Cautionary Statement

The Economic Assessment discussed herein has been undertaken to explore the technical and economic feasibility of developing an underground mine to economically and sustainably exploit the Kanmantoo Copper Gold Deposit, located in South Australia.

The Kanmantoo Copper Gold Project (Kanmantoo or Project) is 100% owned by Hillgrove Resources Limited.

The Production Target and financial forecasts presented in the Economic Assessment are shown on a 100% Project basis. The Production Target underpinning the Base Case financial forecasts included in the Economic Assessment comprises 74% Measured and Indicated Resources, and 26% Inferred Resources. The Production Target included in the Economic Assessment relating to the project payback period of 9 months post the completion of pre-production works comprises 84% Measured and Indicated Resources, and 16% Inferred Resources. The Mineral Resource Estimate underpinning the Base Case Production Target has been prepared by a Competent Person in accordance with the requirements in the JORC Code 2012.

There is a lower level of geological and grade continuity confidence associated with Inferred Resources and there is no certainty that further exploration work will result in the conversion of Inferred Resource estimates to Indicated Resource estimates or return the same grade and tonnage distribution.

The economic outcomes associated with the Economic Assessment are based on certain assumptions made for commodity prices, concentrate treatment and recovery charges, exchange rates and other economic variables, which are not within the Company's control and subject to change from time to time. Changes in such assumptions may have a material impact on economic outcomes.

To achieve the range of outcomes indicated in the Economic Assessment, additional funding will likely be required. Investors should note that there is no certainty that Hillgrove Resources will be able to raise that amount of funding when needed. It is also possible that such funding may only be available on terms that may be dilutive to or otherwise affect the value of Hillgrove's existing shares.

This announcement contains forward-looking statements. Hillgrove 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 fund the development of the project. However, several factors could cause actual results, or future expectations to differ materially from the results expressed or implied in the forward-looking statements. Given the uncertainties involved, investors should not make any investment decisions based solely on the results of the Economic Assessment.

Competent Persons Statement

The information in this release that relates to Exploration Results, Exploration Targets and Mineral Resource Estimates is based on information compiled by Mr Peter Rolley, who is a Member of The Australian Institute of Geoscientists. Mr Rolley is a full-time employee of Hillgrove Resources Limited and has sufficient experience relevant to the styles of mineralisation and type of deposit under consideration to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code)'. Mr Rolley has consented to the inclusion in the release of the matters based on their information in the form and context in which it appears. All exploration drill results, soil sampling images, and rock chip results have previously been reported to the ASX by a Competent Person at the time.

Monday, 27 February 2023

UPDATED KANMANTOO UNDERGROUND STAGE 1 ECONOMIC ASSESSMENT EXPANDS MINE LIFE

- **Economic Assessment of Kanmantoo Underground Stage 1 demonstrates strong free cash flow potential (A$205M) from recommencement of operations in 2023.**
- **Existing, well-maintained infrastructure allows for a near-term copper production (~7 months from commencement) at industry leading capital costs (A$25M) and capital intensity (US$1,290/t).**
- **A further 6kt Cu in Nugent has not yet been added to mine plan.**

STAGE 1 ECONOMIC ASSESSMENT:

Financials	**Post-tax free cash flow: A$205M**[1] **$NPV_8$: A$165M** **Internal rate of return: 231%** **Payback Period: 9 months post completion of pre-production works**
Mining Inventory	Initial 45 month mine plan of 4.5Mt, targeting production of **43.5k tonnes of copper** and **11.5k ounces of gold**.
Resource	Plan based on Mineral Resource Estimate of **6.4Mt @ 1.09% Cu, 0.12 g/t Au**, however additional drilling in Nugent has **increased this by a further 6kt** contained copper which is **not included in this Economic Assessment**[2].
Near Term	First copper sales within **7 months** of final investment decision.
Low Capex	**Low capital costs of only A$25M** results in one of the lowest capital intensity projects in the world, at just US$1,290/t of annual copper produced.
Healthy Margins	**All in sustaining cost of A$8,051/t** copper (US$2.56/lb) provides good margins at current and projected copper price.
Low Risk	*Regulatory*: Tier 1 jurisdiction, with all **permitting in place**. *Technical*: Very **well understood geology**, geotech and metallurgy with the plan focussing on extensions of the same lodes that were previously mined and processed in the open pit. *Costs*: Capex is predominantly working capital, with **infrastructure already in place**. Opex is based on tendered costs for mining and contracts as well as historical costs for processing.

[1] *Assumptions: Cu (US$9,450/t), Au (US$1,750/oz), Ag (US$22/oz), AUD/USD (0.70)*
[2] *ASX release 26 July 2022 Updated Nugent Underground Mineral Resource Estimate compared to ASX release 14 December 2021 Updated Kavanagh Underground Mineral Resource Estimate*

POTENTIAL UPSIDE:

Drilling	Drilling in Nugent in 2022 **increased the Mineral Resource Estimate by a further 6kt** contained copper which is **not included in this Economic Assessment.** A number of additional lodes within the permitted mine site sit outside of the current drilling program and provide an opportunity to further expand resource base after commencement of the initial mine plan. Drilling commenced on two of these lodes in late 2022 and continues into 2023 with a view to testing viability of these mineralised lodes as additional work areas in the mine plan.
Additional Throughput	Processing plant infrastructure operates at 40% of capacity, providing the **ability to increase annual throughput with no additional permitting or capital expenditure**, uniquely positioning Hillgrove to be able to respond to changing commodity prices to maximise value.

MANAGING DIRECTOR'S STATEMENT:

Commenting on the updated economic assessment of the Kanmantoo Underground, Hillgrove CEO and Managing Director, Lachlan Wallace said:

> *"The updated study reaffirms the excellent project potential. The Kanmantoo Underground Stage 1 presents a unique opportunity to produce copper in a Tier 1 jurisdiction, generating post-tax cash flows in excess of $200M in the initial stage.*
>
> *With all infrastructure and permitting in place, the project is well positioned for a fast, low capital restart, with first copper production only 7 months from commencement.*
>
> *The resource potential is exciting, with 143 mineralised intersections from 122 holes, resulting in the increase in Mineral Resources from less than 1Mt in 2019, to almost 7Mt in 2022. Such high exploration strike rate and resource conversion provides confidence that further drilling may result in increased resources and an expansion in the mine plan.*
>
> *The project is highly leveraged to rising copper prices. The underground stopes are designed to cut-off grades based on the current copper price. Many of these stopes terminate whilst still within a lower grade copper halo around the higher grade core. At higher prices, there is potential to grow the existing plan by simply widening stopes for relatively low incremental cost. With mill capacity at only 40%, and excess tailings storage capacity, additional mineralised material can be processed without displacing any high grade.*
>
> *And finally, it is a testament to the robustness of the project, that in an inflationary environment, the project has increased in both mine life and projected value, whilst also reducing further what was already one of the world's lowest capital intensity copper development opportunities.*

Low capital intensity

The project requires only $25M of development capital (excluding contingency), due to the existing processing facility and tailings storage infrastructure, both of which are being maintained in a ready restart condition. This is in line with the December 2021 capital estimate ($26M) despite cost inflation during this period. The existing infrastructure and the short distance from the portal to the copper lodes, positions Kanmantoo as one of the lowest capital intensity copper development projects in Australia at US$1,290/t of annual copper production in the first three years, well below other development projects which average over US$16,000/t[3].

Mineral Resource Estimate increased by 21%

The Mineral Resource Estimate (MRE)[4] increased metal content by 21% following the 2022 drilling program. The geological confidence increased with Measured and Indicated increasing from 67% to 76% of the total MRE[5]. The increases came from both Kavanagh and Nugent.

During the same period, the mining inventory in the plan increased from 3.3Mt to 4.5Mt. Importantly, the Kanmantoo Underground Stage 1 economic assessment has only been updated for Kavanagh, and does not include any of the additional 6kt Cu metal which was added to the Nugent MRE in 2022. It is expected that as this material is incorporated into the mine plan, that the minable inventory will continue to grow.

Existing infrastructure maintained ready for restart

All infrastructure is in place, including a 3.6Mtpa processing plant that is being maintained in such a manner that it can be restarted quickly with very little refurbishment costs. The electricity and water contracts have been maintained, and water is pumped through the system daily, whilst each week the mill, crushing and conveying system is operated. All critical spares required to mitigate lengthy operational downtime are stored at site.

In addition, the tailings storage facility is operational and has approximately 3Mt more permitted capacity than the current mine plan, providing additional tailings as drilling continues to identify further resources and grow the mine plan without further permitting.

Ability to quickly respond to changing commodity prices to maximise value of resource

The drilling program completed in 2021 confirmed that many of the higher-grade zones are surrounded by lower grade haloes which presents an opportunity to further increase value through a lower grade bulk mining approach which better utilises the existing mill capacity. The spare processing capacity enables Hillgrove to respond to changing commodity prices by flexing the cut-off grade to maximise value from the Kanmantoo Underground, without the need for additional capital expenditure. Whilst most other producers would need to consider permitting, capital costs and lengthy construction times to expand production to take advantage of changing prices, the Kanmantoo project can react quickly which may prove valuable as the world continues to decarbonise, fuelling demand for copper.

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[3] AME, 2017, Copper - Capital Intensity of New Copper Mine

[4] ASX release 26 July 2022 Updated Nugent Underground Mineral Resource Estimate

[5] ASX release 26 July 2022 Updated Nugent Underground Mineral Resource Estimate compared to ASX release 14 December 2021 Updated Kavanagh Underground Mineral Resource Estimate

Mineral lodes extend up to 500m below the pit and open at depth

The drilling indicates that the mineralisation extends 500m below the base of the main pit above Kavanagh, and over 200m below the Nugent pit, however the Stage 1 mine plan only extends ~250m below the main pit and ~150m below the Nugent pit due primarily to lack of drilling density at depth. Both of these areas remain open at depth and exploration drilling will continue in parallel with the Kanmantoo Stage 1 development, with a view to replace resource depletion from underground mining and to extend the mine life beyond Stage 1.

Mine plan includes only 2 of 9 known lodes within the permitted mining lease

In addition to the depth and strike extensions of the Kavanagh and Nugent lodes, there are a number of other mineralised zones within the permitted lease that were either mined or drilled during the previous open pit operations. In late 2022, drilling commenced in two of these areas with a view to demonstrate depth continuity below historic drilling and mining. Pending drill results, there is potential to bring these zones into the mine plan as separate work areas in order to increase annual copper production. Again, the underutilised mill, and spare capacity in the permitted tailings storage facility enables this to be done without additional processing capital.

Early decline development brings forward first copper production

Early development works undertaken in 2021/22 established two portals, intersected high grade mineralisation and an underground drilling platform. This has enabled the early establishment of infrastructure at the ventilation and primary access portals, including water supply lines, fuel storage, electrical infrastructure, secondary ventilation fans, ablution, crib, office, and emergency response facilities. This primes the project for rapid low-cost ramp up to first copper.

Lower risk

As a fully permitted brownfield project, there is relatively low risk compared to other mining start-ups. The project extracts the same lodes that were mined and processed for almost a decade in the open pit, which materially reduces the technical risk around geology interpretation, ground support requirements, and metallurgical recovery. In addition, with all the infrastructure already in place and being maintained at a high standard, the risk of capital blowout on restart is considered low.

Authorised for release by the Board of Hillgrove Resources Limited.

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HILLGROVE RESOURCES

SUMMARY REPORT

Kanmantoo Underground

Stage 1

UPDATED ECONOMIC ASSESSMENT 2023 (UEA 2023)

HILLGROVE RESOURCES LIMITED ACN 004 297 116
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Contents

1 Project Highlights

In December 2021, Hillgrove Resources Limited (Hillgrove or HGO) released the Kanmantoo Underground Stage 1 Project Economic Assessment (EA 2021). Since then, an updated mine plan and project financial model has been completed based on additional geological data, further detailed mine engineering and firm equipment and contractor costs. These changes are included in this Kanmantoo Underground Stage 1 Updated Economic Assessment 2023 (UEA 2023). Highlights of UEA 2023 include the following:

- Free cash flow generation of A$205M from an initial mine life of 45 months, with an internal rate of return of 231%.
- Project net present value (NPV_8) of A$165M and all-in sustaining costs (AISC) of A$8,051 per tonne of payable copper.
- 4.5 million tonnes processed for 43.5k tonnes recovered copper and 11.5k ounces recovered gold based on the current mineral resources.
- Low capital costs due to existing processing plant and tailings infrastructure and 350 metre open pit haul road providing access to the portal. The capital intensity of the project of $US1,290 per tonne (AUD/USD 0.70) of annualised copper production is an order of magnitude below the global average of $US16,000 per tonne (US$7.26/lb)[1].
- Low operating costs including grid electricity, water, transport, and labour with no fly-in fly-out workforce requirements due to the project's proximity to Adelaide.
- Permitting and licensing in place allows for first revenues to be received within seven months of an investment decision.
- Processing plant infrastructure operating at ~40% of capacity provides the ability to increase additional throughput, with no additional capital expenditure. This may also provide an opportunity to increase copper production and project value by reducing the cut-off grade based on prevailing metal prices.

The free cash flow generated by the project is forecast to be $205M, with an NPV_8 of $165M. This cash is generated over a longer mine life than the EA 2021 and is primarily driven by an increase in the resource, as well as a change in mine planning methodology based on detailed engineering and firm mining contractor and equipment supplier costs from the contract tender process. The high-level areas of variance between the EA 2021 and the UEA 2023 are presented in Table 1, with additional project metrics presented in Table 2.

In addition to superior value, there are several other benefits to this plan, including:

- A lower cut-off grade results in wider stopes, which reduces geological and operational risk; and
- A longer mine life provides more opportunity to drill additional targets in the vicinity of the underground workings and bring them into production whilst the site is operating.

[1] AME, 2017, *Copper - Capital Intensity of New Copper Mines*

Table 1: Table of variances between the EA 2021 and the UEA 2023

Economic Assessment		EA 2021	UEA 2023
Financial	Free Cash Flow	A$196M	A$205M
	NPV 8%	A$166M	A$165M
	IRR	389%	231%
	AISC	A$6,991	A$8,051
Production	Mine Life	36 months	45 months
	Ore mined	3.3MT	4.5MT
	Copper Grade	1.17%	1.05%
	Copper Production	35.6 kt	43.5kt
	Gold Grade	0.17g/t	0.15 g/t
	Gold production	9.9 koz	11.5 koz
Pre-production capital requirements	Mining	A$21M	A$16M
	Infrastructure	A$2M	A$3M
	Processing	A$1M	A$1M
	Other	A$2M	A$5M[2]
	Total	**A$26M**	**A$25M**
	Capital Intensity	US$1,550/t	US$1,290/t
Costs (A$/t milled)	Mining	A$46	A$47
	Processing	A$13	A$13
	Royalties	A$7	A$6
	Offtake Charges	A$6	A$8
	Logistics	A$5	A$5
	General and Administration	A$2	A$3
	Total	**A$81**	**A$82**

[2] includes negative operating cash flow in month 1 of ore processing

Table 2: Other Project Information

Mining	2022 Mineral Resource Estimate (not including Nugent update)	6,405kt at 1.09% Cu and 0.12g/t Au
	Stage 1 Mining Zones	Kavanagh (east, central, west) to 650mRL Nugent to 900mRL
	Cut-Off Grade	0.6% Kavanagh and 0.8% Nugent
	Mining Rate	Peak 140,000 tonnes per month
	Operations	Partial owner/operator with specialised contractors where required (diamond drilling, vertical development, production drilling, equipment maintenance)
Processing	Processing plant	> 3 million tonnes per annum processing plant, currently in care and maintenance
	Flowsheet	Crushing, grinding, flotation, dewatering
	Processing Period	39 months (Stage 1)
	Copper Grade	1.05%
	Gold Grade	0.15g/t
	Recoveries	Cu 93.1% (average - feed grade dependent) Au 55%
	Concentrate Grade	24% Cu
	Production	14kt Cu per annum (average) 3koz Au per annum (average)
	Processing operations	Hillgrove owned and operated
Infrastructure	Tailings Storage Facility	Approved capacity of > 7 million tonnes of tailings, currently in care and maintenance
	Access to portal	Open pit haul road to the lower portal approximately 350 metres below surface
	Electricity	Grid power with 10 MW 132-11 kv switch yard on site. Overhead power lines to supply power to the mine portal.
	Water	Agreements and pipelines in place
	Fuel	Diesel fuel storage tanks currently established on site including at the portal
Logistics and Marketing	Logistics	Concentrate to be trucked in containers to Port Adelaide for bulk shipping
	Customers	Offtake agreements in place for all production

2 Background

The Kanmantoo Copper Mine is located in the Adelaide Hills region of South Australia. The original mine site contained several underground workings from the mid to late 19th century and the original Kanmantoo Copper Mine open pit, which was in operation from 1970 until 1976 on the Kavanagh copper zones. Approximately 4.1Mt @ 0.9% Cu was mined from the open pit before operations closed in 1976 due to low copper prices. In 1976, Kanmantoo Mines drilled and developed an underground operation around the Kavanagh and East Kavanagh copper lodes, but the low copper prices resulted in its abandonment before underground production began.

Hillgrove undertook exploration work at the site from 2004, which proved up additional mineral resources adjacent to and below the historical Kavanagh open pit. This led to Hillgrove commencing open pit mining on the Kavanagh, Valentine, Matthew, Emily Star, Spitfire and Nugent lodes, and processing ore on the site from 2011. Mining of the main open pit - Giant - was completed in May 2019 with final ore from the depth extensions of the West Kavanagh lode. The processing of stockpiled ore concluded in March 2020. From 2011 to 2020, the operation produced 137k tonnes of copper and 56k ounces of gold from several open pits.

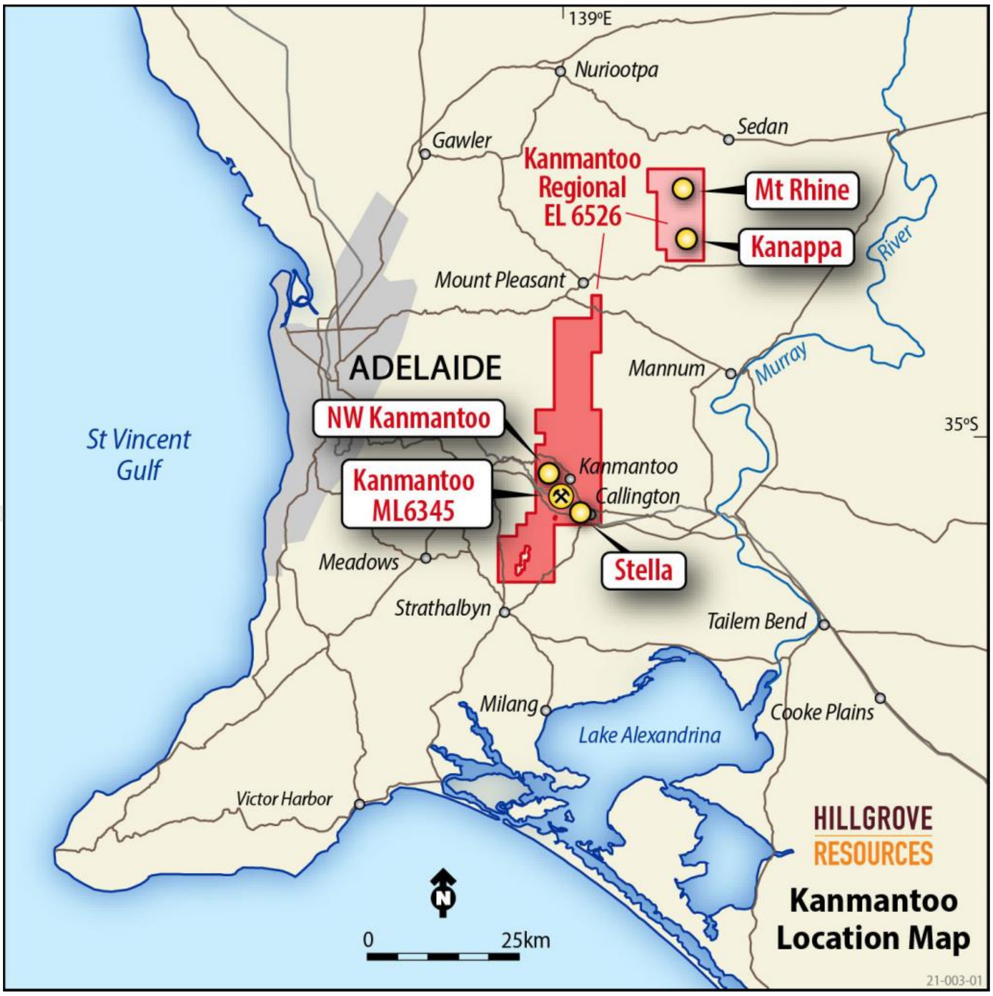


Figure 1: Location of the Kanmantoo Copper Mine (ML6345) and exploration tenements

The project's location, 55 kilometres from Adelaide, and three kilometres from the main dual carriageway leading to the export port of Port Adelaide, brings inherent operating and capital cost advantages. This includes low cost grid electricity, water, transport and labour due to there being no requirement for a fly-in fly-out workforce. The mine's location in the Adelaide Hills - one of South Australia's most attractive settings - also helps to attract and retain a high quality workforce who predominantly live within the region.

This UEA 2023 investigates mining the known resources of Kavanagh and Nugent, forming the Kanmantoo Underground Stage 1 Project. As evident from Figure 2, areas included in this assessment only form a portion of the known mineralised areas on the mining lease. Hillgrove anticipates this to be the first stage in a larger operation, with results of the 2022 Nugent drilling program not included in this assessment.

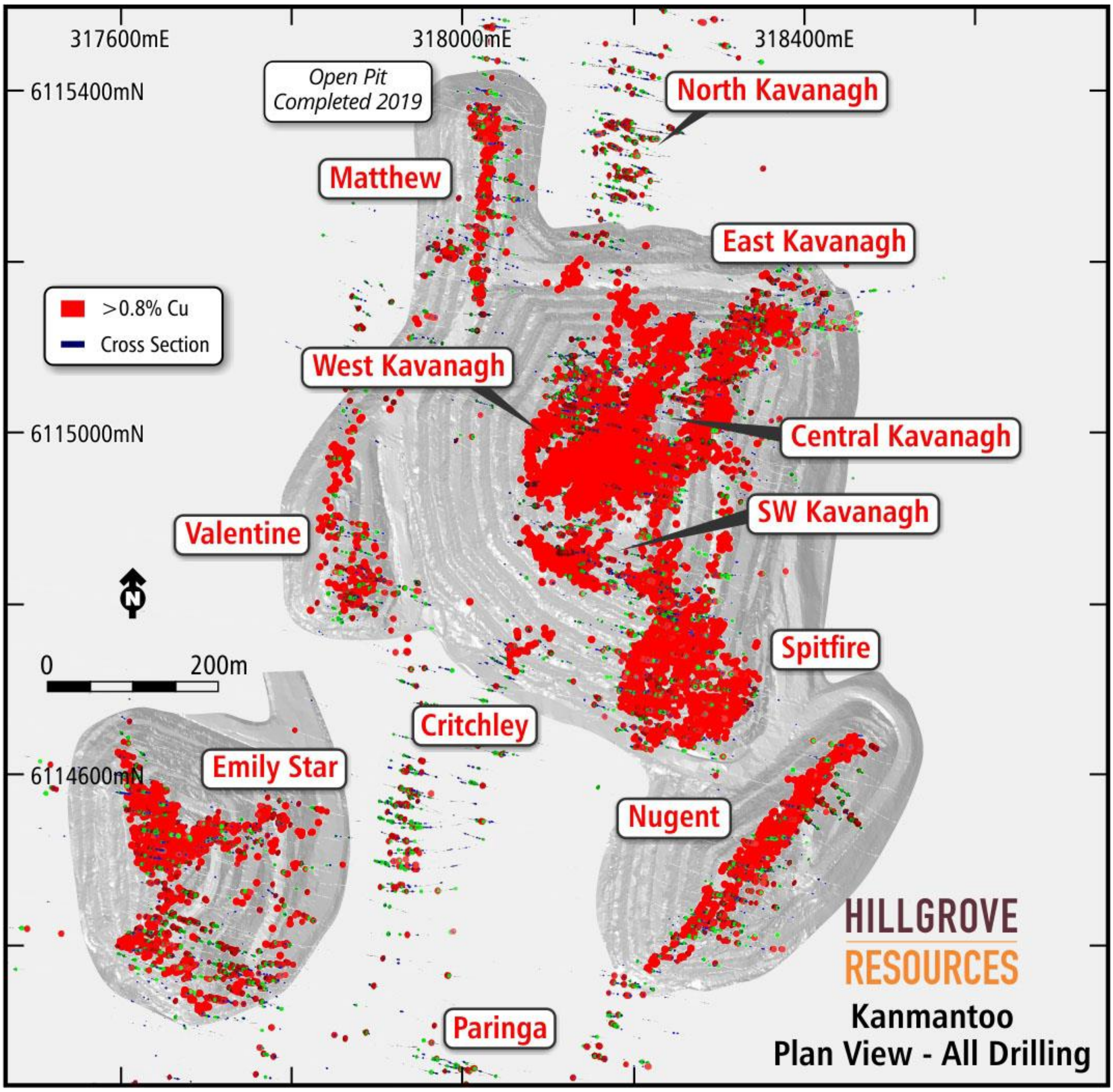


Figure 2: All drilling with >0.8% copper grades showing the location of the Cu/Au zones at Kanmantoo

3 Underground Mineral Resource and Geology

The Kanmantoo Cu-Au mineral resources are located in two mineral systems, termed Kavanagh and Nugent. A description of the Kavanagh underground resource and the Nugent underground resource used in this UEA 2023 are contained in the 2022 Kavanagh Mineral Resource Estimate released on 11 May 2022 and the Nugent underground resource contained in ASX release of 7 December 2020 respectively. The Nugent underground resource was subsequently updated in 2022 following further drilling, however this estimate has not been incorporated into the UEA 2023. A summary of the resource estimates used in this UEA 2023 is provided in the following sections.

3.1 Regional Geology

The Kanmantoo copper deposits are located 55 km south-east of Adelaide, South Australia at latitude -35.083^{0}S, longitude 139.00^{0}E, on the Barker (SI-5413) 1:250,000 map sheet.

The pelitic meta-sedimentary rocks of the Cambrian Kanmantoo Group in the Adelaide Geosyncline are host to numerous copper, gold, lead, zinc, silver, pyrite deposits over a 300km N-S strike length of which Kanmantoo is the largest. The copper-gold deposits at Kanmantoo are hosted within meta-pelites that are regionally thermally altered to andalusite – sillimanite grade schists. The mine sequence is characterised by an abundance of andalusite dominant schists interbedded with quartz biotite schists. The Cu-Au mineralisation is emplaced post peak-metamorphism and syn to post peak deformation of the Delamerian Orogen from magmatic fluids in a structurally controlled shear system.

3.2 Extent of Post Open Pit Exploration Drilling

In June 2019, Hillgrove commenced diamond drilling to test the continuity of the Central and East Kavanagh lodes below the eastern wall of the mined Giant open pit. Since then, drilling programs have been completed in 2020 and 2021/2022 to test the extents of Kavanagh, Spitfire and Nugent Cu-Au zones. Mineral Resource Estimates (MRE) have been released for the Kavanagh mineral system in 2019, 2020, 2021 and 2022, and for the Nugent mineral system in 2020 and 2022.

Table 3 below summarises the 2020 Nugent MRE and the Kavanagh March 2022 MRE (incorporating the Kavanagh and Spitfire zones) which are the basis of the UEA 2023.

The 2020 Nugent MRE and the 2022 Kavanagh MRE are Stage 1 of the Kanmantoo Underground Project, with further drilling currently being undertaken to improve the confidence in the Mineral Resources and to drill test additional Cu-Au mineral zones.

The current resource only includes Kavanagh (East, Central, West, and South-West) and the upper levels of Nugent and Spitfire. There are no resources included in the Stage 1 mining inventory for the North Kavanagh and Emily Star areas, as these have not yet been converted into MRE for underground purposes. There are also no resources included for Nugent below 900mRL. Drilling has identified continuation of the Kavanagh Cu-Au mineral zones to approximately 380mRL, which is 500 metres below the completed Giant open pit. All areas drilled to date, including Kavanagh and Nugent, remain open at depth.

Table 3: Underground Mineral Resource Estimate used in EA 2023

Deposits	JORC 2012 Classification	Tonnage (kt)	Cu (%)	Au (g/t)	Cu Metal (kt)
Kavanagh 2022 (0.6% Cu COG)	Measured	780	1.28	0.10	9.9
	Indicated	3,640	1.03	0.06	38
	Inferred	1,300	1.0	0.1	10
	Sub-Total	5,750	1.10	0.10	61
Nugent 2020 (0.8% Cu COG)	Indicated	202	1.4	0.47	2.8
	Inferred	457	1.3	0.7	6
	Sub-Total	659	1.32	0.61	8.7
Totals	**Measured**	780	1.28	0.1	9.9
	Indicated	3,840	1.05	0.09	40.4
	Inferred	1,800	1.1	0.2	19
	Total	6,405	1.09	0.12	69.6

Note: Due to appropriate rounding, numbers may not sum

3.3 Kavanagh

Figure 3 below is a longitudinal section along the strike of the Kavanagh Cu-Au mineral zones showing the final position of the Giant open pit and all the reverse circulation (RC) and diamond drilling (DD) exploration drilling completed by Hillgrove in this area. The longitudinal section highlights the significant drill intersections with the best of these located from approximately 900mRL to 700mRL (approximately 200m below the bottom of the open pit).

The drilling demonstrates that the Kavanagh mineralisation continues below 380mRL (approximately 500m below the bottom of the open pit), however more drilling is required to convert this deeper mineralisation to mineral resources adequate for mine planning.

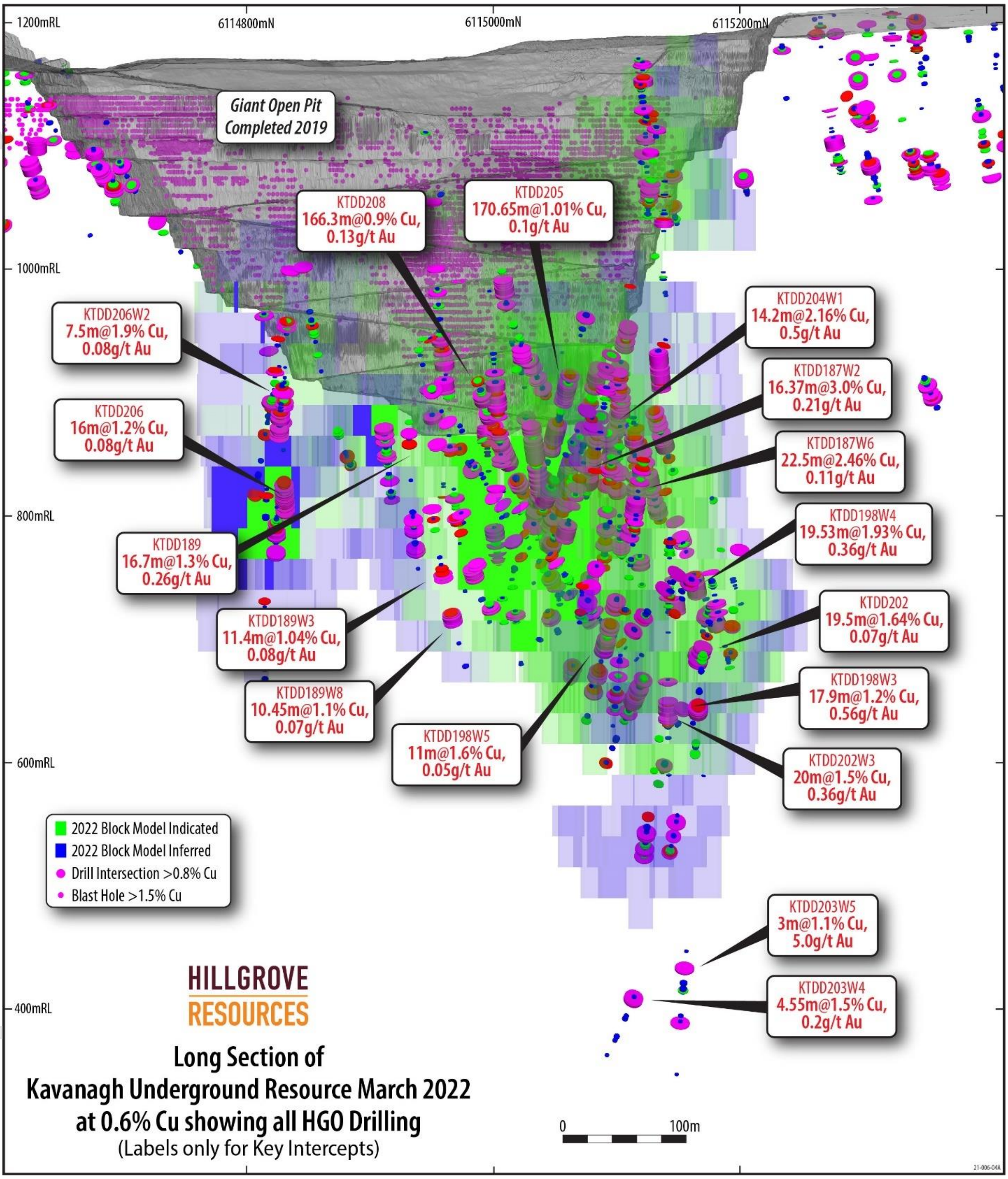


Figure 3: Longitudinal section of Kavanagh drilling with key drill Intercepts labelled

3.3.1 Kavanagh Mineralisation

The various Kavanagh Cu-Au mineralised zones are hosted within Biotite Chlorite Garnet Schist (BCGS) and/or Garnet Andalusite Biotite Schist (GABS) with sulphide distribution controlled by the structural fabric, both as finely disseminated sulphides along the S2 fabric and as massive sulphide veins. The sulphide mineralisation is dominated by coarse grained pyrrhotite and chalcopyrite with minor bismuthinite, pyrite and rarely free gold.

The Kavanagh Cu-Au mineral zones of intense sulphide veining and sulphides vary between 3 to plus 20 metres in width with haloes of lower density sulphide veining up to 10 to 20 metres in width.

The various Kavanagh lodes are characterised by their local alteration styles and mineral assemblage. For example, the East Kavanagh mineralisation is often associated with strong gold and bismuth endowment, whilst West Kavanagh has minimal gold and bismuth and has a higher ratio of pyrrhotite to chalcopyrite compared to Central Kavanagh.

Drill holes KTDD205 (170.65m @ 1.01% Cu, 0.10g/t Au) and KTDD208 (166.3m @ 0.90% Cu, 0.13g/t Au) demonstrate that in the centre of the Kavanagh mineral system, where all Kavanagh mineral lodes are structurally well developed, the cumulative extent of the sulphide veining is expressed over 160 metres in width.

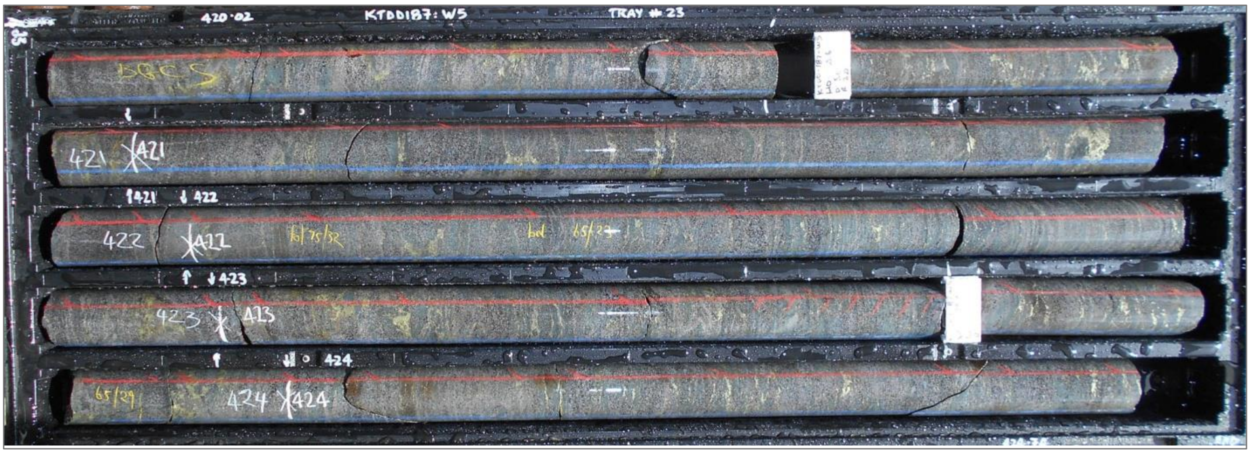


Figure 4: Central Kavanagh core (KTDD187_W5 from 420m to 424.7m downhole) showing mineralised BCGS

Figure 5: East Kavanagh core (KTDD187_W5 from 401.4m to 405.9m downhole) showing mineralised GABS

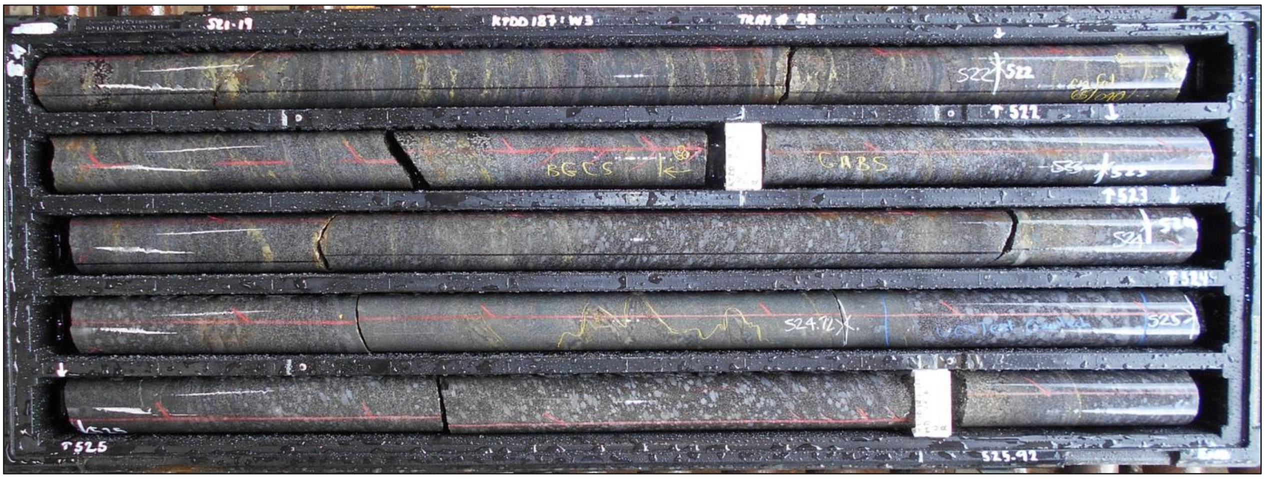


Figure 6: West Kavanagh core (KTDD187_W5 from 521.2m to 525.9m downhole) showing the interbedded GABS and BCGS within the mineralised shoot

3.4 Nugent

Figure 7 is a longitudinal section along the strike of the Nugent zone showing the final position of the Nugent open pit and all the RC and DD exploration drilling completed by HGO in the area. The longitudinal section highlights significant intersections along strike and down-dip demonstrating that the Nugent Cu-Au mineralisation is open at depth and along strike. Drilling along the Nugent zone was undertaken in 2022 with intent to convert Inferred Resource to Indicated Resource and increase total resource. The update Mineral Resource Estimate for Nugent was released on 26 July 2022, increasing Cu metal by 6kt, however this update has not been incorporated into the UEA 2023.

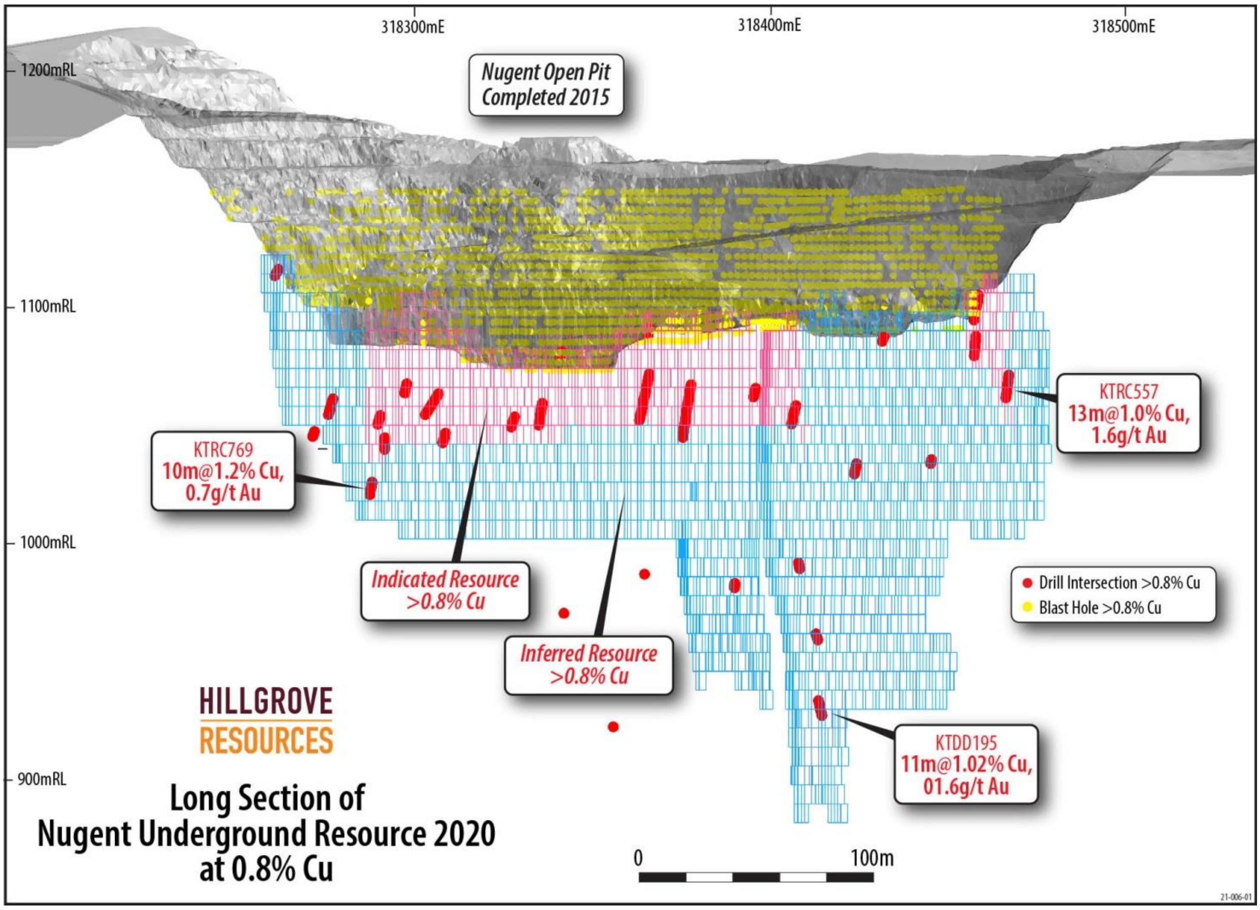


Figure 7: Longitudinal section of Nugent drilling with key drill intercepts as at the 2020 Nugent MRE labelled

The Nugent Cu-Au mineral zone strikes NE-SW (~040° direction) dips sub-vertically toward the south-east, with the mineralisation following the shear corridor and hosted within a silicified BCGS zone. The Nugent alteration system shows a significant increase in silica in comparison to the Kavanagh systems, both as a pervasive overprint and as defined quartz veins, with sulphide and gold mineralisation generally confined to zones of structurally complex quartz veining in a silica rich variety of the BCGS.

Figure 8: Core from KTDD195 (from 300.5m to 305.1m downhole) showing the silicious BCGS from Nugent

Gold is also enriched in the Nugent lode system, with intersections including KTDD141 of 12m @ 2.2% Cu and 7.9g/t Au. Towards the south-west end of the Nugent lode zone, there are gold only intersections including KTRC086 6m @ 0.06% Cu, 4.3g/t Au from 92m downhole. Gold is generally very fine grained and rarely visible as shown in Figure 9.

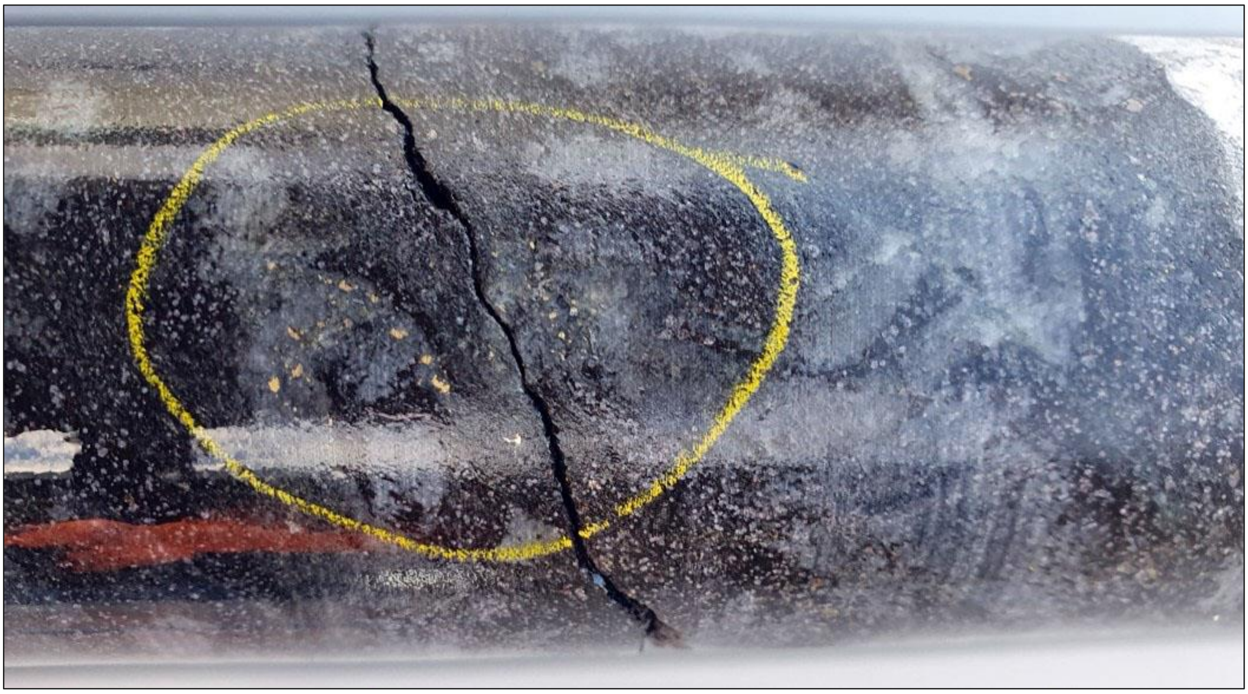


Figure 9: Free gold in Nugent KTDD209 at 339.7m depth downhole

3.5 Mineralisation Continuity and Confidence

The geologic interpretation of the geometry of the mineralisation is conditional to the sulphide vein density and hence the spatial continuity is dependent on the applied copper cut-off grade. As a result, the higher-grade copper zones do not have hard, planar boundaries. In reality, the boundaries between higher-grade copper zones and low-grade copper zones are subjective and spatially variable. To assist with the geological understanding, a 0.2% Cu wireframe has been interpreted to visualise the overall continuity of the copper mineralisation. If the economic cut-off grade is increased to 1.0% Cu, the mineral zones become truncated into a series of lenses and pods, with much higher variability in grade and spatial continuity.

The Kavanagh mineralised lodes are generally within a broad sulphide alteration zone, within which there is localised variation in the concentration of copper sulphides. In contrast, the Nugent zone is generally a single zone of sulphide alteration of varying width and intensity of copper-gold. While both mineral systems have, on average, a consistent overall geometry, within the mineral zone the higher-grade portions can vary in length along strike and plunge.

3.5.1 Kavanagh 2022 Resource Estimate

The 2022 Kavanagh Underground MRE has been estimated using Multiple Indicator Kriging (MIK) with the estimation parameters aligned to be concordant with the dominant S2 fabric that controls most of the sulphide distributions.

The 2022 Kavanagh Underground MRE has reported the MIK estimate at 0.6% Cu cut-off grade. A description of the Kavanagh Underground MRE can be found in the Kavanagh Underground MRE final report of 11 May 2022.

Figure 10 below presents a cross section through the Kavanagh mineral system showing drill hole copper grades, the generalised alteration outlines showing the continuity of the mineralisation, and the classification category for the MIK estimated panels for those panels with a volume greater than 50% above 0.6% Cu.

Classification of the 2022 MIK Kavanagh resource estimate is initially based on the MIK parameters and Indicated Resources have an average drillhole intercept spacing of between 20m and 40m and are not based on a single drill hole or single drill section. Inferred Resources have an average drillhole intercept spacing over 40m. Measured panels are only within a specific area wireframed as appropriate, and any panels classified as Measured by the MIK process, that are located outside of the geologist’s interpreted Measured area are re-assigned as Indicated. All estimated panels below 600mRL are coded as Inferred.

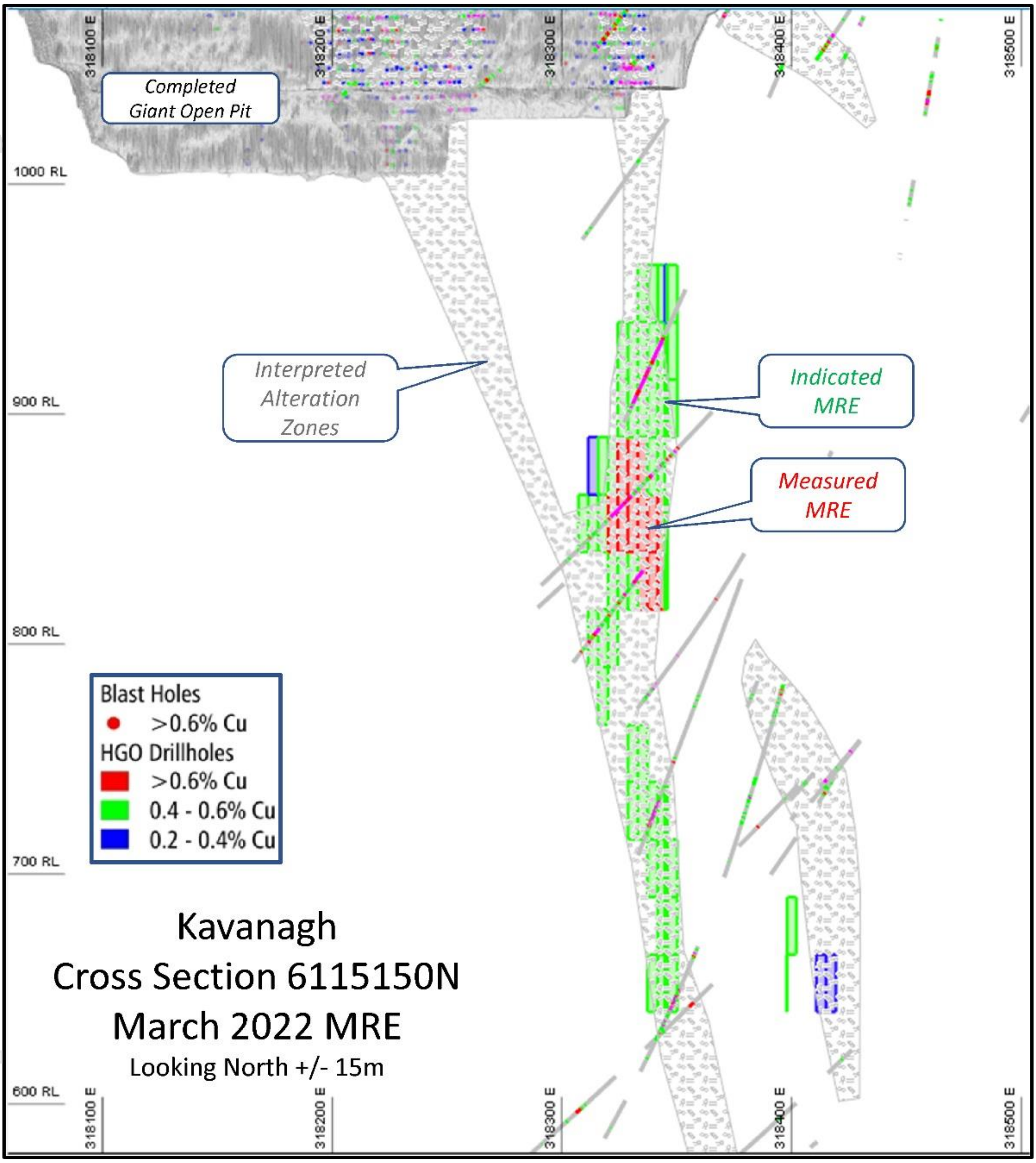


Figure 10: Cross section of Kavanagh drilling and Cu grades and 2022 MRE by risk classification

3.5.2 Nugent 2020 Resource Estimate

Ordinary Kriging (OK) has been used to estimate the Nugent 2020 MRE, with copper grades assigned to individual blocks within the 0.8% Cu modelled wireframes. The OK estimation parameters are aligned with the Nugent mineral trends of -75 deg to 135 deg (dip/dip-direction). Classification of the estimated Nugent OK blocks is based on drill hole density, with Indicated based on a geologically interpreted zone below the open pit with a drill density of 35m by 35m and Inferred otherwise.

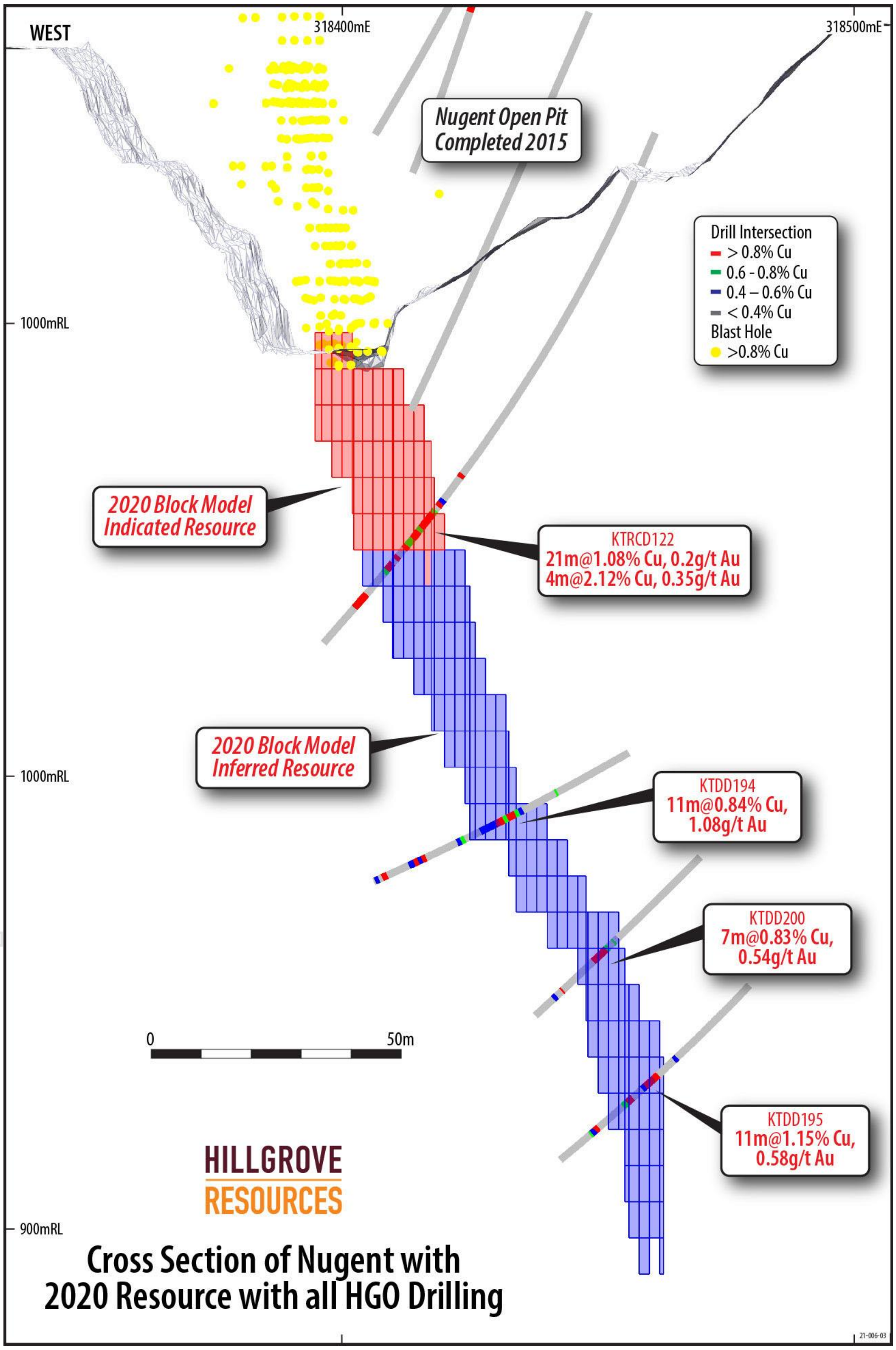


Figure 11: Cross section of Nugent drilling and Cu grades

3.5.3 Nugent 2022 Resource Estimate

At the conclusion of the 2022 drilling on the Nugent zone, a new estimate of the Cu-Au resource was completed. This estimate of the Nugent resources incorporating the 2022 drilling, reported on 26 July 2022, is not included in UEA 2023.

Table 4: Nugent 2022 Mineral Resource Estimate

Deposits	JORC 2012 Classification	Tonnage (kt)	Cu (%)	Au (g/t)	Cu Metal (kt)
Nugent 2022 (0.7% Cu COG)	Indicated	865	1.19	0.64	10.3
	Inferred	400	1.1	0.3	5
	Sub-Total	1,270	1.18	0.54	15

Note: Due to appropriate rounding, numbers may not sum

Highlights to note on the Nugent 2022 MRE include:

- 70% increase in the total copper metal compared to the 2020 Nugent resource of 8.7 k tonnes Cu.
- 69% of the Nugent Resources are now classified as Indicated compared to 30% Indicated in the 2020 Nugent MRE.
- The resource estimates are still constrained by the extent of the drilling and not by the geology, in both the along-strike and down-dip directions.
- The updated Nugent mineral resource continues to affirm the economic potential for an underground operation utilising the invested capital in the Kanmantoo Mining Lease and Processing Plant.
- The 2022 Nugent drilling and consequent MRE supports the investment of further drilling into the Cu-Au mineral systems at Kanmantoo.

Figure 12 is a cross section through the 2022 Nugent drilling and MRE and demonstrates the Nugent Cu-Au system is still open to depth.

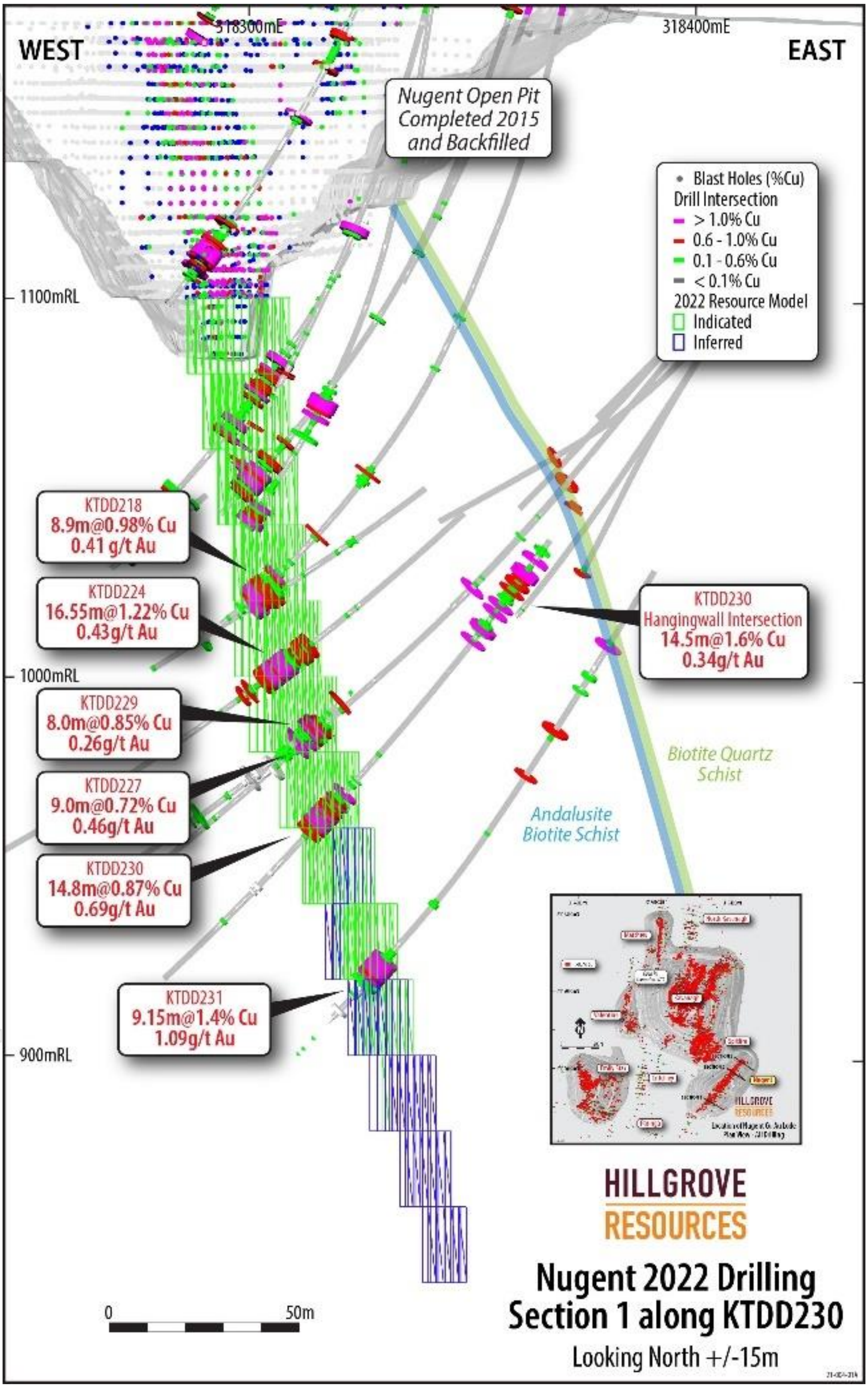


Figure 12: Cross section of 2022 Nugent drilling and MRE

3.6 Planned Underground Geology Production Activities

3.6.1 Face Mapping

Underground development is planned to be undertaken based on survey control following confirmation of the location of the mineralisation from drilling and development crosscuts.

All development headings, backs and walls will be LIDAR scanned and photographed (both colour and spectrally) and these data sets used to digitally map the faces, backs and walls of the underground development and thereby to interpolate with the drill hole data into 3D space the mineralised structures, geotechnical and hydrologic observations. The use of photography/scanning materially reduces the time spent in active mining areas and removes the requirement for any sampling or work at the face, which significantly reduces the risk usually associated with face sampling tasks.

3.6.2 Kavanagh Stope Definition Drilling

Diamond drilling from underground drill platforms will be required to enable final mine planning of stope boundaries and development designs.

As the initial Kavanagh and Nugent declines proceed, drill platforms (cuddies) will be developed from the relevant declines and diamond drilling will proceed from these cuddies to enable the drilling of east-west intercepts (towards the west for Kavanagh and towards the southeast for Nugent) through the Indicated/Inferred mineral zones on an approximate 15-20m (north) x 20 (elevation) spacing to mitigate the uncertainty associated with the short scale spatial continuity of the copper mineralisation.

The initial underground drill program is planned to define the Kavanagh mineralisation between 950mRL and 820mRL. The number of drill rigs will be scheduled to match underground development and stope prioritisation.

The oriented drill core will be auto-structurally logged, photographed (colour and NIR) and sample boundaries geologically delineated. Samples will be crushed on site and analysed on-site by portable XRF for Cu, Bi, S (a process utilised very successfully in the Giant open pit for grade control).

The colour and infra-red photography will be used to interpolate alteration, sulphide veining, geotechnical and mineralisation controls in an expeditious and optimal manner to enable integration into the resource drill hole database and the underground face mapping database to rapidly interpolate updated 3D models of geotechnical and copper grade boundaries for incorporation into mine planning optimisation.

The drilling productivity will be maintained ahead of all stope planning to enable higher risk geotechnical or mineralised zones to be identified and incorporated in mine planning responses.

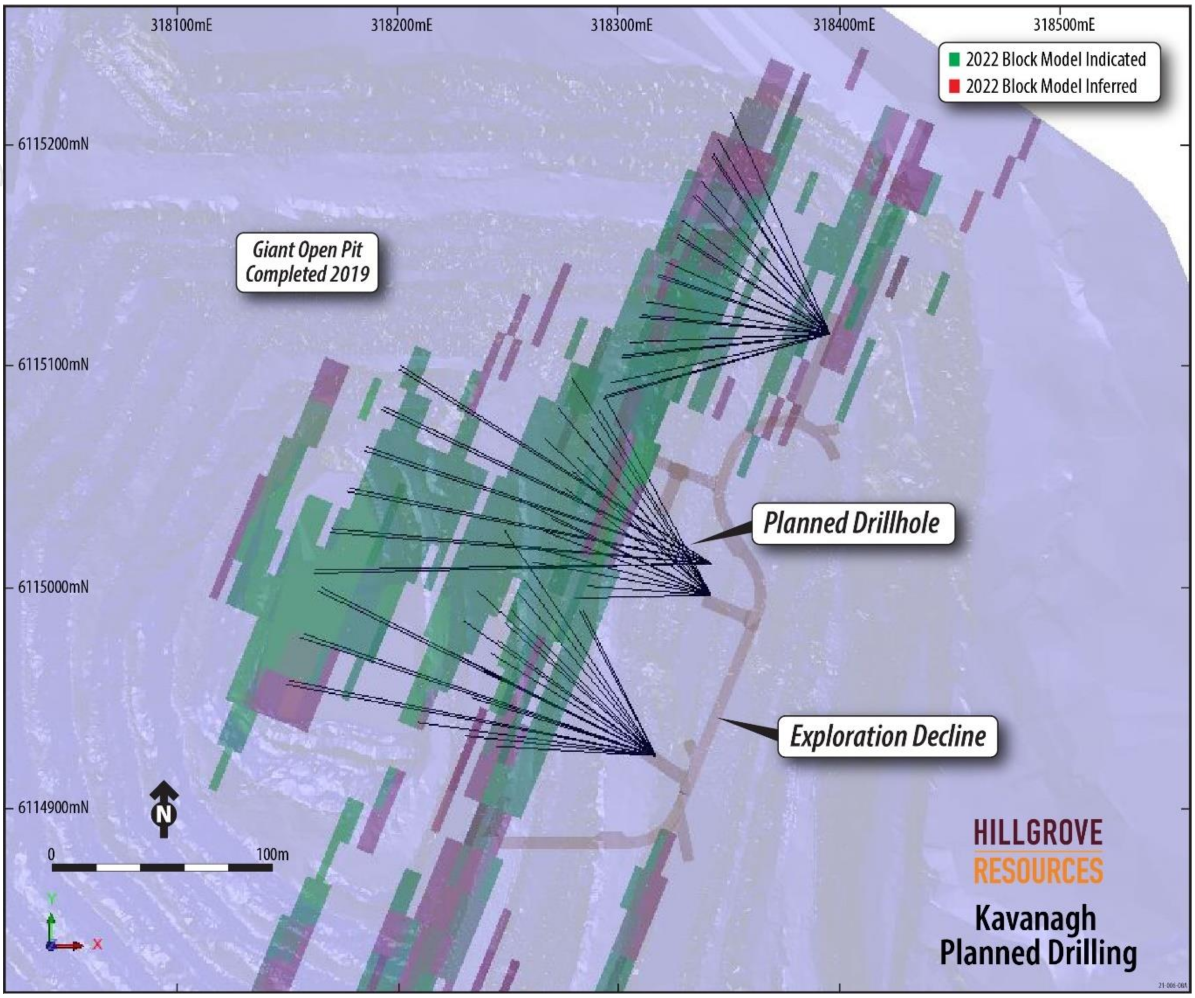


Figure 13: Plan view of proposed underground diamond drilling

The 20 x 20m pattern described above will be replicated for each level going forward with ~25 drill holes for each Kavanagh and Nugent work area with an average hole length of 200m (increasing with each level) required for each level to cover all the planned stope areas.

3.6.3 Underground Geotechnical Drilling

Three oriented drill holes are planned from each UG diamond drill cuddy drilling toward the east to test the geotechnical and hydrological conditions for the decline development.

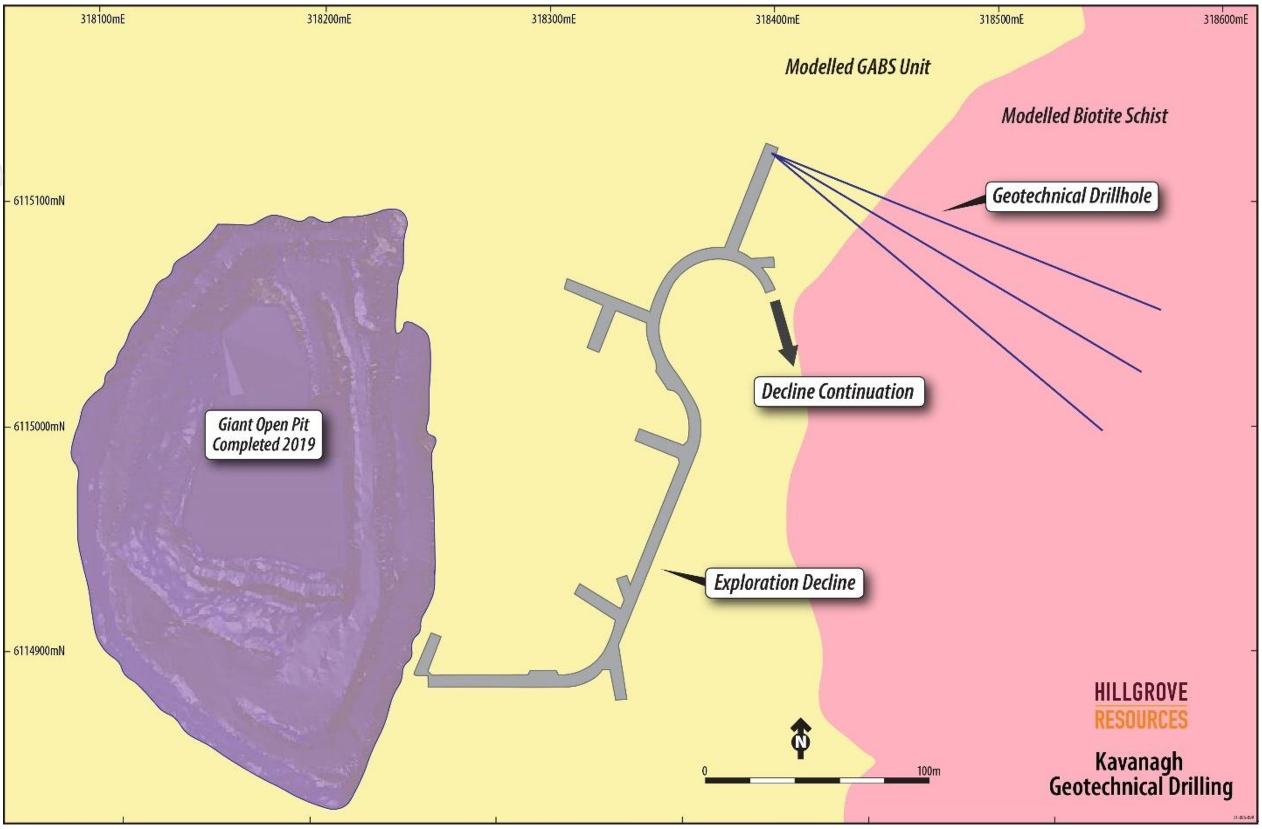


Figure 14: Plan view of proposed underground geotechnical diamond drilling

3.7 Ongoing Resource Definition Work

Drilling in Nugent was undertaken in 2022. The results of that drilling program can be seen in Figure 18 as the yellow labels. In 2022 the Nugent Mineral Resource Estimate was updated with the 2022 drilling and a new MRE released in 26 July 2022. However, has not been included in the UEA 2023. The Stage 1 plan is therefore limited to the 2020 block model described herein which does not include the 2021-2022 drilling program. There are many positive drilling intercepts outside of the existing 2020 block model and as such it is expected that when the Mine Plan is next updated, the mining inventory in Nugent will also increase.

In 2022, the exploration decline was used as an underground drilling platform and 12 holes were drilled into the Spitfire Cu-Au system (Figure 15). These holes have successfully identified a significant Cu-Au system for underground mining requiring further drilling to bring to production. The Spitfire drilling clearly demonstrates that there are opportunities to convert smaller Cu-Au systems proximal to the proposed Kavanagh/Nugent underground infrastructure to additional production centres feeding the under-utilised mill capacity.

Highlights from the Spitfire drilling include:

- **22KVUG004 18.82m @ 0.95% Cu, 0.18 g/t Au from 53.38m downhole**
- **22KVUG005 12.55m @ 1.72% Cu, 0.22 g/t Au from 56.45m downhole**
- **22KVUG006 13.13m @ 2.1% Cu, 0.18 g/t Au from 72.0m downhole**
- **22KVUG008 10.35m @ 2.38% Cu, 0.28 g/t Au from 66.65m downhole**

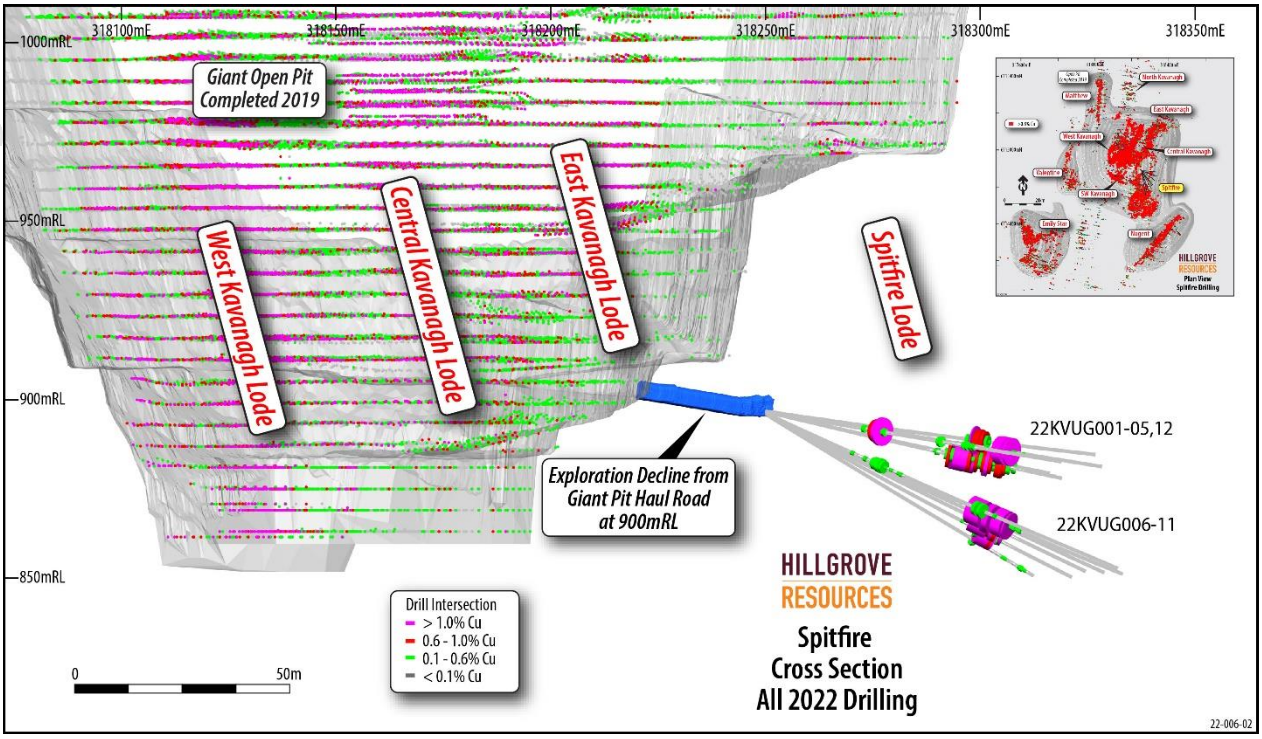


Figure 15: Cross section of the Spitfire drilling showing its proximity to the decline (in blue) and to the main Kavanagh Cu zones

The next drilling program will focus on Nugent and Kavanagh strike and depth extensions, North Hub (North Kavanagh and Coopers) and South Hub (Paringa, Emily Star and South Emily), all located on the Mine Lease.

The Emily Star Cu-Au mineralisation was mined as an open pit by Hillgrove from 2012-2015 and is the second largest Cu endowment on the Kanmantoo Mine Lease. Figure 16 is a cross section through the Emily Star mineralisation and clearly shows multiple Cu-Au zones with high Cu breccias that warrant further drilling to identify their continuity and tenor.

The North Kavanagh Cu-Au zone was partially mined in the Giant open pit and is within 150 metres of the planned underground development. Like Spitfire, it offers an opportunity to develop additional Cu-Au resources that convert to mill feed through its proximity to Kavanagh UG development (refer Figure 17).

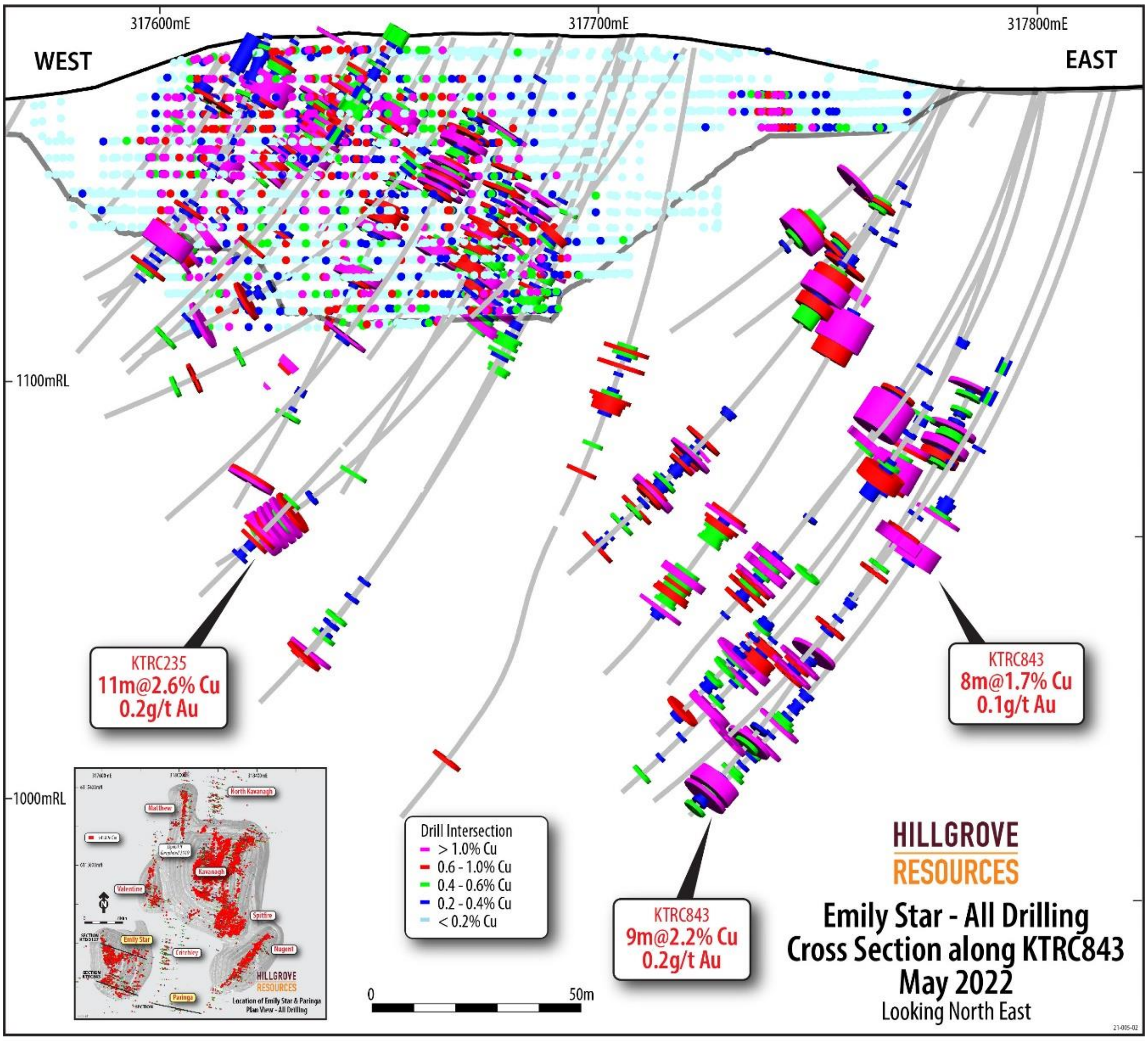


Figure 16: Cross section through the Emily Star Cu-Au mineralisation showing the multiple Cu-Au zones and high-grade opportunities

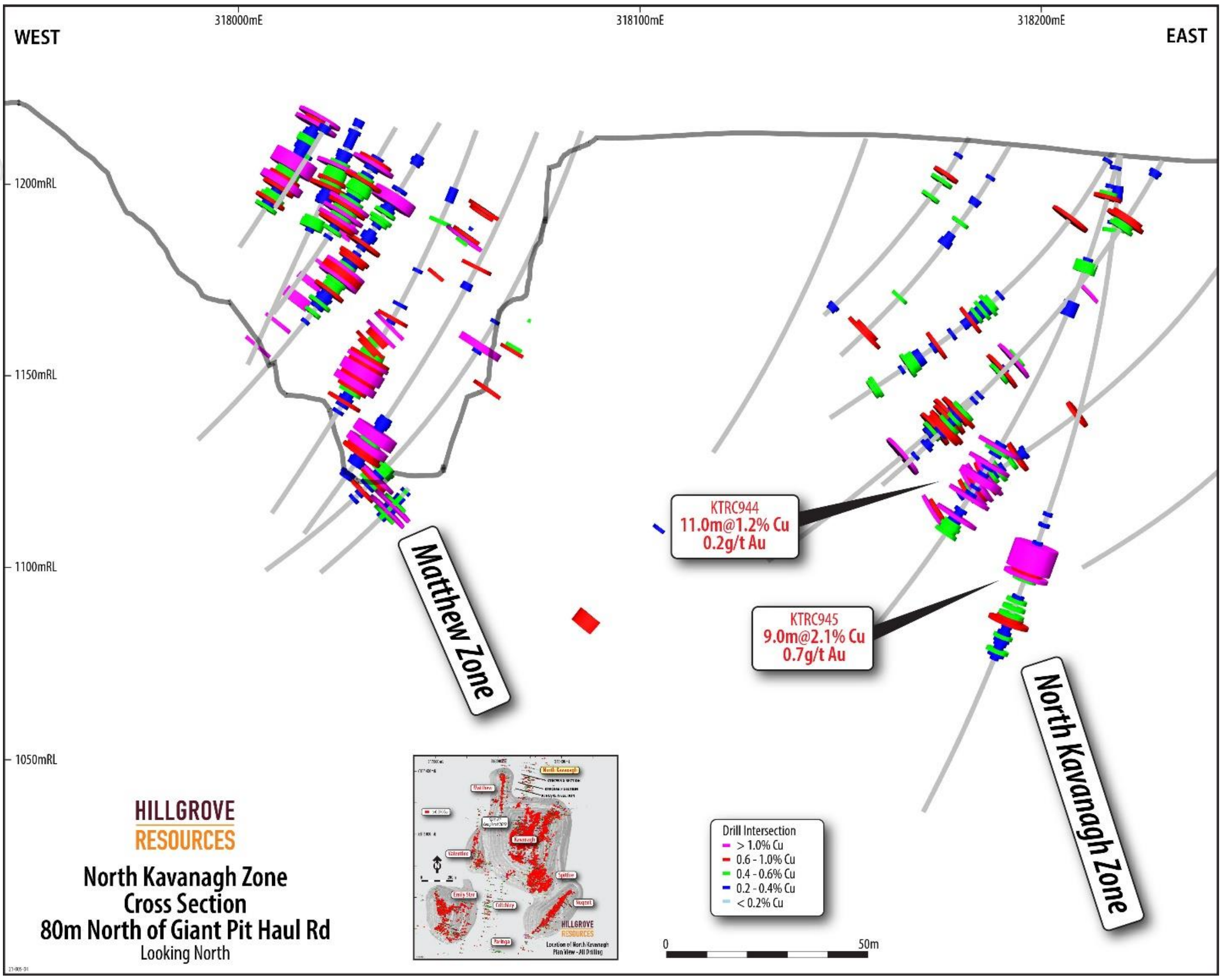


Figure 17: Cross section through the North Kavanagh Cu-Au mineralisation

An initial scout drilling program in each area will concentrate on delineating broad zones that may have economic merit, followed by infill drilling to develop an Inferred Resource.

Should any area successfully delineate economic resources, the addition of these mineralised zones to the mining inventory will increase the number of underground working areas and thus maximise annual copper production and provide additional project value through more efficient utilisation of the existing processing capacity at Kanmantoo.

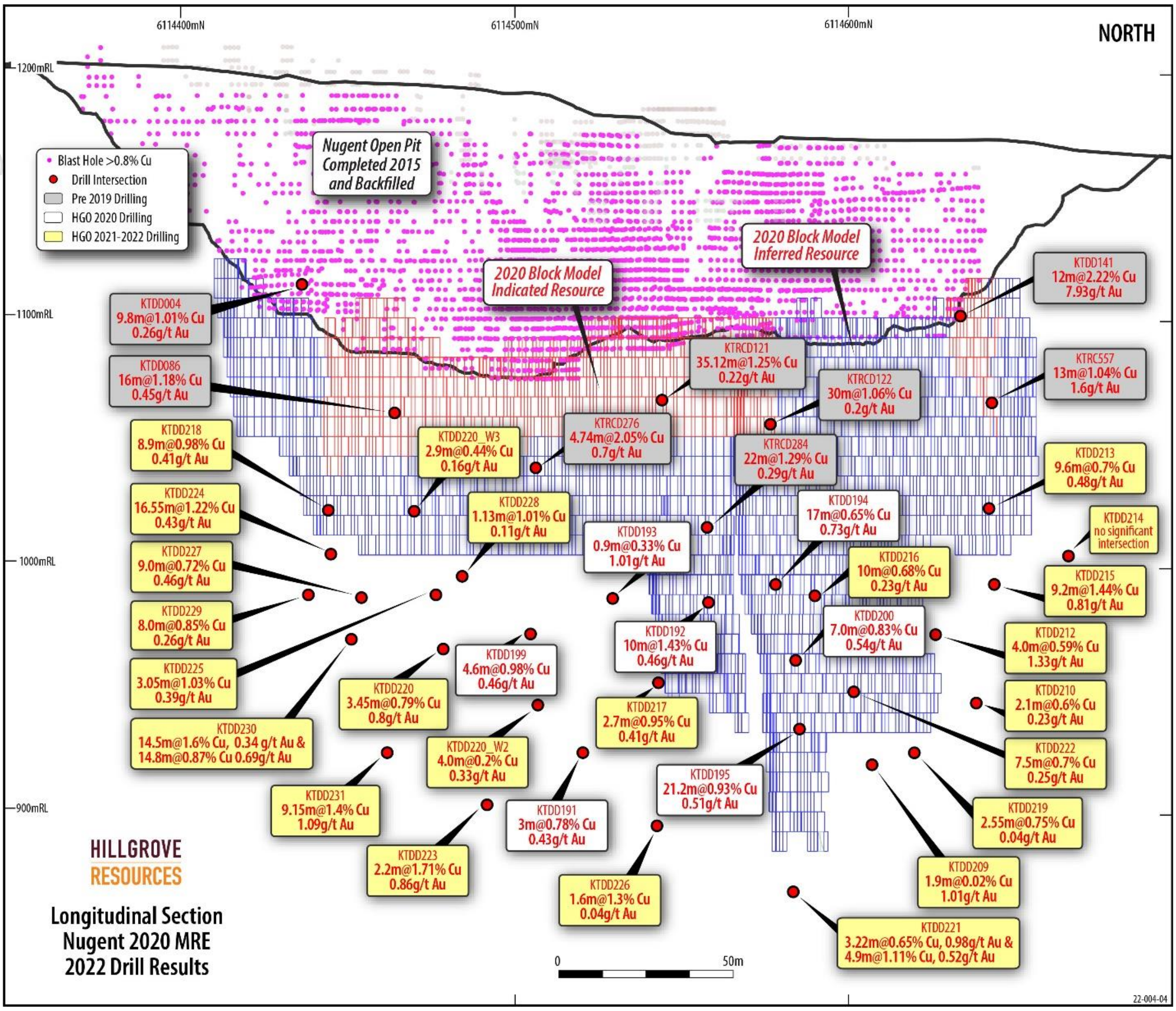
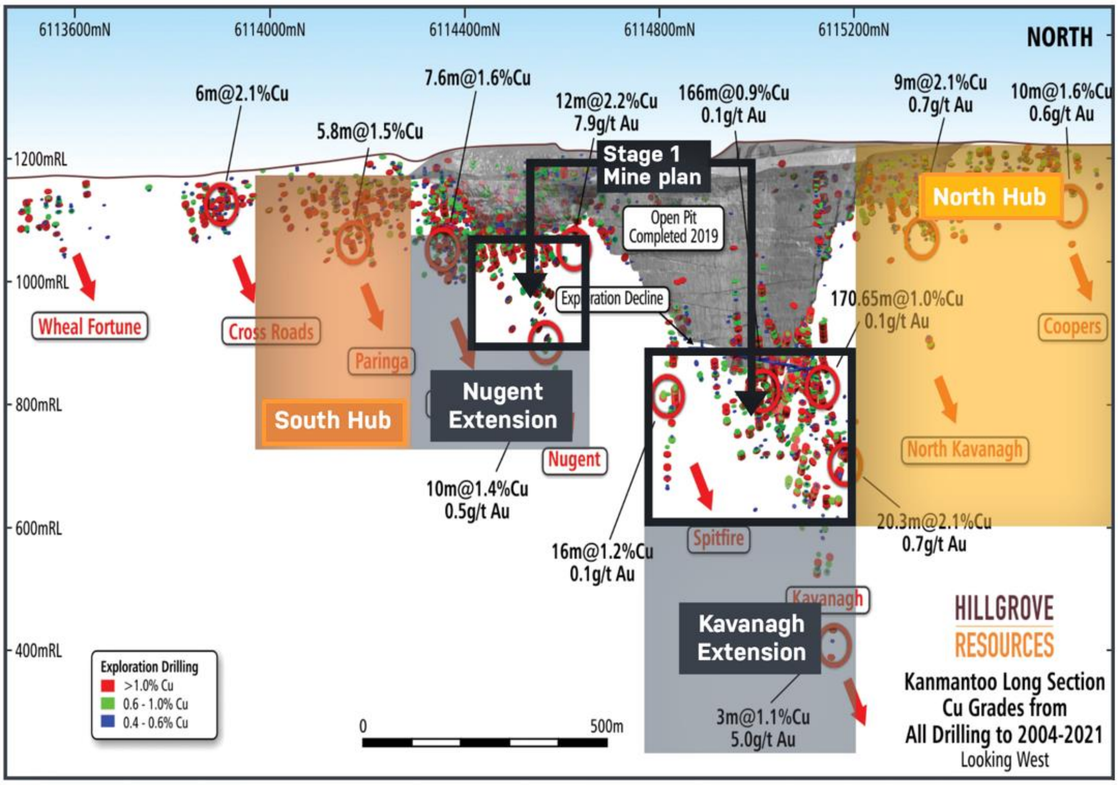


Figure 18: Longitudinal section along the Nugent Lode with updated 2021-2022 drill results

Going forward, surface drilling will be undertaken to identify the along-strike and down dip extensions of the additional lodes and along strike for the main lodes as shown in Figure 19 to potentially add Inferred Resources to the project to be converted to Reserves with underground drilling.



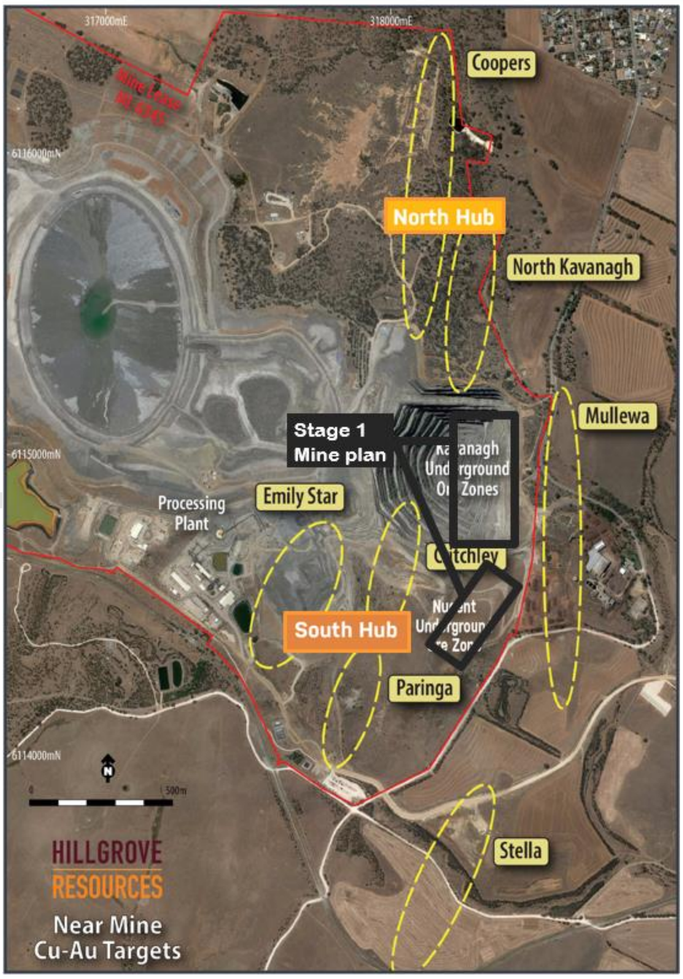


Figure 19: Long section (top) and plan (bottom) views of drill targets

4 Mine Geotechnical Evaluation

4.1 Geotechnical Setting

Most of the proposed development and production is hosted in the garnet andalusite biotite schist (GABS) unit and the GDM1a geotechnical domain. This is a very competent rock unit with three well known discontinuity sets. The rock unit has been metamorphosed and in the open pit is excavated with steep 75° -90° batters, up to 36m in height. On the western side of the Giant open pit there is a fourth well established foliation discontinuity set, but on the eastern side of the pit foliation discontinuities are rarely seen.

Variation in rock type and geotechnical domain occurs in the northern end of Nugent where the biotite schist (BS) unit is observed. This is within the GDM2 geotechnical domain due to its differing rock properties to the GABS.

4.2 Geotechnical Modelling

Due to the significant existing mine exposure in the various pits on site and the significant history of geotechnical evaluation of the site, Mining One consultants were engaged to undertake underground geotechnical analysis on a preliminary mine design within the Kavanagh work area based on geological shapes. A FLAC^{3D} model was created to assess:

- The geotechnical stability of mine development and stoping, as well as the expected overbreak associated with stoping.
- The stability of the areas around the interface between the underground mine and the existing pits.

The review identified that a suitable maximum stable open span of stoping for the assessment was in the order of 25m x 75m. Significant recommendations from the review also included the following:

- Larger stope spans would have significant potential for block failure and dilution. Thick pillar spans would be required to maintain a suitable slenderness ratio. However, this would result in significant material loss in these pillars.
- If open stoping with no backfill was selected as the preferred mining method, the rib and sill pillars would need to remain stable for the life of the mine.
- Strategic pillar placement would be based on orebody geometry and grade distribution.
- Backfill and secondary ground support would be beneficial in maintaining opening stability and increasing recovery from the orebody.
- A significant crown pillar would be required to be left beneath the Giant open pit if stopes were to remain open long term, to ensure the stability of the pit.

The Stage 1 mine design has addressed these recommendations in Kavanagh. A similar review will be carried out for the Nugent work area to confirm the design parameters.

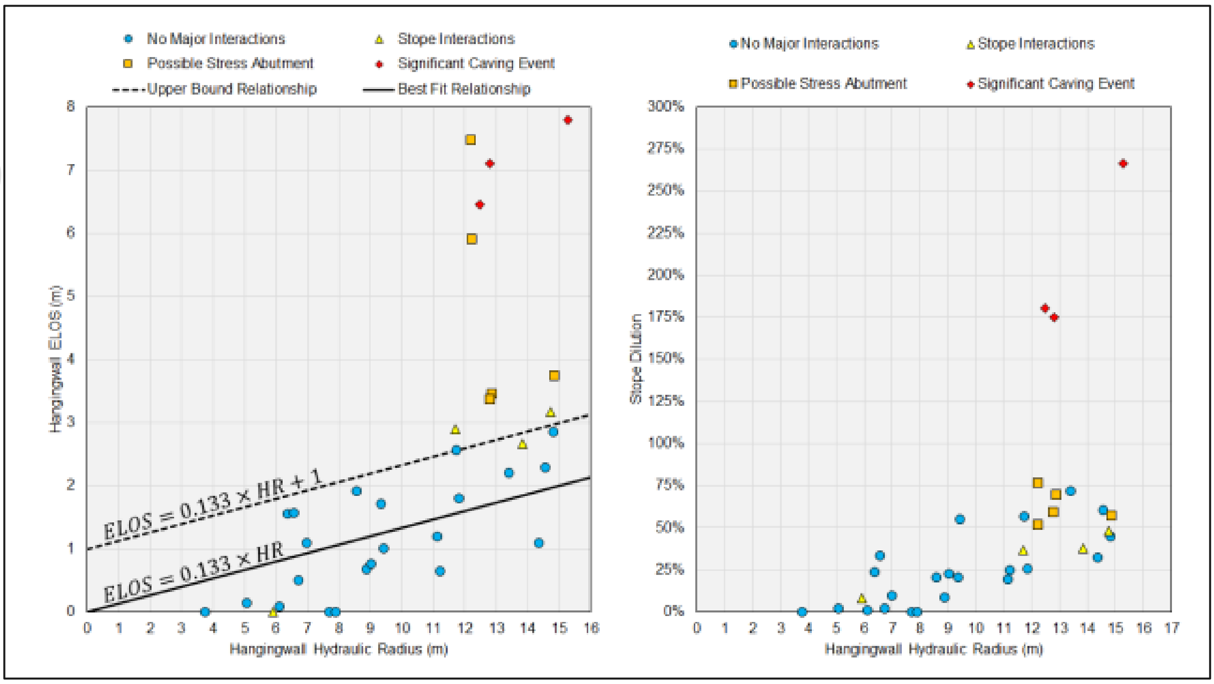


Figure 20: Overbreak estimation on initial stope modelling

4.3 Ground Control Management Plan

An initial Ground Control Management Plan (GCMP) has been prepared for the mine to enable the mining of the exploration decline within the Giant open pit, with this decline likely to become the primary mine decline for several years when the mine commences production. The GCMP details the following:

- Responsibilities of parties in relation to ground control in the mine.
- Data collection requirements.
- Required design parameters.
- Criteria to ensure risk management in ground control within the mine.
- Implementation of the design and standards, required quality assurance and training requirements to ensure the controls are effective.

The UEA 2023 has used the GCMP to quantify personnel, equipment costs and systems requirements including periodic external review.

4.4 Access Via the Giant Open Pit

Access to the portal will be via the 2.8km long open pit ramp as shown in Figure 21. Historically, access to the pit was closed during high rain events due to the slippery nature of the biotite schist. An all-weather pavement will be established for the underground to maintain continued access.

Access during rain periods heightens the rockfall risks of the open pit. Controls either completed or planned and budgeted to manage these risks include:

- The narrowing of dual lane ramps to single lanes (on the outside of the ramp) with passing bays (completed).
- The establishment of large windrows down the centre of the dual lane ramp to provide extra rockfall catch capacity (completed).
- The refurbishment of existing drape mesh installations above critical areas of the lower east wall single lane ramp system (completed and ongoing).
- Additional drape mesh installations above critical infrastructure to be installed on mining approval.
- Adopting a periodic scaling routine by a local rope specialist contractor that has extensive experience at Kanmantoo (completed and ongoing).
- Continuous laser scanning monitoring regime of walls above working and trafficable areas, with periodic scanning of all pit walls for change over time (active and ongoing).

Figure 21: Access and rockfall protection

4.5 Portal Areas

The mine design has four planned portals, including the exploration decline portal on the 900mRL bench and the ventilation adit portal on the 940mRL Bench (PB4), both of which have commenced mining with the Komatsu MC51 and conventional drill and blast. An additional portal on the 940mRL Bench is planned to be mined in the short term to facilitate definition drilling of the upper Kavanagh resource. Longer term the top Nugent access portal will be mined on the 1040mRL Bench (PB1). Production stoping will eventually compromise the 900mRL exploration decline, with primary access via Nugent only. There is potential for additional short-term adits to be mined into the pit as economic geology is better defined and understood. Figure 22 and Figure 23 show isometric views of the current and planned portal locations.

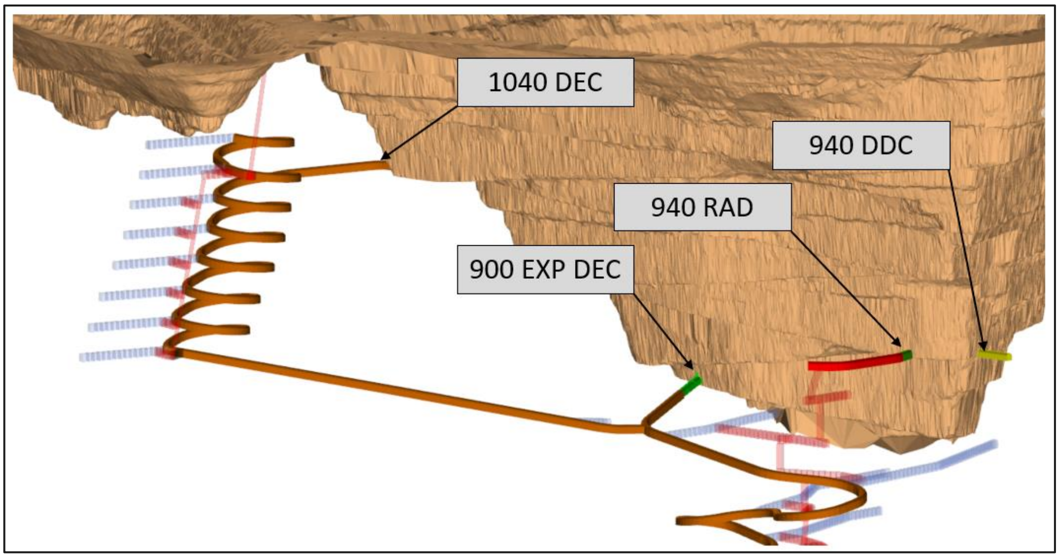


Figure 22: Life of mine main portal locations

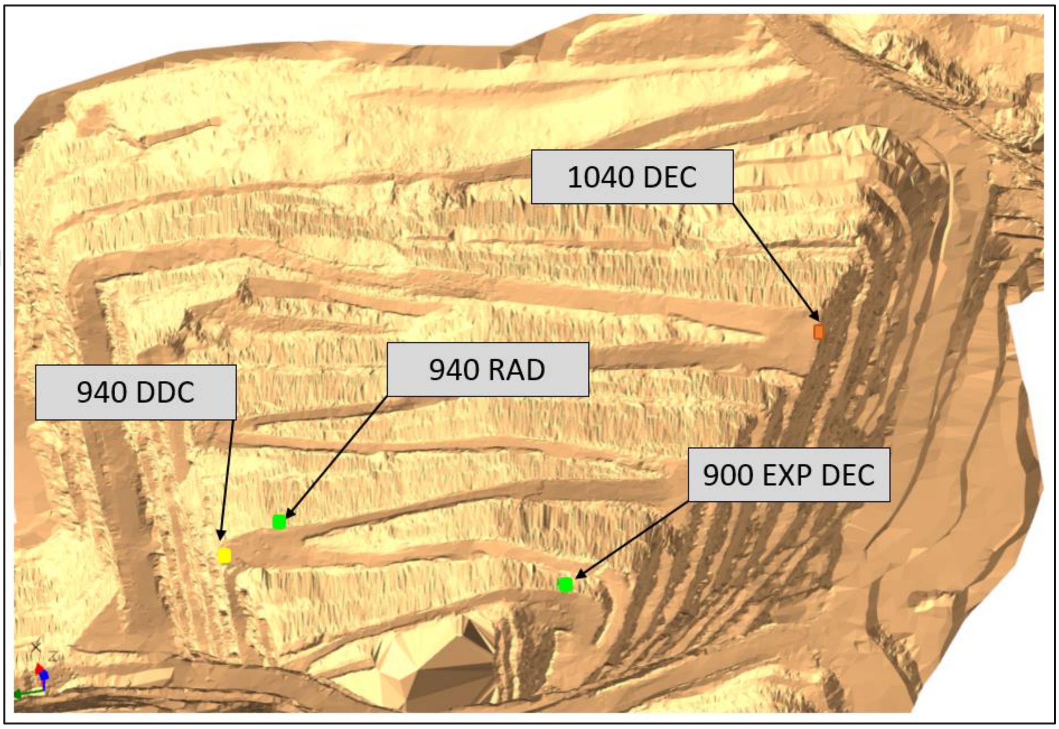


Figure 23: Life of mine portal locations, looking in pit

Each of the portals into the pit will be supported to a standard as defined for the exploration decline which includes surface support of the wall above the portal, 12m Self Drilling Anchor (SDA) perimeter support to protect the portal pillars and where required additional rockfall protection above the portal. An example of the support for the 900mRL level portal can be seen in Figure 25. Each portal will be mapped (Figure 24) and the regime of support endorsed by the site geotechnical engineers with review by a geotechnical consultant.

Figure 24: Mapping of the dominant geotechnical features in the exploration decline portal face (left) and the established 900 exploration decline portal (right)

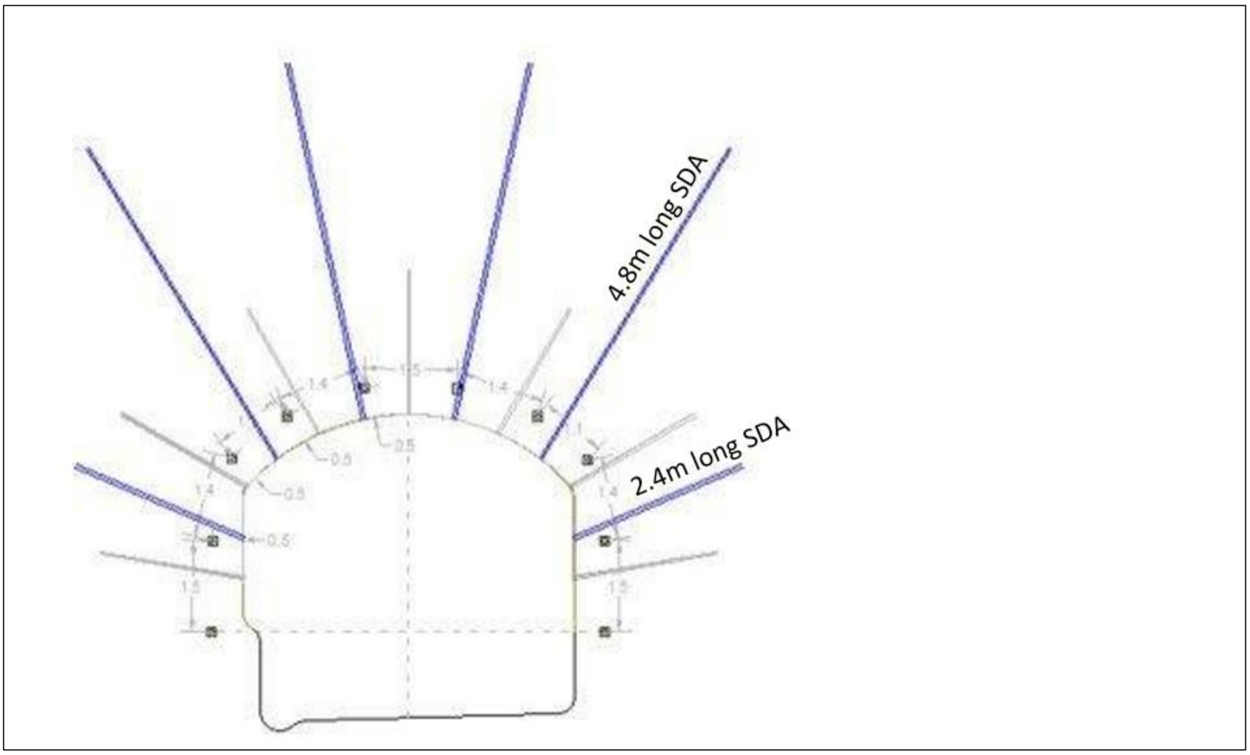


Figure 25: Lateral and radial SDAs for portal reinforcement

4.6 Development Ground Support

Based on the geotechnical analysis of the mine from core and pit exposures, there does not appear to be the need for fibrecrete surface support through the mine based on weathering, spalling or seismicity. As such, conventional primary support will likely be based on using friction stabilisers and steel mesh as is industry standard for shallow Australian mines. Geotechnical consultants, Mining One, undertook several reviews of the rock mass quality and core to determine recommended development and stope ground support. These reviews of the Kavanagh and Nugent lodes concluded that the above-mentioned support was suitable and fitted well when benchmarked with existing operations.

Ground support standards have been applied to the various development profiles and functions which consider their use, longevity and exposure to mining induced stress. These standards are based on current industry best practices, such as surface support down to 2.0m from the floor on the drive walls and face support as shown in Figure 26.

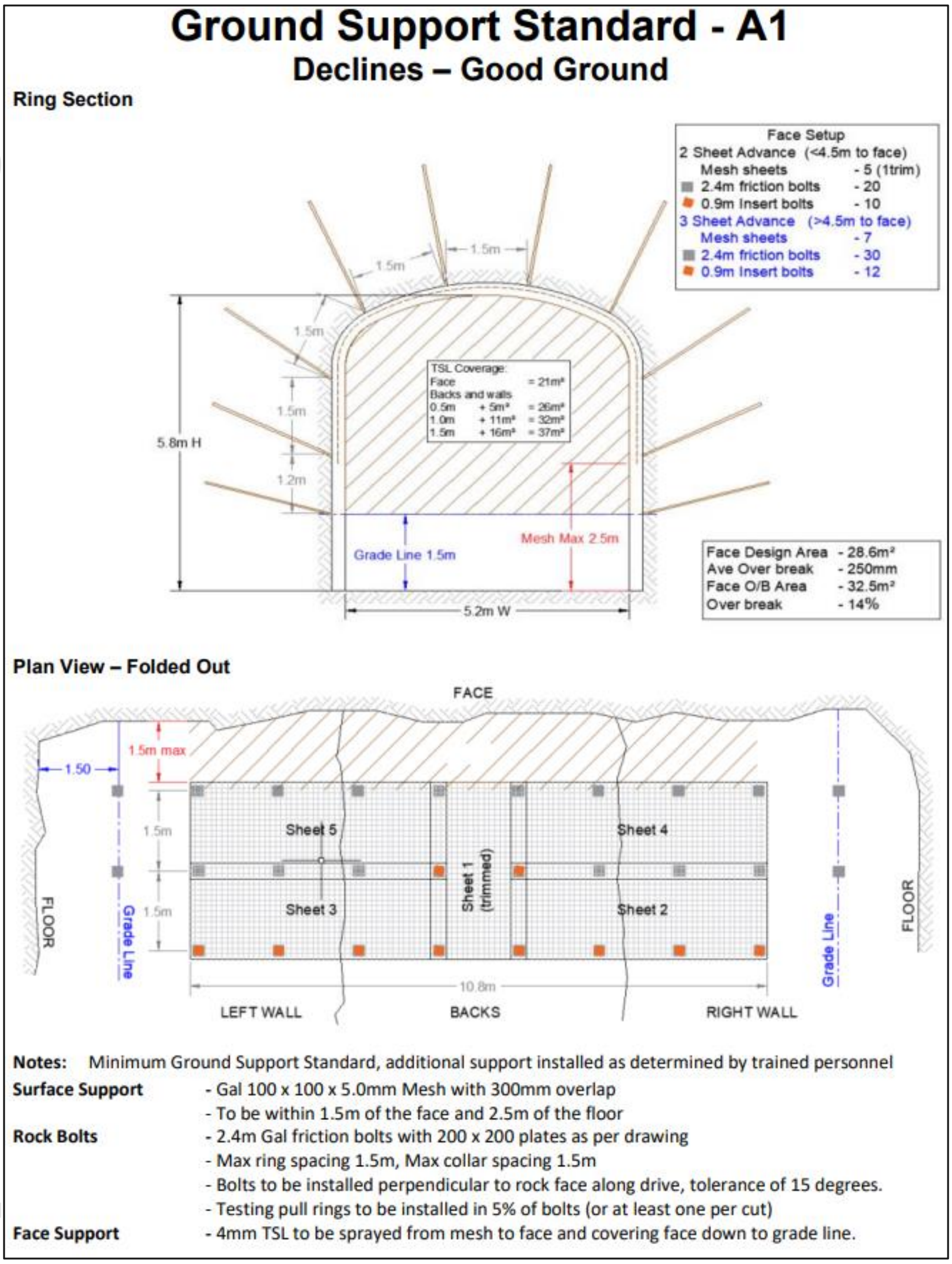


Figure 26: Example of typical ground support standard

A kinematic review of the ground support for the exploration decline based on exploration holes in the immediate area of the exploration decline verified suitability of the ground support standards adopted for evaluation in the UEA 2023.

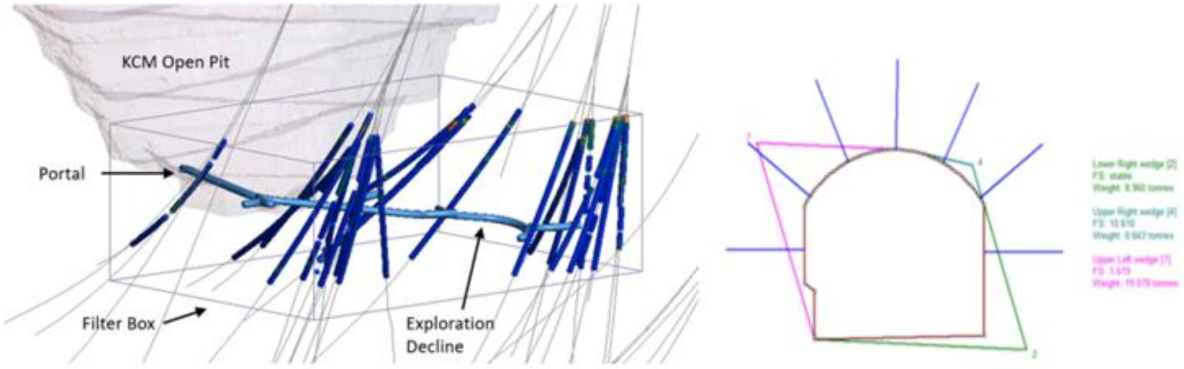


Figure 27: Exploration decline filtered data set and assessment wedge formation

Deep intersection support using resin grouted SDA's rather than cable bolts has been assumed based on performance, installation safety, cost effectiveness and increasing industry acceptance. The calculation process for the deep encapsulated SDAs is the same as used in cable bolt centric designs, with depth and density being determined by the rock mass characteristics and inscribed circle of the intersection opening, inclusive of likely overbreak on the shoulders of the intersection. The majority of intersections in the mine design have an inscribed radius of 9m (Table 5) and this has been used in calculating the quantity and cost for evaluations. A factor of safety of 1.2 has been used for all intersection designs.

Table 5: SDA installation quantity and length

Span (m)	Mass (t/m)	No. of R32	No. of R38	Min Length
9	296	13	7	4.5
10	406	18	10	4.8
11	540	24	13	5.2
12	701	30	17	5.5
13	892	38	21	5.8
14	1,114	48	27	6.2

For production stoping, an allowance has been made for SDA deep support. For blind up-hole stopes there is an allowance for brow support between firings, allowing for a single ring of 3x7.2m SDA's, on 12m lateral spacing. Additionally, SDA support is allowed for where stope width exceeds 5m. Quantity assumes 4m ring spacing with a fan of 3x7.2m SDA's. Approximately 12.5km of stope SDAs is allowed for in modelling.

4.7 Vertical Development Stability

Escape ways will be raise-bored to 1.1m diameter and lined with prefabricated escape route modules. Return air raises will be slotted using raise-bore techniques then long-hole drilled and blasted to 4.5m x 4.5m profiles and left unsupported unless geotechnical review identifies significant structures. In this case, they will be fibrecreted and bolted using a lowered platform. The Nugent ventilation raise will be raise-bored to 3m diameter and remote fibrecreted using shaft lining contractors. A geotechnical hole will be drilled to assist further geotechnical evaluation. However, it is expected to be stable given the location in the GABS rock-type unit.

4.8 Mine Design Stope Stability

Stable stope span has been limited to a hydraulic radius (HR) of < 11 as per Table 6 below for 25m level intervals used for the mine design. Typically, a bottom-up approach has been adopted using a combination of cemented and uncemented rockfill and open stopes as indicated in Figure 28 and discussed in detail in Section 5.1.3. This will enable adjacent mining along strike without the need to leave pillars, with evaluations showing this to be the best economic outcome at current metal prices. Stopes require fill to facilitate subsequent stoping up dip.

Table 6: Mathew's Method - hydraulic radius for stope hanging walls

		Length (m)								
		20	30	40	50	60	70	80	90	100
Height (m)	25	5.6	6.8	7.7	8.3	8.8	9.2	9.5	9.8	10.0
	50	7.1	9.4	11.1	12.5	13.6	14.6	15.4	16.1	16.7
	75	7.9	10.7	13.0	15.0	16.7	18.1	19.4	20.5	21.4
	100	8.3	11.5	14.3	16.7	18.8	20.6	22.2	23.7	25.0
	125	8.6	12.1	15.2	17.9	20.3	22.4	24.4	26.2	27.8
	150	8.8	12.5	15.8	18.8	21.4	23.9	26.1	28.1	30.0
	175	9.0	12.8	16.3	19.4	22.3	25.0	27.5	29.7	31.8

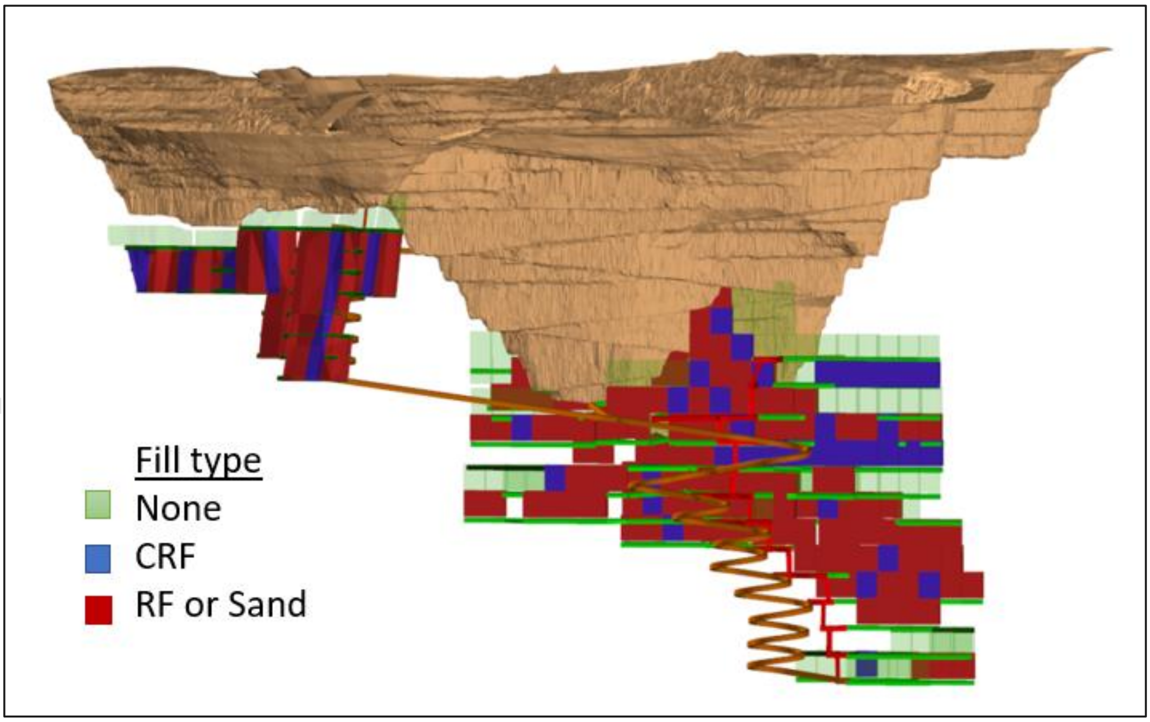


Figure 28: Stope backfill showing fill type

The application of bottom-up bench stoping allows control of hanging wall exposures and enables mining of crown pillars between the underground stopes and the pit leading to significantly higher recovery of the resource. Connecting the Nugent decline to Kavanagh provides an alternate access to Kavanagh which enables the Kavanagh crown pillar to be mined, increasing recovery of the Kavanagh lodes and reducing rockfall risk along the lower single lane pit access ramp.

5 Mining

The Kanmantoo underground life of mine plan involves mining the Kavanagh zones to the 650mRL and the Nugent zone to the 900mRL. The approximate extent of these areas relative to additional drill targets is shown in Figure 29.

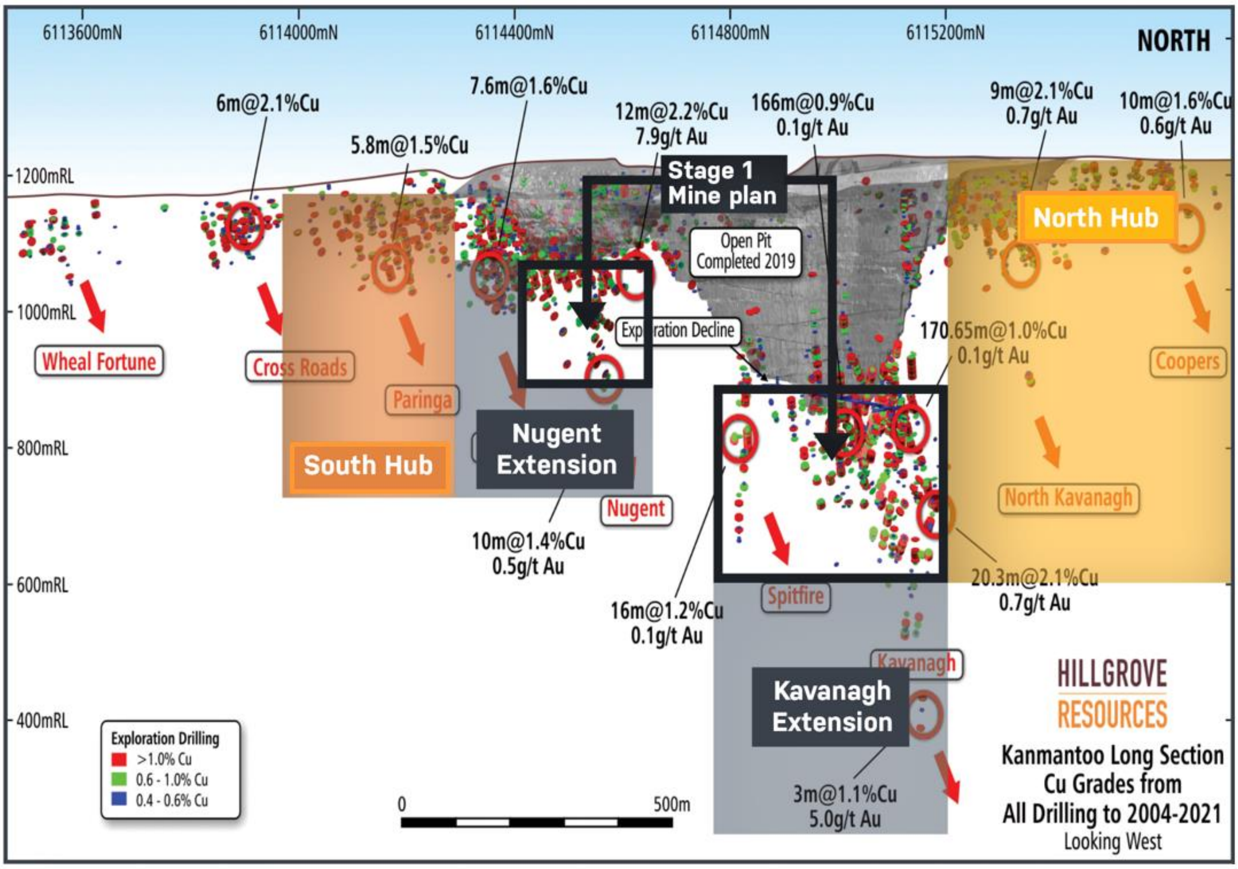


Figure 29: Approximate areas of the Kanmantoo underground life of mine plan (black boxes)

5.1 Mining Approach

Development of an initial exploration decline commencing from 900mRL near the bottom of the Giant open pit was undertaken in 2021/22 as part of early works which will allow further definition drilling to be undertaken prior to the commencement of stope mining. This development initially trialled new technology in the form of a Komatsu MC51 Continuous Miner which advanced a total of approximately 40m on 900 and 940 Levels prior to demobilisation. Conventional drill and blast process have also been trialled at the 900 level. The remainder of the decline and all subsequent horizontal advance will be completed using conventional jumbo drill and blast process with key designs parameters as follows:

- Declines will be mined 5.5m wide and 5.8m high at a maximum grade of 1:7.

- Capital development will be mined flat also with dimensions 5.5m x 5.8m.
- Ore drives will be slightly smaller at 5m x 5m which will be sufficient to accommodate standard medium sized mining equipment.
- Mining will be by conventional drill and blast methods using drilling jumbos, charge units, 20 tonne loaders and 60 tonne trucks.
- In Kavanagh, a 25m sublevel interval has been selected based on geological variability, orebody width, geotechnical stability, and previous experience with drill hole deviation in the pit.
- In Nugent, the sublevel interval has been reduced to 20m which is largely due to anticipated ground conditions as experienced in the pit.
- Decline and capital development has been designed proximal to the lodes. This enables drill cuddy positions for stope definition drilling in advance of level access and drives.
- A minimum standoff of 50m from the decline to the lodes allows for capital pillars around open voids and provides room to mine level stockpiles, loading bays and ventilation access drives.

5.1.1 Development

In the upper portion, the Kavanagh decline layout is relatively open with the objective of allowing placement of drilling platforms that provide good lateral coverage for early definition drilling. The decline subsequently changes to spiral type to allow placement of level accesses that are vertically stacked and central to the production centroid. This was done to avoid sequencing impacts of misaligned accesses, whilst minimising overall development metres. The compromise required with this layout is the inclusion of a 120m long drill cuddy mid-way down the Kavanagh deposit.

Nugent access is established top and bottom, with the top access via a new portal within the pit and the lower access driving south from Kavanagh. Drilling positions will be established early to allow definition of the production footprint. In Nugent, the sub level interval is 20m. To maintain 25m corner radius and vertically stacked accesses, the gradient has been flattened to 8.4:1. Longer term, the Nugent top access portal and decline will be the primary access to Kavanagh due to extraction of stopes near the 900 portal and under the pit ramp.

Current design general development layouts for the Stage 1 Underground Project are shown in Figure 30 and Figure 31.

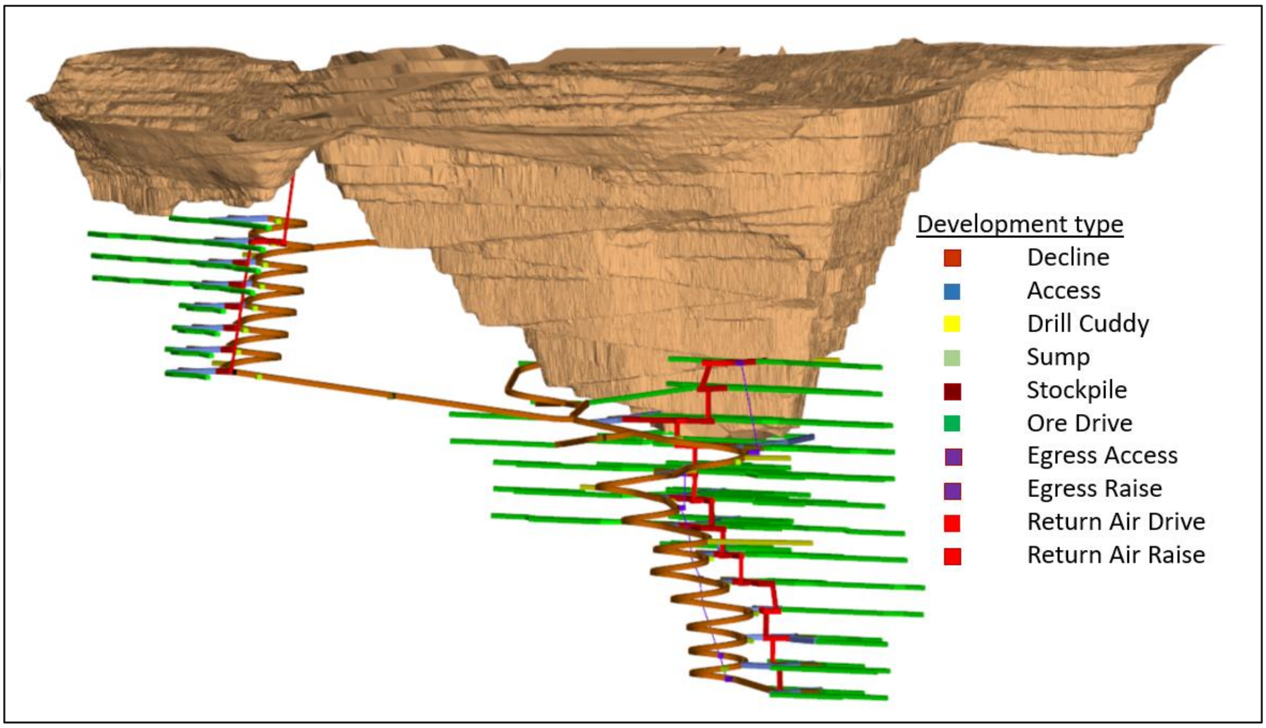


Figure 30: Mine development isometric view

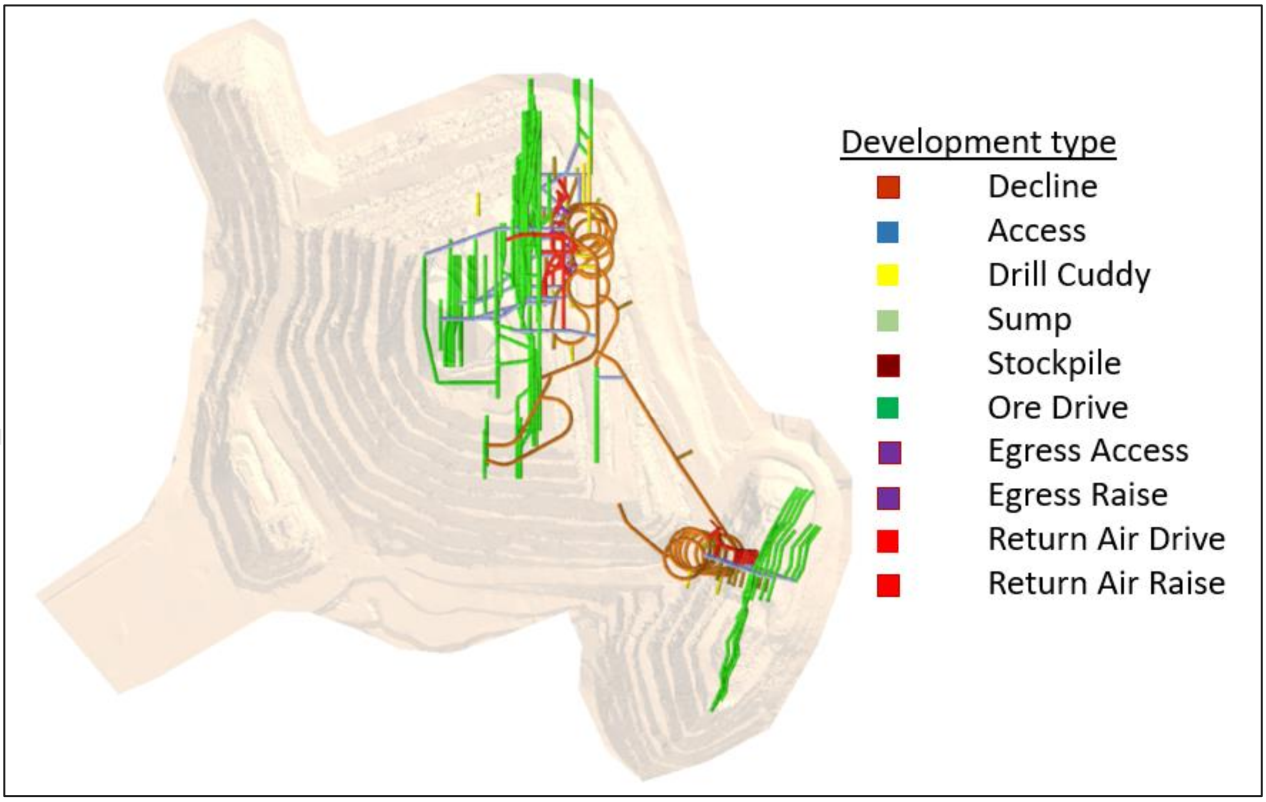


Figure 31: Development plan view under the pit

The level layouts include the following minimum requirements:

- Return air drive, exhausting air used on the level with the intersection stripped for truck loading.
- Stockpile configured for truck loading and CRF mixing.
- Sump (located off the level down the decline).
- Wall strip to accommodate secondary level fan (location in access or decline TBD based on vent study).
- Secondary egress via ladderway with access on the decline near each level.

Figure 32 presents an isometric view of the 810 Level.

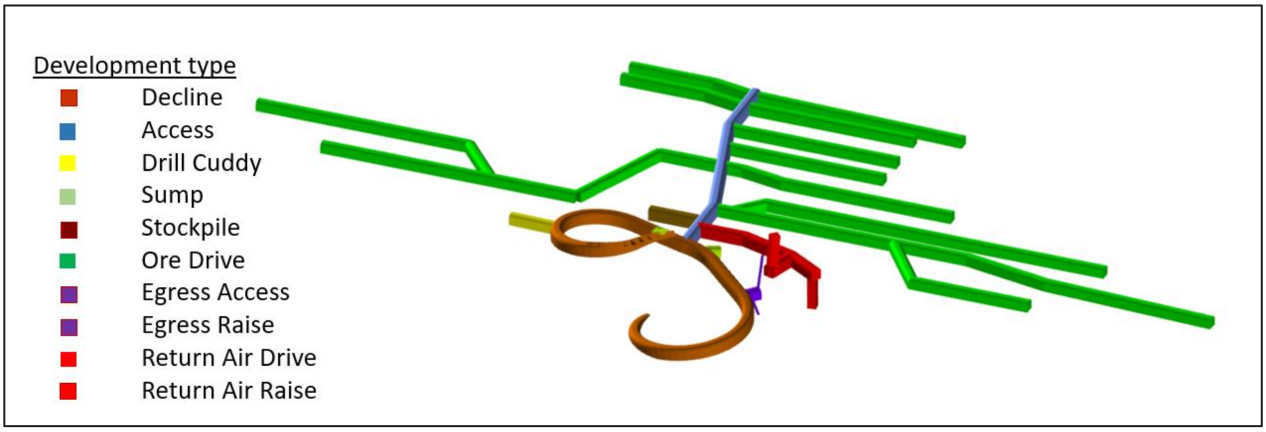


Figure 32: Typical Kavanagh production level

Production ore drives are designed as longitudinal relative to orebody strike. The geological model utilised to inform designs is highly variable, which results in stopes with varying width as well as small sub-lodes running parallel to the main lodes. Where stopes are >14m in transverse width, parallel twin ore drives are used to enable more effective drill layouts from the top level, and two draw points on the bottom level to improve stope recovery and productivity.

In most instances, the stoping sequence is retreating toward the level access drive, which means that ore drives branch or fork mid-way along where there is a sub-lode. However, where there is potential to mine a sub-lode ahead of the overall retreating sequence, ore drives are run in parallel which adds metres to the plan but accelerates tonnes.

To note, the final placement and layout of ore drives requires completion of final definition drilling and modelling to ensure placement best suits operational stoping constraints. This drilling is planned and budgeted in the UEA 2023.

5.1.2 Stoping

Open stoping is the mining method selected for the life of mine, with variations applied depending on constraints driven by geometry and sequencing. Primarily, bench stoping will be utilised. In this configuration, stopes are extracted over a single level to a strike length of up to 80m (although typically 60m or less). Stopes are production drilled in down-hole configuration from the top level. Empty stopes are backfilled to provide confinement on the walls, plus providing a platform to work upon for successive stopes vertically above. Most designed stopes have an adjacent stope along strike. As such, a wedge of consolidated fill is placed on the end that will be exposed. The remainder of the stope is filled with loose material.

There are instances where stoping fronts are commenced mid-way up the ore lodes. This has been done to enable early ore production; however, it introduces compromise for the stopes directly below. To enable full extraction of these stopes, the floor of the primary stope must be filled with consolidated backfill that will remain largely stable when undercut. Additionally, the secondary stope must be mined as a blind up hole and will not be backfilled.

The stope configuration of blind-up hole with no fill is used at the top of ore lodes. This reduces development metres on the top level and fill cost.

Based on the tonnage in the core of the Kavanagh mineral lodes, a complete recovery approach has been adopted, rather than incorporating stable, long term pillars. Caving was ruled out based on the relatively small spans and competent nature of the rock mass as evident in the Giant open pit. Additionally, a subsidence mining method would undercut the Giant Pit ramp.

Based on the geotechnical modelling and evaluation, a hydraulic radius less than 11 was considered acceptable for medium term access and mining. This has guided the approach of bench stoping lengths of approximately 60m to 80m along strike and filling initially with a consolidated fill wedge followed by loose fill. The expectation is that this will reduce the risk of significant stope failure. The current design does not include stopes with transverse widths of >20m. In sections of the deposit with mineralisation of >20m, pillars have been designed.

The guiding stope design rules as follows:

- Minimum stope width of 4m transverse.
- Maximum stope width of 20m.
- If ore zone is >20m wide, a pillar must be left between stopes.
- Minimum pillar width 8m.
- Where pillars are necessary, no pendant pillars are acceptable.
- Pillars cannot start or stop mid stope along strike. If a pillar is required, the stope stops and is filled, with a new stope commencing.
- Stope width gain or loss is limited to a maximum of 4m per 10m of strike length.

In Nugent, similar process has been applied, with the following notable exceptions:

- 20m sublevel spacing.
- Maximum stope strike length 40m.
- Bottom-up only with blind up-hole on the top level only.
- Narrower modelled lode geometry limits stopes to <8m.

Currently there is no deep hanging wall support in the mine design or cost model. This will be considered in future iterations of the mine design to optimise the size and geometry of stopes that can be mined in a single exposure.

In general, mining a stope that is 60m long is less productive than a stope that is 60m tall. However, a trade off study determined that the increased quantity and cost of fill required to mine vertical sequence was materially higher than the bogging efficiencies. Additionally, as mining fronts become fully established, there is opportunity to consecutively operate multiple stopes over separate levels. A vertical approach also greatly increases the exposure to open holes for a greater length of time. Open stopes will have stope poles fitted to the brows of each stope to prevent accidental loss of machinery or personnel over a vertical edge.

The final stope design will be based on additional data obtained from stope definition drilling. Figure 33 and Figure 34 show stoping type for the mine plan.

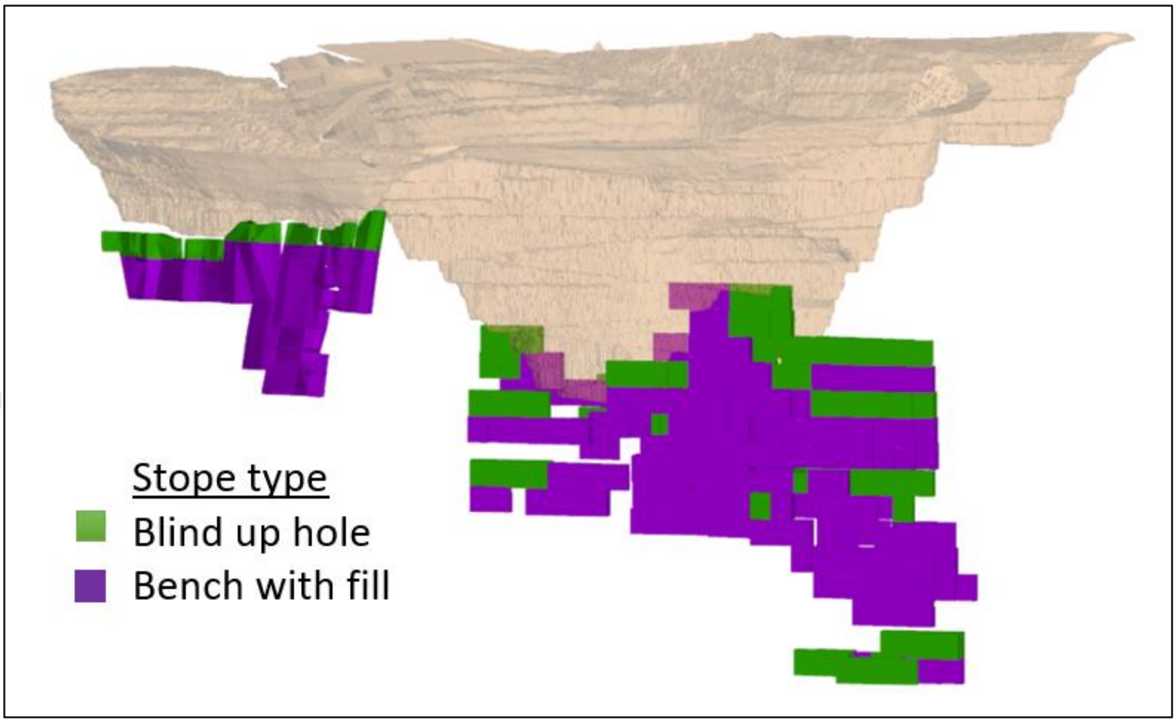


Figure 33: Stope type long section

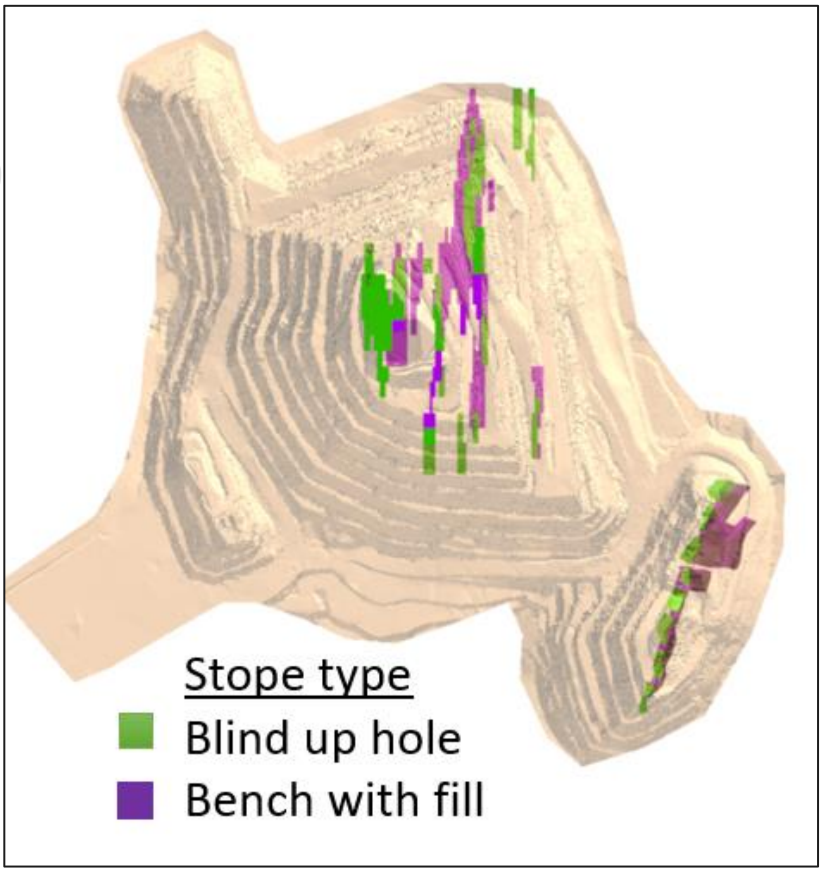


Figure 34: Stope type plan view through open pit

5.1.3 Backfill

Previous mine designs of the Kavanagh and Nugent mineralised zones with higher cut-off grades have been based on open long hole stoping with sill and rib pillars to limit the span of designed stopes and provide stable openings without backfill. At the current lower, economically viable cut-off grades used in this assessment, the span and widths of stoping panels would result in a significant amount of potentially economic mineralised material being left in pillars. An evaluation of the value of mineralisation in these pillars compared with the cost of a consolidated fill justified the use of such fill to recover this mineralised material.

Paste or cemented hydraulic fill systems were considered and discounted based on the relatively low quantity of this fill required to replace strategically placed pillars in the mine design and the high cost of capital to establish.

Where a consolidate fill is required, Cemented Rock Fill (CRF) has been selected due to its relatively low capital requirement, ease of placement and availability of waste rock on site. Hillgrove has recruited a team with significant experience in setting up and operating CRF in similar mines. Several cement batch plants are located within 10km of the mine site and bulk cement delivery to the site is easily facilitated. The current mine plan requires approximately 650k tonnes of CRF.

CRF will be selectively used to replace pillars in stoping panels at the limit of their lateral extent for each level. The fill will form a wedge in the stope and once the rill reaches the fill point with a 5m minimum thickness, the CRF will cease and the remainder of the stope will be filled with unconsolidated fill, either waste rock or sandfill. This minimises the use of CRF from a cost management perspective while providing a stable free face from which to recommence the next lateral stoping panel. CRF cement content of 4% by mass has been used for costing.

Unconsolidated fill will be used where possible to fill stope voids to provide a working horizon for mining the stoping panels up dip and to minimise voids for regional long-term stability in the mine. Mine capital development will produce in the order of 750k tonnes of waste material that will be largely utilised for forming CRF pillars over the life of mine.

The mine plan costing has allowed for approximately 1.4m tonnes of sandfill (dry tailings) to be used for stope fill pending approval to use this material. The coarse free draining nature of the tails at Kanmantoo suggests this would be an excellent source of fill for the underground mine. This has the additional benefit of reducing tailings storage requirements which would reduce tailings storage facility (TSF) construction costs. Investigations will consider the suitability of dry tailings and the best source, with options being to either reclaim dry tails from TSF or to utilise fresh tails and to dewater ahead of being sent underground. There also remains the potential to post-fill inject this material with cementitious grout or resin to replace CRF. It is planned to review this option and the potential to deliver this material to the core of the Kavanagh stoping panels via small passes from the surface.

The mine plan requires approximately 1.4 million tonnes of backfill material in addition to development waste generated. Therefore, if sand fill is not viable, additional fill material will be sourced. Significant volumes of waste rock are available from open pit operation which could easily be utilised. As stated previously, where stopes are at the top of a sequence and can be mined as a blind up hole, backfill will not be placed. Figure 36 illustrates stopes by fill type. Figure 35 presents a long section through three completed stopes, identifying CAF (zig-zag) and unconsolidated fill (dots). To note, in this example the stope bottom left has no subsequent exposure and does not require a full pillar of consolidated fill.

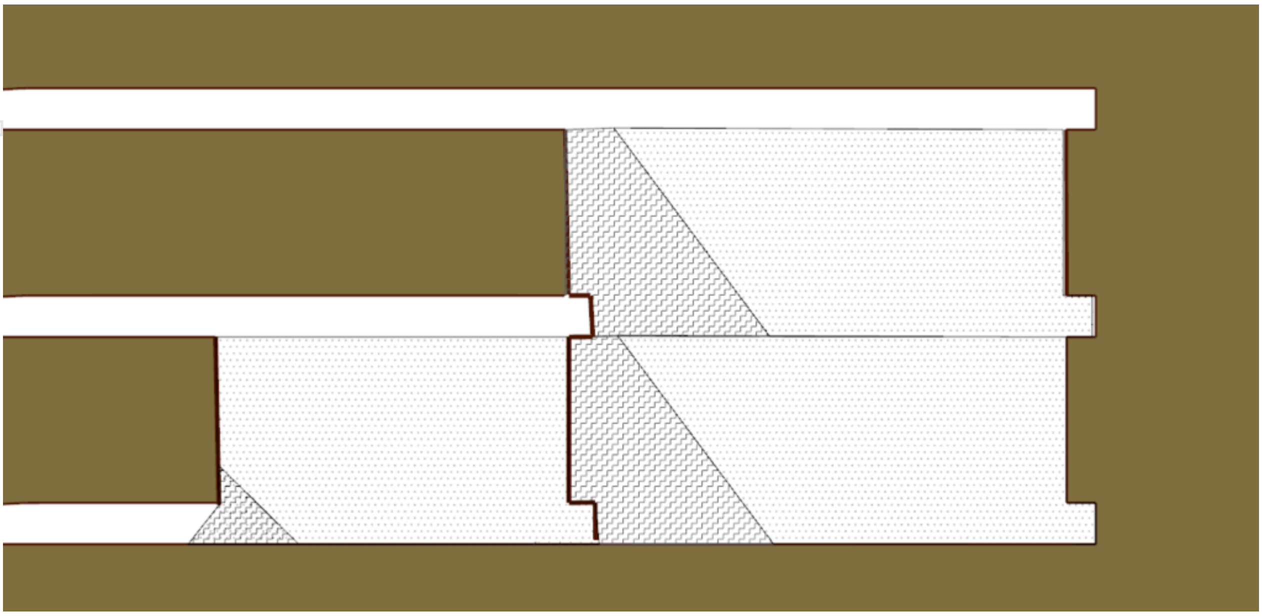


Figure 35: Long section of backfill makeup in completed stopes

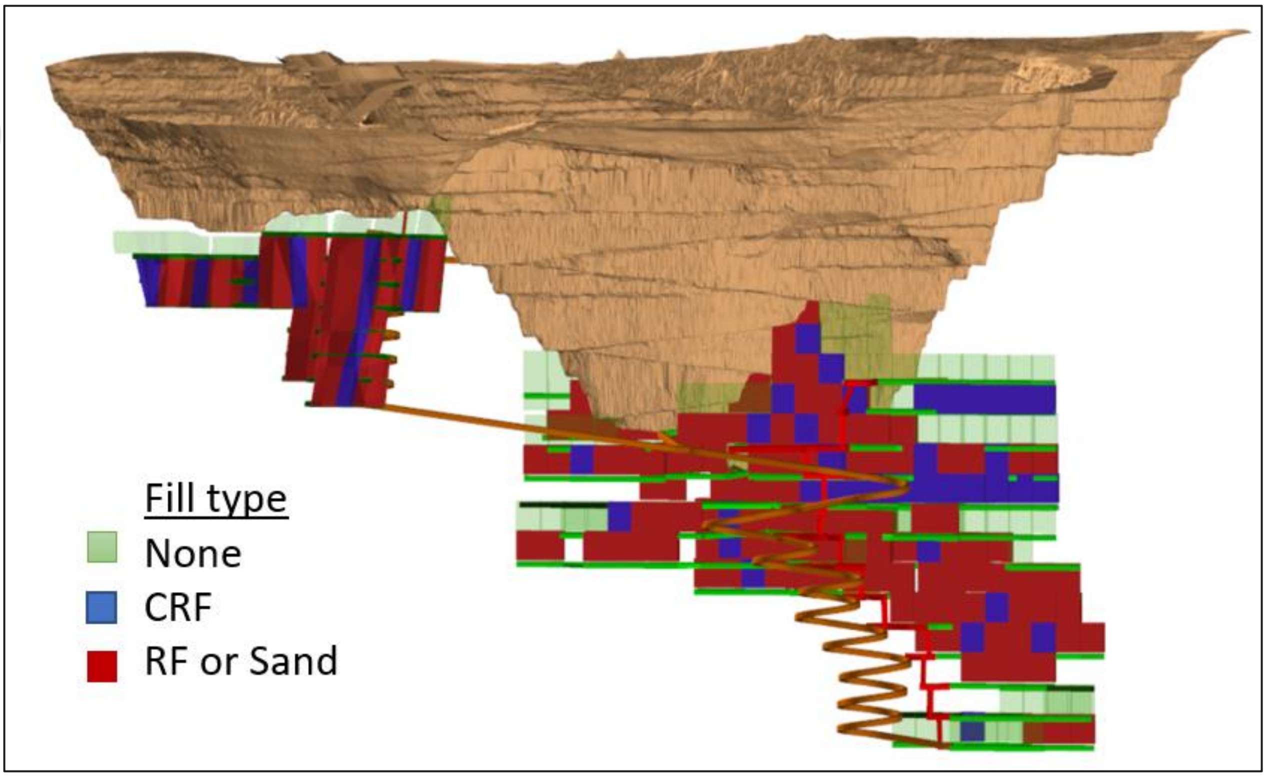


Figure 36: Mine fill long section

5.2 Design Standards

5.2.1 Lateral Development

The main access declines will be mined 5.5m wide by 5.8m high, at a grade of 1:7 and a minimum radius of 25m. This allows for use of typical 60 tonne underground trucks currently available on the market, access for Epiroc Easers or Sandvik Rhinos, and is matched to the ventilation intake requirements through the mine. Underground stockpile areas will be 20m deep, 6m wide and 6m high to be effective as stockpiles and allow safe loading at stockpile intersections. Capital development will typically be mined at 5.5m wide by 5.8m high to facilitate truck loading from the declines and ventilation duct clearance. Sumps will be mined 7m deep, located on the decline, directly below the level accesses at a gradient of -1:7.

Drives and crosscuts will be mined at 5m wide by 5m high at gradients of at least 1:50 to promote drainage on the levels. This drive size width permits 20 tonne loaders when bogging stopes and has low enough backs to facilitate optimal up-hole production drilling.

All primary ground support (mesh and bolts) will be galvanised and deep support will be fully resin encapsulated. Mesh will be installed to a height of no more than 2.5m from the floor to the walls. Costing is based on the geotechnical review as detailed in the Section 4 and recommended minimum standards. However, the initial exploration decline is trialling the suitability of thin spray on liner (TSL) for temporary face support which, if successful, may result in reduced ground support costs and improve jumbo productivity. Ground support regimes will be determined based on rock conditions with minimum ground support plans used for each mining profile and rock mass classification.

5.2.2 Vertical Development

The current mine design negates the requirement for a ventilation raise to the surface for the Kavanagh mining area. Instead, the upper ventilation adit will be mined from the 940mRL bench in the pit. This adit will provide initial access to the top of the 940mRL stope block for fill and stability purposes. It will also provide access to a primary fan located in the crosscut drive and connected to the mine below through a series of mined 4.5m x 4.5m ventilation return air raises (RAR's).

RAR's will be mined by long hole drill and blast methods around a 750mm raise-bored slot. Allowance has been made to remote fibrecrete these open raises. However, geotechnical evaluation using a mapping LIDAR will be used to validate this requirement. As each production level is developed, the level crosscut will head directly to the return access drive to allow immediate mining of the level RAR. This ensures forced ventilation is not stretched past its operational capability and keeps the mine primary ventilation circuit as close to the operating development as possible.

Emergency egress raises will be required to be mined in the Kavanagh mining area as the area is accessed by a single decline. The Nugent mining area is accessed from declines both from above and below which will negate the need for a second means of egress to be established. For the Kavanagh egresses they will be mined and fitted out prior to stoping on the level which they access. Currently these raises are planned to be a 1.1m diameter raise-bore with either an Epiroc Easer or Sandvik Rhino fitted with either a Safescape ladder system or equivalent steel ladder module.

A 3m ventilation raise has been designed for the Nugent stoping block. This raise will daylight the surface between the Giant and Nugent open pits in the GABS rock unit. A primary ventilation fan will be installed on this raise to draw air out from the Nugent workings. This raise will be fibre spray lined to ensure longevity. It is planned that this raise will be established via two legs, the first from surface down to ~1050L, the second from 1050L down to the bottom on 930mRL.

Figure 37 shows the planned layout of vertical development.

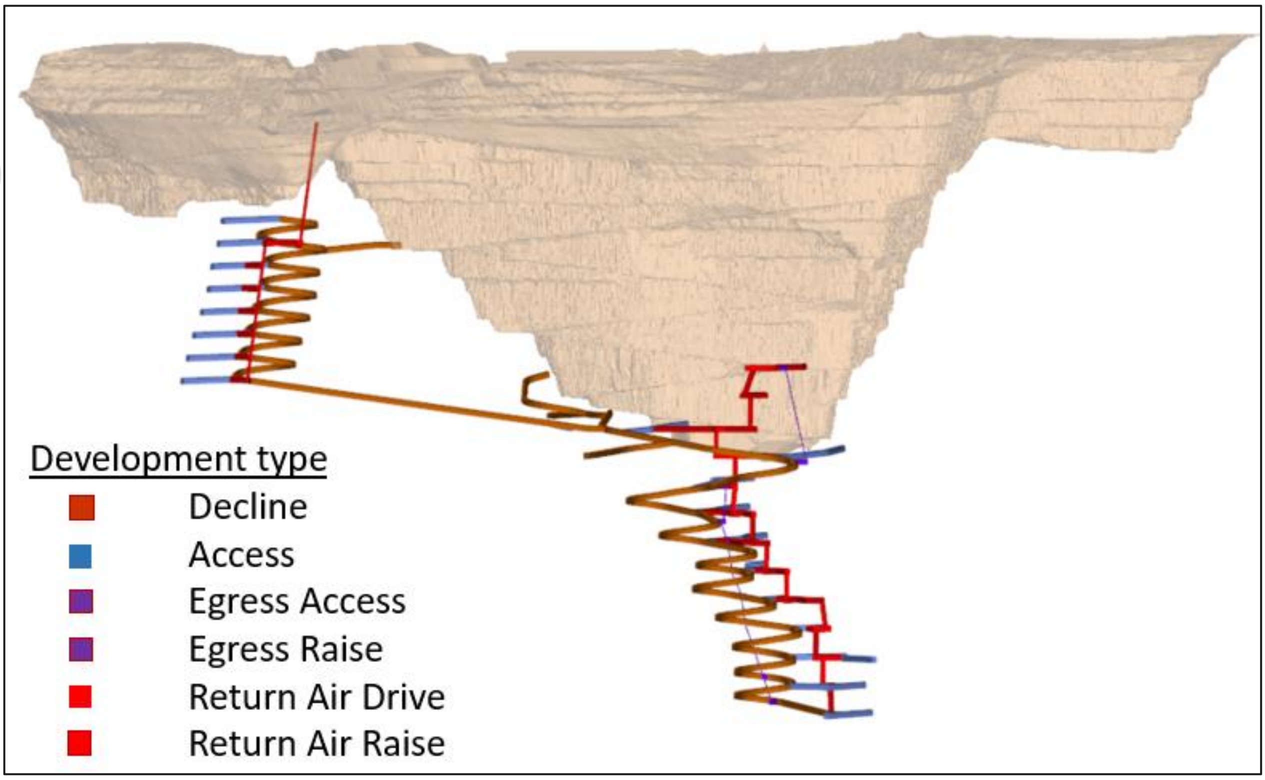


Figure 37: long section vertical development layout

5.2.3 Stoping

In operation each stope will be designed based on defined stope cut-off grades, minable shapes, interactions and backfill method, informed by detailed definition drilling and modelling. Designs will be done in association with the mine geologist and the mine geotechnical engineer. For this study, Kavanagh stopes were designed based on the MIK resource model SMU of 20m long, 4m wide and 25m high. A cut-off grade of Cu>=0.6% was applied. Nugent utilises a conventional kriged model with a copper cut-off of 0.8%. Further detail of the rules guiding stope delineation were outlined in section 5.1.2.

5.3 Operating Model

The operating model assumed for life of mine is predominantly owner operator with engagement of contractors for specialised activities including raiseboring, slotting, production drilling and some ancillary services (road maintenance, dust suppression, elements of backfill). Hillgrove will directly employ the majority of personnel, including technical services, frontline supervision and machine operators. Frontline equipment and maintenance services necessary to function as an owner operator will typically be leased under Supply Maintain and Repair Contract (SMARC) arrangements. This includes face drills, loaders and trucks. Other support equipment will be a combination of lease, lease to own and outright upfront purchase. Firm proposals have been received for all major equipment.

The mine ramp-up schedule underpinning the UEA 2023 has a staged ramp up which allows for a progressive approach to bringing in additional fleet and personnel. Additionally, the conventional approach taken with mine method and layout means that all equipment is readily available.

5.4 Mining Equipment

5.4.1 Development

Development will be mined with standard jumbos – typically Sandvik DD421 or Epiroc M2C's. An allowance for three jumbos has been made in the cost model which will both bore and install ground support, allowing flexibility in the fleet. An alternate option under consideration is to operate with two bolting jumbos and one boring jumbo, which may improve development quality and overall drill fleet performance. The development profile has been levelled using three standard jumbos averaging one 4.1m cut every shift which results in 750m per month at peak development. Charging will be undertaken using a dedicated charge unit such as a Normet MC605 or equivalent. A charging basket will also be available to use on other available site equipment to cover maintenance and breakdowns of the charge unit.

5.4.2 Production Drilling

Horseshoe production drill rigs will be used for production drilling of both up and down holes utilising 89 or 102mm bits and ST58 tube strings. The drill and hole size is driven by the stope width, sub level interval and the drill hole deviation experienced at Kanmantoo in blast hole and exploration drilling. Production drills will drill stope charge holes, capital vertical development long hole raise holes and any service holes required for the mine infrastructure, such as cable and drain holes.

Production drilling design is based on a stope drilling yield of 8.5 tonnes per drill metre, based on an average stope width of 12m. While it may be possible to undertake all drilling using two production drills, during peak production the site will use two front line production drills with a third drill used for short-term excess demand. The modelled production drill productivity is 6,500m per month.

5.4.3 Slotting

The UEA 2023 de-risks the mine production critical path activity of stope slotting by specifying that stope slots will be mined with a mobile raise boring unit such as an Epiroc Easer or Sandvik Rhino. While the unit cost to open a slot with this method is generally higher than long hole raising, it reduces operational risk and as such has a higher reliability of achieving planned productivity. Slots will be raise-drilled either up or down to a 750mm diameter, after which production drills will drill around this slot-raise to open the slot to the width of the stope. Pricing and availability have been obtained from two separate suppliers. A rig will be required on site full time from first production at a schedule rated of 100m per month, which provides sufficient surge capacity for higher rates if required.

Figure 38: Epiroc Easer and Sandvik Rhino Rigs

5.4.4 Production Charging

A second charge unit similar to that used for development will be used for up-hole production charging. A mixing truck will be used to load down-hole drilled holes. At this stage it is envisaged that ANFO will be used with Nonel detonators and electronic starter detonators for blasting. Several explosive specific light vehicles will be required.

5.4.5 Loading

Standard 20 tonne load haul dump (LHD's), such as Sandvik 621's or Caterpillar 2900's, will be used for material handling. All remote bogging will be done with tele remotes using relocatable tele remote cabins, truck mounted cabins or from surface tele remote stations to facilitate stope bogging over shift changes. Both loader models under consideration are capable of loading the range of trucks detailed below.

5.4.6 Haulage

The mine plan is based on operating a fleet of 45 to 60 tonne articulated dump trucks (ADT). Several contractors have provided tender pricing and contract proposals for these trucks, which have been independently substantiated by an increasing number of these types of trucks being used in the industry. These trucks have a significantly lower capital and operating cost and are more readily available compared to underground specific haul trucks. Their diesel burn is significantly lower than their underground equivalents.

Ejector tray trucks will form part of the fleet, which will facilitate periodic cost efficient sheeting of the main haulage ways and direct tipping of waste into fill stopes, which negates the need for additional loaders to undertake this activity.

An evaluation of tipping high grade material at the 900mRL portal bench and then using a subcontracted surface operator to rehandle into 100 tonne open pit trucks to haul to the ROM pad was undertaken. This demonstrated for the 2.8km distance, the economies of scale using larger trucks did not offset the rehandle costs.

Hillgrove is considering a trial of a trolley assist/charge system for use on a section of the open pit haul road. The potential to install such a system would facilitate the use of battery electric trucks in the mine. The driver for such a change would be reduced truck numbers due to increased up-grade speed and reduced ventilation requirement, the combination of which would be expected to result in reduced truck operating cost. This would also reduce carbon emissions. The cost benefits of this have not been included in this study.

5.4.7 Backfill

For consolidated pillars, CRF will be mixed in a bay proximal to the stope to be filled. A dedicated truck will transport dry cement underground and mix and discharge a cement slurry into the mixing bay. Use of a CRF truck will significantly reduce the risk and diesel loading compared to running agitator trucks for the same function. A standard loader will then mix the slurry with waste rock and place the CRF in the stope. Trucks with ejector trays will be utilised for delivery of waste rock for CRF mixing and for any placement of waste rock directly into stopes. Designs are being evaluated for waste rock passes through the centre of Kavanagh to reduce trucking and improve fill cycle productivity.

Sandfill is planned to be distributed underground through a network of vertical raises. Fill rates for CRF have been scheduled at 600 cubic metres per day.

5.5 Mine Infrastructure

5.5.1 Power

Short term power is currently supplied by a 900 kVa generator located on the 900mRL bench adjacent to the portal. This will be used for initial mine start-up. An overland 11kV arial power line is planned to be installed from the site substation to the south-eastern corner of the pit to supply power longer term. From there, it will be fed to an underground substation located on the 865mRL level. As the mine is developed, additional 1.5MVa underground substations will be installed on the Nugent decline at the 1005mRL Level and in the lower Kavanagh decline at the 765mRL level. The total installed power peaks in the mine power model at 3MW, with capacity to draw up to 4MW from the site substation.

Combined with the smart mine control, system fans will be run on as needs basis driven by EMS units on each level, this will minimise power draw on this variable load to the minimum required to maintain suitable set ventilation levels. Additionally, variable speed primary vent fans are being investigated which have the potential to further reduce consumption.

5.5.2 Ventilation

The mine primary ventilation circuit is based on an extraction principle of drawing fresh air in through the declines and adits for supply through the mine to ventilation exhaust returns. Primary fans to support both Kavanagh and Nugent have been secured, with four refurbished 250kW axial fans on-site. They are 415V units with variable speed drives. Three units will be located in Kavanagh 940L Return Air Drive and one unit located in Nugent at the bottom of the upper 3m diameter raisebore. Vent modelling by external experts has been completed, demonstrating suitability of the fans. Modelling indicates that the fans will be operated at below their peak power rating to reduce overall power draw which will be sufficient to support the modelled mining fleet. The air volume required through the mine is based on $0.05m^3$ per kW of diesel power underground. Individual levels will be ventilated using secondary ventilation fans mounted on stands in the decline forcing air into the working areas and then returning to the surface via the RARs. Fans will be controlled via smart controls and environmental monitors such that they are only operating when required for mining activities or to ventilate blast fumes from a heading.

5.5.3 Water Supply

Mine water will be supplied directly from the raw water pipeline to the site. An existing 90mm polyethylene (PE) line from the top of the Giant open pit, down the haul road to the 900mRL portal will be extended into the decline and subsequent mine development. Pressure reducers are installed periodically to maintain water pressure within pipeline specifications. The line along the haul road additionally facilitates ramp dust suppression sprinklers and access for emergency firefighting water. The 90mm lines will continue into the mine via the main declines and fed to the levels via 63mm PE pipe. All underground fittings will be electrofusion to improve reliability and reduce the cost, leaks and losses associated with standard screw fittings.

5.5.4 Dewatering

Based on hydrogeological modelling previously conducted, the mine dewatering system is currently designed to allow for up to 20L/s from the mine. The modelling has a safety factor of 200%. Recent monitoring of the pit since pit closure until December 2021 shows an average inflow rate into the pit of 3.6L/s from groundwater and rainfall runoff within the catchment.

5.5.4.1 Giant Open Pit Dewatering

As part of the mine risk review it has been determined that no mining will be conducted beneath the bottom of the Giant open pit while it has any significant water in the base of the pit. The pit currently has approximately 190ML of water in its base, filling the bottom 33m of the pit to the 883mRL. Dewatering commenced in 2022 to commission pumping equipment and has now ceased pending the recommencement of development. Dewatering will take an estimated 4-5 months at a rate of 15-20L/s and water will be pumped to the Tailings Storage Facility (TSF) for use in the processing plant. For the initial dewatering, a floating electric bore pump will pump the water from the pit up through protected 4" well master hose to a 200mm poly line from the northern ramp back to the processing plant. Subsequently, a small pump will be maintained in the pit floor to transfer runoff water from the pit to the mine dewatering system until the West Kavanagh crown stopes are mined. Post mining of these stopes, open pit runoff will be collected on the 865mRL level and directed to a dedicated sump and pump system.

5.5.4.2 Underground Water Management

Ground water and mine operations water will be collected through the mine in level sumps. These will be periodically connected with drain holes to allow settling capacity and reduce dedicated pumps in each sump. 8kW Flygt pumps will be used to pump from these sumps to travelling mono pumps located every 250 vertical metres through the mine in dedicated pump cuddies. Decline faces will be dewatered with on board drill snort pumps and 5kw electric face pumps.

90mm PE pump lines will be installed in the declines to facilitate removal of water from the mine. Dual lines from the 900mRL to the surface via the Nugent and Kavanagh declines will provide adequate capacity without the need to increase pipe size and allow for operational maintenance and downtime for the pumping system. Pumps will be monitored through the mine data and control system.

5.5.5 Compressed Air

Compressed air will be reticulated through the mine to support mining operations. Mine air will also be routed to the mine refuge chambers as a primary source of air in an emergency. The mine owns 2 x Compare Delcos 3100 - 132kW - 875CFM compressors, one of which is installed at the 900mRL Portal and the other which will be installed as required at the collar of the Nugent ventilation shaft. These compressors are mid-way though their life and will service the mine for the Stage 1 Underground.

Compressed air will be reticulated through the mine via 90mm PE pipes in the decline and 63mm PE pipe in the levels, using electrofusion joins to reduce air loss and leakage.

5.5.6 Communications

Two forms of communication will be established in the mine. An existing MST leaky feeder radio system will be extended through the mine to support operational requirements, with multiple channels for operations, maintenance and emergency communications. All vehicles, refuge chambers and key infrastructure will have VHF radios fitted.

Blasting will be conducted using an MST Ped-Blast firing system over the leaky feeder on a dedicated channel. In addition to this a Firefly smart lighting system will be extended through the mine to facilitate emergency response, traffic management in the declines and support WIFI communications and integrated infrastructure control.

5.5.7 Explosives Magazines

Through transitioning to drill and blast development for the exploration decline, all necessary steps to store and utilise explosives on site were fulfilled. This included purchase of previously leased magazines, transfer of licenses and recommissioning of onsite compounds. There is capacity within these magazines to store sufficient stocks for the proposed mining production rate. In the future bulk explosives will be manufactured on site to reduce handling and storage costs and reduce exposure to pre-packaged explosives being unavailable.

5.5.8 Refuge Chambers

Refuge chambers will be installed at key locations through the mine. Primary refuge chambers will typically accommodate 20 persons. The location of these will be based on the travel time of personnel from the furthest location to the refuge in the event of an irrespirable atmosphere matched to the duration of their personal self-rescuers (MSA 30/100's).

Smaller mobile 6-person refuge chambers will be positioned in mine development areas where the risk of entrapment exists. Typically, cuddies will be mined for these smaller refuges to be placed by IT's such that multiple activities can occur as the mine is developed. Refuge chambers will be connected to mine air, have their own air sources and be linked by two forms of communication.

The capacity of refuge chambers will be matched to the number of personnel working within their catchment area in the mine and be managed through the mine control system and allocated tags on the mine tag boards both manual and digital. Refuges will have programmed periodic maintenance and testing.

5.6 Mine Design

The mine design was undertaken using Deswik software. As discussed in previous sections, the overall layout for Kavanagh locates the decline in the hanging wall of the orebody, with levels on 25m vertical intervals. Decline placement provides good early definition drill coverage whilst minimising overall metres and schedule interactions. Ore drives are orientated longitudinal to the lodes, with branches designed when multiple parallel economic stopes are delineated.

In Nugent, the level interval is 20m, with the decline located in the footwall. Transverse level access intercepts the ore lode approximately in the middle, with longitudinal ore drives extending north and south on the single lode. Nugent mineralisation extends up to the bottom of the pit floor. Some stopes plan to recover into the pit floor, with rib pillars on regular intervals to control dilution. Other stopes leave a crown pillar. The process for generating stopes has been discussed in previous sections.

5.7 Mine Scheduling

Mine scheduling has been completed in Deswik Sched and is fully integrated with the design. All development for the life of mine has been designed inclusive of sumps and stockpiles. Development is broken down into 4m long task solids and scheduled with task rates as outlined in Table 7.

Table 7: development default scheduling task rates

Activity	Rate m/month
Decline	80
On-level	60
Ore Drives	60

The relatively low task rates help to ensure that sufficient headings are available for each jumbo. Assumed jumbo productivity is 250m/month. Development is levelled manually to monthly resolution within the schedule to fully utilise the assumed jumbo fleet profile.

Production is scheduled with multiple linked tasks for a single stope. Table 8 outlines the steps within each stope and the default rates applied. For a typical stope, these tasks must occur sequentially, with directly adjacent stopes having finish-start links from backfill to slot.

Table 8: Production cycle steps and rates

UEA 2023			
Activity	**Driver**	**Rate**	**Unit**
Slot	slot m	5	day
Prod Drill	drill m	220	day
Production	Stope t	1500	day
Backfill	Fill volume	600	day

Monthly ore production rates are levelled manually as a second pass after development.

Sequential stopes along ore drives are sequenced so that the mining fronts retreat toward the central access. Where possible mining panels are mined bottom-up to minimise the need for CRF. However, some panels have been initiated mid-height to provide early ore tonnes. In Nugent, all stopes are planned to be mined bottom up without exception.

5.8 Mining Cost Model

A detailed mining cost model has been developed which allows comparison between the various operating model structures which have been considered. The model utilises mine schedule outputs and applies a series of assumptions and factors to build up detailed profiles for mining fleet, personnel, consumables, and infrastructure. Firm prices for the great majority of unit rates have been received and are utilised to develop detailed build-ups by cost centre. The logic within the model will be utilised to develop future mining budget.

5.9 Mining Risk Management

In accordance with the Work Health and Safety Regulations, 2012 (SA), the mine has established interim Principal Mining Hazard Management Plans (PMHMP) in anticipation of mine commencement and is currently operating the exploration decline development under these plans.

6 Processing

The existing Kanmantoo processing plant will be used to process ore from the underground operation. The process plant consists of crushing, grinding, flotation and dewatering processes and a flowsheet of the processing plant is provided in Figure 39. A single product (copper concentrate) will be produced with a grade of approximately 24% copper and containing gold and silver credits.

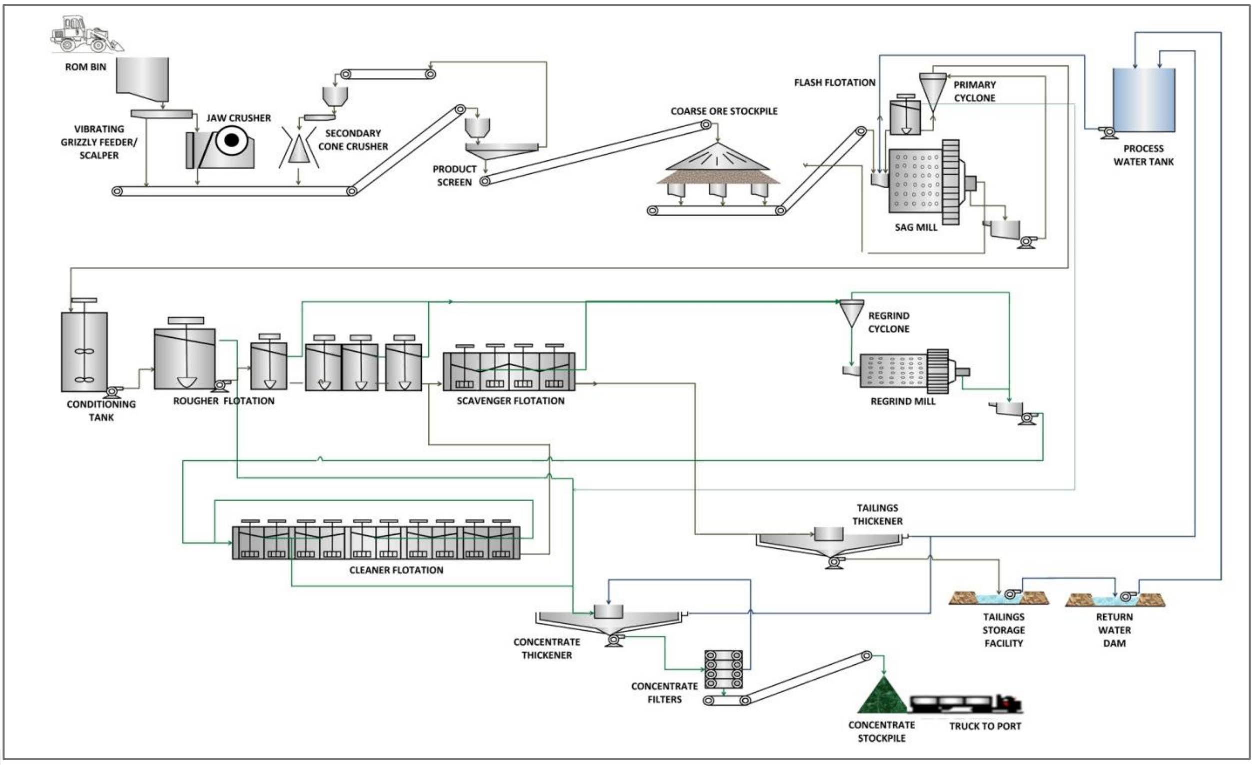


Figure 39: Kanmantoo processing plant simplified flowsheet

6.1 Processing Overview

The processing plant is capable of annual throughput in excess of 3 million tonnes. This was demonstrated during the open pit operation with a peak annual throughput of 4.1million tonnes in 2015. The Kanmantoo Underground Stage 1 Project produces around 1.4 million tonnes of plant feed per annum meaning the processing plant is approximately 40% utilised. This provides capacity to increase throughput as the mining operation expands without any additional capital requirements. Due to the lower annual output of the underground, the plant will be operated with fewer employees on a campaign basis to minimise unit costs. The plant will also be operated at a reduced hourly throughput rate resulting in a finer grind and improved metallurgical performance. This increase in metallurgical performance is not currently factored into the recovery model and remains upside.

Processing unit costs are forecast to be higher than the open pit operation at around $13 per tonne compared to $8-9 per tonne due to the fixed cost component of the processing plant, combined with the reduced throughput. However, if the output of an expanded underground operation increases in future stages of the project, the processing unit cost will decrease.

The major assumptions for processing used in this UEA 2023 are summarised in Table 9.

Table 9: Processing assumptions used in the UEA 2023

Milled Tonnes	1.4 million tonnes per annum (ave)
Milling rate:	Circa 350 tonnes per operating hour (tpoh)
Primary Grind Size P80	212 um
Flotation Residence Time	22 minutes
Copper Recovery	Average 93.1% (tail model based on feed grade)
Gold Recovery	55%
Concentrate Copper Grade	24%
Processing Costs	Fixed cost of $595k per month plus $7.78 per tonne processed variable cost. Average unit cost $13.10 per tonne

Figure 40: Kanmantoo Copper Mine processing plant and workshops

6.2 Copper Metallurgy

6.2.1 Copper Recovery Model

The metallurgy of the Kanmantoo copper mineralisation is well understood, with 8 years of experience processing open pit ore from the same zones that are planned to be mined in the underground operation. The copper containing mineral of the Kanmantoo zones is almost entirely coarse-grained chalcopyrite, with pyrrhotite the prevalent gangue sulphide mineral. During the open pit operation, a linear tail model was developed and used to predict tailings grade, and therefore copper recovery, based on operational data from the processing plant. The models are shown in the graphs below, with Figure 41 showing the linear tail model and Figure 42 showing the resulting copper recovery versus feed grade model. As the Kanmantoo underground is a continuation of the same Kavanagh and Nugent lodes that were mined in the open pit, the material produced will be very similar from a mineralogical perspective. Therefore, this model is a reasonable, if not conservative, estimate for the metallurgical performance of Kanmantoo underground mining inventory. Further metallurgical test-work on core produced from the underground drilling has been undertaken to successfully confirm this, as outlined in subsequent sections.

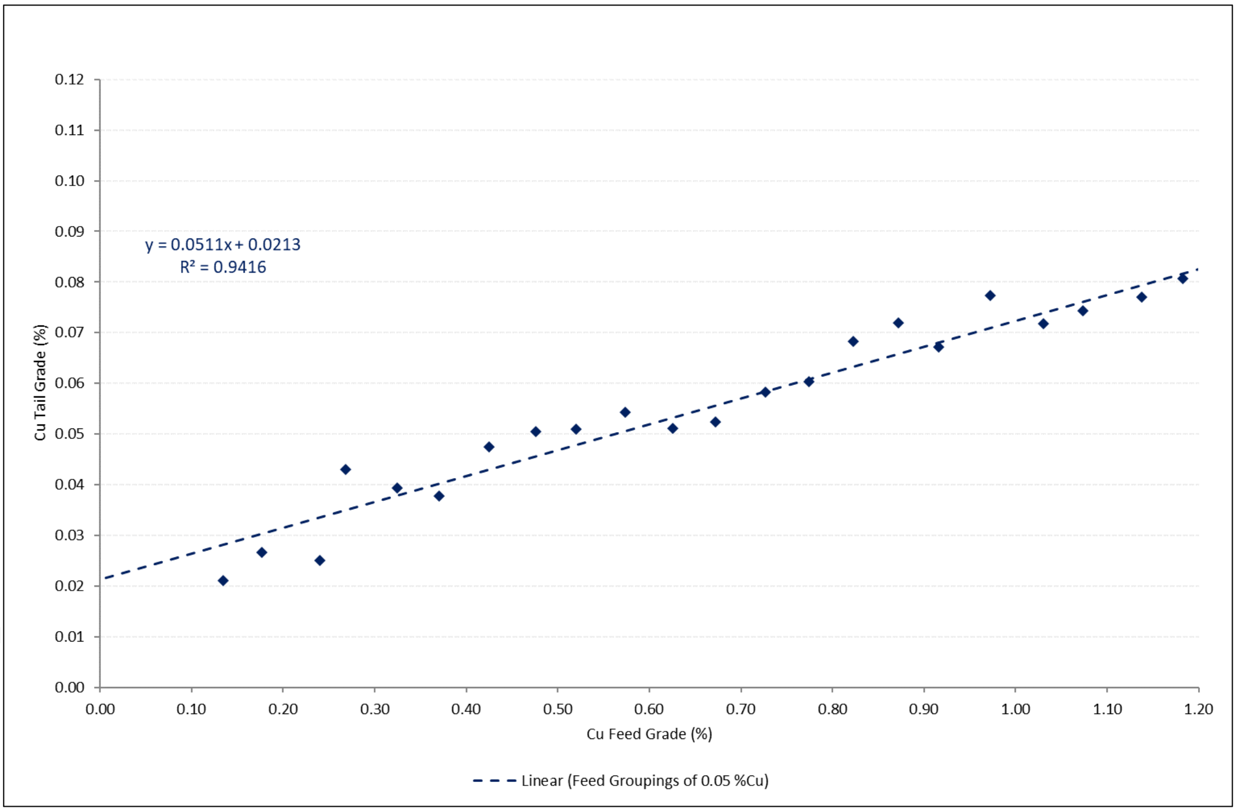


Figure 41: Tail copper grade versus feed copper grade (linear tail model)

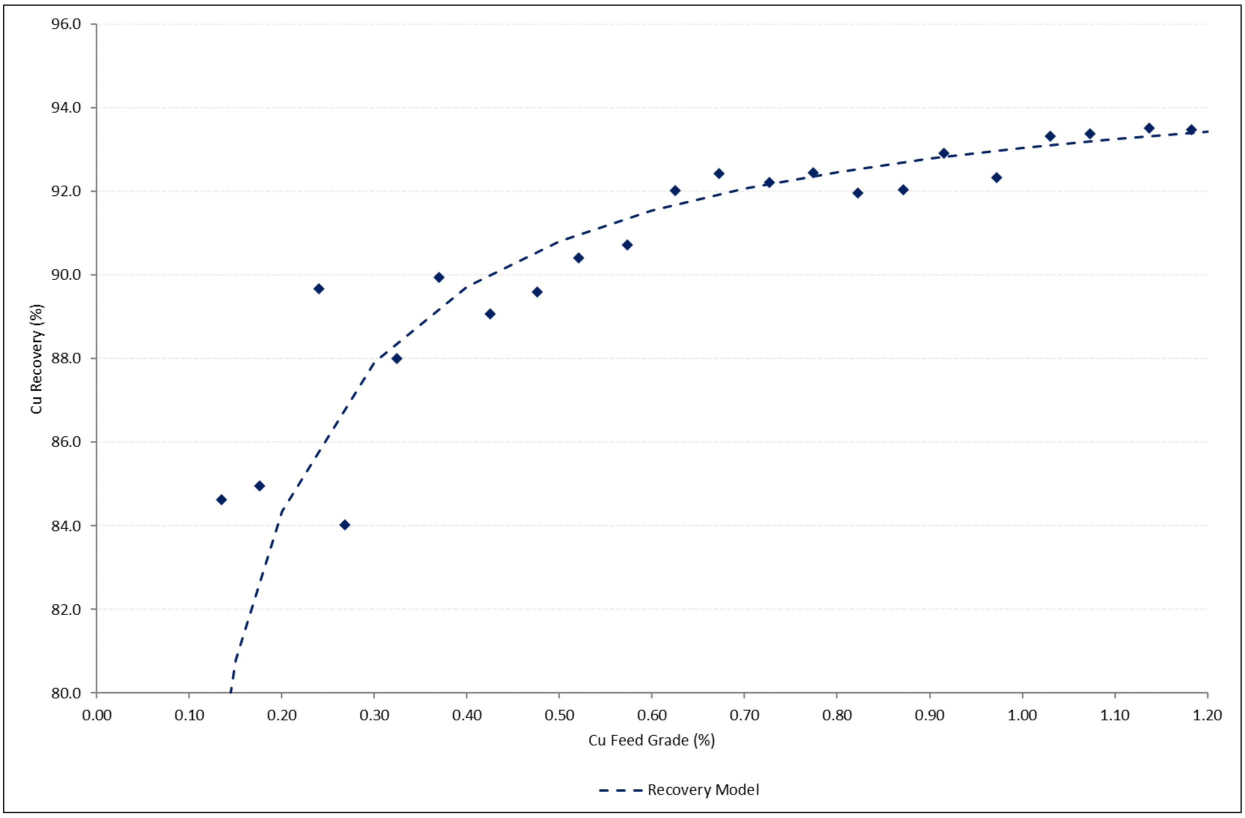
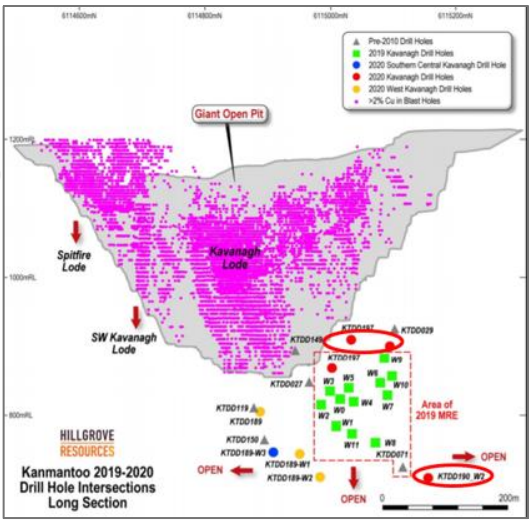


Figure 42: Copper recovery versus feed grade from linear tail model

The Stage 1 Underground average copper recovery is 93.1%, with a range of 92.3% to 93.6% based on a range of monthly feed grades from 0.78% to 1.30%.

6.2.2 Underground Metallurgical Test Work

Approximately 30 flotation tests have been conducted using various conditions on samples from the 2019 and 2020 underground drilling programs. The test-work to date has primarily focussed on Kavanagh samples with some minor works conducted on Nugent samples. The locations of the drill holes samples are shown in Figure 43 with the Kavanagh composite consisting of mineralised intercepts from two drill holes in East and Central Kavanagh at the 900mRL and 700mRL and three holes from a 100m vertical span through Nugent. This program was designed to confirm underground copper recovery assumptions and to investigate gold recovery. The parameters tested included grind size, reagent regime, pH, regrind size, gangue depressants and slurry density. The gold aspects of the UEA 2023 are discussed in Section 6.3, however the copper metallurgical results support the historical recovery model and provide potential to improve on this performance.



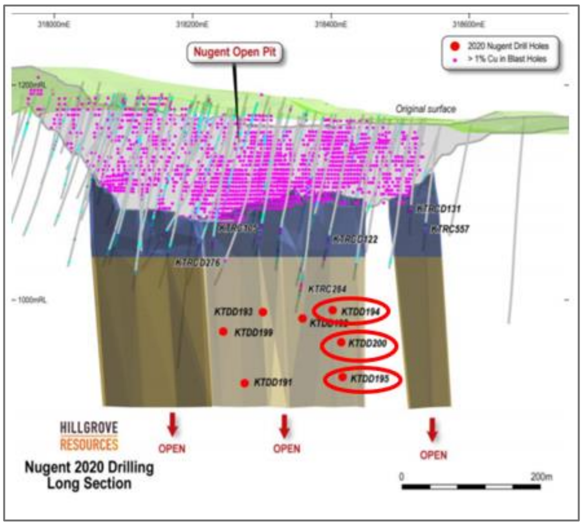
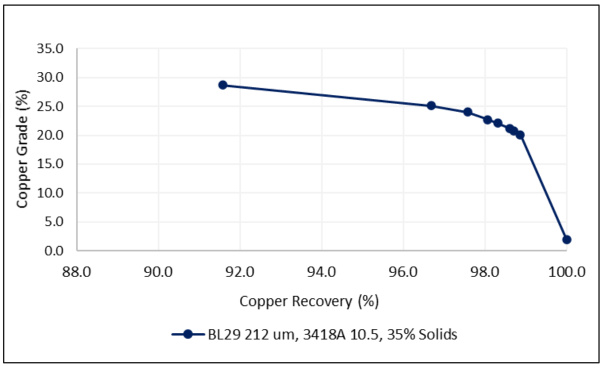


Figure 43: a. Kavanagh sample locations *b. Nugent sample locations*

The optimal flotation conditions were confirmed to be the use of Aerophine 3418A (the incumbent collector), elevated pH of 10.5, grind size of 212 um, and slurry density of 35% solids. The reagents and pH used will be identical to those used during the open pit operation. The target grind size will be finer, and the slurry density lower compared to the open pit operation, both of which are achievable due to the reduced hourly throughput for the underground material. No metallurgical benefits resulted from a grind size finer than 212 um due to the coarse grained chalcopyrite characteristics of the Kanmantoo lodes. The finer grind sizes tested resulted in additional pyrrhotite liberation and a reduced concentrate grade. The coarse grind size remains a key contributor to the low operating costs for the processing plant.

Excellent copper metallurgical performance of above 25% copper concentrate grade at above 96% copper recovery was achieved under the above conditions in the laboratory tests (Figure 44). The fast flotation kinetics of the chalcopyrite resulted in almost 97% of the copper being recovered in the first 5 minutes of flotation (Figure 44).



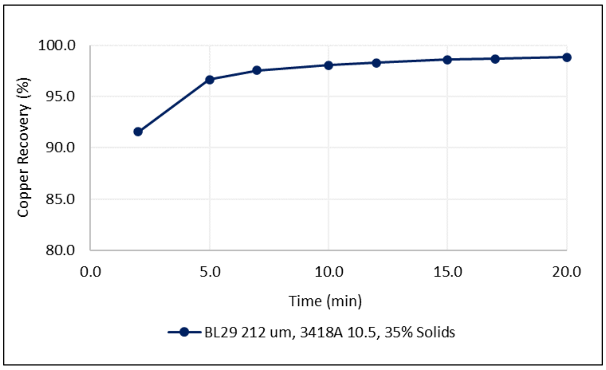


Figure 44: Copper grade/recovery and kinetics for flotation test BL29

Flotation tests using acidic Tailings Storage Facility (TSF) water did not result in any detrimental effects on metallurgical performance which is important as this will be the primary water source for processing.

6.3 Gold Test Work

A gold recovery rate of 55% for Stage 1 of the underground is assumed. This is based on the historical performance of the circuit in its current configuration, including the flash flotation circuit. Gold formed only a small portion (circa 5%) of Hillgrove's revenue stream during the open pit operation therefore there was limited focus on gold. Although overall gold revenue for Stage 1 is also around 5% of total project revenue there is the potential for that to change in Spitfire, Nugent and East Kavanagh where gold endowment is expected to be higher than historical averages.

Recent gold test-work at Kanmantoo includes the following:

- 2016 plant trials at lower pH to increase recovery of gold associated with iron sulphide minerals whilst processing high gold grade ore from the Spitfire zone of the open pit. This resulted in increased gold recovery at a lower concentrate grade. For this period, the value of the additional gold recovered outweighed the reduction in copper concentrate grade.
- 2017 diagnostic cyanidation leaching of three plant tail samples of Kavanagh ore resulted in 75% of the gold contained in the tails being leachable.
- 2017 Gravity Recoverable Gold test (Knelson and table) on a plant cyclone underflow sample obtained whilst processing high gold grade ore from the Spitfire zone of the open pit. This test demonstrated the propensity of this Spitfire sample to gravity concentrate.
- 2020 Mineralogical analysis (QEMSCAN) on 32 polished section slides (Nugent, Kavanagh, and exploration areas) which is discussed below.
- 2020 Heavy Liquid Separation and Gravity Recovery Gold test work (Knelson and Mozley) using Nugent KTDD200 core.
- 2021 flotation project previously discussed in Section 6.2.

The most significant of the early test-work was determining the propensity for gravity concentration of gold contained in a plant cyclone underflow sample. The cyclone underflow was targeted because this inherently contains a higher proportion of gold than the plant feed due to the specific gravity of the gold. The plant was processing high gold grade ore (>1 g/t) from the Spitfire area of the pit at the time the sample was collected. This cyclone underflow sample had a gold assay of 4.5g/t. The results were promising, with production of a table concentrate (from a laboratory Knelson concentrate) of a grade of 300 g/t gold and recovery of 61.7% of the gold in the plant underflow sample. The distribution of copper in the table concentrate was low at 1.08%. Spitfire zones are being drilled as part of the current drilling program to determine whether they can be added to the mining inventory. If there are high-grade gold zones in this area there remains the potential to improve gold recovery in a future stage of the project.

Mineralogical analysis on recent core from drilled areas of Kavanagh and Nugent has revealed the gold as being fine grained and associated with several minerals. The gold in the Kavanagh samples was found to be mainly present as fine grain gold (<10µm) associated with (but not limited to), chalcopyrite, bismuth minerals, pyrrhotite, mica (biotite), quartz and Fe Al Silicate. The gold in the Nugent samples was found to be mainly present as fine grain gold (<10µm) associated with (but not limited to), chalcopyrite, bismuth minerals, Fe Silicates, and quartz. The gold in these samples was not able to be recovered by gravity methods, however this may change for areas where there are higher gold grades, in particular Nugent where visible gold has been observed in recent core.

The flotation test-work program conducted in 2021 investigated modifying flotation parameters to increase gold recovery through the existing plant. Some notes from this program are below:

- Unlike copper performance, gold recovery increased with the reduced grind sizes of 106 and 150 um. Essentially this is due to the same reasons that copper performance viz concentrate grade was reduced. Additional gold was recovered with an increase in sulphur recovery and iron recovery. This is due to fine gold associated with pyrrhotite being recovered as pyrrhotite becomes liberated from gangue minerals.
- A reduction in pH to 8 resulted in increased gold recovery but lower concentrate grade. This is because the lower pH has the effect of increasing the iron and sulphur kinetics as elevated pH acts as iron sulphide depressant. This results in a movement further up the gold/iron and gold/sulphur selectivity curves and down the gold recovery-copper grade curve.
- With a reduced pH and a stronger collector (Potassium Amyl Xanthate) up to 80% gold recovery was achieved with 100% sulphur recovery. However, the copper concentrate grade was significantly reduced to 10-15% copper and bismuth recovery was significantly increased under these conditions.

With the average gold feed grade of 0.15 g/t and gold revenue circa 5% of total revenue for Stage 1 Underground, targeting a higher gold recovery through the flotation plant is not economically viable due to the reduced copper grade/recovery and increased bismuth in concentrate. However, this may change depending on commodity prices and the gold to copper feed grade ratio and is discussed further in Section 6.5.

The current drilling program for Nugent contains some areas where there is significantly higher gold endowment. Further test-work will be undertaken on these samples to determine if there is free gold that may be recoverable through gravity methods. Drilling of Spitfire, which previously has contained gravity recoverable gold, is also being undertaken. If sufficient gold endowment is present, further tests will be undertaken on this material to optimise the value of the project.

6.4 Bismuth

The only deleterious element of significance in the Kanmantoo mineralisation is bismuth in the form of the bismuth sulphide - bismuthinite. A bismuth recovery model has been developed to determine bismuth concentration in the final concentrate. This has been used in the project financial model. The range of bismuth in concentrate for the period covered by Stage 1 Underground is between 300 and 800 ppm which is allowable under the concentrate offtake agreement with associated minor penalties factored into the financial model. The variability of bismuth concentration will reduce on a ship-by-ship basis which will minimise the penalty regime.

6.5 Metallurgical Parameter Summary

Table 10 below shows the relationship between various operating parameters on metallurgical performance, with green arrows representing a favourable response and red arrows representing an unfavourable response. The arrows represent the change from the baseline conditions (open pit operations) to the new condition. The size of the arrows provides an indication of the relative impact of the change. In general, a higher pH regime results in improved copper grade / recovery and reduced bismuth concentration, but lower gold recovery. Due to the relative values of copper grade/recovery and bismuth penalty compared to the value of the gold, the plant will be operated predominantly under the base case strategy. However, if there is elevated gold concentration in the material from individual zones of the mine then this strategy may be modified to increase the value of gold recovered. A net smelter return (NSR) financial model has been developed to assess the optimum operating point on the grade-recovery curve based on a range of parameters. A higher gold recovery regime would involve reducing the pH to recover gold associated with pyrrhotite.

Table 10: Effect of processing variables

	Cost implications	Copper grade/recovery	Gold recovery	Bismuth grade in concentrate
From 212 um to 106 um	↑	↓	↑	→
From pH 10.5 to pH8	→	↓	↑	↑
From 3418A to PAX	→	↓	→	↑
45% solids to 35% solids	→	↑	→	→
From tap water to TSF water	↓	→	→	↓
From 22 g/t to 55 g/t 3418A	↑	↓	→	→
Sodium silicate addition	↑	→	→	→

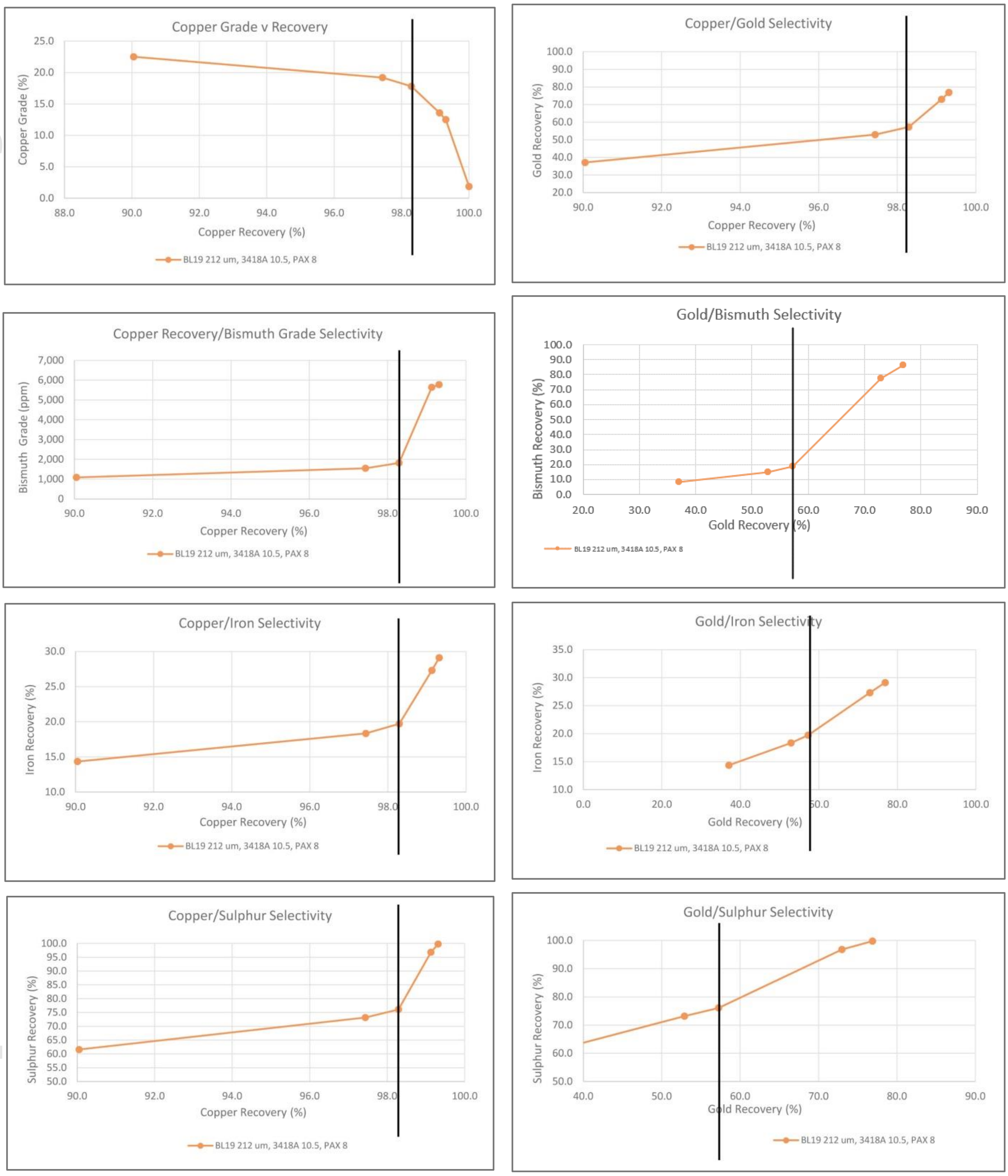


Figure 45: "Two concentrate" metallurgical results

Due to the trade-off between copper grade/recovery and gold/bismuth, several flotation tests were undertaken assessing the potential to produce two concentrates:

- A standard copper concentrate at 24% copper, 93-94% copper recovery, 50-55% gold recovery and low-medium bismuth.
- A second concentrate which would recover the remaining sulphur with high bismuth and

additional gold recovery (80% total).

Several laboratory tests were completed to assess this option. The most significant of these involved using three stages of 3418A at a pH of 10.5 and then two stages with PAX at a reduced pH of 8. The key results of this test are shown in Figure 45. The black line on each chart represents the point where the conditions were changed to the low pH regime. At this operating point, it is evident that in order to obtain the circa 25% additional gold recovery, a significant increase in bismuth, sulphur and iron recovery will occur relative to copper recovery. The gold/iron and gold/sulphur selectivity chart remain approximately linear meaning additional gold was recovered at the same rate as iron and sulphur (gold associated with pyrrhotite).

The resulting product from the low pH and PAX stages was as follows:

- Cu 0.45%
- Au 2.0 g/t
- Fe 44.1%
- S 25.4%
- Bi 13,120 ppm

It is unknown whether a product with these attributes would realise any additional value. However, if there were high gold grades in future plant feed sources, the gold concentration in this product would likely be significantly higher. This may provide an opportunity to produce a gold rich concentrate product to sell or leach on site. The capital costs to modify the processing plant to produce this concentrate would be minimal due to the additional capacity and flexibility in the installed processing infrastructure. This will be investigated further as project upside.

The initial operating strategy will be to utilise the NSR model to determine operating conditions to optimise value based on copper and gold head grades. If feed sources with a high gold grade are processed, the pH may be modified to increase gold recovery as was successful with Spitfire ore during the open pit operation. This will be an economic trade-off between additional gold recovery and lower concentrate grade and higher bismuth.

6.6 Processing Cost Model

The processing operating cost model has been developed from first principles based on the lower throughput that an underground mine would deliver relative to the open pit ore throughput. This results in considerably higher unit costs per tonne processed due to the fixed components of these costs such as labour, electricity connection, water and equipment hire. A cost model has been developed as $595k per month fixed plus $7.78 per tonne variable. This results in an average Stage 1 processing unit cost of $13.10 per tonne compared to around $8.50 to 9.00 per tonne for the previous open pit operation. The processing unit cost will decrease should the amount of material available for processing increase as per Figure 46.

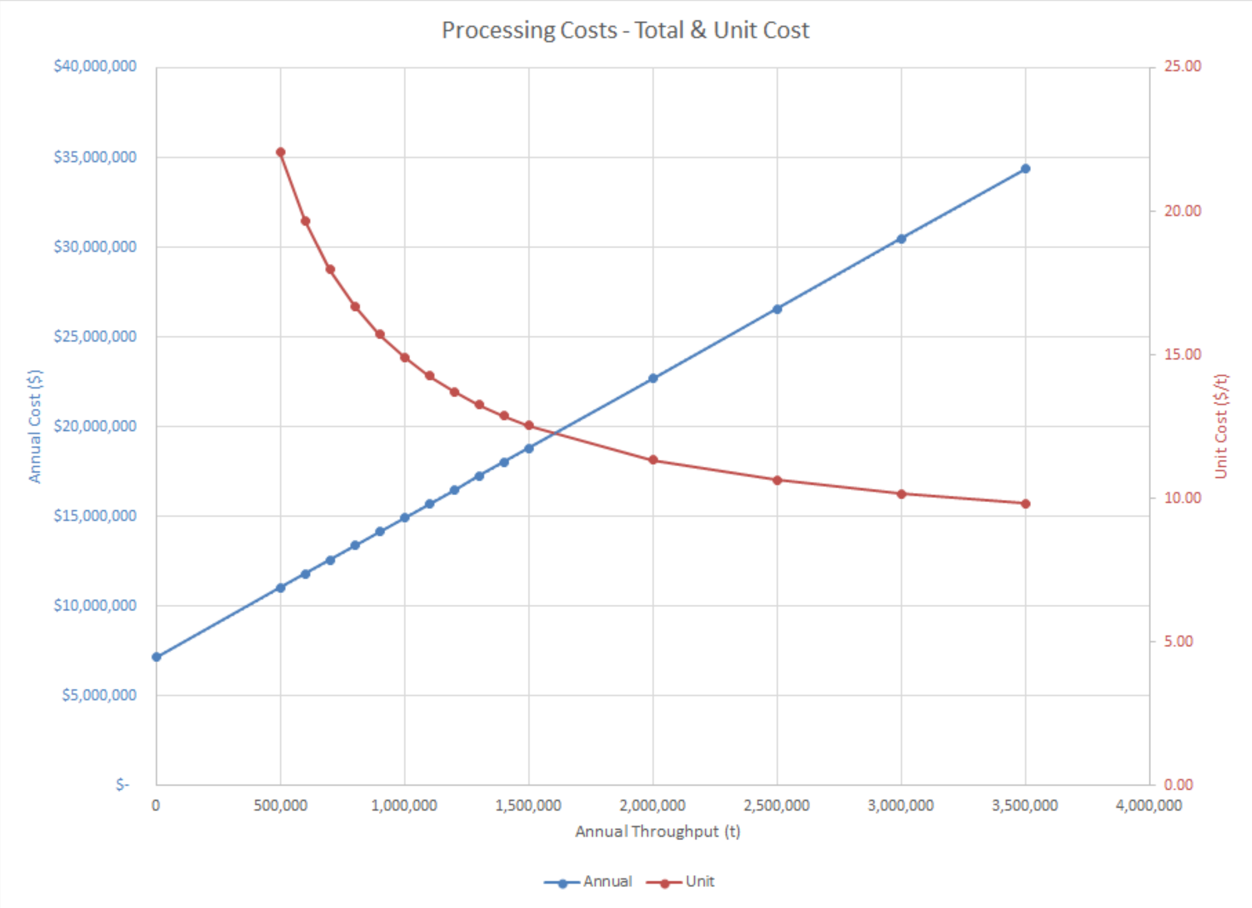


Figure 46: Processing cost model (total and unit cost)

Opportunities to reduce processing costs through continuous improvement initiatives will be investigated as the project progresses.

6.7 Operating Plan for the Processing Plant

It is anticipated that the processing plant will be operated for between 14-16 days per month at a daily throughput rate of around 9,000 tonnes. This is significantly lower than the historical 10,500 tonnes per day at a run-time for 29-30 days per month (94% run-time). The plant will be operating at approximately 40% of installed capacity meaning that additional feed sources can be processed with no additional capital and fixed costs, resulting in significantly reduced unit costs.

No major modifications to the circuit are required to allow this lower throughput operating strategy but optimisation will occur during the initial months of processing underground material.

Hillgrove employees will operate the processing plant.

7 Tailings Storage Facility

The existing permitted tailings storage facility (TSF) will be used for the tailings produced from the underground operation. The TSF consists of a centre decant tower and an underdrainage system to allow for the recycling of tailings water to be used in the processing plant. The permitted TSF design allows for a further 7 million tonnes of tailings to be stored based on the TSF crest being constructed to a height approximately 12-14 meters above the existing height to the 1274mRL. However, at this future height, the dam has not reached its technical limits, and should the mining inventory increase beyond 7 million tonnes in the future, it is expected that further raises would be approved. Due to the capital invested in the early stages of the TSF, incremental costs to raise the embankments are relatively low.

The construction sequence of the approved TSF is shown in Figure 47. However, only Stage 7c, Stage 8 and a small part of Stage 9A are required to be constructed for Stage 1 Underground.

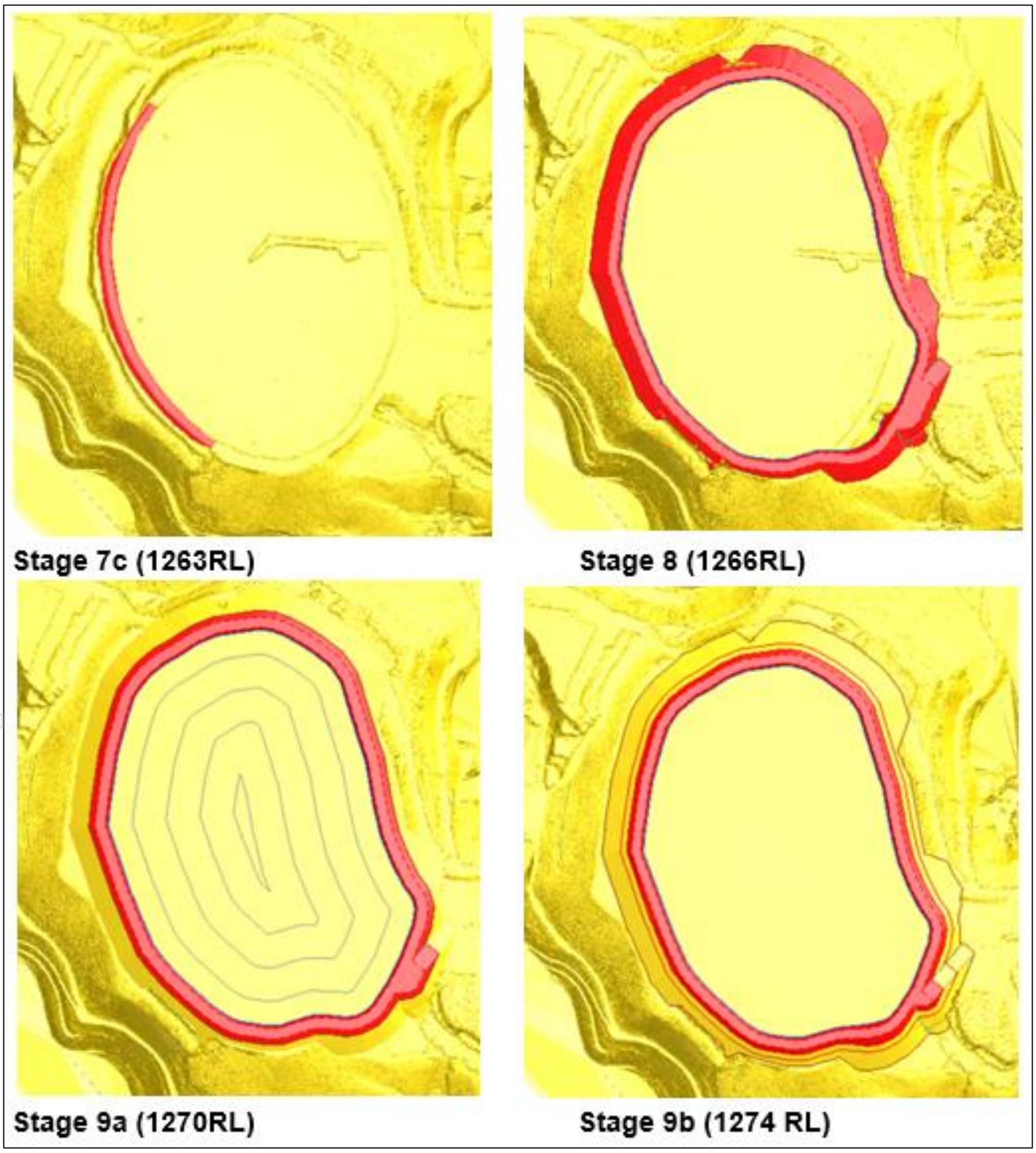


Figure 47: Approved TSF Design. Note: decant road raise not shown for simplicity.

For Stage 1 Underground, the TSF will be raised a total of approximately six meters. Timing of the construction will occur over three periods to manage the timing of the capital cost outflow. These are scheduled as follows:

- Stage 7C: Raise the western perimeter of the TSF 3 meters to 1263mRL. Note previous stages 1-7B were constructed as part of the open pit operation.
- Stage 8: Raise entire perimeter to 1266mRL.
- Stage 9A (partial): Raise entire perimeter to 1269mRL to accommodate the remaining tails from Stage 1 Underground. Stage 9A is permitted to be raised further to accommodate increases in the mining inventory.

The cost estimate of TSF construction for Stage 1 Underground is $3.4M across years 1 and 3 of the project. Further stages would be constructed if required for future stages of the Kanmantoo underground operation.

TSF costs have been estimated using the volumes of waste rock to construct the embankments and current pricing for heavy equipment hire and labour. The cost estimates for each of the stages are summarised in Table 11.

Table 11: TSF construction volumes and costs

Stage	Embankment Volume (m^3)	Tails Storage (dmt)	Cost ($)
Stage 7C	56k	0.90MT	$0.3M
Stage 8	609k	2.0MT	$2.4M
Stage 9A	140k	1.4MT	$0.7M

There is sufficient waste rock located adjacent to the TSF to be used for construction of the embankments. An area at the top of the Integrated Waste Landform has been left open for this purpose as shown in Figure 48.

Figure 48: Integrated waste landform showing rehabilitated areas and open areas containing waste rock for future TSF construction

8 Infrastructure

The majority of the infrastructure required for the site is currently in place. This includes workshops, warehouses, offices, changerooms, fuel storage, explosives magazine, ablutions and communications. An overall site layout of key features of the Kanmantoo mine site is provided in Figure 49 and Figure 50.

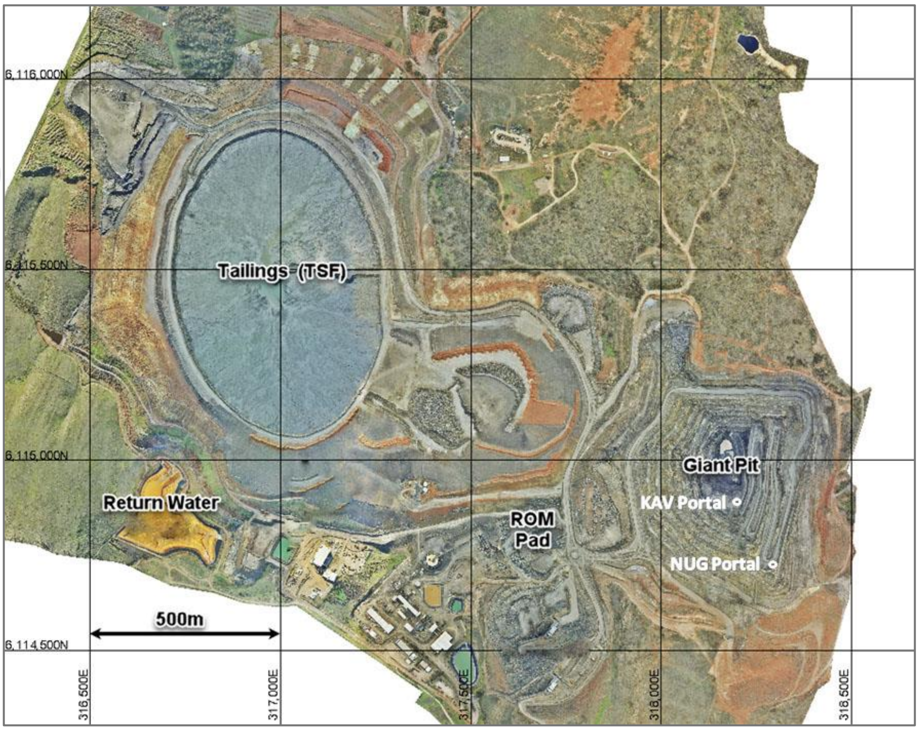


Figure 49: Site layout showing key features

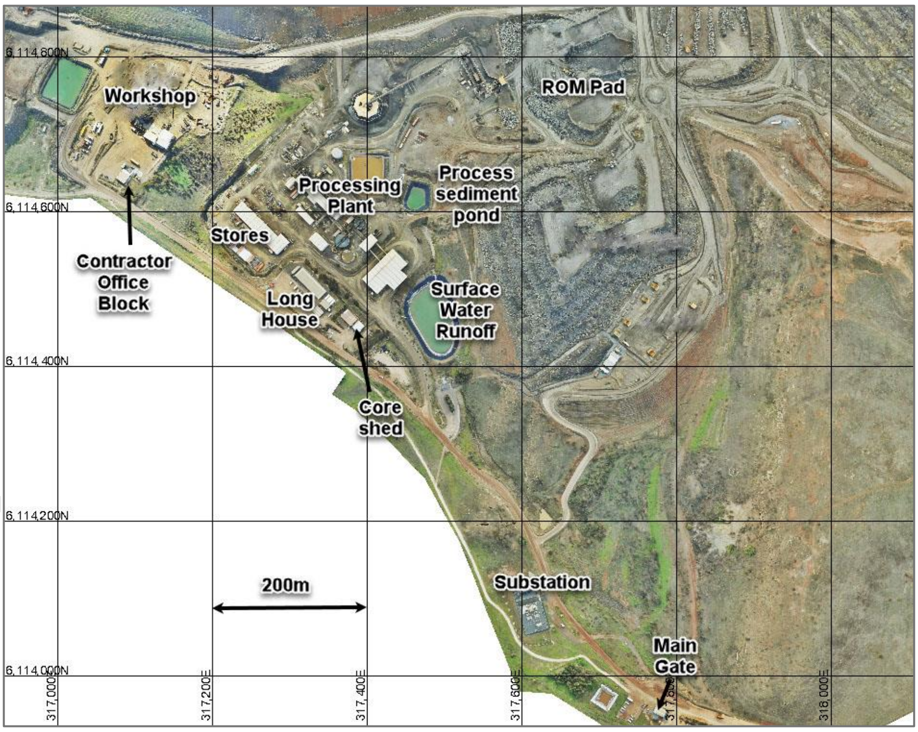


Figure 50: Site layout of key surface infrastructure

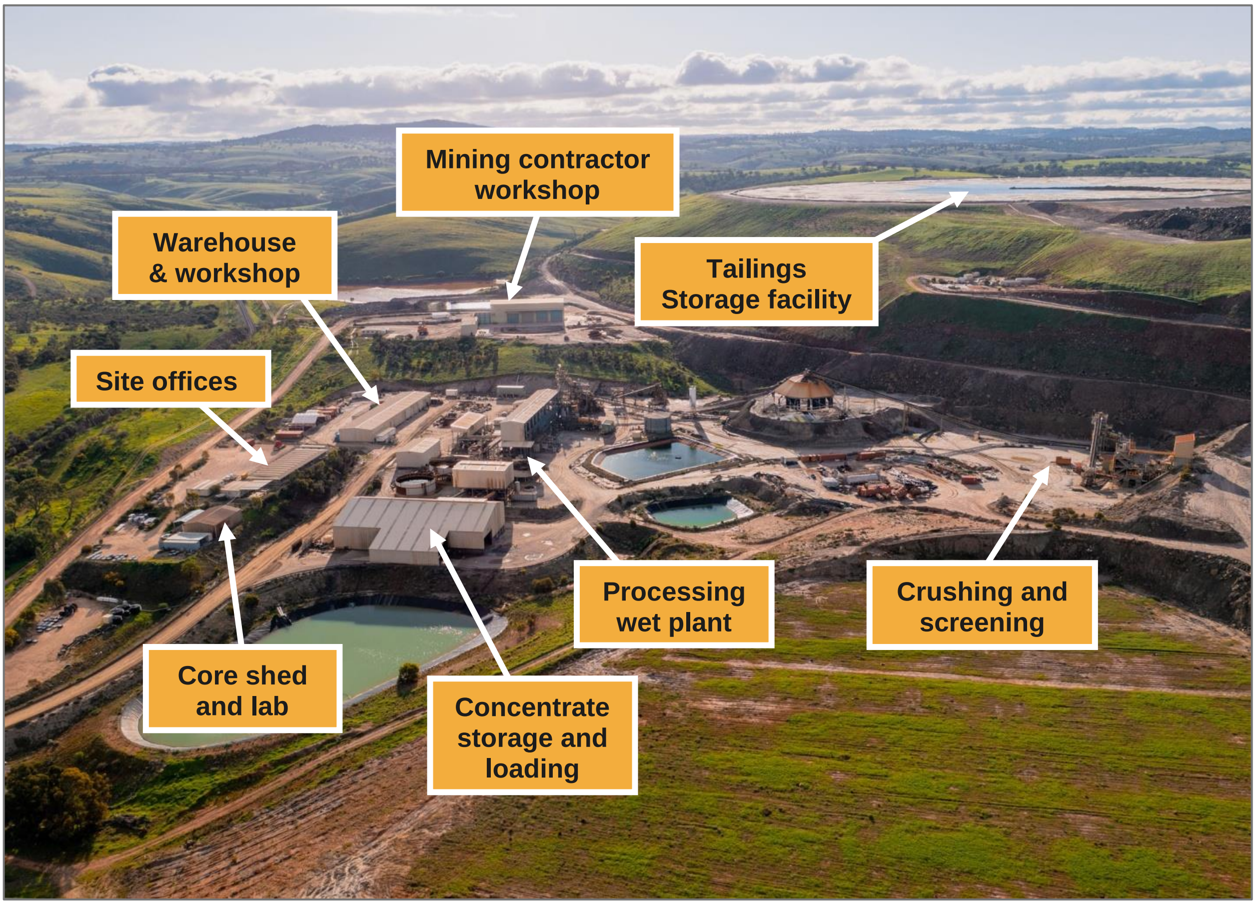


Figure 51: Overhead view of key site infrastructure including processing plant, workshops, warehouses and offices

Additional infrastructure has been installed at the underground portal location at the base of the open pit for the exploration decline. This includes water supply, fuel storage, electrical infrastructure (diesel genset and transformer), secondary ventilation fan, ablution, crib and office facilities.

Figure 52: Infrastructure located at the underground portal

On commencement of Stage 1 Underground, the diesel genset at the portal will be replaced with mains power. This will utilise existing capacity in the 11KV supply to the processing plant through overhead power lines to the open pit crest then down the open pit wall as shown in Figure 53. A preliminary study has estimated budget capital costs of $1.9M for this installation and this will significantly reduce the electricity costs compared to using diesel power generators. Underground electrical infrastructure from the portal is included in the mining unit costs.

Figure 53: Proposed electrical power line route to the portal location

9 Environmental and Regulatory

All the necessary approvals are in place for the underground operation. The most recent Program for Environment Protection and Rehabilitation (PEPR) for the underground operation was approved by the Department of Energy and Mining (DEM) in October 2020.

Progressive rehabilitation of the mine site has been undertaken during the open pit operation and an example of one area of the site is shown in Figure 54. Maintenance of the currently rehabilitated areas will be ongoing and statutory environmental monitoring requirements will be undertaken. However, there are no further major rehabilitation activities required until the cessation of operations at the mine site.

Figure 54: South facing photographs of the IWL in January 2020 (top) and August 2021 (bottom) showing rehabilitation revegetation and landform shaping

Hillgrove has sufficient materials to complete site closure cost effectively when required. These include non-acid forming (NAF) rock, to cap the tailings dam and other disturbed areas of the site, and high-quality topsoil to spread over the NAF rock to be seeded. During the open pit operation, areas were established for harvesting of high-quality native seed, including the Seed Propagation Area (SPA) and the Seed Multiplication Area (SMA). These, along with other areas of high-quality revegetation, undertaken by Hillgrove provide low-cost native seed annually that is harvested and used for the required revegetation of the site. Figure 55 shows examples of the seed collection activities that provide considerable value to Hillgrove from environmental, community and financial perspectives.

Figure 55: Harvesting of high-quality native seed provides a cost effective way for Hillgrove to undertake progressive site rehabilitation

SafeWork SA are not directly involved in project approval; however, they review relevant mining sections of the PEPR on behalf of the DEM. SafeWork SA have been consulted throughout the project assessment phase and have provided feedback on design elements, emergency response capabilities and the Principal Mining Hazard Management plan. The Kanmantoo Underground Mining project will operate under Section 10 of the Work Health and Safety Regulations 2012 (SA), which requires the completion of a Principal Mining Hazard Management Plan (PMHMP) and associated documents.

Hillgrove holds Environmental Protection Agency Licence, which was renewed in July 2020.

Hillgrove has demonstrated outstanding commitment to support the communities of Kanmantoo and Callington adjacent to the Kanmantoo Copper Mine. Through the Kanmantoo-Callington Community Consultative Committee (KCCCC) several projects have been delivered, enhancing these communities. The mine also supports employment of local residents who live in close proximity to the mine, providing mutual benefits. The support and co-operation of the local communities has assisted in Hillgrove maintaining a social acceptance to operate in the area. Hillgrove and the KCCCC have been recognised by the South Australian government for best practice in community consultation.

10 Logistics and Marketing

Hillgrove, along with its life of mine offtake partner, has significant experience in marketing concentrates of varying qualities, including the material which was produced as part of the Kanmantoo open pit between 2011 and 2020. Kanmantoo concentrate is expected to be saleable internationally to various markets and will be via established logistics routes to export ports, with grades expected to be as shown in Table 12.

Table 12: Concentrate product quality

Metric	Unit	Range
Copper Grade	%	22-26
Gold Grade	g/t	1.5-3.0
Silver Grade	g/t	30-60
Bismuth Grade	ppm	300-800

The concentrate product quality is similar to that produced between 2011 and 2020 from the Kanmantoo open pit, which was acceptable to smelters.

Concentrate will be trucked to the Port of Adelaide in specially designed containers previously used for the project. The full containers will be stacked at the port and concentrate from the containers will be loaded onto ships using an onshore crane with a “rotainer” attachment. Hillgrove has been exporting concentrate through Port Adelaide under the same proposed method since 2011. Port Adelaide has permits to handle, store and load copper concentrates and has sufficient infrastructure and capability in place to export Kanmantoo concentrates.

Hillgrove has a life of mine offtake agreement with Freepoint Metals and Concentrates LLC. This agreement contains metal payable levels, treatment charges, and refining charges in line with industry standards.

11 Cost Estimates

The project cost estimates were undertaken by Hillgrove based on input from a range of parties. Mining costs have been developed from the mining contract tender processes as well as updated costs for key project inputs. Processing costs have been developed from first principles using information gathered from the open pit operations and adjusted for the lower throughput of the underground operation. Updated consumable costs have been sought from suppliers and included in the cost models.

The pre-production capital cost estimates have been derived based on commercial offers and first principal methodology. Major infrastructure costs are based on budget estimates from external contractors or consultants.

The estimated pre-production capital cost for Kanmantoo is A$25 million and represents the estimated costs of developing the project until it produces first concentrate. A summary of the capital cost for the project is provided in Table 13. Further details of the costs estimates for the various areas of the project are included in subsequent sections.

Table 13: Pre-production capital requirements

Capital Cost Estimate	Description	A$M
Mining	Working capital to develop Underground to first copper production. All-weather ramp pavement, pit dewatering, and geotechnical rockfall controls.	$16
Infrastructure	Overhead electrical power supply to portal Additional light vehicles	$3
Processing	Inventory replacement and minor maintenance	$1
Other	Various items including administration and capital purchases as well as negative cash flow in month 1 of processing	$5

Operating costs of the mine are estimated to be A$82 per tonne milled with operating cost estimates based on commercial offers and first principal cost estimates. Table 14 provides a summary of the operating cost estimates for each area of the operation.

The low pre-production capital intensity is US$1,290 per tonne (AUD/USD 0.70) of annualised copper production. This positions Stage 1 of the Kanmantoo Underground as one of the lowest capital intense projects in the world, which typically average around US$16,000 / tonne[3].

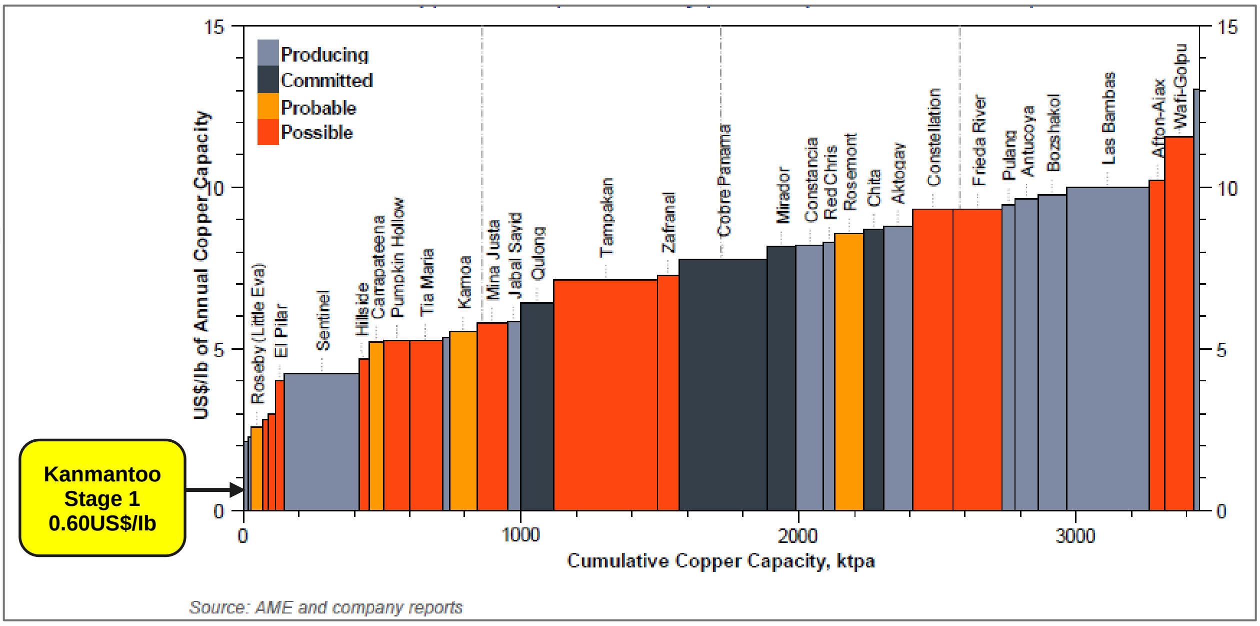


Figure 56: New copper mine capital intensity (mines in production from 2015)

[3] AME, 2017, *Copper - Capital Intensity of New Copper Mines*

Table 14: Operating cost estimates

Operating Costs	Description	A$/t Milled
Mining	Development, drill and blast, load and haul, underground diamond drilling mine services, labour, supervision, and technical support.	$47
Processing	All processing plant costs including, processing, maintenance, tailings management and labour.	Fixed Monthly cost $595k plus $7.78 per tonne variable cost. Average $13 per tonne.
Royalties	State government royalty payments	$6
Offtake Charges	Including treatment and refining charges	$8
Logistics	Land and sea freight. Ship loading.	$5
General and Administration	Administration staff salaries, site supplies and freight, environmental monitoring obligations, rates and licences, site administration, insurance and legal.	$3
Total		**$82**

The mining operating cost of $47/t is low compared to Australian mines of similar scale. This is predominantly due to the short mine life, which has a period of ~15 months at the end where development ceases and only stoping/production mining costs are incurred (~$25-30/t). The mining operating cost, when development is ongoing, is closer to $60/t during steady state operations.

The all-in sustaining costs (AISC) for the Kanmantoo Underground Stage 1 Project is A$8,051 per tonne of payable copper as per Table 15. This includes the costs associated with mining, processing, road transport to Port Adelaide, shipping to customers, site general and administration, precious metal credits and South Australian Government royalty of 5%.

Table 15: LOM all in sustaining costs (AISC)

Category	A$/tonne Cu
By-product credits	($772)
Mining and Material Handling	$4,982
Processing	$1,390
Royalties	$677
Offtake Charges	$829
Logistics	$550
General and Administration	$307
Tailings Dam	$90
TOTAL	**$8,051**

12 Financial Analysis

12.1 Financial Summary

The key financial aspects for the project are summarised in Table 16.

Table 16: Key financial aspects

Metric	Unit	Amount
Free Cash Flow	A$	$205M
Discount Rate	%	8%
Net Present Value	A$	$165M
Internal Rate of Return	%	231%
Pre-production Capital Requirements	A$	$25M
Project Pay Back Post Development	Months	9
Mine Life	Months	45
Stage 1 Copper Production	Tonnes	43.5k
Stage 1 Gold Production	Ounces	11.5k
LOM All In Sustaining Cost	A$/Tonne	$8,051

Under the base case, the project has an estimated free cash flow generation of $205 million, a net present value at a discount rate of 8% of $165 million, with an estimated internal rate of return (IRR) of 231%. It is forecast that these financial metrics can be met with a relatively low working capital requirement of $25 million – enabling a forecast pay back of 9 months post the completion of the development. The project cumulative free cash flow generation profile is highlighted in Figure 57.

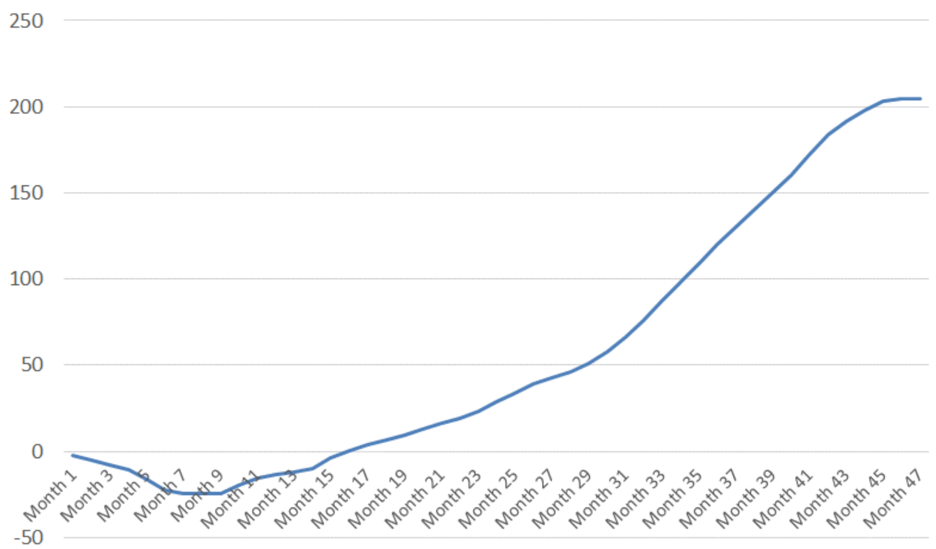


Figure 57: Project free cash flows (A$M cumulative)

12.2 Financial Assumptions

The following financial assumptions have been used for the assessment:

- The revenue estimates for copper, gold, and silver are derived from the sale of concentrates containing an average of 24% copper, 2.0 grams per tonne of gold, and 38 grams per tonne of silver.
- Working capital, after the initial pre-production capital of $25 million, is assumed to be self-generated by the project and as such, no separate funding is envisaged.
- With the tax loss position of the company, there is a sufficient tax shield such that income taxes are not payable under the base case of the project.
- The commodity pricing and exchange rate assumptions are shown in Table 17 below.

Table 17: Pricing and foreign exchange assumptions

Metric	Unit	
Copper Price	US$/t	$9,450
Gold Price	US$/oz	$1,750
Silver Price	US$/oz	$22
Exchange Rate	A$:US$	0.70

These prices are the same as that used in the EA 2021 and are broadly in line with pricing at the time of writing. Historically, the company has been prudent with hedging, with due consideration to the price at the time to ensure that free cash flow generation is maximised from future sales.

12.3 Financial Sensitivity

The sensitivity of the project free cash flows to variations in the key project drivers is provided in Figure 58.

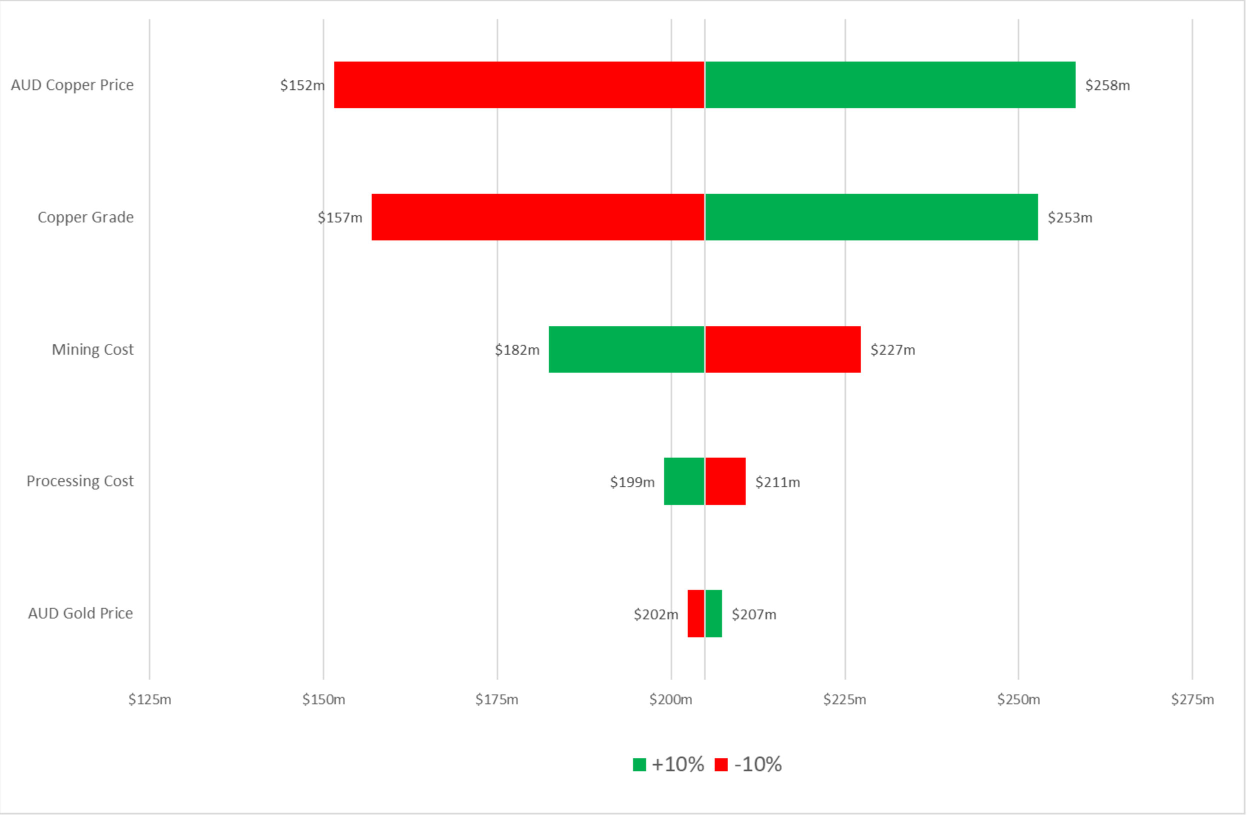


Figure 58: Project economic sensitivities – free cash flow (A$M)

In addition, the net present value at varying discount rates are as follows:

- NPV 6% = $174m
- NPV 8% = $165m
- NPV 10% = $156m
- NPV 12% = $149m

13 Project Funding

The basis of the funding will be to minimise associated costs with due consideration to the financial risks. The debt-to-equity funding mix has not been finalised.

14 Project Execution

Month 1 in the plan is the month when development commences from the exploration decline. It is assumed that at FID, the project funding has been secured.

14.1 Production Schedule

Mine development is forecast to ramp up to full rates of 750m per month (25m per day) by month 16 of the schedule with first stope material being mined at month 7. The relatively slow development ramp-up reflects the time it takes to open up sufficient working headings to maintain a high production rate. Maximum ore production of 140k tonnes is reached in month 30 as shown in Figure 59.

Processing operations are scheduled to commence in month 7 when sufficient material is stockpiled, and a sustainable mining production profile is achieved to accommodate monthly processing. The ramp-up of processing rates is shown in Figure 60.

Monthly plant feed grades range between 0.8% and 1.3% copper. Monthly copper production is expected to range from 400 tonnes to 1,600 tonnes. Copper feed grade, copper production and gold production are shown in Figure 61.

In terms of resource category, 74% of the contained copper metal in the plan is in the indicated category and the remaining 26% is in the inferred category. The monthly profile of copper contained copper by resource category is shown in Figure 62.

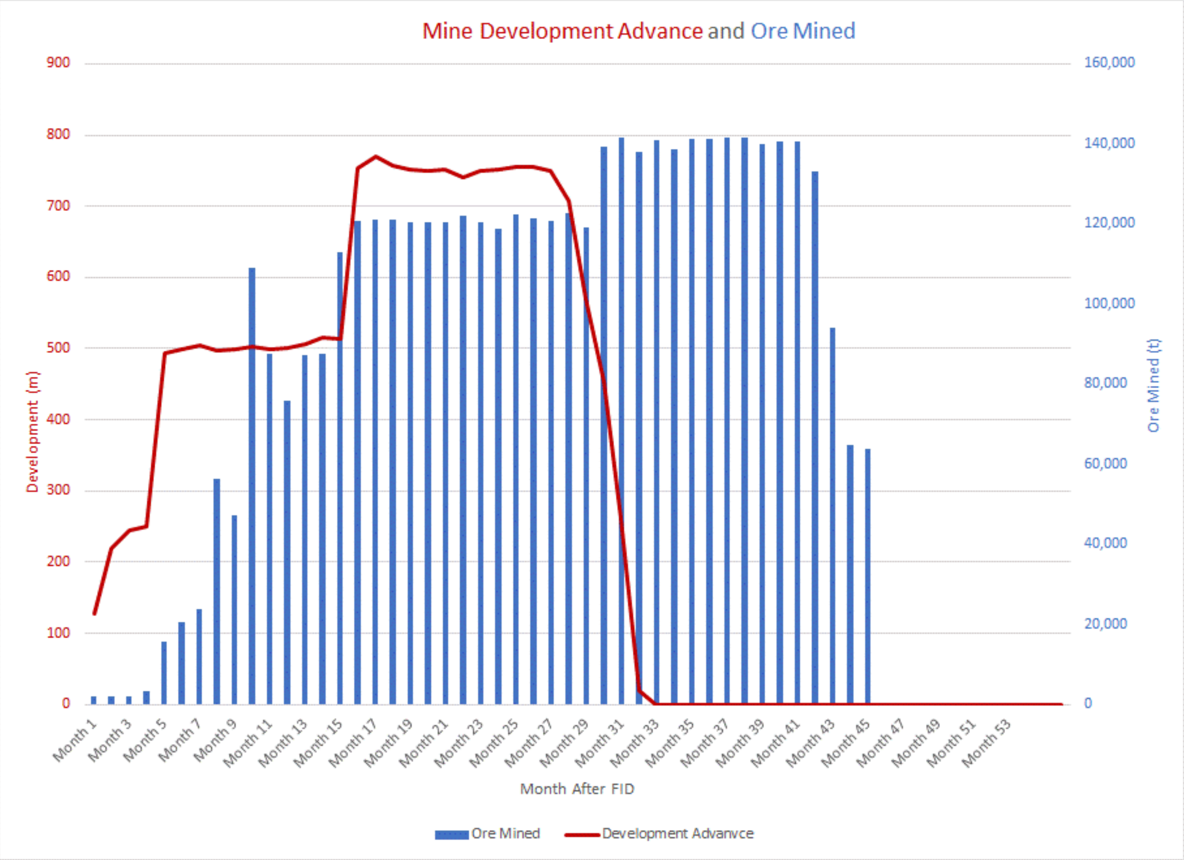


Figure 59: Monthly mine development advance and material mined

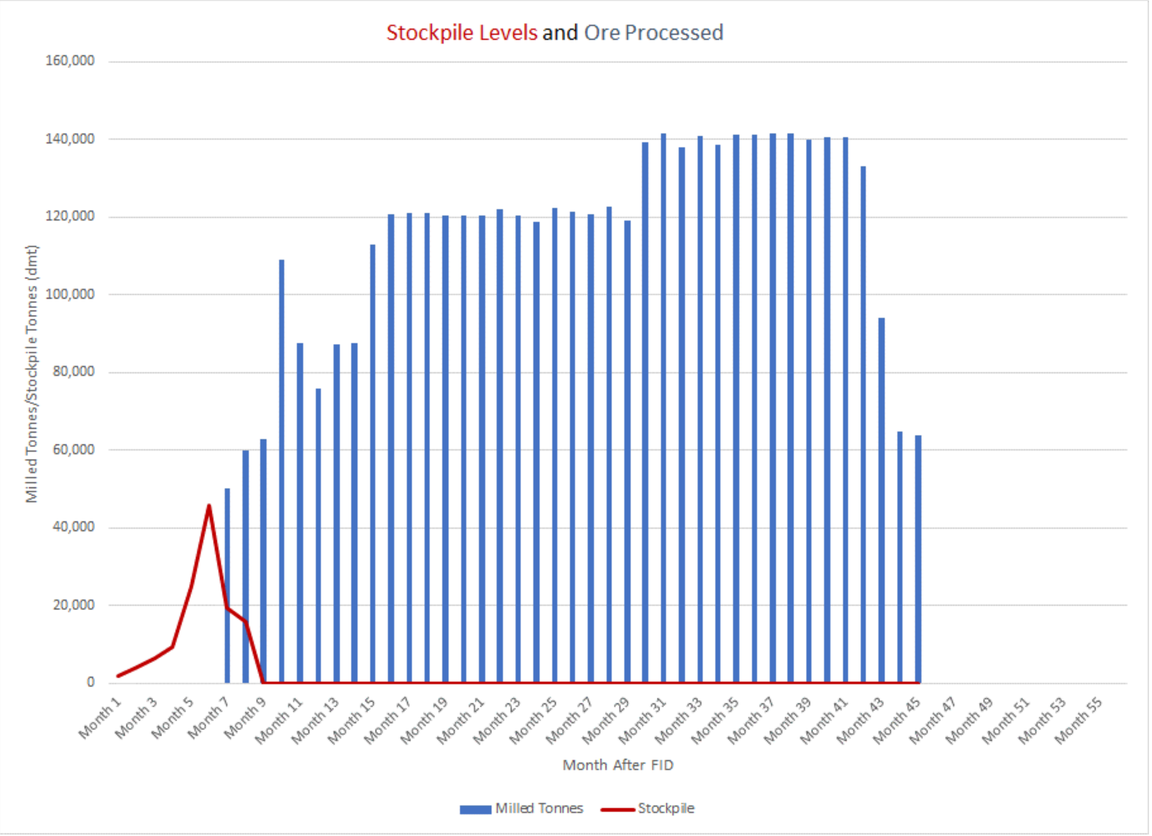


Figure 60: Monthly stockpile levels and ore processed

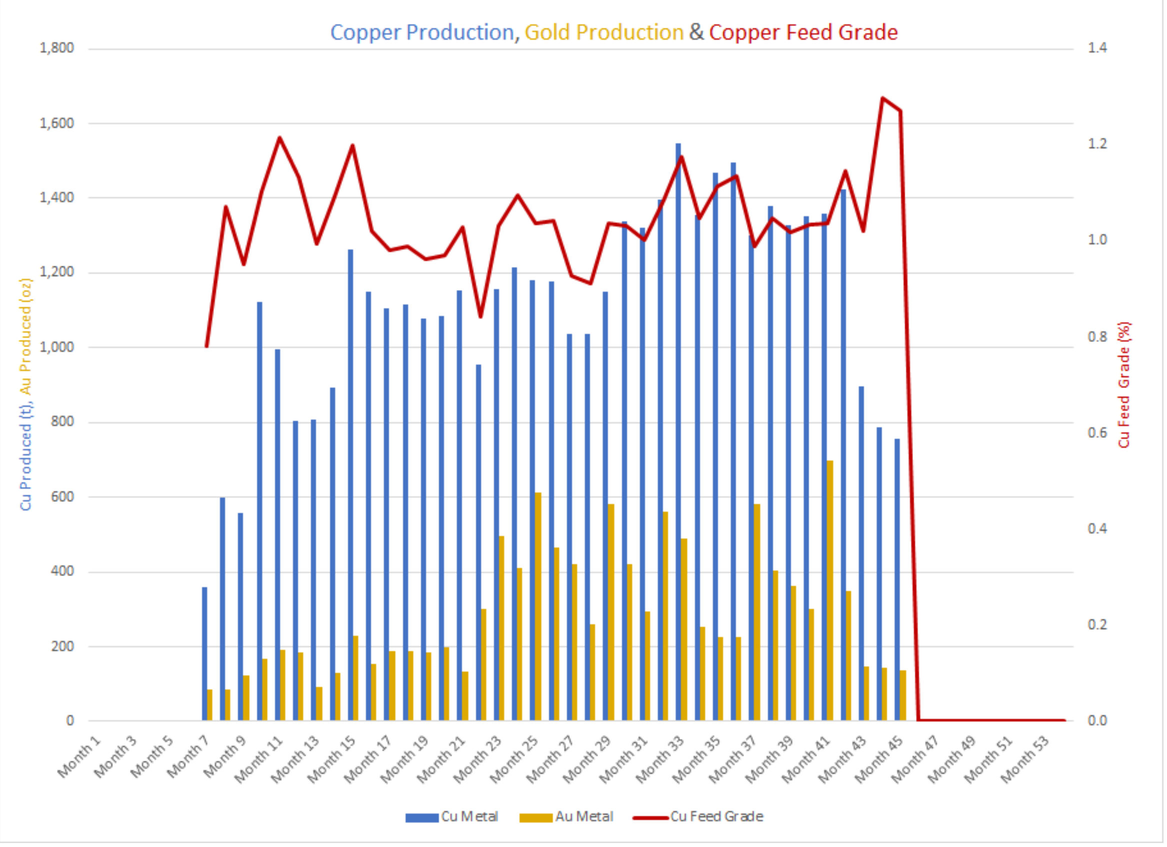


Figure 61: Monthly copper production, gold production and copper feed grade

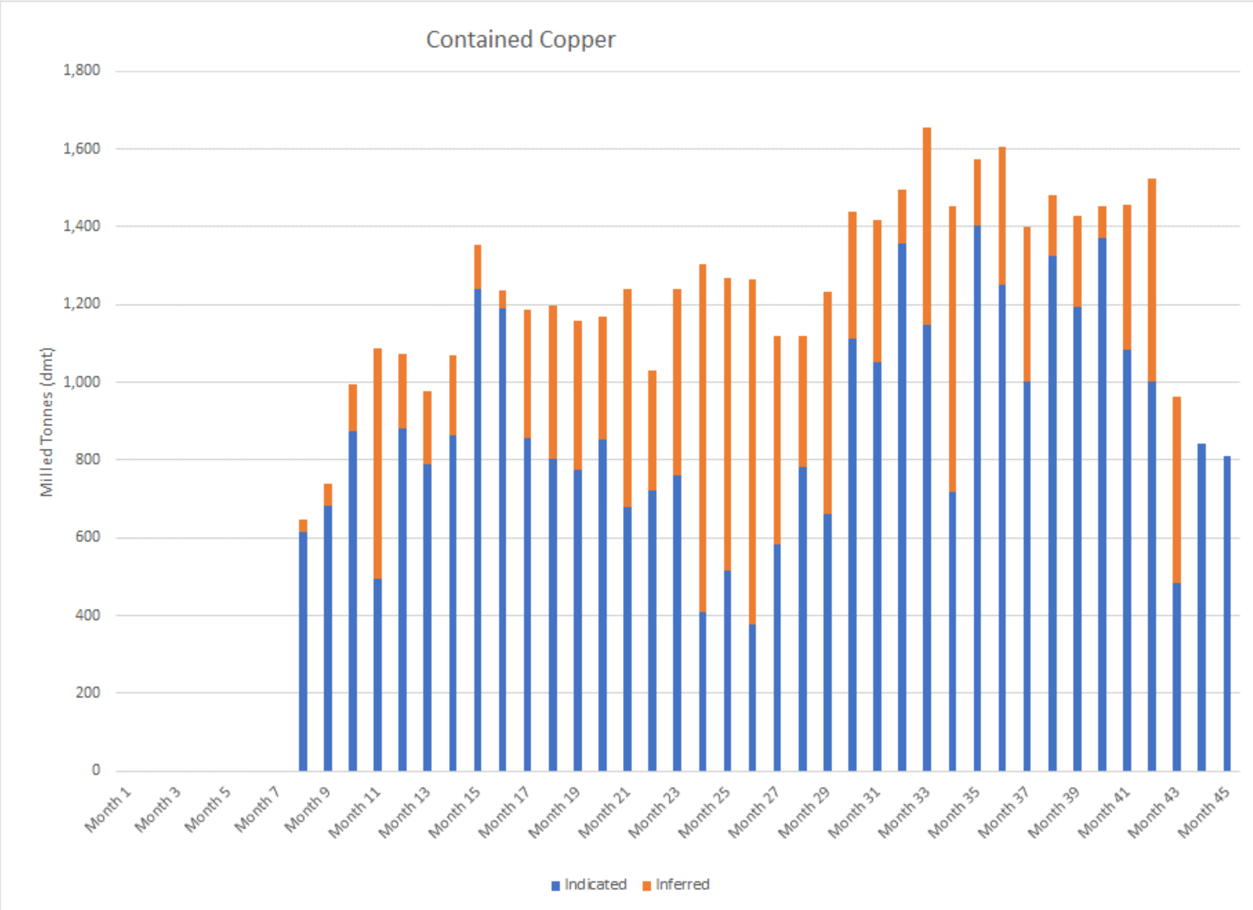


Figure 62: Contained copper metal by resource category

Table 18 provides the annual profile of production metrics for the project.

Table 18: Annual production forecasts

Metric	Year 1	Year 2	Year 3	Year 4 (9 months)
Processed (MT)	0.45 MT	1.4 MT	1.6 MT	1.1MT
Feed Grade (%)	1.07%	1.02%	1.05%	1.07%
Copper recovery (%)	93.2%	93.1%	93.2%	93.2%
Copper Produced (kt)	4.4	13.0	15.5	10.5
Gold Produced (koz)	1.8	4.5	4.7	0.4

(note: figures may not sum due to rounding)

15 References

All exploration drill results, exploration information and Mineral Resource Estimates have previously been reported to the ASX by Competent Person at the time. The results reported herein are reported in the form and context of the original ASX releases.

Refer http://www.hillgroveresources.com.au/announcements

- 10 Oct 2019 Excellent Drill Results from Kanmantoo Cu-Au Deposit
- 5 Nov 2019 Additional Information to Maiden Kavanagh Underground
- 3 Sep 2020 Drilling Expands Cu-Au Footprint at Kanmantoo Underground
- 7 Dec 2020 Updated Kanmantoo Underground Mineral Resource Estimates
- 23 Feb 2021 Kanmantoo Underground Exploration Target Update
- 3 May 2021 Drilling Confirms Down-Dip Cu-Au Mineralisation at Kanmantoo
- 6 May 2021 Hillgrove Hits 170m of Copper Mineralisation at Kanmantoo
- 24 Jun 2021 Drilling Results Update at Kanmantoo
- 31 Aug 2021 Hillgrove Awarded $2m Grant to Commence UG Decline
- 1 Sep 2021 Hillgrove Hits 166m of Copper Mineralisation at Kanmantoo
- 22 Sep 2021 $12m Raising for Drilling and Development Kanmantoo Copper
- 27 Oct 2021 Next Major Drilling Program Underway at Kanmantoo
- 28 Oct 2021 Hillgrove receives Overwhelming Support for SPP
- 1 Nov 2021 Portal Cut for Kanmantoo Decline Commences
- 14 Dec 2021 Updated Kavanagh Underground Mineral Resource Estimate
- 3 May 2022 Nugent Zone Delivers Excellent Drill Results
- 11 May 2022 May 2022 Updated Kavanagh Underground Mineral Resource Estimate
- 26 July 2022 Updated Nugent Mineral Resources Estimate
- 8 August 2022 Spitfire Copper Gold Zone Drill Results