regeneration kiln will be pumped directly from the site fuel supply system.

6.3.6.4. Elution reagents

Sodium hydroxide will be delivered in bulk by truck for use in the elution circuit and intensive leach.

Hydrochloric acid will be delivered in bulk by truck for use in the acid wash circuit.

Flux reagents for gold smelting will be delivered in powder form in 25kg bags, including silica sand, sodium nitrate, soda ash and borax.

Leachaid will be delivered in 20kg buckets for use in the intensive leach reactor.

6.3.6.5. Flocculant

Flocculant will be delivered in 20 kg bags for use in the tails thickener. Flocculant bags will be manually loaded to the flocculant mixing station.

6.3.7. Services

6.3.7.1. Compressed Air

Two rotary screw compressors with 30 kW electric drives will service the general plant including the workshop.

This circuit will also provide compressed air for the leach circuit required for the carbon transfer air lifts and air addition to the leach slurry.

A separate air compressor will be installed for the mill lubrication system.

6.3.7.2. Raw Water

Raw water will be distributed throughout the plant by a duty pump from the raw water tank which is fitted with a level indicator.

A separate gland water pump will supply water for pump seals.

The fire water pump skid will be equipped with a backup diesel pump and supplied with water from the raw water tank.

6.3.7.3. Process Water Services

Process water will be distributed throughout the plant by a duty pump and standby from the process water pond which is fitted with a level indicator.

The process water is distributed to the milling and leaching areas and for general hosing.

Process water will be sourced from a combination of raw water and tailings dam return water.

6.3.7.4. Potable and Safety Shower Water System

Supply of the potable water treatment package is outside the battery limit. The potable water will be supplied from the scheme water system and transferred to the potable water tank fitted with a level indicator. A single potable water pump connected to the tank will service the elution requirements and safety shower ring main. Pressure for the safety showers is maintained by a pressure sustaining valve on the return ring into the potable water tank. The safety shower circuit is equipped with a backup diesel pump in the event of a power failure.

7. Power Generation

Site power generation is based on a 10MW power station, owned and operated by Zenith Pacific. The system is a hybrid power station consisting of a gas thermal power station, solar PV and a Battery Energy Storage System (**BESS**) on a build, own and operate (**BOO**) basis model. The system includes 30% Renewable penetration with modelling indicating that the renewable configuration will provide a reduced levelised cost of electricity (**LCOE**) in relation to a 100% gas option with the added benefit of a 30% reduction in carbon emissions.

The main user of electrical power is the 2.5Mtpa processing plant and associated site infrastructure, as discussed in section 13.1.

A LCOE cost of $0.19/kwh has been modelled.

The installed generation capacity is summarised in Table 14 below.

Table 14 – Generation Capacity

Thermal Station	**Capacity**	**Unit**
Gas – Jenbacher 620 Generating Sets (4 x 3.36MW)	13.44	MWe
Diesel – Cummins KTA50 Generating Sets (2 x 1.0MW)	2.00	MWe
Renewables	**Capacity**	**Unit**
Solar PV Farm	12.0	MWdc
6.30MW / 5.19MWhr Battery Energy Storage Solution (BESS)	6.30	MWdc
Total Installed Capacity – Renewables	18.30	Mwe
Installed Capacity	**Capacity**	**Unit**
Total Installed Capacity	33.74	MW

Equipment to be installed is set out below.

- 4 x 3360kW 11kV Gas Generators
- 2 x 1250kVA 415V Diesel Generators
- 1 x 415V /11kV Step-Up Transformers
- 1 x Earthing Transformer
- BESS – 6.30MW / 5.190MWhr
- 1 x 11kV HV/LV Prefabricated Switchroom (with office)
- 1 x 11kV HV Board with the following tiers:
    - 4 x Incomers (Generators)
    - 1 x Incomers (Spare)
    - 3 x 11kV Feeders
- 2 x 11kV BESS Incomer/Feeder
    - 1 x Incomer (Solar Farm)
    - 1 x Auxiliary Transformer Feeder
    - 1 x Earthing Transformer Feeder
    - 12.0MWdc Solar PV Farm
    - 11kV Step-up Transformer for Solar Farm
    - HV Cabling from Solar Farm to Power Station HV Board

8. Other Infrastructure

8.1. Tailings Storage Facility and Waste Landforms

Land & Marine Geological Services was commissioned by to conduct a Scoping Study Design of the surface, Theia Tailings Storage Facility (**TTSF**) and Eos and Hestia In-Pit TSFs, for the Project.

The combined TSF capacity is 31.6Mt, which is significantly larger than the LoM processing schedule of 26.5Mt. Pre-production and sustaining capital costs are included for stages 1 and 2 of the TTSF as well as the Eos and Hestia in-pit TSFs. This provides for 26.1Mt of tailings storage capacity.

As illustrated in Figure 24, the TTSF is planned to be incorporated into the Theia waste landform (**WLF**). This minimises the costs associated with cartage of waste material for the construction of the TSF embankments.

The proposed TSF design concept is based on downstream construction techniques, with both upstream and downstream slopes of 2.0 to 3.0:1 (H:V). The perimeter embankments are to comprise an engineered, compacted 'select' soil embankment with a cut-off trench on the upstream face, with a minimum crest width of 4 metres. The downstream section of the embankment will have a minimum crest width of 15 metres and comprises traffic-compacted mine waste.

The shape of the TTSF and WLF are designed to account for tenure and heritage constraints.

The waste dumps were designed using 10 metre batter heights at 15-degree angles with a 20 metre berm between batters. The Theia dump has a maximum vertical height of 45 metres while the Eos WLF has a vertical height of 20 metres. No specific Hestia waste dump has been designed at this stage as the Hestia waste mined will either be carted to the Theia WLF or used as backfill in the northern end of Theia.

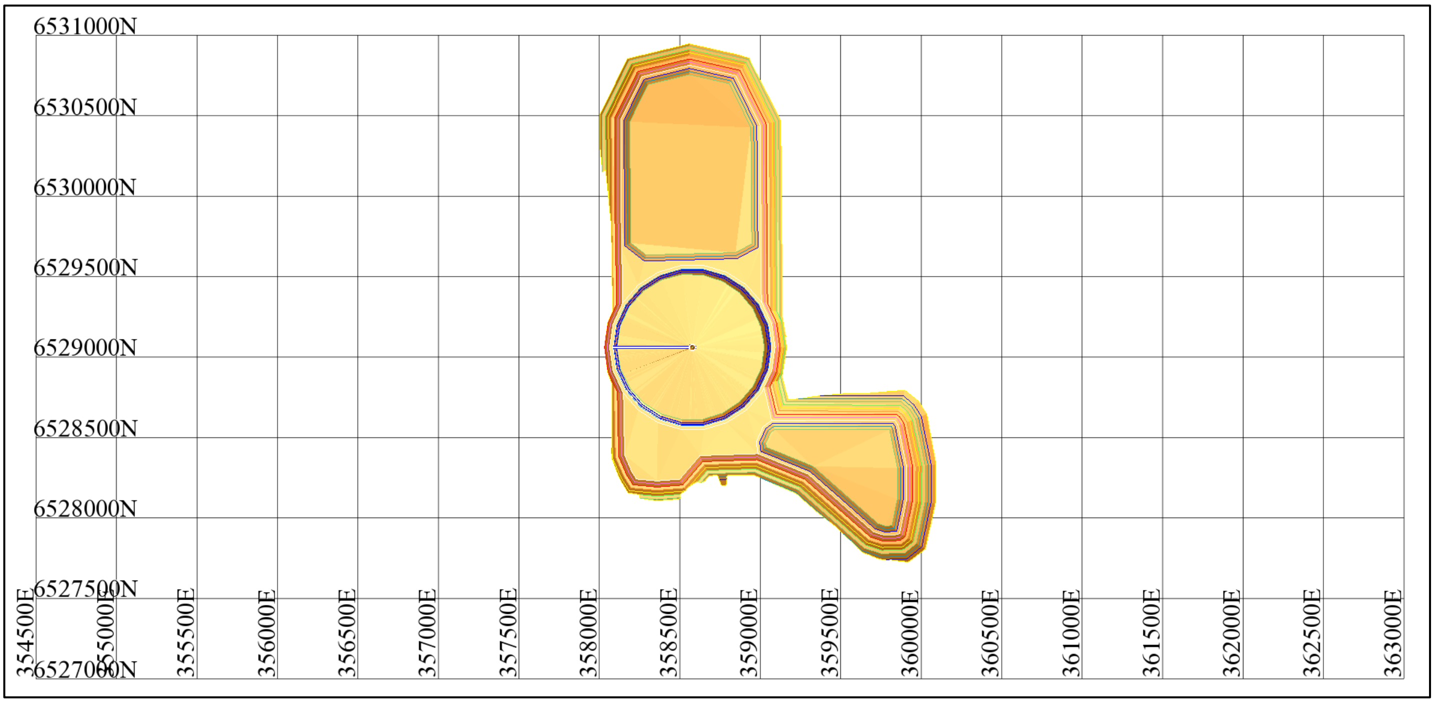

Figure 24 – Theia WLF including the TTSF

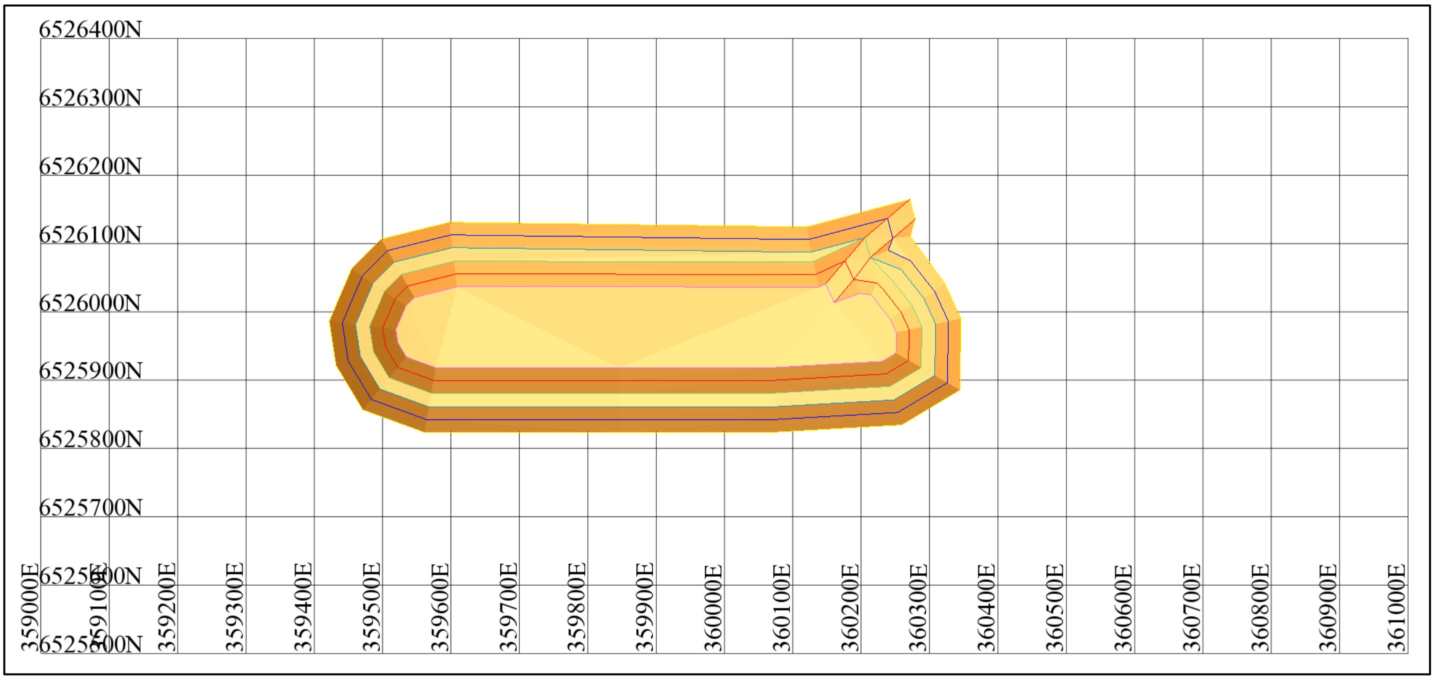

Figure 25 – Eos WLF

8.2. Site Roads and Access

Figure 26 below shows the conceptual layout of the Mandilla mine site including roads and proposed processing area.

The available footprint has resulted in a suboptimal design for the TTSF and Theia WLF. This has the potential to increase waste haulage distances to reach the northern most parts of the Theia WLF. Further stages of technical study will examine how to mitigate these impacts and determine the optimum WLF for both the Theia and Hestia open pits.

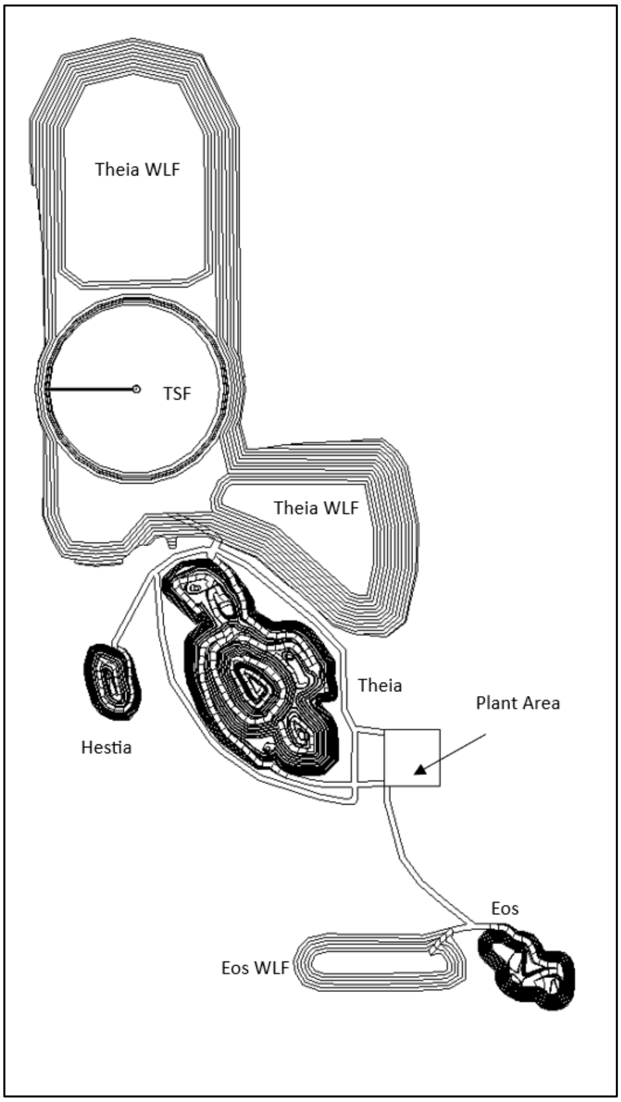

Figure 26 – Scoping Study site layout

8.3. Water Supply and Storage Distribution

A work program to identify suitable water supply to the site has been proposed but has not commenced.

Water quality within the mining area has salinity levels several times that of seawater and a high concentration of soluble magnesium which has a significant buffering effect when lime is added to process slurry to raise the pH ahead of the addition of sodium cyanide.

There are several production bore fields in the wider area that provide significantly better-quality water, which has similar salinity to seawater. This water has been used as the basis for determining metallurgical performance and reagent consumption.

Astral expects the proposed work program is likely to identify sufficient quantities of water of this quality to supply the site for processing and dust suppression purposes.

Additionally, the TTSF is being designed to return up to 70% of water in slurry back to the process plant which will reduce reliance on the bore field supplied process water. Furthermore, when tailings deposition is moved to the Eos and Hestia in-pit TSF's, the percentage of water in the slurry that is returned to the process plant is likely to be higher again, thus further reducing the reliance on bore field supplied process water.

8.4. Accommodation and Flights

8.4.1. Accommodation

The Kambalda township is located approximately 24 kilometres by road from Mandilla.

The Shire of Coolgardie recently constructed a 200-person camp within the Kambalda West townsite and is currently expanding this to a 320-person camp. The Shire of Coolgardie has also created conceptual plans for up to 1,520-person accommodation camp to be located at the intersection of Marianthus Road and the Goldfields Highway.

Given both the current and future capacity of accommodation and messing at Kambalda, costs have been modelled based on pricing provided by the Shire of Coolgardie.

8.4.2. Flights

The Kambalda airstrip is used by several commercial airlines to fly mining personnel to mine sites in the Kambalda region. The airstrip is currently unsealed and, as a result, can only be utilised by propellor driven aircraft. The Shire of Coolgardie has budgeted plans to seal the airstrip which will allow larger jet aircraft to land at the Kambalda airstrip.

The Shire of Coolgardie also provides all necessary Aerodrome Reporting Officers (**ARO**s), check-in services and associated facilities that will allow 100-seat jet aircraft to land in Kambalda.

Costs for provision of flights have been modelled based on pricing received by commercial airline operators currently providing services into Kambalda airstrip.

8.5. Non-Process Infrastructure

Como Engineering was commissioned to provide capital cost estimates for non-process related infrastructure items. These included:

- Process plant offices, laboratory and laboratory fit out;
- Bore fields and bore field piping;
- Administration, Mining and Geology offices;
- Medical, training and Mines Rescue buildings;
- Mining contractor heavy and light vehicle workshops;
- Non-process roads (excluding haul roads);
- Fuel storage and distribution to vehicle fuelling pads; and
- Turkey’s nest and standpipe for mining.

Explosives supplies are anticipated to be sourced from local explosives manufacturers and distributors.

General arrangement drawings for the process plant and non-process infrastructure are provided below in Figure 27 and Figure 28 retrospectively:

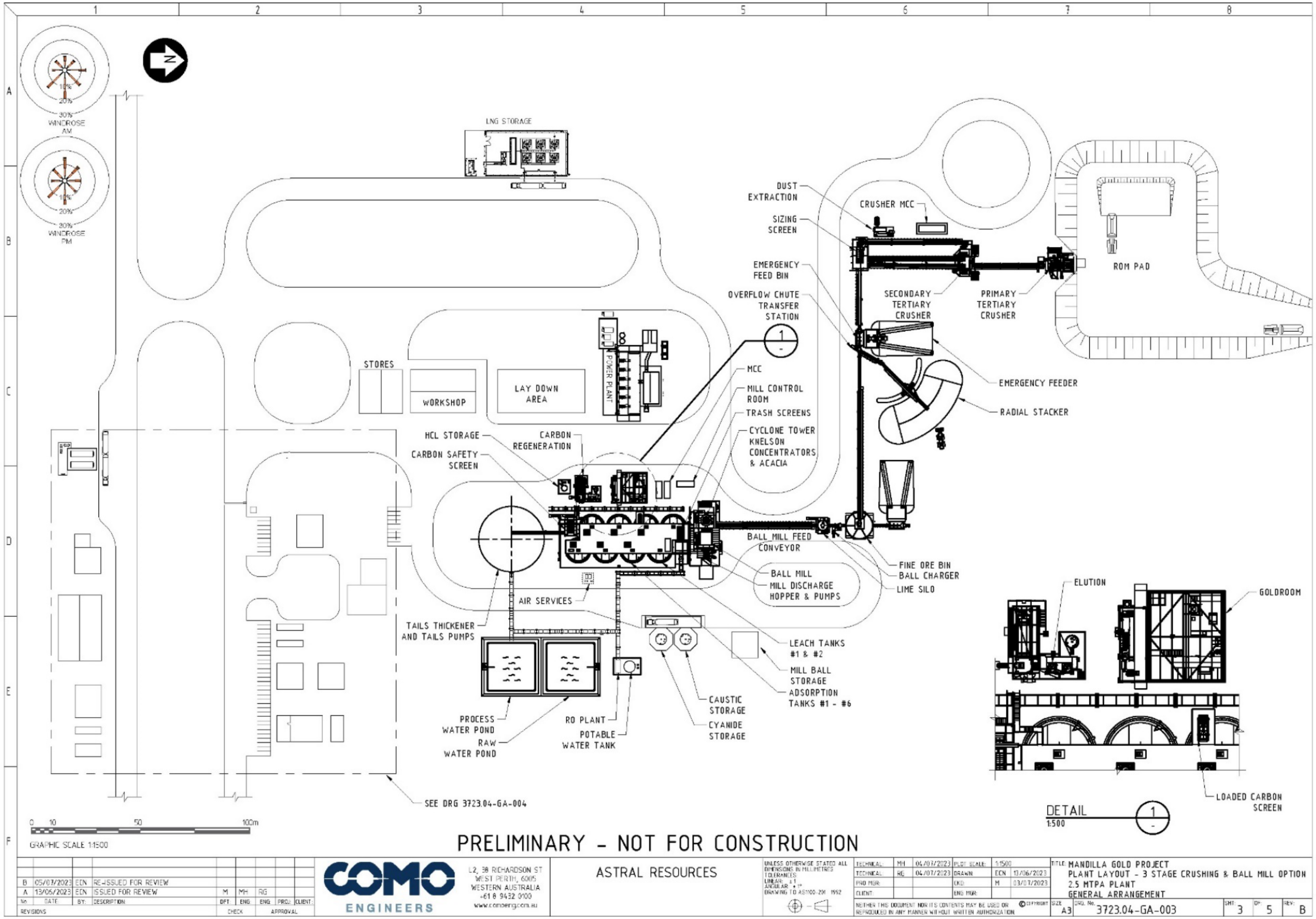

Figure 27 – General arrangement drawing for Mandilla Gold Project process plant and non-process infrastructure

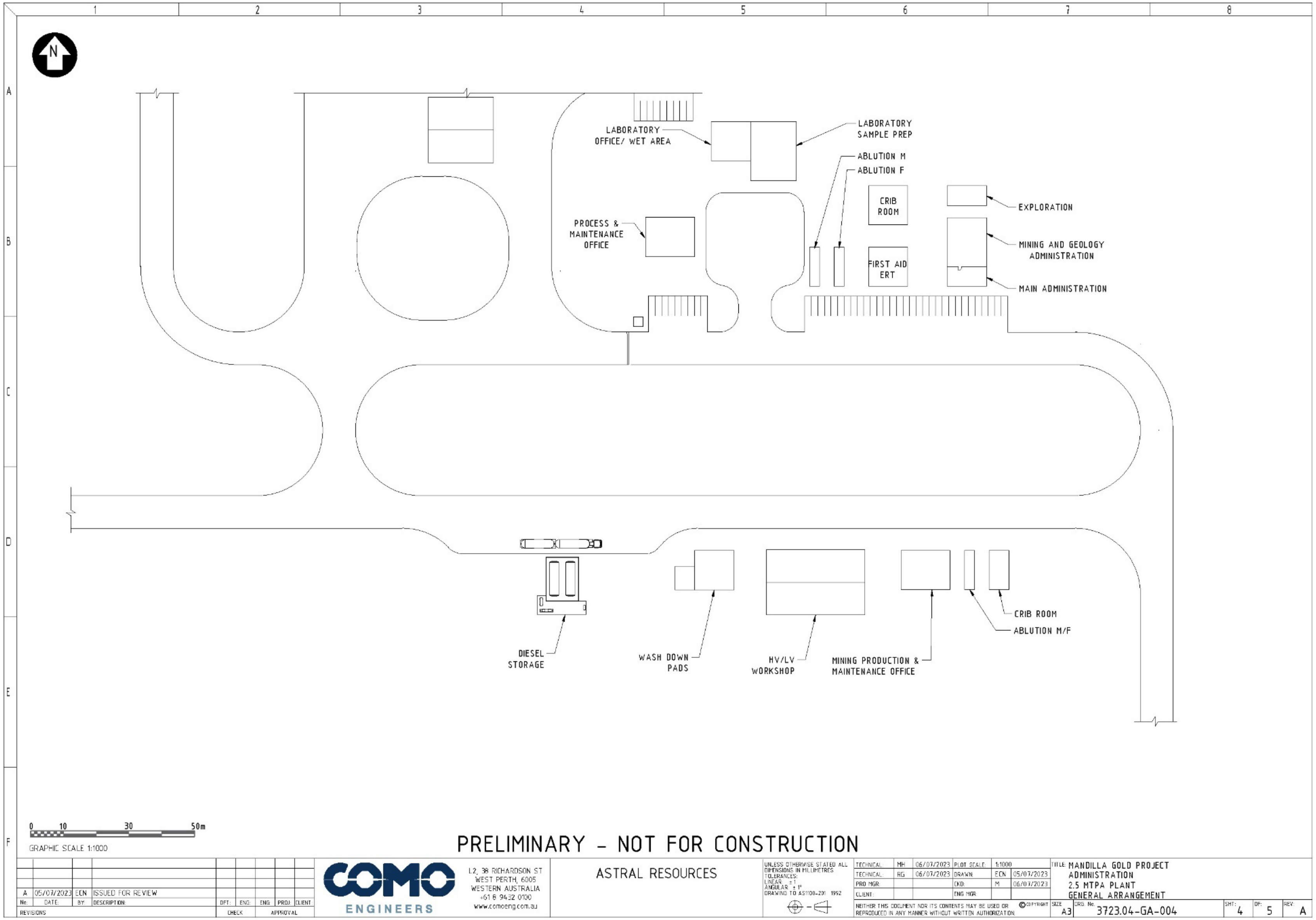

Figure 28 – Zoomed in view of general arrangement drawing for non-process infrastructure

9. Environmental

The Project site is located on vacant crown land which has historically been used for cattle grazing, as remains evident through local damage.

Mandilla Homestead is located approximately 1.5 kilometres to the east of the Project. Astral has held preliminary discussions with the lease holder with regards the development of Mandilla and the possible impacts of the potential mining operations. Discussions have been positive and while, the likely impacts are acknowledged, they do not appear to be a barrier to development at the current time.

Significant historic environmental work exists from the Mandilla palaeochannel mining operations conducted in 2007. Work conducted to support the approval of the paleochannel mining operations includes Flora and Fauna studies, soils and waste characterisation, heritage surveys and a closure report. Much of the past work will be used to support studies for the development of the future larger operations; however, due to the passing of time and the significantly larger footprint and scope, these will need to be significantly updated and broadened.

9.1. Flora

A reconnaissance level of field survey was undertaken in September 2020 by Native Vegetation Solutions. This involved a site visit from 14 – 15 September 2020 and a follow up site visit on 8 November 2021 to coincide with the flowering of a potential Priority flora species. At the time of the survey, proposed disturbance areas were relatively unknown and, as a result, a larger survey area was chosen. The area surveyed is shown in Figure 29.

A total of 29 Families, 62 Genera and 116 Species were recorded within the survey area. Five of the flora taxa recorded were introduced (weeds). The most commonly represented families were *Chenopodiaceae* with 17 taxa, followed by *Scrophulariaceae* (14 taxa), *Fabaceae* (14 taxa), *Myrtaceae* (13 taxa) and *Asteraceae* (13 taxa). The most represented genera were *Eremophila* with 14 taxa, *Eucalyptus* (10 taxa), *Acacia* (7 taxa) and *Maireana* (6 taxa).

Two Priority Flora were recorded in the survey area; *Beyeria sulcata* var. *truncata* (P3) was recorded at 157 locations (including one large population outside the survey area) and *Ptilotus procumbens* (P1) was recorded at eight locations. Both populations are localised within areas that are not likely to be developed when considering the scope of the operation being contemplated, shown in Figure 30. *Beyeria sulcata* var. *truncata* (P3) is located on the eastern Boundary of M15/633 and is coincident with the Emu Rocks Granite while *Ptilotus procumbens* (P1) was located in the South east of the search area adjacent a regional drainage line, both locations are unfavourable for development for multiple reasons, however; should these areas need to be developed it is not expected that the presence of either species would prevent it.

9.2. Fauna

A basic vertebrate fauna surveys was undertaken by Terrestrial Ecosystems during the period 14 – 15 September 2020 with a follow up visit to undertake targeted searching between the 24th and 25th February 2021. The field surveys were conducted in conjunction with the Flora survey and covered the area shown in Figure 29.

The Fauna Surveys identified three broad fauna habitats in the project area:

- Mixed eucalypt woodland with mixed shrubs, chenopods and grasses on red sandy-clay substrate;
- Chenopod shrubland with scattered grasses over a red sandy-clay substrate; and
- Acacia shrubland with scattered trees and grasses over a red sandy-clay substrate with extruding granite rocks and boulders.

The area has been lightly grazed by cattle with some areas showing signs of degradation (i.e. cattle tracks, chewed bushes and shrubs, etc). There was evidence of rabbits and other feral and pest fauna (feral cats, donkey and wild dogs) in the area. The fauna habitat quality varies from highly degraded to very good with the more degraded areas due to historical land uses.

Searches of threatened and priority fauna databases indicates that there are four threatened species of fauna and three migratory species of birds identified under the *EPBC Act 1999* as potentially occurring in the project area or surrounds. There is one Schedule 7 species as listed under the *BC Act 2016* and three species listed on the DBCA's Threatened and Priority Fauna List that potentially occur in the project area or surrounds. An assessment of the likelihood of each of the species listed being found in the project area in conjunction with field surveys, did not identify any species of significance that may be affected by the clearing proposed in this Scoping Study.

The Survey did identify potential habitat for the Arid Bronze Azure Butterfly (Critically Endangered). All potential habitat was the subject of a follow up targeted search with no evidence of either the Host Ants or Arid Bronze Azure Butterfly found.

Figure 29: Flora and fauna baseline survey area

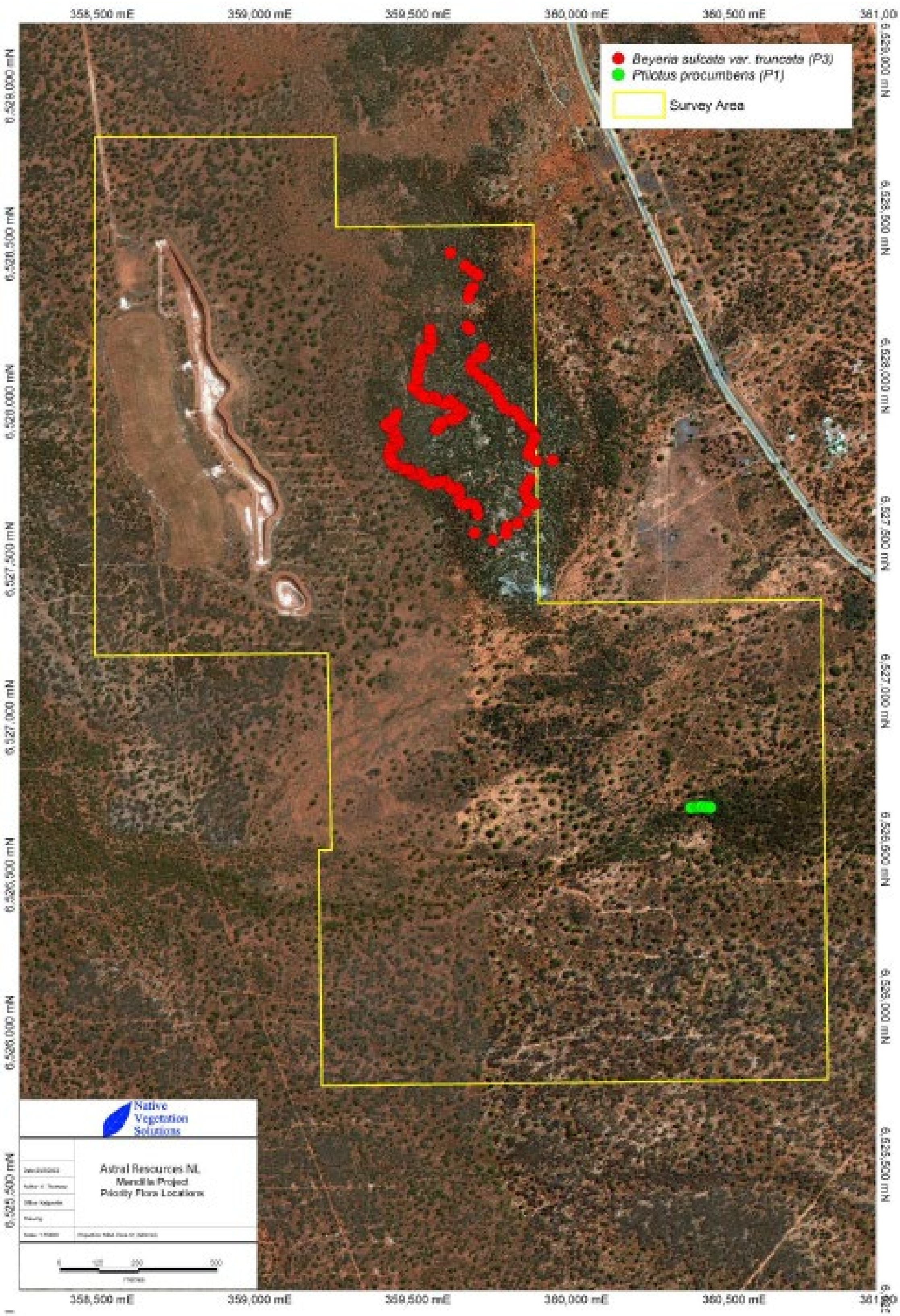

Figure 30: Locations of Priority Flora Identified

9.3. Hydrogeology

Preliminary hydrogeological work has been undertaken across both Theia and Iris deposits by Groundwater Resource Management. Field work included a series of airlift tests on resource drillholes, with the results subsequently used as a basis for estimate of water inflow to the open pits. The study and groundwater models were developed based on the Theia and Iris open pits; however, it has since been determined that the Iris Pit will not form part of the mine plan (though it may be included at a later date). Key findings of the study are:

- Groundwater quality is hypersaline (between 50,000 and 250,000 mg/L TDS) and is unsuitable for alternate uses (stockwater etc.).
- Predicted inflows to the open pits (including Iris) range between 7 and 21L/s (total) as such water can likely be managed via in-pit sumps with water used for selective dust suppression.
- There is unlikely to be significant drawdown impacts on either third part bores or groundwater dependent ecosystems.

A water balance has been completed for the purposes of assessment of the TTSF and the Eos and Hestia inpit TSF's. Preliminary dewatering studies have also been completed for mining and a proposal has been received (but work not commenced) to identify suitable quality and quantities of water for processing requirements. A full site water balance has not been completed.

9.4. Further Work

While substantial historic soil and waste characterisation work has been completed on the Project, this work needs to be expanded to cover the broader footprint proposed within the Scoping Study as well as the increased scope with respect to waste material types.

Additional work is required to reduce uncertainty in water inflow estimates to the mine voids as well as to identify a viable process water source.

Limited hydrology work has been completed, which needs to be addressed and formalised with final designs validated against findings.

Over time, the footprint of the Project has increased substantially so there will need to be additional Flora and Fauna surveys completed in order to give flexibility as design options are narrowed and the footprint potentially further increased with ongoing exploration success.

Upon completion of mining of the paleochannels in 2007, the site was partially rehabilitated, with ongoing monitoring taking place in the 16 years hence. A review of this information, together with a review of the closure plan will be required as part of any related Mining Proposal.

10. Native Title and Heritage

While M15/96 and M15/633 both fall within the Marlinyu Ghoorlie Claim area, both tenements predate native title legislation and therefore are not subject to Native title Legislation.

It is noted that Astral is currently working with the Marlinyu Ghoorlie claimants in respect of heritage approvals as well as Native Title approvals in respect of the Company's Feysville Gold Project.

Archaeological surveys of the area were conducted in 2006 as part of preparation for previous operations. The surveys identified one site of significance situated on the eastern boundary of M15/633 known as Emu Rock. The survey proposes an interim management method of the application of a 100-metre buffer from the site.

The operation contemplated by the Scoping Study will not impact on the site itself though some infrastructure (a road) may impinge on an identified buffer zone.

Astral expects to work with the Marlinyu Ghoorlie to make appropriate arrangements in respect of the site.

11. Permitting

The proposed development is located within granted mining leases (specifically M15/96 and M15/633).

Approvals required to achieve the outcomes of the Scoping Study in its current format are expected to include the following:

- Mining Act Approvals including: Mining Proposal, Mine Closure Plan & Native Vegetation Clearing Permit
- Part V Works Approval & Groundwater Abstraction Licence
- Any third-party approval required from Mt Edwards Critical Metals Pty Ltd as the registered tenement holder of M15/96

12. Operating Cost Estimate

Operating costs are derived from a number of sources including quotations and budget pricing supplied by suppliers, estimates based on similar WA mining operations, and pricing derived from processing plant suppliers scaled by accepted methods.

The Scoping Study is aimed at identifying operating costs to an accuracy of +/-35%.

Table 15 - Operating costs summary

Operating Costs[1]	$ million	$/t Milled	$/oz
Mining[2]	$818	$30.88	$967
Processing (incl. Maintenance, Transport, Insurance & Refining)	$461	$17.42	$545
General & Administrative (Site)	$34	$1.27	$40
C1 Cash Cost[3]	**$1,313**	**$49.57**	**$1,552**
Royalties	$58	$2.19	$69
Sustaining Capital	$23	$0.87	$27
All-in Sustaining Cost (AISC)[4]	**$1,394**	**$52.63**	**$1,648**

Notes:

[1] – Operating costs presented in the table above were calculated based on recovered gold.

[2] – Excludes pre-production mining costs.

[3] – C1 cash cost includes mining, processing (including transport, insurance and refining costs) and site G&A costs.

[4] – All-in Sustaining Cost (**AISC**) per ounce payable includes C1 cash cost, royalties and sustaining capital costs. It does not include corporate costs, exploration costs and non-sustaining capital costs.

12.1. Mining Costs

Mining costs are derived from estimated cost per bulk cubic metre (**bcm**) rates for load and haul, drill and blast, and technical services as provided by AMC Consultants.

The AMC Consultants bcm rate is inclusive of an allowance of $0.07 per tonne mined for grade control drilling. In addition, the Company has also included an assumed cost of $1.25 per tonne of ore processed for grade control drilling and related costs. The total LoM allowance for grade control drilling is approximately $42.5 million.

The cost for accommodation, messing and flights for mining personnel is included within mining costs.

The average mining cost per total material mined over the LoM is $4.69/t or $11.58/bcm.

12.2. Power Generation Costs

Site power generation is based on a 10MW power station, owned and operated by Zenith Pacific. The system is a hybrid power station consisting of a Gas Thermal Power Station, Solar PV and a BESS on a Build, Own and Operate (BOO) basis model. The system includes 30% Renewable penetration with modelling indicating that the renewable configuration will provide a reduced LCOE in relation to a 100% Gas Option with the added benefit of a 30% reduction in Carbon Emissions.

The main user of electrical power is the 2.5Mtpa processing plant and associated site infrastructure.

A LCOE cost of $0.19/kwh has been modelled.

Refer to section 7 for further information.

12.3. Processing Costs

The estimates for the processing plant operating costs were completed by Como Engineers to an accuracy of +/-35% for a 2.5Mtpa CIL process plant using a three-stage crushing and ball milling circuit. Costs were inclusive of crushing, milling and gravity, leaching and absorption, elution and goldroom, services and general maintenance.

A power load list was provided and costs have been modelled based on the LCOE above.

Specific site administration costs were also provided by Como and have been incorporated in General & Administrative costs.

The cost for accommodation, messing and flights for processing personnel is allocated to processing costs.

The average processing cost per total plant feed over the LoM is $17.42/t.

12.4. General and Administrative Costs

G&A costs includes a fixed annual cost of $1.04 million provided by Como Engineers.

Power costs for non-process infrastructure have been modelled based on the load list provided by Como Engineers at the LCOE rate detailed in section 7.

Personnel costs for an Owners Team (consisting of a General Manager, HSE Manager and Safety, Environmental and Security Personnel). Costs have been built up on a first principles approach in-house, utilising available market rate data.

Flight costs have been modelled based on recent flight cost information for Cobham Aviation.

Accommodation and Messing costs have been modelled based on pricing provided by the Shire of Coolgardie who operate suitable camp accommodation in Kambalda.

The average G&A cost per plant feed tonne processed is $1.27/t.

12.5. Royalties

The Mandilla Project is free from third party royalties. Royalty costs are limited to the WA State Government Royalty of 2.5% of gold revenues.

13. Capital Cost Estimate

Capital costs are derived from a number of sources including quotes and budget pricing from suppliers and estimates based on recent actual pricing from similar Western Australian mines, as detailed in Table 16 below. They include all pre-production site, process plant, tailings dam, and mining development costs as well as sustaining capital post-production start-up.

The Scoping Study is aimed at identifying the capital and operating costs to an accuracy of +/-35%.

Table 16 - Capital cost estimate

Pre-Production Capital	Source	$m
Processing Facilities and Site Infrastructure	Como Engineers	91.3
Owner's Costs	Como Engineers	4.2
Tailings Storage Facility	Land & Marine Geological Services	8.1
Earthworks and Roads	In-house/other studies	5.0
Contingency	Como Engineers	14.4
Pre-Production Mining & G&A	In-house/AMC	68.4
Total Pre-Production		**191.4**
Sustaining Capital		**$m**
Processing Plant	In-house/other studies	9.0
Tailings Storage Facility	Land & Marine Geological Services	6.0
Mine Closure & Site Rehabilitation	In-house/other studies	7.6
Total Sustaining		**22.6**
Total LOM Capital		**214.0**

13.1. Processing Plant and Non-Processing Infrastructure Cost Breakdown

The estimate for the processing plant and non-processing infrastructure cost construction was completed by Como Engineers to an accuracy of +/-35%.

The capex for a 2.5Mtpa CIL process plant using a three-stage crushing and ball milling circuit is shown below. A single line item for site infrastructure of $10.05 million is also included below, the inclusions for this line item are detailed in Section 8.5.

Table 17 – Processing plant capital cost breakdown

Plant Costs		Equipment & Materials	Labour	Total
EPCM	$m	-	12.65	12.65
General	$m	3.02	2.74	5.77
Electrical	$m	5.12	3.50	8.62
Site Infrastructure	$m	8.70	1.36	10.05
Crushing	$m	8.80	1.32	10.12
Grinding	$m	12.00	2.37	14.37
Gravity Recovery	$m	2.87	0.52	3.38
Leaching	$m	13.15	1.12	14.28
Elution & Goldroom & Regeneration	$m	3.47	1.07	4.54
Tailings	$m	2.92	0.61	3.53
Reagents	$m	1.22	0.33	1.55
Services	$m	2.18	0.30	2.48
Subtotal	**$m**	**63.45**	**27.88**	**91.34**
Contingency 15%	$m	9.52	4.18	13.70
Total	**$m**	**72.97**	**32.07**	**105.04**
Owners' Costs		**Equipment & Materials**	**Labour**	**Total**
First Fills	$m	1.69	-	1.69
Commissioning Spares	$m	1.23	-	1.23
Warehouse and Critical Spares	$m	1.28	-	1.28
Subtotal	**$m**	**4.20**	**-**	**4.20**
Contingency 15%	$m	0.63	-	0.63
Total	**$m**	**4.83**	**-**	**4.83**
Plant + Owners' Costs				
Plant Costs	$m	72.97	32.07	105.04
Owner's Costs	$m	4.83	-	4.83
Total Costs	**$m**	**77.80**	**32.07**	**109.86**

An allowance for processing plant sustaining capital has been made of $1.8 million per annum (approximately 2% of original capital) in operating years two through to seven.

13.2. Pre-Production Mining and G&A Costs

Pre-production Mining capital costs include all mining costs up until the commencement of processing (refer to section 12.1 for mining costs).

Pre-production G&A costs include all G&A costs up until the commencement of processing (refer to section 12.4 for G&A costs).

13.3. Tailings Storage Facility Capital & Sustaining Capital Costs

The estimate for the Tailings Storage Facility construction was provided by Chris Lane of Land and Marine Geological Services.

An initial capital cost of $8.1 million has been modelled. This includes preliminary investigation costs such as tailings and waste rock testing as well the first TSF lift, which will be needed to begin storing tailings material at the start of the mine life and which should have the capacity to store approximately 2.1 years of plant production. An additional cost of approximately $6.0 million will be required for an additional TSF lift as well as facilitating in-pit storage at Hestia and Eos to contain the remaining material processed throughout the LoM at Mandilla. The in-pit storage will help reduce cost and negate building a larger TSF and/or adding any additional lifts.

13.4. Earthworks and Roads

The estimate for the capital costs associated with Earthworks and Roads was based on estimates published for similar mining operations, adjusted for the expected footprint of the Mandilla operation.

13.5. Mine Closure & Rehabilitation Costs

The estimate for the sustaining capital costs associated with Mine Closure & Rehabilitation was based on estimates published for similar mining operations, adjusted for the expected footprint of the Mandilla operation.

14. Project Economics – Financial Analysis and Outcomes

14.1. Financial Result

At a gold price of A$2,750/oz, which is lower than the gold spot price over the past six months, the Project is forecast to generate an unleveraged and pre-tax IRR of 73%, an undiscounted and pre-tax Free Cash Flow of A$740 million and an unleveraged and pre-tax $NPV_{8\%}$ of approximately A$442 million (refer to the range of possible economic values determined by sensitivity in Section 14.3). The financial summary is presented in Table 18 below:

Table 18 – LOM financial results summary

Key Financial Assumptions		
Gold Price Assumed	A$/oz	2,750
Discount Rate	%	8.00
Key Project Metrics		
Payable Metal	Koz	845
Gold Revenue	**A$M**	**2,325**
Mining Costs – Total	A$M	877
Mining Costs – Pre-Production *(capitalised)*	A$M	(59)
Mining Costs	A$M	818
Processing (including Maintenance, Transport, Insurance & Refining)	A$M	461
General and Administrative Costs	A$M	34
Royalty *(2.5% of gold revenue)*	A$M	58
Project EBITDA	**A$M**	**954**
Depreciation and Amortisation	A$M	234
Net Profit Before Tax (NPBT)	A$M	720
Capital		
Pre-Production Capital Expenditure	A$M	123
Pre-Production Costs - Mining/General & Administrative	A$M	68
Sustaining Capital	A$M	23
LOM Capital	**A$M**	**214**
Project Returns		
Project Free Cash Flow (undiscounted and pre-tax)	**A$M**	**740**
Project $NPV_{8\%}$ (unleveraged and pre-tax)	A$M	442
Project IRR (unleveraged, pre-tax, calculated on annual basis)	%	73%
Payback Period (unleveraged and post-tax)[1]	Years	0.75
Capital Intensity[2]	A$/oz p.a.	1,899
NPV (unleveraged and pre-tax)/Pre-production Capital	ratio	2.3

Notes:

[1] – Payback period is calculated from the start of gold production.

[2] – Capital intensity is calculated by dividing pre-production capital by average annual payable metal over the first 7.4-year period.

Approximate project cashflows on a pre-tax basis are modelled in Chart 8 below.

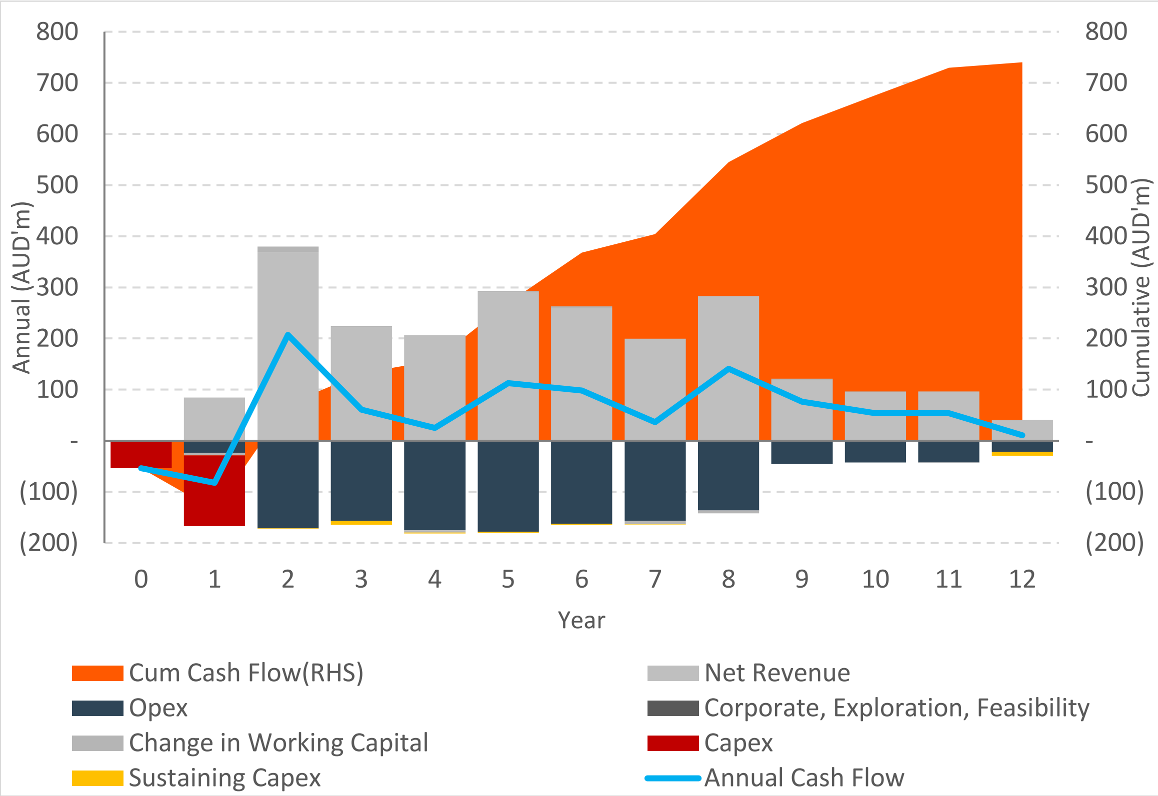

Chart 8 – Project cashflows (pre-tax)

14.2. Production Target

The total payable (recovered) gold metal over the life of the Project is forecast to be approximately 845koz. A breakdown of the schedule of payable gold by Resource category (Indicated and Inferred) across the life of the Project is included at Chart 9.

Approximately 80% of the materials scheduled for extraction in the first three years of the production target are classified as Indicated, with the balance classified as Inferred. This provides confidence in the Project being able to pay back the pre-development capital from the higher confidence Indicated category.

Over the life of mine, approximately 70% of the production target is categorised as Indicated, with the remaining 30% classified in the Inferred category. The Inferred mineralisation is scheduled as late as possible in the production schedule.

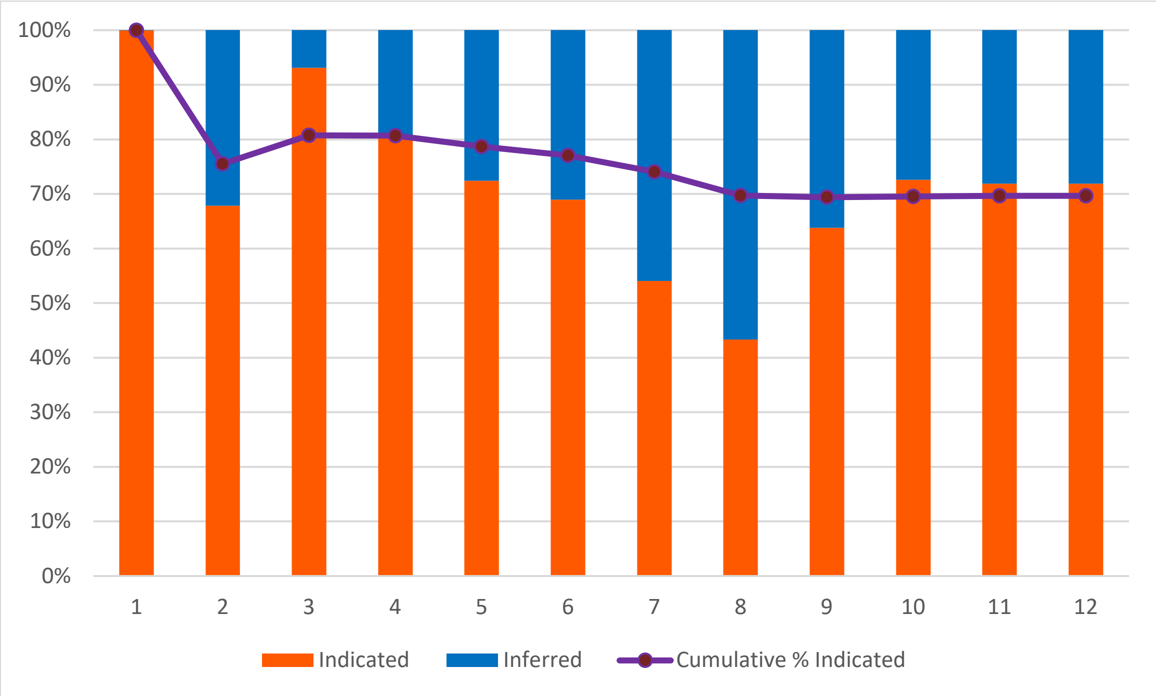

Chart 9 – Payable metals % by Resource category

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. The underlying Mineral Resources have been prepared by the Competent Persons in accordance with the JORC Code.

14.3. Sensitivity Analysis

The Project is financially robust with a short payback period and strong free cashflows. The Project's unleveraged and pre-tax NPV is most sensitive to changes in gold price and operating costs, while it is more resilient to changes in the discount rate, metal recovery and capital costs as shown in Chart 10 below.

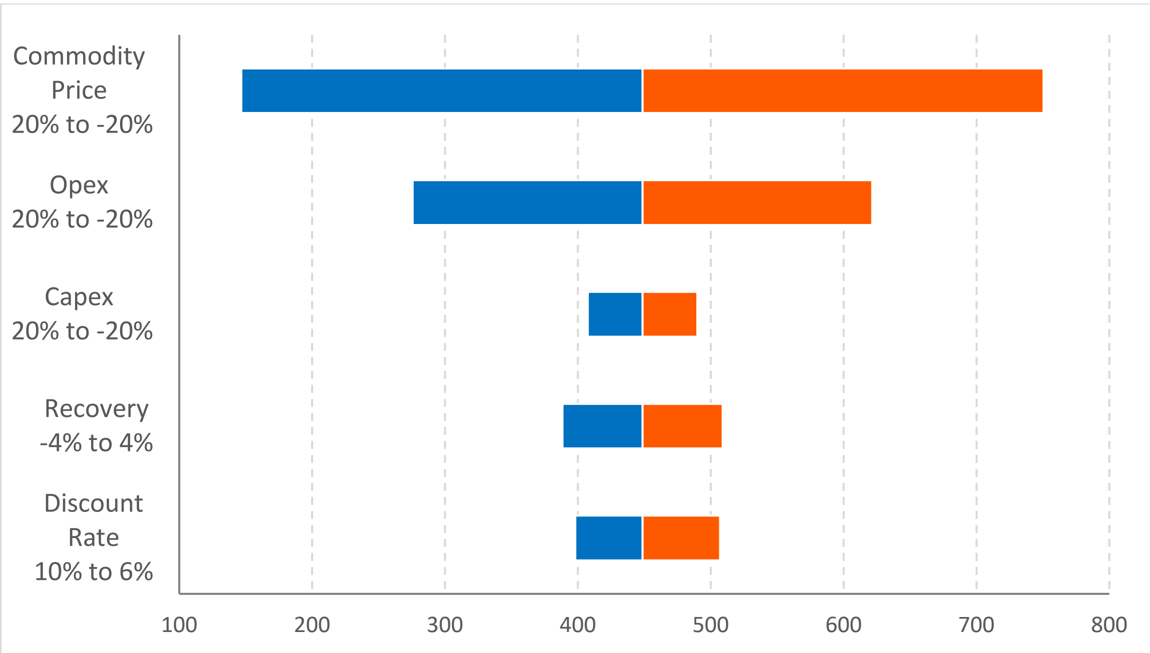

Chart 10 – NPV sensitivity analysis (unleveraged, pre-tax)

Changes to the Australian dollar gold price, either by US dollar gold price variation or AUD:USD exchange rate fluctuations would have a direct impact on revenue and derived cashflow. The forecast impact on key metrics across a range of Australian dollar gold prices is provided in Table 19 below.

Table 19 - Gold price sensitivity

				Base Case		
Gold Price	**AUD/oz**	**2500**	**2625**	**2750**	**2875**	**3000**
NPV Pre-Finance, Pre-tax	AUD m	305	374	**442**	511	579
Pretax IRR	%	54%	64%	**73%**	83%	92%
Payback	Years	0.83	0.75	**0.75**	0.67	0.67
Annual EBITDA	AUD m	69.6	79.2	**88.8**	98.4	107.9
LOM EBITDA	AUD m	748	851	**954**	1,057	1,160
Free Cashflow	AUD m	534	637	**740**	843	946

14.4. Growth Potential

The following factors have not been captured in the Scoping Study and could offer medium and long term upside to the financial outcomes of the Scoping Study:

- Mineral Resource growth – Astral has demonstrated the ongoing growth potential of Mandilla with the recent December 2022 MRE and July 2023 MRE adding approximately 0.5Moz at a discovery cost of approximately $17/oz. Both extensional and in-fill targets are likely to lead to the discovery of additional mineralisation.
- In addition, the Theia deposit remains open at depth with diamond drilling currently underway to test for extensions of gold mineralisation at depth.
- Alternative feed sources – Recent successful drilling at Kamperman, a prospect within the Feysville Gold Project, has demonstrated a high-grade zone of gold mineralisation extending over 240 metres along strike which remains open at depth and to both the north and south. Additional sources of ore, specifically higher-grade ore, has the potential to further enhance the robust project economics of Mandilla.
- Alternative feed sources located within close proximity to Mandilla which are currently owned by third parties could become available.
- Process plant design optimisation – The current process plant design contemplates a tailings thickener to maximise water return and minimise reagent use, the IWLTSF design contemplated is designed to maximise water recovery (up to 70% of water in slurry). This provides an opportunity to remove the tailings thickener from the capital and operating cost estimates.
- Utilisation of neighbouring process plants – the Kalgoorlie/Kambalda region has approximately 30Mtpa of installed processing capacity currently operational, with recent financial approvals (refer ASX:NST, ASX:EVN) for an additional 15Mtpa to be constructed. Existing process plants within the vicinity of Mandilla are likely to become mine constrained in the near future and this presents an opportunity to bring Mandilla into production without incurring approximately $100M of capital costs associated with a new process plant and tailings storage facility.

15. Funding

The Scoping Study estimates a funding requirement of approximately A$191 million to cover the capital and operating costs from the commencement of plant construction to the end of plant commissioning and the commencement of gold production. It is expected that the funding requirement will be met with a mixture of debt and equity, which will need to be raised prior to project construction commencing.

The Company considers there is a reasonable basis to conclude that the project funding will be available when required, on grounds including the following:

- The Project has strong technical and economic fundamentals which provides an attractive return on capital investment and generates significant free cashflows at conservative gold prices (well below current spot gold price). This provides a strong platform to source debt and equity funding.

- The Company has a strong track record of raising equity funds as and when required to further the exploration and evaluation of Mandilla.

There is, however, no certainty that the Company will be able to source funding as and when required. Typical project development financing would involve a combination of debt and equity. It is possible that such funding may only be available on terms that may be dilutive to or otherwise affect the value of the Company's existing shares.

16. Conclusions and Next Steps

The Board of Astral has approved this Scoping Study.

The Scoping Study provides justification that Mandilla is a commercially viable stand-alone gold mining operation and, accordingly, the Board of Astral is supportive of progressing the Project to a preliminary feasibility study, subject to ongoing funding.

Exploration and evaluation activities are continuing at both the Mandilla and Feysville Gold Projects. Exploration activities at Mandilla will include both in-fill drilling to convert Inferred Resources to Indicated Resources, together with ongoing exploration drilling targeting further resource growth.

Timing of project development is not yet determined due to the preliminary nature of the studies completed to date.

17. Reasonable Basis for Forward Looking Assumptions

No Ore Reserve has been estimated or declared for the Project. This document has been prepared in compliance with the JORC Code (2012) and the ASX Listing Rules. All material assumptions on which the Scoping Study production target and projected financial information are based have been included in this release and disclosed in the table below. The level of study does not support the estimation of Ore Reserves or provide any assurance that the Project will go ahead or be realised. The scoping study strongly supports progress to the next level of study being a preliminary feasibility study.

Criteria	JORC Code explanation	Commentary
Mineral Resource estimate for conversion to Ore Reserves	▪ *Description of the Mineral Resource estimate used as a basis for the conversion to an Ore Reserve.* ▪ *Clear statement as to whether the Mineral Resources are reported additional to, or inclusive of, the Ore Reserves.*	• *The Mineral Resource Estimate (MRE) on which the Scoping Study is based was announced to the ASX on 20th July 2023.* • *No Ore Reserve has been declared as part of the Scoping Study.*
Site Visits	• *Comment on any site visits undertaken by the Competent Person and the outcome of those visits.* • *If no site visits have been undertaken indicate why this is the case.*	• *Julie Reid, the Competent Person for the reporting of exploration results is Astral Resources' (AAR) Geology Manager and conducts regular site visits.* • *Michael Job, the Competent Person for the Estimation and Reporting of Mineral Resources at Mandilla has not visited site but plans to do so later in 2023.*
Study status	• *The type and level of study undertaken to enable Mineral Resources to be converted to Ore Reserves.* • *The Code requires that a study to at least Pre-Feasibility Study level has been undertaken to convert Mineral Resources to Ore Reserves. Such studies will have been carried out and will have determined a mine plan that is technically achievable and economically viable, and that material Modifying Factors have been considered.*	• *No Ore Reserve has been declared.* • *The Study is a Scoping Study.*
Cut-off parameters	• *The basis of the cut-off grade(s) or quality parameters applied.*	• *Cut-off grade parameters are based on operating costs and site overheads.*
Mining factors or assumptions	• *The method and assumptions used as reported in the Pre-Feasibility or Feasibility Study to convert the Mineral Resource to an Ore Reserve (i.e. either by application of appropriate factors by optimisation or by preliminary or detailed design).* • *The choice, nature and appropriateness of the selected mining method(s) and other mining parameters including associated design issues such as pre-strip, access, etc.* • *The assumptions made regarding geotechnical parameters (eg pit slopes, stope sizes, etc), grade control and pre-production drilling.* • *The major assumptions made and Mineral Resource model used for pit and stope optimisation (if appropriate).* • *The mining dilution factors used.* • *The mining recovery factors used.* • *Any minimum mining widths used.* • *The manner in which Inferred Mineral Resources are utilised in mining studies and the sensitivity of the*	• *No Ore Reserve has been declared.* • *Refer to the Optimisation, Mine Design and Schedule Section of this report.*

	outcome to their inclusion. • *The infrastructure requirements of the selected mining methods.*	
Metallurgical factors or assumptions	• *The metallurgical process proposed and the appropriateness of that process to the style of mineralisation.* • *Whether the metallurgical process is well-tested technology or novel in nature.* • *The nature, amount and representativeness of metallurgical test work undertaken, the nature of the metallurgical domaining applied and the corresponding metallurgical recovery factors applied.* • *Any assumptions or allowances made for deleterious elements.* • *The existence of any bulk sample or pilot scale test work and the degree to which such samples are considered representative of the orebody as a whole.* • *For minerals that are defined by a specification, has the ore reserve estimation been based on the appropriate mineralogy to meet the specifications?*	• *Refer to the Metallurgy and Processing Section of this report.*
Environmental	• *The status of studies of potential environmental impacts of the mining and processing operation. Details of waste rock characterisation and the consideration of potential sites, status of design options considered and, where applicable, the status of approvals for process residue storage and waste dumps should be reported.*	• *Refer to the Environmental Section of this report.* • *Refer to the Permitting Section of this report.*
Infrastructure	• *The existence of appropriate infrastructure: availability of land for plant development, power, water, transportation (particularly for bulk commodities), labour, accommodation; or the ease with which the infrastructure can be provided or accessed.*	• *Mandilla is located approximately 70 kilometres south of the significant mining centre of Kalgoorlie and 20 kilometres west of Kambalda in Western Australia. Mandilla is accessible via sealed highway.* • *Kambalda has suitable accommodation and other services (airstrip) for required activities.* • *Given the projects location, suitable labour is available from Kambalda, Kalgoorlie and Perth for required activities.* • *Sufficient land is available within the Mining Leases to accommodate the infrastructure contemplated by this Scoping Study.* • *Power and water requirements are discussed in this report.*

Costs	• *The derivation of, or assumptions made, regarding projected capital costs in the study.* • *The methodology used to estimate operating costs.* • *Allowances made for the content of deleterious elements.* • *The source of exchange rates used in the study.* • *Derivation of transportation charges.* • *The basis for forecasting or source of treatment and refining charges, penalties for failure to meet specification, etc.* • *The allowances made for royalties payable, both Government and private.*	*Capital costs:* • *Project capital costs for the processing plant and non-process infrastructure were provided at ± 35% by experienced constructors for a 2,500 ktpa process plant option.* • *For the tailings storage facility, capital costs have been provided by experienced constructors, based on the mining and processing schedules.* • *For all other capital costs including infrastructure and mining related costs have been estimated from similar Western Australian mining operations.* *Operating Costs:* • *Operating costs have been provided by experienced contractors for the planned scope of operations, with items estimated by Astral personnel derived from first principles and/or supplier quotes.* *Deleterious Elements:* • *No allowance has been made for deleterious elements content on the basis that no deleterious elements have been detected.* *Exchange Rates:* • *All costs were estimated in Australian dollars (AUD).* *Transportation Charges:* • *It is assumed that gold doré will be transported from site for refining in Perth with no other transport costs applicable.* *Treatment and Refining:* • *Treatment and refining charges in the financial model are based on market observations for similar products where available.* *Royalties:* • *The state government royalty of 2.5% is applied in the economic analysis.*
Revenue factors	• *The derivation of, or assumptions made regarding revenue factors including head grade, metal or commodity price(s) exchange rates, transportation and treatment charges, penalties, net smelter returns, etc.* • *The derivation of assumptions made of metal or commodity price(s), for the principal metals, minerals and co-products.*	• *The derivation of feed grades comes from the Mineral Resource estimates with the application of dilution modifying factors as outlined above.* • *The product to be sold is gold in the form doré bars produced on site. The gold price assumed is AUD$2,750 per ounce.*

Market assessment	• *The demand, supply and stock situation for the particular commodity, consumption trends and factors likely to affect supply and demand into the future.* • *A customer and competitor analysis along with the identification of likely market windows for the product.* • *Price and volume forecasts and the basis for these forecasts.* • *For industrial minerals the customer specification, testing and acceptance requirements prior to a supply contract.*	• *Gold doré bars will be sold at spot price.* • *NA* • *NA* • *NA*
Economic	• *The inputs to the economic analysis to produce the net present value (NPV) in the study, the source and confidence of these economic inputs including estimated inflation, discount rate, etc.* • *NPV ranges and sensitivity to variations in the significant assumptions and inputs.*	• *Refer to economic analysis, which assumes a discount rate of 8%, and nil inflation.* • *Economic analysis includes a sensitivity analysis on various cost factors gold grade and gold price scenarios.*
Social	• *The status of agreements with key stakeholders and matters leading to social licence to operate.*	• *The Project is granted on approved mining leases and coupled with a positive stakeholder engagement process undertaken by the Company, there are no issues expected around forming agreements with key stakeholders, if so required, to complete the works as planned.*
Other (incl Legal and Governmental)	• *To the extent relevant, the impact of the following on the project and/or on the estimation and classification of the Ore Reserves:* • *Any identified material naturally occurring risks.* • *The status of material legal agreements and marketing arrangements.* • *The status of governmental agreements and approvals critical to the viability of the project, such as mineral tenement status, and government and statutory approvals. There must be reasonable grounds to expect that all necessary Government approvals will be received within the timeframes anticipated in the Pre- Feasibility or Feasibility study. Highlight and discuss the materiality of any unresolved matter that is dependent on a third party on which extraction of the reserve is contingent.*	• *No Ore Reserve has been declared.* • *No naturally occurring risks have been identified.* • *The project is 100% owned by Astral, and there are no marketing arrangements in place.* • *All of the working area in the study are on approved mining leases with no outstanding issues or requirements with DMIRS. There are no third party unresolved matters that may impact upon approvals.*
Classification	• *The basis for the classification of the Ore Reserves into varying confidence categories.* • *Whether the result appropriately reflects the Competent Person's view of the deposit.* • *The proportion of Probable Ore Reserves that have been derived from Measured Mineral Resources (if any).*	▪ *No Ore Reserve has been declared.* ▪ *No Ore Reserve has been declared.* ▪ *No Ore Reserve has been declared.*
Audits or reviews	• *The results of any audits or reviews of Ore Reserve estimates.*	▪ *No Ore Reserve has been declared.*

Discussion of relative accuracy/ confidence	▪ Where appropriate a statement of the relative accuracy and confidence level in the Ore Reserve estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the reserve within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors which could affect the relative accuracy and confidence of the estimate. ▪ The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used. ▪ Accuracy and confidence discussions should extend to specific discussions of any applied Modifying Factors that may have a material impact on Ore. Reserve viability, or for which there are remaining areas of uncertainty at the current study stage. ▪ It is recognised that this may not be possible or appropriate in all circumstances. These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.	▪ No Ore Reserve has been declared. ▪ Metallurgical recoveries have been based on testwork data. ▪ Costs have been derived from both recent industry data and estimations from independent consultants and suppliers. ▪ Cost estimate accuracy for the Scoping Study is considered to be in the order of ±35%.