

NORTHPARKES MINE MODIFICATION 6

E22 Portal, TSF2 Buttressing and E31 Precinct
Modification Report

FINAL

November 2021



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Modification Report

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Prepared by
Umwelt (Australia) Pty Limited
on behalf of
CMOC Northparkes

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QMS Certification Services

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Acknowledgement of Country

Umwelt would like to acknowledge the traditional custodians of the country on which we work and pay respect to their cultural heritage, beliefs, and continuing relationship with the land. We pay our respect to the Elders – past, present, and future.

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Document Status

Rev No.	Reviewer		Approved for Issue	
	Name	Date	Name	Date
1	Lauren Evans	18/11/2021	Alex Irwin	19/11/2021

Executive Summary

CMOC-Northparkes Mines (Northparkes) is a copper and gold mine located 27 kilometres (km) north-west of Parkes, in the Central West of New South Wales (NSW). Approved operations at the Northparkes Mine include open cut and underground copper-gold mining, associated ore handling and processing and product transport through to December 2032.

Mining operations at Northparkes are currently authorised under a Project Approval (PA 11_0060) granted on 16 July 2014 under the former Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

Proposed Modification

Northparkes proposes to modify PA 11_0060 under section 4.55(2) of the EP&A Act. The Proposed Modification includes the following:

- construction and use of a new underground portal access (including associated drive, conveyor and other ancillary infrastructure) for E22 underground mining operations, to increase operational efficiency and reduce overland ore transport
- embankment buttressing of Tailings Storage Facility 2 (TSF2), including associated amendments to the approved disturbance area
- changes to TSF construction within the approved disturbance footprint associated with increased safety requirements for TSFs since first approved
- minor changes to the E31 and E31N open cut pits to reflect updated geological data and improved resource recovery, including:
 - minor adjustments to disturbance areas for the approved pits and associated infrastructure (roads, safety bunds, water management etc)
 - minor increases to maximum approved mining depths.
- establishment of temporary waste rock stockpile areas for the E31 and E31N pits to avoid unnecessary material re-handling in the future due to the proposed Northparkes E44 Rocklands Project
- additional detail regarding the approved methods and locations of rehabilitation material (soils and vegetation) stockpiling
- establishment of additional clay and filter material borrow pits for TSF construction and lifts
- relocation of existing Contractor area facilities (eg site offices, crib huts and a workshop) which will also service the E31 and E31 mining operations
- relocation of the main water supply pipeline and Rosedale (TSF3) tailings pipeline and
- clarification regarding approved disturbance boundaries and the location of ancillary infrastructure within the E31 Precinct.

Project Justification and Benefits

The Proposed Modification will provide a range of benefits, including:

- improved operational efficiencies (including reduced overland ore transport) associated with E22 underground operations
- facilitating improvements to the approved TSF2 and the Infill TSF to meet updated design and safety requirements
- improved resource recovery from within the E31 and E31N open cut areas
- avoiding or mitigating potential future impacts associated with the proposed Northparkes E44 Rocklands Project by avoiding potential operational conflicts, improving operational synergies and minimising future material rehandling that will be required for the proposed Rocklands TSF.

Assessment of Impacts

- The assessments presented in this report indicated that the Proposed Modification is unlikely to significantly increase the environmental impacts of approved operations. In particular, these assessments demonstrate that:
- surface disturbance associated with the Proposed Modification is primarily limited to areas of approved disturbance for PA 11_0060 and areas which have been heavily disturbed by historical agricultural activity
- the proposed clearing of additional native vegetation associated with the Proposed Modification will be partially mitigated by the removal of an approved area of disturbance from the Approved Operational Area; the residual impacts of clearing will be suitably offset in accordance with the *NSW Biodiversity Offsets Scheme*
- no additional impacts on Aboriginal or historic heritage values are expected as a result of the Proposed Modification, relative to approved operations
- noise, blasting and air quality impacts associated with the operations will continue to comply with relevant performance criteria and will be managed through the implementation of measures detailed in existing management plans
- surface water and groundwater impacts associated with the Proposed Modification will be minimal and generally consistent with approved operations.

The key findings of this assessment are summarised in the table below.

Summary of Key Environmental Impacts

Aspect	Environmental Assessment
Biodiversity	The majority of additional proposed surface disturbance will be contained within areas of Category 1 – Exempt Land and areas that have been extensively modified by agricultural and forestry activities. However, the Proposed Modification will involve the removal of 13.59 hectares (ha) of native vegetation. Of this, approximately 3.28 ha is commensurate with threatened ecological communities listed under the <i>Biodiversity Conservation Act 2016</i> (BC Act). Northparkes has identified an area of undisturbed remnant woodland which is proposed to be removed from the Approved Operational Area under PA 11_0060, thereby proportionally reducing offsetting requirements for the Proposed Modification. The residual credit requirements will be met using one or a combination of offsetting mechanisms available under the <i>NSW Biodiversity Offsets Scheme</i>.
Heritage	One recorded Aboriginal heritage site (P1 – AHIMS site 35-6-0156), a potential scar tree, is located within the Proposed Modification Area. The Aboriginal Cultural Heritage Assessment Report (ACHAR) for the Proposed Modification included reconsideration of this site, in consultation with Registered Aboriginal Parties. This assessment concluded that the tree was not culturally modified. As such, the AHIMS register will be updated to reflect that AHIMS 35-6-0156 is not a site. No other recorded Aboriginal objects will be impacted by the Proposed Modification. Northparkes will continue to manage potential Aboriginal cultural heritage impacts, including unexpected finds, in accordance with the Northparkes Mines Aboriginal Cultural Heritage Management Plan. No impacts to historic heritage values are expected as a result of the Proposed Modification.
Noise, Blasting and Air Quality	Noise, blasting and air quality impacts associated with the Proposed Modification are expected to be negligible. Northparkes will continue to manage these impacts in compliance with existing performance criteria under PA 11_0060 and in accordance with its approved management plans.
Surface Water	The Proposed Modification will involve a minor increase in catchment area for the mine's contaminated water catchment system, relative to approved operations. Northparkes will continue to manage surface water impacts in accordance with the established performance criteria set out in the approved Water Management Plan.
Groundwater	The proposed increase in mining depth in the E31 and E31N pits is expected to have a negligible impact on groundwater levels and quality, relative to approved operations.
Visual	Views of new and relocated features associated with the Proposed Modification will be fully or partially shielded by vegetation and will be generally consistent with approved operations.
Social	As the Proposed Modification is unlikely to increase environmental or amenity impacts relative to approved operations, there will be minimal potential for any additional social impacts. Northparkes will continue to implement existing commitments under PA 11_0060 (as modified) for the management of social impacts.

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1.0 Introduction and Overview of Proposed Modification

1.1 Background

CMOC-Northparkes Mines (Northparkes) is a copper and gold mine located 27 kilometres (km) north-west of Parkes, in the Central West of New South Wales (NSW) as shown in **Figure 1.1**. Approved operations at the Northparkes Mine include open cut and underground copper-gold mining, associated ore handling and processing and product transport through to December 2032.

Northparkes is a joint venture between China Molybdenum Co., Ltd (CMOC) (80%) and the Sumitomo Groups (20%). CMOC is an international resources company with a diverse portfolio of high quality, low cost long-life assets. CMOC is focused on mining, processing, smelting, product technology, trade, research and development. Ore extracted at Northparkes Mines is processed on-site to produce high quality copper concentrate which is transported by road to the Goonumbla Rail Siding and dispatched by rail to Port Kembla for export.

Mining operations at Northparkes commenced in 1993 and have continued under various development consents and project approvals issued by the NSW Land and Environment Court, Parkes Shire Council and the Minister for Planning, as detailed in **Section 2.1** and **Appendix A**.

On 16 July 2014, Northparkes was granted Project Approval (PA 11_0060) for the Northparkes Mine Step Change Project under the former Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act). All prior development consents and project approvals for mining operations at the site have now been surrendered, with consolidated mining operations authorised solely under PA 11_0060.

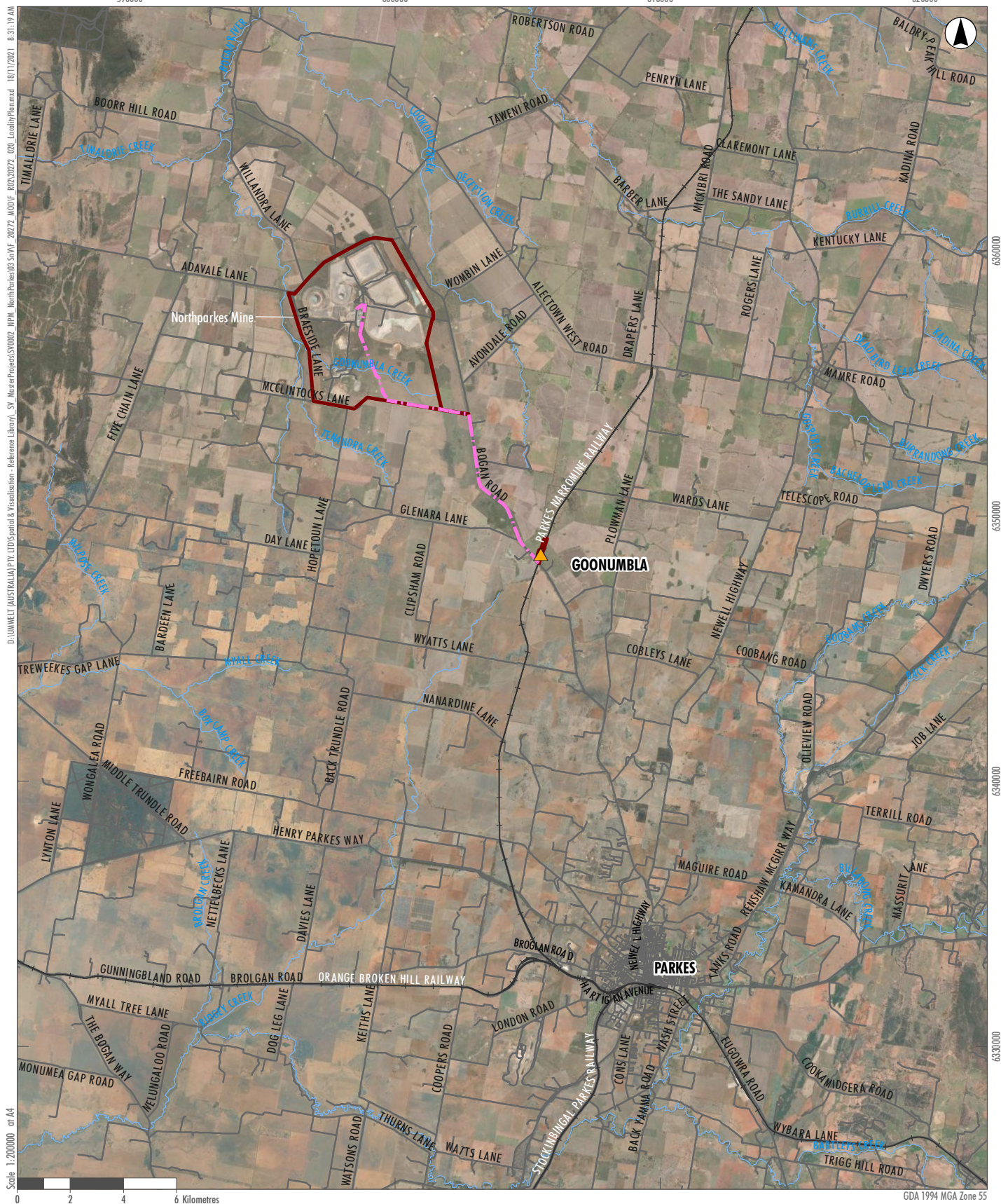
Updated geological assessment work has also identified minor changes to the scale of the approved E31 and E31N open cut pits which include works located outside the disturbance areas identified for these pits in PA11_0060. A review of underground operations has also identified improved operational efficiencies associated with a new portal and associated decline servicing the E22 underground operations.

Northparkes have lodged a Scoping Report for the Northparkes E44 Rocklands Project. This State Significant Development (SSD) application will cover all operations at Northparkes and will supersede PA 11_0060. The proposed Rocklands TSF is located to the south of the Rosedale TSF and will subsume the currently approved E31 and E31N open cut pits, approved clay and filter borrow pit locations, existing topsoil, subsoil and vegetation stockpiles (collectively referred to as rehabilitation material stockpiles) and the TSF construction laydown area and workforce facilities (and originally planned E31 facilities). The operational timeframe for the E31 open cut changes and E22 Portal do not align with the approval timeframe for the Northparkes E44 Rocklands Project and, accordingly, a modification of PA11_0060 is required to cover these changes to approved operations.

Additionally, design and safety requirements for tailings storage facilities have been updated since the construction of some of the earlier Northparkes TSFs. A review of TSF2 has identified a high priority need to improve buttressing on the eastern side of TSF2 and the associated Infill TSF between TSF1 and TSF2. The earlier construction of the approved Infill TSF (between TSF2 and the Estcourt TSF) has also been identified as a priority to manage potential risks associated with the western wall of TSF2. These works require additional disturbance on the eastern side of TSF2 to accommodate the buttressing and associated road

accesses, water management and rehabilitation material stockpiling. The construction of the Infill TSF (located wholly within the Approved Operational Area), will require the relocation of various infrastructure and facilities including haul roads and pipelines and the existing contractor area (site offices, crib huts and a workshop).

A number of reasonably minor changes to approved operations under PA 11_0060 are required as a result of the TSF changes, E22 Portal and changes to E31 open cut pits. Included with these changes are the relocation of certain approved activities, in anticipation of the Rocklands TSF being approved, to avoid potential operational conflicts and improve operational synergies with this TSF construction and operation in the future. These changes include the temporary stockpiling of waste rock and relocation of rehabilitation material stockpiles to minimise unnecessary rehandling of material associated with the Rocklands TSF construction.



Legend

- Northparkes Project Area
- Approved Road Haulage Route (Northparkes Mine to Goonumbra Rail Siding)
- Goonumbra Rail Siding
- Railway Line
- Road
- Drainage Line

FIGURE 1.1

Locality Map

1.2 Proposed Modification

Northparkes is seeking a modification to PA 11_0060 pursuant to section 4.55(2) of the EP&A Act. The Proposed Modification includes a number of changes to approved operational activities at Northparkes Mine largely associated with updated tailings construction requirements for TSF2, approved mining operations at the E31 and E31N open cut mining pits, construction of a new E22 underground access portal and associated drive which will enable transport of ore via conveyor directly to the surface near the ball mill and improve integration with existing facilities and changes to the location of activities in anticipation of future approval of the proposed Rocklands TSF.

A detailed description of the Proposed Modification is provided in **Section 2.2**.

2.0 Proposed Modification

2.1 Overview of Approved Operations

Table 2.1 provides an overview of the various development consents and project approvals granted for mining operations at Northparkes Mines. Mining operations were initially authorised by a combination of development consents granted by the NSW Land and Environment Court and Parkes Shire Council. However, these consents were surrendered following the approval of the Northparkes E48 Project (PA 06_0026) by the Minister for Planning on 28 February 2007. This project approval was subsequently surrendered following the Minister's approval of the Northparkes Mines Step Change Project (PA 11_0060) on 16 July 2014. Current mining operations at Northparkes Mines are authorised solely under PA 11_0060.

Table 2.1 Northparkes Development Consents and Project Approvals

Development Consent/Project Approval	Date of Grant	Description	Comments
DA504_90	7 August 1991 (Modified on 23 March 1993)	Open cut mining of three copper/gold deposits with underground mining at a later date and associated building works	Granted by NSW Land and Environment Court following objector appeal against consent granted by Parkes Shire Council – Surrendered under PA06-0026
DA836_95	21 March 1995	Development of two (2) Open Cut Mines and Haul Road	Granted by Parkes Shire Council – Lapsed
DA895_95	19 June 1996	Development of No 2 Tailings Impoundment (TSF2)	Granted by Parkes Shire Council – Surrendered under PA06-0026
DA976_96	3 September 1996	Water Supply Augmentation	Granted by Parkes Shire Council – Surrendered under PA06-0026
DA00204	Caloola Clay Borrow Pit	Clay Borrow Pit	Granted by Parkes Shire Council – Surrendered under PA06-0026
DA03079	1 July 2003	Additions to Northparkes Mines (Estcourt Retention Pond)	Granted by Parkes Shire Council – Surrendered under PA06-0026
DA03107	23 September 2003	In-Pit Tailings Disposal (E22 and E27 Voids)	Granted by Parkes Shire Council – Surrendered under PA06-0026
PA06-0026 (as modified)	28 February 2007 (Modified 6 October 2009, 28 October 2009)	Northparkes E48 Project	Granted by Minister for Planning – Surrendered under PA 11_0060
DA11092	31 January 2012	Training Centre	Granted by Parkes Shire Council – Surrendered under PA11_0060
PA 11_0060 (as modified)	16 July 2014. Modified on 5 occasions (see Table 2.2)	Northparkes Mine Step Change Project	Granted by Minister for Planning and Environment

2.1.1 Northparkes Mines Step Change Project

The currently approved Northparkes Mine Step Change Project (PA 11_0060) includes:

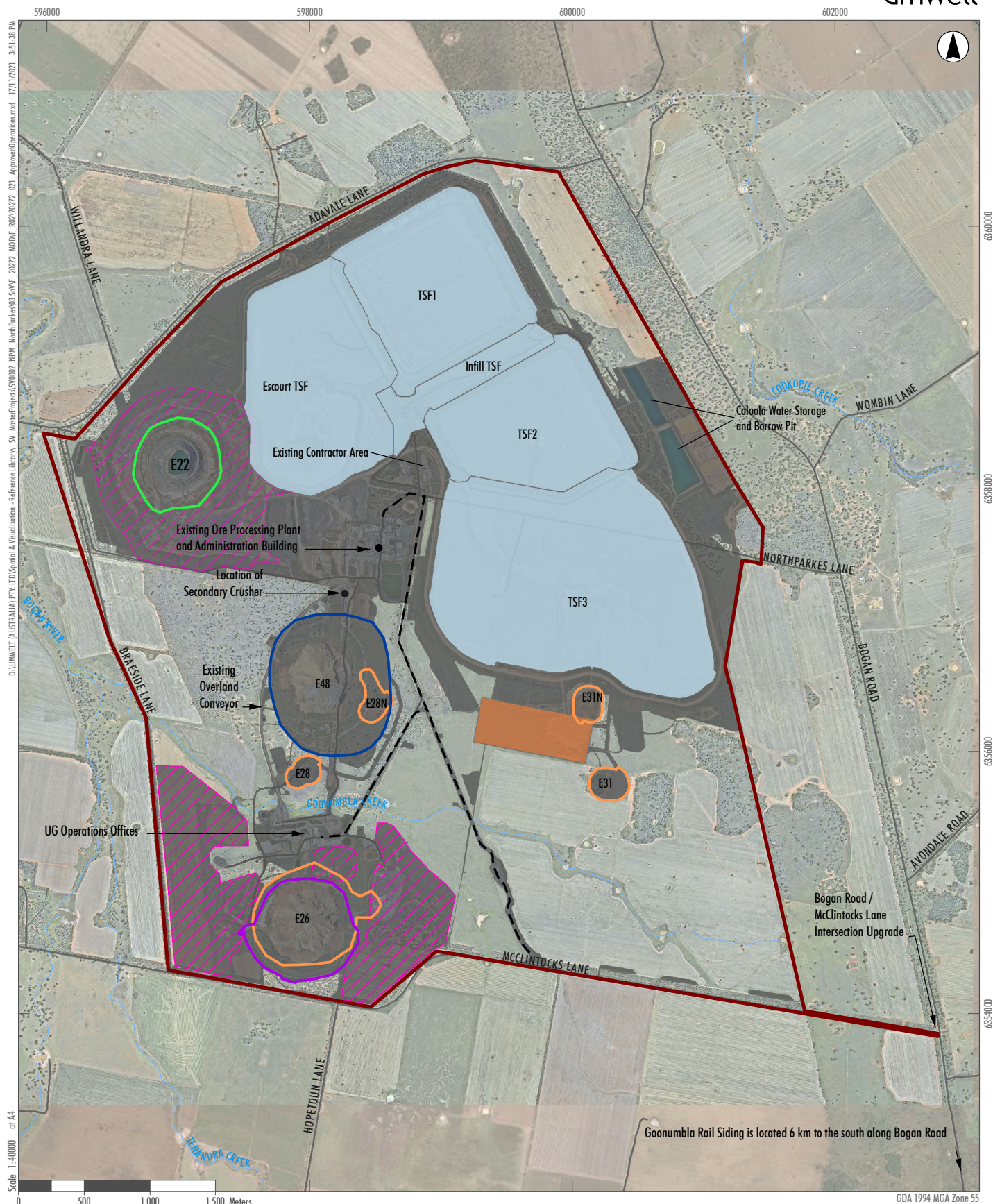
- continuation of approved underground block cave mining in the E48 and E26 ore bodies, and associated underground infrastructure
- development of underground block caving in the E22 resource beneath the E22 open cut void
- campaign open cut mining through development of five open cut resources including:
 - development of four small open cut pits E31, E31N, E28, E28N
 - E26 open cut which is located in an area of existing underground block cave subsidence.
- amendments to the configuration of TSFs including the development of the Rosedale TSF (TSF 3)
- development of new waste dumps for the management of open cut waste rock, which can be utilised in the development of TSFs
- continuation of approved ore processing infrastructure up to a capacity of 8.5 million tonnes per annum (Mtpa)
- road haulage of copper concentrate to the existing Goonumbla rail siding
- continued use of existing mine infrastructure and site facilities
- continuation of existing approved water supply and management processes
- development of an amended access road to service all mine related traffic entering the site
- continuation of approved mining operations for an extended life of an additional seven years until end of 2032
- rehabilitation and closure of the mine site after the end of the operational life of the Project in accordance with relevant approvals.

PA 11_0060 has been modified on 5 occasions, as outlined in **Table 2.2** below. The key features of approved operations under PA 11_0060 (as modified) and Approved Operational Area are shown in **Figure 2.1**.

Table 2.2 Summary of Modifications to PA 11_0060

Modification No.	Date of Grant	Description
MOD 1	16 June 2015	Modifying approved mining methods to permit sub-level caving in E26 and E48 underground mining areas
MOD 2	31 March 2016	Correcting reference to unformed road
MOD 3	22 September 2017	Establishment of additional extraction level within the E26 underground mining area (E21 Lift 1N)
MOD 4	6 September 2018	Construction and operation of an additional ball mill New secondary crushing building Upgrades to ore conveyor, hoisting and processing infrastructure Upgrading and relocation of power supply Clarification of blasting hours
MOD 5	30 August 2019	Temporary road haulage to Parkes National Logistics Terminal during upgrading of Goonumbla Rail Siding Relocation of secondary crushing building

A Consolidated Project Description for PA 11_0060 (incorporating the Proposed Modification) is provided in **Appendix A**.



Legend

- Northparkes Project Area
- Approved E22 Subsidence Area
- Approved E26 Subsidence Area
- Approved E48 Subsidence Area
- Approved Waste Dumps
- Approved Open Cut Areas
- Tailings Storage Facility
- Approved Rosedale Borrow Pit and Approved E31 Waste Rock Stockpile Area

- Approved Operational Area
- Internal Access Road
- Road
- Drainage Line

FIGURE 2.1

Approved Operations

2.2 Proposed Modification

As identified in **Section 1.2**, the Proposed Modification includes a number of changes to approved operational activities at Northparkes Mine. These changes are largely associated with updated tailings construction requirements for TSF2, approved mining operations at the E31 and E31N open cut mining pits, construction of a new E22 underground access portal and associated drive to improve integration with existing facilities and changes to the location of activities in anticipation of future approval of the proposed Rocklands TSF.

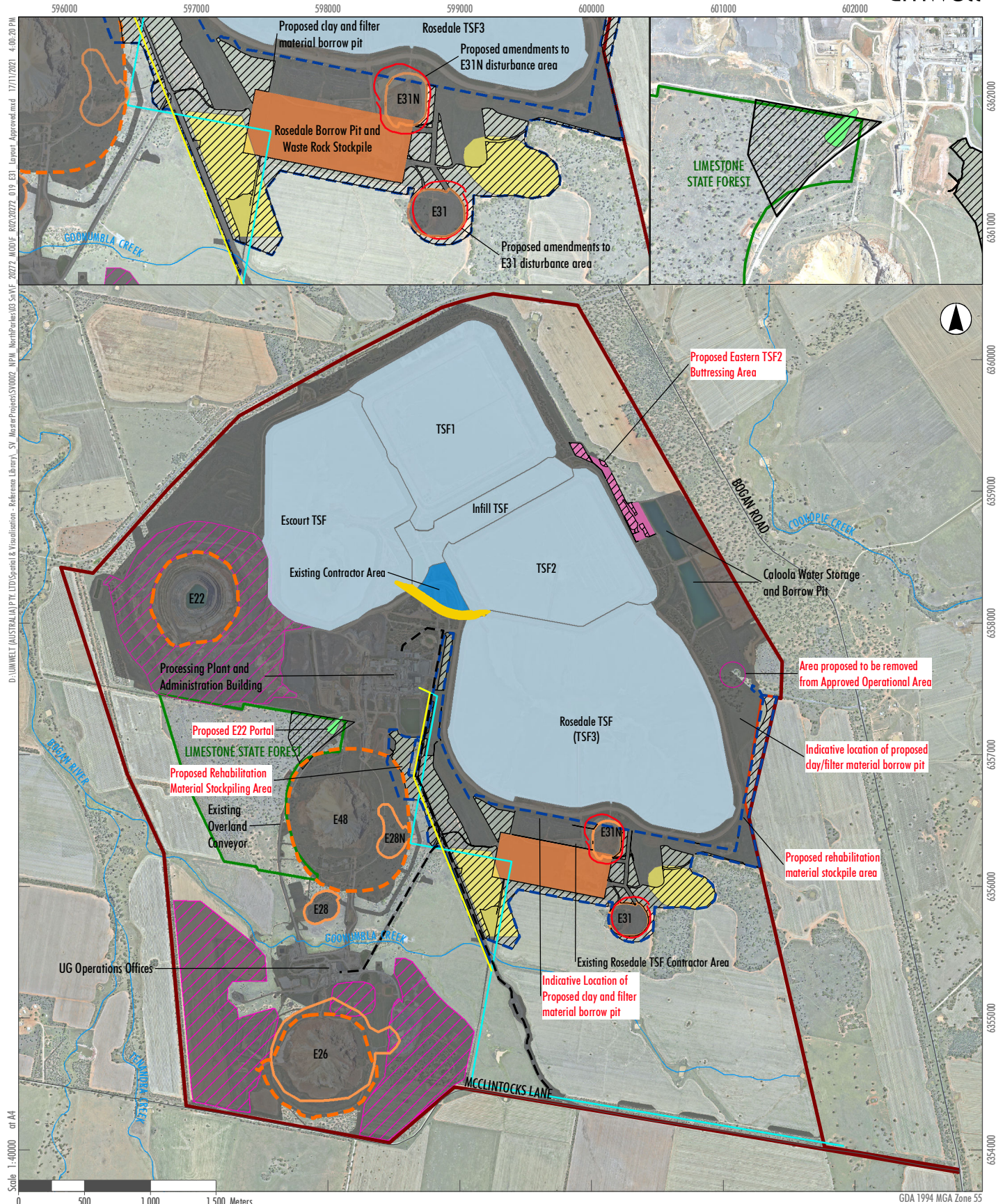
The key features of the Proposed Modification are shown in **Figure 2.2**.

The Proposed Modification includes the following:

- construction and use of a new underground portal access (including associated drive, conveyor and other ancillary infrastructure) for E22 underground mining operations
- TSF2 embankment buttressing (including associated amendments to the approved disturbance area)
- changes to TSF construction within the approved disturbance footprint associated with increased safety requirements for TSFs since first approved
- minor changes to the E31 and E31N open cut pits to reflect updated geological data and improved resource recovery, including:
 - minor adjustments to disturbance areas for the approved pits and associated infrastructure (roads, safety bunds, water management etc)
 - minor increases to maximum approved mining depths.
- establishment of temporary waste rock stockpile areas for the E31 and E31N pits to avoid unnecessary material re-handling in the future due to the proposed Rocklands TSF
- additional detail regarding the approved methods and locations of rehabilitation material (soils and vegetation) stockpiling
- establishment of additional clay and filter material borrow pits for TSF construction and lifts
- relocation of the Contractor area facilities (e.g. site offices, crib huts and a workshop) which will also service the E31 and E31 mining operations
- relocation of the main water supply pipeline and Rosedale (TSF3) tailings pipeline, and
- clarification regarding approved disturbance boundaries and the location of ancillary infrastructure within the E31 Precinct (as defined below).

The Proposed Modification Area includes additional proposed disturbance areas associated with the proposed E22 Portal and TSF2 embankment buttressing, as shown in **Figure 2.2**. The Proposed Modification Area also incorporates the area known as the E31 Precinct (see **Figure 2.2**). This Precinct includes areas used for water management, access, topsoil and subsoil stockpiles as well as the approved E31 and E31N open cuts pit areas and the Rosedale Borrow Pit Area (also approved for waste rock stockpiling). The total area of additional disturbance associated with the Proposed Modification is approximately 98 hectares (ha).

Table 2.3 provides an overview of the Proposed Modification relative to the approved operations under PA 11_0060.



Legend

- | | | |
|---|---|---------------------------------------|
| Northparkes Project Area | Proposed Additional Disturbance Areas | Proposed Infill TSF Bund (conceptual) |
| E31 Precinct Area | Approved Open Cut Areas | Internal Access Road |
| Proposed E31 and E31N Pit Extents | Approved Waste Dumps | Existing Water Supply Pipeline |
| Proposed Extension to Project Area Boundary | Approved Subsidence Limits | Proposed Water Supply Pipeline |
| Proposed Temporary Waste Rock Stockpile | Tailings Storage Facility | Drainage Line |
| Proposed Eastern TSF2 Buttrressing Area | Approved Rosedale Borrow Pit and Approved E31 Waste Rock Stockpile Area | Roads |
| Proposed E22 Portal | Approved Operational Area | |
| Proposed TSF Infill Area | | |

FIGURE 2.2

Proposed Modification

Table 2.3 Proposed Modification – Changes relative to Approved Operations

Aspect	Approved Operations (PA 11_0060)	Proposed Modification
Mine Life	Mining until end of 2032	No change
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.	No change, however, the E31 and E31N pit boundaries will be slightly amended
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
Mine Products	Copper/gold concentrate	No change
Blasting	Surface blasting permitted between the hours of 9:00 am to 5:00 pm Monday to Saturday Underground blasting permitted 24 hours per day, seven days per week	No change
Open Cut Mining Depth	E26 – approximately 300 m below ground level (mbgl) E28/E28N – approximately 60 mbgl E31 – approximately 80 mbgl E31N – approximately 70 mbgl	No change to E26, E28 and E28N E31 – approximately 110 mbgl (increase of 30 m) E31N – approximately 95 mbgl (increase of 25 m)
Underground Mining Infrastructure	Continued use of underground mining infrastructure, including ventilation and dewatering systems, power supply, maintenance workshops, underground refuelling station, underground offices, crib rooms and amenity facilities	Addition of new decline to E22 workings and associated portal. No change to other approved operations.
Ore Processing	Processing up to 8.5 Mtpa of ore through the existing processing plant sourced from underground and open cut mining areas	No change
Ore Handling and Processing Infrastructure	Continued operation of existing ore processing plant including surface crusher, crushed ore stockpiles, active grinding mills, froth flotation area and concentrate storage An overland conveyor to transport ore from the hoisting shaft to the ore processing plant stockpiles Construction and operation of an additional ball mill New secondary crushing building Upgrades to ore conveyor, hoisting and processing infrastructure	New conveyor connecting E22 Portal with existing conveyor system No change to other approved operations.

Aspect	Approved Operations (PA 11_0060)	Proposed Modification
Tailings Management	Construction and operation of TSFs augmented to connect existing and approved tailings facilities, through the development of the Rosedale TSF (TSF 3) southward from the existing southern embankment of TSF2. Approved TSFs comprise the Estcourt TSF, TSF 1, TSF2, Rosedale TSF (also known as TSF 3) and the Infill TSF	Buttressing of the eastern embankment of TSF2 (including extension to approved disturbance area) Minor extension to approved Infill TSF area (wholly within approved disturbance areas) Relocation of Rosedale TSF pipeline
Borrow Pits	Caloola, Estcourt and Rosedale Borrow Pits	Establish new clay and filter material borrow pits to the east (within approved Rosedale TSF footprint) and immediately south of the Rosedale TSF
Waste Rock Management	Establishment of waste stockpiles to store waste material generated during open cut mining campaigns Use of waste rock material for TSF construction and maintenance	Establishment of two new temporary waste rock stockpiling areas (up to 30 m in height), to the west and east of the Rosedale Borrow Pit, within the E31 Precinct No change to other approved waste rock management practices
Water Management	Continued operation of water supply infrastructure Continued supply of water via an extension of Parkes Shire Council's water pipeline, supplemented by collected surface water runoff and recycled water from processing plant and TSFs Continuation and extension of site water management system to comply with the requirements of EPL 4784 Construction of clean water diversion channels around the existing processing plant, site offices, TSFs and other operational areas, to ensure clean water is appropriately separated from operational water	New water management infrastructure associated with proposed E22 Portal (e.g. surge dams, dewatering sump etc) Minor changes to surface water management associated with TSF2 buttressing works Incorporation of new E31 Precinct stockpiling and hardstand areas into the existing site water management system Realignment of Main Water Supply Pipeline to the west of the Access Road.
Site Facilities	Administration building and change rooms, core shed, laboratory, emergency response shed, warehouse, workshop, chemical and explosive storage areas, internal mine site road and associated parking facilities Block cave knowledge centre (including offices, class rooms, training workshops and additional car parking facilities) Contractor area including carpark, offices, crib huts and a workshop.	Relocation of Contractor Area within existing Approved Operational Area
Services Infrastructure	Continued operation (and where necessary maintenance, upgrading and relocation) of logistics connections including telecommunications, electricity and waste water Operation of four wastewater treatment plants	No change

Aspect	Approved Operations (PA 11_0060)	Proposed Modification
Site Access	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
Product Transport	Road haulage of concentrate to Goonumbla rail siding for transport to Port Kembla Temporary road haulage to Parkes National Logistics Terminal during the upgrade of the Goonumbla rail siding and in other circumstances (with the approval of the Planning Secretary))	No change
Operating Hours	24 hours per day, seven days per week	No change
No. Employees	Approximately 700 full time equivalents	No change
Approved Operational Area	As shown in Figure 2.1	As shown in Figure 2.2 Increase in approved operational area to include allowance for: • E31 Precinct activities • TSF2 eastern buttressing works and associated changes • E22 Portal • Stockpiling areas for rehabilitation material Adjustment of Approved Operational Area to remove an area of Grey Box woodland (which has not been impacted due to a revised design of the Rosedale TSF) to compensate for part of the increased disturbance of native vegetation.
Rehabilitation and Final Landform	As shown in Appendix 9 of PA 11_0060	Rehabilitation and final landform generally consistent with approved operations (see Figure 2.4).
Biodiversity Offset Strategy	Limestone National Forest Offset Estcourt Tailings Storage Facility Offset Kokoda Biodiversity Offset	No change to existing biodiversity offset areas Residual biodiversity impacts of Proposed Modification to be offset using one or a combination of mechanisms available under the NSW Biodiversity Offsets Scheme

2.2.1 E22 Portal

A new portal and associated decline to the existing approved E22 access heading is proposed to improve operational efficiencies and reduce overland ore transport. The new portal will be located in the north-eastern corner of Limestone National Forest, in an area not currently approved for disturbance. The portal will be primarily used for ore transport to the surface, however it may also be used for personnel/vehicle/equipment access in the future. The new portal will also incorporate an associated conveyor (connecting into the mine's existing conveyor system) and water management infrastructure (e.g. surge dams, dewatering sumps etc).

The proposed portal and associated conveyor will reduce overland ore transport distance by approximately half, allowing extracted ore to bypass the hoist and connect directly to the mine's secondary crusher. The proposed portal will also provide a secondary egress point from underground workings.

2.2.2 TSF2 Buttressing

Northparkes has identified that the walls of TSF2 and the currently constructed Infill TSF between TSF1 and TSF2 require additional buttressing to meet relevant safety standards. This buttressing will require an adjustment to the approved disturbance boundary to the east of TSF2 to accommodate some of the buttressing works as well as relocation of water management infrastructure, drains and access road around the extended toe of the TSF wall and areas for emplacement of topsoil and subsoil material.

2.2.3 Extension of TSF Infill Area

The Proposed Modification also includes an extension to the approved Infill TSF area located between TSF2 and the Estcourt TSF (refer to **Figure 2.2**). This will include the construction of a new embankment at the southern end of the extension area. This extension is required as a result of increased safety design standards for tailings storage facilities. The proposed Infill TSF extension area is located wholly within existing approved disturbance areas.

The extension of the Infill TSF will require the relocation of the Contractor Area which is currently located to the immediate west of TSF2 and the relocation of various existing and approved infrastructure servicing the Rosedale TSF and the mining of the E31 and E31N pits.

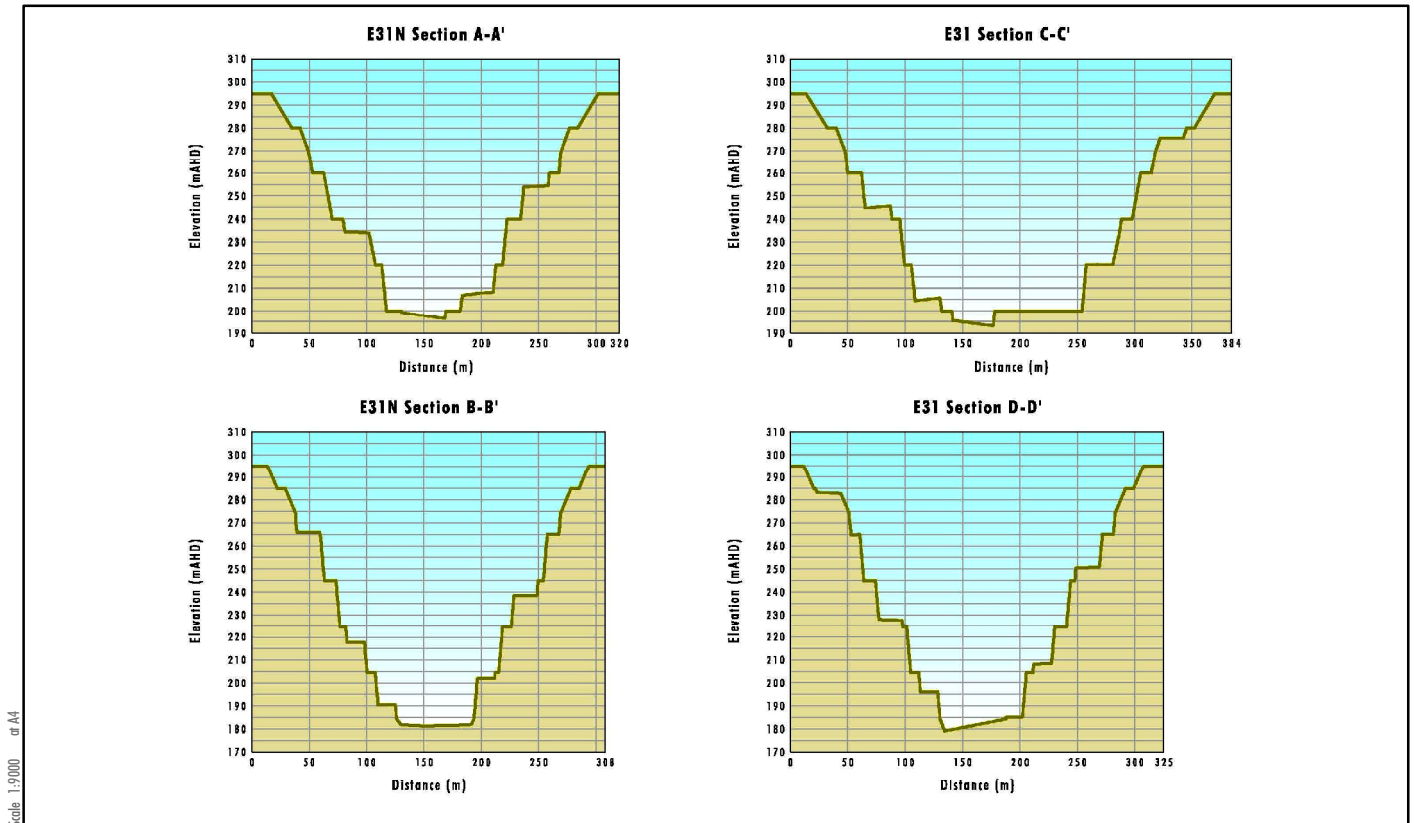
2.2.4 Changes to E31 and E31N Pit Areas

Improved resource definition and a review of the mine design for E31 and E31N pits has identified that minor adjustments to the approved disturbance boundaries of the two pits are required. The proposed adjustments will optimise the design of the pits. **Figure 2.2** provides a comparison of approved and proposed disturbance boundaries for the E31 and E31N pits.

In addition, Northparkes is seeking to marginally increase the approved mining depths in both pits to approximately:

- 110 m below ground level in the E31 pit (an increase of 30 m)
- 95 m below ground level in the E31N pit (an increase of 25 m).

Conceptual cross sections showing proposed changes to the E31 and E31N pits are provided in **Figure 2.3**.



- Legend
- Proposed E31 and E31N Pit Extents
 - Section Lines
 - Conceptual Pit Design

FIGURE 2.3

Indicative E31 and E31N Pit Cross Sections

Three additional open cut mining areas are also approved under PA 11_0060 (E26, E28 and E28N), however no changes are proposed to these operations as part of the modification and these open cut pits will not be mined concurrently with the E31 and E31N open cut mining operations.

2.2.5 Relocation of Temporary Waste Rock Stockpiling Areas

Northparkes has also identified the potential to utilise waste rock from the E31 and E31N pits in the construction of the future Rocklands TSF, which will form part of the upcoming E44 Rocklands Project. To avoid rehandling of this waste rock in the future (and associated noise and air quality impacts), alternate temporary stockpiling locations have been identified within the E31 Precinct which will improve integration of these approved mining operations with the proposed Rocklands TSF construction (see Figure 2.2). These temporary stockpiles will be up to 30 m high.

Waste rock from the E31 pits and other approved waste stockpiles will continue to be utilised for lifts to approved TSFs across the site. The Proposed Modification will provide for the use of waste rock from all open cut pits and underground construction activities in TSF construction generally, rather than being specific to certain TSFs. This change is likely to reduce overall impacts from operations as waste rock will typically be sourced from the closest stockpile to the point of use. It is noted that the proposed temporary waste rock stockpiling areas will be ideally located for use in future lifts of the approved Rosedale TSF.

Waste rock in the new temporary waste rock stockpiles which is not required for TSF construction (including the proposed Rocklands TSF) will be relocated to existing approved waste dumps (see **Figure 2.2**) with the areas used for temporary waste rock stockpiling will then be rehabilitated to agricultural land (see **Section 2.2.12**).

2.2.6 Relocation of Rehabilitation Material Stockpiling Areas

Northparkes proposes to establish a new rehabilitation material stockpiling area for topsoil, subsoil and vegetative material to the west of the Mine Access Road. This area will contain topsoil, subsoil and vegetation stockpiles associated with disturbance to the west of the access road (including the new E22 Portal) as well as topsoil and subsoil material associated with the construction of the western E31 waste rock stockpile. Some of the existing soil and vegetation stockpiles located within the E31 Precinct will also be relocated to this area along with (potentially) topsoil and subsoil from the clay and filter material borrow pit and E31 open cut pits. The establishment of this area will facilitate the future construction of the proposed Rocklands TSF and avoid rehandling of rehabilitation materials within the E31 Precinct. The footprint of this stockpile area and associated haul road has been chosen to avoid areas of remnant trees and regrowth vegetation.

Other areas within the E31 Precinct will also be used for topsoil, subsoil and vegetation stockpiles (see **Figure 2.2**). These stockpiles will be located in areas which, where possible, avoid disturbance as a result of future activities proposed as part of the Northparkes E44 Rocklands Project. The Approved Operational Area to the east of the Rosedale TSF will be extended to the existing Mining Lease boundary to accommodate additional stockpiling in this area which is likely to include topsoil and subsoil associated with the clay and filter material borrow pits, the eastern E31 Temporary Waste Rock Stockpile and E31 open cut pits.

Management of these stockpiles will be as per commitments approved under the Mining Operations Plan.

2.2.7 Additional Clay and Filter Material Borrow Pits

The approved Rosedale Borrow Pit had been identified as a source of clay and filter material for TSF construction, however, a need for additional and differing quality material has been identified. Two additional locations of clay and filter material have been identified as shown in **Figure 2.2**. The Proposed Modification involves the establishment of these additional clay and filter material borrow pits for TSF construction and lifts. Both proposed borrow pit areas are located within existing Approved Operational Areas.

These borrow pits will be developed to approximately 10 meters deep. Due to the high clay content within these borrow pit areas, these will be retained in the final landform as water storages with the slopes of the pits battered to ensure long term safety and stability.

2.2.8 Relocated Contractor Area

Offices, workshop facilities, crib huts and bathhouse facilities for contractors engaged at Northparkes for short term operational requirements (e.g. TSF construction activities and campaign mining operations such as the E31, E31N and E28 open cut pits) are currently located in an area west of TSF2 within the expanded Infill TSF Area. Due to the need to extend the area of the Infill TSF, these facilities require relocation. The Contractor Area will be relocated within the existing Approved Operational Area, in the general vicinity of the Processing Plant and Administration Buildings. This Contractor Area will also be used during the construction of the Rocklands TSF, once approved.

Facilities which will be constructed in this area include:

- office facilities
- bathhouse
- crib facilities
- workshops for small vehicles and mining equipment required for open cut mining and other construction activities
- hard stand areas for plant not in operation
- diesel storage and refuelling area
- car parking
- laydown areas
- water tanks (rainwater and potable), and
- sewerage treatment facilities.

Consistent with the current Contractor Area, all buildings, other than workshop areas will be relocatable temporary buildings. The workshop facilities will include a combination of permanent sheds and temporary workshop areas. Workshop areas will be fully paved. Carparks will either be paved or constructed as a waste rock hard stand area.

Water management at the relocated Contractor Area will include a combination of sediment control areas and mine/dirty water management areas depending on the nature of risks presented by run-off. Both water management and demands will be similar to that of the existing Contractor Area which will be decommissioned.

2.2.9 Rosedale TSF Pipeline

It is proposed to relocate the tailings pipeline servicing the Rosedale TSF to a more direct route between the existing processing plant to the Rosedale TSF. The pipeline will consist of poly pipe with an approximate diameter of 315 millimetres and will be constructed above ground. The pipeline will be wholly located within proposed and Approved Operational Area identified in **Figure 2.2**.

2.2.10 Ancillary Infrastructure within the Approved Operational Area

The current haul road alignment to the west of the Rosedale TSF that will have been used for E31 and E31N operations requires relocation due to the construction of the Infill TSF wall. This relocation will result in a more direct haul route between the E31 mining area and the ore stockpiles. The construction of this haul road will require the disturbance a small area (approximately 0.25 ha) of remnant vegetation located between the Rosedale TSF and the existing mining operations area.

The proposed western temporary waste rock stockpile is located over the current alignment of the main water supply pipeline servicing Northparkes Mine. This pipeline will be relocated to the west of the internal access road and run adjacent to the road to the Processing Plant and Administration Building Area (refer to **Figure 2.2**). Construction of this relocated section of pipeline will be consistent with the current pipeline. The pipeline will be buried along the entire length of the realignment.

Consistent with existing approved operations, internal access roads and other linear infrastructure servicing and water management infrastructure will be located within the Operational Area.

Consistent with current practices, Northparkes will continue to utilise farm roads and clean water diversion infrastructure outside of the Approved Operational Area. Ongoing maintenance activities, consistent with routine farm maintenance activities, may continue to occur outside the Approved Operational Area.

2.2.11 Water Management Infrastructure

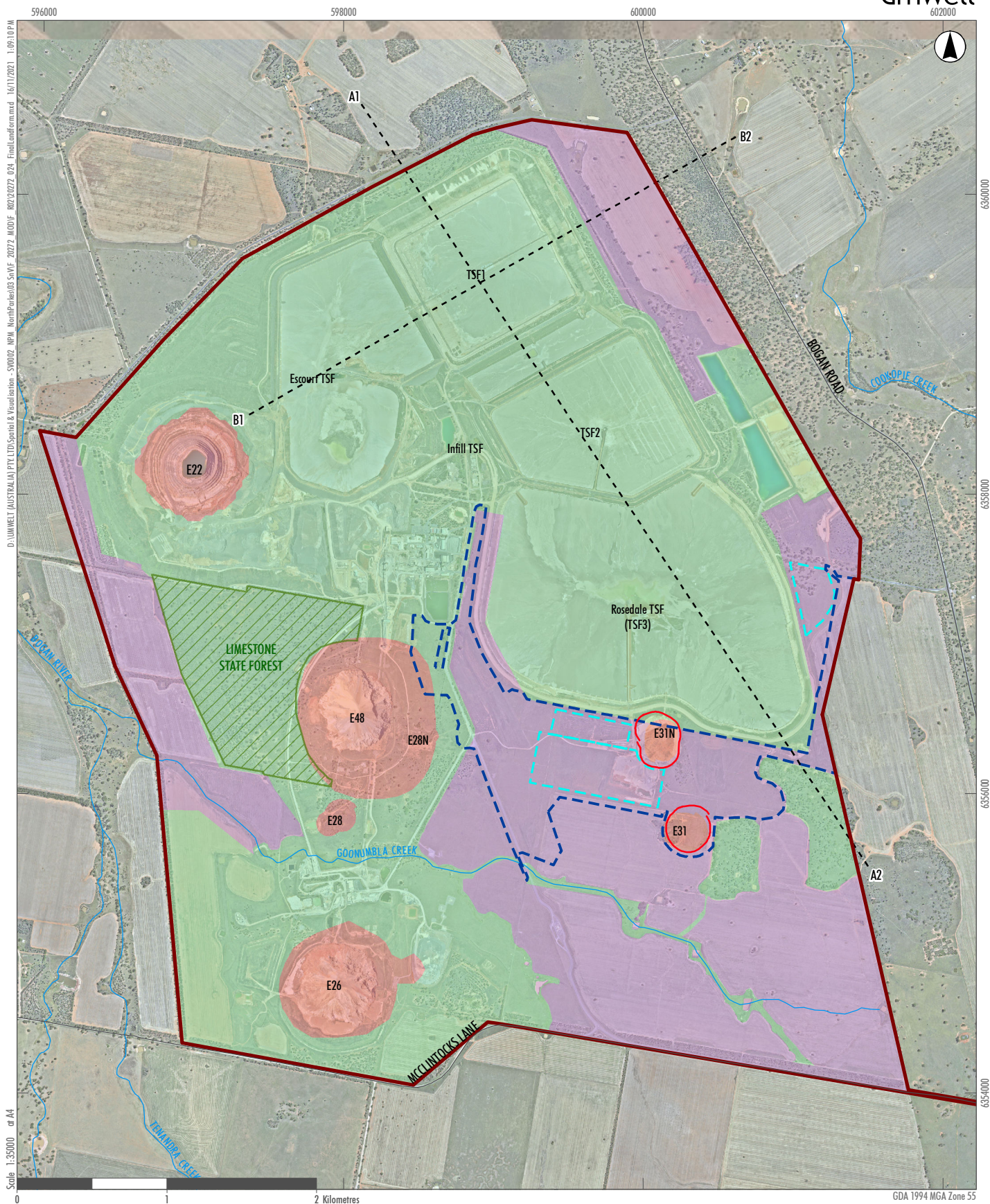
The temporary waste rock stockpiles will be managed as part of the mine water management system with runoff from these areas collected and pumped to mine water storages as required.

Runoff from soil stockpiles and areas disturbed as part of vegetation stockpiling will be managed primarily through silt fencing, consistent with existing operations.

Runoff from other disturbed areas will be managed in accordance with existing practices set out in the Water Management Plan, subject to some minor changes as outlined **Section 5.5**.

2.2.12 Rehabilitation and Final Landform

Rehabilitation will remain generally consistent with approved operations. The Proposed Conceptual Landform is provided in **Figure 2.4**.



- Legend
- Northparkes Project Area
 - E31 Precinct Area
 - Proposed E31 and E31N Pit Extents
 - Water Storage Dam
 - State Forest
 - Drainage Line
 - Roads
 - Final Landform Cross Sections
 - Agricultural Land Use
 - Native Vegetation
 - Restricted Land Use

FIGURE 2.4

Proposed Conceptual
Final Landform

2.3 Clarification of Operational Areas

The Proposed Modification also provides an opportunity to clearly define the approved disturbance boundaries in the vicinity of the Rosedale TSF and E31 Precinct (and the Project generally). The full extent of Approved Operational Areas, including stockpiling areas, haul roads and ancillary infrastructure is not clearly defined in Appendix 2 of PA 11_0060, although these activities have been previously assessed and approved.

Northparkes has prepared a detailed report which seeks to clearly define historically disturbed land (approved) and ongoing operational areas (i.e. excluding historical disturbance which has been committed to revegetation and this work has commenced). This report is included as Attachment 1 to the Consolidated Project Description in **Appendix A**.

As part of the review of approved disturbance areas, Northparkes has identified a 0.69 Ha area of remnant woodland vegetation located adjacent to the former Northparkes Access Road which is approved for disturbance, but is no longer required to be impacted due to the revised layout of the Rosedale TSF. The impacts of clearing this area have already been offset in accordance with the conditions of PA 11_0060. Northparkes proposes to remove this area from the Approved Operational Area to partially compensate for the additional disturbance to remnant vegetation associated with the Proposed Modification.

Figure 2.2 shows the extent of the Northparkes Mine Operational Area for the Project as modified, including the area of currently Approved Operational Area to be removed.

3.0 Statutory and Strategic Context

3.1 Commonwealth Legislation

3.1.1 Environmental Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the primary environmental and planning regulatory instrument relevant to the Modification at a Commonwealth level.

Under the EPBC Act, approval by the Commonwealth Minister for the Environment is required for any action that may have a significant impact on Matters of National Environmental Significance (MNES). These matters are:

- World Heritage properties
- National Heritage Places
- Wetlands of international importance (Ramsar wetlands)
- migratory species, threatened species, critical habitats or ecological communities
- Commonwealth land, marine areas or reserves
- nuclear actions
- a water resource in relation to coal seam gas development and large coal mining development.

The Proposed Modification will not be referred to the Commonwealth Department of Agriculture, Water and Environment (DAWE) under the EPBC Act as (having regard to cumulative impacts) it is not considered likely to have a significant impact on any MNES (including cumulative impacts) (refer to **Section 5.1.4.6**).

3.1.2 Native Title Act 1993

The *Native Title Act 1993* (NT Act) is administered by the National Native Title Tribunal. The Tribunal is responsible for maintaining a register of native title claimants and bodies to whom native title rights have been granted. These native title holders and claimants must be consulted prior to the granting of a mining lease over land to which the native title claim or right applies. This Act prescribes that native title can be extinguished under certain circumstances, including the granting of freehold land.

The Proposed Modification does not require the grant of any new mining leases over land and can be undertaken either pursuant to existing mining leases on freehold land, or in the case of the proposed E22 Portal, under an 'ancillary mining activity' condition to be added to the adjacent ML 1247. Northparkes have an existing access licence with Forestry NSW regarding the use of Limestone National Forest and construction and use of the proposed E22 Portal is consistent with this agreement. There is no requirement to consider the NT Act further.

3.2 New South Wales Legislation

3.2.1 Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* (EP&A Act) is the primary legislation governing environmental planning and assessment for NSW. Previously approved as a major project under the now repealed Part 3A of the EP&A Act, PA 11_0060 has been transitioned to a SSD in accordance with the provisions of the State and Regional Development State Environmental Planning Policy (SRD SEPP).

3.2.1.1 Approval Pathway

It is proposed to modify PA 11_0060 under section 4.55(2) of the EP&A Act. Further details regarding this approval pathway are provided below.

Section 4.55(2)(a) states that a consent authority may, on application being made by the applicant or any other person entitled to act on a consent granted by the consent authority and subject to and in accordance with the regulations, modify the consent if it is satisfied that the development to which the consent as modified relates is substantially the same development as the development for which consent was originally granted and before that consent as originally granted was modified (if at all). Modifications sought under section 4.55(2) must be substantially the same development for which the consent was originally granted.

The Proposed Modification is considered to be substantially the same development as that approved under PA 11_0060 as:

- The overall nature and scale of the development remains similar to the approved operations.
- No changes are proposed with respect to the key elements of the approved operations, including the approved mine life, mining methods, annual ore processing rate, hours of operation, workforce or product transportation.
- The environmental impacts associated with the Proposed Modification are substantially the same as the approved operations (see Section 2.1).
- The Proposed Modification will disturb a small area that contains Category 2 – Regulated Land, with the remainder of the Proposed Modification Area comprised of approved disturbance and Category 1 - Exempt Land under Part 5A of the *Local Land Services Act 2016*. Residual impacts to native vegetation within Category 2 – Regulated Land will be fully offset in accordance with the *Biodiversity Conservation Act 2016* and satisfy the standard of no-net loss of biodiversity. The assessment of residual biodiversity impacts is discussed further in **Section 5.1**.
- One recorded Aboriginal site has been identified within the Proposed Modification Area: AHIMS Site 35-6-0156, a modified tree located adjacent to the proposed E22 Portal. As discussed in **Section 5.2.1**, it has been determined that this tree was not culturally modified, and consequently the AHIMS listing will be updated to 'not a site'. Northparkes will avoid any impacts to the tree until such time as the listing is updated.
- The proposed activities and location of proposed activities remains broadly consistent with the activities assessed as part of the original ACHA undertaken for PA 11_0060.

3.2.1.2 Mandatory Matters for Consideration

Under section 4.55(3) of the EP&A Act, in determining an application for the modification of a development consent, the consent authority must take into consideration such matters referred to in section 4.15(1) as they are of relevance to the development which is the subject of the application. These mandatory matters for consideration, and the sections where they are addressed in this Modification Report, are outlined in **Table 3.1**. An assessment of relevant environmental impacts associated with the Proposed Modification is contained in **Section 5.0**.

Table 3.1 Mandatory Matters for Consideration

Matters for Consideration	Relevant Section of Modification Report
the provisions of - (i) any environmental planning instrument	Section 3.2.3 and Appendix C
(ii) any proposed instrument that is or has been the subject of public consultation under this Act and that has been notified to the consent authority (unless the Secretary has notified the consent authority that the making of the proposed instrument has been deferred indefinitely or has not been approved), and	Section 3.2.3 and Appendix C
(iii) any development control plan,	Not applicable based on SSD provisions
(iiia) any planning agreement that has been entered into under section 7.4, or any draft planning agreement that a developer has offered to enter into under section 7.4	Not applicable
(iv) the regulations (to the extent that they prescribe matters for the purposes of this paragraph),	Consideration of the <i>Dark Sky Planning Guideline</i> summarised in Section 5.7
(b) the likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality	Section 5.0
(c) the suitability of the site for the development,	Section 6.0 and Table C2 in Appendix C
(d) any submissions made in accordance with this Act or the regulations	Not applicable - To be considered by Consent Authority following public exhibition period.
(e) the public interest	Section 6.0

In addition, section 4.55(3) provides that a consent authority must take into consideration the reasons given by the original consent authority for the grant of the consent that is sought to be modified.

In granting consent for PA 11_0060, the Minister's delegate noted that the Project has significant economic and social benefits, including continued employment for up to 700 people and annual direct and indirect regional output of \$335 million. The Minister's delegate concluded that the environmental impacts associated with the Project could be adequately mitigated, managed, offset and compensated through a range of commitments made by Northparkes, including the operation of a real-time noise management system, implementation of a comprehensive biodiversity offset strategy, robust design and construction of TSFs, on-site water management to ensure zero off-site discharges, surface and groundwater monitoring and progressive rehabilitation. The Proposed Modification will not alter these existing commitments or significantly alter the environmental impacts of approved operations. Consequently, the Proposed Modification is considered to be consistent with the reasons for the grant of the consent.

3.2.2 Other State Legislation

As an existing operation, Northparkes currently holds a number of additional licences and approvals under other State legislation. Due to the Proposed Modification being SSD (and formerly approved under Part 3A), the assessment and approval process for a number of these approvals is aligned with the development application assessment process under Part 4. Section 4.42 of the EP&A Act requires that a number of approvals, if required for SSD, must be granted consistent with the terms of any development consent granted for the development. Section 4.41 of the EP&A Act removes the requirement for a number of approvals for approved SSD.

No separate approvals under other State legislation are required for the Proposed Modification. The Proposed Modification is not expected to require a variation to the site's Environment Protection Licence (EPL 4784). All works associated with the Proposed Modification are located within existing mining lease boundaries and will continue to be regulated in accordance with the *Mining Act 1992* (the Mining Act). The Mining Operations Plan will be updated as required to reflect changes made by the Proposed Modification.

Further details regarding approval requirements under Sections 4.41 and 4.42 of the EP&A Act are outlined in the Statutory Compliance Table (Table C1 in **Appendix C**).

3.2.3 Environmental Planning Instruments

3.2.3.1 State Environmental Planning Policies

The following State Environmental Planning Policies are relevant to the consideration of the development application for the Proposed Modification.

State Environmental Planning Policy (State and Regional Development) 2011 (SRD SEPP)

The SRD SEPP identifies development to which the SSD assessment and determination process under Part 4 of the EP&A Act applies. The Proposed Modification is for the purpose of mining and is SSD as defined by the provisions of the SRD SEPP and requires development consent under Part 4 of the EP&A Act.

By operation of section 4.5(a) of the EP&A Act and clause 8A(2) of the SRD SEPP, the Minister for Planning and Public Spaces is the consent authority for the modification application as Northparkes has not disclosed a reportable political donation.

State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007 (Mining SEPP)

Clause 50A of the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation) provides that a development application for consent to 'mining or petroleum development' on certain identified land (including land shown on the Strategic Agricultural Land Map) must be accompanied by—

- (a) a gateway certificate, or
- (b) a site verification certificate that certifies that the land on which the proposed development is to be carried out is not biophysical strategic agricultural land.

By operation of clause 17A(1)(a) of the Mining SEPP, 'mining or petroleum development' excludes development carried out inside the mining area of an existing mining lease.

These provisions only apply to elements of a proposed development which require a new mining lease to authorise the proposed activities. As a new mining lease is not required for the Project, there is no requirement for a Site Verification Certificate or Gateway Certificate.

Part 3 of the Mining SEPP requires specific matters to be considered by the consent authority when deciding whether to grant consent to a development application (or modification application) for mining development.

The development, as it is proposed to be modified, will continue to comply with all non-discretionary standards for mining under clause 12AB of the Mining SEPP. This includes standards for cumulative noise and air quality impacts, blasting impacts and impacts on groundwater. The Proposed Modification will not trigger any voluntary land acquisition or mitigation rights, having regard to clause 12A of the SEPP and the *Voluntary Land Acquisition and Mitigation Policy for State Significant Mining, Petroleum Production and Extractive Industry Developments* (NSW Government, September 2018).

Detailed consideration of the relevant provisions of the Mining SEPP is provided in the Statutory Compliance Table (Table C2 in **Appendix C**).

State Environmental Planning Policy (Koala Habitat Protection) 2020 and State Environmental Planning Policy (Koala Habitat Protection) 2021 (SEPP Koala Habitat Protection)

The Proposed Modification area is zoned RU1 Primary Production and is located within an LGA listed in Schedule 1 of SEPP Koala Habitat Protection 2021. As such, SEPP Koala Habitat Protection 2020 applies to the land. However, the development control provisions in Part 2 of the SEPP Koala Habitat Protection 2020 do not apply to State Significant Development (including modifications). Potential impacts on koala habitat associated with vegetation disturbance are considered as part of the Biodiversity Development Assessment Report (refer to **Appendix D** and **Section 5.1**).

State Environmental Planning Policy No 33 – Hazardous and Offensive Development

SEPP 33 requires the consent authority to consider whether an industrial proposal is a potentially hazardous industry or a potentially offensive industry. A hazard assessment is completed for potentially hazardous development to assist the consent authority to determine acceptability.

The Proposed Modification will not result in any changes to the approved operations (which are considered to be hazardous or offensive within the meaning of SEPP 33), nor does the Proposed Modification include any potentially hazardous or offensive development. Accordingly, no further consideration of SEPP 33 is required.

State Environmental Planning Policy No 55 – Remediation of Land

SEPP 55 aims to provide a state-wide planning approach to the remediation of contaminated land and to reduce the risk of harm to human health and the environment by consideration of contaminated land as part of the planning process. Under SEPP 55, a consent authority must not consent to the carrying out of development on land unless it has considered any potential contamination issues.

The Proposed Modification does not involve any change of use of land, but rather a consolidation of the mine's approved operational area. Consequently, a preliminary investigation of the Proposed Modification area is not required.

Consistent with previous commitments in the Step Change Project EA (Umwelt, 2013), Northparkes will:

- ensure that the storage and handling of chemicals within the E31 Precinct is undertaken in accordance with relevant Australian Standards and guidelines
- develop and implement a site-wide contaminated land management strategy as part of the overarching closure and decommissioning strategy for Northparkes Mines.

3.2.3.2 Parkes Local Environmental Plan 2012

The site is zoned RU1 Primary Production and RU3 Forestry under the *Parkes Local Environmental Plan 2012* (PLEP). The Proposed Modification does not involve any change to approved land uses under PA 11_0060 and the modification is consistent with the objectives of both the RU1 and RU3 zones.

The Proposed Modification Area contains land identified on the Terrestrial Biodiversity Map under the PLEP. This includes areas which are already approved for disturbance under PA 11_0060. The Proposed Modification is consistent with the requirements of clause 6.2 of the PLEP on the basis that:

- The Proposed Modification will involve minimal vegetation clearance outside approved disturbance areas and will have a negligible impact on ecological values, biodiversity structure and habitat connectivity within the site
- The residual impacts of the Proposed Modification on terrestrial biodiversity will be appropriately offset in accordance with the NSW Biodiversity Offsets Scheme and the *Biodiversity Conservation Act 2016*.
- A detailed assessment of impacts on terrestrial biodiversity is provided in **Section 5.1** and **Appendix D**.

3.3 Strategic Context

The following regional plans and local planning strategies apply to the site:

- *Central West and Orana Regional Plan 2036*
- *Parkes Shire 2030+ Community Strategic Plan*
- *Parkes Shire Local Strategic Planning Statement 2020*

The grant of PA 11_0060 pre-dates these plans and strategies and the Proposed Modification will not change the scale, intensity or duration of approved operations at Northparkes Mines. The Proposed Modification is generally consistent with the aims and objectives of these documents.

4.0 Stakeholder Engagement

4.1 Government Agency Engagement

Targeted consultation with relevant government authorities has been undertaken during the preparation of the Modification Report. A summary of this consultation process is provided in **Table 4.1**.

Table 4.1 Agency Consultation Summary

Government Agency/Statutory Corporation	Consultation	Agency Comments	Response
DPIE	Briefing provided 1 September 2021. A copy of the <i>Review of Approved Disturbance Area Report</i> (Attachment 1 to the Updated Project Description in Appendix A) was provided by email for comment on 30 September and 11 October 2021. Scoping letter submitted 21 October 2021. Briefing provided as part of combined interagency meeting regarding the E44 Rocklands Project on 28 October 2021.	Justification to be provided for any clarification of disturbance boundaries.	Detailed justification regarding delineation of approved disturbance boundaries provided in Attachment 1 of Appendix A .
Biodiversity, Conservation and Science Directorate (BCS)	Briefing provided 7 September 2021. Subsequent email advice provided by BCS 14 September 2021. A <i>Land Category Mapping Report</i> and supporting <i>Review of Approved Disturbance Area Report</i> were provided to BCS for review on 30 September 2021. Supplementary information was also provided to BCS on 11 October 2021.	Justification to be provided regarding selection of plot data and classification of Category 1 – Exempt Land under the LLS Act.	On 21 October 2021, BCS accepted Umwelt's land categorisation analysis for the Proposed Modification and endorsed the underlying methodology (see Appendix D).
Council	Briefing provided as part of combined interagency meeting regarding the E44 Rocklands Project on 28 October 2021 Briefing also provided via the Community Consultative Committee (see Section 4.3).	No specific concerns raised in relation to the Proposed Modification.	Not applicable.
Department of Primary Industries	Briefing provided as part of combined interagency meeting regarding the E44 Rocklands Project on 28 October 2021.	No specific concerns raised in relation to the Proposed Modification.	Not applicable.

Government Agency/Statutory Corporation	Consultation	Agency Comments	Response
Forestry Corporation of NSW (FCNSW)	Briefing provided 29 September 2021.	Details of proposed E22 Portal components and access control arrangements requested.	Details provided by email 29 September 2021. The Proposed Modification is not expected to require a variation to the mine's existing Forestry Permit.
Heritage NSW	Briefing provided 7 October 2021.	No objection to proposed approach to consultation, subject to further discussion with Registered Aboriginal Parties (RAPs) and DPIE (see Appendix E) Heritage NSW also agreed with the proposal to revisit the status of AHIMS site 35-6-0156, in consultation with RAPs.	Consultation with RAPs is detailed in Section 4.2 and in Appendix E . Further discussion regarding AHIMS site 35-6-0156 is provided in Section 5.2.1 and Appendix E
Mining, Exploration and Geoscience	Briefing provided as part of combined interagency meeting regarding the E44 Rocklands Project on 28 October 2021.	No specific concerns raised in relation to the Proposed Modification.	Not applicable.

4.2 Aboriginal Community Consultation

The Aboriginal cultural heritage assessment of the Proposed Modification followed the *Aboriginal cultural heritage consultation requirements for proponents* (ACHCRs) (DECCW, 2010). As the Proposed Modification Area overlaps with the Project Area for the Northparkes E44 Rocklands Project, consultation processes for the two proposals have been combined, where appropriate.

Full details of consultation with RAPs, including a consultation log and copies of relevant correspondence, are included in **Appendix E**. No concerns were raised by any RAPs with respect to the survey methodology for the Proposed Modification and input provided by RAPs during the field survey in November 2021 is detailed in **Appendix E**.

4.3 Community Consultation

Northparkes has a well-established engagement program with community stakeholders, including:

- Operation of the Northparkes Community Consultative Committee (CCC), which includes nearby landholders and representatives from Parkes Shire Council
- Community meetings (annually or twice per year).

Northparkes provided a briefing on the Proposed Modification to the Northparkes CCC on 3 November 2021. The CCC includes the owners of Receiver 10a (Hillview). No specific concerns were raised in relation to the proposal.

Northparkes also engaged in targeted consultation with the owners of the following sensitive receivers in November 2021:

- 1 - Oakvale (an occupied residence)
- 7 - Avondale (an unoccupied residence)
- A (a residence constructed following the approval of PA 11_0060, located west of 3 - Hubberstone).

Each of the above receiver locations are shown in **Figure 5.1** (see **Section 5.0**).

No specific concerns were raised with respect to the Proposed Modification. However, general feedback was provided in relation to blasting and tailings dust associated with approved operations. Northparkes will continue to engage with landowners in relation to these concerns and adaptively manage blasting and air quality impacts in accordance with existing approval conditions and approved management plans.

5.0 Environmental Impact Assessment

Table 5.1 provides a preliminary analysis of the key environmental issues of relevance to the Proposed Modification and identifies the particular aspects where further environmental assessment is required. Where aspects have been identified as requiring further assessment, these assessments are summarised in the following subsections, and where relevant, detailed technical studies are provided as appendices to this report.

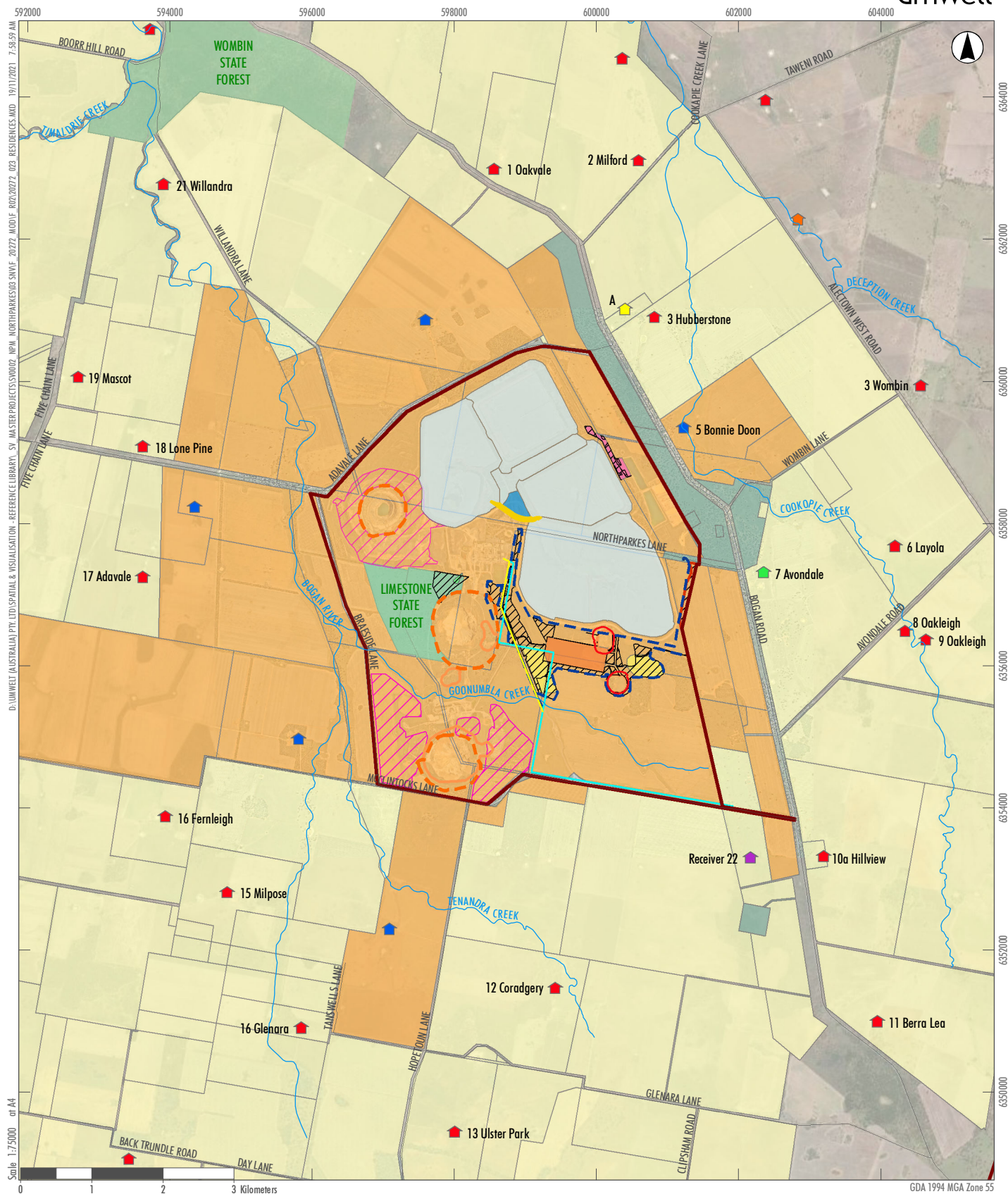
Table 5.1 Preliminary Environmental Assessment

Aspect	Environmental Assessment	Further Assessment Required?
Biodiversity	The Proposed Modification area has been extensively altered by historical cropping activity and approved mining operations. However, the Proposed Modification includes surface disturbance outside the Approved Operational Area and will require some additional clearing of native vegetation.	Yes, see Section 5.1 and Appendix D
Heritage	The majority of the Proposed Modification area has been subject to previous assessment with respect to both Aboriginal and historic heritage values. However, surface disturbance associated with the proposed E22 Portal and TSF2 buttressing works includes areas outside the Approved Operational Area and has the potential to impact Aboriginal and historic heritage values.	Yes, see Section 5.2 and Appendix D
Noise & Blasting	The proposed E22 Portal, TSF2 buttressing works, minor extension of the E31 and E31N pits and proposed changes to existing stockpiling arrangements for waste rock and rehabilitation material have the potential to generate noise impacts. Additionally, the development of the proposed E22 Portal decline will require blasting in an area not previously assessed.	Yes, see Section 5.3 and Appendix D
Air Quality	The Proposed Modification will result in additional surface disturbance and involves changes to existing stockpiling arrangements for waste rock and rehabilitation material. As such, the proposal has the potential to impact air quality.	Yes, see Section 5.4 and Appendix D
Surface Water	The Proposed Modification will result in additional surface disturbance and involves changes to existing stockpiling arrangements for waste rock and rehabilitation material. As such, the proposal has the potential to impact surface water quality and the water management system.	Yes, see Section 5.5 and Appendix D

Aspect	Environmental Assessment	Further Assessment Required?
Groundwater	The proposed increase in mining depth in the E31 and E31N pits has the potential to impact groundwater levels and quality. Other components of the Proposed Modification are not expected to impact groundwater resources.	Yes, see Section 5.6 and Appendix D
Visual	The Proposed Modification, including the proposed changes to waste rock stockpiling, has the potential to alter visual impacts at sensitive receiver locations, relative to approved operations.	Yes, see Section 5.7
Social	As the Proposed Modification is unlikely to increase environmental or amenity impacts relative to approved operations, there will be minimal potential for any additional social impacts.	Yes, see Section 5.8
Greenhouse Gas and Energy	The Proposed Modification does not seek to extend the approved life of the mine or increase the annual processing rate. No significant changes to plant and equipment are proposed and alterations to internal haulage distances for waste rock, clay and topsoil stockpiling are unlikely to significantly alter greenhouse gas emissions, relative to approved operations.	No
Economics	The Proposed Modification is not expected to significantly change the economic costs and benefits of approved operations. However, the proposal will increase the operational efficiency of E22 underground operations, optimise resource recovery from the E31 and E31N open cut pits and facilitate the proposed E44 Rocklands Project through the relocation of waste rock and rehabilitation material stockpiling areas.	No
Bushfire	The Proposed Modification is not expected to increase bushfire risks or alter existing bushfire management practices for approved operations. Northparkes will continue to comply with existing conditions of consent regarding bushfire management.	No
Waste	Northparkes will continue to comply with existing conditions of consent with respect to waste management, including: • implementing all reasonable and feasible measures to minimise waste (including waste rock generated by the Project) • ensuring that waste generated by the Project is appropriately stored, handled and disposed of • monitoring and reporting on the effectiveness of waste minimisation measures in the Annual Review.	A standalone assessment regarding waste management is not required, however see separate assessments of surface water and groundwater impacts associated with the proposed temporary waste rock stockpiling areas in Sections 5.5 and 5.6 .

Aspect	Environmental Assessment	Further Assessment Required?
Rehabilitation and Mine Closure	No significant changes to final landform or post mining land use are proposed. However, the conceptual final landform plan will be amended to reflect the proposed changes to the E31 and E31N pits and to reflect the as-built alignment of the Rosedale TSF. The Proposed Modification will allow flexibility to retain proposed clay/filter material borrow pits as water storages in the final landform.	No – however, the proposed Conceptual Final Landform is shown in Figure 2.4

For the purposes of the noise, blasting and air quality assessments, sensitive receiver locations in the vicinity of Northparkes Mines are shown in **Figure 5.1**. Environmental monitoring locations for approved operations are shown in **Figure 5.2**.

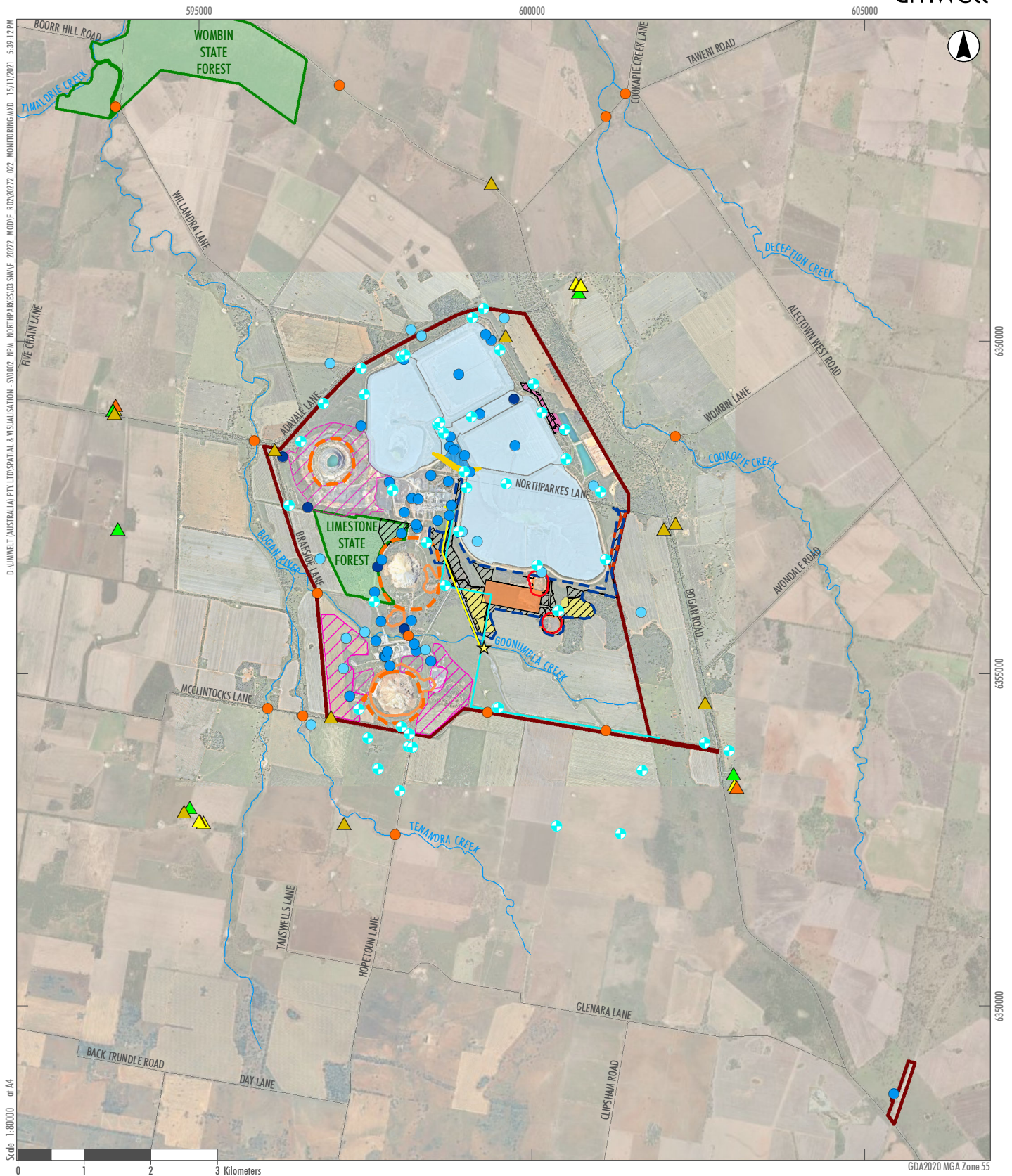


Legend

- | | | |
|---|---|--|
| Northparkes Project Area | Tailings Storage Facility | Northparkes |
| E31 Precinct Area | Approved Open Cut Areas | Crown Land |
| Proposed E31 and E31N Pit Extents | Approved Waste Dumps | Private |
| Proposed Extension to Project Area Boundary | Approved Rosedale Borrow Pit and Approved E31 Waste Rock Stockpile Area | Telstra Corporation Ltd |
| Proposed Temporary Waste Rock Stockpile | Proposed Infill TSF Bund (conceptual) | Private Residence |
| Proposed Eastern TSF2 Buttressing Area | Existing Water Supply Pipeline | New Residence (constructed after 2013) |
| Proposed E22 Portal | Proposed Water Supply Pipeline | Agreement Residence |
| Proposed TSF Infill Area | State Forest | Mine Owned |
| Proposed Additional Disturbance Areas | | Approved Private Residence (yet to be constructed) |
| Approved Subsidence Limits | | Derelict Residence |

FIGURE 5.1

**Sensitive
Receiver
Locations**



Legend

- | | |
|---|---|
| Northparkes Project Area | Approved Waste Dumps |
| E31 Precinct Area | Approved Open Cut Areas |
| Proposed E31 and E31N Pit Extents | Tailings Storage Facility |
| Proposed Extension to Project Area Boundary | Approved Rosedale Borrow Pit and Approved E31 Waste Rock Stockpile Area |
| Proposed Temporary Waste Rock Stockpile | Proposed Infill TSF Bund (conceptual) |
| Proposed Eastern TSF2 Buttressing Area | Existing Water Supply Pipeline |
| Proposed E22 Portal | Proposed Water Supply Pipeline |
| Proposed TSF Infill Area | State Forest |
| Proposed Additional Disturbance Areas | |
| Approved Subsidence Limits | |

Environment Monitoring Sites

- Noise
- Depositional Dust Monitoring Locations
- TSP Dust Monitoring Locations
- PM10 Dust Monitoring Locations
- Farm Dams Monitoring Locations
- Process Water Monitoring Locations
- Surface Water Monitoring Locations
- Water Course Monitoring Locations
- Groundwater Monitoring Locations
- Northparkes Mines Weather Station

FIGURE 5.2

Environmental Monitoring Locations

5.1 Biodiversity

A Biodiversity Development Assessment Report (BDAR) was prepared by GHD to assess the potential biodiversity impacts of the Proposed Modification in accordance with the Biodiversity Assessment Method (BAM) (DPIE 2020). The key findings of the BDAR are summarised in the sections below and the full report is contained in **Appendix D**.

5.1.1 Local Ecological Context

Parkes is located within the Lower Slopes subregion of the NSW South Western Slopes IBRA Bioregion. Regional topography ranges from undulating to hilly ranges and isolated peaks set in wide valleys.

Two NSW (Mitchell) Landscapes are present within the Proposed Modification Area: the Bogan Alluvial Plains and the Goonumbla Hills. Proposed disturbance areas are primarily associated with the Goonumbla Hills landscape, which is characterised by loam and red-brown soils on flats and supports Grey Box, White Cypress Pine and Poplar Box.

The Proposed Modification Area encompasses an area of approximately 98.17 ha. This area has been extensively modified by agricultural and forestry activities, but retains isolated patches of woodland vegetation (see **Figure 5.3**).

5.1.2 Assessment Methodology

The BDAR was prepared in accordance with the BAM (DPIE 2020) and with reference to relevant survey guidelines for threatened species. The BDAR methodology included:

- desktop analysis (literature and database reviews and background research)
- Land category mapping to identify Category 1 – Exempt Land (within the meaning of Part 5A, Division 2 of the *Local Land Services Act 2013*)
- vegetation mapping
- sampling of vegetation integrity plots
- habitat assessments, including hollow-bearing tree assessments
- targeted surveys for threatened flora
- targeted and opportunistic surveys for threatened fauna (utilising survey data collected for the E44 Rocklands Project, where available).

Full details of the assessment methodology are provided in the BDAR (see **Appendix D**).

The majority of additional disturbance areas associated with the Proposed Modification have been classified as Category 1 – Exempt Land (see **Figure 5.3**) on the basis that the subject land:

- was cleared of native vegetation as at 1 January 1990 or lawfully cleared after 1 January 1990 (but before 25 August 2017) or
- comprises low conservation grasslands.

Category 1 – Exempt Land has been excluded from assessment in the BDAR in accordance with section 6.8(3) of the BC Act. A detailed report summarising the outcomes of the land category mapping is provided in Appendix G of the BDAR (see **Appendix D**).

5.1.3 Avoidance and Mitigation Measures

The Proposed Modification has been designed so as to avoid impacts to remnant vegetation to the greatest extent practicable. The majority of additional surface disturbance associated with the Proposed Modification will be contained within areas of Category 1 – Exempt Land and areas that have been extensively modified by agricultural and forestry activities (see **Figure 5.3**). In addition, the proposed rehabilitation material stockpiling areas on the western side of the access road have been sited so as to avoid remnant paddock trees and surrounding regrowth.

It is noted that the identified disturbance area associated with the proposed E22 Portal is likely to be further refined during the detailed design phase. Consequently, the assessment of potential biodiversity impacts of the Proposed Modification presented in **Section 5.1.4** and biodiversity offsetting requirements presented in **Section 5.1.5** are considered to be conservative.

Northparkes has committed to minimise and mitigate the unavoidable impacts of the Proposed Modification on threatened species and communities in accordance with its established Health, Safety and Environment Management System (HSEMS) and through the implementation of the measures outlined in **Table 5.2**.

Table 5.2 Proposed Mitigation Measures for Biodiversity Impacts

Timing	Mitigation Measures	Responsible Party
Pre-construction / clearing	Continued implementation of established pre-clearance protocols (see Appendix B)	Construction contractor/ Site ecologist
	Ensure all workers are provided with an environmental induction prior to starting work on site. This will include information on the ecological values of the site and protection measures to be implemented to protect biodiversity.	Construction contractor/ Site ecologist
	Use of and regular inspection and maintenance of erosion and sediment control measures.	Construction contractor
	Fence off or mark trees and areas of native vegetation to be retained, to avoid additional impacts on vegetation. Fencing should protect the entire Tree Protection Zone (a general 5 m buffer zone will be applied, which is sufficient for the tree sizes present)	Construction contractor/ Site ecologist
	Appropriate buffers will be established around trees that are to be retained. Work will avoid damage to the structural root zones (SRZ) of the trees	Construction contractor/ Site ecologist
Construction / clearing	Restrict stockpiles of construction materials, fill or vegetation to existing cleared areas and not within areas of adjoining native vegetation	Construction contractor
	Water should be applied to stockpile areas during windy conditions	Construction contractor
	Construction traffic will remain on existing roads and tracks and avoid areas of native vegetation where practicable.	Construction contractor

Timing	Mitigation Measures	Responsible Party
	Continued implementation of established procedures for the management of habitat features, including hollow bearing trees (see Appendix B)	Construction contractor/ Site ecologist
	Reinstatement of unstable surfaces as quickly as practicable after construction for those areas not to be directly used for proposal infrastructure	Construction contractor

In addition, the re-establishment of native woodland communities forms a significant part of the rehabilitation strategy for disturbed areas under the approved Mining Operations Plan for Northparkes Mines (Northparkes, 2020).

As outlined in **Section 2.3**, Northparkes has identified an area of undisturbed remnant woodland to the east of the Rosedale TSF which it proposes to remove from the Approved Operational Area. This area contains 0.69 ha of PCT 80 Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion and has been assessed as being in good condition.

5.1.4 Assessment of Impacts

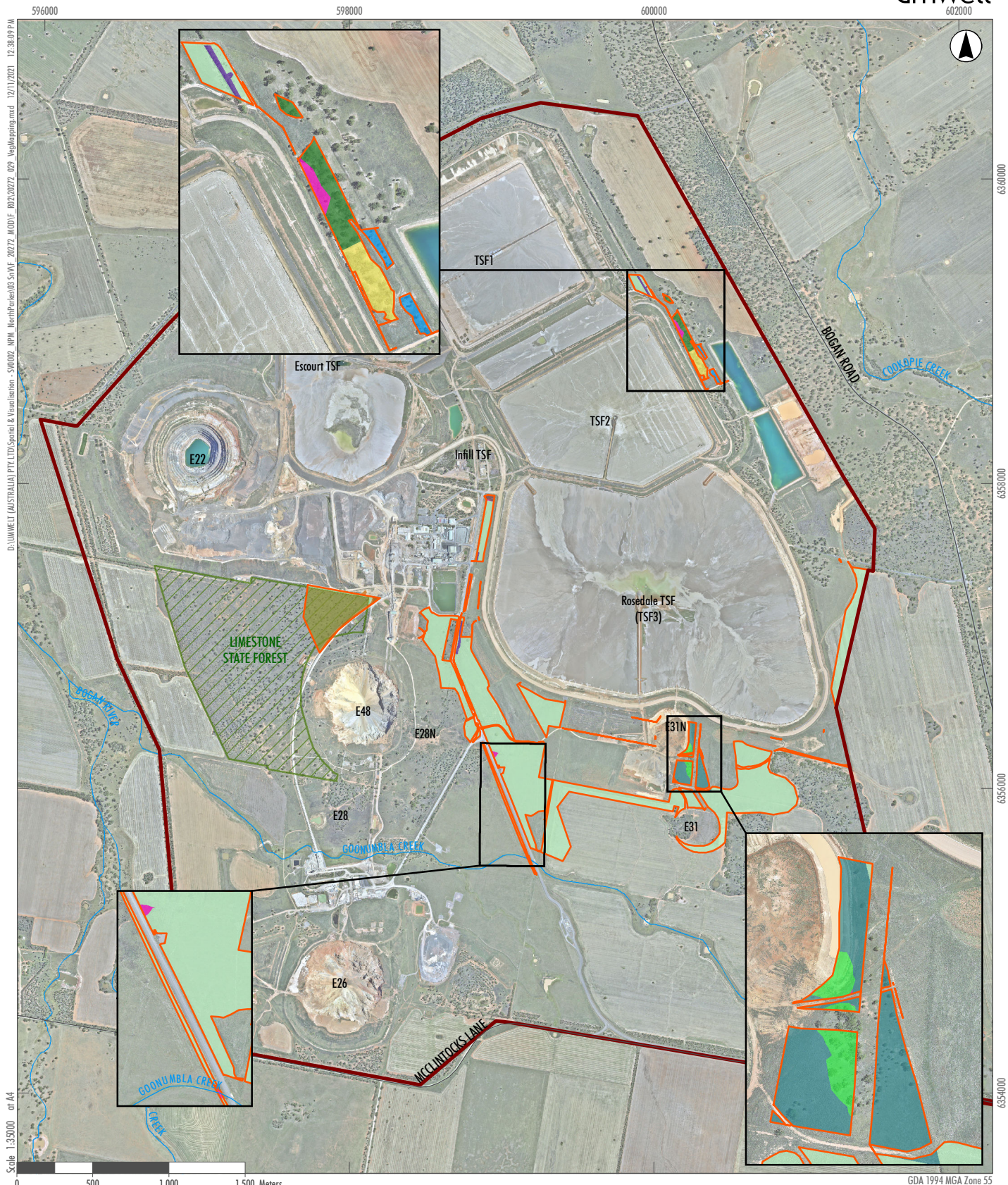
5.1.4.1 Native Vegetation

Table 5.3 provides a summary of the six Plant Community Types (PCTs) identified within the Proposed Modification Area and the extent of proposed disturbance due to the Proposed Modification. These PCTs have been identified as Zones 1 to 6 within the BDAR and are shown spatially in **Figure 5.3**. It is noted that approximately 83.23 ha (or 85%) of the Proposed Modification Area is classified as Category 1 – Exempt Land under the *Local Land Services Act 2013*.

Table 5.3 Plant Community Types

Vegetation Type	BC Act Status	EPBC Act Status	Extent in Proposed Modification Area (ha)
Zone 1 - PCT 56 – Poplar Box - Belah woodland on clay-loam soils on alluvial plains of north-central NSW – degraded understorey	Not listed	Does not meet the key diagnostic characteristics in the listing advice	0.73
Zone 2 - PCT 80 – Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion – good	Inland Grey Box Endangered ecological community	Does not meet the key diagnostic characteristics in the listing advice for Inland Grey Box woodland	0.19
Zone 3 - PCT 248 – Mixed box eucalypt woodland on low sandy-loam rises on alluvial plains in central western NSW – degraded understorey	Does not meet the key diagnostic characteristics in the listing advice for Inland Grey Box woodland	Does not meet the key diagnostic characteristics in the listing advice for Inland Grey Box woodland	9.58
Zone 4 - PCT 76 – Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions – good	Endangered ecological community of Inland Grey Box woodland	Endangered ecological community of Inland Grey Box woodland	1.43

Vegetation Type	BC Act Status	EPBC Act Status	Extent in Proposed Modification Area (ha)
Zone 5 - PCT 82 – Western Grey Box - Poplar Box - White Cypress Pine tall woodland on red loams mainly of the eastern Cobar Peneplain Bioregion - good	Endangered ecological community of Inland Grey Box woodland	Endangered ecological community of Inland Grey Box woodland	1.11
Zone 6 - PCT 277 – Blakely's Red Gum – Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion – planting	Critically Endangered ecological community of Box-Gum woodland	Does not meet the key diagnostic characteristics in the listing advice for Box-Gum woodland	0.55
Exotic grassland and cleared areas	Not listed	Not listed	1.35
Category 1 – Exempt Land, including low conservation grasslands, cropping and plantings	Not listed	Not listed	83.23
Total			98.17



Legend

- █ Northparkes Project Area
- █ Proposed Disturbance Areas
- █ State Forest
- Drainage Line
- Roads
- █ Category 1
- █ Category 1 (Low Conservation Grassland)
- █ Category 1 (Planted - Not Category 2)
- █ Cleared
- █ Exotic grassland
- █ PCT 248 - Mixed box eucalypt woodland on low sandy-loam rises on alluvial plains in central western NSW
- █ PCT 277 - Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion
- █ PCT 56 - Poplar Box - Belah woodland on clay-loam soils on alluvial plains of north-central NSW
- █ PCT 76 - Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
- █ PCT 80 - Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion
- █ PCT 82 - Western Grey Box - Poplar Box - White Cypress Pine tall woodland on red loams mainly of the eastern Cobar Peneplain Bioregion

Image source: NPM (2020) Data source: NPM (2021); NSW DFSI (2021)

FIGURE 5.3

Vegetation Mapping

The Proposed Modification involves the removal of 13.59 ha of native vegetation¹. Of this:

- 2.73 ha (comprising PCTs 76, 80 and 82) is commensurate with the *Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Penplain, Nandewar and Brigalow Belt South Bioregion* Endangered Ecological Community (EEC) listed under the BC Act
- 0.55 ha (comprising PCT 277) is commensurate with the *White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions Critically Endangered Ecological Community (Box Gum Woodland CEEC)* listed under the BC Act.

PCTs 76 and 82 are also commensurate with *Grey Box (Eucalyptus microcarpa) Grassy Woodland and Derived Native Grasslands of South-Eastern Australia* EEC listed under the EPBC Act. The Proposed Modification will directly impact 2.53 ha of this EEC.

It is noted that the area of Box Gum Woodland CEEC (PCT 277) is comprised of disjointed planting and as such, is highly modified. This, in combination with its small patch size (0.55 ha), means that it is not commensurate with the *White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland* CEEC listed under the EPBC Act.

The largest area of vegetation to be cleared is in Zone 3 (PCT 248), within the Limestone National Forest. Approximately 9.58 ha of this community will be impacted by the proposed E22 Portal. This vegetation is generally in a degraded state, with an understory dominated by introduced species and cypress pine regrowth, and is not commensurate with any threatened ecological community.

5.1.4.2 Threatened Flora

Eight threatened flora species were considered to have potential habitat within the Proposed Modification, based on the vegetation types present. In particular, the Pine Donkey Orchid (*Diuris tricolor*) has been recorded to the east of the E48 mining area, within similar vegetation types. However, no threatened flora species were identified within the Proposed Modification Area, despite targeted surveys utilising five metre transects in all areas of remnant woodland and extending into adjacent areas of low conservation grassland. Remaining grassland within the study area is dominated by exotic flora species and has been heavily modified by cropping activities. Consequently, these areas were largely excluded from the survey effort on the basis that they do not provide suitable habitat for threatened flora species.

One threatened flora species, *Lepidium aschersonii* (Spiny Peppergrass) was conservatively assumed to be present within one zone of the Proposed Modification Area, on the basis that this zone was surveyed in October 2021, outside of the nominated survey period for the species (November to April). Consequently, *Lepidium aschersonii* has been identified as a species credit species in **Table 5.5**. However, it is noted that this species was not recorded in other zones within the Proposed Modification Area despite surveys being undertaken during the nominated survey period. Additional flora surveys of the affected zone are scheduled to be undertaken in November 2021. If, as expected, this species is not identified, then an amendment to the BDAR will be issued confirming this species is not present and revising the species credit calculations accordingly (refer to **Section 5.1.5**).

¹ Does not include allowance for the 0.69 Ha of PCT 80 to be removed from the Approved Operational Area.

Other threatened flora species were excluded on the basis of targeted surveys and/or historical surveys of the Proposed Modification Area and broader Project Area.

5.1.4.3 Threatened Fauna

Three threatened fauna species listed under the BC Act were recorded in the vicinity of the Proposed Modification Area during field surveys:

- Grey-crowned Babbler (*Pomatostomus temporalis temporalis*)
- Major Mitchell's Cockatoo (*Lophochroa leadbeateri*)
- Superb Parrot (*Polytelis swainsonii*).

The Grey-crowned Babbler is an ecosystem credit species under the BAM. Major Mitchell's Cockatoo and the Superb Parrot are dual credit species, being an ecosystem credit species for foraging habitat and a species credit species for breeding habitat. However, as no evidence of breeding habitat or breeding behaviour was identified during extensive, targeted field surveys for these species, no species credits are applicable.

The Proposed Modification will result in the removal of approximately 32 hollow-bearing trees, primarily located within areas dominated by Grey Box Woodland. Removal of these hollows may reduce the potential breeding habitat for native species in the area, including hollow-dependent bird species, arboreal fauna and microbats. However, given the availability of similar remnant native habitat (in excess of 90 ha) adjacent to the patches of the woodland proposed to be disturbed, the loss of these hollows is unlikely to substantially impacts the availability of suitable habitat resources for these species.

Areas of native vegetation impacted by the Proposed Modification are primarily fragmented patches of woodland which are unsuitable for shelter dependent or less mobile fauna species. The Proposed Modification will not isolate any patches of habitat or sever any habitat corridors.

5.1.4.4 Groundwater Dependent Ecosystems (GDEs) and Aquatic Ecosystems

The Proposed Modification Area does not contain any mapped high priority GDEs. Native vegetation in the Proposed Modification Area and its surroundings is considered to possess low potential for reliance on subsurface presence of groundwater.

There are no farm dams, named creeks or other areas of significant aquatic habitat within the Proposed Modification Area. The Project Area is traversed by Goonumbla Creek, however, this 1st order stream will not be impacted by the Proposed Modification. Further consideration of potential impacts aquatic habitat is provided in **Appendix D**.

5.1.4.5 Potential Indirect Impacts

The approved operations have the potential to indirectly impact biodiversity values through edge effects (including noise, dust, light spillage, erosion and sedimentation) as well as incursion by weeds, pests and pathogens. The Proposed Modification is unlikely to significantly increase these indirect impacts, which will be managed in accordance with the Avoidance and Mitigation measures outlined in **Section 5.1.3**.

5.1.4.6 Impacts to Matters of National Environmental Significance (MNES)

The Proposed Modification has the potential to impact five MNES listed under the EPBC Act. Assessments of Significance for these species and communities are provided in Appendix E of the BDAR (**Appendix D**). The findings of these assessments are summarised **Table 5.4**. These assessments have concluded that the Proposed Modification is unlikely to significantly impact any of these MNES (see also **Section 3.1.1**).

Table 5.4 Summary of Impacts to MNES

MNES	EPBC Act Listing Status	Significant Impact Predicted?	Comment
<i>Grey Box (Eucalyptus microcarpa) Grassy Woodland and Derived Native Grasslands of South-Eastern Australia</i> (PCT 76 and 82)	EEC	No	The Proposed Modification will directly impact 2.53 ha of this EEC. The removal of these small, fragmented patches of woodland is unlikely to significantly impact the EEC.
Spiny Peppercress (<i>Lepidium aschersonii</i>)	Vulnerable	No	Spiny Peppercress was not recorded in the Proposed Modification Area, however, due to the inability to survey parts of the proposal site during their nominated survey period, presence has been conservatively assumed. A total of 1.43 ha of potential Spiny Peppercress habitat will be removed. This represents a minor fraction of the potential alternative habitat for these species (<3% percent in the surrounding buffer area).
Superb Parrot (<i>Polytelis swainsonii</i>)	Vulnerable	No	The Superb Parrot was recorded, in woodland adjacent to the Proposed Modification Area. The Proposed Modification will remove 13.59 ha of potential foraging and movement habitat for the species. There are over 90 ha of similar native woodland habitat in the adjacent patches of vegetation that provide known habitat for the Superb Parrot. The habitat to be removed therefore represents only a minor fraction of the potential habitat for the species (<2% percent in the surrounding buffer area).
Grey-headed Flying-fox (<i>Pteropus poliocephalus</i>)	Vulnerable	No	The Grey-headed Flying-fox, whilst not recorded in the Proposed Modification Area during surveys, is likely to use the Proposed Modification Area for foraging habitat. The Proposed Modification will remove 2.71 ha of potential foraging and movement habitat for the species. There are over 90 ha of similar native woodland habitat in the adjacent patches of vegetation that provide potential habitat for the Grey-headed Flying-fox. The habitat to be removed therefore represents only a minor fraction of the potential habitat for the species (<1% in the surrounding buffer area).

5.1.4.7 Serious and Irreversible Impacts (SII)

Section 7.16(3) of the BC Act requires the Minister for Planning to consider whether a proposed SSD is likely to have Serious and Irreversible Impacts (SII) on biodiversity values, and whether there are any additional and appropriate measures that will minimise those impacts if consent is granted, in accordance with the principles in section 6.7 of the *Biodiversity Conservation Regulation 2017*.

Box Gum Woodland CEEC is a SII entity listed under the BC Act. However, the Proposed Modification is unlikely to have SII on this CEEC on the basis that it will impact a very small area (approximately 0.55 ha) of planted and highly modified woodland vegetation which represents approximately 0.0002 ha of the remaining extent of the community.

5.1.4.8 Impacts Not Requiring Assessment

The Proposed Modification will disturb approximately 1.35 ha of exotic vegetation. As per Section 10.4 of the BAM, these areas do not require further assessment. Additionally, as noted in **Section 5.1.2**, the 83.23 ha of Category 1 – Exempt Land within the Proposed Modification Area does not require further assessment.

5.1.5 Biodiversity Offset Strategy

Table 5.5 provides a summary of the ecosystem and species credits that require offsetting as a result of the Proposed Modification. Full details on the calculation of the necessary biodiversity credits for the Proposed Modification are provided in **Appendix D**.

Table 5.5 Biodiversity Credit Requirements for Proposed Modification

Name	Area (ha) Impacted	Credits Required
Ecosystem Credits		
Zone 1 – 56 Poplar Box - Belah woodland on clay-loam soils on alluvial plains – degraded understorey	0.73	12
Zone 2 – 80 Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion – good	0.19	8
Zone 3 – 248 – Mixed box eucalypt woodland on low sandy-loam rises on alluvial plains in central western NSW – degraded understorey	9.58	272
Zone 4 – 76 Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions – good	1.43	36
Zone 5 – 82 Western Grey Box – Poplar Box – White Cypress Pine tall woodland on red loams - good	1.11	47
Zone 6 – 277 Blakely's Red Gum – Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion – planting	0.55	19
Total Ecosystem Credits		394
Species Credits		
<i>Lepidium aschersonii</i> (Spiny Peppercress)	1.4	35
Total Species Credits		35

As outlined in **Section 2.3**, Northparkes has identified an area of undisturbed remnant woodland to the east of the Rosedale TSF which it proposes to remove from the Approved Operational Area. This area contains 0.69 ha of PCT 80, which will generate 27 ecosystem credits. Impacts associated with the clearing of this area have been previously offset under PA 11_0060. Northparkes therefore proposed a ‘disturbance area swap’, which will proportionally reduce the PCT 80 credit obligations in **Table 5.5**. The proposed disturbance swap area will account for all of the credit requirements for Zones 1 and 2 and/or parts of Zones 4 or 5, in accordance with the relevant trading rules of the Biodiversity Offsets Scheme. Further details are provided in **Appendix D**.

The residual credit offset requirements outlined in **Table 5.5** will then be met using one or a combination of offsetting mechanisms available under the NSW Biodiversity Offsets Scheme and in accordance with the BC Act. This may include:

- In perpetuity conservation through the establishment of a Biodiversity Stewardship site/s and the retirement of credits
- Securing the required credits through the open credit market
- Payments to the Biodiversity Conservation Fund
- Funding a Biodiversity Conservation Action (if applicable).

5.2 Heritage

5.2.1 Aboriginal Cultural Heritage

An Aboriginal Cultural Heritage Assessment Report (ACHAR) was prepared by OzArk Environment & Heritage to assess the potential impacts of the Proposed Modification on Aboriginal cultural heritage values. The ACHAR was prepared in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (Code of Practice) (DECCW, 2010) and the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (ACHRs) (DECCW, 2010).

The key findings of the ACHAR are summarised in the sections below and the full report is contained in **Appendix E**.

5.2.1.1 Archaeological Context and Assessment Methodology

The majority of the Proposed Modification Area has been subject to previous Aboriginal cultural heritage assessment, as part of the Northparkes Mines Step Change Project, subsequent due diligence assessments associated with exploration activities and recent field surveys undertaken for the proposed E44 Rocklands Project. As the archaeological characteristics of the Proposed Modification Area have been well recorded, the ACHAR (see **Appendix E**) included a limited, supplementary survey effort (focused on the proposed TSF2 buttressing area and the E22 Portal area) to ensure that survey coverage across the entirety of the Proposed Modification Area meets the standard required under the Code of Practice.

As the Proposed Modification Area overlaps with, or is adjacent to, the assessment area for the E44 Rocklands Project, the stakeholder consultation process for the Proposed Modification has been combined with that for the new SSD application. In addition, Northparkes engaged with Heritage NSW and DPIE in September and October 2021, to ensure that the approach to consultation was consistent with ACHRs (see **Section 4.1** and **Appendix J**).

Desktop searches of relevant databases were conducted to identify any previously recorded heritage sites within the Proposed Modification Area. Full details of desktop searches are provided in **Appendix E**. The search results are summarised in **Table 5.6**.

Table 5.6 Results of Aboriginal Cultural Heritage Desktop Searches

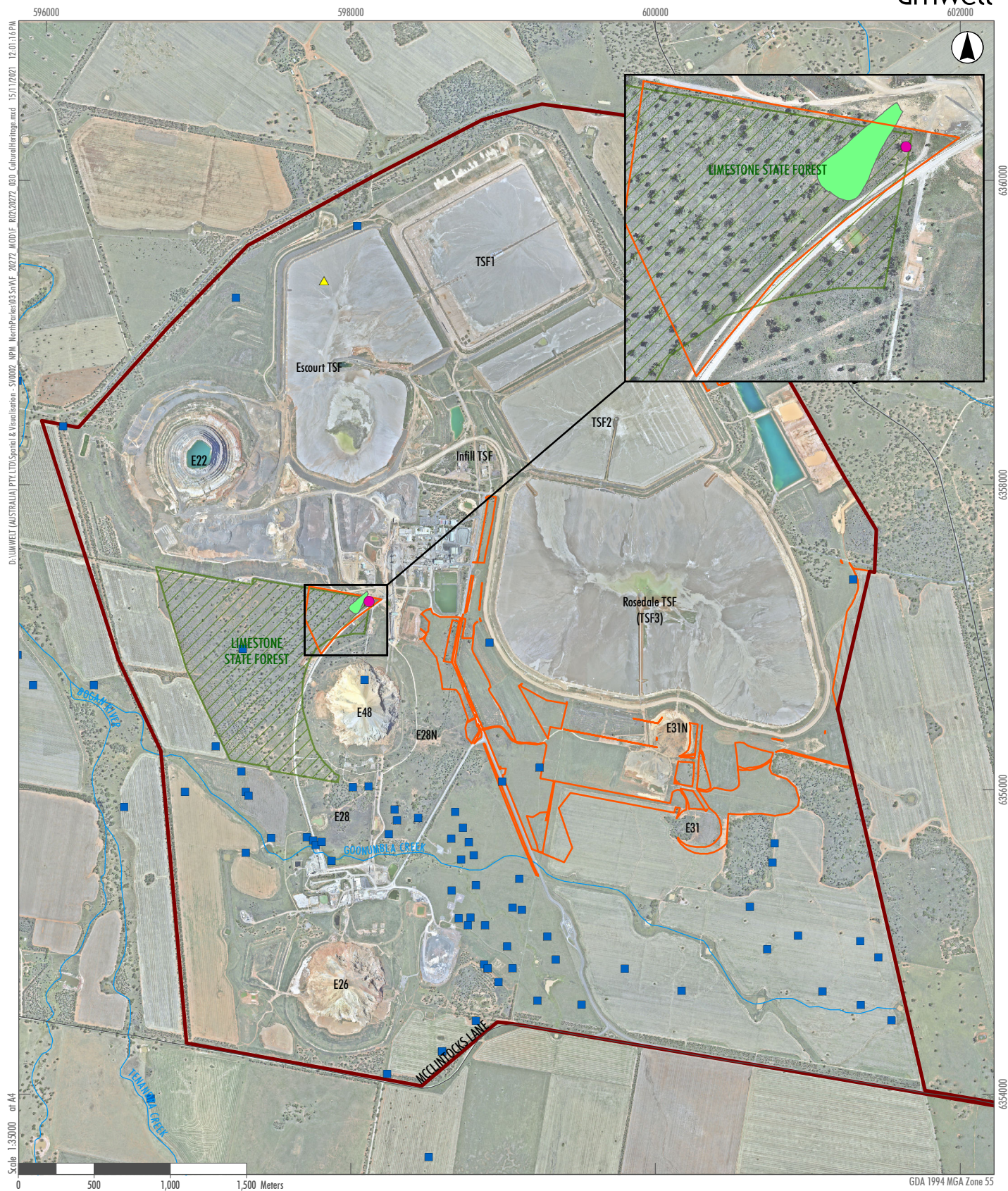
Name of Database	Date of Search	Type of Search	Comment
Commonwealth Heritage Listings	11/10/2021	Parkes LGA	No places listed on either the National or Commonwealth heritage lists are located within the Proposed Modification Area.
National Native Title Claims Search	11/10/2021	Parkes LGA	No active Native Title Claims include the Proposed Modification Area.
AHIMS	29/11/2021	5 x 5 km centred on the Proposed Modification Area	81 AHIMS sites are located within the 5 x 5 km search area. One valid site is located within the Proposed Modification Area (see Figure 5.4).
Local Environmental Plan (LEP)	11/10/2021	Parkes LEP of 2012	No places of Aboriginal heritage significance occur near the Proposed Modification Area.

Of the 81 AHIMS sites recorded in the vicinity of the Proposed Modification Area, 78 are artefact sites and three are modified trees. One valid site (P1 - AHIMS 35-6-0156), a potential scar tree, is located within the Proposed Modification Area. This site is situated in the north-eastern corner of the Limestone National Forest, in the vicinity of the proposed E22 Portal (see **Figure 5.4**). This scar tree was recorded in 1996 and is described on the associated site card as follows:

Scarred Box Tree, the lozenge-shaped scar is at least 350 cm above ground level. It is approximately 150 cm long by 40 cm wide. It may have been made naturally, be a forester's blaze, or made by an Aboriginal.

Given the height of the scar (more than 3 m above ground level), it is considered unlikely that the tree is culturally modified. Consequently, the origin of the scar and the status of this site, were re-investigated in the ACHAR, in consultation with Registered Aboriginal Parties (RAPs). The conclusions of this re-assessment are discussed in **Section 5.2.1.2** below.

All other AHIMS sites recorded within the Proposed Modification Area (comprising a total of four isolated finds) were salvaged at the time of survey.



Legend

- Northparkes Project Area
- Proposed Disturbance Areas
- P1 (AHIMS 35-6-0156) – Not a site
- Artefact site
- ▲ Modified tree (carved or scarred)
- Proposed E22 Portal
- State Forest
- Drainage Line
- Roads

FIGURE 5.4

Aboriginal cultural
heritage sites

Note: Figure shows recorded sites and includes sites which have been salvaged or destroyed

Image source: NPM (2020) Data source: NPM (2021); NSW DFSI (2021)

5.2.1.2 Assessment of Aboriginal Cultural Heritage Impacts

A supplementary field survey was undertaken in November 2021. Full details of field survey results are provided in **Appendix E**.

No additional Aboriginal sites were identified during the November 2021 survey. Additionally, the modified tree (P1 – AHIMS #35-6-0156) was inspected by OzArk and RAPs during the survey. It was agreed that the scarring on the tree is not of Aboriginal origin. Nevertheless, Northparkes has committed to avoid any direct impacts on the modified tree until such time as the AHIMS listing is updated to reflect that #35-6-0156 is not an Aboriginal site. Further details are provided in **Appendix E**.

5.2.1.3 Management, Monitoring and Reporting

Northparkes will implement the following recommendations as outlined in the ACHAR:

- The modified tree (P1 – AHIMS #35-6-0156) will be updated to ‘not a site’ on the AHIMS register. The tree will not be impacted until the approved Aboriginal Site Impact Recording Form (ASIRF) has been received.
- The ACHMP will be consulted for the appropriate procedures if unanticipated Aboriginal objects or human skeletal remains are encountered during works

No revisions the ACHMP are expected to be required due to the Proposed Modification.

5.2.2 Historic Heritage

The Project Area has been subject to extensive historic heritage assessment as part of the Northparkes Mines Step Change Project (PA 11_0060) and the preceding Northparkes E48 Project (PA 06_0026). There are no State or locally-listed heritage items within or in the vicinity of the Project Area. Two sites of potential historic heritage significance were identified within the Project Area:

- a workman’s hut, blacksmith’s shed and shearing shed structure, located within the footprint of the Rosedale TSF (approved for disturbance under PA 11_0060)
- Goonumbla Silo at the Goonumbla Rail Siding (not impacted under PA 11_0060).

Neither of these sites will be impacted by the Proposed Modification.

The Statement of Commitments for PA 11_0060 includes specific protocols for the management of unexpected finds of potential historic heritage significance (see **Appendix B**). In the event of that potential heritage items are identified on site, all works in the immediate area will cease and the item will be assessed by a qualified archaeologist or heritage consultant, and where relevant, Heritage NSW. In the event of discovery of human remains, all works will cease and the NSW Police will be contacted immediately. Works in the vicinity of the remains will not recommence without the prior written confirmation of NSW Policy. These protocols will extend to all works associated with the Proposed Modification.

5.3 Noise and Blasting

A Noise Assessment was undertaken by Muller Acoustic Consulting for the Proposed Modification. The findings of the assessment are summarised in the sections below and the full report is contained in **Appendix F**.

5.3.1 Existing Noise Environment

A detailed noise impact assessment was undertaken for the Northparkes Mines Step Change Project (Umwelt, 2013a), in accordance with the NSW *Industrial Noise Policy* (INP) (DECCW, 2000) which was then in force.

Monitoring results at privately owned receivers surrounding Northparkes Mines show that the existing background noise levels are at or below 30 dBA. In addition to this, the surrounding land use is dominated by agricultural holdings with no other industrial noise sources in the area surrounding the site.

Condition 1 of Schedule 3 of PA 11_0060 requires Northparkes to ensure that noise generated by the Project does not exceed the criteria replicated in **Table 5.7**, unless Northparkes has a negotiated agreement in place with the affected landowner to exceed those noise levels. Compliance with the noise criteria is to be measured in accordance with the INP, including the specific requirements and exemptions set out in Appendix 5 of PA 11_0060.

Table 5.7 Existing Noise Impact Assessment Criteria dB(A) (PA 11_0060)

Property	Day L _{Aeq} (15min)	Evening L _{Aeq} (15min)	Night	
			L _{Aeq} (15min)	L _{A1} (1min)
All privately-owned land	35	35	35	45

Currently, attended noise compliance monitoring is completed on a quarterly basis in accordance with the approved Northparkes Mines Noise Management Plan at the noise monitoring locations shown in **Figure 5.2**. Monitoring results show ongoing compliance with the existing noise criteria in **Table 5.7**.

It is noted that the existing noise criteria were established in accordance with the now superseded INP and were based on the project specific noise levels established under that policy. Under the EPA's contemporary *Noise Policy for Industry* (NPfI) (2017), the day time criteria would be set at 40dB L_{Aeq}(15min). However, in an effort to minimise impacts to sensitive receivers, Northparkes does not propose to amend the existing 35 dB L_{Aeq}(15min) criterion as part of the Proposed Modification.

5.3.2 Assessment of Noise Impacts

The Noise Assessment included a comparison of noise impacts associated with approved operations and the Proposed Modification. The key components of the Proposed Modification and their associated noise impacts are considered in detail in **Appendix F** and are briefly summarised below:

- The development of the proposed E22 Portal is expected to result in negligible noise impacts, relative to approved mining and processing operations. The nearest privately owned receivers are located approximately 2 km from the proposed portal location and noise levels at these receivers are expected to remain below 30 dBA.

- Noise levels associated with TSF2 buttressing works are expected to remain below 30 dBA at the nearest privately owned receivers and will not result in an exceedance of the existing 35dB noise criteria at any receivers. The proposed Infill TSF Extension works will have no discernible noise impacts.
- The Proposed Modification will extend the E31N pit by approximately 100 m to the north-west and 60 m to the south, and extend the E31 approximately 80 m to the north-east. The distance between the pit locations and the nearest privately owned receivers is in the order of 3 km to the north-east and 4 km to the west. Accordingly, the difference in received noise levels at nearby privately owned residences will be negligible.
- Haulage and placement of waste rock to the proposed temporary waste rock stockpile areas are within 300 m of the approved stockpiling area in the Rosedale Borrow Pit and existing haulage routes to other waste rock stockpiles, resulting in a negligible difference in noise levels at receivers.
- the proposed clay and filter material borrow pits will be located in close proximity to approved open cut mining areas and borrow pits and will not necessitate any substantial changes in equipment, relative to existing approved operations.

All of the activities proposed within the E31 Precinct are expected to be completed within a 24-30 month period commencing in early 2022. As noted in **Section 2.2.4**, the approved E26, E28 and E28N open cut pits will not be mined concurrently with the E31 and E31N open cut pits.

Overall, the Noise Assessment concluded that given the relatively minor nature of the proposed changes, and the distance to the nearest privately owned receivers, the difference in noise levels at receiver locations will be negligible and imperceptible from approved operations.

5.3.3 Blasting Impacts

Condition 6 of Schedule 3 of PA 11_0060 requires Northparkes to ensure its blasting operations do not cause exceedances of the criteria replicated in **Table 5.8**, unless Northparkes has a negotiated agreement in place with the owner of the affected residence or infrastructure to exceed these levels.

Table 5.8 Existing Blasting Criteria (PA 11_0060)

Location	Airblast Overpressure (dB(Lin Peak))	Ground Vibration (mm/s)	Allowable Exceedance
Residence on privately owned land	120	10	0%
	115	5	5% of the total number of blasts over a period of 12 months
All public infrastructure	-	50 (or a limit determined by the structural design methodology in AS 2187.2-2006, or its latest version, or other alternative limit for public infrastructure, to the satisfaction of the Secretary)	0%

Appendix F also included consideration of blasting impacts associated with the proposed E22 Portal decline. The assessment concludes that blasting emissions (airblast and overpressure) associated with portal development will remain well below the criteria in **Table 5.8** for blasts with a maximum instantaneous charge (MIC) up to 350 kg.

5.3.4 Noise and Blasting Management, Monitoring and Reporting

Noise

Northparkes will continue to manage, mitigate and monitor noise impacts generated by the Project in accordance with the approved Noise Management Plan. No changes to existing reporting arrangements are required.

Blasting

Blasting at the E31 and E31N pits will be consistent with approved mining in these pits and the minor changes in location and increased depth of the pits will not impact on the ability for Northparkes to manage blasting to meet the relevant criteria.

Northparkes will continue to adaptively manage its blasting operations to maintain compliance with these criteria, in accordance with established practices outlined in the approved Blast Management Plan.

5.4 Air Quality

An Air Quality Impact Assessment (AQIA) was undertaken by EMM for the Proposed Modification. The findings of the assessment are summarised in the sections below and the full report is contained in **Appendix G**.

5.4.1 Existing Air Quality Environment

Northparkes maintains an on-site meteorological station (see **Figure 5.2**) which records continuous weather conditions, including wind speed and direction, temperature, solar radiation, rainfall and atmospheric pressure. The AQIA included a review of monitoring data recorded between January 2016 and December 2020 (inclusive). This dataset featured a high level of data completeness for the entire five-year period, with each year featuring at least 99.2% hourly data completeness. In addition, the monitoring data demonstrated a similarity across all years for the most important parameters for pollutant dispersion, such as wind speed and direction, temperature and relative humidity.

The recorded winds across all five years were predominately aligned along the north-south axis, with a spread of air flow between northwest to northeast and southeast to southwest. Limited winds are experienced from the eastern and western quadrants. Across the five years of data, the annual average recorded wind speed ranged from 3.1 m/s to 3.5 m/s, while the frequency of calm conditions (i.e. wind speeds less than 0.5 m/s) occurred between 3.3% and 6.5% of the time.

Northparkes maintains an air quality monitoring network in the vicinity of the Project Area. The network currently consists of the following:

- three beta attenuation monitors (BAMs) for recording particulate matter less than 10 micrometres (μm) (PM_{10}) on a continuous basis

- three high volume air sampler (HVAS) units for recording of total suspended particulate matter (TSP) on a one-in-six day routine
- a comprehensive network of dust deposition gauges.

The current air quality monitoring network is shown in **Figure 5.2**.

The AQIA also included a review of PM₁₀ monitoring data recorded at the three Northparkes Mines BAM locations between 2016 and 2020. Exceedances of the NSW Environment Protection Authority (EPA) 24-hour average criterion of 50 µg/m³ were recorded in the monitoring data at all three BAMs for all years except 2016, with PM₁₀ concentrations increasing notably from 2016 through to 2020. This increase is linked to intensifying drought conditions across eastern Australia with associated dust storm events and the extensive bushfire emergency that occurred in NSW between July 2019 and February 2020.

For the purpose of illustrating regional-scale elevated particulate matter events, EMM reviewed concurrent 24-hour average PM₁₀ concentrations from NSW DPIE air quality monitoring stations (AQMS) located at Wagga Wagga North (250 km south-southwest of NPM), Orange (105 km east-southeast of NPM), Bathurst (150 km east-southeast of NPM) and Merriwa (240 km northeast of NPM). Overall, EMM concluded that the annual average PM₁₀ concentrations recorded at Northparkes Mines, particularly between 2016 and 2018, are comparable with other DPIE AQMS locations across the broader region. This confirms that the dominant influencing source of particulate matter emissions was likely regional scale transportation (e.g. dust storms and bushfires), rather than emissions generated by approved operations. This conclusion is supported by investigations into exceedances of criteria recorded by the BAMs which conclude that the operations at Northparkes are not the cause of any exceedances. Ongoing exceedances of criteria associated with regional scale transport event (dust storms and bushfires) will continue to occur under the Proposed Modification.

5.4.2 Assessment of Air Quality Impacts

The Proposed Modification has the potential to change emissions of air pollutants and associated air quality impacts to the surrounding environment, relative to approved operations.

In order to understand the air quality impacts of the Proposed Modification, EMM reviewed and updated the emissions inventory previously prepared for the Northparkes Mine Step Change Project (SKM, 2013) to reflect the changes associated with the Proposed Modification. Full details of the emissions inventory calculations are provided in **Appendix G**.

The updated emissions inventory accounts for transportation of waste rock to the proposed temporary waste rock stockpiling areas and to two TSF construction areas (TSF2 East or Infill East, replacing previous emissions associated with the now completed Rosedale TSF bulk earthworks). It also accounts for box cut construction for the proposed E22 Portal and associated haulage of excavated material.

No changes were made to previous assumptions (SKM, 2013) with respect to the ore processing rate (8.5 Mtpa), ventilation shaft emissions, total wind erosion area, drill/blast activities in E31 pits, or dozer active hours at E31 pits or TSF construction areas.

As noted in **Section 2.2.4**, the approved E26, E28 and E28N open cut pits will not be mined concurrently with the E31 and E31N open cut pits and this is also reflected in the emissions inventory updates used to consider the impacts associated with the Proposed Modification.

It is noted that the air quality assessment for the Northparkes Mines Step Change Project (SKM, 2013) AQIA did not present annual emissions for PM₁₀ or PM_{2.5}, instead applying a single particle size distribution to all quantified TSP emissions. In contrast, the updated emissions inventory prepared by EMM for the Proposed Modification has quantified emissions by particle size fraction based on source specific particle size distribution consistent with current best practice modelling techniques. Therefore, the primary point of comparison between approved operations and the activities associated with the Proposed Modification is the annual TSP emission totals presented in the emissions inventories of the respective air quality assessments (SKM, 2013 and EMM, 2021 – see **Appendix G**). A simplified comparison is provided in **Table 5.9**.

Table 5.9 Comparison of Emissions - Approved Operations and Proposed Modification

Emissions Inventory	Annual emissions by source and PM size fraction (kg/yr)		
	TSP	PM ₁₀	PM _{2.5}
Total emissions – Approved operations (SKM, 2013)	2,343,000.0	916,113.0	110,121.0
Total emissions – Operations including activities associated with Proposed Modification (EMM, 2021)	2,144,315.6	882,769.2	131,343.3

Note: SKM (2013) did not present annual emission totals for PM₁₀ or PM_{2.5}. These above calculations assumed that PM₁₀ or PM_{2.5} were 39% and 4.7% of total annual TSP emissions, respectively. By contrast, the emissions inventory prepared by EMM for the Proposed Modification has quantified emissions by particle size fraction based on source specific particle size distribution.

As shown in **Table 5.9**, the annual TSP emissions quantified for the Proposed Modification are 8% lower than the annual TSP emissions quantified and modelled by SKM (2013). The annual PM₁₀ and PM_{2.5} totals for the Proposed Modification are 3% lower and 19% higher than the totals estimated by SKM (2013) for approved operations. The primary reason behind the reduction in TSP and PM₁₀ levels is that the assessment of the approved operations by SKM assumed the concurrent mining of the E31 open cut pits with the E26 Open Cut mining operations and the construction of the Rosedale TSF. With the completion of the bulk earthworks associated with the Rosedale TSF and deferral of E26 and E28 open cut mining to occur after mining in E31 and E31N, there is an expected reduction in overall emission sources. The predicted increase in PM_{2.5} emissions is associated with differences in the approach to quantifying emission intensities. The AQIA included a like-for-like comparison of predicted PM_{2.5} emissions using the same methodology applied by SKM (2013) indicates the predicted emissions from the Project while activities contemplated by the Proposed Modification are undertaken will be approximately 8% lower than considered in the SKM (2013) assessment.

Overall, the AQIA concluded that particulate emissions from the Proposed Modification will be lower than previous estimates for the Northparkes Mines Step Change Project. Consequently, air quality impacts from the Proposed Modification are expected to be consistent with, or less than those previously assessed and approved under PA 11_0060.

5.4.3 Management, Monitoring and Reporting

Northparkes will continue to manage, mitigate and monitor air quality impacts generated by the Project in accordance with the approved Air Quality Management Plan, subject to minor updates to the reflect the Proposed Modification (as required).

No changes to existing reporting arrangements are required.

5.5 Surface Water

A Surface Water Management Assessment was undertaken by GHD for the Proposed Modification. The findings of the assessment are summarised in the sections below and the full report is contained in **Appendix H**.

5.5.1 Surface Water Context

The existing surface water management system at Northparkes Mines operates in accordance with the approved Water Management Plan (Northparkes, 2017). The objectives of the surface water management system are to:

- Divert clean water around operational areas of the mine.
- Capture and contain dirty and contaminated water.
- Maximise the reuse of dirty and contaminated water to minimise the raw water demand.

Northparkes Mines is a zero discharge site, up to the relevant design criteria for the surface water management infrastructure. These design criteria, and the surface water management system generally, are described in further detail in **Appendix H**.

5.5.2 Proposed Surface Water Management System

The Surface Water Management Assessment proposes a conceptual surface water management system for the Proposed Modification, which includes drains and new retention ponds to capture and contain surface runoff from the proposed temporary waste rock stockpiling areas and other disturbed areas (see Figure 2.1 in **Appendix H**) This proposed system seeks to manage clean, dirty and contaminated areas within the Proposed Modification Area separately, where practical.

5.5.2.1 Clean Water Management

Clean water will be managed through a series of clean water diversion drains intended to divert overland surface flows around contaminated areas. Clean water diversion drains will be constructed adjacent to both of the proposed temporary waste rock stockpiling areas, around the E31 and E31N open cut pits and the proposed clay and filter material borrow pits.

5.5.2.2 Dirty Water Management

Proposed additional disturbance areas associated with TSF2 buttressing will be temporarily managed as dirty water during construction, prior to stabilisation. Similarly, topsoil stockpiles will be temporarily managed as dirty water catchment until stabilised and will then be managed as clean water catchment. Controls applies will be consistent with temporary construction activity controls in Managing Urban Stormwater (Landcom, 2004).

Consistent with current approved operations, the proposed clay and filter material borrow pits will include sumps to capture direct rainfall into the pits. Where required (i.e. in order to allow continued clay/filter material extraction), collected water in the sumps will be recirculated into the contaminated water management system. Collected water will also be used for haul road dust suppression, where reasonable and feasible. Following extraction, the proposed clay and filter material borrow pits will be retained as water storages for mining purposes or as farm dams.

5.5.2.3 Contaminated Water Management

The proposed contaminated water management system consists of contaminated water diversion drains and retention ponds. Surface water runoff from the waste rock emplacement areas will be captured in the drains and diverted to the retention ponds.

It is noted that the proposed retention ponds may intercept some clean and dirty water surface flows. This interception will be minor and incidental to the purpose of containing potentially contaminated runoff by means of gravity surface flows in open drains. Intercepted flows will be contained and recirculated into the contaminated water management system as contaminated water.

Existing contaminated water storages RP09 and RP28 will be removed to accommodate the extension of the Infill TSF. This will not result in any change to the overall management of contaminated water as capacity at the remaining contaminated water storages (e.g. RP02) can be increased, as needed, consistent with PA 11_0060.

5.5.3 Assessment of Surface Water Impacts

The proposed changes to surface water management have the potential to change the volume of clean, dirty and contaminated water required to be managed by the surface water management system.

Appendix H provides an assessment of potential impacts on the surface water management system including a comparison of existing approved and proposed catchment areas for affected water storages. This assessment indicates that relative to existing conditions, the Proposed Modification will result in the following impacts.

- An increase in the total catchment of potentially contaminated water storages. This corresponds to a decrease in the total catchment area that discharges offsite to Goonumbla Creek, largely due to the excision of the proposed temporary waste stockpiling areas from the catchment.
- A minor (1.7%) increase in the catchment area for one contaminated water storage (RP20) associated with the eastern buttressing of TSF2.

Catchment changes associated with the proposed clay and filter material borrow pits were not considered in the assessment outlined above. However, a reasonable worst-case assumption has been made that entirety of the proposed borrow pit areas may need to be managed within the contaminated water management system. Based on this worst-case scenario, the Proposed Modification will increase the total area of the potentially contaminated catchment by approximately 5%.

Overall, it is concluded that the surface water impacts associated with the Proposed Modification are expected to be generally consistent with approved operations.

5.5.4 Realignment of Water Supply Pipeline

As outlined in **Section 2.2**, the Proposed Modification includes the partial realignment of the main water supply pipeline for Northparkes Mines. The new pipeline alignment will run along the western side of the internal access road as shown in **Figure 2.2**.

Consistent with the existing water supply pipeline, the new pipeline will be buried along its entire alignment and will cross Goonumbla Creek. The pipeline realignment will be undertaken in accordance with established erosion and sedimentation controls outlined in the approved Northparkes Mines Surface Water Management Plan and having regard to *Controlled activities on waterfront land – Guidelines for riparian corridors on waterfront land* (DPI – Office of Water, 2012).

5.5.5 Management, Monitoring, Licensing and Reporting

Northparkes will continue to manage works within the Proposed Modification in accordance with the established performance criteria set out in the approved Water Management Plan. The Water Management Plan will also be updated to reflect the proposed changes to on-site water management infrastructure.

As no off-site discharges are proposed, and the proposed surface water management arrangements are generally consistent with approved operations, no changes to monitoring, licensing or reporting are required as a result of the Proposed Modification.

5.6 Groundwater

A Groundwater Assessment was undertaken by Australasian Groundwater & Environmental Consultants (AGE) for the Proposed Modification. The Groundwater Assessment is a qualitative, desktop level analysis of groundwater impacts associated with the proposal. The findings of the assessment are summarised in the sections below and the full report is contained in **Appendix I**.

5.6.1 Groundwater Context

The Northparkes Mine is located within the Lachlan Fold Belt. The geology within the Project Area comprises a shallow weathered regolith overlying bedrock strata, with near-vertical ore body intrusions and surrounding mineralised zones. Both the bedrock and regolith are characterised by low permeability and poor groundwater quality which is typically unsuitable for agricultural use due to elevated concentrations of sodium and chloride.

Hydrogeological modelling for the Northparkes Mine Step Change Project (Golder, 2013a) indicated that groundwater inflows due to mining operations peaked at 4.3 ML/day in 2011. Groundwater inflows associated with the Project were predicted to decline from 0.40 ML/day in 2019 to less than 0.3 ML/day by 2032. This modelling assumed that the total duration of mining in the E31 and E31N pits will be approximately four years. Groundwater inflows to the E31 and E31N pits were predicted to range between 0.03 and 0.32 ML/day during mining.

Groundwater drawdown associated with the Project was not predicted to exceed the 2 m minimal impact considerations under the *NSW Aquifer Interference Policy* at any privately-owned bores in the surrounding locality and this is supported by monitoring.

Actual observed mine inflows at Northparkes have typically been consistent with or less than previous predictions in other mining pits and underground operations (Golder, 2013b and GHD 2020).

5.6.2 Potential Groundwater Impacts

The proposed increase in mining depth in the E31 and E31N open cut pits has the potential to increase groundwater inflows, relative to previous predictions. Consequently, the Groundwater Assessment (**Appendix I**) has focused on the proposed changes to these pits and the potential for associated impacts on groundwater levels and quality.

The E22 drive and associated portal run in an approximately north south alignment to the west of the E48 underground operations. The nature of this proposed drive and its proximity to the E48 underground workings, and location between the E26 and E22 operations mean the construction of this portal and drive are unlikely to have any observable impact on groundwater systems.

The other components of the Proposed Modification are not expected to impact groundwater resources.

5.6.3 Groundwater Assessment Results

Groundwater inflows to E31 and E31N are likely to remain within the previously predicted range (i.e up to 0.32 ML/day). Furthermore, due to changes in mine scheduling, it is now anticipated that the mining of E31 and E31N could be completed in approximately 24 months, if the two pits are mined concurrently. Given the shorter timeframe for mining, and noting that observed mine inflows at Northparkes have typically been lower than modelled predictions, long-term groundwater level and flow impacts are expected to be similar to, or less than previously predicted.

The Proposed Modification will increase the size and depth of the E31 and E31N pits, resulting in additional waste rock generation, particularly in the E31N pit. The majority of additional waste rock is expected to be unoxidized.

Slight increases in TDS and sulfate concentrations may be observed in monitoring bores in the vicinity of the proposed temporary waste rock stockpiles. These impacts are expected to be localised to the stockpiling areas, due to the low permeability of surrounding shallow clay layers. Consistent with approved operations, stockpiled waste rock material will be used for TSF construction and any materials not required for TSF construction will be relocated to existing approved waste rock stockpiling areas (see **Figure 2.2**). As such, waste rock stockpiling and handling is considered to present a low risk of groundwater contamination.

5.6.4 Monitoring, Licensing and Reporting

Northparkes will continue to monitor, mitigate and manage groundwater impacts in accordance with the approved Groundwater Management Plan. This includes quarterly monitoring of groundwater levels and quality (including TDS and sulfate) and implementation of a Groundwater Trigger Action Response Plan.

Northparkes currently holds a Water Access Licence (WAL 34955) which permits the taking of up to 232 ML/year from the Lachlan Fold Belt MDB Groundwater Source regulated under the *Water Sharing Plan for the NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020*. The WAL is sufficient to account for all predicted groundwater inflows to underground and open cut mining areas for the Step Change Project. The Proposed Modification is not predicted to result in any observable increase in groundwater inflows to the E31 and E31N pits, relative to previous predictions. Consequently, groundwater take will continue to be managed under existing entitlements and in accordance with the requirements of the *Water Management Act 2000*.

Annual Reporting requirements for approved operations will not change as a result of the Proposed Modification.

5.7 Visual Impacts

5.7.1 Existing Visual Context

The locality surrounding Northparkes Mine is utilised primarily for broadscale agriculture. The surrounding topography is generally flat, with some localised areas of topographic relief, and is used extensively for dry land cropping. The visual catchment for approved operations extends approximately 2 km to the north and north-east of the Project Area, with longer distance views available between 2 and 6 km to the west and south of the Project Area.

The visual impact assessment undertaken for the Northparkes Mines Step Change Project identified that components of the Project, including waste rock dumps and augmented TSFs may be visible from sensitive receivers and public vantage points (include along Bogan Road and McClintocks Lane). However, these will typically be distant, partial views which will be generally consistent with longstanding mining operations at the site.

5.7.2 Assessment of Visual Impacts

The Proposed Modification primarily represents a consolidation of the Approved Operational Area under PA 11_0060, with all changes, with the exception of a minor adjustment to the eastern boundary, occurring within the approved Project Area. Views of new and relocated features associated with the Proposed Modification will be fully or partially shielded by vegetation, and the given the intervening separation distance, these features will not significantly alter existing views at any sensitive receivers or key public vantage points.

The key proposed change, with respect to visual impacts, is the relocation of the temporary waste rock stockpiling areas. However, as the height of these stockpiles will remain consistent with approved waste rock dumps within the Project Area (which range from approximately 25 to 30 m in height), no significant visual impacts are expected at any sensitive receiver and views of the stockpiles from along Bogan Road are screened by vegetation and terrain.

Clause 92 of the EP&A Regulation requires the consent authority to take into consideration the *Dark Sky Planning Guideline* (DPIE, 2016) when determining a development application for SSD on land located less than 200 km from the Siding Spring Observatory. The Proposed Modification will not significantly alter lighting impacts of approved operations, which are currently managed in accordance with the principles set out in the Guideline (e.g. directing light downwards, avoiding 'over' lighting etc). The proposed TSF2 buttressing works will be limited to daylight hours only and are unlikely to be visible from any private residences. Daylight operations only will minimise potential night lighting impacts to the north and east, along Bogan Road. As such, the Proposed Modification is considered to be consistent with the objectives and principles of the DPIE Guideline (2016).

Northparkes has committed to implement a range of measures to mitigate visual impacts associated with PA 11_0060, as set out in **Appendix B**. These include:

- maintenance of existing vegetation where possible for visual screening, including infill planting where necessary

- additional screen plantings in strategically located positions to augment existing plantings and limit views into the Project from public roads, in particular McClintock's Lane
- ensuring that areas of disturbance are kept to the minimum practicable at any one point in time and that rehabilitation of disturbed areas is undertaken as soon as practical
- aiming to minimise night lighting impacts on surrounding landowners and road users by ensuring, where practicable, that light is directed towards work areas and not towards private residences and roads.

Northparkes will continue to implement these measures in respect of the Proposed Modification. However, given the minor nature of the changes proposed, supplementary mitigation measures are unlikely to be required.

5.8 Social Impacts

A detailed Social Impact Assessment (SIA) was undertaken for the Northparkes Mines Step Change Project (Umwelt, 2013b). In accordance with the recommendations of this SIA, Northparkes committed to a range of social impact mitigation measures which are set out in **Appendix B**. These include continued community engagement over the life of the mine, and in preparation for mine closure and ongoing consultation with Council to manage short-term demands accommodation and any other unanticipated social impacts.

Additionally, a detailed SIA was undertaken in 2019 to consider social impacts associated with the temporary changes to the road transport route under Modification 5 (Umwelt, 2019). In accordance with the recommendation of the Modification 5 SIA, Northparkes committed to additional measures to maximise the socio-economic benefits of the Project, which are also set out in **Appendix B**. These additional measures involve actively seeking and further developing mutually beneficial community relationships with key community groups and organisations, such as the Parkes Red Cross, NSW Farmers Association and Trundle Pastoral and Agricultural Society Inc.

The Proposed Modification is not expected to change the nature, duration or severity of social impacts associated with approved operations, on the basis that:

- No changes to the approved mine life, annual processing rate, transport routes, mine workforce or hours of operation are proposed
- Key amenity impacts including noise, blasting, air quality and visual impacts will remain consistent with approved operations (see **Sections 5.3, 5.4, and 5.7**).

Consequently, it is considered that the social impacts of the Project can continue to be appropriately managed in accordance with the existing conditions of approval (as modified) and the mitigation measures set out in **Appendix B**.

6.0 Justification and Conclusion

The Proposed Modification will provide a range of benefits, including:

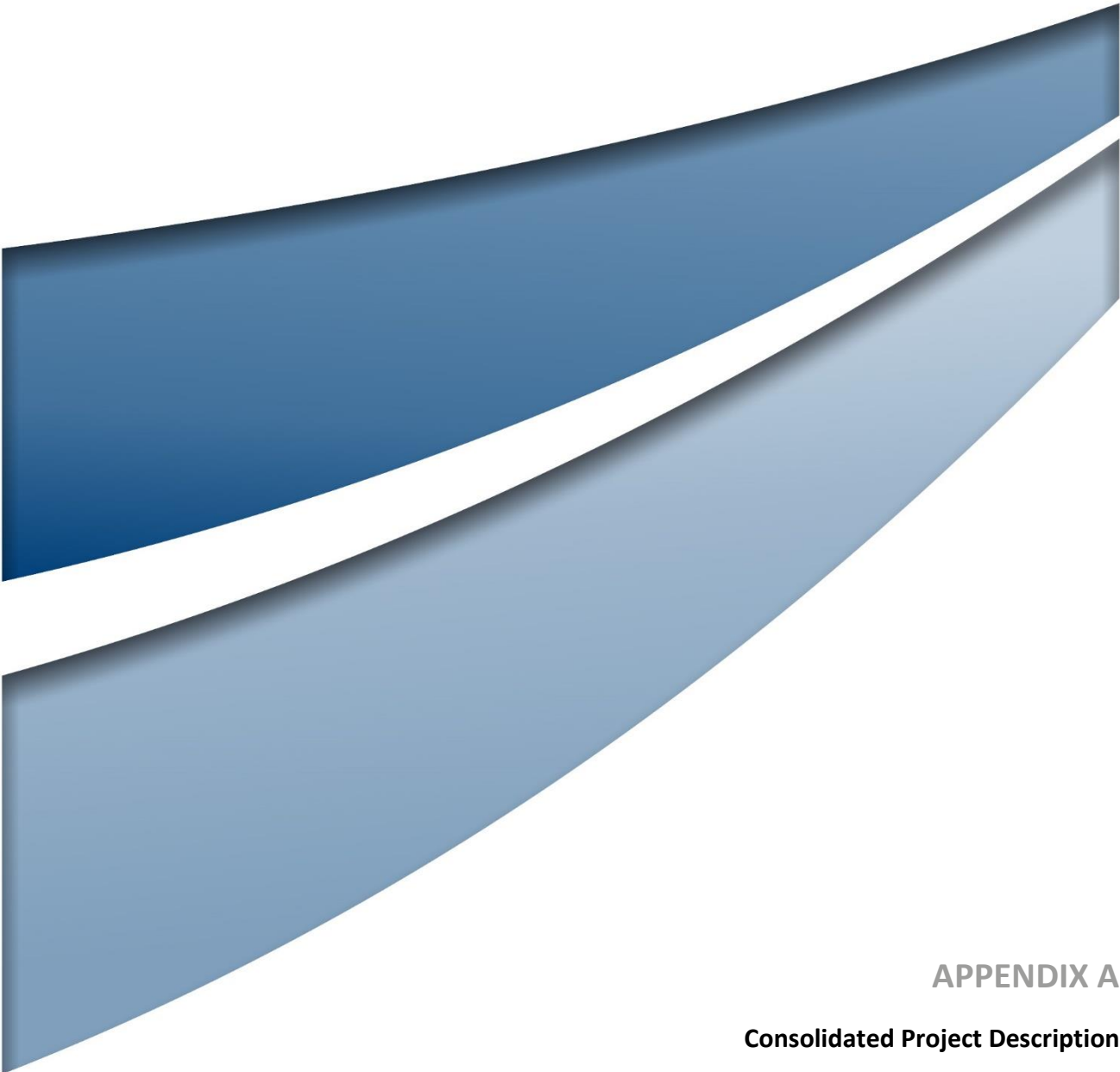
- improved resource recovery from within the E31 and E31N open cut areas
- improved operational efficiencies (including reduced overland ore transport) associated with E22 underground operations
- facilitating improvements to TSF2 and the Infill TSF Area to meet updated design and safety requirements
- avoiding or mitigating potential future impacts associated with the proposed E44 Rocklands Project by avoiding potential operational conflicts, improving operational synergies and minimising future material rehandling that will be required for the Rocklands TSF.

The assessments presented in this report indicated that the Proposed Modification is unlikely to significantly increase the environmental impacts of approved operations. In particular, these assessments demonstrate that:

- surface disturbance associated with the Proposed Modification is primarily limited to areas of approved disturbance for PA 11_0060 and areas which have been heavily disturbed by historical agricultural activity
- the proposed clearing of additional native vegetation associated with the Proposed Modification will be partially mitigated by the removal of an approved area of disturbance from the Approved Operational Area; the residual impacts of clearing will be suitably offset in accordance with the NSW Biodiversity Offsets Scheme
- no additional impacts on Aboriginal or historic heritage values are expected as a result of the Proposed Modification, relative to approved operations
- noise and air quality impacts associated with the operations will continue to comply with relevant performance criteria and will be managed through the implementation of measures detailed in existing management plans
- surface water and groundwater impacts associated with the Proposed Modification will be minimal and generally consistent with approved operations.

7.0 References

- GHD, 2020. *Northparkes Mines Site Water Balance*
- Golder, 2013a. *Northparkes Mine Step Change Project Groundwater Impact Assessment Report*
- Golder, 2013b. *Northparkes Step Change Project – Responses to Review Comments*
- Northparkes, 2017. *Northparkes Mines Water Management Plan*
- Northparkes, 2020. *Northparkes Mines Mining Operations Plan 2020-2022*
- Northparkes 2021. *Northparkes Environmental Noise Management Plan*
- SKM, 2013. *Northparkes Step Change Project Air Quality Impact Assessment*
- Umwelt, 2013a. *Northparkes Mines Step Change Noise Impact Assessment*
- Umwelt, 2013b. *Social Impact Assessment Northparkes Mines Step Change Project*
- Umwelt, 2019. *Social Impact Assessment – Application to Modify Project Approval 11_0060*



APPENDIX A

Consolidated Project Description

Consolidated Project Description

A1 Introduction

This chapter provides a summary of approved operations under PA 11_0060 (as modified), consistent with *State significant development guidelines – preparing a modification report* (DPIE, July 2021). The Consolidated Project Description should be read in conjunction with the documents listed in **Section A3** of this chapter.

A2 Project Overview

The approved operations involves the consolidation and replacement of PA 06_0026 (Northparkes E48 Project, as modified) and DA 11092. The approved operations, as modified (incorporating MOD 6) includes:

- continuation of approved underground block cave mining, with the addition of sub-level caving, in the E48 and E26 ore bodies, and associated underground infrastructure
- development of underground block caving in the E22 resource beneath the E22 open cut void
- campaign open cut mining through development of five open cut resources including:
 - development of four small open cut pits E31, E31N, E28, E28N
 - E26 open cut which is located in an area of previous underground block cave subsidence
- amendments to the configuration of TSFs including the development of the Rosedale TSF (TSF 3), including TSF2 embankment buttressing and extension to Infill TSF
- development of waste rock stockpile areas for the management of open cut waste rock which can be utilised in the development of TSFs
- establishment of temporary waste rock stockpile areas for the E31 and E31N pits
- use of waste rock (including stockpiled material) in the development, lifts and buttressing of TSFs
- continuation of approved ore processing infrastructure up to a capacity of 8.5 million tonnes per annum (Mtpa)
- road haulage of copper concentrate to the existing Goonumbla rail siding (with temporary haulage to Parkes National Logistics Terminal during upgrading of Goonumbla rail siding and in other circumstances (with the approval of the Planning Secretary))
- operation of railing loading facilities at Goonumbla rail siding
- continued use of existing mine infrastructure and site facilities, upgrades to ore conveyor, hoisting and processing infrastructure, construction and operation of an additional ball mill and new secondary crushing building, upgrading and relocation of power supply, relocation of existing Contractor Area within the Approved Operational Area

- construction and use of a new underground portal access (including associated drive, conveyor and other ancillary infrastructure) for E22 underground mining operations
- establishment and use of rehabilitation material (vegetation, topsoil and subsoil) stockpiling areas within the Approved Operational Area
- establishment of clay and filter material borrow pits for TSF construction and lifts
- continuation of existing approved water supply and management processes, with relocation of main water supply pipeline
- maintenance, replacement and relocation of water management and services infrastructure (as required, within the limits of the Approved Operational Area)
- activities ancillary to mining, waste rock management and operation of tailings storage facilities within the Approved Operational Area (including, vehicle washdown areas, water management infrastructure (such as drains, pipelines, and dams), internal access and haul roads and temporary support facilities such as site offices, crib rooms and self-contained toilet facilities, temporary construction and decommissioning laydown areas))
- development of a new access road (with access control facilities and associated carparking) to service all mine related traffic entering the site
- upgrade of McClintocks Lane and associated intersection works on Bogan Road
- continuation of approved mining operations until the end of 2032
- rehabilitation and closure of the mine site after the end of the operational life of the Project in accordance with relevant approvals.

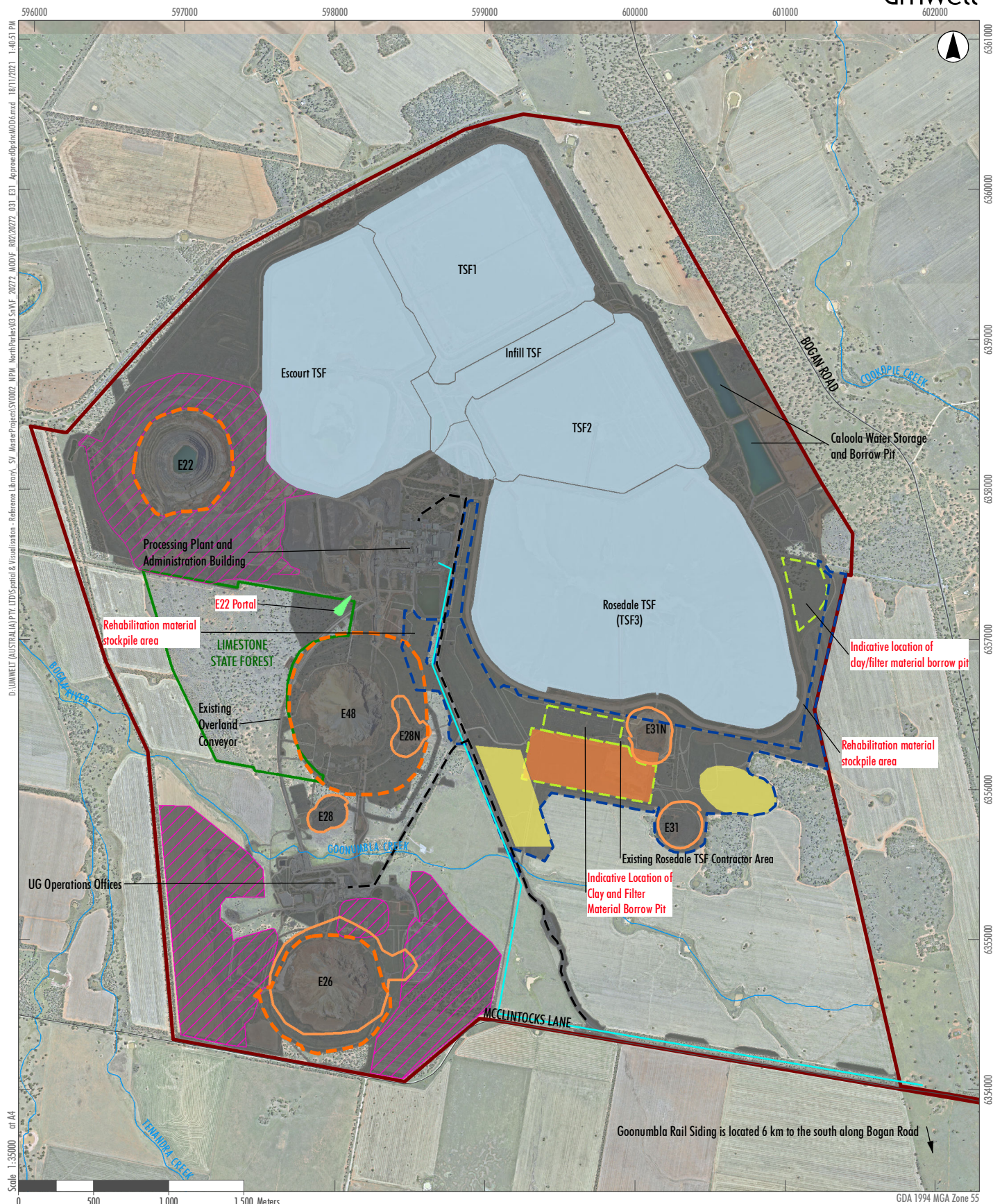
Table A1 below provides a summary of the key features of the approved operations (as modified). The key components of approved operations are shown in **Figures 1 to 4**.

Table A1 Summary of Approved operations (as modified)

Aspect	Approved Operations (PA 11_0060)
Mine Life	Mining until end of 2032
Mining Areas	• Underground caving of the E22, E26 and E48 ore bodies. • 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.
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.
Mine Products	Copper/gold concentrate
Blasting	• Surface blasting permitted between the hours of 9:00 am to 5:00 pm Monday to Saturday • Underground blasting permitted 24 hours per day, seven days per week
Open Cut Mining Depth	• E26 – approximately 300 m below ground level (mbgl) • E28/E28N – approximately 60 mbgl • E31 – approximately 110 mbgl • E31N – approximately 95 mbgl

Aspect	Approved Operations (PA 11_0060)
Underground Mining Infrastructure	- Continued use of underground mining infrastructure, including ventilation and dewatering systems, power supply, maintenance workshops, underground refuelling station, underground offices, crib rooms and amenity facilities - Addition of new decline to E22 workings and associated portal
Ore Processing	Processing up to 8.5 Mtpa of ore through the existing processing plant sourced from underground and open cut mining areas
Ore Handling and Processing Infrastructure	- Continued operation of existing ore processing plant including surface crusher, crushed ore stockpiles, active grinding mills, froth flotation area and concentrate storage - An overland conveyor to transport ore from the hoisting shaft to the ore processing plant stockpiles - Construction and operation of an additional ball mill - New secondary crushing building - Upgrades to ore conveyor, hoisting and processing infrastructure - New conveyor connecting E22 Portal with existing conveyor system
Tailings Management	- Approved TSFs comprise the Estcourt TSF, TSF 1, TSF2, Rosedale TSF (also known as TSF 3) and the Infill TSF (incorporating Infill TSF extension area) - Buttressing works on TSF2 - Ongoing maintenance and lifts of TSFs Ancillary activities associated with TSF operation including pipelines to tailings delivery and water management (to be located within Approved Operational Areas)
Borrow Pits	Caloola, Estcourt, Rosedale and E31 Precinct Borrow Pits (within approved Rosedale TSF footprint and immediately south of the Rosedale TSF) Use of extractive and waste rock material generated by construction and augmentation of water management infrastructure for construction and maintenance of TSFs and water management infrastructure elsewhere on the site
Waste Rock Management	- Establishment of waste stockpiles to store waste rock material generated during open cut mining campaigns - Establishment of two temporary waste rock stockpiling areas (up to 30 m in height), to the west and east of the Rosedale Borrow Pit, within the E31 Precinct - Use of waste rock (including stockpiled material) for TSF construction and maintenance
Water Management	- Operation, maintenance (and where appropriate, relocation) of water supply infrastructure - Continued supply and use of water via an extension of Parkes Shire Council's water pipeline via Main Water Supply Pipeline, including realignment to the west of the Access Road - Use of collected surface water runoff and recycled water from processing plant and TSFs - Continuation and extension of site water management system for operational purposes - Construction and maintenance of clean water diversion channels around the existing processing plant, site offices, TSFs and other operational areas, to ensure clean water is appropriately separated from operational water - New water management infrastructure associated with proposed E22 Portal (e.g. surge dams, dewatering sump etc)
Site Facilities	- Administration buildings and change rooms, core shed, laboratory, emergency response shed, warehouses, workshops, chemical and explosive storage areas, internal mine site roads and associated parking facilities - Block cave knowledge centre (including offices, class rooms, training workshops and additional car parking facilities) - Contractor area including carpark, offices, crib huts and a workshop, with flexibility to relocate Contractor Area within the existing Approved Operational Area (i.e. in the vicinity of the Processing Plant and Administration Buildings) to accommodate the extension to the Infill TSF

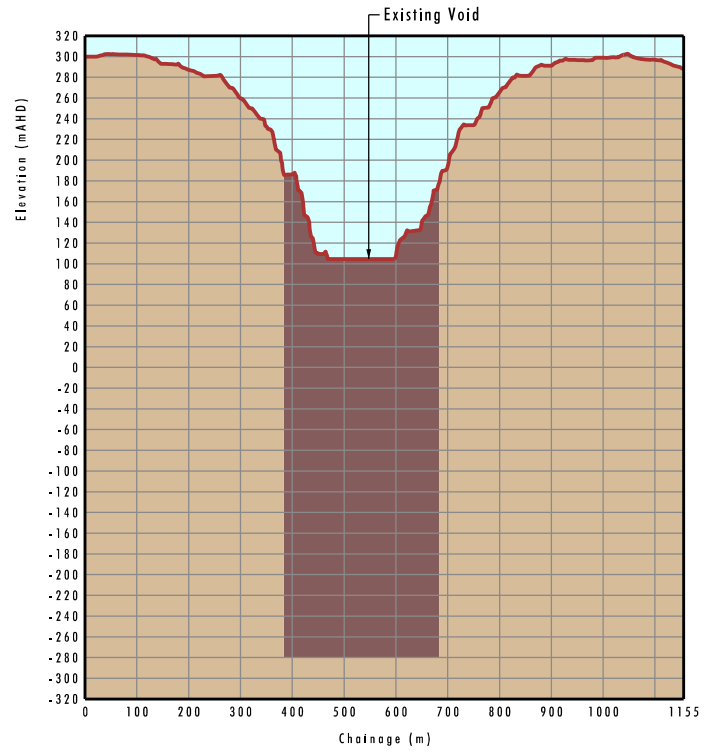
Aspect	Approved Operations (PA 11_0060)
Services Infrastructure	- Continued operation (and where appropriate, relocation) of logistics connections including telecommunications, electricity and waste water - Operation of four wastewater treatment plants and associated waste disposal areas.
Site Access	- Provision of an upgraded site access road along a new alignment from McClintocks Lane (and closure of the previous site access road as primary mine site access point) and associated maintenance - Development of an access control and visitor's car parking on new Access Road - Upgrade/sealing and maintenance of McClintocks Lane between the NPM access road and Bogan Road - Upgrades as required to the intersection of McClintocks Lane and Bogan Road.
Product Transport	- Road haulage of concentrate to Goonumbla rail siding for transport to Port Kembla - Temporary road haulage to Parkes National Logistics Terminal during the upgrade of the Goonumbla rail siding and in other circumstances (with the approval of the Planning Secretary))
Operating Hours	24 hours per day, seven days per week
No. Employees	Approximately 700 full time equivalents
Approved Operational Area	As shown in Figure 1
Rehabilitation and Final Landform	As shown conceptually in Figures 3 and 4
Biodiversity Offset Strategy	- Limestone National Forest Offset - Estcourt Tailings Storage Facility Offset - Kokoda Biodiversity Offset - Residual credit obligations under Modification 6 to be met using one or a combination of mechanisms available under the NSW Biodiversity Offsets Scheme



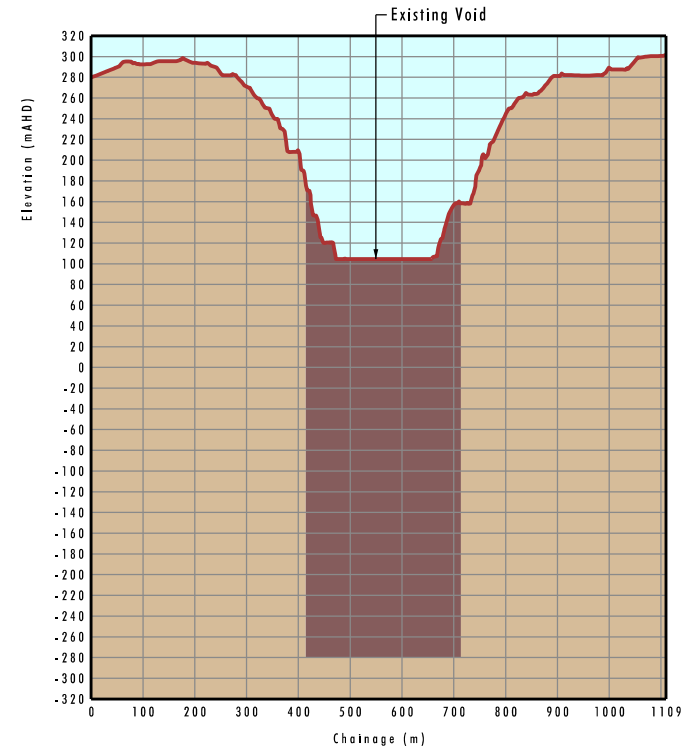
- Legend**
- | | |
|--------------------------------|---|
| Northparkes Project Area | Tailings Storage Facility |
| E31 Precinct Area | Approved Rosedale Borrow Pit and Approved E31 Waste Rock Stockpile Area |
| Temporary Waste Rock Stockpile | Operational Area |
| E22 Portal | Indicative Borrow Pit |
| Approved Open Cut Areas | Internal Access Road |
| Approved Waste Dumps | Water Supply Pipeline |
| Subsidence Management Area | Drainage Line |
| | Roads |

FIGURE 1

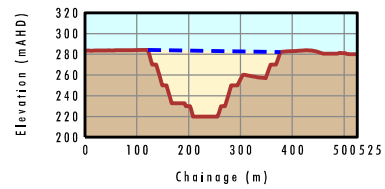
Approved Operations
(Incorporating MOD 6)



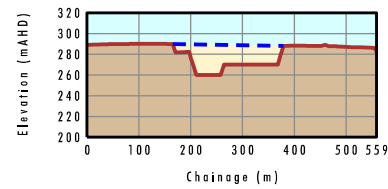
E22 East-West



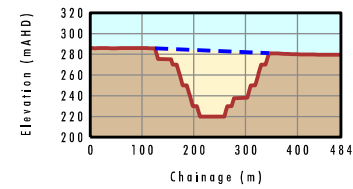
E22 North-South



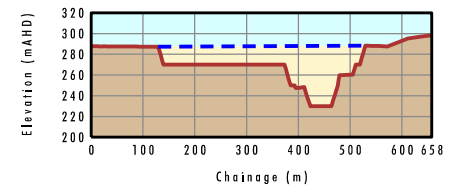
E28 East-West



E28N East-West



E28 North-South



E28N North-South

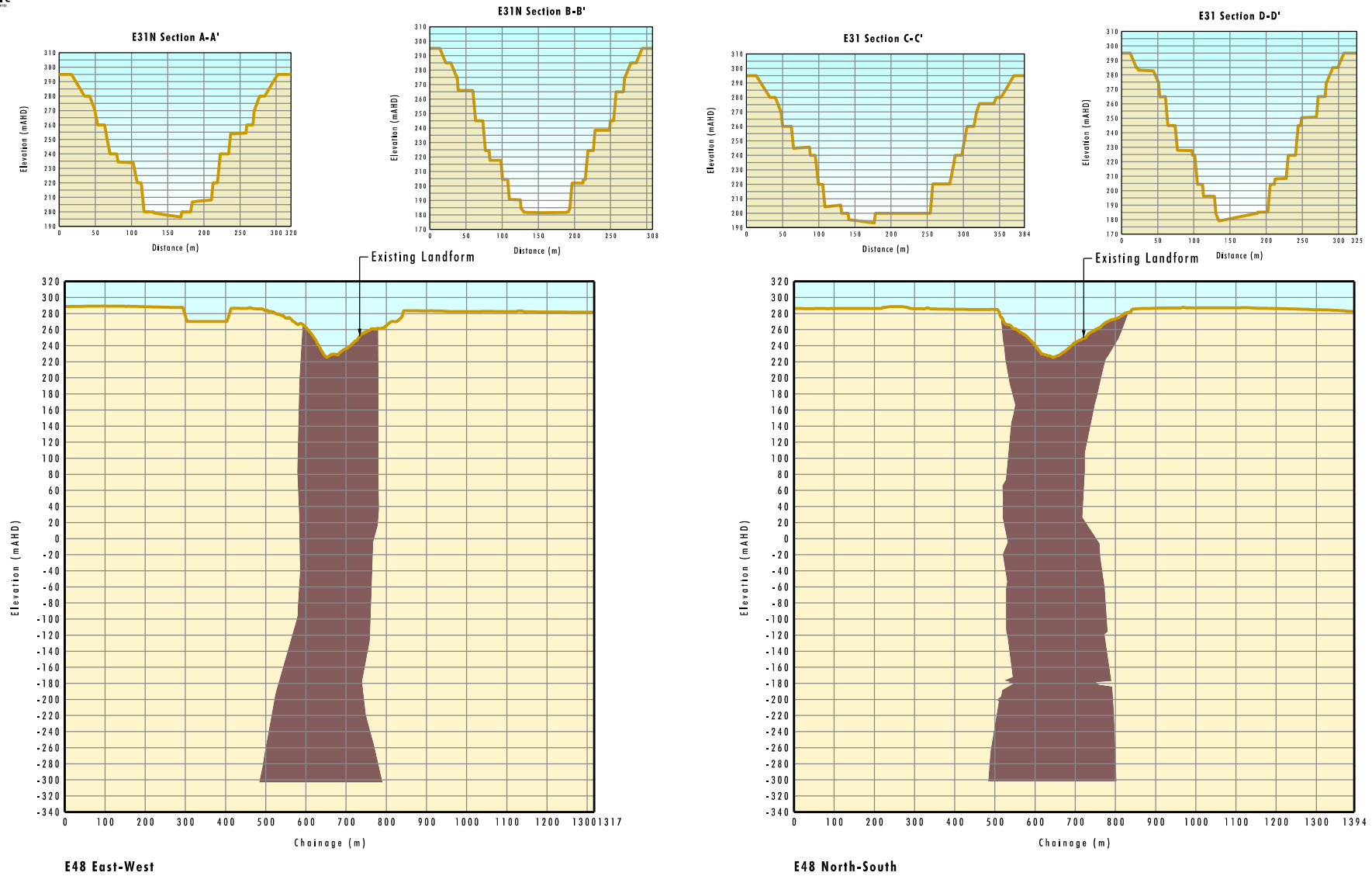
Legend

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

0 50 125 250m
Vertical Scale

0 100 250 500m
Horizontal Scale

FIGURE 2A
Conceptual Mine Plan Cross Sections



Legend

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

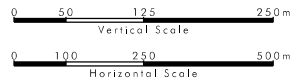
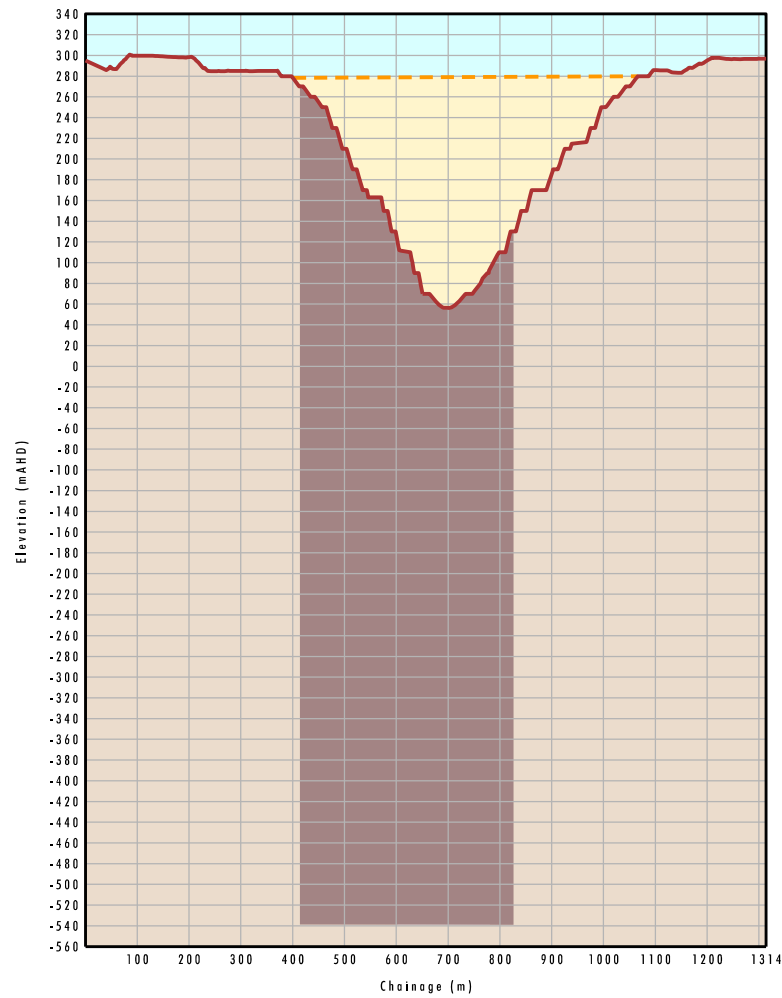
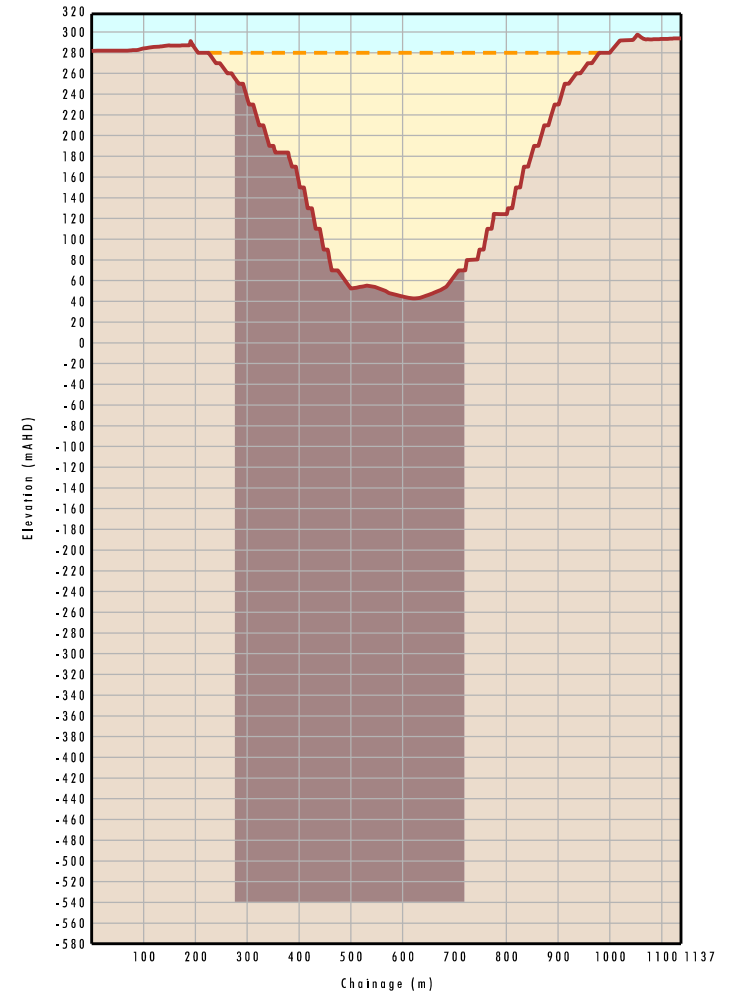


FIGURE 2B
Conceptual Mine Plan Cross Sections



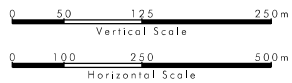
E26 East-West



E26 North-South

Legend

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



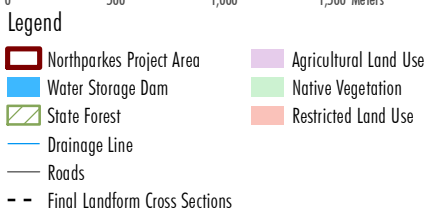
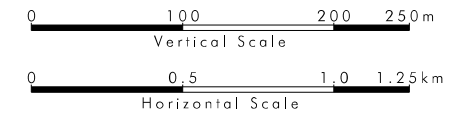
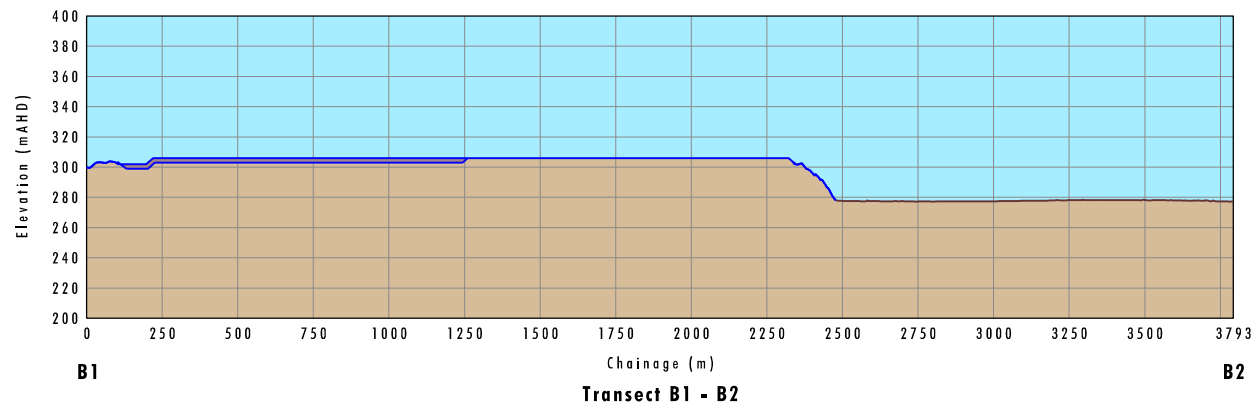
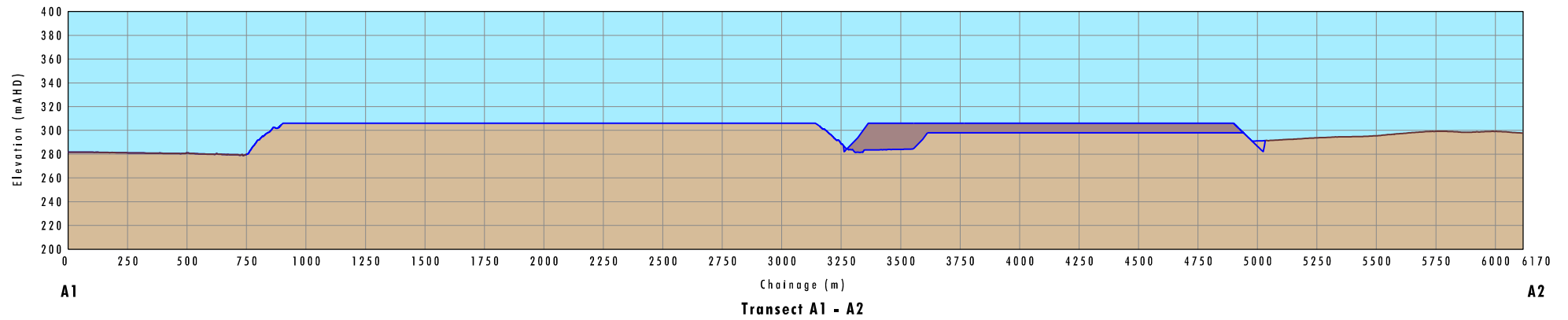


Image source: NPM (2020) Data source: NPM (2021); NSW DFSI (2021)



Legend

- Approved Final Landform Cross Section
- Natural Ground Surface

FIGURE 4

Final Tailings Landform Cross Sections

A3 Relevant Documents

Table A2 List of Relevant Documents (PA 11_0060)

Document Reference	Document Title
Project Description and Environmental Assessments	
2013 EA	The Environmental Assessment titled <i>Northparkes Mines Step Change Project</i> (5 volumes), dated July 2013, the response to submissions dated September 2013 and the Addendum dated November 2013 ¹
MOD 1 EA	The Environmental Assessment titled <i>Northparkes Mines – Application for a 75W Modification</i> dated April 2015
MOD 2 EA	the Environmental Assessment titled <i>75W Modification to PA 11_0060 to reference unformed road land parcel in Appendix 1 of the Northparkes Mines Step Change Project Approval (PA 11_0060)</i> dated 11 March 2016
MOD 3 EA	The Environmental Assessment titled <i>Section 75W Modification to Project Approval 11_0060 – Northparkes Mines Proposed Changes to Mine Plans</i> dated 5 July 2017
MOD 4 EA	The Environmental Assessment titled <i>Environmental Assessment for Section 75W Modification to Project Approval 11_0060 – Northparkes Mines Proposed Changes to Ore Processing Infrastructure and Administrative Amendments</i> dated 19 July 2018
MOD 5 EA	The Environmental Assessment prepared by Umwelt titled <i>Northparkes Mines Statement of Environmental Effects Supporting an Application to Modify Project Approval 11_0060</i> dated June 2018
MOD 6 Mod Report	The Modification Report prepared by Umwelt titled <i>Northparkes Mines Modification 6 – E22 Portal, TSF2 Buttreasing and E31 Precinct</i> dated November 2021
Biodiversity Offset Strategies	
2013 EA	The Environmental Assessment titled <i>Northparkes Mines Step Change Project</i> (5 volumes), dated July 2013, the response to submissions dated September 2013 and the Addendum dated November 2013
E48 EA	The Environmental Assessment titled <i>Environmental Assessment Northparkes Mines – E48 Project, Volumes 1 – Parts 1 to 5, and Volume 2 – Parts 6 to 9</i> , prepared by RW Corkery & Co. Pty Ltd, dated August 2006
E48 MOD 1 BOS	Northparkes Mines Section 75W Modification Biodiversity Offset Strategy, prepared by GHD Pty Ltd, dated August 2009

¹Includes description of existing approved operations which were to continue under PA 11_0060.

A4 Relevant Land

Table A3 Schedule of Land (PA 11_0060)

Lot	DP		Relevant Mining Lease
46	753998	CMOC Mining Pty Ltd	ML1743
41	753998	CMOC Mining Pty Ltd	ML1247, ML1743
49	753998	CMOC Mining Pty Ltd	ML1743
10	1132130	CMOC Mining Pty Ltd	ML1743
100	1207194	CMOC Mining Pty Ltd	ML1367
12	753998	CMOC Mining Pty Ltd	ML1367
1	831622	CMOC Mining Pty Ltd	ML1247
2	830291	CMOC Mining Pty Ltd	ML1247, ML1743
3	830291	CMOC Mining Pty Ltd	ML1743
3	831119	CMOC Mining Pty Ltd	ML1247
1	830291	CMOC Mining Pty Ltd	ML1247
381	1108642	Crown Land	ML1247
382	1108642	CMOC Mining Pty Ltd	ML1641
42	1120299	The State of NSW	ML1247
43	1120299	CMOC Mining Pty Ltd	ML1247
41	1120299	CMOC Mining Pty Ltd	ML1247, ML1367
1	831119	CMOC Mining Pty Ltd	May be overlapped by ML1247
Between 3/830291 and 49/753998		Crown Land (CMOC Application to Purchase Reference #DPI W563265)	N/A
1	818783	CMOC Mining Pty Ltd	N/A (Goonumbla Rail Siding)
1	848944	State Rail Authority of NSW	N/A (Goonumbla Rail Siding)
1	952674	State Rail Authority of NSW	N/A (Goonumbla Rail Siding)
Bogan Road and McClintock Lane road reserves			N/A (road upgrade works)



ATTACHMENT 1

Review of Approved Disturbance Area (Sept 2021)



NORTHPARKES MINE

Review of Approved Disturbance Area

FINAL

September 2021



NORTHPARKES MINE

Review of Approved Disturbance Area

FINAL

Prepared by
Umwelt (Australia) Pty Limited
on behalf of
CMOC Northparkes

Project Director: David Holmes
Project Manager: Lauren Evans
Report No. 20272/R05
Date: September 2021



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Document Status

Rev No.	Reviewer		Approved for Issue	
	Name	Date	Name	Date
Final	David Holmes	30/9/2021	David Holmes	30/9/2021

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1.0 Introduction

CMOC-Northparkes Mines (Northparkes) is a copper and gold mine located 27 km north-west of Parkes, in the Central West of New South Wales, Australia. Northparkes is a joint venture between China Molybdenum Co., Ltd (CMOC) (80%) and the Sumitomo Groups (20%).

Mining at Northparkes has been undertaken for over 25 years with operations commencing in 1993 following approval of Development Consent DA504/90 by the Land and Environment Court in August 1991.

A full list of consents historically applicable to the site (excluding consents which were not commenced) is set out in **Table 1.1**.

Table 1.1 Northparkes development consents and project approvals

Development Consent/ Project Approval	Date of Grant	Description	Comments
DA504_90	7 August 1991 (Modified on 23 March 1993)	Open cut mining of three copper/gold deposits with underground mining at a later date and associated building works.	Granted by NSW Land and Environment Court following objector appeal against consent granted by Parkes Shire Council – Surrendered under PA06-0026
DA836_95	21 March 1995	Development of 2 Open Cut Mines and Haul Road	Granted by Parkes Shire Council - Lapsed
DA895_95	19 June 1996	Development of No 2 Tailings Impoundment (TSF2)	Granted by Parkes Shire Council – Surrendered under PA06-0026
DA976_96	3 September 1996	Water Supply Augmentation	Granted by Parkes Shire Council – Surrendered under PA06-0026
DA00204	17 January 2001	Caloola Clay Borrow Pit	Granted by Parkes Shire Council – Surrendered under PA06-0026
DA03079	1 July 2003	Additions to Northparkes Mines (Estcourt Retention Pond)	Granted by Parkes Shire Council – Surrendered under PA06-0026
DA03107	23 September 2003	In-Pit Tailings Disposal (E22 and E27 Voids)	Granted by Parkes Shire Council – Surrendered under PA06-0026
PA06-0026 (as modified)	28 February 2007 (Modified on 6 October 2009, 28 October 2009)	Northparkes E48 Project	Granted by Minister for Planning – Surrendered under PA 11_0060
DA11092	31 January 2012	Training Centre	Granted by Parkes Shire Council – Surrendered under PA11_0060

Development Consent/ Project Approval	Date of Grant	Description	Comments
PA 11_0060 (as modified)	16 July 2014 (Modified on 16 June 2015, 31 March 2016, 22 September 2017, 6 September 2018, 30 August 2019)	Northparkes Mine Step Change Project	Granted by Minister for Planning and Environment

Up until the 2013 Step Change Project Environmental Assessment, the approvals documentation (including consent documents) did not contain any mapping of the extent of the approved disturbance footprint for operations. The following summarises the disturbance mapping contained in key approval documents:

1.1 2006 E48 Project Approval

The E48 Project Approval consolidated all previous approvals for the Northparkes operation under a single Part 3A Project Approval (PA06-0026) and all preceding Council Consents were surrendered.

In the 2006 Environmental Assessment for the E48 Project (R.W Corkery & Co, 2006) (E48 Project EA), Part B described the existing approved operations which were to be carried through under the consolidated E48 Project Approval. As noted in Table 1 above, all of the development consents covering operations approved to that date were surrendered following the grant of PA06-0026. The existing activities approved under the existing consents which were surrendered were described in Table A2 as follows and shown in Figure B34 of the E48 Project EA (reproduced in **Figure 1.1**) as follows:

Existing Site Components and Activities (to continue for the remainder of the mine life).

- E26 Underground Mine, associated subsidence zone and waste rock/clay dumps.
- E26 Underground Mine Portal, Hoisting Shaft and Exhaust Fan.
- E26 Underground Mine Surface Infrastructure and Services.
- Overland Conveyer and E26 Service Road.
- Processing Plant and Rill Tower Stockpile (for underground ore) and ROM Pad (for open cut ore).
- Tailings Storage Facilities 1 and 2 and Return Water Dam.
- Administration and Training Buildings, Car Parks and various infrastructure and services.
- Process Water Dam, Caloola and Estcourt Borrow Pits and Water Storages.
- Various open cut waste rock/clay stockpiles and dumps.
- Mine Access Road and various internal roads and tracks.
- E22 Open Cut Mine (continued mining envisaged and subsequent tailings disposal - approved for tailings disposal).
- E27 Open Cut Mine (mining completed – used for water storage and approved for tailings disposal).

- Various compounds for equipment storage and services.
- Sound Bund and numerous tree lots.

As can be seen from **Figure 1.1**, only the general outline of key features is shown. There is no mapping of existing approved disturbance areas¹ and, in particular, topsoil and subsoil stockpiles are not mapped. Figure B10 from the E48 Project EA includes mapping of some existing infrastructure and services including power lines and supply water pipeline as well as sealed and unsealed roads and tracks however the scale of the figure and detail shown is not sufficient to define the extent of disturbance associated with these activities. Also not included were historical construction laydown areas (most of which will also be required for post-mining decommissioning works). Several other figures in Part B show elements of approved operations, however, as with Figure B10, these are not of sufficient detail to define the extent of existing and approved disturbance under the historical consents. A further complication is that there are internal access roads and water management infrastructure that is associated with ongoing agricultural operations but also utilised by mining operations. There is no demarcation between these activities as being mine related or farming related in the E48 Project EA.

¹ High level disturbance mapping was contained in Figure 4 of the Aboriginal Heritage Assessment (Part 8 of the Specialist Studies Compendium, Australia Archaeological Survey Consultants Pty Ltd dated August 2006) however a review of this mapping indicates that it does not show all areas that were clearly disturbed by approved mining activities and, in some cases, identifies areas that had not been disturbed but were identified as such. As such, these boundaries have not been relied on as being definitive of approved disturbance areas.



FIGURE 1.1

Approved Operational Area
under PA11_0060

The additional features approved under PA06_0060 were:

- E48 Underground Mine, associated subsidence zone and waste rock stockpile.
- E48 Underground Mine Portal (Existing E26 Mine Portal).
- E48 Underground Mine Surface Infrastructure and Services (same as for E26).
- E48 Overland Conveyor/Service Corridor.
- Tailings Storage Facility 3 (Cells A and B) and Return Water Dam.
- Infill between Tailings Storage Facilities 1 and 2.
- Rosedale Borrow Pit.
- Various internal roads and tracks.
- A 45ha addition to Limestone National Forest (as a land swap).
- Various ancillary components and activities to the above components.

The location of the key features was shown on Figure C2 of the E48 Project EA (reproduced in **Figure 1.2**). As can be seen in **Figure 1.2**, only the key features are shown and there is no mapping of internal roads and tracks associated with the approved operation (and in particular, those associated with the construction and operation of the E48 Overland Conveyor, TSF 3, the Return Water Dam and the construction and use of material from the Rosedale Borrow Pit), nor are the locations of soil stockpiles associated with the construction of TSF3 and the Rosedale Borrow Pit identified.

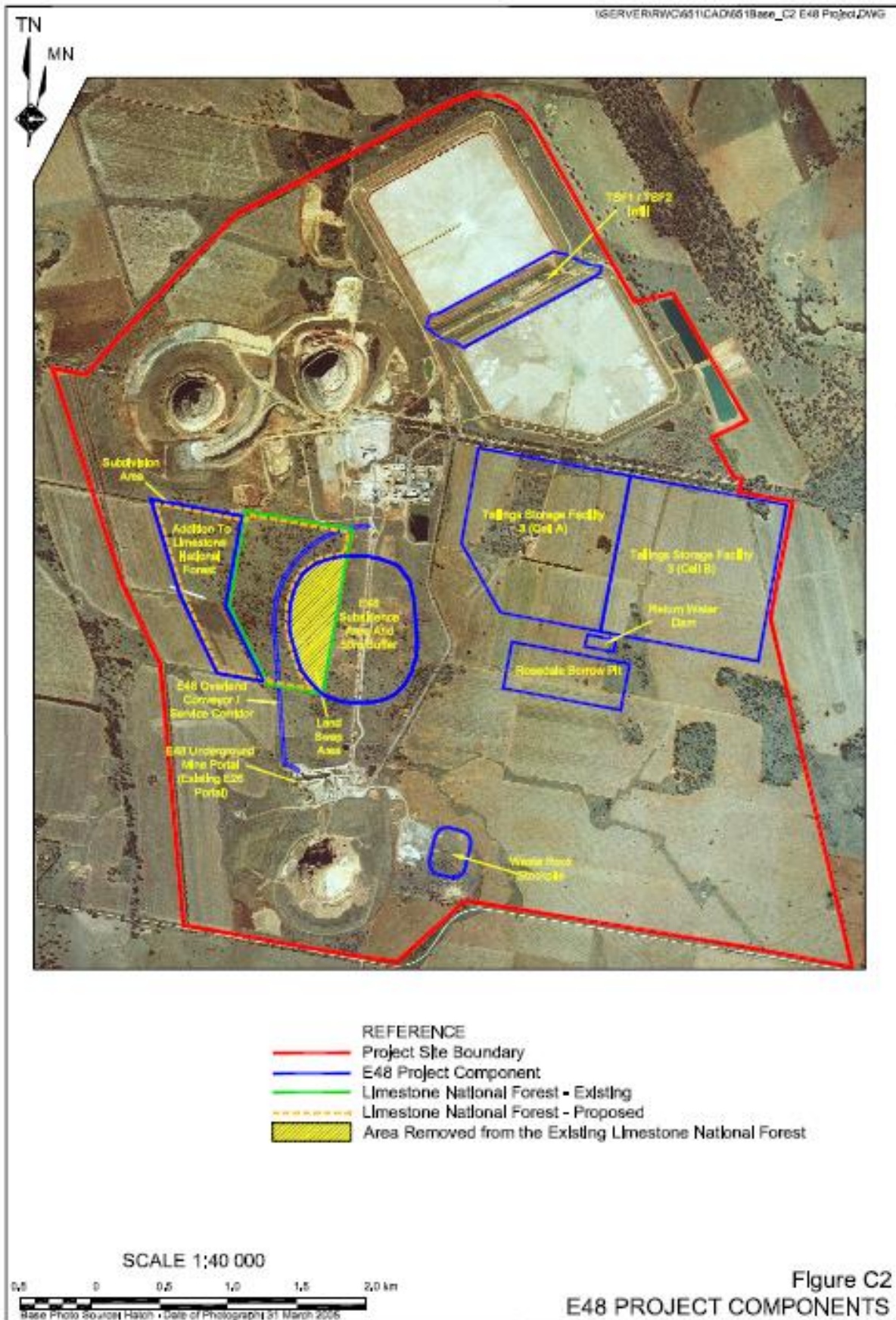


Figure 1.2 E48 Project Components

(R.W. Corkery & Co, 2006)

1.2 Step Change Project

In addition to retention of existing approved operations under PA06_0026, the Step Change Project (PA11_0060) included the following key physical elements:

- expansion of approved open cut mining in the E26 resource and associated waste rock emplacement areas
- Mining of four small open cut pits, E31, E31N, E28N and E28
- Development of block cave mining in the E22 resource (below the existing approved open cut)
- Augmentation of approved (but at the time, not yet constructed) TSF 3
- Construction of an upgraded site access road and upgrades to McClintocks Lane.

Figure 5.9 of the Step Change EA (Umwelt 2012) (reproduced in **Figure 1.3**) identified the 'Proposed Disturbance Area'. This figure however relied on the broad feature mapping of existing approved operations from the 2006 E48 Project EA and save for some access roads, underground infrastructure and the general 'as built' alignment of the E48 Project Conveyor realignment, did not pick up a range of historically approved disturbance nor the ancillary activities associated with the construction of TSF 3 (referred to as the Rosedale TSF in the Step Change EA). A conceptual layout only of the proposed access road was provided.



FIGURE 5.9
Proposed Disturbance Area

Figure 1.3 Figure 5.9 from Step Change EA

Notably, several key features of development approved in the E48 Project EA and identified as part of the proposed operations in Figure 2.8 to 2.11 were not captured by Figure 5.9 in the Step Change EA including:

- The approved E48 Subsidence footprint and associated 50m buffer zone
- Part of the clay stockpile located close to the existing ore processing facility
- A low grade ore stockpile to the southwest of the E26 open cut/subsidence zone.

Disturbance associated with other features of approved operations which were to be carried through to the Step Change Project which were not captured in the proposed disturbance area mapped in Figure 5.9 of the Step Change EA include:

- disturbance associated with utilities infrastructure including power lines and water supply pipeline (refer to Figure 2.7 in the Step Change EA)
- existing soil stockpiles and areas available for stockpiling topsoil and subsoil material from the TSF3 (Rosedale TSF) Area
- water management infrastructure (drains and pipelines) associated with existing approved operational areas (including waste rock stockpiles associated with E26, E22 and the approved TSFs (including TSF3))
- historical construction laydown areas and associated site facilities
- underground ventilation facilities.

Additionally, while the map captured the 'as built alignment' for the E48 Project conveyor, it did not fully capture associated disturbance, including the maintenance road.

Other features not identified in the proposed and approved disturbance area stockpiles were:

- topsoil and subsoil stockpiles associated with the Rockdale TSF, Rockdale Borrow pit area and newly approved open cut pits
- access and maintenance roads associated with top soil stockpiles and construction activities
- disturbance associated with water management works required for the redesigned Rosedale TSF, new open cut pits and expanded E26 waste stockpile areas.

1.3 PA11_0060 Modification 3 Application

Modification 3 to PA11_0060 sought changes to the approved underground mining operations in the E26 resource. As part of the Modification 3 application documentation, Figure 3 (reproduced in **Figure 1.4**) contained a replication of the approved Disturbance Area for PA11-0060 and an 'as built' disturbance area for the Access Road and associated Access Control area. A review of the approved disturbance shown in Figure 3 and areas approved for disturbance under historical consents which have been carried through to PA11_0060 indicates that this mapping of approved disturbance is incorrect and does not capture all approved disturbance areas. Observable in Figure 3, but not captured in the disturbance area mapping are:

- a number of subsoil and topsoil stockpile areas associated with the pre-stripping activities for the Rosedale TSF as specified in the Step Change EA and
- water management drains identified in the Surface Water Assessment for the Step Change Project (Appendix 11 of the Step Change EA).
- features identified as missing in the Step Change EA mapping discussed in **Section 1.2** above.

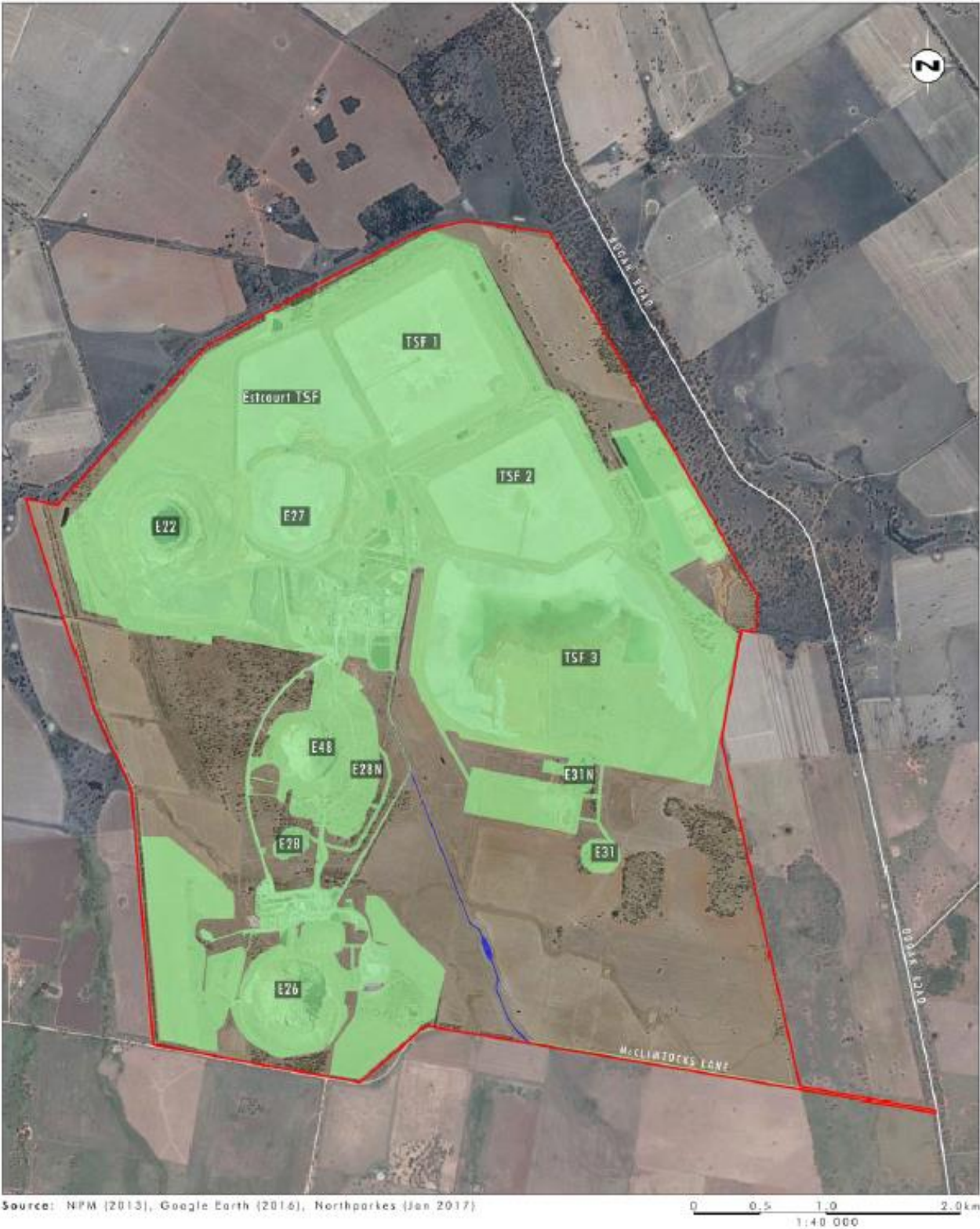


FIGURE 3
Disturbance Areas

Figure 1.4 Figure 3 from PA11_0060 Modification 3 Application

1.4 Northparkes Mining Operations Plan

Notwithstanding the lack of detail regarding certain disturbance activities, in particular water management, access roads and soil stockpiles, in the environmental assessment documentation, the Mining Operations Plan for Northparkes has shown these features and considered them in operational environmental management processes and rehabilitation planning. Plan 2 from the Current Northparkes Mines Mining Operations Plan 2020-2022 is reproduced in **Figure 1.5**. This plan does not however fully capture all historical and approved but not yet constructed disturbance.

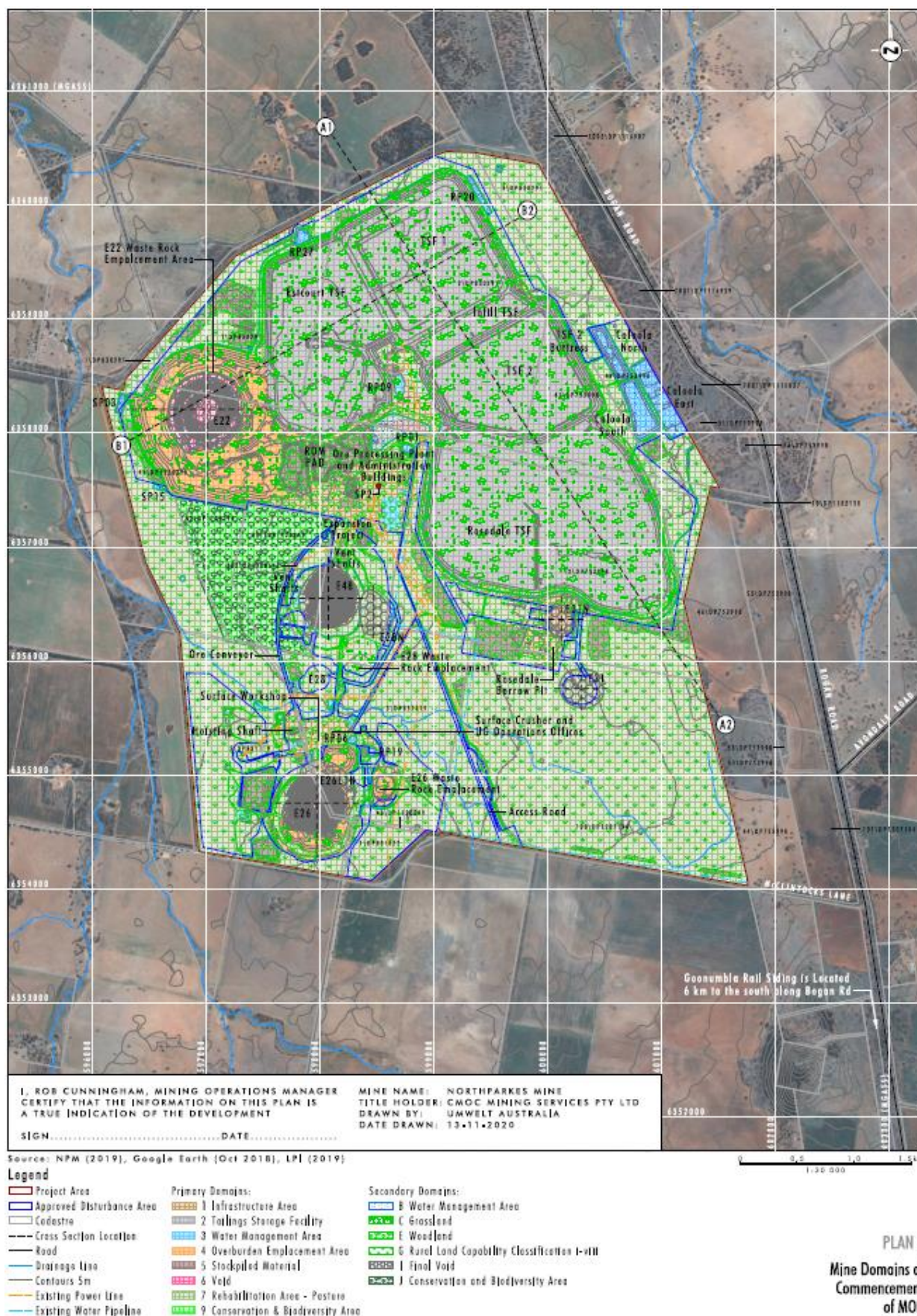


Figure 1.5 Plan 2 from Northparkes Mine MOP 2020-2022

2.0 Mapping of Approved Disturbance for future

2.1 Mining Disturbance

As part of the proposed PA11_0060 Modification 6 assessment, Umwelt has been engaged to fully document all historically approved and proposed future disturbance to provide a baseline against which future applications can assess proposed changes to approved operations. This mapping has been limited to the PA11_0060 Project Area.

In order to do this, Umwelt has undertaken the following steps:

1. Starting with the 'Disturbance Area' shown in Figure 3 of the PA11_0060 Modification 3 Environmental Assessment, added in the following omissions from key features approved in and prior to PA06_0026:
 - clay stockpile area north of E48
 - low grade ore stockpile to the southwest of E26
 - E48 subsidence management zone.
2. Reviewed aerial and satellite imagery available to identify areas of historical disturbance that was attributable to mining related activities
3. Assessed whether areas of identified disturbance were approved under consents at the time the disturbance was undertaken or was part of approved operations under surrendered consents that has been carried through to PA11_0060 and
4. Mapped areas of existing disturbance and approved but not yet undertaken disturbance.

As part of the above processes, a detailed review of 'As Built' features such as the Site Access Road and the E48 Conveyor which are identified conceptually in approval documentation was undertaken to ensure that the disturbance associated with this approved infrastructure accurately captured final built alignment and ancillary disturbance such as earthworks, table drains, maintenance roads and construction laydown areas.

Where identifiable from aerial imagery, construction laydown areas and ancillary construction disturbance have also been captured as similar areas will be required for closure works and, where possible, these existing disturbed areas should be used for these areas during closure (and maintenance) activities.

In a number of areas, the existing mapping of 'approved disturbance areas' includes small fragments of land between approved and existing disturbance areas that will necessarily be impacted by either water management works or works associated with rehabilitation works. These omissions in being mapped as approved disturbance have been identified where appropriate. It is noted that, almost without exception, these small 'infill' areas have a long history of agriculture disturbance. A review of available assessment documentation applicable to the activities impacting these areas indicates that heritage and ecological impacts in these areas have been considered. Accordingly, their omission from being mapped as 'approved disturbance' in historical assessment documentation does not mean that the impacts associated with their disturbance has not been assessed.

Disturbance associated with power lines, pipelines and telecommunications was only undertaken where this disturbance was evident in the imagery reviewed. The ongoing maintenance of this infrastructure and its removal post mining is approved under the current consents however the disturbance associated with these works is difficult to capture in disturbance mapping. Future disturbance associated with the maintenance of this infrastructure will be minimised and avoidance of remnant trees avoided where possible. Disturbance associated with the removal of this infrastructure as part of mine closure planning processes will be detailed in the Mine Closure Planning Process

Figure 2.1 to Figure 2.5 show the areas of disturbance additional to those areas identified in the PA11_0060 Modification 3 mapping. The justification for including particular areas is detailed in **Table 2.1 to Table 2.5**.

A consolidated 'Approved Operational Area' is mapped in **Figure 2.6**. **Figure 2.1** also includes the alignment of existing powerlines and water pipelines which will also require some future disturbance activities to undertake maintenance during operations and removal as part of the mine closure planning processes.



Legend

Disturbance Category

- As Built
- Mod 3 Mapping
- Updated



FIGURE 2.1
Additional Identified Disturbance Areas

Table 2.1 Additional Identified Disturbance Areas – Area 1

Figure ID	Nature of approved disturbance	Relevant consent where approved
10	Internal Access Road (also used for farming purposes)	PA11_0060
11	Access Road (as built)	PA11_0060
29	Vegetation/Soil stockpile (Rosedale TSF and E31N)/Rosedale TSF construction laydown area	PA11_0060/PA06_0026
31	Access Road (as built)	PA11_0060
32	Access Road (as built)	PA11_0060
34	Access Road (construction laydown area)	PA11_0060
44	Internal Access Road (also used for farming purposes)	Farming road – ability to be used for E31 operations approved under PA11_0060
45	Internal haul road – soil stockpiles	PA06-0026/PA11_0060
46	Soil Stockpile	
47	Supply Pipeline alignment/Internal Access Road. Also used for farming purposes	DA976_96/PA06-0026/PA11_0060
48	Supply Pipeline alignment/Internal Access Road. Also used for farming purposes	DA976_96/PA06-0026/PA11_0060
59	Access Road (construction laydown area)	PA11_0060
63	Disturbance mapping omission	PA11_0060
80	Internal Access Road	PA06-0026/PA11_0060
84	Soil stockpile and ancillary disturbance area/ haul road	PA06-0026/PA11_0060
85	Soil Stockpile (Rosedale TSF)	PA06-0026/PA11_0060
87	Access Road (as built)	PA11_0060
114	Soil Stockpile (Rosedale TSF)	PA06-0026/PA11_0060
117	Supply Pipeline alignment/Internal Access Road. Also used for farming purposes	DA976_96/PA06-0026/PA11_0060
118	Topsoil strip – McClintocks Lane Upgrade Works	PA11_0060
119	Topsoil strip – McClintocks Lane Upgrade Works	PA11_0060
120	Topsoil strip – McClintocks Lane Upgrade Works	PA11_0060
124	Internal haul road – soil stockpiles	PA06-0026/PA11_0060
125	Internal haul road – soil stockpiles	PA06-0026/PA11_0060
126	Internal haul road – soil stockpiles	PA06-0026/PA11_0060
127	Soil stockpile – ancillary disturbance area	PA06-0026/PA11_0060
128	Ancillary disturbance, Rosedale TSF construction and maintenance	PA06-0026/PA11_0060
133	Access Road – ancillary construction disturbance	PA11_0060
142	Soil stockpile – ancillary disturbance area	PA06-0026/PA11_0060
144	Soil stockpile access road	PA11_0060
145	Soil stockpile access road	PA11_0060
146	Soil stockpile access road	PA11_0060
148	‘Approved Disturbance Area’ as identified in PA11_0060 Modification 3 EA.	PA11_0060
149	McClintocks Lance Upgrade Works	PA11_0060
152	Internal haul road – soil stockpiles	PA06-0026/PA11_0060

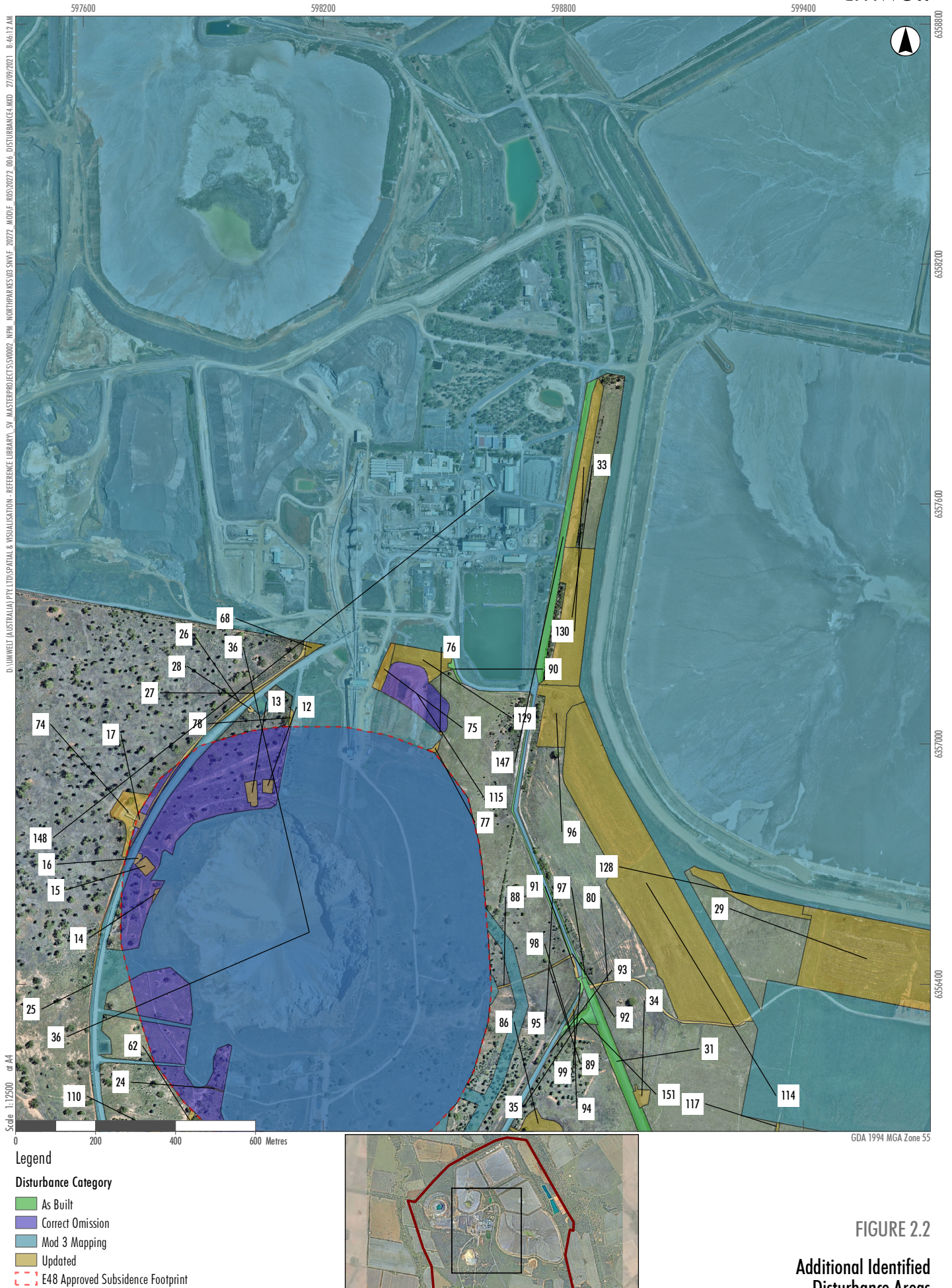
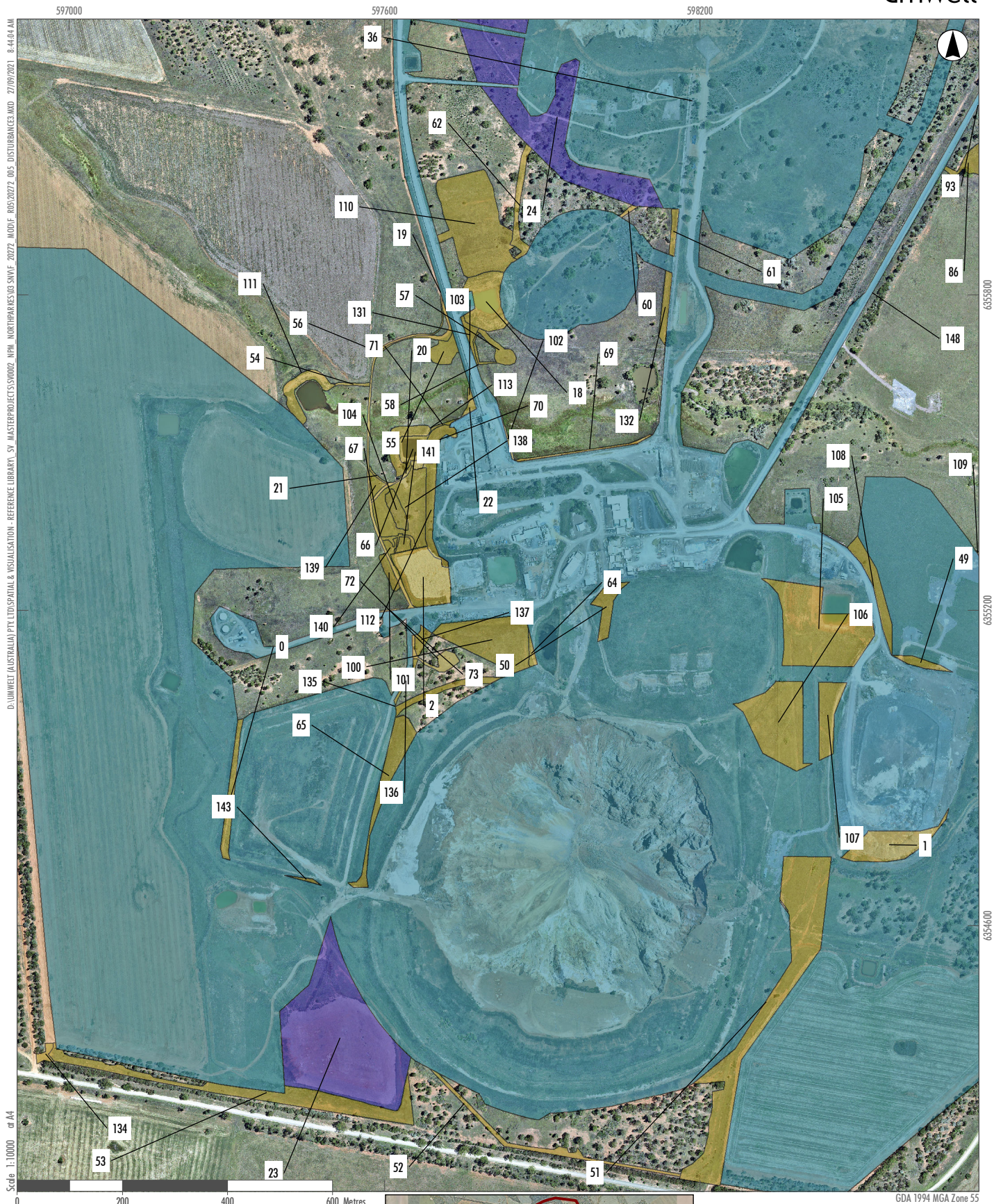


Table 2.2 Additional Identified Disturbance Areas – Area 2

Figure ID	Nature of approved disturbance	Relevant consent where approved
12	Construction laydown area	PA06-0026 or earlier consent (within E48 Subsidence management zone)
13	Construction laydown area	PA06-0026 or earlier consent (within E48 Subsidence management zone)
14	Ancillary mining disturbance	PA06-0026 or earlier consent (within E48 Subsidence management zone)
15	Water management infrastructure	PA06-0026 (within E48 Subsidence management zone)
16	Ancillary Conveyor construction disturbance	PA06-0026 (within E48 Subsidence management zone)
24	Internal access road (within E48 Subsidence Zone)	PA06-0026
25	Conveyor maintenance Road	PA06-0026
26	Conveyor/Ventilation fan infrastructure	PA06-0026 (within E48 Subsidence management zone)
27	Conveyor maintenance Road	PA06-0026
29	Vegetation/ Soil stockpile (Rosedale TSF and E31N)/ Rosedale TSF construction laydown area	PA11_0060/PA06_0026
31	Access Road (as built)	PA11_0060
33	Ancillary disturbance (Rosedale TSF Construction, Water management, Infrastructure)	PA06-0026 /PA11_0060
34	Access Road (construction laydown area)	PA11_0060
36	E48 Subsidence Management Zone (purple areas are omissions from mapped disturbance)	PA06-0026 (As shown in Figure 1.3 of Step Change EA but omitted from disturbance mapping)
62	Internal Access Road	PA06-0026
74	Ventilation Fan and associated infrastructure	PA06-0026/PA11_0060 (partly within E48 Subsidence Zone)
75	Ancillary disturbance/ construction area	PA06-0026 or earlier consent
76	Ancillary Disturbance - stockpiles	Approved pre 2006.
77	Ancillary Disturbance - stockpiles	Approved pre 2006.
78	Construction Laydown Area for Conveyor	PA06-0026
80	Internal Access Road	PA06-0026/PA11_0060
86	Soil stockpile	PA06-0026
88	Internal Access Road	Approved pre 2006.
90	Internal Access Road	Approved pre 2006.
91	Internal Access Road	Approved pre 2006.
92	Internal access road (former farm road)	Various
93	Internal Access Road	Approved pre 2006.
94	Internal Access Road	PA06-0026 or earlier consent
95	Access Road (as built)	PA11_0060
96	Rosedale TSF ancillary construction disturbance, infrastructure (power and telecommunications) and TSF infrastructure, soil stockpile ancillary disturbance.	PA06-0026/PA11_0060

Figure ID	Nature of approved disturbance	Relevant consent where approved
97	Access Road (as built)	PA11_0060
98	Access Road (as built)	PA11_0060
99	Internal Access Road	PA06-0026 or earlier consent
110	Soil Stockpile	PA06-0026
114	Soil Stockpile	PA06-0026/PA11-0060
115	Clay Stockpile (purple areas are omissions from mapped disturbance)	Approved pre 2006. Identified as existing approved feature in E48 Project EA (PA06-0026)
117	Supply Pipeline alignment/Internal Access Road. Also used for farming purposes	DA976_96/PA06-0026/PA11_0060
128	Ancillary disturbance, Rosedale TSF construction and maintenance	PA06-0026/PA11_0060
129	Infrastructure management/construction area (powerlines)	Approved pre 2006.
130	Infrastructure (powerlines and telecommunications) and Access Road construction	PA11_0060
147	Access road	Originally approved in DA504_90. Upgraded with Access Road works under PA11_0060
148	'Approved Disturbance Area' as identified in PA11_0060 Modification 3 EA.	PA11_0060
151	Access Road (as built)	PA11_0060



Legend

Disturbance Category

- Correct Omission
- Mod 3 Mapping
- Updated



FIGURE 2.3
Additional Identified Disturbance Areas

Table 2.3 Additional Identified Disturbance Areas – Area 3

Figure ID	Nature of approved disturbance	Relevant consent where approved
0	Ancillary Disturbance	DA504_90
1	Waste Stockpile	DA504_90. General outline captured in PA06-0026 but general area also identified as mine water management area in PA06_0026.
2	Water Treatment Facility	PA11-0060
18	Water Management Infrastructure	Approved pre 2006.
19	Internal Access Road	DA504_90
20	Internal Access Road	DA504_90
21	Access Road	DA504_90
22	Ancillary Disturbance	DA504_90
23	Low Grade Ore Stockpile (purple areas are omissions from mapped disturbance)	DA504_90 (As shown in Figure 1.3 of Step Change EA but omitted from disturbance mapping)
24	Internal access road (within E48 Subsidence Zone)	PA06-0026
36	E48 Subsidence Management Zone (purple areas are omissions from mapped disturbance)	PA06-0026 (As shown in Figure 1.3 of Step Change EA but omitted from disturbance mapping)
49	Ancillary disturbance/ water management	DA504_90/PA06-0026/PA11-0060
50	Waste Stockpile	DA504_90
51	Ancillary Disturbance – E26	DA504_90
52	Internal Access Road	DA504_90
53	Soil Stockpile	DA504_90
54	Internal Access Road	DA504_90
55	Construction/maintenance pad (powerlines)	DA504_90
56	Internal Access Road	DA504_90
57	Construction/maintenance pad (powerlines)	DA504_90
58	Internal Access road (former farming road)	PA06-0026
60	Internal Access Road	PA06-0026
61	Internal Access Road/ Ancillary construction/demolition disturbance	DA504_90
62	Internal Access Road	PA06-0026
64	Water Management	DA504_90
65	Soil Stockpile	DA504_90
66	Water Management	DA504_90
67	Internal Access Road	DA504_90
69	Ancillary disturbance	DA504_90
70	Soil Stockpile	DA504_90
71	Ancillary disturbance	DA504_90
72	Construction Pad	PA11_0060 (within area generally identified as waste stockpile under DA504_90)
73	Internal Access Road	PA06-0026

Figure ID	Nature of approved disturbance	Relevant consent where approved
86	Soil Stockpile	PA06-0026
93	Internal Access Road	Approved pre 2006.
100	Soil Stockpile	DA504_90
101	Soil Stockpile	DA504_90
102	Ancillary Disturbance	DA504_90
103	Internal Access Road/ Ancillary construction	PA06-0026
104	Soil stockpile	DA504_90
105	Water management/ Ancillary disturbance	DA504_90
106	Water Management/ Internal Access Road/ Ancillary disturbance	DA504_90
107	Water Management	DA504_90
108	Ancillary disturbance/ water management	DA504_90/PA06-0026/PA11-0060
109	Water Management Infrastructure	PA06-0026/PA11-0060
110	Soil Stockpile	DA504_90
111	Soil Stockpile/ Water Management Infrastructure	Approved pre 2006.
112	Soil Stockpile	DA504_90
113	Soil Stockpile	DA504_90
131	Ancillary Disturbance/ Construction/Water Management	PA06-0026
132	Internal Access Road/ Ancillary construction/demolition disturbance	DA504_90
134	Internal Access Road (also used for farming)	DA504_90
135	Internal Access Road	DA504_90
136	Internal Access Road/Ancillary disturbance	DA504_90
137	Ancillary Disturbance	DA504_90
138	Ancillary Disturbance	DA504_90
139	Ancillary Disturbance	DA504_90
140	Ancillary Disturbance	DA504_90
141	Ancillary Disturbance	DA504_90/PA11_0060
143	Ancillary Disturbance	DA504_90
148	'Approved Disturbance Area' as identified in PA11_0060 Modification 3 EA.	PA11_0060

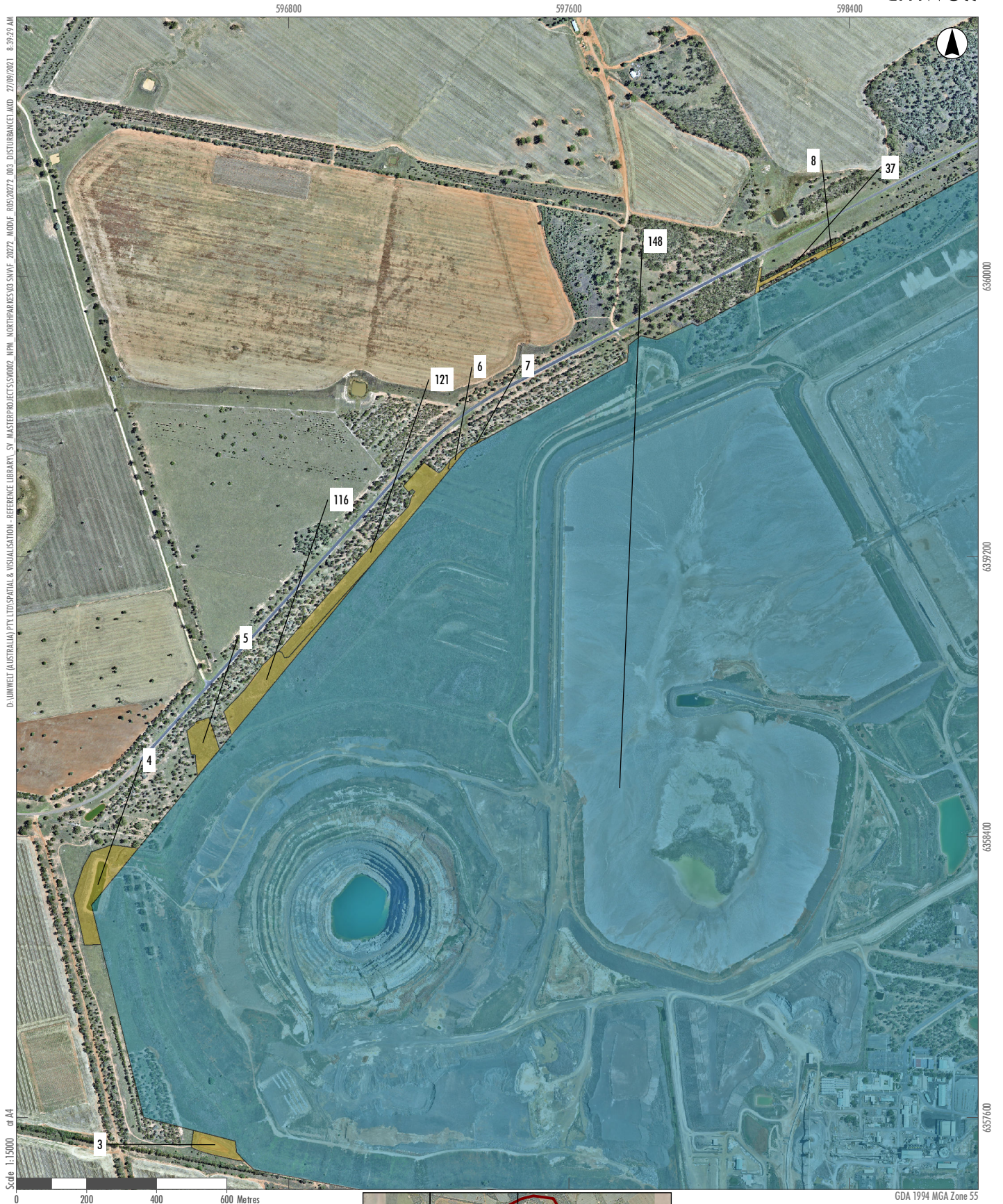


FIGURE 2.4
Additional Identified
Disturbance Areas

Table 2.4 Additional Identified Disturbance Areas – Area 4

Figure ID	Nature of approved disturbance	Relevant consent where approved
3	Water Management Infrastructure	DA504_90
4	Water Management Infrastructure	DA504_90
5	Soil Stockpile	DA504_90
6	Soil Stockpile	DA 03079
7	Soil Stockpile	DA 03079
8	Water Management Infrastructure	DA504_90/DA 03079
37	Internal Access Road	Various/ Farming
116	Soil Stockpile	DA504_90/DA 03079
121	Water Management Infrastructure (Clean Water)	DA504_90
148	'Approved Disturbance Area' as identified in PA11_0060 Modification 3 EA.	PA11_0060



Legend

Disturbance Category

Mod 3 Mapping

Updated



FIGURE 2.5

**Additional Identified
Disturbance Area**

Table 2.5 Additional Identified Disturbance Areas – Area 5

Figure ID	Nature of approved disturbance	Relevant consent where approved
9	Water Management Infrastructure	PA11_0060
10	Internal Access Road (also used for farming purposes)	PA11_0060
30	Soil Stockpile	PA06-0026
38	Soil Stockpile	DA895_95
39	Vegetation/ Soil Stockpile	PA11_0060
40	Internal Access Track (formerly farming)	PA11_0060/Farming
41	Ancillary Disturbance – Water management and soil stockpiles	PA06-0026/ PA11_0060
42	Internal Access Track (formerly farming)	PA11_0060/Farming
43	Internal Access Track (formerly farming)	PA11_0060/Farming
79	Water Management Infrastructure	DA504_90/DA895_95/PA06-0026
81	Water Management Infrastructure	DA504_90/DA895_95/PA06-0026
82	Soil Stockpiles	DA895_95/DA00204
83	Ancillary Disturbance – Vegetation and Soil Stockpile	PA11_0060
122	Water Management Infrastructure	DA504_90/DA895_95/PA06-0026
123	Soil Stockpile	DA895_95
148	'Approved Disturbance Area' as identified in PA11_0060 Modification 3 EA.	PA11_0060



FIGURE 2.6

Approved Operational Area

2.2 Road Realignment Disturbance

As part of the approval requirements for DA504_90, Northparkes realigned part of McClintocks Lane, part of Adavale Lane and constructed a new road between McClintocks Lane and Adavale Lane running along the western boundary of the Northparkes Project Area. McClintock Lane was also upgraded as part of PA11_0060. With the exception of the upgrades to McClintocks Lane associated with its use as the primary access route for the Northparkes Mine (refer to **Figure 2.1** and **Table 2.1**), disturbance associated with these roadworks has not been mapped.

2.3 Mining Disturbance around approved E31N footprint

A review of the aerial imagery has identified an area around the approved E31N pit area that was disturbed by mining in 2018-20 but is outside the area mapped as being part of the approved disturbance footprint. Due to the focus of the assessment on additional impacts from the approval of the E31N open cut pit in this area as part of the Step Change Project assessment, these two areas have been reviewed in detail to ascertain whether the disturbance was approved under the approved works under PA06-0026 carried through to PA11_0060 (i.e. ancillary disturbance related to the use and construction of the Rosedale TSF Return Dam, TSF 3 Construction, Rosedale Borrow Pit or soil stockpiles associated with these activities).

2.3.1 Disturbance west of the E31N footprint

A small area to the west of the E31N footprint has been disturbed for activities associated with roads between the Rosedale Borrow Pit, area identified as the TSF Return Water Dam in PA06-0024 and the Rosedale TSF associated with the construction of the Rosedale TSF. As identified in **Figure 2.1** and **Table 2.1** the disturbance within this area is considered to be consistent with the activities approved under PA06_0026 and has therefore been mapped as part of the approved disturbance area. Part of this area has also been used for sourcing clay material for the Rosedale Borrow Pit construction. As the sourcing of this material is within the area disturbed by ancillary approved activities and is broadly within the approved E31N footprint, the use of this area for extraction of clay material is considered to be 'generally in accordance with' the development described in the Step Change Project EA. It is noted that this area would also be considered to be Category 1 – exempt land under the *Local Land Services Act 2013* (LLS Act) land due to the history of cropping in this area up to and after 1990.

2.3.2 Disturbance East of the E31N footprint

An approximately 0.73Ha area of land on the eastern side of the area of E31N Approved Disturbance (as identified in the PA11_0060 Modification 3 EA) has been disturbed from activities associated with preparatory works for the E31N open cut pit (Teal coloured area in **Figure 2.7**). This disturbance has removed approximately 0.24 Ha of PCT56 – Poplar Box – Belah woodland on clay loam soils of the alluvial plains of north-central NSW. Ground truthing of similar quality vegetation to the immediate south of the area removed indicates this vegetation is degraded. The remaining approximately 0.49 Ha has been identified as Category 1 – exempt land for the purposes of the LLS Act due to a history of cropping prior to and in 1990-1991 and indications from previous ecological field work that the grassland is exotic and likely to be Low Conservation Value Grassland. It is noted that two paddock trees which were present in this area in 1990 have also been removed.

While this disturbance is ancillary to the mining of E31N (i.e. necessary for the construction of safety bunds, water management and general access around the pit, the impacts associated with these activities were not assessed in the Step Change Project EA and the disturbance activities undertaken are not considered to be ancillary to the activities approved under PA06-0026. While it is arguable that this disturbance could be considered to be 'generally in accordance with the 'EA' as defined in PA11_0060, this small area of mining related disturbance has conservatively been mapped as **not being** part of the approved disturbance area under PA11_0060.

Due to the small and largely incidental nature of this disturbance, it is recommended that an adjustment to the approved disturbance area be pursued as part of the PA11_0060 Modification 6 application in an area that has not yet been disturbed and is not required for future disturbance to compensate for the loss of the vegetation in the Category 2 land in this area. This adjustment should remove an equivalent area of similar or higher conservation value woodland, preferably in an area that retains a reasonable level of connectivity to vegetation outside of the area identified as being the part of the 'Approve Operation Area' (refer to **Figure 2.6**).

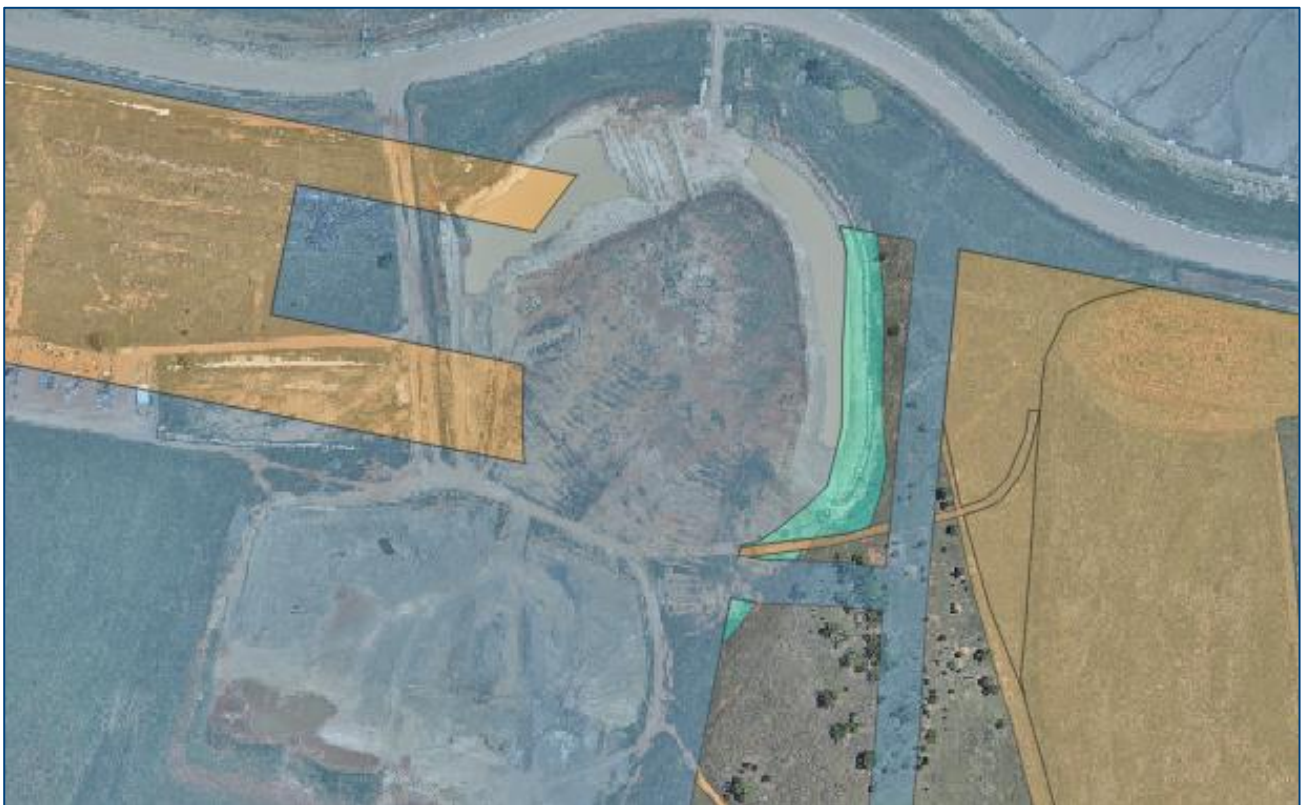


Figure 2.7 Disturbance adjacent to approved E31N disturbance area

2.4 Agricultural Disturbance

Northparkes continues to manage parts of the PA11_0060 Project Area for agricultural uses. Ongoing disturbance of these areas associated with cropping activities, farm access roads and general land management practices (including dams and drainage management) continues to be undertaken. Disturbance associated with these activities has not been mapped except for some access roads which are used for both mining and farming purposes (including farm access roads which have been realigned around approved mining disturbance areas).

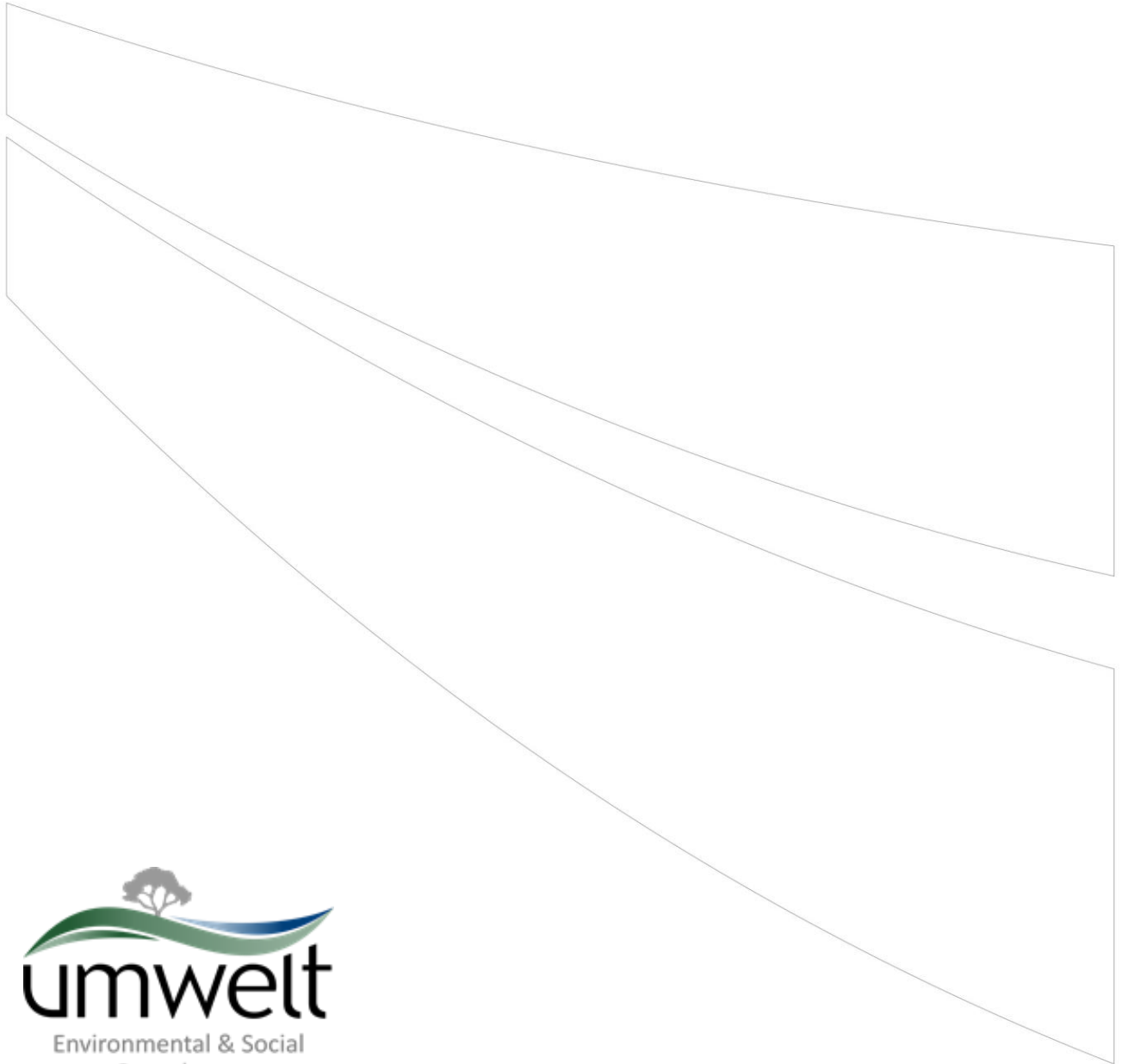
While some of the drainage management works on these properties is utilised as part of the mine water management system (predominately clean water diversions and drainage lines for design overflow from sediment dams), this has not been mapped except where the predominate use of these works is associated with mine related activities and future disturbance associated with final landform re-establishment works is likely to be required. The main examples where this disturbance has been mapped is the area around the E26 void and approved waste dumps and some areas around the Rosedale TSF and the approved E31 and E31N pit areas.

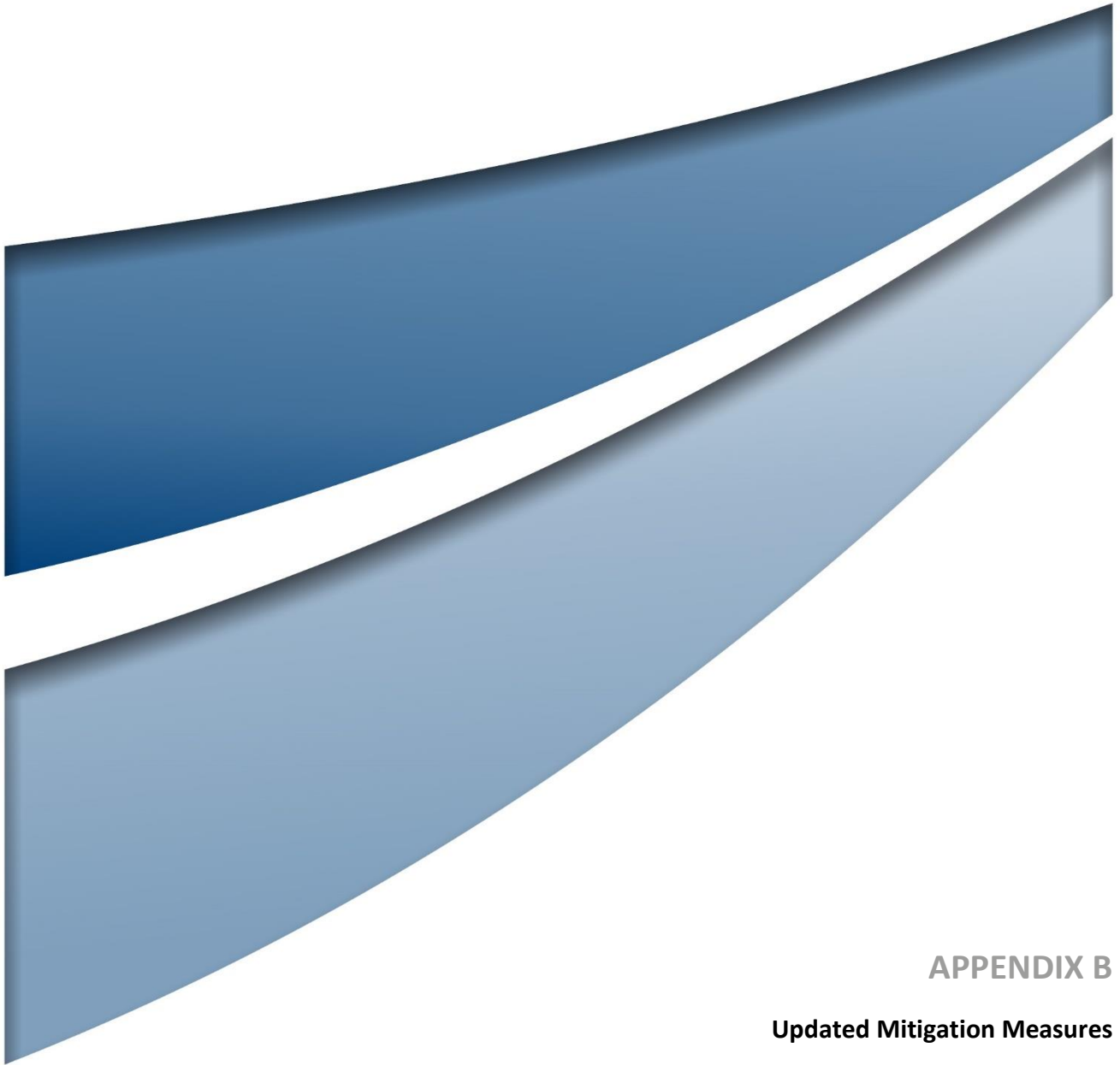
3.0 References

Australia Archaeological Survey Consultants Pty Ltd (2006) *Northparkes Mines – E48 Project: Aboriginal Heritage Assessment* (Part 8 in Northparkes Mines – E48 Project Environmental Assessment (RW Corkery & Co (2006))

R.W Corkery & Co (2006), *Northparkes Mines – E48 Project Environmental Assessment*

Umwelt (2013), *Environmental Assessment: Northparkes Mines Step Change Project*





APPENDIX B

Updated Mitigation Measures

Updated Project Description

Table B1 provides an updated summary of mitigation measures for PA 11_0060 as modified (incorporating MOD 6). It is intended that **Table B1** will replace the Statement of Commitments in Appendix 3 of PA 11_0060.

Table B1 Updated Mitigation Measures

Updated Mitigation Measures (PA 11_0060, as modified)	
Noise	
N1	NPM will undertake additional targeted noise monitoring during construction periods for TSFs, whilst campaign open cut mining operations occur during winter night time operations. This targeted monitoring program will include the use of real time monitoring and be undertaken to identify situations when metrological conditions have the potential to exacerbate noise impacts on neighbouring receivers. Appropriate noise mitigation measures will be implemented as required.
Traffic and Transport	
TT1	The proposed road upgrades, including the development of a new internal access road, upgrades to McClintocks Lane and its intersection with Bogan Road and the development of a new visitors car park, will each be designed in accordance with appropriate guidelines and standards and finalised in consultation with Parkes Shire Council and local landholders/neighbours as appropriate.
TT2	NPM will maintain current arrangements for financial contribution for the purpose of road maintenance as agreed with Parkes Shire Council and DP&I in accordance with the executed Planning Agreement.
TT3	NPM will prepare a detailed Construction Traffic Management Plan for the construction period of the Project, which will include details of: - any staging works - construction routes - heavy vehicles including oversize vehicles - traffic management during the construction of the upgraded intersection in Bogan Road and McClintocks Lane.
TT4 (MOD 5)	NPM will implement the following measures during temporary haulage arrangement to Parkes National Logistics Terminal: - Truck movements will be limited as follows: - No more than two A-Double vehicles used to transport the copper concentrate, with no more than four Northparkes generated truck movements past a receiver in any one hour - No more than 32 truck movements in any 24 hour period, and no more than four movements per hour - No truck movements between 10.00 pm and 7.00 am on Saturday and Sunday nights - Adherence to the conditional restrictions on access to the Restricted Access Vehicle (RAV) routes on McClintocks Lane, Bogan Road and Brolgan Road - Adherence to sign-posted and RAV route conditioned speed limits - Preparation and implementation of a driver fatigue management policy and plan - Preparation and implementation of a transport code of conduct.

Updated Mitigation Measures (PA 11_0060, as modified)	
Aboriginal Cultural Heritage	
ACH1	NPM commits to a comprehensive survey of all portions of the proposed disturbance area that have not been subject to 100 per cent survey coverage prior to disturbance. Thus, any and all areas of the development footprint that will be affected will be examined prior to construction commencing, in consultation with the Aboriginal Heritage Working Group, and agreed management measures will be implemented.
ACH2	In the unlikely event that unexpected archaeological remains or potential heritage items not identified as part of this report are discovered during the Project, all works in the immediate area will cease. The remains and potential impacts will be assessed by a qualified archaeologist or heritage consultant and, if necessary, the Heritage Branch, BCD notified in accordance with Section 146 of the Heritage Act (NSW).
ACH3	If potential human remains are located following any surface disturbance, all works will halt in the immediate area to prevent any further impacts to the remains. The NSW Police will be contacted immediately. No action will be undertaken until police provide written notification to the Proponent.
MOD 6	- The previously recorded modified tree (P1-Alectown, 35-6-0156) will be updated to 'not a site' on the AHIMS register. The tree will not be impacted until the approved Aboriginal Site Impact Recording Form (ASIRF) has been received. - The Aboriginal Cultural Heritage Management Plan (ACHMP) will be consulted for the appropriate procedures if unanticipated Aboriginal objects or human skeletal remains are encountered during works
Socio-Economic	
SE1	- NPM will continue investigating the sizing of contracts in order to facilitate the inclusion of local businesses within ongoing operations. - NPM will consult with PSC in regard to other influences on accommodation demands when scheduling operations requiring short-term increases in employees and contractors. - Should unanticipated impacts become evident during the life of the Project, NPM will liaise with PSC and/or the relevant government body in relation to how infrastructure challenges in the future may be met as a community. - NPM will commence SIA, with regard to mine closure (including consultation with PSC, FSC, and the community), five years prior to the anticipated end of mine life, unless further extensions of mine life are being sought at that time. - NPM will continue its existing community engagement and consultation program and will extend the program to facilitate feedback from the community with regard to community perceptions of NPM in order to proactively manage matters as they arise.

Updated Mitigation Measures (PA 11_0060, as modified)	
SE2 (MOD 5)	NPM will implement the following measures during temporary haulage arrangement to Parkes National Logistics Terminal: • A-Double configuration vehicles to be used to limit the number of commutes • Northparkes to periodically engage with landowners or residents adjoining the proposed transport route to monitor the impacts of traffic noise. • Fatigue management of drivers to be enforced to ensure safety of employees, pedestrians and other road users. • Promote and enforce safe driving practices. • Drivers to travel the proposed route prior to commencement of copper concentrate delivery to familiarise themselves to changes in road signage, speed zones and high impact areas. • Employees to report any road maintenance concerns to road managers to ensure continued condition of the proposed transport route. • Implement a reporting procedure for any impact to private property including debris damage during commute along the proposed haul route. • Continue to employ locally and invest in community sustainability projects. • Continue to provide financial and other support to local groups and organisations.
Biodiversity	
B1	NPM will implement the biodiversity management strategies outlined in Appendix 9 of the 2013 EA, including: • Feral animal and noxious weed control consistent with existing practices at the NPM • Rehabilitation of disturbed areas to provide soil stabilisation and protection and possible future farming opportunities • Adaptive management, as required, if a previously recorded or unassessed threatened species is identified in the proposed disturbance area during operations • Ongoing monitoring and maintenance of any revegetation works and habitat enhancement activities • Establishment of an ongoing monitoring program to monitor native flora and fauna across the Project Area.

Updated Mitigation Measures (PA 11_0060, as modified)

B2

Pre-Clearance Protocol

NPM will implement a tree felling procedure to minimise the potential for impacts on native fauna species (including threatened species) as a result of the clearing of hollow-bearing trees. The procedure will include:

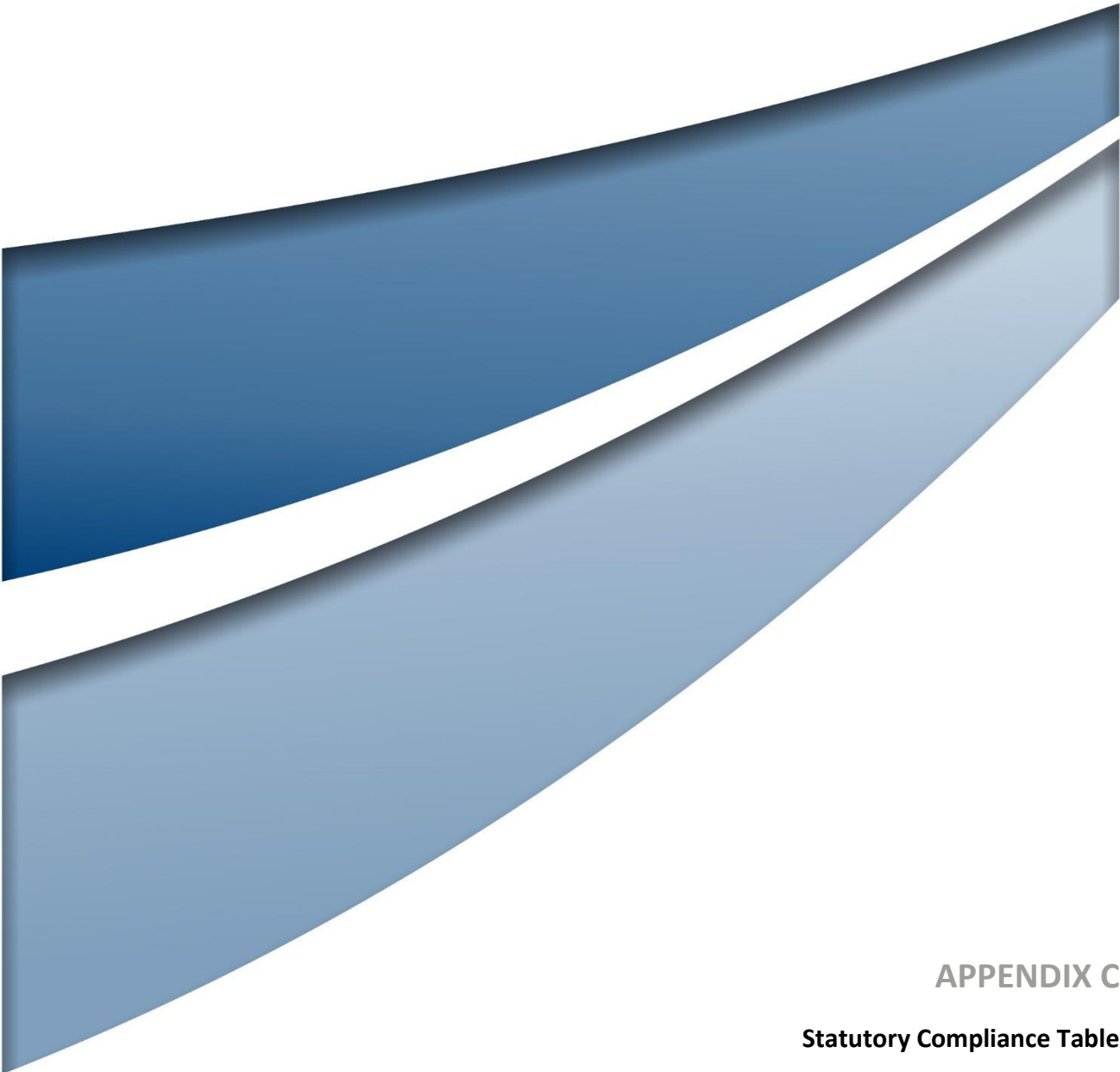
- comprehensive pre-clearing surveys by a suitably experienced and qualified ecologist, no more than two weeks prior to felling. This will include marking of hollow-bearing trees, as well as any other notable features such as fallen timber, hollow logs or boulders suitable for salvage; active nests, dreys or dens requiring consideration; and seed-bearing trees for salvage. Surveys will include detailed searches for threatened flora and fauna species, including micro-bats
- removal of non hollow-bearing trees/vegetation as close to the hollow-bearing tree felling date as possible (in order to discourage fauna usage of the area). It is not considered necessary for a suitably experienced and licensed ecologist to be present to supervise such works, providing pre-clearing surveys have been completed within the designated timeframe
- detailed hollow-bearing tree felling procedures, including (but not limited to):
 - supervision of all hollow-bearing tree felling works by a suitably experienced and licensed ecologist. If an ecological issue is encountered, the ecologist is to advise on the most appropriate measures to ensure minimal impact on fauna species, particularly threatened species
 - visual canopy inspection on the day of the felling of hollow-bearing trees for fauna species and active nests
 - shaking of hollow-bearing tree (with heavy machinery) for at least 30 seconds to encourage resident fauna to abandon tree, prior to felling
 - lowering of hollow-bearing trees as gently as possible with heavy machinery
 - inspection of all hollows in felled trees by a suitably experienced and licensed ecologist
 - capture of any displaced/injured fauna by a suitably experienced and licensed ecologist
 - release of unharmed fauna into nearby secure habitats by a suitably experienced and licensed ecologist
 - injured fauna to be assessed and taken to wildlife carer, if necessary, by a suitably experienced and licensed ecologist
 - felled trees to be rolled so that the number of hollows blocked against the ground are minimised
 - all felled trees to remain in place overnight to allow any unidentified fauna to escape
 - salvage of suitable hollows for treatment and installation within rehabilitation and revegetation areas as compensatory habitat, where practicable.

All personnel who will capture/handle/house and/or transport native fauna species (injured or uninjured) will be appropriately licensed under the requirements of the NSW Animal Ethics Committee.

Site personnel (particularly vehicle operators) will be briefed on fauna awareness issues and will be required to report incidents involving injury to native wildlife. Assistance from a wildlife carer or veterinarian will be sought if injured native wildlife are encountered.

Updated Mitigation Measures (PA 11_0060, as modified)	
B3	Nest Boxes - To address the loss of hollows from clearing activities, the following will be undertaken: - Augmentation of existing hollows within retained woodland remnants within the Project Area (see below). The amount of nest boxes to be used for this purpose will be developed based on further surveys of the proposed disturbance area during pre-clearing surveys. - Staged mitigation of hollow loss from the proposed disturbance areas by placing nest boxes in surrounding vegetation. - The type of nest box to be used will be dependent on the size of the hollows being removed and the type of species likely to be utilising the hollows. In general, the likely composition of nest box types will include a mix of bat roost boxes, parrot boxes, glider boxes, possum boxes and owl boxes. - The number of nest boxes to be established will be dependent on the number of hollows to be removed and the existing provision of tree hollows in areas targeted for the addition of nest boxes. - Hollow-bearing tree surveys will be undertaken prior to clearing to determine the number of hollows to be impacted but given the abundance of hollows across the Wider Study Area, it is considered that hollow replacement should be undertaken at a ratio of one nest box (or suitable salvaged hollow) for every two natural hollows removed during felling.
B4	Salvage of Habitat Features - The salvage and relocation of hollow logs, fallen timber and boulders will be undertaken wherever possible. - Pre-clearance surveys will be used to clearly mark hollow-bearing trees. Hollow salvage operations will then be incorporated into the clearing phase (where appropriate) and will involve the careful removal of identified suitable hollows, hollow capping and any other restorative/protection works required. Hollows will be re-erected in trees in suitable positions within the non-impacted woodland areas within the Project Area. - Salvaged and re-erected hollows will be subject to the same levels of maintenance and monitoring as nest boxes.

Updated Mitigation Measures (PA 11_0060, as modified)	
MOD 6	NPM will implement the following mitigation measures during works associated with MOD 6: • Ensure all workers are provided with an environmental induction prior to starting work on site. This would include information on the ecological values of the site and protection measures to be implemented to protect biodiversity. • Use of and regular inspection and maintenance of erosion and sediment control measures. • Fence off or mark trees and areas of native vegetation to be retained, to avoid additional impacts on vegetation. Fencing should protect the entire Tree Protection Zone (a general 5 m buffer zone will be applied, which is sufficient for the tree sizes present) • Establish appropriate buffers around trees that are to be retained. Work would avoid damage to the structural root zones (SRZ) of the trees • Restrict stockpiles of construction materials, fill or vegetation to existing cleared areas and not within areas of adjoining native vegetation • Applying water to stockpile areas during windy conditions • Construction traffic would remain on existing roads and tracks and avoid areas of native vegetation where practicable. • Reinstatement of unstable surfaces as quickly as practicable after construction for those areas not to be directly used for proposal infrastructure. Residual biodiversity impacts associated with MOD 6 will be offset in accordance with the <i>NSW Biodiversity Offsets Scheme</i> and the <i>Biodiversity Conservation Act 2016</i>.
Visual	
V1	• NPM will implement the following mitigation measures to mitigate potential visual impacts from the Project: ○ Maintenance of existing vegetation where possible for visual screening, including infill planting where necessary; ○ Additional screen plantings will be utilised in strategically located positions to augment existing plantings and limit views into the Project from public roads, in particular McClintock's Lane; ○ Continued establishment of revegetation corridors outside the active mine area through ongoing land management practices; ○ Ensuring that areas of disturbance are kept to the minimum practicable at any one point in time; ○ Rehabilitation of disturbed areas in undertaken as soon as practical; and ○ Aiming to minimise night lighting impacts on surrounding land owners and road users by ensuring, where practicable, that lighting plants are positioned such that light is directed toward work areas and not towards private residences and roads.



APPENDIX C

Statutory Compliance Table

Table C1 Relevant State Legislation

Act	Comment	Further Approval Required?
Approvals Which Do Not Apply (Section 4.41)		
Fisheries Management Act 1994	A permit under section 201 (dredging or reclamation work), s. 205 (harming marine vegetation) or s. 219 (blocking of fish passage).	No
Heritage Act 1977	An approval under Part 4 (effect on interim heritage orders and listing on State Heritage Register), or an excavation permit under section 139 (disturbance or excavation of relic) and Division 8 Part 6 of the Act.	
National Parks and Wildlife Act 1974	The <i>National Parks and Wildlife Act 1974</i> (NP&W Act) aims to manage and conserve nature, objects, places and features that have ecological and cultural value. The NP&W Act is administered and enforced by the OEH. Aboriginal places and objects are protected under the NP&W Act. An Aboriginal Heritage Impact Permit (AHIP) is required for consent to destroy, deface or damage Aboriginal object or Aboriginal place.	
Rural Fires Act 1997	A bushfire safety authority under section 100B (bushfire safety authority).	
Water Management Act 2000	A water use approval under section 89; a water management work approval under section 90; an activity approval (other than an aquifer interference approval) under section 91.	
Approvals Legislation to be Applied Consistently with Development Consent (Section 4.42)		
Mine Subsidence Compensation Act 1961 (MSC Act)	An approval under section 15 from the NSW Mine Subsidence Board (MSB) for development within a mine subsidence district.	No
Fisheries Management Act 1994	An aquaculture permit under section 144. An aquaculture permit will not be required for the Proposed Modification.	No
Mining Act 1992 (Mining Act)	All works associated with the Proposed Modification will be located within existing mining lease boundaries. The Mining Act requires all mining operations and ancillary mining activities be subject to a Mining Operations Plan (MOP) approved by the NSW Resources Regulator. The relevant MOP will be updated as required to reflect changes made under the Proposed Modification	Yes - amendment to conditions to manage E22 Portal operation as an ancillary mining activity
Protection of the Environment Operations Act 1997 (POEO Act)	The POEO Act regulates pollution to the environment and requires licences for environmental protection including waste, air, water and noise pollution control. Minerals mining is a scheduled activity which must be licensed under the POEO Act. The Proposed Modification will not require a variation to the site’s existing EPL.	No

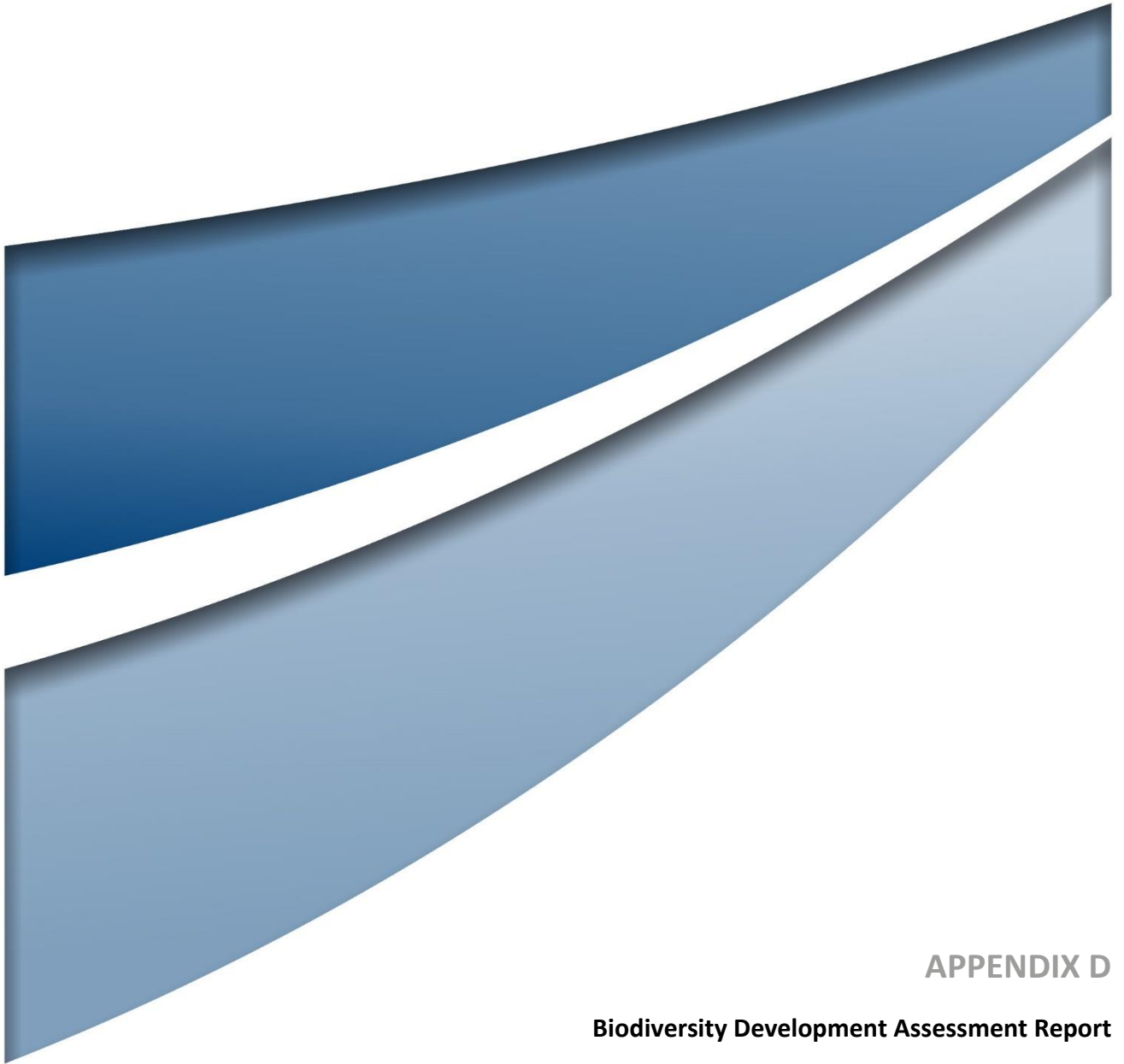
Act	Comment	Further Approval Required?
Other State Legislation Relevant to the Proposed Modification		
Biodiversity Conservation Act 2016 (BC Act)	The BC Act was implemented on 25 August 2017. The introduction of this legislation subsequently repealed the <i>Threatened Species Conservation Act 1995</i> (TSC Act). A Biodiversity Development Assessment Report has been prepared in accordance with the Biodiversity Assessment Methodology. The residual biodiversity impacts of the Proposed Modification will be offset in accordance with the NSW Biodiversity Offsets Scheme.	No
Water Management Act 2000 (WM Act)	The Proposed Modification will not require approval under sections 89, 90 or 91 (other than an aquifer interference approval) of the WM Act due to the exemptions outlined under Section 4.41 of the EP&A Act.	No
Roads Act 1993	The <i>Roads Act 1993</i> (Roads Act) applies to public roads in NSW, and depending upon the type of road, is administered by Transport for NSW or the local council. The Proposed Modification does not require approval under Section 138 of the Roads Act as it does not involve works or structures that disturb the surface of a public road or connect a road to a classified road.	No

Table C2 Application of Mining SEPP 2007

Clause	Description	Comment
12AB: Nondiscretionary development standards for mining	(1) The object of this clause is to identify development standards on particular matters relating to mining that, if complied with, prevents the consent authority from requiring more onerous standards for those matters (but that does not prevent the consent authority granting consent even though any such standard is not complied with).	Noted.
	(2) The matters set out in this clause are identified as non-discretionary development standards for the purposes of section 79C (2) and (3) of the Act in relation to the carrying out of development for the purposes of mining.	Noted.
	(3) Cumulative noise level The development does not result in a cumulative amenity noise level greater than the acceptable noise levels, as determined in accordance with Table 2.1 of the Industrial Noise Policy, for residences that are private dwellings.	Complies – see Section 5.3 and Appendix F
	(4) Cumulative air quality level The development does not result in a cumulative annual average level greater than 30 µg/m ³ of PM ₁₀ for private dwellings.	Complies – see Section 5.4 and Appendix G

Clause	Description	Comment
	(5) Airblast overpressure Airblast overpressure caused by the development does not exceed— (a) 120 dB (Lin Peak) at any time, and (b) 115 dB (Lin Peak) for more than 5% of the total number of blasts over any period of 12 months, measured at any private dwelling or sensitive receiver. (6) Ground vibration Ground vibration caused by the development does not exceed— (a) 10 mm/sec (peak particle velocity) at any time, and (b) 5 mm/sec (peak particle velocity) for more than 5% of the total number of blasts over any period of 12 months, measured at any private dwelling or sensitive receiver.	Complies – see Section 5.3 and Appendix F
	(7) Aquifer interference Any interference with an aquifer caused by the development does not exceed the respective water table, water pressure and water quality requirements specified for item 1 in columns 2, 3 and 4 of Table 1 of the Aquifer Interference Policy for each relevant water source listed in column 1 of that Table	Complies – see Section 5.6 and Appendix I
	(8) The Minister is to review a non-discretionary development standard under this clause if a government policy on which the standard is based is changed.	Noted.
12: Compatibility with other land uses	Consideration is given to: - the existing uses and approved uses of land in the vicinity of the development - the potential impact on the preferred land uses (as considered by the consent authority) in the vicinity of the development - any ways in which the development may be incompatible with any of those existing, approved or preferred land uses. The respective public benefits of the development and the existing, approved or preferred land uses are evaluated and compared Measures proposed to avoid or minimise any incompatibility are considered.	The Proposed Modification will not significantly increase the environmental or amenity impacts of approved operations on existing and approved land uses in the vicinity of the site. These impacts will continue to be managed using established mitigation and monitoring strategies (see Appendix B). Approved mining operations have successfully co-existed with farming activities at Northparkes Mines for many years. The Proposed Modification is considered to be compatible with agricultural activities in the locality.

Clause	Description	Comment
16: Transportation	The following transport-related issues are considered: - the transport of some or all of the materials from the site by means other than public road. - limitation of the number of truck movements that occur on roads within residential areas or roads near to schools. - the preparation of a code of conduct for the transportation of materials on public roads.	The Proposed Modification will not change approved transport product arrangements.
17: Rehabilitation	The rehabilitation of the land affected by the development is considered including: - the preparation of a plan that identifies the proposed end use and landform of the land once rehabilitated - the appropriate management of development generated waste - remediation of any soil contaminated by the development - the steps to be taken to ensure that the state of the land does not jeopardize public safety, while being rehabilitated or at the completion of rehabilitation.	Minor changes to the approved conceptual final landform and post-mining land use associated with the clay and filter material borrow pits. Waste, hazards and contamination risks will continue to be managed in accordance with existing conditions of approval.



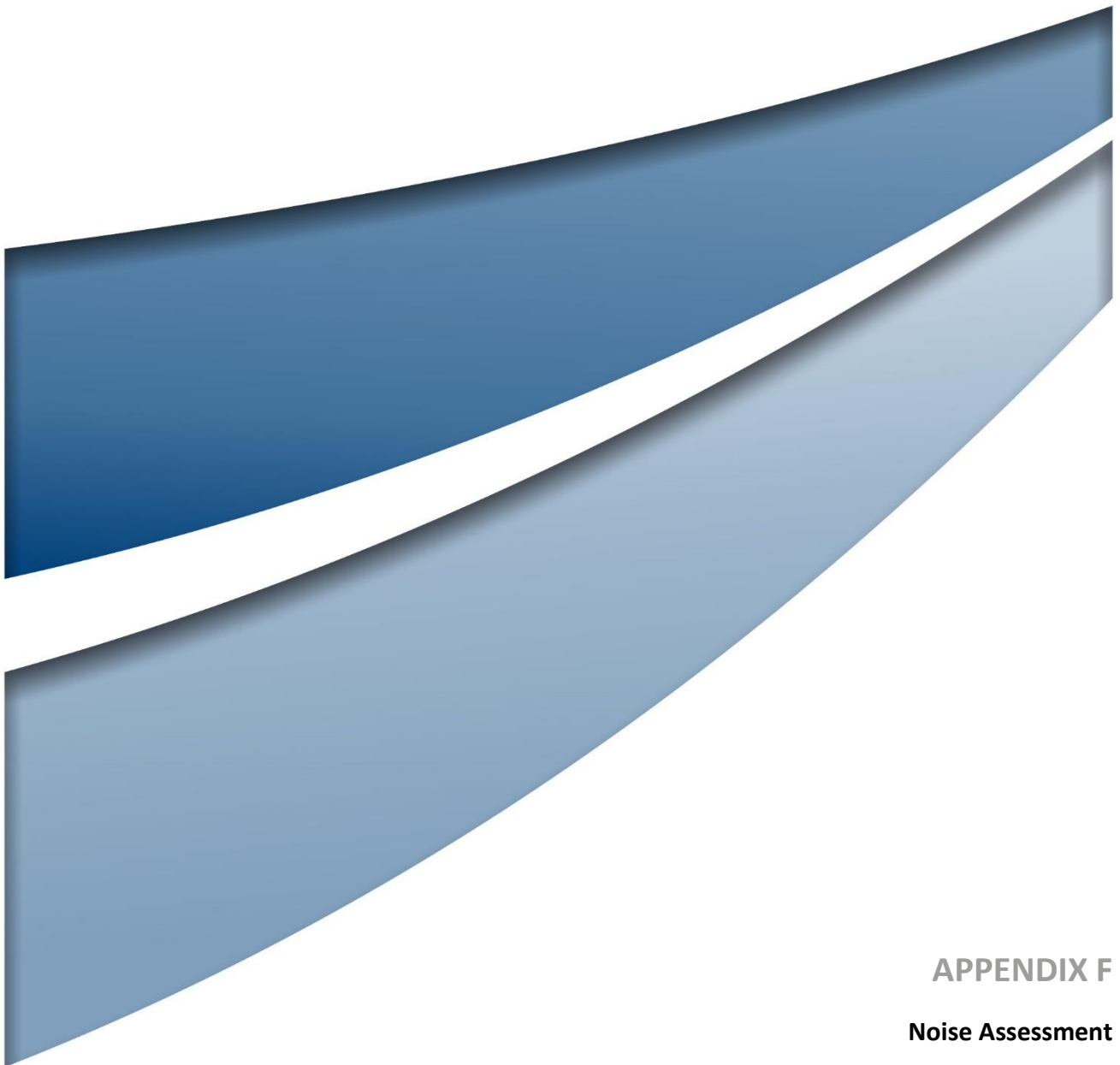
APPENDIX D

Biodiversity Development Assessment Report



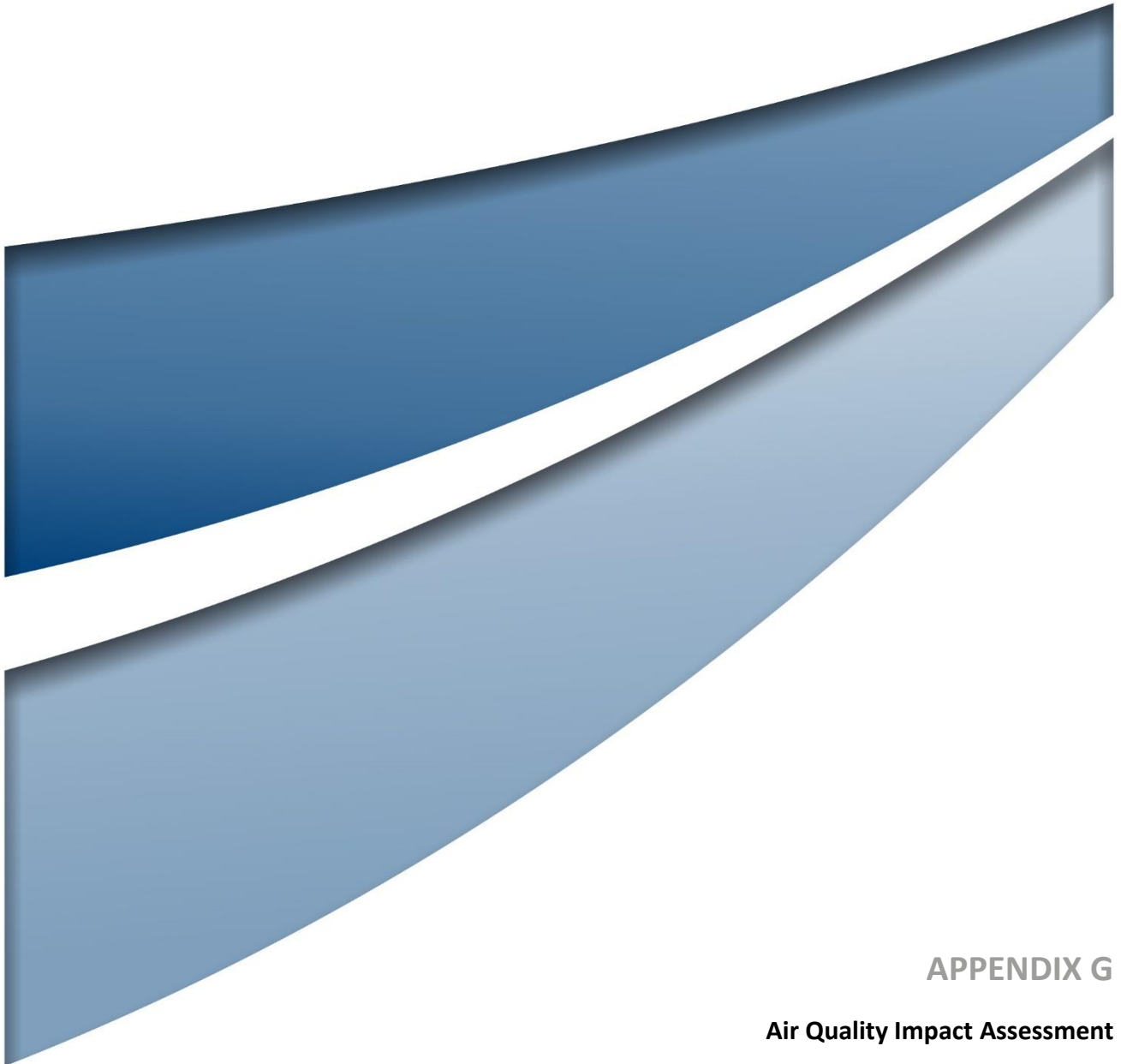
APPENDIX E

Aboriginal Cultural Heritage Assessment Report



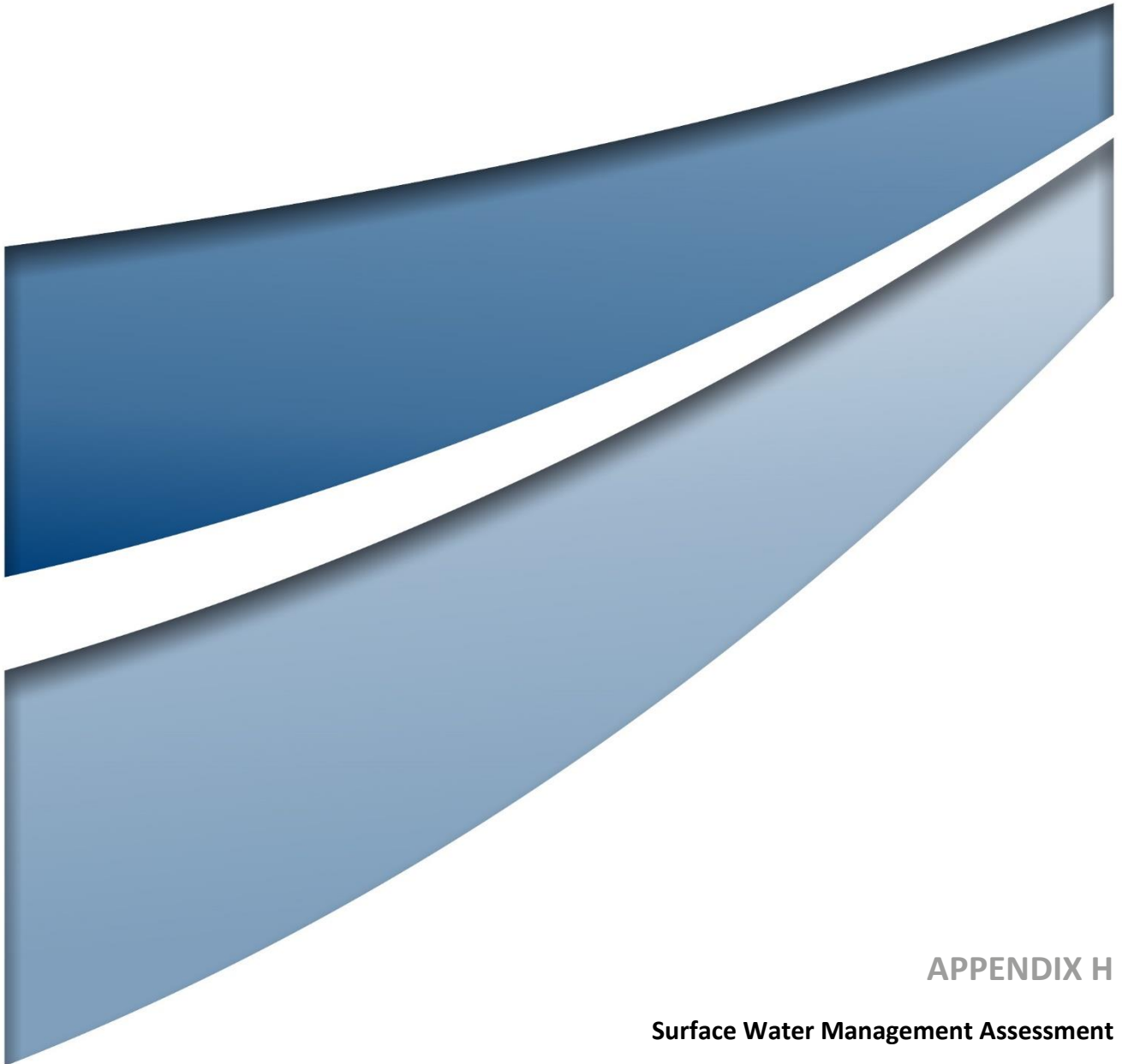
APPENDIX F

Noise Assessment



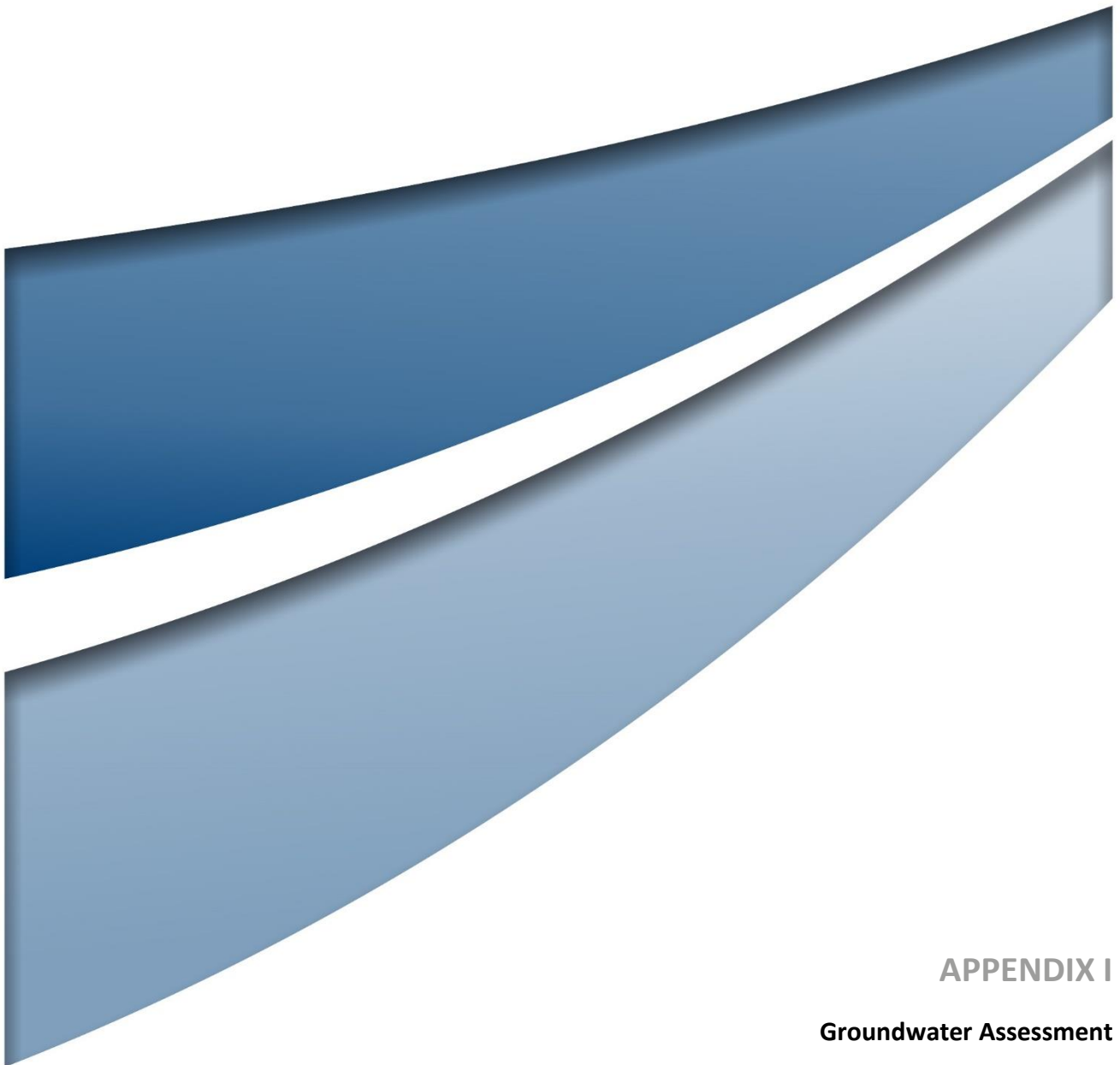
APPENDIX G

Air Quality Impact Assessment



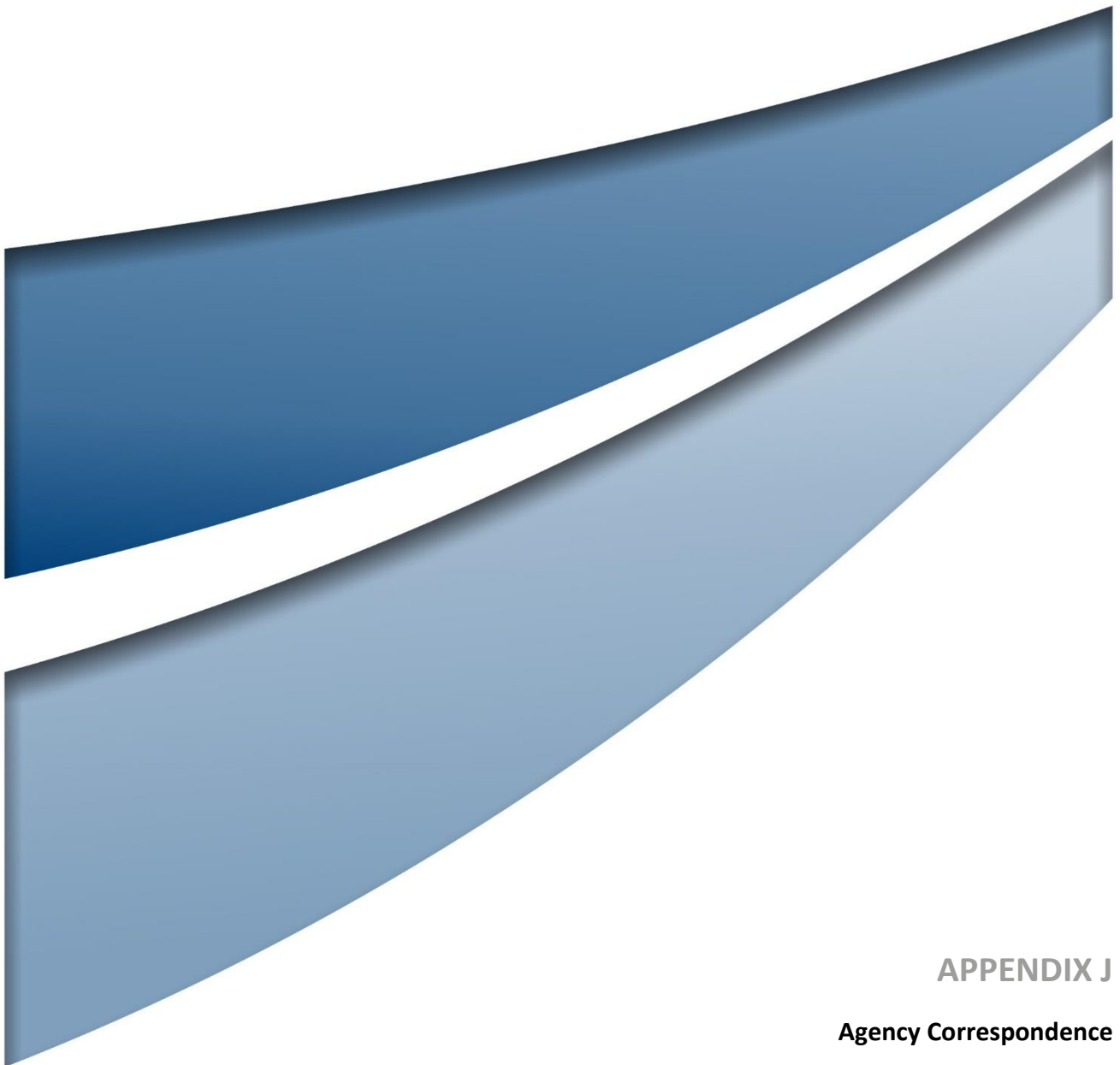
APPENDIX H

Surface Water Management Assessment



APPENDIX I

Groundwater Assessment



APPENDIX J

Agency Correspondence

Our ref: DOC21/923457

Your ref:

David Holmes
Principal Environmental Consultant – Approvals & Policy
Umwelt (Australia) Pty limited
dholfmes@umwelt.com.au

Dear David

Northparkes Mine - Proposed Land Categorisation Assessment

Thank you for your e-mail dated 11 October 2021 to the Biodiversity, Conservation and Science Directorate (BCS) of the Department of Planning, Industry and Environment providing additional information relating to the Land Categorisation Assessment for the Northparkes Mine site.

BCS has reviewed the 2 March 1974 and 29 June 1982 georectified aerals and Addendum Figures A1 (1974) and A2 (1982) which contain an overlay of the LLS Category Mapping on the aerals for these dates.

In combination with the Northparkes Mine Local Land Services Act 2013 Land Category Mapping and other documents provided on 1 October 2021, BCS considers Umwelt's analysis of the land categorisation of the subject site to be reasonable and endorse the methodology provided.

If you require any further information regarding this matter, please contact David Geering, Senior Conservation Planning Officer, via david.geering@environment.nsw.gov.au or (02) 6883 5335.

Yours sincerely



Samantha Wynn
Senior Team Leader Planning North West
Biodiversity, Conservation and Science Directorate

21 October 2021

Our ref: DOC21/877916

David Holmes
Principal Environmental Consultant – Approvals & Policy
Umwelt (Australia) Pty limited
dholmes@umwelt.com.au

Dear David

Northparkes Mine - Proposed Land Categorisation Assessment

Thank you for your e-mail dated 1 October 2021 to the Biodiversity, Conservation and Science Directorate (BCS) of the Department of Planning, Industry and Environment inviting comments and seeking endorsement on the Draft Land Categorisation Assessment Report for the Northparkes Mine site.

BCS has reviewed the Northparkes Mine Local Land Services Act 2013 Land Category Mapping (the report) in addition to other documents pertaining to the subject site. We consider Umwelt's method of analysing desktop datasets for the subject site to be reasonable. However, we note that the earliest aerial photography used of the site was from 1991 as the 1990 aerial was not available and satellite imagery from 1990 was of insufficient resolution for mapping purposes.

Category 1-exempt land is broadly defined as being land cleared of native vegetation as at 1 January 1990 or lawfully cleared after 1 January 1990 (but before 25 August 2017). Evidence must be provided that clearly demonstrates that the subject land was cleared as at 1 January 1990.

The report does provide land use mapping from the 1990 Northparkes Environmental Impact Assessment which was cross checked against aerial photos from 1974 and 1982 as evidence that the site was cleared before 1990. BCS recommends that the 1974 or 1982 aerial photos be presented to BCS as supporting evidence of the condition of the subject site prior to 1 January 1990 and to confirm the conclusions reached in the 1990 Northparkes Environmental Impact Assessment mapping.

If you require any further information regarding this matter, please contact David Geering, Senior Conservation Planning Officer, via david.geering@environment.nsw.gov.au or (02) 6883 5335.

Yours sincerely



Samantha Wynn
Senior Team Leader Planning North West
Biodiversity, Conservation and Science Directorate

8 October 2021



Our ref: DOC21/885806-1

Lauren Evans
Principal Environmental Consultant
Umwelt (Australia) Pty Limited
Email: Lauren Evans LEvans@umwelt.com.au
Attention: Jodie Benton jodie@ozarkehm.com.au

Dear Lauren

Northparkes Mine (MP 11_0060) - Mods, 6 & 7. Advice of Aboriginal consultation.

Thank you for the presentation meeting (8 October 2021) on the proposed Northparkes Mine approach to Aboriginal consultation for Mod 6 (E31 Precinct Modification) and Mod 7 (E22 Portal & TSF2 Buttressing Modification). Heritage NSW (HNSW) wish to reiterate that we have no issues with the proposed method for consultation.

HNSW note that the proposed streamlined consultation with the Registered Aboriginal Parties (RAPs) for the area identified as Mod 6, is for an area of intense land use disturbance history and has been subjected to an Aboriginal cultural heritage assessment. No known Aboriginal objects remain, post salvage operations. We also note that the current unexpected finds protocols will apply to new disturbance areas and that the RAPs will be further consulted.

We also note and accept the proposed consultation for the area identified as Mod 7 which will follow the standard 28-day consultation period during which, correspondences with the RAPs will be undertaken on the draft survey method for un-surveyed areas. We also endorse that the validity of a registered Aboriginal scarred tree will also be re-assessed with the RAPs during this period.

We are satisfied for the proposed consultation for Mods 6 & 7 to be submitted to the determining authority, the Department of Planning Infrastructure and Environment, for their appraisal.

If you have any questions regarding the above advice, please contact Phil Purcell, Archaeologist at Heritage NSW on 68835341 or Phil.Purcell@environment.nsw.gov.au

Yours sincerely

NICOLE DAVIS

A/Senior Team Leader Aboriginal Cultural Heritage Regulation - North

Heritage NSW

Department of Premier and Cabinet

11 October 2021

