



Our Ref: 4060/TC/20170705

5 July 2017

David Kitto
Executive Director
Department of Planning and Environment
GPO Box 39
SYDNEY NSW 2001

Dear David

Re: Section 75W Modification to Project Approval 11_0060 – Northparkes Mines Proposed Changes to Mine Plans

Northparkes Mines (Northparkes) proposes to modify Project Approval 11_0060 under Section 75W of the *Environmental Planning and Assessment Act 1979* (EP&A Act) to allow for proposed changes to the approved mine plan. Specifically Northparkes proposes to develop a new lift at the E26 orebody, known as the E26 Lift 1 North (E26L1N) mine area.

This letter has been prepared to detail the proposed modifications and provide an assessment of potential environmental impacts arising from the proposed changes to support the modification to PA11_0060.

1.0 Background

Northparkes received project approval for the Northparkes Extension Project on 16 July 2014 (PA11_0060) under Part 3A of the EP&A Act to provide for continued mining at Northparkes, the development of additional underground and open cut mining areas, changes to the approved tailings storage facility along with a range of ancillary infrastructure changes. This project approval has been subsequently modified twice to provide for alternate underground mining methodology (sub level caving) and also adjustments to the schedule of lands. Both of these modifications have been approved as minor modifications under Section 75W of the EP&A Act.

Underpinning the original project approval, Umwelt (Australia) Pty Limited (Umwelt) prepared a comprehensive Environmental Assessment (EA) that provided a description and assessment of the Northparkes operation through to 2032. The existing approved mining operations are detailed in Section 2.0 of the EA.

The mining philosophy employed by Northparkes is one of 'mill feed' whereby the goal of mining activities is to maintain a constant supply of available ore to put through the processing plant to maintain consistent copper concentration production. Accordingly, mine planning is refined through further exploration and detailed mine design to maintain the primary feed from the existing E26 and E48 underground mines, and the approved E22 underground mine, whilst being supplemented by additional ore from the approved campaign open cut mining as well as use of existing ore stockpiles for lower grade material. As a result of this approach, flexibility in mine design is essential, within the constraints of the approved impact from the Northparkes operations as established under the existing project approval.

2.0 Proposed Modification

The proposed modifications to the Project Approval are detailed below, with the proposed overall site layout being as shown on **Figure 1**, which is an amended version of Figure 1.2 of the EA.

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Northparkes proposes to develop an additional underground block cave mining area within the E26 ore body known as E26L1N. The pipe-like E26 ore body is currently divided into two lifts as part of the currently approved mine plan. Lift 1 (which was completed in October 2003) extends from the surface to approximately 480 metres below the surface. Underground block cave mining in E26 also consists of Lift 2 and Lift 2N. The extraction level of Lift 2 extends to approximately 830 metres below the surface.

The proposed E26L1N mine area consists of:

- Establishment of additional extraction level at approximately 520 to 540 metres below ground level (mbgl) at the northern extent of the currently approved E26 underground mine
- Establishment of minor tunnelling and underground conveyor infrastructure to link with approved hoisting infrastructure at E26 to enable transport of ore from E26L1N to the processing plant
- Extraction of approximately 36 Million tonnes (Mt) of ore from the E26L1N mine area over the currently approved life of Northparkes

In addition, Northparkes has proposed minor amendments to the conceptual E26 underground mine extent reflective of the conceptual nature of the approved mine plans.

Figure 2 shows the proposed amendments to the E26 underground mining areas (An amended version of Figure 2.15 of the EA), which shows a cross section of the E26 block cave mine that incorporates the proposed E26L1N mine area as well as to reflect the conceptual boundaries of this mining extent to provide necessary flexibility for detailed mine planning and development.

The proposed additional mining within the E26L1N mine area will not require changes to the currently approved ore processing rates and approved mine life for Northparkes. In addition, the approved tailings storage facilities have sufficient capacity to accommodate the additional tailings from the E26L1N mine area.

Table 1 provides an overview of the proposed modification relative to the approved operations under PA11_0060.

Table 1 – Comparison of Proposed and Approved Mining Operations under PA11_0060

Major Project Components/ Aspects	Approved Operations	Proposed Modifications
Mining Areas	Continued underground caving of the E26 and E48 ore bodies. Development of underground cave mining in the E22 resource (previously subject to open cut mining). Development of open cut mining area in existing mine subsidence zone for E26. Development of four small open cuts to extract ore from E28, E28N, E31 and E31N. All proposed open cut mining areas are located within the existing PA 06_0026 Project Area and existing Mining leases.	Development of E26 Lift 1 North cave underground mine area and associated underground ore transfer infrastructure
Ore Processing	Continuation of processing up to 8.5 Mtpa of ore through the existing processing plant sourced from underground and open cut mining areas.	No Change
Mine Life	Mining until end of 2032.	No Change
Operating Hours	24 hours per day, seven days per week	No Change
Number of Employees	Approximately 700 full time equivalents	No Change

Major Project Components/ Aspects	Approved Operations	Proposed Modifications
Mining Methods	Multiple Underground Block Caves and Sub Level Caves Campaign Open cut mining of up to 7 Mtpa for stockpiling and processing as required.	No Change
Infrastructure	Construction and operation of: TSF augmented to connect existing and approved tailings facilities, through the development of TSF 3 southward from the existing southern embankment of TSF 2. Establishment of new waste stockpiles to store waste material generated during open cut mining campaigns including a vehicle wash down area. Continued operation of existing processing plant, site offices, underground access, water supply infrastructure and logistics connections. Continued road haulage of concentrate to Goonumbla rail siding for transport to Port Kembla. Closure of the existing site access road through the development of TSF 3. Provision of an upgraded site access road along a new alignment from McClintocks Lane. Development of an access control and visitor's car parking at the intersection of the proposed site access and McClintocks Lane. Upgrade/sealing of McClintocks Lane between the NPM access road and Bogan Road. Upgrades as required to the intersection of McClintocks Lane and Bogan Road.	No Change.
Approved Disturbance Area	As detailed on Figure 5.9 of the EA (reproduced as Figure 3). In addition, as shown on Figure 3, the detailed design and construction of the approved access control and access road has resulted this infrastructure being constructed within a smaller footprint (approximately 4ha compared to the approved disturbance of approximately 8ha). The detailed design and minor amendments to the alignment of the approved access road from McClintocks Lane also resulted in the approved access control area being constructed further to the north than as shown in the EA. Given that the overall disturbance area is smaller and Northparkes constructed this infrastructure in areas of cultivated agricultural land as opposed to the approved disturbance to Threatened Ecological Communities and free of other constraints, the impacts are less than that provided in the EA.	The extent of predicted subsidence from the proposed mine plan changes is within existing approved disturbance areas. There are no changes to the current approved disturbance area for Northparkes as a result of the proposed modification.

3.0 Proposed Approval Path

Northparkes proposes to modify the Project Approval under Section 75W of the EP&A Act. The Project Approval was approved by the NSW Minister for Planning under Part 3A of the EP&A Act on 16 July 2014.

Although Part 3A of the EP&A Act has been repealed, Schedule 6A Clause 3(1) of the EP&A Act provides transitional arrangements for the continued use of Section 75W to modify project approvals granted under Part 3A. Based on the nature of the proposed modification and minor risk of additional environmental impacts it is proposed that this is determined as a minor modification of PA11_0060.

Discussions have been held with DP&E to introduce the proposed modification and discuss the proposed approval pathway. DP&E has indicated that the use of the Section 75W approval pathway was suitable for the proposed modification.

4.0 Environmental Assessment

Northparkes has engaged Umwelt to prepare an environmental assessment for the proposed modification outlined above in **Section 2**. **Table 2** below details the environmental aspects considered for the purpose of this environmental assessment and details whether the impacts of the proposed modifications are significantly different to the approved impacts for Northparkes.

The subsidence impact predicted for the proposed E261N mine area will extend to an additional area to the north of the current predicted E26 subsidence area, but will remain within the approved E26 open cut area. As shown on **Figure 1**, the subsidence management zone for E26 has been extended to the north to be consistent with the approved E26 open cut disturbance footprint.

The proposed modifications to the E26 mine plans will not result in areas of additional surface disturbance or require any modifications to existing approved surface infrastructure at Northparkes. Accordingly the proposed modification will not result in any changes to the existing approved disturbance area established under PA11_0060 as shown on **Figure 3**.

Table 2 – Review of Environmental Impacts

Impact Type	Significant change from approved impacts	Comments
Agricultural Impact	No	All surface disturbance is within approved surface disturbance areas
Air Quality	No	All surface disturbance is within approved surface disturbance areas No change in stockpile, TSF or processing relative to the approved Northparkes operations.
Noise and Blasting	No	No change to surface operations Blasting practices are consistent with current approved operations
Biodiversity	No	All surface disturbance is within approved surface disturbance areas
Water Resources	No	All surface disturbance is within approved surface disturbance areas and captured within approved water management system. A review of potential groundwater impacts associated with the proposed E26L1N mine area has been completed and is included as Attachment 1 . As outlined in Attachment 1 the proposed E26L1N modification at Northparkes is not considered to result in any significant groundwater related impacts in addition to the currently approved mine plan. Any additional impacts are considered to be negligible and meet the Level 1 minimal impact considerations of the Aquifer Interference Policy, and as such are considered as acceptable. As there are no proposed changes to the WMS

Impact Type	Significant change from approved impacts	Comments
		catchment and groundwater inflow is not substantially different to approved operations there will be no change in operational water balance for Northparkes. Northparkes continues to supplement water requirements through established water licence and supply arrangements as part of approved operations.
Heritage (Aboriginal and European)	No	All surface disturbance is within approved surface disturbance areas
Visual	No	All surface disturbance is within approved surface disturbance areas and there is no change to approved surface infrastructure
Traffic and Amenity	No	No change to production or staff levels
Rehabilitation	No	All surface disturbance is within approved E26 open cut disturbance area which is identified as a restricted land use in the final landform
Social and Economic Impacts	No	The proposed modifications to the approved mine plans will enable required operational flexibility as part of ongoing Northparkes operations. The social and economic benefits remain consistent with the EA and are significant in terms of local and regional economy and employment.

5.0 Justification and Benefits

As outlined above, the environmental impacts of the proposed modification of PA11_0060 are expected to be minimal and are consistent with the impacts associated with the approved Northparkes operations. The proposed modifications to the approved mine plans will enable Northparkes to develop an additional underground mine area within the established E26 ore body whilst also providing for an appropriate level of operational flexibility as part of ongoing Northparkes operations.

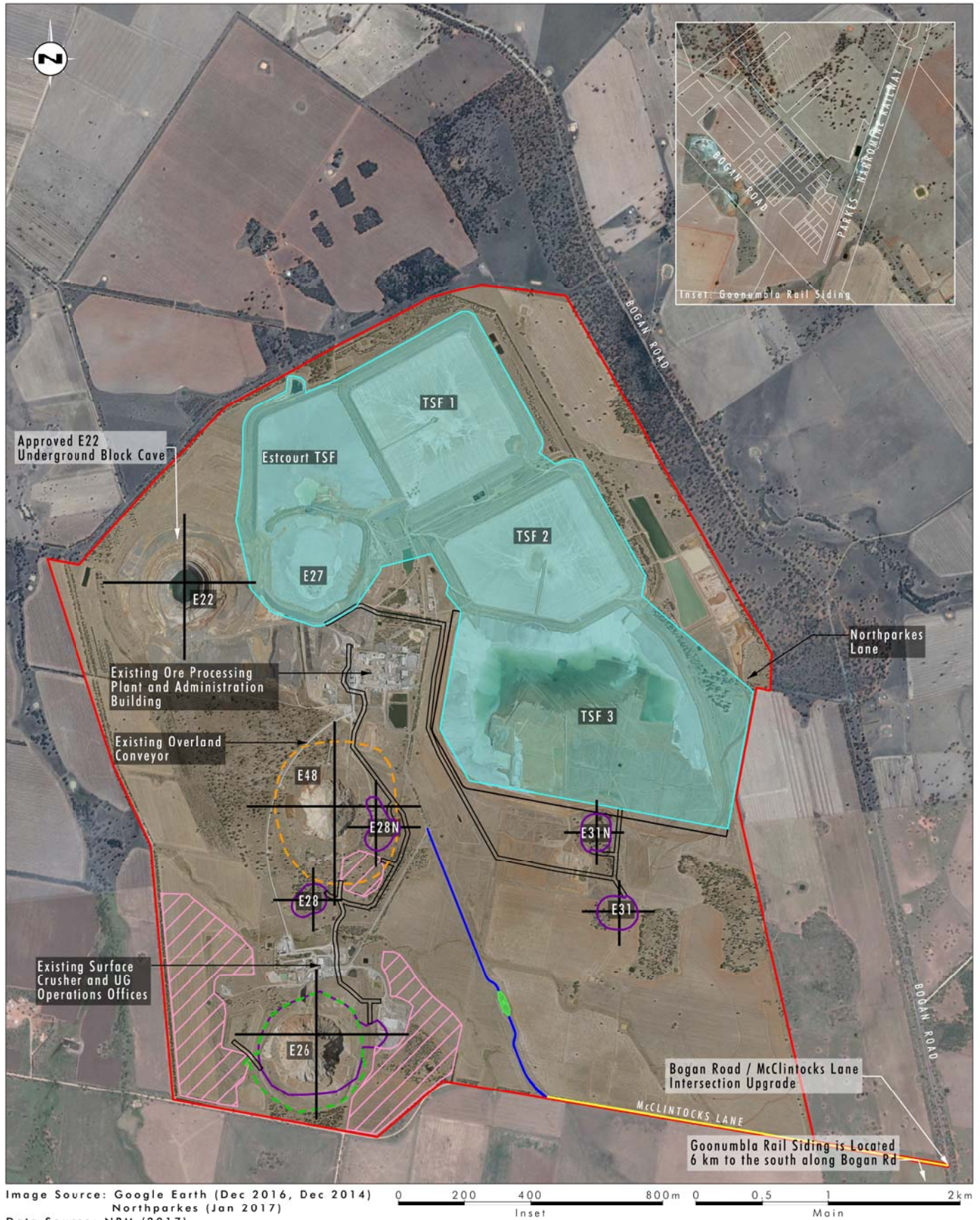
Given that the proposed modification involves limited environmental impacts beyond the current PA11_0060, a minor modification under Section 75W of the EP&A Act is sought to allow for the proposed modifications outlined in this letter.

Your earliest consideration of this matter would be greatly appreciated. If you require any further information, please don't hesitate to contact me on (02) 4950 5322.

Yours sincerely



Tim Crosdale
Group Manager
enc

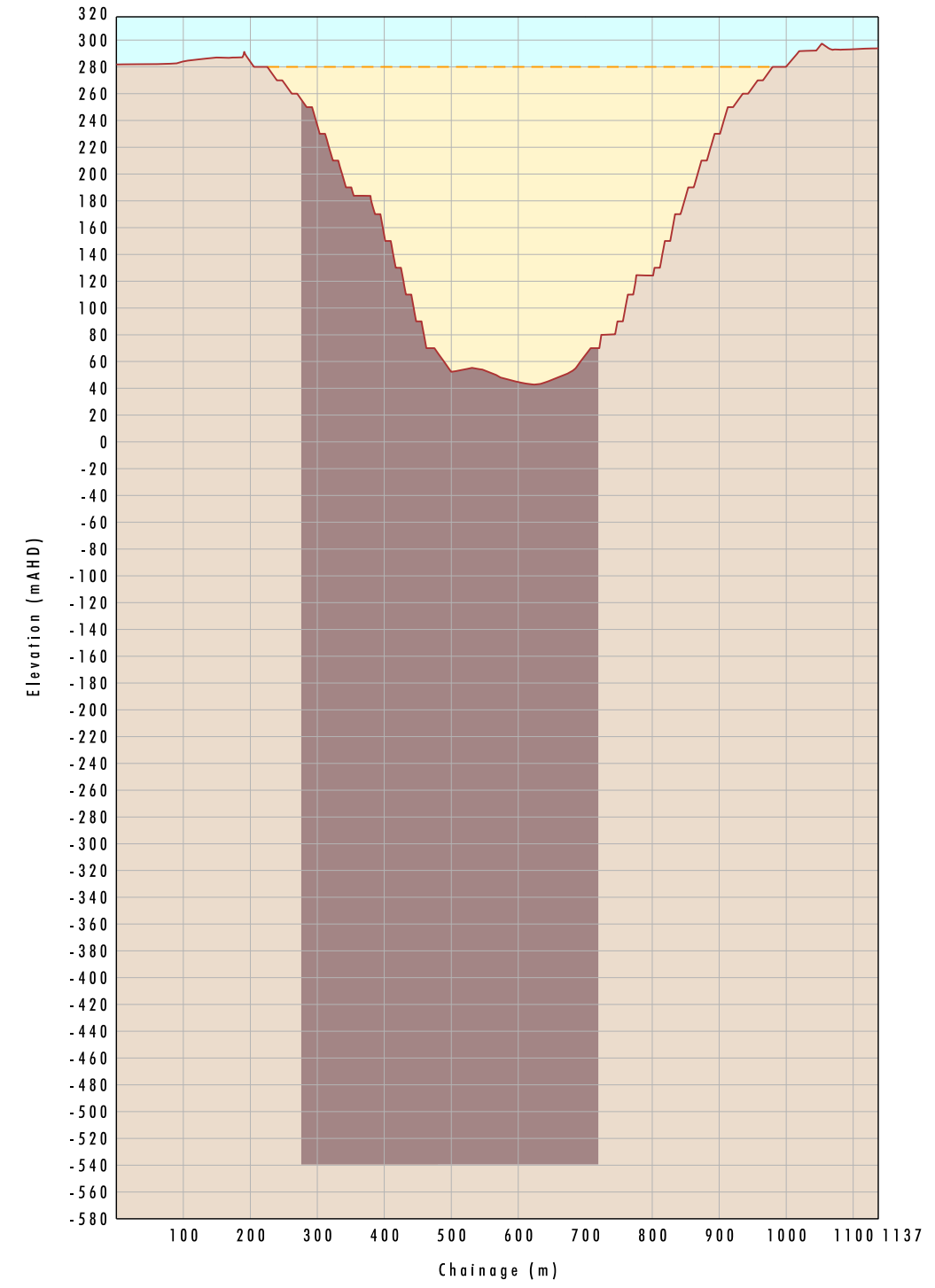
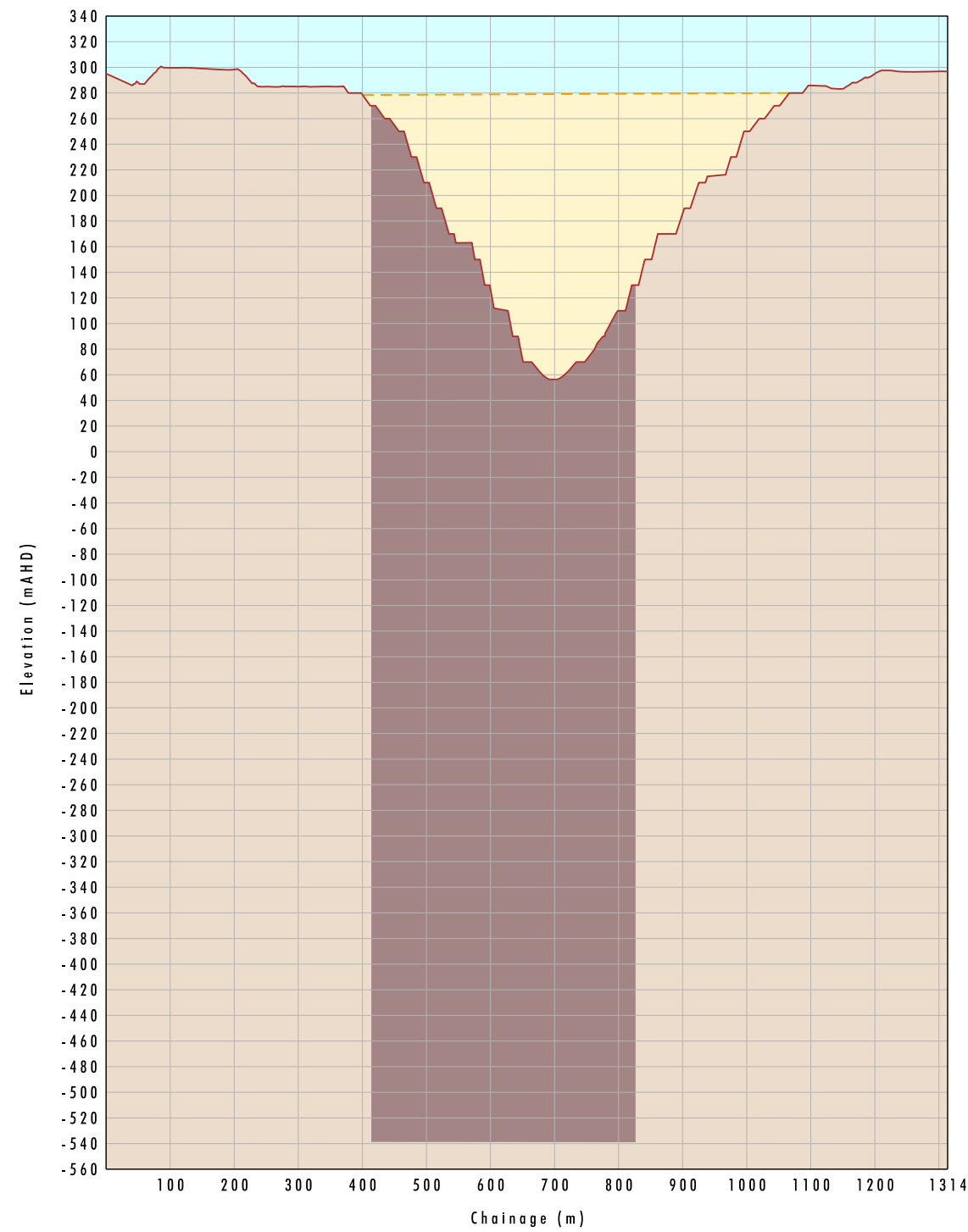


Legend

- Project Area
- Proposed E26 Subsidence Area
- Approved E48 Subsidence Area
- Approved Tailings Storage Facility
- Approved Open Cut Areas
- Approved Upgrade to McClintocks Lane
- Approved Waste Dumps
- Access Control and Visitor Car Park
- Site Access Road
- Approved Haul Road
- Transect

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FIGURE 1
Conceptual Mine Plan Layout



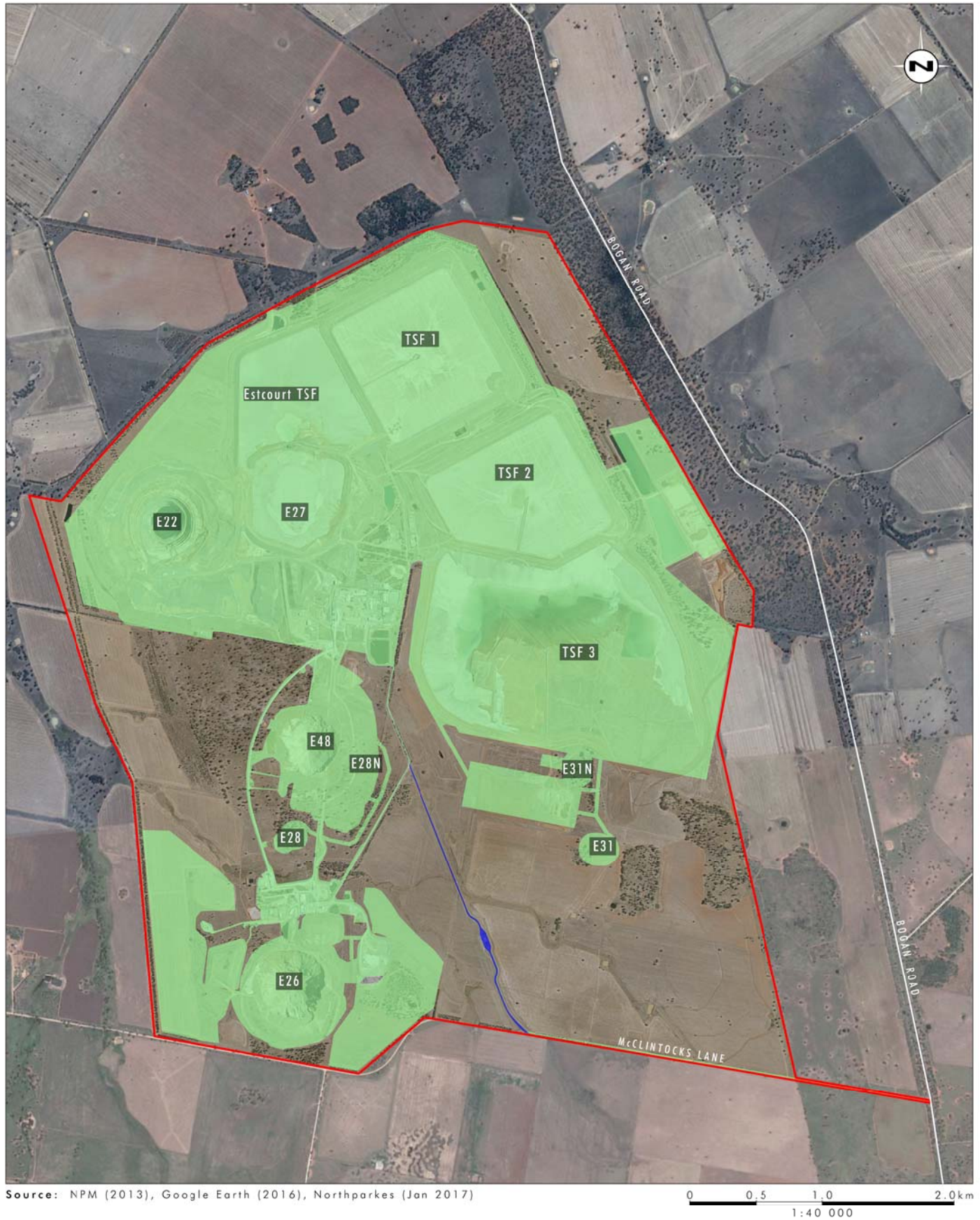
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- Open Cut
- Underground Block Cave (Approximate Extent)
- Predicted Conceptual Open Cut Final Void
- Original Surface Level

0 50 125 250m
Vertical Scale

0 100 250 500m
Horizontal Scale

FIGURE 2
Conceptual Mine Plan Cross Sections



Legend

- Project Area
- Approved Disturbance Area (PAII-0060)
- Disturbance Access Control and Access Road

FIGURE 3
Disturbance Areas



ATTACHMENT 1

3 July 2017

Attention: Tim Crosdale
Umwelt (Australia) Pty Ltd
75 York Street
Teralba, NSW 2284

Project Name: Northparkes Mine
Project Number: WES-WRE-00054

Subject: Qualitative Groundwater Assessment – Proposed Modifications to E26 Underground Mine

Dear Tim

The following letter provides a qualitative review and groundwater assessment of potential groundwater impacts arising from proposed modifications to mine design at the Northparkes Mines. Potential impacts are compared against the approved project impacts as presented in the 2013 Groundwater Impact Assessment Report (Golder Associates, 2013¹).

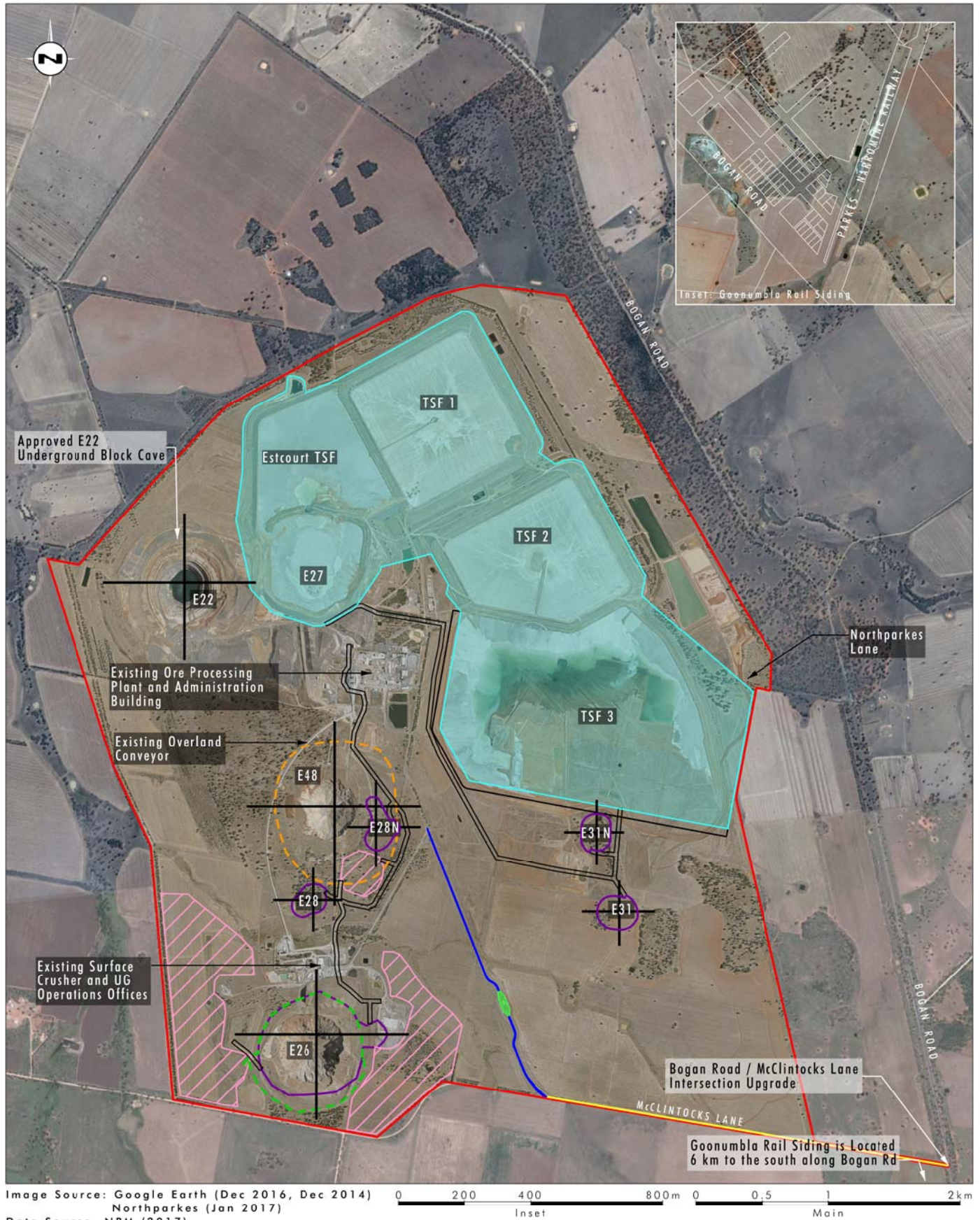
1. Background

Northparkes Mines (Northparkes) is located in the locality of Goonumbla, approximately 24km to the north-northeast of Parkes in NSW. Northparkes is a copper-gold mine, extracting ore through a combination of open pit and underground cave mining methods. Approved site layout and mining locations are provided on Figure 1.

Orebodies are hosted within a mineralised halo surrounding quartz monzonite intrusions within the Goonumbla Volcanics of the Lachlan Foldbelt. The monzonite intrusions are sub-vertical and trend in a north-south orientation. The individual intrusions form narrow pipes, typically less than 50m wide, but are open to depths in excess of 900 m below ground level (mbgl). A thin mantle of transported detritus up to 6 m in depth overlies the project area with a deeper regolith and weathering profile extending to depths of up to 150 mbgl.

Groundwater occurrence is generally limited to secondary porosity (fracture flow) with all formations present typically of low hydraulic conductivity. Away from the influence of mining, depth to groundwater is of the order of 25 to 53 m below ground level (mbgl), with the water table residing within the weathered basement lithologies. Regional groundwater flow is in a north to northwesterly direction. Bore yields in the region are typically low, averaging less than 1 litre per second (L/s) (Golder Associates, 2013). Water quality is commensurately marginal, typically brackish to saline, with some occurrences of better quality groundwater at shallower depths.

¹ Golder Associates, 2013. *Northparkes Mine Step Change Project, Groundwater Impact Assessment Report*. Prepared for Umwelt (Australia) Pty Ltd. Report Number 117626007-007-Rev1. Dated July 2013.



Legend

- Project Area
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- Transect

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FIGURE 1
Conceptual Mine Plan Layout

During extraction of the ore through the cave mining, groundwater seeps from the surrounding formation into the caved zone, and from there percolates down to the extraction level where it is collected in sumps and pumped from the mine. The seepage from the surrounding formation is driven by the pressure differential between the intact formation and the caved zone and results in the development of a depressurised, and potentially desaturated, halo surrounding the cave zone. Given the low permeability of the formations at Northparkes, the cone of drawdown resulting from mine dewatering will be steep and localised to the mining area.

Further detail on project geological and hydrogeological setting and groundwater occurrence is provided in Golder Associates (2013).

2. Approved Operations

A summary of the approved project components, under project approval PA11_0060 is provided on Table 1.

Table 1 : Comparison of Proposed and Approved Mining Operations under PA11_0060

Major Project Components/ Aspects	Approved Operations	Proposed Modifications
Mining Areas	Continued underground caving of the E26 and E48 ore bodies (as per current approval). Development of underground cave mining in the E22 resource (previously subject to open cut mining). Development of open cut mining area in existing mine subsidence zone for E26. Development of four small open cuts to extract ore from E28, E28N, E31 and E31N. All proposed open cut mining areas are located within the existing PA 06_0026 Project Area and existing Mining leases.	Development of E26 Lift 1 North cave underground mine area and associated underground ore transfer infrastructure
Ore Processing	Continuation of processing up to 8.5 Mtpa of ore through the existing processing plant sourced from underground and open cut mining areas.	No Change
Mine Life	Mining until end of 2032.	No Change
Operating Hours	24 hours per day, seven days per week	No Change
Number of Employees	Approximately 700 full time equivalents	No Change
Mining Methods	Multiple Underground Cave and Sub Level Cave Campaign Open cut mining of up to 7 Mtpa for stockpiling and processing as required.	No Change

Major Project Components/ Aspects	Approved Operations	Proposed Modifications
Infrastructure	Construction and operation of: TSF augmented to connect existing and approved tailings facilities, through the development of TSF 3 southward from the existing southern embankment of TSF 2. Establishment of new waste stockpiles to store waste material generated during open cut mining campaigns including a vehicle wash down area. Continued operation of existing processing plant, site offices, underground access, water supply infrastructure and logistics connections. Continued road haulage of concentrate to Goonumbla rail siding for transport to Port Kembla. Closure of the existing site access road through the development of TSF 3. Provision of an upgraded site access road along a new alignment from McClintocks Lane. Development of an access control and visitor's car parking at the intersection of the proposed site access and McClintocks Lane. Upgrade/sealing of McClintocks Lane between the Northparkes access road and Bogan Road. Upgrades as required to the intersection of McClintocks Lane and Bogan Road.	No Change.

3. Proposed Modification

Northparkes proposed to develop a new lift at the E26 orebody, named the E26 Lift 1 North (E26L1N) mine area.

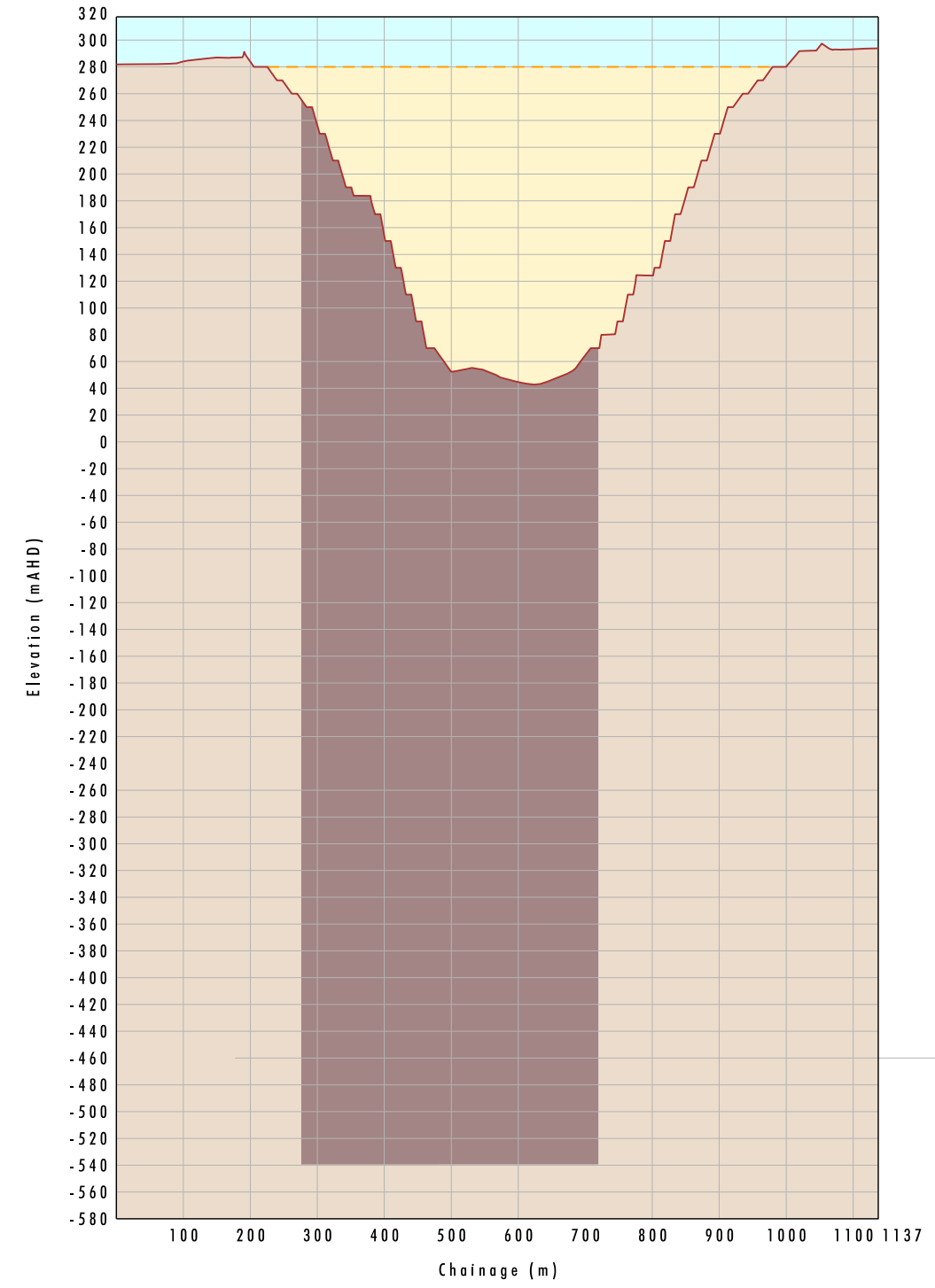
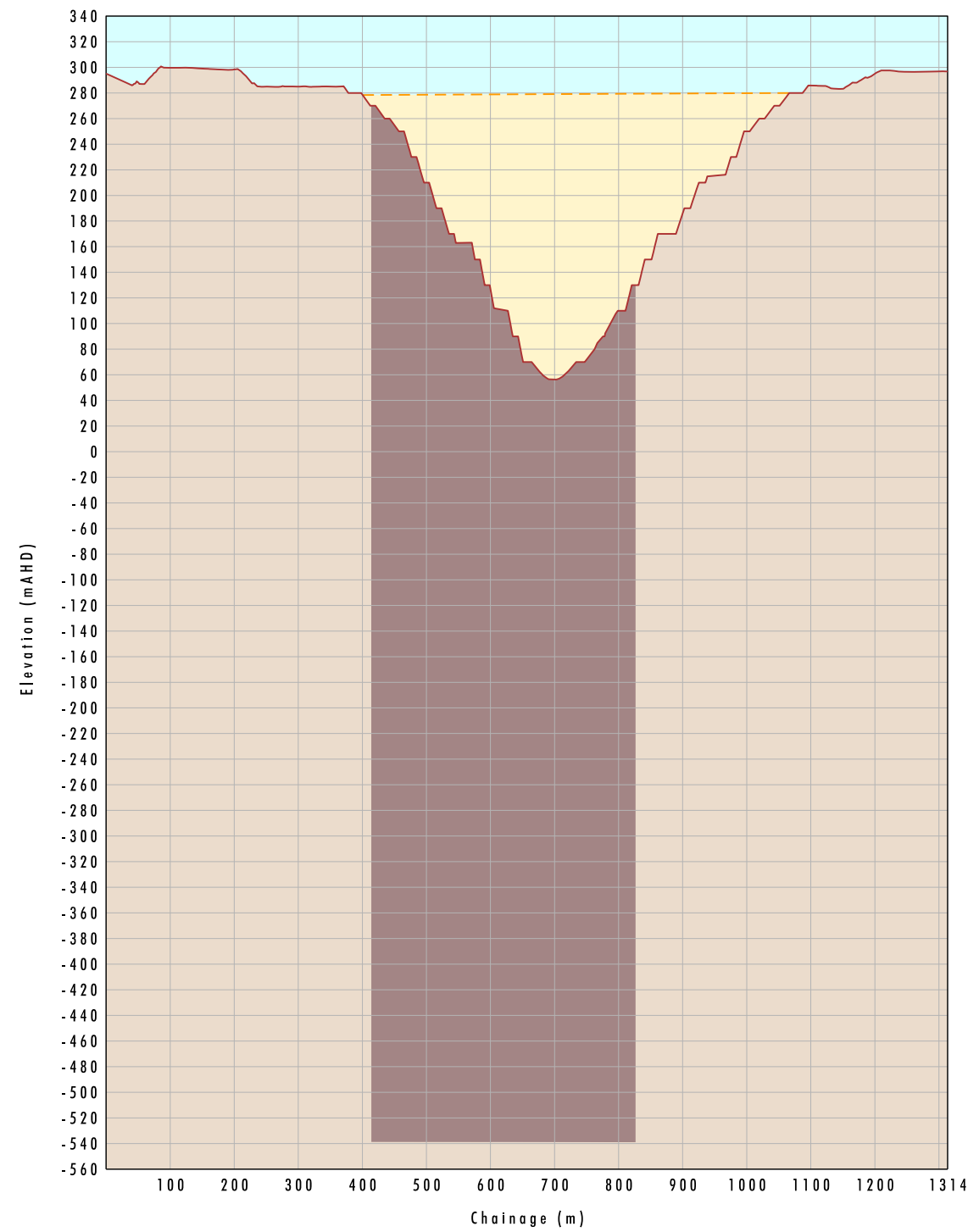
The development of E26L1N will provide for around 30Mt of ore extracted from this area. No other changes (processing rates, tailings usage) will be required from the current approved mine plan, and it is understood that the tailings storage facilities have enough capacity to accommodate the additional tailings from the E26L1N area.

The proposed modifications are presented on Figure 2 alongside the approved mine plan.

3.1 Magnitude of Proposed Modification

The proposed E26L1N development is presented in section view relative to the existing E26N on Figure 2. The undercut and extraction levels for E26L1N are planned at approximately 520 to 540 mbgl. There is considerable overlap in the foot prints of E26 and E26L1N, with the limit of caving of E26L1N only offset from the current E26 cave outline by less than 100 m to the northeast. The surface expression of subsidence and caving of E26L1N will be retained within the existing approved E26 open cut mining footprint.

From interpretation of historical dewatering data, inflows to E26L1 at end of extraction in 2003 were of the order of approximately 250 to 500 kL/day (2.9 to 5.8 L/s), with the development of E26 Lift 2 also contributing approximately 500 kL/day. Given that the existing E26 caved zone has been open and drained for up to 14 years, it is anticipated that the orebody being targeted by E26L1N will be substantially depressurised and drained, and will not contribute significantly to the total mined inflows, other than developing a larger response zone to seepage collection.



Legend

- Open Cut
- Underground Block Cave (Approximate Extent)
- Predicted Conceptual Open Cut Final Void
- Original Surface Level

0 50 125 250m
Vertical Scale

0 100 250 500m
Horizontal Scale

FIGURE 2
Conceptual Mine Plan Cross Sections

3.2 Observed vs predicted Water Levels

Groundwater monitoring data for the period March 2004 to March 2017 in the vicinity of E26 have been reviewed and compared to predicted drawdown as presented in the 2013 GWIA (Golder Associates, 2013).

Predicted groundwater decline resulting from all mining operations at cessation of mining (2028) from the 2013 groundwater impact assessment is presented on Figure 3. From that assessment the predicted 10m decline in groundwater level at the top of bedrock remained largely within the Northparkes project area, and the extent of drawdown was predicted to be limited to within 4.5 km of the open pits and underlying caved areas.

In the vicinity of E26, the majority of this predicted decline in water level would arise from the completion of the first lift of E26, E26 Lift One (E26L1) that was completed in October 2003. E26L1 was developed from a depth of 480 mbgl (-180 mAHD) to surface. A second lift was also completed at E26 from a depth of 840 mbgl (-540 mAHD), however, it is the initial lift, closest to surface and elevated hydraulic conductivities associated with the weathered zone that would have the greatest influence on groundwater levels.

Groundwater hydrographs for the bores located closest to E26 are provided in Figure 4. The cumulative departure from mean rainfall conditions (CRD) is also presented on Figure 4 for comparison of the data against long term climatic conditions. The CRD has been derived from rainfall data collected in Parkes from October 1889 to June 2017 (BoM Stations 65026 and 65068). For the period presented, a coarse interpretation of the CRD indicates the following:

- a period of predominantly average to below average rainfall from January 2004 to January 2010;
- A period of strongly above average rainfall from January 2010 to March 2012;
- A period of predominantly average rainfall from March 2012 to May 2016; and
- Generally above average rainfall to October 2016.

From Figure 4, water levels show no distinct response to the E26 mining operation, although no data is available from before the extraction of E26L1. A stepped water level decline of approximately 7 m is apparent at P149 from October 2006 to March 2007 that could be associated with the second lift at E26 or with open cut operation. The decline is then followed by a partial recovery due to elevated rainfall during 2010 and 2011. A number of other monitoring bores also show a response to rainfall over this period, most notably P100 which displays a rapid water level rise of approximately 4 m over six months. A spiked drop in water levels is shown at P101 and P102 in December 2007. However, subsequent monitoring show a return to previous water level trends and the data points may be erroneous. Several other anomalous data spikes are apparent in the data set.

No ongoing response to mining is apparent and there is no indication of a hydraulic gradient towards the mining area. There is however, an abrupt change in water level between P149 and the rest of the monitoring bores. A low permeability east west trending fault is included in the groundwater model south of E26 and it is likely that this structure separates P149 from the other monitoring bores represented on Figure 4.

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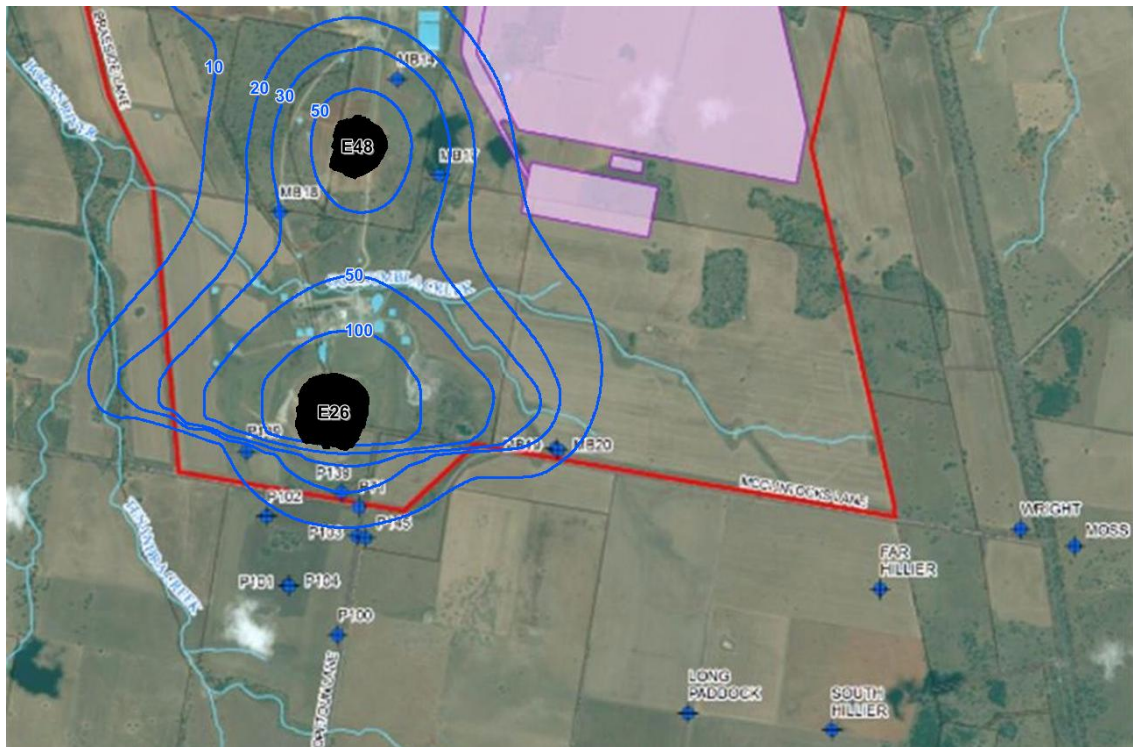


Figure 3 : 2013 GWIA – Predicted Drawdown (m)



Figure 4 : E26 Groundwater Level Monitoring

4. Comparison with 2013 GWIA

The 2013 GWIA concluded that the approved operations at Northparkes posed little risk to the surrounding groundwater system or users. Given the general low permeability of the surrounding lithology, marginal water quality, and minimal development and utilisation of groundwater resources in the region in general, the potential impacts of the proposed development of E26L1N are unlikely to pose any significant additional risk.

The assessment of potential impacts from the 2013 groundwater impact assessment are summarised in the following sections, along with the assessment of potential additional impacts arising from the proposed mining of E26L1N.

4.1 Impact on Groundwater Levels and Flow

2013 GWIA	Additional Impacts from E26L1N
The impact of the proposed Project on groundwater levels is expected to be localised, and limited mainly to the vicinity of the mine operations. Depressurisation impacts are not predicted to have a large area of influence, due to the low hydraulic conductivity of the water-bearing formations, thus limiting the areal extent of impact. It is anticipated that the radius of groundwater depressurisation in the bedrock formation would extend up to approximately 4.5km from the pits at cessation of the proposed mining. The study indicated that the Project will generate low volumes of seepage from the bedrock. The maximum seepage rate was estimated to be 0.8ML/year based on the modelling results. It is likely that, despite the groundwater sink caused by additional evaporative losses no long term impact on post mining groundwater levels would be observed at any significant distance from the pits.	No significant additional impact on groundwater level is expected as the orebody to be mined will already be largely depressurised. No significant increase in the extent of impacts would be attributable to the modification. Given that the orebody to be mined will be substantially depressurised and drained by previous mining, no significant increase in mine inflow and dewatering are anticipated. No significant change is anticipated to post mining water level recovery.

4.2 Potential Impact on Surface Water Systems

2013 GWIA	Additional Impacts from E26L1N
There is no measureable groundwater impact on the surface water system within and in the vicinity of the Project Area as a result of the dewatering activities.	No change.

4.3 Impact on Groundwater Quality

2013 GWIA	Additional Impacts from E26L1N
Potential for elevated TDS, sulphate and metal/metalloid concentrations at neutral pH in	No change. It is also noted that the open cut mine voids and

2013 GWIA	Additional Impacts from E26L1N
groundwater, which can enter the groundwater system.	subsidence areas are anticipated to remain long term groundwater sinks, mitigating the potential risk of offsite migration of potential contaminants.

4.4 Impact on Other Groundwater Users

2013 GWIA	Additional Impacts from E26L1N
Based on the extent of the predicted drawdown associated with the Project, no private groundwater users have been identified as being affected or potentially impacted by the Project.	No change.

4.5 Impact on Groundwater Dependant Ecosystems

2013 GWIA	Additional Impacts from E26L1N
There are no known springs or groundwater dependant ecosystem within the vicinity of the project or within the area of predicted drawdown.	No change.

5. Aquifer Interference Policy – Minimum Impact Considerations

The NSW Aquifer Interference Policy (AIP) provides a framework for assessing the impacts of aquifer interference activities on water resources. To assess potential impacts, groundwater sources are categorised as either highly productive or less productive, with sub-categories for alluvial, coastal sands, porous rock, and fractured rock aquifers. For each category there are a number of prescribed minimal impact considerations relating to water table and groundwater pressure drawdown, and changes to groundwater and surface water quality.

Two levels of minimal impact considerations are specified. If the predicted impacts are less than the Level 1 minimal impact considerations, then these impacts will be considered as acceptable.

The aquifers in the vicinity of Northparkes are categorised as a less productive fractured rock groundwater source. The potential impacts relating to the development of E26L1N are compared against the relevant minimal impact considerations on Table 2.

Table 2 : AIP Minimal Impact Considerations

Minimal Impact Consideration – Less Productive Fractured Rock Groundwater Source	E26L1N Assessment
Water Table 1. Less than or equal to 10% cumulative variation in the water table, allowing for typical climatic “post-water sharing plan” variations, 40m from any: (a) high priority groundwater dependent ecosystem; or (b) high priority culturally significant	There are no high priority groundwater dependant ecosystems, high priority culturally significant site, or water supply works within the area of predicted water table decline.

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Minimal Impact Consideration – Less Productive Fractured Rock Groundwater Source	E26L1N Assessment
site; listed in the schedule of the relevant water sharing plan. A maximum of a 2m decline cumulatively at any water supply work. 2. If more than 10% cumulative variation in the water table, allowing for typical climatic “post-water sharing plan” variations, 40m from any: (a) high priority groundwater dependent ecosystem; or (b) (b) high priority culturally significant site; listed in the schedule of the relevant water sharing plan if appropriate studies demonstrate to the Minister’s satisfaction that the variation will not prevent the long-term viability of the dependent ecosystem or significant site. If more than a 2m decline cumulatively at any water supply work then make good provisions should apply.	
Water Pressure 1. A cumulative pressure head decline of not more than a 2m decline, at any water supply work. 2. If the predicted pressure head decline is greater than requirement 1. above, then appropriate studies are required to demonstrate to the Minister’s satisfaction that the decline will not prevent the long-term viability of the affected water supply works unless make good provisions apply.	There are no water supply works within the area of predicted water table decline.
Water Quality 1. Any change in the groundwater quality should not lower the beneficial use category of the groundwater source beyond 40m from the activity. 2. If condition 1 is not met then appropriate studies will need to demonstrate to the Minister’s satisfaction that the change in groundwater quality will not prevent the long-term viability of the dependent ecosystem, significant site or affected water supply works.	The most reasonable beneficial use of the surrounding groundwater source is considered to be for agricultural water. The mining of E26L1N is not expected to present any deleterious risk to water quality outside of the mining area and will not lower the beneficial use category beyond 40m from the project boundary.

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Subject: Qualitative Groundwater Assessment – Proposed Modifications to E26 Underground Mine

Minimal Impact Consideration – Less Productive Fractured Rock Groundwater Source	E26L1N Assessment
Additional Considerations ... any advice provided to a gateway panel, the Planning and Assessment Commission or the Minister for Planning on a State significant development or State significant infrastructure will also consider the potential for: · acidity issues to arise, for example exposure of acid sulphate soils; · water logging or water table rise to occur, which could potentially affect land use, groundwater dependent ecosystems and other aquifer interference activities. Specific limits will be determined on a case-by-case basis, depending on the sensitivity of the surrounding land and groundwater dependent ecosystems to waterlogging and other aquifer interference activities to water intrusion.	The 2013 GWIA discusses the potential for the exposure and oxidation of acid forming minerals within the confines of the active mining operations. Evaporation losses from the open mine voids were inferred to result in a long-term groundwater sink mitigating the offsite migration of water from the mine voids. The E26L1N modification is not expected to result in any significant changes from the 2013 GWIA in this respect. The 2013 GWIA discussed potential for groundwater mounding beneath the TSF. This is expected to be very localised and will not affect land use, groundwater dependant ecosystems or other aquifer interference activities. No significant additional impacts are anticipated as a result of mining E26L1N.

6. Summary

The proposed E26L1N modification at Northparkes is not considered to result in any significant groundwater related impacts on top of the currently approved mine plan. Any additional impacts are considered to be negligible and meet the Level 1 minimal impact considerations of the AIP, and as such are considered as acceptable.

7. Close

We trust that the assessment provided above meets with your expectations and project requirements. Should you require any further information please do not hesitate to contact our office.

Yours sincerely

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