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REHABILITATION MANAGEMENT PLAN

Tahmoor Coal

Contents

Summary Table	
Name of Mine	Tahmoor Mine
Rehabilitation Management Plan Commencement Date	2 July 2022
Rehabilitation Management Plan Revision Dates and Version Numbers	See Section 13 for change information
Mining Leases and Expiry Dates	ML1376 28/08/2043 ML1308 02/03/2035 ML1539 16/06/2024, (renewal submitted for assessment) ML1642 27/08/2031 CCL716 13/03/2042 CCL747 06/11/2025
Name of Lease Holders	Tahmoor Coal Pty Limited
Date of Original Submission	1 July 2022

This Rehabilitation Management Plan (RMP) has been prepared in accordance with the NSW Resources Regulator (NSW RR) Form and Way - Rehabilitation Management Plan for Large Mines (NSW RR, July 2021). This RMP has been developed to satisfy the requirements of Condition B60 of Development Consent State Significant Development (SSD) 8642 and lease conditions for Consolidated Coal Lease (CCL) 716, 747 and Mining Lease (ML) 1376, 1308, 1539, and 1642.

An amendment to the Mining Regulation 2016 (Regulations) under the Mining Act 1992 (Mining Act), commenced on 2 July 2021. The amendment provides new standard rehabilitation conditions for mining leases which replaces existing mining lease conditions. A transitional period of 12 months (to 2 July 2022) has been established to allow mining operations sufficient time to prepare for the implementation of the new conditions for any existing ML.

1 Part 1 – Introduction to mining project

1.1 History of operations

Mine Operator and Proprietors
Tahmoor Coal Pty Ltd (Tahmoor Coal) owns and operates the Tahmoor Mine, an existing underground coal mine located approximately 80 kilometres (km) south-west of Sydney in the Southern Coalfields of New South Wales (NSW).
Significant surface disturbing activities, including mining operations, ancillary mining activities and exploration, carried out on the mining area.
Tahmoor Mine surface facilities are situated between the towns of Tahmoor and Bargo within the Wollondilly Local Government Area (LGA). The mine has previously extracted longwalls to the north and west of the surface facilities and has been operating continuously since 1979 when coal was first mined using bord and pillar mining methods, followed by longwall mining methods since 1987. Tahmoor Mine produces a primary hard coking coal product and a secondary higher ash coking coal product that are used predominantly for coke manufacture for steel production. Extracted coal is processed on site at the coal handling and preparation plant (CHPP) and coal clearance facilities prior to transportation via rail to Port Kembla and Newcastle for Australian domestic and export customers. The location of Tahmoor Mine in the regional context is shown in Error! Reference source not found..
Rehabilitation undertaken since commencement of mining operations including decommissioning or demolition of built infrastructure
The majority of rehabilitation completed since commencement of mining has been confined to the Reject Emplacement Area (REA), as emplaced areas are progressively reshaped, topsoiled and rehabilitated. The Bargo Collieries Shaft is no longer in use and is located within CCL 747. The shaft site has been covered with a steel plate and fenced, with routine security and environmental inspection of the site undertaken to assess safety and security aspects.
State the approved life of the mine date as per the relevant development consent
31 December 2033, or until 10 years from start of second workings, whichever is the sooner.

1.2 Current development consents, leases and licences

Approval/Lease/License	Description	Date of Grant	Date of Expiry
Development Consents			
SSD 8445	Tahmoor South Project	23/04/2021	31 December 2033, or until 10 years from start of second workings, whichever is the sooner.
SSD 8445 (Mod 1)	Modification to date for Water Treatment Plant installation date.	19/07/2022	Same as above
SSD 8445 (Mod 2)	Underground brine disposal and transfer mine water	13/06/2023	Same as above
DA 7105/47*	Underground Mine	26/03/1975	No expiry

DA 162/76	Bargo Consent	21/04/1976	Submission to Wollondilly Shire Council to surrender DA162/76 as per SSD 8445 condition A21 (a) on 8/6/2022.
DA 76/20188*	Coal Preparation Plant Stockpiles and Reject Emplacement Area. Modification 1: Modification for road haulage of trial coal shipments Modification 2: Modification for Upgrades for Longwall mining Modification 3: Modification for Road Haulage in Wollondilly Shire and when rail unavailable Modification 4: Modification for Road Haulage to Corrimal and Coal Cliff Coke Works	23/08/1979	No expiry
DA 190/85*	Surface Works for Gas Extraction.	16/12/1985	No expiry
DA 57/93 (as modified)*	Tahmoor North Project. Modification 1: Modification for heritage approval condition.	7 /09/1994	No expiry
DA 67/98 (as modified)	Tahmoor North Extension Project. Modification 1: Modification for additional areas to be subsided. Modification 2: Modification for Redbank Tunnel Subsidence Management. Modification 3: Modification for Redbank Tunnel Subdivision of Land. Modification 4: Modification for Expanded Subsidence Footprint. Modification 5: Modification for subsidence area update	25/02/1999	16/06/2024
Mining Leases			
Consolidated Coal Lease 716	Original Tahmoor Leases	15/06/1990	13/03/2042
Consolidated Coal Lease 747	Bargo Mining Lease	23/05/1990	06/11/2025
Mining Lease 1376	Tahmoor North Lease	28/08/1995	28/08/2043
Mining Lease 1308	Mining Lease west of CCL716	02/03/2014	02/03/2035
Mining Lease 1539	Tahmoor North Extension Lease	16/06/2003	16/06/2024 (renewal submitted for assessment)
Mining Lease 1642	Pit Top and REA surface mining lease	27/08/2010	27/08/2031

Environmental Licences			
Environment Protection Licence 1389	01/05/1994, latest variation 23/8/2022	01/05/1994, latest variation 23/8/2022	No expiry
WAL 36442	Water Access Licence	06/12/2013	No expiry
WAL25777	Water Access Licence	01/07/2012	No expiry
WAL43572	Water Access Licence	08/09/2021	No expiry
WAL43656	Water Supply Works Approval	01/08/2022	No expiry
WAL44608	Water Access Licence	08/02/2023	No expiry
SWC839757	Water Access Licence (Leased)	10/07/2023	01/07/2024
XSTR200005	Licence to store explosives	02/02/2017	02/02/2027 (renewed annually)
5061521	Radiation Licence	29/10/2023	29/10/2024
EPBC Approval 21017/8084	EPBC Approval	01/10/2021	01/09/2061

** As required by Condition A21 of SSD 8445, DA 7105/47, 76/20188, 190/85 and 57/93 will be surrendered following the completion of current mining activities and mine closure/rehabilitation activities required by those consents.*

1.3 Land ownership and land use

Overview (in a table) of the land tenure of the general area (i.e., land tenure of lots within and adjacent to mining leases).

See

Table 1 Land Ownership and Uses

Schedule of land ownership, occupancy, and leases over the mining lease area consistent with the land ownership and land use figure.

See

Table 1 Land Ownership and Uses

Summary of the known historic land uses, current land uses and proposed final land uses.

Tahmoor is generally bounded by the Bargo and Nepean Rivers to the north, the roadway of West Parade and the Picton-Mittagong Railway to the west, the Nepean River, Metropolitan Special Area (MSA) and Upper Nepean State Conservation Area to the east, and Crown land and the M31 Hume Motorway to the south. Mine infrastructure at the Surface Facilities Area is surrounded by vegetated land and gullies, bounded by Remembrance Driveway to the west and bisected by the Main Southern Railway.

Underground mining activities commenced at the site during the 1980's. The wider underground mining areas extends beneath semi-rural and partly forested landscapes, along with a mix of rural and environmental land uses.

Rural uses within the general area include small-scale agricultural activities such as poultry, cattle grazing, trotting horse training, greyhound training and several horse studs. While incised gullies and plateaux have largely remained undisturbed, large areas of flat and low gradient slopes have undergone moderate landscape disturbances as a result of large-scale vegetation clearance relating to agricultural activities, generally on the areas with the shale derived soils. Tahmoor also extends under the residential, semi-rural and agricultural areas of the villages of Buxton, Bargo and Balmoral.

The approved final land use for Tahmoor Mine as defined within Appendix 5 of SSD 8445 is native bushland (trees, shrubs and grassland).

Information about any stewardship agreement, conservation agreement or other similar agreements specific to mining lease areas.

There are no stewardship or conservation agreements relating to mining at Tahmoor Coal.

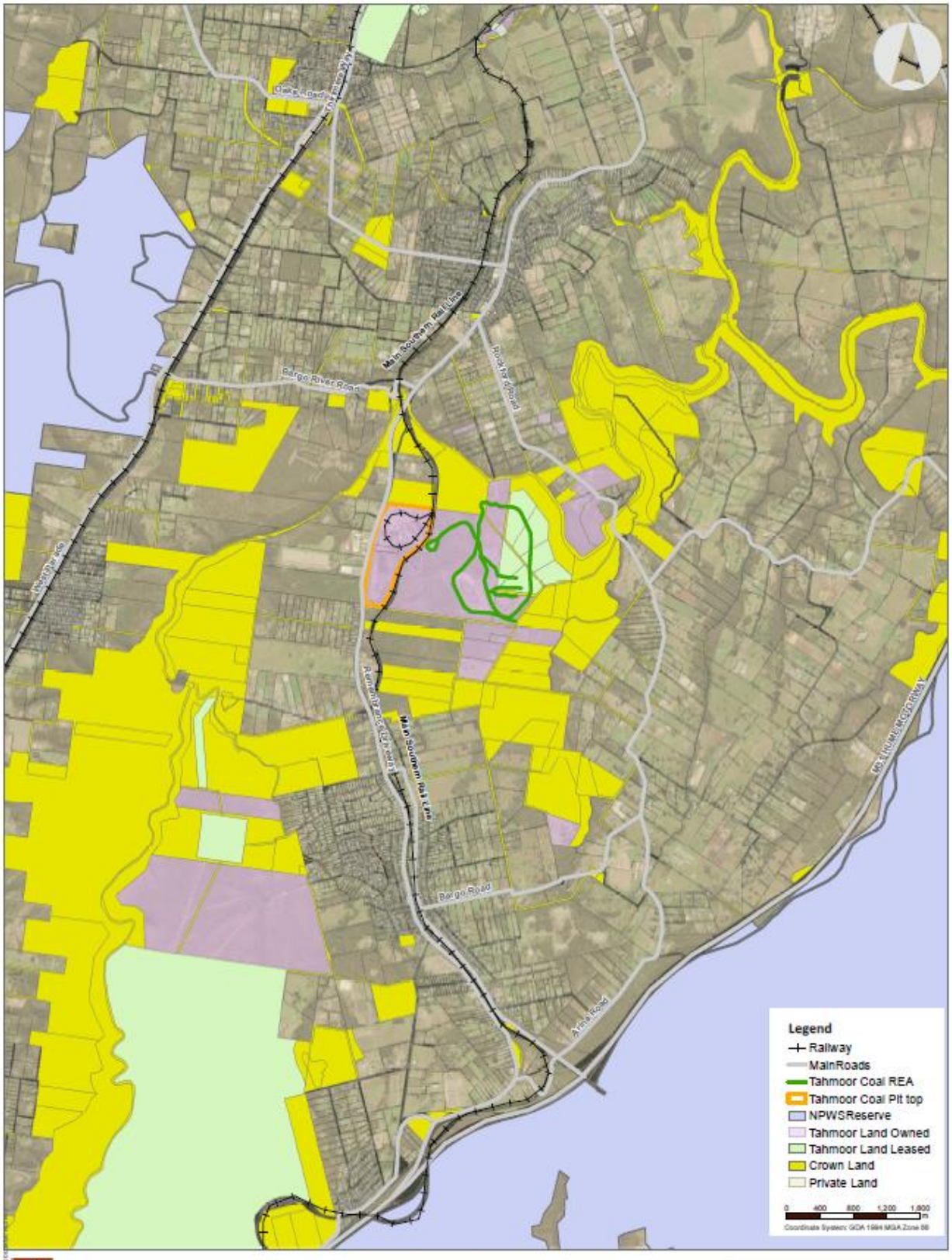
As part of the Tahmoor South assessment process, the footprint of the REA was minimised so as to clear previous rehabilitated areas, and not extend into native bushland. A Biodiversity Offset Strategy has been developed and biodiversity impacts will be offset as per the strategy.

Table 1 Land Ownership and Uses

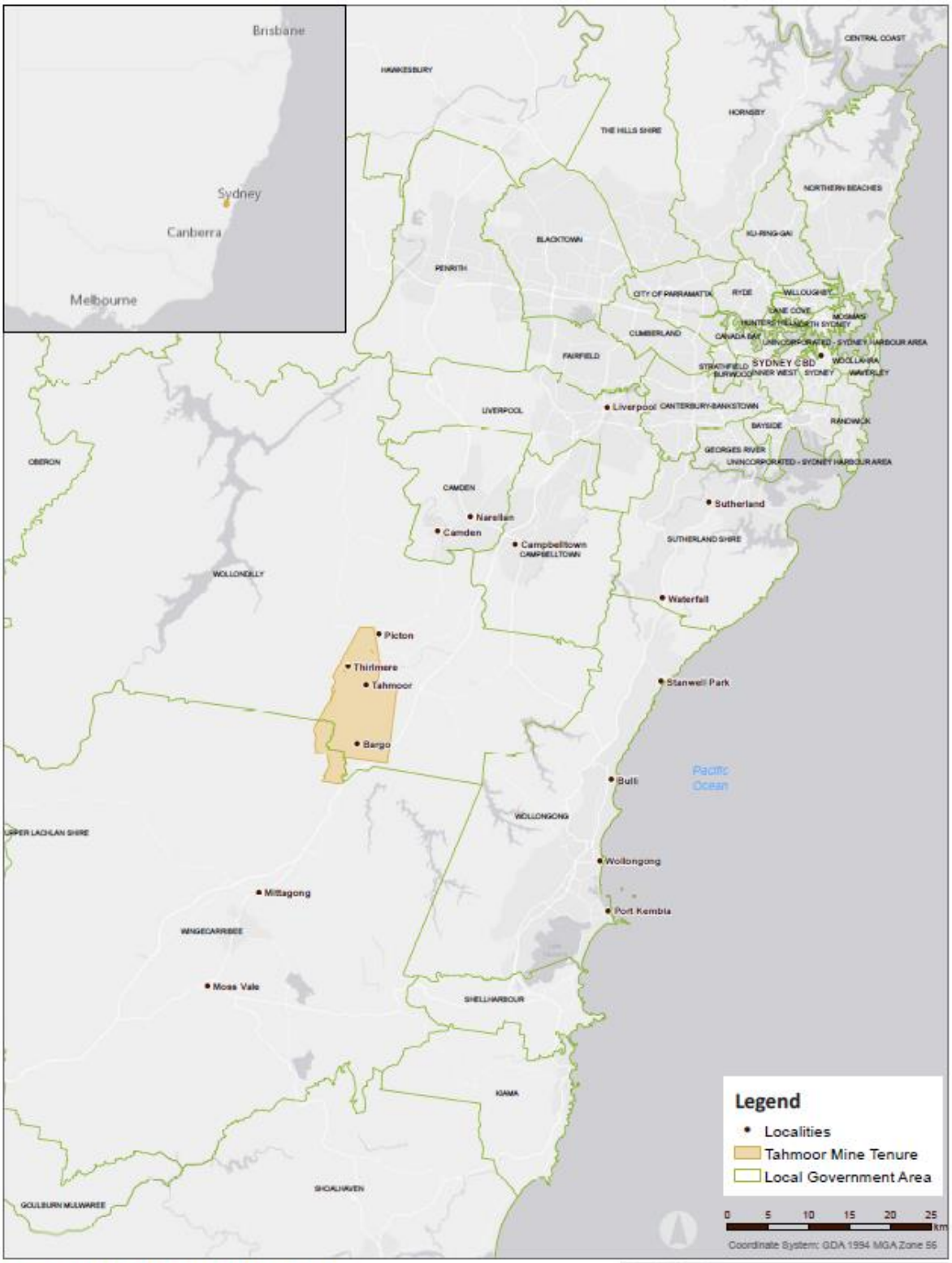
Lot	DP	Physical Address	Tenure Type	Use
170	751250	Kader Street, Bargo	Freehold	Bargo Colliery Site
35	751250	Kader Street, Bargo	Freehold	Bargo Colliery Site
1	120968	Remembrance Driveway, Bargo	Freehold	Tahmoor Coal Mine Site
162	1054184	Remembrance Driveway, Bargo	Freehold	Tahmoor Coal Mine Site
13	3306	Stratford Rd, Tahmoor	Freehold	Tahmoor Coal No.1 Shaft
441	751270	275 Rockford Rd, Tahmoor	Freehold	Tahmoor Coal No.2 Shaft
248	751250	Charlies Point Road, Bargo	Freehold	Reject Emplacement Area
217	751250	115 Charlies Point Road, Bargo	Freehold	House occupied by tenant
216	751250	185 Charlies Point Road, Bargo	Freehold	House
222	751250	220 Charlies Point Road, Bargo	Freehold	Land occupied by tenant
2231	787222	215 Charlies Point Road Bargo	Freehold	House occupied by tenant
2232	787222	225 Charlies Point Road, Bargo	Freehold	Reject Emplacement Area
245	751250	125 Anthony Road, Bargo	Freehold	House occupied by tenant
132	879762	4 Hodgson Grove, Tahmoor	Freehold	House occupied by tenant
134	879762	7 Hodgson Grove, Tahmoor	Freehold	House occupied by tenant
1&2	1037712	260 Rockford Rd, Tahmoor	Freehold	House occupied by tenant
45	751270	250 Rockford Road, Tahmoor	Freehold	House

1.3.1 Land ownership and land use figure(s)

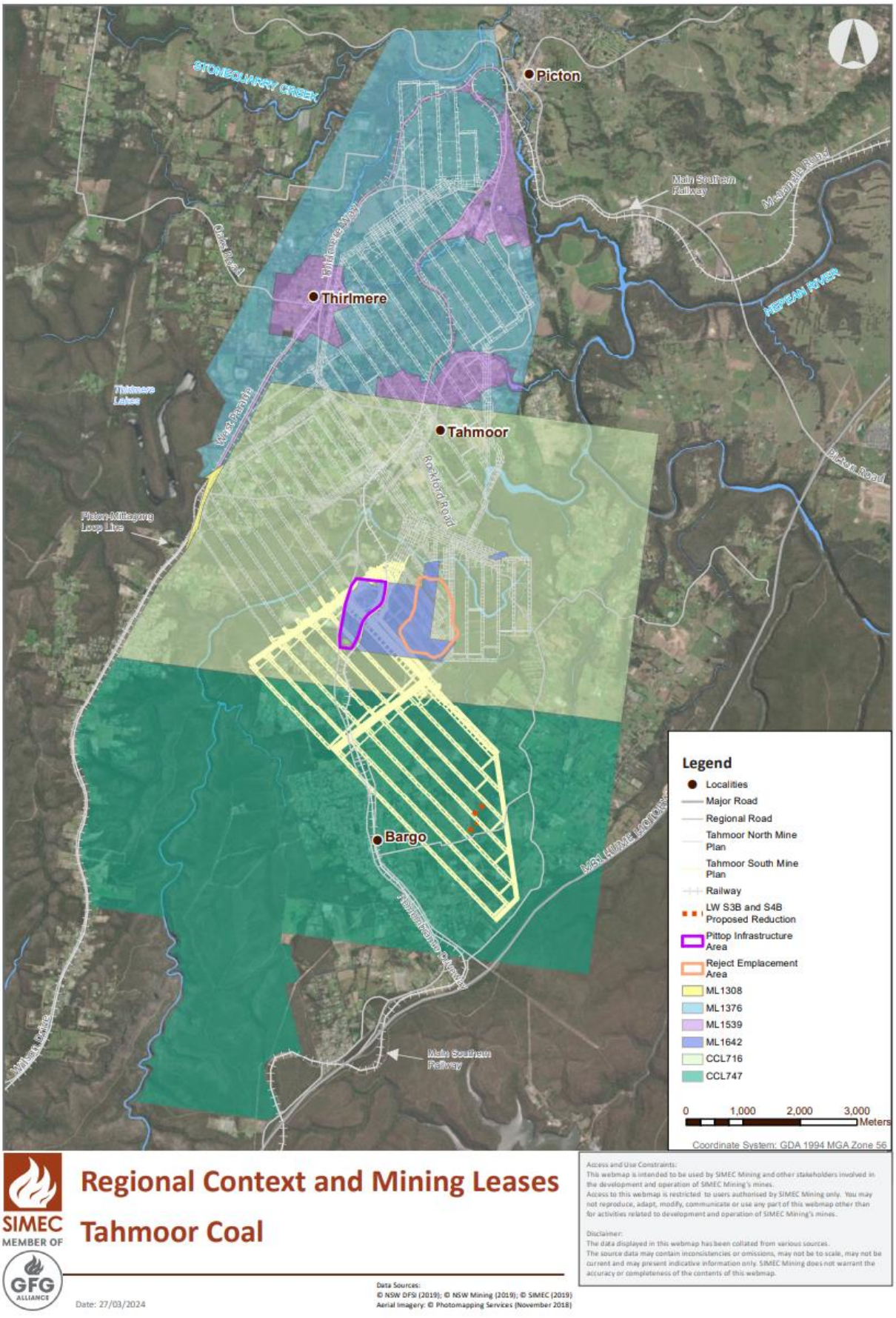
1.3.1.1 a. Land Ownership



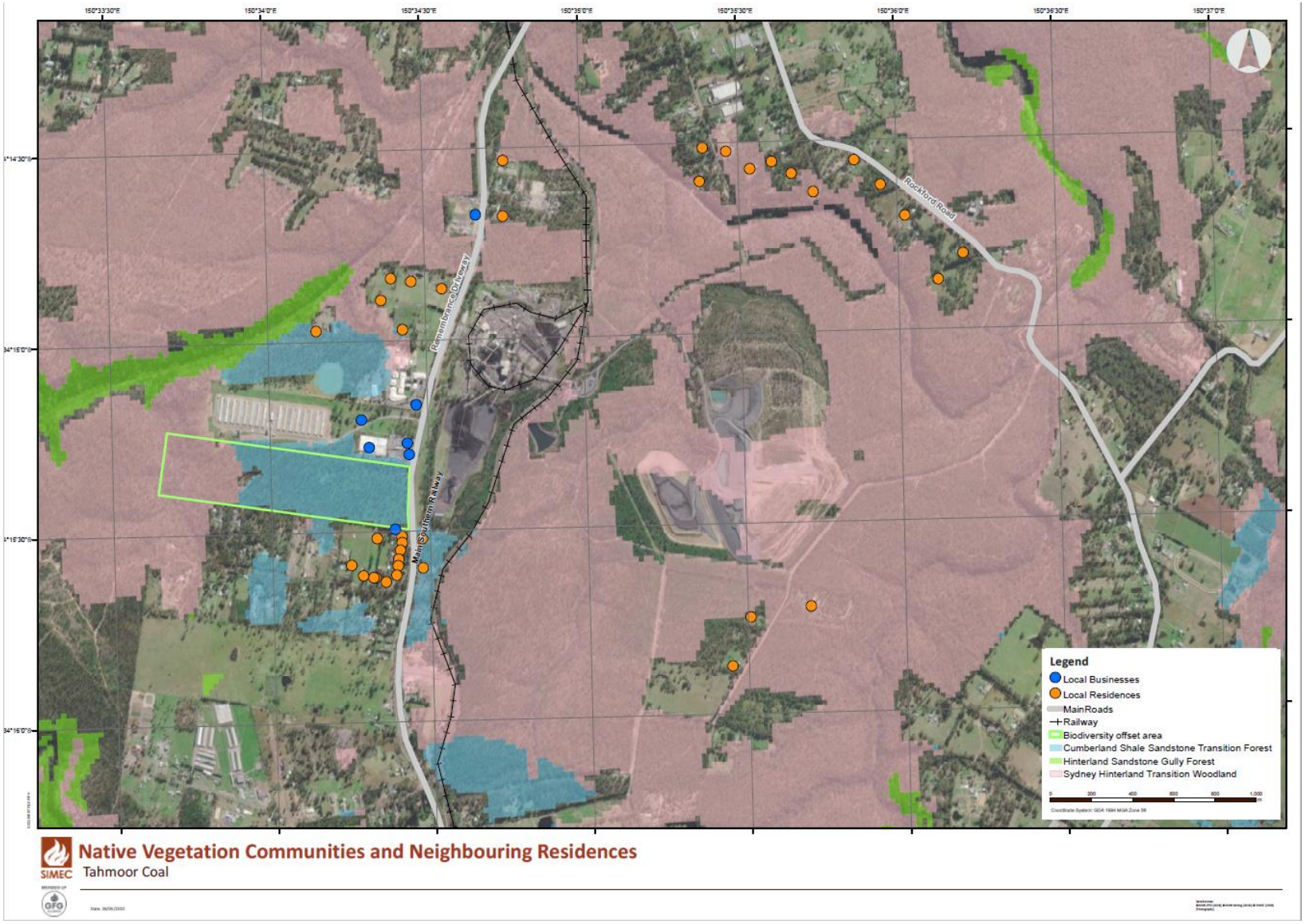
1.3.1.2 b. Location of the project in a state-wide context



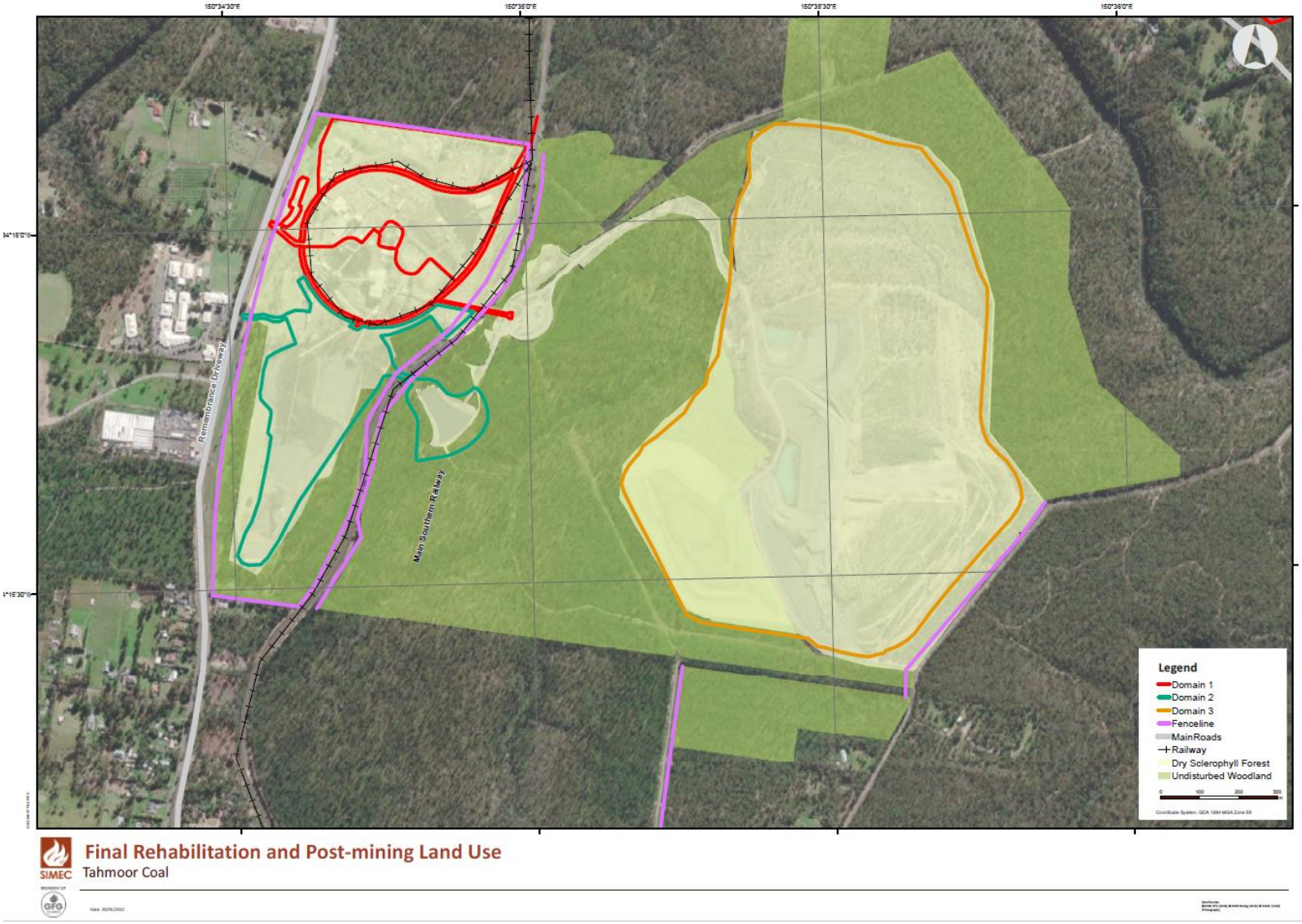
1.3.1.3 c. Surface and Subsurface authorisations covering the mining area



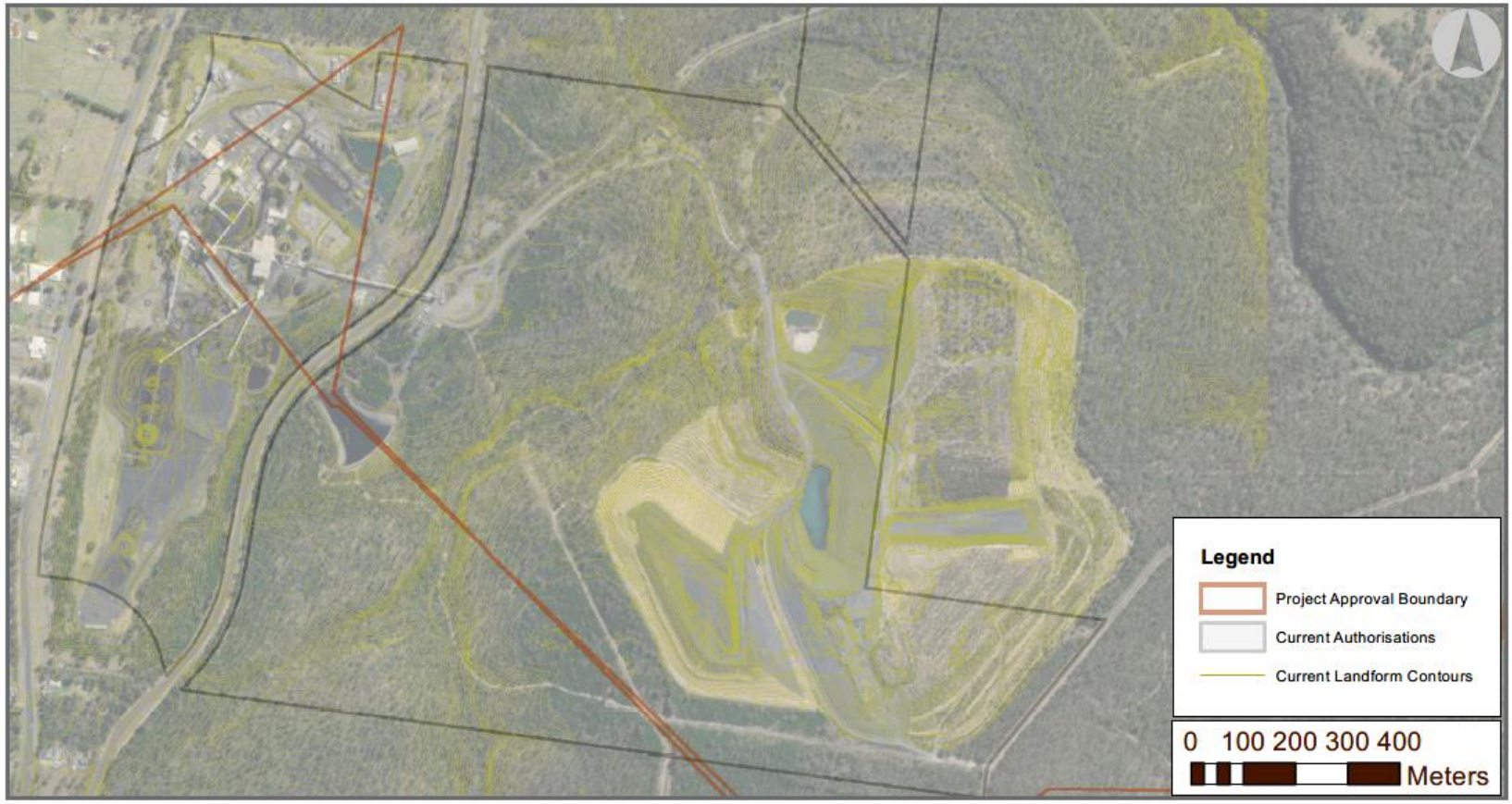
1.3.1.4 d. vegetation community boundaries and j. neighbouring residences and operations of significance



1.3.1.5 e. land use boundaries



1.3.1.6 f. Surface contours at a 1m contour interval



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Plan 1B: Current landform contours
Tahmoor Coal

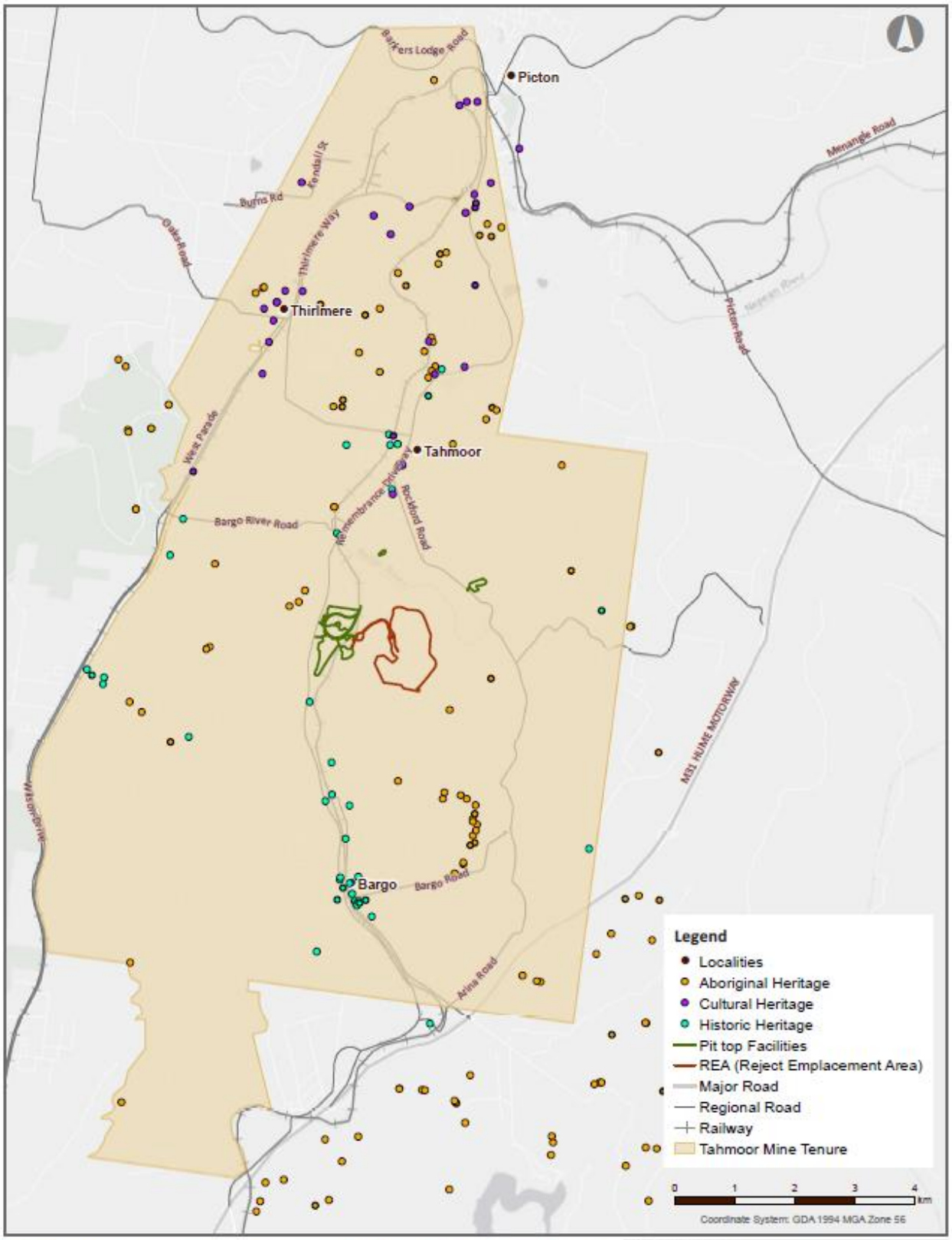
Id: 7631, 5833

Date: 27/03/2024

Coordinate System: GDA 1994 MGA Zone 56
Projection: Transverse Mercator
Datum: GDA 1994

Data Sources:
© NSW DFSI (2019)
© NSW Mining (2019)
© SIMEC (2019)

1.3.1.7 g. areas of environmental, cultural or heritage sensitivity identified for retention or special management



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Historic and Aboriginal Heritage locations

Tahmoor Coal

Data Sources:
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Date: 1/07/2022

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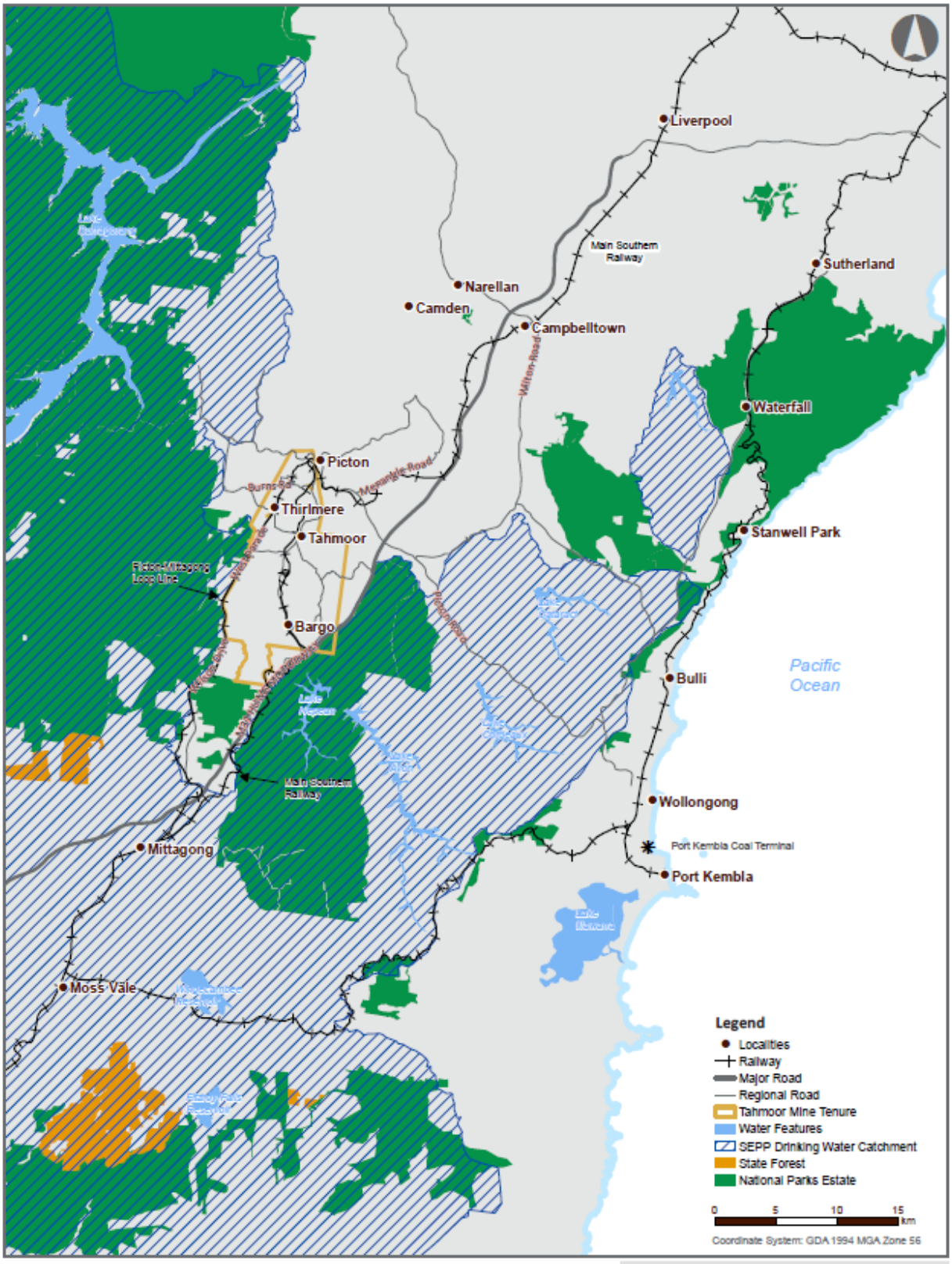
1.3.1.8 h. water catchment areas



2 Part 2 – Final land use

2.1 Regulatory requirements for rehabilitation

List, in a table, all the regulatory requirements for rehabilitation that apply to the mining area.

Appendix A outlines the regulatory requirements in table form related to the scope of this document. The primary regulatory requirements relating to rehabilitation and closure at Tahmoor Mine include:

- Relevant approval conditions of:
  - SSD 8445 (as modified)
  - DA 1975
  - DA 1979 (as modified)
  - DA 190/85
  - DA 57/93
  - DA 67/98
- Conditions of existing mining authorisations including:
  - CCL 716
  - CCL 747
  - ML 1308
  - ML 1376
  - ML 1539
  - ML 1642

2.2 Final land use options assessment

This section only applies when the development consent does not define the final land use.

The final landform for Tahmoor Mine is identified in Appendix 5 of SSD 8445 and further outlined in the proceeding sections. The final landform will be further developed across the LOM and within the Tahmoor Mine Rehabilitation Strategy, in accordance with Condition B58 of SSD 8445.

2.3 Final land use statement

State the final land use(s) for the mining area. The final land use statement must:

- **be consistent with any approved final land use described in the relevant development consent(s)**
- **reflect the outcomes of a final land use options assessment (section 2.2) (if applicable).**

The final land use must be depicted spatially on the final landform and rehabilitation plan.

The approved final land use for Tahmoor Mine as defined within Appendix 5 of SSD 8445 is native bushland (trees, shrubs and grassland). SSD 8445 Consent Condition B56 states that the final landform of the site must be rehabilitated in accordance with the conditions imposed on the mining leases(s) associated with the development under the Mining Act 1992. The final landform must comply with the objectives from SSD 8445 Consent Condition, summarised below:

- Stable and sustainable for the intended post-mining land use/s
- Consistent with surrounding topography to minimise visual impacts
- Incorporate relief patterns and design principles consistent with natural drainage that mimic natural topography and mitigate erosion to the greatest extent practicable

The Final Land and Rehabilitation Plan (FLRP) is provided in **FLRP Plan 1** and **FLRP Plan 2 (Sections 5.1 and 5.2 respectively)**. The final landform and the rehabilitation conducted will be designed to produce a stable landform capable of supporting sustainable ecosystems and enabling sustainable land use after the completion of mining.

FLRP Plan 1 and **FLRP Plan 2** are generally in accordance with the proposed final land use rehabilitation plan in Appendix 5 of Development Consent SSD 8445. The closure of Tahmoor Mine. Final land use options will be further confirmed in the detailed closure planning process, which will involve undertaking further final land use analyses, at a time closer to the cessation of mining operations.

2.4 Final land use and mining domains

2.4.1 Final land use domains

Define and list the final land use domain(s) for all areas within the lease as illustrated in the final landform and rehabilitation plan.

The final land use domains at Tahmoor Mine have been defined in accordance with the *Form and Way for Rehabilitation Management Plans for Large Mines* (NSW RR, 2021).

The final land use domain for the entire Tahmoor Mine area is **self-sustaining native grassland ecosystem.**

The final landform design has been a key consideration in the design of Tahmoor Mine, with the objective of maximising opportunities to achieve a sustainable rehabilitated landform post closure.

The development of the final landform will include the continued use of natural landform design processes incorporating micro-relief principles, consistent with the existing mining operations.

2.4.2 Mining domains

Describe the mining domain(s) for all operational/disturbance areas within the mining area site as illustrated in the final landform and rehabilitation plan.

Mining domains at Tahmoor Mine have been defined in accordance with the *Form and Way for Rehabilitation Management Plans for Large Mines* (NSW RR, 2021). Most of these domains are connected or within close proximity of one another and will therefore share similar final landforms and rehabilitation objectives. The mining domains are detailed in **Table 2** below.

Table 2 Mining Domains

Mining Domain	Description
Mine Infrastructure Area	• Main Pit Top Area • Main Workshop • Coal Handling Preparation Plant (CHPP) • Administration Area • Rail Loading Facility • No.1 Ventilation Shaft • No.2 Ventilation Shaft • No.3 Shaft • Gas Drainage Plant and associated infrastructure • Sewage/Water Treatment Plant • Offices and workshops • Ventilation infrastructure • Vehicle access tracks • Services (water, communication, & electricity)

	• Product Stockpile Area
Overburden Emplacement Area	• Reject Emplacement Area
Underground Mining Area	• Subsidence Management Area (in accordance with relevant Extraction Plans)
Water Management Area	• Clean Water Storages • Dirty Water Storages
Other Ancillary Infrastructure	• Exploration boreholes

3 Part 3 – Rehabilitation risk assessment

Summary of rehabilitation risk assessments conducted by the lease holder
A rehabilitation focussed risk assessment followed by a Bowtie assessment was conducted during March 2022. The methodology for the risk assessment adopts principals of AS NZS ISO 31000:2018 Risk Management - Guidelines and the NSW RR bowtie risk assessment for operational and rehabilitation phases. The risk assessment encompassed the following key steps: • identifying the related risks, including what could happen, when and where; • analysing the risks using a qualitative risk approach (i.e. identifying existing controls, determining specific consequences/likelihoods and then determining the residual level of risk); • evaluating the risks to determine the significant issues. The purpose of risk evaluation is to make decisions based on the outcomes of the risk assessment about which of the risks need controls or the implementation of a mitigation strategy; and • establishing controls to mitigate/treat the risks identified as part of the process. A total of 52 risks were identified during the process of the risk assessment. Of these risks, 34 were ranked as low and 15 were ranked as medium. There were three risks ranked high. **Table 3** presents a summary of the most recent rehabilitation risk assessment undertaken. As Low risks are considered well managed through established processes discussed throughout Part 6, they are not represented within this summary.
List of the risks to rehabilitation identified in the most recent rehabilitation risk assessment undertaken in accordance with Clause 7 of Schedule 8A, to the Mining Regulation 2016.
See **Table 3 Summary of Rehabilitation Risks Relevant to Tahmoor Mine**
List of the risks to rehabilitation identified in the most recent rehabilitation risk assessment undertaken in accordance with Clause 7 of Schedule 8A, to the Mining Regulation 2016
See **Table 3 Summary of Rehabilitation Risks Relevant to Tahmoor Mine**

Table 3 Summary of Rehabilitation Risks Relevant to Tahmoor Mine

Identified Risk	Risk Rating	Where Addressed
General		
Insufficient funding for or prioritisation of rehabilitation activities.	Medium	This RMP, associated Forward Program as well as Rehabilitation Cost Estimate (RCE)
Mining Phase – Land clearing		
Insufficient Biological resource salvage and maintenance (e.g. subsoil, topsoil, vegetative material, seedbank, rocks, habitat resources) through clearing, salvage and handling practices.	Medium	Section 6.2.1
Limited pre-existing biological resources for salvage (e.g. topsoil, weeds)	Medium	Section 6.2.1
Mining Phase – Active mining operations		
Adverse geochemical/chemical composition of materials such as overburden, interburden, processing wastes, subsoils and topsoils and imported cover materials.	Medium	Section 6.2.1
Redirection of creek and river flows.	High	Section 6.2.3
Subsidence cracking to natural landforms	Medium	Section 6.3
Subsidence cracking to structures	High	Section 6.3
Impacts to aquifers and groundwater loss of water to water users including the environment.	Medium	Section 6.2.1
Mining Phase – Decommissioning following completion of mining		
Impacts on heritage items.	Medium	Section 6.2.1
Rehabilitation Phase – Ecosystem and land use establishment		
Weather and climatic influences (e.g. drought; intense rainfall events; bushfire and climate change).	Medium	Section 6.2.6
Availability of areas for revegetation in optimal seasonal conditions.	Medium	Section 6.2.1 and 6.2.3
Rehabilitation Phase - Ecosystem and land use development to achieve a sustainable post mining land use		
Weather and climatic influences (e.g. drought; intense rainfall events; bushfire and climate change).	Medium	Section 6.2.6
Long term water quality and quantity issues (e.g. acid-drainage, high salinity).	Medium	Section 6.2.6
Damage to rehabilitation (e.g. fauna, domestic stock, vandalism, vehicular interactions, bushfire, insects and plant disease).	Medium	Section 6.2.6
Re-disturbance of established rehabilitation areas.	High	Section 6.2.6
Insufficient establishment of target species and limited species diversity.	Medium	Section 7
Limited vegetation structural development and habitat for targeted fauna species.	Medium	Section 6.2.1 and Section 7
Erosion and failure of landform, drainage and water management/storage structures.	Medium	Section 6.2.6

4 Part 4 – Rehabilitation objectives and rehabilitation completion criteria

4.1 Rehabilitation objectives and rehabilitation completion criteria

Feature	Objective (as defined in Schedule 2, Condition B56 of Development Consent SSD 8445)
All areas of the site affected by the development	• Safe, stable and non-polluting • Fit for the intended post-mining land use/s • Achieve the final landform and post-mining land use/s as soon as practicable after cessation of mining operations • Minimise post-mining environmental impacts
Areas proposed for native ecosystem re-establishment	• Establish/restore self-sustaining native woodland ecosystems, with a focus on establishing local plant community types, as described in the EIS and in **Table 5** of SSD-8445 • Establish: - habitat, feed and foraging resources for threatened fauna species; - local vegetation connectivity and wildlife corridors, as far as is reasonable and feasible
Final landform	• Stable and sustainable for the intended post-mining land use/s • Consistent with surrounding topography to minimise visual impacts • Incorporate relief patterns and design principles consistent with natural drainage that mimic natural topography and mitigate erosion to the greatest extent practicable
Surface infrastructure of the development	• To be decommissioned and removed, unless the Resource Regulator agrees otherwise • All surface infrastructure sites are to be revegetated with suitable local native plant species to a landform consistent with the surrounding environment
Portals and vent shafts of the development	• To be decommissioned and made safe and stable
Watercourses subject to mine water discharges	• Hydraulically and geomorphologically stable • Aquatic ecology and riparian vegetation that is the same or better than prior to grant of this consent
Watercourse damaged by subsidence impacts	• Restore pre-mining surface flow and pool holding capacity as soon as reasonably practicable • Hydraulically and geomorphologically stable, with riparian vegetation and aquatic ecology that is the same or better than prior to secondary extraction
Water quality	• Water retained on the site is fit for the intended post-mining land use/s • Water discharges are consistent with the regional catchment management water quality objectives
Built features damaged by mining operations	• Repair to pre-mining condition or equivalent unless the: ○ owner agrees otherwise; or ○ damage is fully restored, repaired or compensated for under the *Coal Mine Subsidence Compensation Act 2017*
Cliffs, minor cliffs, rock face features and steep slopes	• No additional risk to public safety compared to prior to mining
Community	• Ensure public safety • Minimise adverse socio-economic effects associated with mine closure

Table 4 Proposed Rehabilitation Objectives, Rehabilitation Completion Criteria and Performance Indicators

Final Land Use Domain (spatial reference)	Mining Domain (spatial reference)	Proposed Rehabilitation Objectives	Completion Criteria	Performance Indicator	Example of Justification/Validation Methods
Native Vegetation (Trees, Shrubs and Grassland)	All Domains	Surface Infrastructure of the Development All infrastructure that is not to be used as part of the final land use is removed and rehabilitated to ensure the site is safe and free of hazardous materials unless the Resources Regulator agrees otherwise.	Removal of all services (power, water, communications) that have been connected on the site as part of the operation.	Infrastructure removed.	Statement provided to confirm completion, utility service disconnection record.
			All demolition work has been carried out in accordance with Australian Standard *AS 2601-2001: The Demolition of Structures,* or its latest version.	Demolition of infrastructure.	Demolition compliance certificates. Records of removal/waste tracking.
			Heritage obligations (e.g. development consent under the *Environmental Planning and Assessment Act 1979,* approvals under the *Heritage Act 1977,* etc.) have been met (e.g. archival recording, building retention or building demolition with footings preserved).	Permits and approval documents issued, archival reports (where required) complete and submitted.	Copy of any relevant approval documentation.
			Removal of all plant, equipment and associated infrastructure including processing facilities, stockpile areas, rail infrastructure and loading facilities, office complex, portable offices, exploration core samples, storage racks, samples.	Infrastructure removed.	As-constructed final landform plan, photos etc. Records of removal.
			Removal of all footings or footings covered to an appropriate depth.	Infrastructure removed.	Surveyed and marked on the as-constructed final landform plan.
			Removal of all water management infrastructure (including pumps, pipes and power).	Infrastructure removed.	Statement provided and before/after photos.

Final Land Use Domain (spatial reference)	Mining Domain (spatial reference)	Proposed Rehabilitation Objectives	Completion Criteria	Performance Indicator	Example of Justification/Validation Methods
			All drill cores have been removed and either taken to authorised storage or disposal location.	Cores removed.	Statement provided to confirm completion.
			Surveying and sealing of all shafts, drill holes and boreholes in accordance with departmental guidelines, relevant standards and associated approval conditions.	Sealing complete.	Engineering report/statement, plug and abandonment log, photos etc.
		Infrastructure to Remain All infrastructure that is to remain as part of the final land use is safe and agreed to by the Resources Regulator.	Where applicable, necessary approvals are in place (e.g. development consent under the *Environmental Planning and Assessment Act 1979*) where buildings and infrastructure are to be retained as part of final land use.	Permits and approval documents issued.	Copy of any relevant approvals.
			Potential hazards (e.g. electrical, mechanical) have been effectively isolated.	Hazards isolated.	Statement provided to confirm completion.
			Access tracks that are to remain are in a trafficable condition that is suitable for their intended purposes.	Any required repairs or upgrades complete.	Copy of any relevant plans, photos etc.
			Heritage obligations as required under the *Environmental Planning and Assessment Act 1979*, *Heritage Act 1977,* etc. have been met (e.g. archival recording, building retention and restoration).	Permits and approval documents issued, archival reports (where required) complete and submitted.	Copy of any relevant approval documentation.
			The structural integrity of the infrastructure is suitable and safe for use as part of the intended final land use.	The structural integrity of the infrastructure has been inspected by a suitably qualified engineer and determined to be safe for the intended final land use	Engineering report/statement, photos etc.

Final Land Use Domain (spatial reference)	Mining Domain (spatial reference)	Proposed Rehabilitation Objectives	Completion Criteria	Performance Indicator	Example of Justification/Validation Methods
				(to an engineering standard).	
			If any underground pipelines or other infrastructure are to remain in situ, they do not pose a hazard for the intended final land use.	The location of the infrastructure has been marked on a plan and registered with the relevant local authority (e.g. local Council) and Dial Before You Dig where this is required by the Council or the relevant authority.	Surveyed and marked on the as-constructed final landform plan. Copy of notification to or correspondence with local Council and Dial Before You Dig.
			Ensure public safety.	Remaining infrastructure is safe and secure from public access.	Records of fencing, access points etc.
		Land Contamination There is no residual soil contamination on site that is incompatible with the final land use or that poses a threat of environmental harm.	Contamination will be appropriately remediated to a condition that does not pose a threat of environmental harm or constrain the final land use.	Contamination will be appropriately remediated so that appropriate guidelines for land use are met, e.g. Health Investigation Level of the National Environment Protection (Assessment of Site Contamination) Measure (1999).	Contamination Remediation Report prepared by Land Contamination Consultant. Site Contamination Audit Report and Site Audit Statement prepared by EPA Accredited Auditor (where required).
			Residual waste materials stored on site (e.g. tailings dams) will be appropriately contained/encapsulated so it doesn't pose any threat of environmental harm or constrain the intended final land use.	The structural integrity of the infrastructure has been inspected by a suitably qualified engineer and determined to be suitable and safe as part of the	Engineered capping design with specifications.

Final Land Use Domain (spatial reference)	Mining Domain (spatial reference)	Proposed Rehabilitation Objectives	Completion Criteria	Performance Indicator	Example of Justification/Validation Methods
				intended final land use and does not pose threat of environmental harm.	
		Landform Stability The final landform is stable and sustainable for future land use and does not present a risk of environmental harm downstream/ downslope of the site or a safety risk to the public/stock/native fauna.	Any areas of active erosion are within the parameters for safe and stable landform. Discharge points from rehabilitated landform to natural channels are stable. Erosion rills are vegetated, stable and less than 20cm x 20cm in size. Drainage structures are stable and there is no evidence of overtopping or scouring.	The final landform has been constructed in general accordance with the approved Final Landform and land use. Drainage structures are classified as stable at mine closure.	Before and after photos, rehabilitation monitoring reports, as-constructed surveys, erosion surveys, independent reports that demonstrate long term stability of rehabilitated landform. Depending on the nature, scale and risks associated with a specific site, stability will need to be evaluated over a number of years (e.g. 5 years).
		Integration with Surrounding Land The final landform is integrated with the surrounding natural landforms and other mine rehabilitated landforms, to the greatest extent practicable. Minimising visual impacts where practicable.	The final landform is constructed generally in accordance with approved final landform design.	The final landform has been constructed in general accordance with the approved final landform.	As constructed survey report.
		Incorporation of Natural Drainage Design	The final landform is constructed generally in accordance with approved final	The final landform has been constructed in general accordance with	As constructed survey report.

Final Land Use Domain (spatial reference)	Mining Domain (spatial reference)	Proposed Rehabilitation Objectives	Completion Criteria	Performance Indicator	Example of Justification/Validation Methods
		Landform design incorporates relief patterns and design principles consistent with natural drainage that mimic natural topography and mitigate erosion. Designed to maximise surface water drainage to the natural environment.	landform design and detailed drainage design plans.	the approved final landform.	Rehabilitation monitoring reports.
		<u>Bushfire</u> The risk of bushfire and impacts to the community, environment and infrastructure has been addressed as part of rehabilitation.	Bushfire management plan developed in consultation with the NSW Rural Fire Service.	Bushfire hazard controls implemented appropriate to the final land use.	Statement provided and before/after photos. Evidence of consultation of the Bushfire Management Plan with NSW RFS.
		<u>Surface Water Quality</u> Runoff water quality is similar to, or better than the pre-mining disturbance runoff water quality and is suitable for receiving waters. Water retained on the site is fit for the intended post-mining land	Runoff water quality from rehabilitation areas represent an acceptable level of change from a background condition (baseline study) and statutory requirements.	Assessment of runoff water quality against local background water quality including: – EC – TSS – pH – Metals – Biological health in accordance with Australian River Assessment System	Water quality monitoring reports Independent biological health assessment report.

Final Land Use Domain (spatial reference)	Mining Domain (spatial reference)	Proposed Rehabilitation Objectives	Completion Criteria	Performance Indicator	Example of Justification/Validation Methods
				(AUSRIVAS) or equivalent.	
			Assessment of water quality against guidelines for the final land use (e.g. agricultural, industrial, recreational).	Water quality in all storages left on site (other than final voids) is suitable for the approved final land use.	Independent report, water quality monitoring reports.
		Groundwater Quality & Regime The risk to important groundwater assets (aquifers, bores) has been addressed by the rehabilitation.	Groundwater quality and groundwater regime are within range as predicted in environmental assessments and in accordance with water sharing plans and water allocations held by the site.	Modelled drawdown and water take is within predictions. Biological monitoring to demonstrate the health and conditions of GDE's (where applicable).	Independent hydro-geological assessment report, monitoring reports, independent ecological assessment.
		Water Approvals Structures that take water are appropriately licensed.	Licenses held, where required.	Hydrological and hydro-geological assessments are undertaken to determine water take at completion from the relevant water sources to confirm that sufficient allocations are held.	Confirmation from relevant Government agency that licences are held.
		Rehabilitation Materials Materials including topsoils, substrate and seeds that are disturbed in the project areas are to be recovered, managed and reused as rehabilitation resources,	All recoverable rehabilitation materials are recovered, managed and used to the greatest extent possible.	Inventories indicate rehabilitation materials are recovered and have been used in rehabilitation in accordance with relevant ground disturbance permits and rehabilitation establishment records.	Ground Disturbance Permits detailing material recovery requirements. Topsoil Inventory. Rehabilitation Establishment records.

Final Land Use Domain (spatial reference)	Mining Domain (spatial reference)	Proposed Rehabilitation Objectives	Completion Criteria	Performance Indicator	Example of Justification/Validation Methods
		to the greatest extent practicable.			
		<u>Vegetation Composition and Coverage</u> Establish/restore native woodland ecosystems with local plant community types.	For Woodland Areas: -20-60% canopy for Woodland areas. -10-60% understorey - 40-80% groundcover For Grassland areas: -0-20% canopy -60-90% Groundcover Native plant species richness assessed for each growth form in accordance with BAM calculator.	Rehabilitation areas contain flora species assemblage's characteristic of each growth form for the target native vegetation communities. NOTE: Includes consideration of weed load and pest animal impacts.	Rehabilitation monitoring reports, independent ecological reports (where required).
			Indicative final minimum total woodland tree/shrub densities for seeded areas to be 400 stems/ha. More than 75% of trees are healthy and growing as indicated by long term monitoring. and/or At least 700ha of native grassland established in final rehabilitated landform.	Tree and shrub densities monitored for establishment and survival.	Rehabilitation monitoring reports, independent ecological reports (where required).
			Less than 30% weed coverage.	Weed presence in rehabilitation areas comparable to surrounding land areas.	Rehabilitation monitoring reports, ecological reports.

Final Land Use Domain (spatial reference)	Mining Domain (spatial reference)	Proposed Rehabilitation Objectives	Completion Criteria	Performance Indicator	Example of Justification/Validation Methods
		Rehabilitation Success The rehabilitation is self-sustaining in perpetuity (as conditioned by conservation agreements and other covenants implemented under the Biodiversity Offset Strategy).	Evidence of flowering and seeds or second-generation seedlings for trees and shrubs or likely to be, based on comparable older rehabilitation sites.	Trees and shrubs are monitored for evidence of ecological succession and evidence of flowers and seeds.	Rehabilitation monitoring reports, independent ecological reports (where required).
		Riparian Habitat Riparian Habitat is established in any diverted and/or re-established creek lines and retained water features.	Monitoring data provides evidence of riparian habitat establishment.	Riparian Habitat are established and consistent with target vegetation community compositions, as required by Approvals.	Rehabilitation/Riparian monitoring reports.
		Fauna Habitat Habitat, feed and foraging resources established for fauna species.	Monitoring data provides evidence of a range of structural habitats similar to pre mining fauna communities are evident in rehabilitation areas. Between 1 and 10 nest boxes/hollows per hectare.	Native rehabilitation areas provide a range of structural features (e.g. trees, shrubs, ground cover, developing litter layer etc.). Habitat features (e.g. logs, rocks and nest boxes), including structures suitable for target species are incorporated into rehabilitation areas at required densities, as required by Approvals	Rehabilitation monitoring reports, independent ecological reports (where required).
		Wildlife Corridors	Habitat Corridors established as required by approvals.	Habitat corridors are established and consistent	Rehabilitation monitoring reports, independent

Final Land Use Domain (spatial reference)	Mining Domain (spatial reference)	Proposed Rehabilitation Objectives	Completion Criteria	Performance Indicator	Example of Justification/Validation Methods
		Vegetation and wildlife corridor connectivity established as far is reasonable and feasible.		with target vegetation community compositions, as required by approvals.	ecological reports (where required). GIS spatial records.
		<u>Target Species</u> Target fauna assemblages and habitat in rehabilitation areas.	Ecological monitoring confirms target native fauna species are recorded utilising rehabilitation areas or habitat suitable for target species is present, as required by Approvals. Pest species presence is comparable to surrounding landholdings.	Rehabilitation areas provide a range of structural habitats similar to pre mining fauna communities. Fauna pest species are managed and controlled. Pest species are not having a detrimental impact on the establishment of the rehabilitation.	Rehabilitation monitoring reports, independent ecological reports (where required). Pest management reports.
		<u>Soil Properties</u> Provide soil chemical and physical properties comparable with the reference sites, or alternate growth medium that is suitable for the establishment and maintenance of the selected vegetation species.	Approximately 10 cm topsoil depth to be incorporated into subsoil material. Rehabilitation monitoring reports verify that soil pH is in the range of 5.5 to 8.5. Cation Exchange Capacity between 4 and 36 cmol+/kg.	Rehabilitation establishment or monitoring reports provide evidence that topsoil or suitable alternatives have been spread uniformly over the rehabilitation surface. Soil chemistry is appropriate to support vegetation growth.	Rehabilitation monitoring reports, independent ecological reports (where required). Rehabilitation establishment methodology forms.
		<u>Surface Water Flows</u> Landform design minimises the surface water flows and impacts on threatened Flora species.	The final landform is constructed generally in accordance with approved final landform design. Drainage structures are stable and there is no evidence of overtopping, scouring or impact to threatened Floral species.	The final landform has been constructed in general accordance with the approved Final Landform.	As constructed survey report. Rehabilitation monitoring reports. Depending on the nature, scale and risks associated

Final Land Use Domain (spatial reference)	Mining Domain (spatial reference)	Proposed Rehabilitation Objectives	Completion Criteria	Performance Indicator	Example of Justification/Validation Methods
				Signs of erosion and or land instability are recorded, measured, assessed and remediated where required. Drainage structures are classified as stable at mine closure.	with a specific site, stability will need to be evaluated over a number of years (e.g. 5 years).

- *The preliminary rehabilitation indicators and completion criteria detailed above have been developed to meet the domain rehabilitation objectives from the site's various consents and approvals. These criteria will continue to be refined throughout the life of mine, following the implementation of rehabilitation and biodiversity monitoring programs, as part of the site's continual improvement process.*
- *Tahmoor Coal will submit the final rehabilitation completion criteria to the NSW RR for approval no later than three years before rehabilitation of the whole (or identified part) of the mining area is proposed to be completed.*

4.2 Rehabilitation objectives and rehabilitation completion criteria – stakeholder consultation

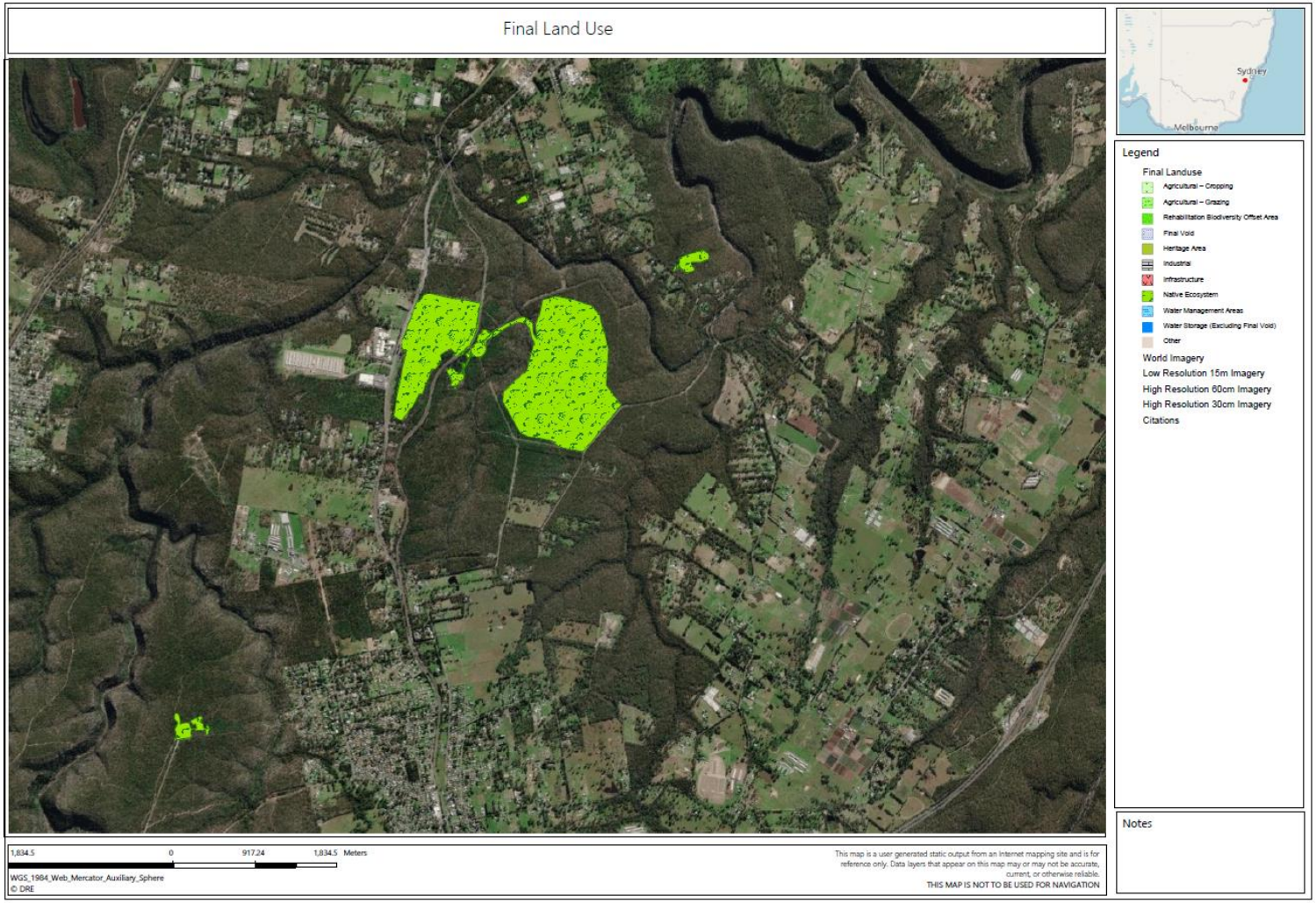
Stakeholder	Consultation Activities, Forms of Consultation and Matters Subject to Consultation.	Consultation to Date	Actions Taken
Local community **Stakeholders within 100 m buffer of pit top operations** **Stakeholders in active subsidence zone**	Ongoing consultation with stakeholders within local community before, during and after mining operations will be undertaken by various methods including community information sessions, monthly newsletters, face to face meetings and newspaper articles. They will be informed and provided with the opportunity to provide feedback in relation to mining operations, rehabilitation objectives/criteria and progress throughout the life of the mine and at mine closure.	Tahmoor Coal Community Consultative Committee – quarterly meetings held Newsletter updates to stakeholders in 20mm subsidence zone and proximity of rehabilitation works Information sessions Newspaper articles Website	Tahmoor Coal Community Consultative Committee – quarterly meetings held Newsletter updates to stakeholders in 20mm subsidence zone and proximity of rehabilitation works Information sessions Newspaper articles Website
NSW Department of Planning, Industry and Environment	Ongoing consultation for management of statutory matters. Liaise for lease relinquishment. Address matters raised in guidelines, policies and project approval before, during and after mining operations. Review Closure Decommissioning and RMP.	Ongoing consultation for creek remediation works and subsidence effected remediation works.	Continued consultation for creek remediation works and subsidence effected remediation works.
NSW Resources Regulator	Consultation in regards to exploration licencing and reporting. Address matters raised in guidelines, policies and project approval before, during and after mining operations.	Ongoing consultation for creek remediation works and subsidence effected remediation works as required.	Continued consultation for creek remediation works and subsidence effected remediation works as required.
Environment Protection Authority	Liaise regularly to attend to licence management matters. Ongoing consultation for management of statutory matters. Liaise for lease relinquishment. Review Closure Decommissioning and RMP.	Ongoing consultation for management of statutory matters.	Continued consultation for management of statutory matters.
WaterNSW	Ongoing consultation to manage water during mining operations including mine dewatering and discharge boreholes sealed as required. WaterNSW kept informed of developments and process.	WaterNSW kept informed of developments and process.	WaterNSW kept informed of developments and process.
Natural Resources Access Regulator	Ongoing consultation to manage water licencing and water access agreements.	Ongoing consultation to manage water licencing and water access agreements.	Continued consultation to manage water licencing and water access agreements.

Wollondilly Shire Council	Ongoing consultation with respect to development consent matters and project planning before, during and after mining operations.	TCCCC meetings held quarterly	TCCCC meetings held quarterly
Subsidence Advisory NSW	Ongoing consultation before, during and after mining operations with Subsidence Advisory representatives. Face to face engagement with Subsidence Advisory representative and local residents impacted or potentially impacted by subsidence.	Ongoing consultation in relation to potential subsidence impacts to property developments.	Responses in relation to request for information to development applications.
SIMEC	As per SIMEC internal communication standards.	Ongoing communication in relation to rehabilitation works	Continued communication in relation to rehabilitation works
Potential final land user	If identified, the final land user should be consulted (where appropriate) through the detailed mine closure development process in order to maximise potential opportunities to add value to the land.	Consultation will take place closer to mine closure	Actions to be taken closer to mine closure
Aboriginal groups	Consultation as required pertaining to the management of Aboriginal heritage sites. Where appropriate, consultation will be conducted via site inspections/meetings.	Ongoing communication in relation to Aboriginal heritage items	Continued communication through RAPS in relation to the management and protection of Aboriginal heritage items
Local business community	Ongoing updates of mining operations via newsletters, information sessions and newspaper articles. To be consulted regarding any Social Impact Assessments that may be undertaken prior to mine closure. Methods for consultation with businesses will be developed as part of the assessment process.	-Newsletters/letters to the local community -Information sessions conducted -Newspaper articles -Information uploaded to Tahmoor Coal's website regularly	To continue the following: -Newsletters/letters to the local community -Information sessions conducted -Newspaper articles -Information uploaded to Tahmoor Coal's website regularly
Community Groups	Financial and in kind support for local community groups via Tahmoor Coal's Corporate Social Involvement community support program. Community support programmes focus on enhancing socio-economic capacity, prosperity and environmental health of stakeholder communities. They are aimed at sustainable enhancements that do not remain dependent on the operation beyond its expected life.	Financial and in kind support for local community groups via Tahmoor Coal's Corporate Social Involvement community support program.	Continue supporting the local community through Tahmoor Coal's community support program

5 Part 5 – Final landform and rehabilitation plan

5.1 Final landform and Rehabilitation Plan (FLRP Plan 1)

Figure 1 - Final Landform and Rehabilitation Plan (FLRP Plan 1): Final Landform Features



5.2 Final Landform and Rehabilitation Plan (FLRP Plan 2)

Figure 2 - Final Landform and Rehabilitation Plan (FLRP Plan 2): Final Landform Contours

6 Part 6 – Rehabilitation implementation

6.1 Life of mine rehabilitation schedule

Describe the rehabilitation schedule over the life of the mine, from the commencement of the rehabilitation management plan until lease relinquishment.

Tahmoor Coal will undertake rehabilitation of mine areas as soon as practicable following the completion of mining activities. Due to the nature of underground mining, the potential for progressive rehabilitation of surface features is limited. Limited opportunities for progressive rehabilitation of the mine site infrastructure are available for the duration of the life of mine as the infrastructure is required for ongoing mining operations. Sites such as exploration drill pads, vent shafts and portals will be progressively rehabilitated as soon as practicable.

The current proposed progressive rehabilitation schedule for Tahmoor Mine is as follows:

- Ongoing maintenance and rehabilitation at the Tahmoor Mine Site including removal of any redundant infrastructure;
- Staged site rehabilitation of Tahmoor Mine while continuing operations, this will include rehabilitation of any mine entrances no longer required and remediation of unused areas;
- Sealing of mine portals and vent shafts and rehabilitation in accordance with final land use objectives at the completion of mining which is anticipated to be required in approximately 10 years' time unless further approvals are obtained to operate beyond this timeframe;
- Undertake final rehabilitation of the Tahmoor Mine site and commence staged site development for any alternative uses; and
- Refine the rehabilitation cost schedule list of items and reassess the costs associated with this schedule.

The progression of rehabilitation is provided within the Annual Rehabilitation Report and Forward Program (ARRFP) in accordance with Clauses 9 and 13 of Schedule 8A to the Mining Regulation 2016.

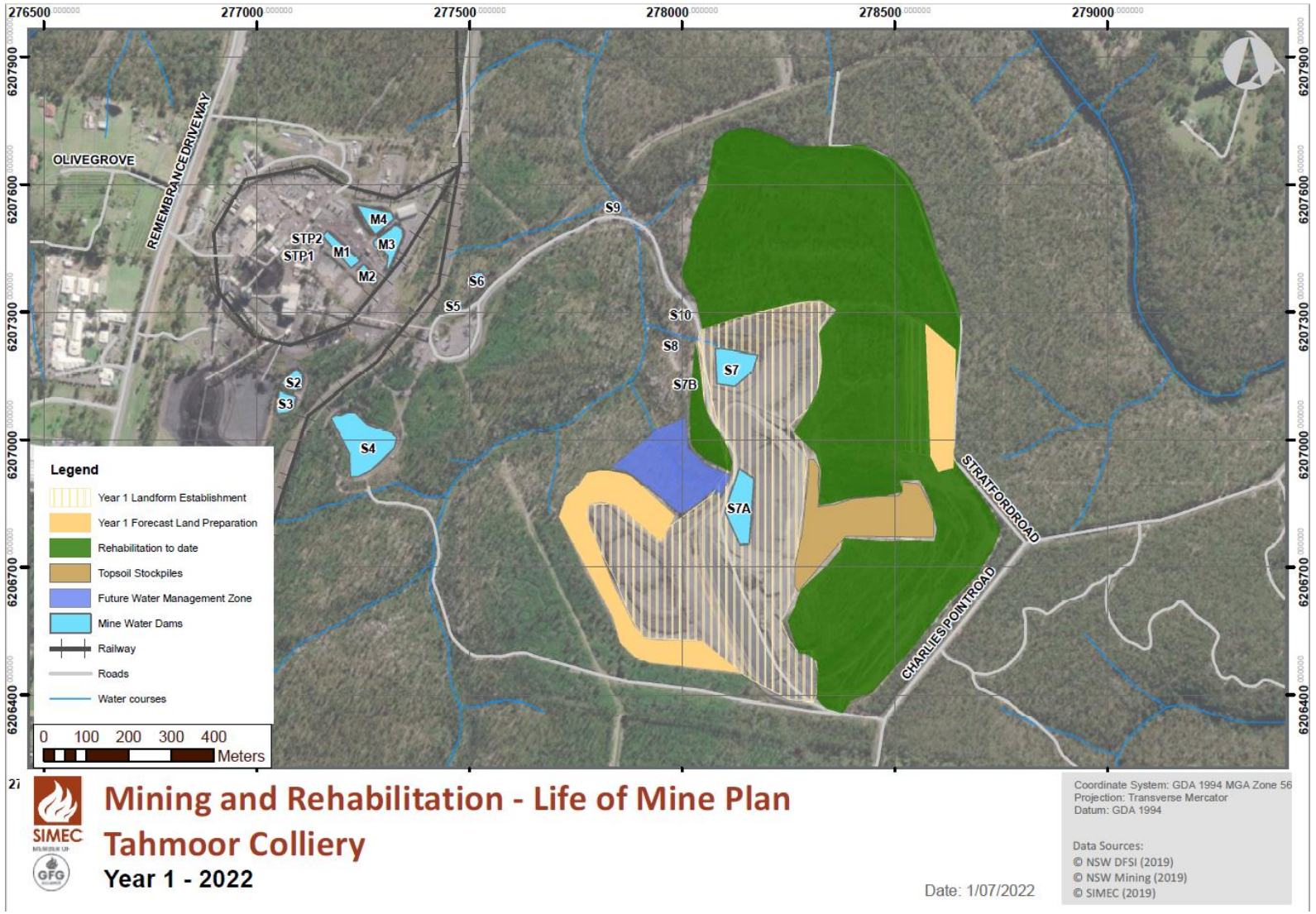
A Detailed Mine Closure Plan will be developed five years out from closure, and will include investigating all options to:

1. align with regional and local strategic land use planning objectives and outcomes;
2. support a sustainable future for the local community;
3. utilise existing mining infrastructure, where practicable; and
4. avoid disturbing self-sustaining native ecosystems, where practicable.

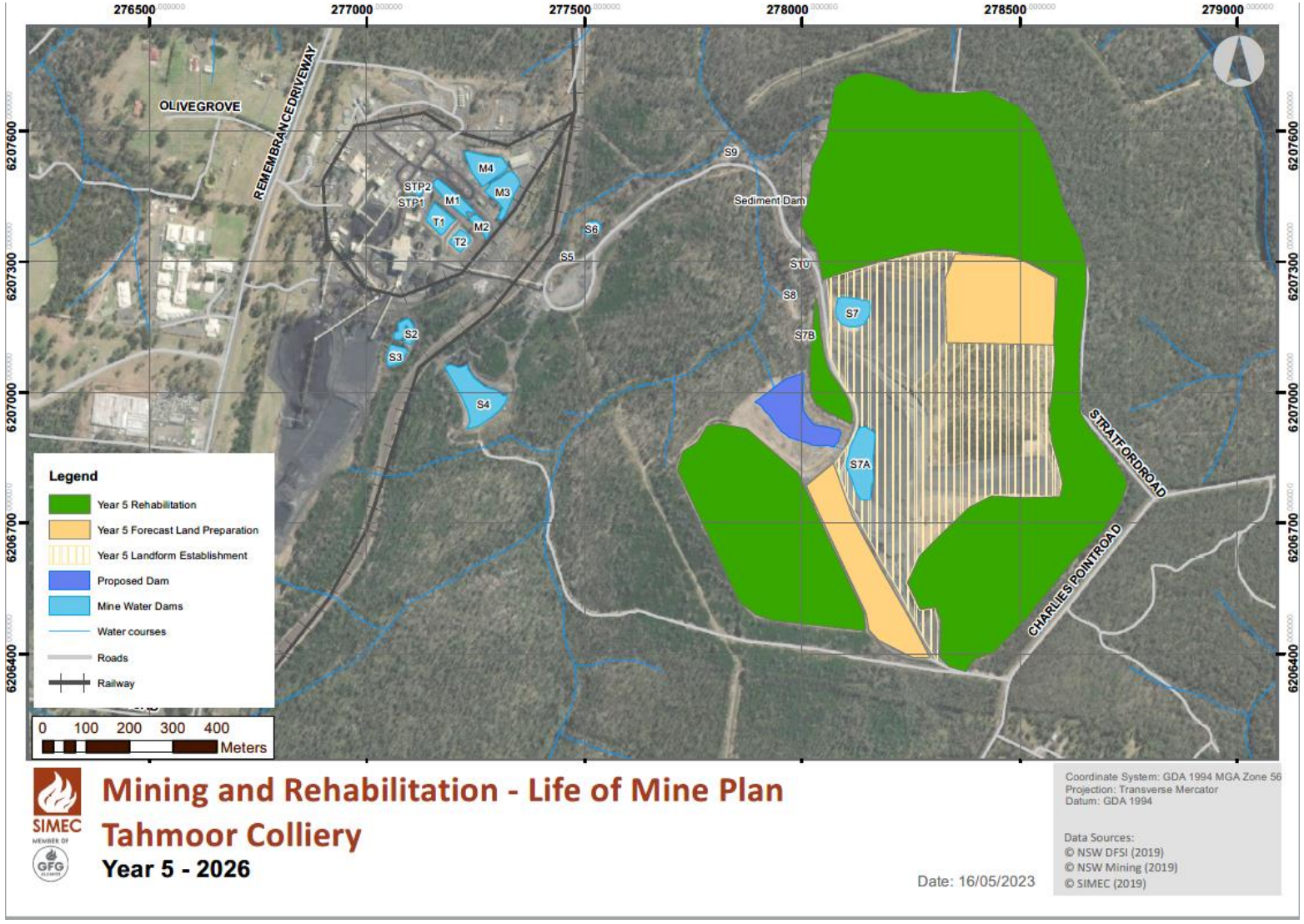
Tahmoor Coal will complete rehabilitation on a progressive basis throughout the life of mine, however if any areas are identified during the life of mine or during the detailed mine closure planning as having the potential for alternative land uses, Tahmoor Coal will liaise with the appropriate stakeholders on the appropriate management of these areas.

Outcomes of rehabilitation will be reported through the Annual Review process and based on the outcomes of the rehabilitation monitoring programs and in consultation with the relevant government agencies, Tahmoor Coal may seek progressive sign-off of rehabilitated areas once the agreed closure and rehabilitation criteria have been satisfied.

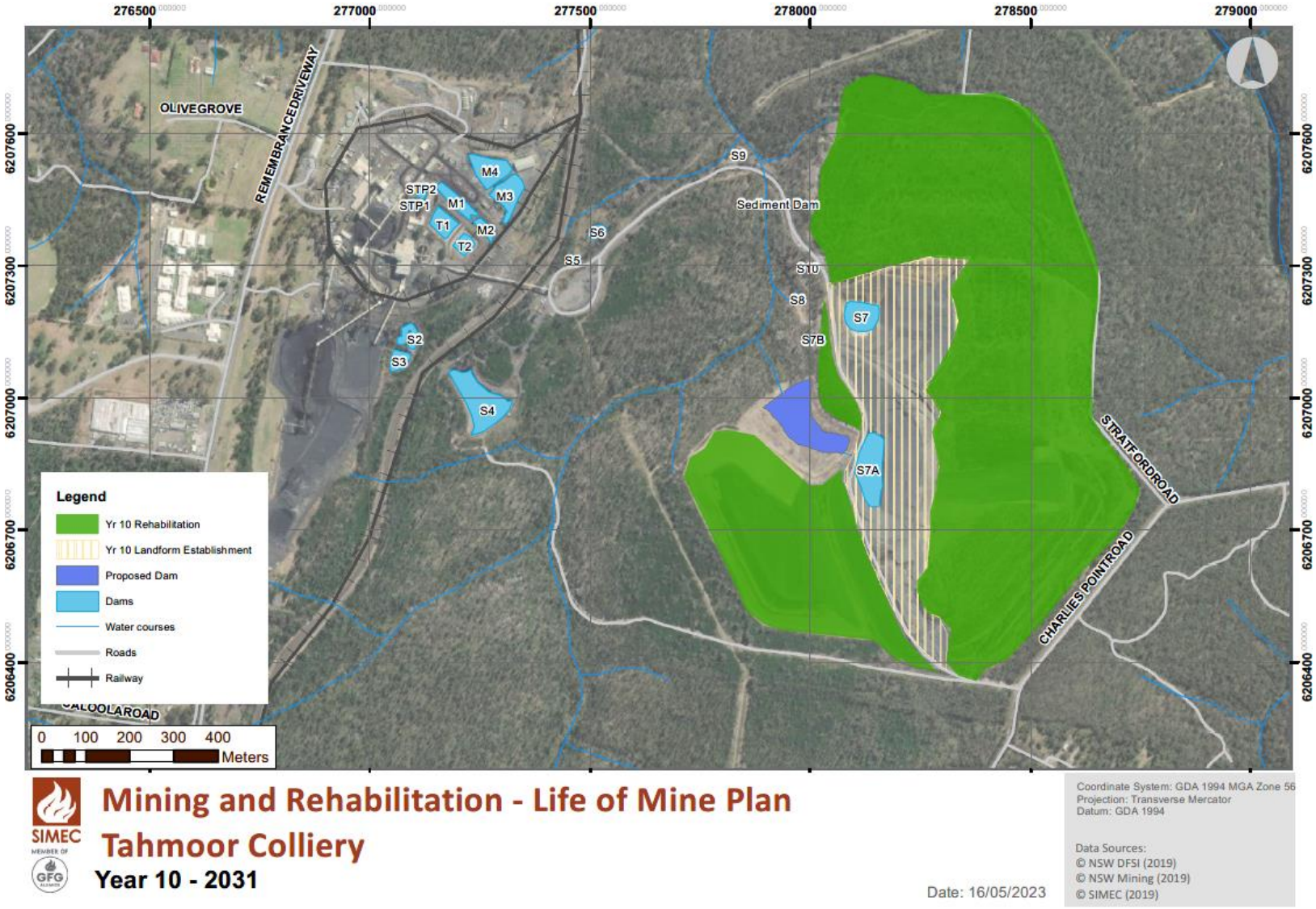
6.1.1 Life of Mine Schedule – Series of Plans – Year 1



6.1.2 Life of Mine Schedule – Series of Plans – Year 5



6.1.3 Life of Mine Schedule – Series of Plans – Year 10



6.2 Phases of rehabilitation and general methodologies

Phase	Description
Active Mining	Management activities associated with active mining that are associated with ongoing rehabilitation including; Topsoil management, flora and fauna management, overburden emplacement, waste management, geology and geochemistry, spontaneous combustion, acid mine drainage, reject/tailings, erosion and sediment control, biological resources, mine subsidence, cultural heritage and exploration activities.
Decommissioning	Removing infrastructure, hardstands, plant, equipment, buildings and other structures and contaminated and hazardous materials.
Landform Establishment	Shaping unformed rock or other sub stratum material into a desired land surface profile including final landform and drainage features. This phase includes substrate material characterisation, hazardous material encapsulation and earthworks to achieve safe and stable slopes with the desired gradients and landscape characteristics.
Growth Medium Development	Establishing and enhancing physical structure, chemical properties and biological properties of a soil stratum for plant growth. This includes placing and spreading soil and applying ameliorants.
Ecosystem and Land Use Establishment	Seeding, planting and transplanting plant species. Incorporates management actions such as weed and feral pest control to achieve species establishment and growth to juvenile communities and habitat augmentation.
Ecosystem and Land Use Development	Applying management techniques to encourage an ecosystem to grow and develop towards a desired and sustainable post mining land use outcome. Incorporates features including species reproduction, nutrient recycling and community structure.
Rehabilitation completion	Completion criteria for rehabilitation are met and the land is determined to be suitable to be relinquished for the mining tenement.

6.2.1 Active mining phase

a. Soils and Materials

Describe the general processes to identify, quantify, characterise and assess the suitability for rehabilitation of topsoil, subsoil and material resources (e.g. inert capping material).

Tahmoor Coal will complete capping of the REA and any other applicable disturbed land in accordance with the Rehabilitation Strategy and the Rehabilitation and Topsoil Management Procedure (TAH-HSEC-00053).

Due to the nature of underground mining at Tahmoor Coal, surface disturbance and topsoil stripping is limited to the Reject Emplacement Area (REA). Capping material from the stripped topsoil/subsoil material onsite will be utilised in the first instance. As the extent of the REA reaches its approved disturbance footprint, it is considered that there will be a capping and topsoil shortage to rehabilitate the remaining site that is active at the time of closure. Tahmoor Coal will source an alternative for local topsoil as part of the Detailed Mine Closure Plan (DMCP). Provision has been included in the RCE to source topsoil or a suitable alternative from an external source given the predicted topsoil deficit on-site. A further assessment of topsoil material availability and suitability will be undertaken in Year 3 of the Forward Program and further assessed as part of the mine closure planning process to quantify any material imbalances that may exist.

The basis of design for capping has been revised by SMEC within the 'REA Filling Sequencing Report' (Dec, 2021) and includes the following approach:

- Any vegetated areas will need to have vegetation and topsoil removed prior to the placement of reject material. For areas where emplaced reject material has been rehabilitated, 300mm of topsoil will exist as highlighted in Tahmoor Coal: Reject Disposal (SIMEC, 2021). Best practice in these areas is to remove topsoil until the final refuse landform level is reached.
- Removed topsoil is to be either utilised for immediate cover of completed reject emplacement areas or stockpiled along the proposed toe of the active emplacement phase (where feasible). As per Tahmoor Coal: Rehabilitation and Topsoil Management Procedure (SIMEC, 2020), topsoil stockpiles should be as

low as possible with a large surface area, constructed with gentle batters, and be less than 3m in height for stability. Stockpiles will be assessed and if required sown with a suitable cover crop to minimise soil erosion and invasion of weed species if planned for long term storage.
- Once an area is cleared for refuse material emplacement, a 1m thick layer of reject material shall be placed to form a stable all-weather wearing working surface before being used as the active emplacement area.
- When the emplaced reject reaches its design shape it will be covered with a minimum of 300mm of soil.
- The internal batters (between emplacement stages) will be covered with a minimum of 300mm of uncompacted topsoil.
- Capping material will be sourced from site until such a time that material is depleted. At that time, Tahmoor Coal will import suitable capping material to cap the remaining REA with at least 300 millimetres of cover.

b. Flora

Describe the management of resources required to establish any specific flora species in rehabilitation, including (but not limited to) threatened species, seed collection, propagation in a nursery, translocated plants, revegetation techniques, and weed and pest management.

Flora (including threatened and invasive species) is managed across Tahmoor Coal leases in accordance with the approved Biodiversity Management Plans (BMP).

Threatened Species and Translocation

Prior to clearing, all threatened flora species occurring within the disturbance area will be clearly marked by a qualified ecologist. These individuals will be salvaged, transplanted, or propagated (depending on species suitability for each option). A suitably qualified and experienced bush regenerator with the appropriate scientific licence for threatened flora transplantation will be engaged well in advance of the desired transplantation completion date. They will prepare a translocation plan and may also need to prepare a translocation application for additional approvals may also need to be sought (i.e., approval from Commonwealth regulator for translocation of EPBC Act listed species).

Seed Collection and Propagation

Tahmoor Coal will collect and propagate local seed from the Tahmoor area, where possible. Replication of local seed will be prioritised if collection in the area is not possible. Any local seed collection would be conducted in accordance with the following (B38(f)viii):

- Appropriately qualified bush regenerators would prepare and implement a Native Seed Collection Strategy, which adheres to the Australian benchmark guidelines developed by Flora bank for native seed collection.
- Seed harvesting and propagation from surrounding areas (and threatened species) should begin at least two years before rehabilitation of the REA commences, this will ensure the tube stock is well established prior to planting.
- Appropriately qualified, experienced, and licenced contractors must be used for native seed collection and must adopt the Model Code of Practice.
- Appropriately qualified bush regenerators must undertake the salvage, transplanting and propagation of threatened flora species, and collection and propagation of seed from the local area.
- Utilise locally sourced seed to propagate tube stock to be used for revegetation

Revegetation Techniques

Native tree and shrub seed will be appropriately pre-treated to break innate dormancy mechanisms and mixed with a cover crop of oats. Species chosen for rehabilitation are comprised of a large portion of diagnostic species of the plant community types recorded in undisturbed adjacent habitat. Areas of revegetation will aim to mimic the species composition of Shale Sandstone Transition Forest.

The entire area will be trimmed to facilitate the appropriate drainage of surface runoff from the site, rock raked to remove all surface rock and deep-ripped. The area will be covered with topsoil material or suitable alternative and a native species mix will be applied to the site. Soil amelioration works including the addition of gypsum and lime will be undertaken as required.

Tahmoor Coal will implement the following approach in relation to revegetation to enhance the quality of vegetation, vegetation connectivity and wildlife corridors including through the assisted regeneration and/or targeted revegetation of appropriate canopy, sub-canopy, understorey and ground strata (B38 (f) iii):

- Good site preparation, including choosing optimal seasonal conditions, and follow-up maintenance of plantings are critical to their long-term viability. Some sites may require several years of watering and weed management;
- Planting palette will be comprised of species of the PCTs recorded in undisturbed adjacent habitat (refer to Section 4.2 of the Biodiversity Management Plan (TAH-HSEC-00378));
- Planting densities will aim to mimic the PCT composition;
- In-fill replacement planting to replace unsuccessful tube stock will be undertaken each year in autumn for at least two years per stage/domain;
- During weed maintenance activity, established plants, particularly trees that are tall enough, will have tree guards removed in order not to inhibit growth;
- Large areas of unsuccessful tube stock will be recorded as they may indicate the requirement for soil improvement prior to replacement planting to ensure greater establishment success;
- Watering will be applied for 4-6 weeks post planting and in the summer of the first year if required, to ensure survival and establishment;
- Appropriately qualified bush regenerators must undertake the rehabilitation planting, infill planting and maintenance including weed control.

A provision for maintenance of rehabilitated areas has been included in the planned closure costing. The provision provides for undertaking such works as fertilising, sediment and erosion control and potential replanting or re-seeding over a likely period of two years. However, there is the potential that a care and maintenance period of up to 10 years may be required.

Weed and Pest Management

Tahmoor Coal will implement the following weed management measures:

- Appropriately qualified bush regenerators will undertake the revegetation maintenance including weed control.
- Undertake maintenance weeding in the disturbance footprint and adjacent natural bushland where weed incursion has been identified. The weed density and the age of the revegetated area will dictate the frequency of weed maintenance after completion of the stages.
- Spot spraying as required to control weeds on steep slopes at risk of erosion.

c. Fauna

Describe the management of fauna, including habitat management (during clearing and progressive rehabilitation), threatened species, habitat augmentation (rock piles, frog ponds, log piles and translocated stag trees), and pest control designed to achieve specific fauna outcomes that may be specified in the approved rehabilitation objectives and rehabilitation completion criteria.

Fauna (including threatened and invasive species) is managed across Tahmoor Coal leases in accordance with the approved Biodiversity Management Plans (BMP).

Habitat Management

Due to the nature of underground mining and the minimal construction activities planned for Tahmoor Mine, very little vegetation disturbance/clearance is required throughout the life of mine. Any required disturbance will be assessed through the Ground Disturbance Permit process to ensure that potential impacts to fauna are adequately identified and mitigated.

Tahmoor Coal will implement the following recommendations in accordance with the Tahmoor South Biodiversity Management Plan:

- Habitat planting will be located to minimise the likelihood of vehicle strike.
- Avoid placing obstacles such as roads and fencing between habitat patches.
- Avoid planting feed trees around fences.

Habitat Augmentation

Salvaged habitat features that have been stockpiled since clearing was undertaken will be evenly placed throughout the rehabilitation area after the topsoil is placed and graded banks and ripping complete, under the supervision of a qualified ecologist. Placement of these features will prioritise the following:

- Cleared timber will be distributed using a long-reach excavator (or similar) to create microhabitats for native plants and animals and to assist in erosion control.
- Establishing shelters or perches in the form of logs and log piles.
- Creating reptile habitat through the limited distribution of surface boulders (if available)
- Distributing salvaged woody course debris evenly around the rehabilitated area if possible. This will provide shelters for many smaller reptile and invertebrate species.

The following Biodiversity measures have been included from the Biodiversity Management Plan:

In order to maximise the use of salvaged resources, including tree hollows, vegetation, and soil resources, for beneficial reuse, including fauna habitat enhancement (B38 (e) iv) the following management measures are to be undertaken:

- Placement of coarse woody debris in the rehabilitation areas will not exceed benchmark values as specified in BioNet Vegetation Classification (or equivalent) at the time of commencement of the relevant stage of rehabilitation.
- No monitoring will be undertaken following placement of coarse woody debris habitat features, as the surrounding habitat will consist of planted tubestock and take a substantial amount of time to recover to a point where it is conducive to regular use of introduced coarse woody debris by local native fauna.
- Salvage topsoil suitable for reuse in rehabilitation of the REA. Store in piles for reuse in rehabilitating the REA.
- If feasible, source fresh donor topsoil from newly cleared areas supporting any of the PCTs that occur within and adjacent to the disturbance area. The use of fresh donor soil would promote establishment of native species from the soil seedbank. Case studies found the use of fresh donor topsoil resulted in the establishment of at least 33% more species than the use of stockpiled topsoil (Commonwealth of Australia 2016).

Tahmoor Coal will prioritise the use of salvaged tree hollows for fauna habitat. Planted saplings will not be large enough to support hollow logs however If required, the installation of nest boxes will be investigated. Nest boxes would be used to provide shelter and breeding habitat for bird and mammal species. If adopted, nest box selection would target the range of threatened fauna recorded or considered to have a moderate to high likelihood of occurrence. Nest boxes would be placed in trees by climbing arborists under the supervision of a qualified ecologist.

The introduction of naturally scarce faunal habitat features such as nest boxes and salvaged tree hollows, and to promote the use of these introduced habitat features by threatened fauna species (B38 (f) v) the following management measures are to be considered (Note in relation to condition (f) v, which states to "…promote the use of these introduced habitat features by threatened fauna species"):

- Promotion of the use of nest boxes by target species typically requires the nest box program to be extensive and to target a single species or species group (i.e., threatened gliders) to achieve any level of success (e.g., Libois et al., 2012; Rueegger et al., 2013; Olah et al., 2014). Otherwise, there is limited empirical evidence to suggest that nest boxes will be occupied by target threatened species to the extent that the local population would benefit (Goldingay et al., 2015).

- Additionally, the site is surrounded by in-tact native vegetation which likely supports many naturally occurring hollows. As such, use of the nest boxes by any common species will be taken to indicate that a naturally occurring hollow in native bushland is vacant for potential use by more sensitive threatened species.
- A nest box strategy is to be prepared which provides guidelines for the placement and monitoring of nest boxes within the REA rehabilitation areas once planted trees reach an average Diameter at Breast Height (DBH) of 20 centimetres (cm) and are likely to be capable of supporting an occupied nest box (Le Roux et al. 2016). This measure may assist to encourage fauna to move back into the rehabilitation areas.
- Nest box selection will target the range of threatened fauna recorded or considered to have a moderate to high likelihood of occurrence (see **Section 4.5**).
- Nest boxes will be placed in trees by climbing arborists under the supervision of a qualified ecologist.

Threatened Species

In order to re-establish habitat for Koalas, as well as other threatened fauna as stated in consent condition (B38 (e)v), specific recommendations according to Wegner and Taws (2019) for Koala's will implement the following where feasible:

- Minimum 30% of total canopy trees as preferred food trees for Koalas;
- The use of a mix of non-eucalypt trees and shrubs for shelter and other behavioural purposes, as dense foliage species help koalas stay cool in summer. For example, Acacia species, turpentine (Syncarpia glomulifera), and kurrajong (Brachychiton populneus);
- Koala forage from both young and old food trees, with DBH ranging between 26 and 80 centimetres. Koalas prefer to rest on old trees;
- Maintain pre-existing clean water storages nearby to increase higher leaf moisture and water to drink;
- Maintain good connectivity between habitat patches, this will support Koalas and other threatened fauna, however Koalas can travel distances of several kilometres across open ground;
- Use a diverse planting palette but include plenty of koala feed trees from the list of koala use trees as defined by Schedule 2 of the State Environmental Planning Policy (Koala Habitat Protection) 2020 and DPIE (2021). Listed Koala feed trees that can be found in the neighbouring PCT's and are known to be preferred by local koalas are:
    - Grey Gum (Eucalyptus punctata);
    - Forest red gum (E. tereticornis); and
    - Blue-leaved Stringy Bark (Eucalyptus agglomerata).

The following Biodiversity measures have been included from the Biodiversity Management Plan:

- Habitat needs to minimise the likelihood of vehicle strike. Avoid planting near main roads when restoring habitat. When constructing new roads or obstacles, avoid putting them within and between koala habitat patches. Fences can also create barriers to koala movement. Avoid planting feed trees around fences (Wegner & Taws, 2019).
- A range of species composition and structure is required to support other threatened fauna within the revegetated area, particularly species for foraging, shelter, and breeding.

To minimise impacts to threatened ecological communities listed under the BC Act and EPBC Act, and contribute to conservation strategies for these communities (B38 (f)i) the following will be undertaken:

- The planting palette will be comprised of diagnostic species of the PCTs recorded in undisturbed adjacent habitat.
- Areas of revegetation will aim to mimic the species composition of the region (Sandstone Shale Transitional Forest) SSTF

Pest Management

Most pest species are highly mobile and can readily replace those that are killed in control programs. Unless actions are well planned and coordinated across a broad area, individual control programs are unlikely to have a lasting effect. As such, there are no specific management measures to control feral pest animals (e.g. trapping, shooting), however the approach detailed below will be undertaken.

Methods of pest control may be chemical (pesticides), biological, or physical, but they are unlikely to have any lasting effect on pest species populations unless they are undertaken as part of a broader (group) feral animal control program. Local Land Services (LLS) coordinates group programs using a variety of control methods. Therefore, pest management (when required) at the site will be undertaken in consultation/collaboration with LLS and local Council, to achieve maximum benefit for biodiversity.

The approach to feral animal control will be as follows:

- Consult with LLS and/or Council to determine if there are any applicable feral pest control programs that can be considered (in line with the Biodiversity Management Plan).
- Continue monitoring the presence of pest species population for fluctuations.
- Undertake pest control actions once the presence of pests is understood.

Weed Management

To control weeds, including measures to avoid and mitigate the spread of weeds (B38(f)ix) the following will be implemented:

- Appropriately qualified bush regenerators must undertake the revegetation maintenance including weed control.
- Undertake maintenance weeding in the disturbance footprint and adjacent natural bushland where weed incursion has been identified. Dependent on the weed density and the age of the revegetated area will dictate the frequency of weed maintenance after completion of the domain.
- Spot spraying is recommended to control weeds on steep slopes at risk of erosion.
- Jute matting may be used to secure steep slopes of the REA and supress weed growth.

d. Rock/Overburden Emplacement

Describe the areas identified for emplacements and/ or capping, the sequencing of emplacements/capping, construction and management to facilitate sustainable landform design and rehabilitation outcomes.

As outlined in **Section 6.2.1 (a)**, Tahmoor Coal will complete capping of the REA and any other applicable disturbed land in accordance with the Rehabilitation Strategy and the Rehabilitation and Topsoil Management Procedure (TAH-HSEC-00053). Capping material from the stripped topsoil/subsoil material onsite will be utilised in the first instance. As the extent of the REA reaches its approved disturbance footprint, it is considered that there will be a capping and topsoil shortage to rehabilitate the remaining site that is active at the time of closure. Tahmoor Coal will source an alternative for local topsoil as part of the Detailed Mine Closure Plan (DMCP). Provision has been included in the RCE to source topsoil or a suitable alternative from an external source given the predicted topsoil deficit on-site.

e. Waste Management

Outline waste disposal and materials handling practices, including the disposal of putrescible wastes, hydrocarbons and management of contaminated soils to minimise or mitigate adverse impacts to rehabilitation.

Waste is managed across Tahmoor Coal leases in accordance with the sites Waste Management Plan (WMP). According to Waste Classification Guidelines Part 1: Classifying Waste (EPA 2014), waste is classified using six classes:

- Special waste;
- Liquid waste;
- Hazardous waste;
- Restricted solid waste;
- General solid waste (putrescible); and
- General solid waste (non-putrescible).

These classes are documented by Tahmoor Coal when managing wastes.

Management of Waste by a Licensed Contractor

Tahmoor Coal has engaged a licensed contractor to act as the authorized agent to manage and track the transport of waste from Tahmoor Mine. As a result, Tahmoor Coal personnel must:

- Ask for documentation to show that the authorized agent is approved by the EPA; and
- Have an agreement with the authorized agent permitting them to consign waste on their behalf. A copy of this agreement must be kept for at least 4 years.

Waste Segregation and Storage

Tahmoor Coal recognises the importance of segregating the six groups of waste so they can be treated separately. Poor segregation of waste can lead to penalties from the waste transport and waste disposal facilities and ultimately prosecution under the POEO Act.

Various bins are placed across the site to assist with waste segregation. Waste produced on site should be put in the appropriate bin and if no bin fits the description of that waste, it should be placed in a bunded area and covered in case of rainfall. A member of the Environment and Community Department should then be provided with details of the waste material so they can forward it to the sites licensed waste contractor for correct off-site disposal.

All wastes that have the potential to cause environmental harm (e.g. hazardous waste) should be placed in secure areas on site. Adequate containment (bunding) is provided to minimise the potential for spillage or leaching which could affect surface water quality or cause soil contamination. Bunded areas are constructed and operated generally in accordance with the EPA's Technical Guideline "Bunding and Spill Management" and Australian Standard (1940-2004) "The Storage and Handling of Flammable and Combustible Liquids". Particular waste streams, such as waste oil, are also managed to provide that they are safe from likely ignition sources to minimise the risk of fire.

Contaminated Soil

Should there be a need to remove and dispose of soil or aggregates, generally after a contamination event such as oil spills, the material is to be excavated and stockpiled. A member of the Environment and Community team are then to be notified. If the material is not suitable for reuse onsite, an environmental consultant is to be engaged to develop a Waste Classification Report (WCR). Samples are to be taken of the material for laboratorial analysis. Once the report is produced and the materials classification identified, the material is to be disposed at a licenced waste disposal facility legally authorised to accept it.

f. Geology and Geochemistry

Describe the geophysical and geochemical risks related to waste emplacements (e.g. sodic spoils) and ore beneficiation (if any) and outline the management/mitigation measures relevant to rehabilitation (e.g. selective handling and emplacement of materials hostile to plant growth).

The soils within the project area are limited by strong acidity and sodic characteristics (Hazelton & Tille, 2009 and AECOM, 2010). Whilst the topsoil is generally suitable to facilitate germination and revegetation, they will all require appropriate amelioration with gypsum or lime due to the strong acidity found in the topsoil throughout the area and some localised marginally sodic topsoil.

g. Material Prone to Spontaneous Combustion

Describe the potential for spontaneous combustion, including:

- **a summary of previous spontaneous combustion occurrences (if any)**
- **the risk of spontaneous combustion occurrence / propensity for combustion of ores and waste materials**
- **key management measures relevant to rehabilitation of areas where there is material prone to spontaneous combustion.**

Spontaneous Combustion above ground is managed across Tahmoor Coal leases in accordance with the Tahmoor Surface Spontaneous Combustion Management Plan (SCMP).

No instances of spontaneous combustion above ground have been recorded in the past. The potential for the coal mined at Tahmoor Mine to spontaneously combust was assessed by the UniQuest in 2007. This assessment found that the R70 values of Tahmoor Mine coal samples were the lowest recorded for the Sydney Basin coals to date in the UQ database. With values in excess of 20 times less than the coal in the Hunter Valley seams which have a documented history of spontaneous combustion. During the approved mining period for SSD 8445, Tahmoor Coal will be mining the same coal seam tested by UniQuest and as such spontaneous combustion is not expected to occur or pose a risk that could not be managed if required using standard management approaches.

Key management measures include correct inert capping and visual inspections.

h. Material Prone to Generating Acid Mine Drainage

Identify the presence of any potential acid forming (PAF) materials, acid rock drainage issues and other geochemical issues of concern. If relevant, this section must describe the management of these materials to minimise or mitigate adverse impacts to rehabilitation (e.g. acid rock drainage impacts).

The surface water / runoff generated from the mines pit top facilities, stockpile and reject emplacement areas are managed via a connected network of drainage lines, dams etc, with all the surface water reporting to the sites main discharge point, Licenced Discharge Point 1 (LDP1, downstream of Dam M4).

Historically, acid mine drainage has not been an issue at the mine. Monthly surface water monitoring results since 2015 for Licenced Discharge Point 1 (LDP1) support the absence of acid mine drainage occurrence, with pH values ranging in between 7.9 and 9.1 with an average of 8.5. Tahmoor Coal will be mining the same stratigraphy using the same methods of mining. Acid mine drainage is therefore not anticipated to be an issue.

i. Ore Beneficiation Waste Management (Reject and Tailings Disposal)

Describe:

- **the geochemical and geophysical characteristics of the beneficiation waste stream and how it is managed, as well as how the process, including disposal methods (e.g. emplacement facilities), will be designed and managed to reduce risks to rehabilitation (e.g. geotechnical instability, geochemical constraints)**
- **stability issues and associated management/treatment strategies that may relate to tailings dams.**

Tahmoor Mine Coal Handling Preparation Plant (CHPP) does not, under normal operations produce tailings material. Fine reject material is de-watered prior and mixed with coarse reject material to produce reject material with a moisture content of up to 20%. The compaction operation on the emplacement is programmed to coincide with the natural reduction in moisture content of the material. The average compaction achieved on the emplacement is in the order of 95%.

The Rehabilitation and Topsoil Management Procedure (TAH-HSEC-00053) details the reject emplacement handling and deposition processes.

j. Erosion and Sediment Control

Describe the potential for erosion and sedimentation impacts to rehabilitation (e.g. sheet erosion and subsequent loss of fine material from shaped emplacement areas awaiting revegetation). Describe how rehabilitation areas will be managed to minimise and/or mitigate adverse impacts to rehabilitation. Include any interim rehabilitation measures (e.g. interim stabilisation or temporary vegetation measures) that are proposed prior to final rehabilitation measures being undertaken at disturbed areas (e.g. interim rehabilitation to prevent erosion, weed incursion and/or dust generation in areas which may be mined at a later stage).

Erosion and sediment controls are managed in accordance with the Erosion and Sediment Control Plan (ESCP) (TAH-HSEC-00374).

Erosion and sediment control measures implemented on site include, but are not limited, to the following:

- Clean water diversion drains and banks
- Dirty water diversion structures

- Filter fences
- Sediment control dams

Erosion and sediment controls are installed and designed in accordance with the requirements of Managing Urban Stormwater: Soil and Construction Volume 1 (Landcom, 2004) and Volume 2E: Mines and Quarries (DECC, 2008) (the Blue Book).

In addition to these measures, prior to any proposed ground disturbance works, Tahmoor Coal completes a Ground Disturbance Permit to assess the extent of erosion and sediment risk. Regular inspections (monthly and after wet weather events greater than 10mm) are undertaken with maintenance works carried out as required.

During rehabilitation the establishment of stable vegetation cover (either temporary or long term) will serve as the key erosion and sediment control to ensure rehabilitation areas achieve a final landform that is safe, stable and non-polluting. Further measures such as catch drains and filter fences may also be implemented during rehabilitation to mitigate the risk of erosion to rehabilitation areas.

k. Ongoing management of biological resources for use in rehabilitation

Describe:

- **how biological resources (e.g. topsoil stockpile seedbanks) will be effectively managed during the mining and production phase to maintain their integrity for later use in rehabilitation**
- **topsoil stockpile management measures to maintain the viability of the topsoil seedbank (e.g. maximum stockpiling period) and minimise adverse impacts to the seedbank from unwanted species (e.g. weed management)**
- **required topsoil depths for optimal germination, growth and survival of emerging vegetation**
- **methods for propagating native seeds and other propagules, and translocation of species (if applicable)**
- **salvage and storage of habitat structures including tree stags and or hollow bearing timber/logs for later use in rehabilitation.**

Refer to Section **6.2.1** and **6.2.1b** for specific details on the ongoing management of biological resources for use in rehabilitation.

l. Mine Subsidence

- **Include a brief history of any previous occurrences of subsidence events that resulted in impacts to natural features that required rehabilitation**
- **Outline the potential subsidence related impacts to natural features which may subsequently require rehabilitation, which may include, but is not limited to impacts to swamps, wetlands, watercourses, native ecosystems, agricultural land, water catchment areas and surface and groundwater resources**
- **Outline the proposed management measures that may be implemented including subsidence monitoring and any trigger action response plans to remediate impacts.**

Mine subsidence from longwall extraction is an important consideration for Tahmoor Coal. The potential for subsidence impacts on natural and man-made features has been assessed and a number of protection and monitoring measures have been implemented within the relevant Extraction Plans. Consent conditions address this in **Appendix A** which covers the specific environmental conditions for underground mining subsidence management. Subsidence Impact Performance Measure requirements that are to be addressed throughout the management plans, are required under SSD 8445.

Extraction Plans are required to be approved by the Department of Planning, Housing and Industry(DPHI) prior to commencement of mining. The relevant Extraction Plans have been prepared for all second workings, including preparation of management plans, monitoring programs, TARPs and a contingency plan, in accordance with Condition C8. The TARPs and contingency plan identify remediation measures that may be required if exceedances occur.

m. Management of potential cultural and heritage issues

Outline any relevant approved management plans or strategies based on the outcomes of any cultural and/or heritage assessments relevant to the mining lease, which must include an outline of any scope of works and conservation actions.

The management of potential cultural and heritage issues is addressed within the sites Heritage Management Plan (HMP).

No identified Aboriginal sites are expected to require salvage throughout the life of mine, excluding any unexpected finds which will be managed in accordance with the unexpected finds contingency plan as outlined in the HMP. In the event salvage is required, a strategy for the care, control and storage of Aboriginal objects would be developed with appropriate consultation with Registered Aboriginal Parties (RAPs).

n. Exploration activities

Describe the scope of works that may be required to rehabilitate any exploration activities that may continue to be undertaken on a mining lease.

Limited surface drilling exploration activities are proposed in the Tahmoor Leases CCL716 and ML1376 to determine geological structure, coal quality and other investigatory purposes. Surface seismic or other surface exploration may be undertaken for similar purposes as exploration drilling. Extensive underground exploration is undertaken by in-seam drilling and will continue throughout the RMP period.

ESF4 Form Applications will be submitted prior to the commencement of exploration. The applications detailed the specific details of each of the exploration boreholes, as well as details of clearing and rehabilitation requirements. Construction, sealing and decommissioning of boreholes will be undertaken in accordance with relevant standards and guidelines as published by NSW RR. Explorational activities over the next three years will also be detailed in the ARRFP.

6.2.2 Decommissioning

Outline the key processes and activities required to decommission and demolish built infrastructure to achieve the final land use, including any assessments or designs.

Decommissioning and demolition activities required to achieve the final land uses will be outlined and scheduled as part of the mine closure planning process. A conceptual mine closure plan has been developed for Tahmoor Mine. A detailed mine closure plan (DMCP) will be developed on consultation with government and other stakeholders no later than five years prior to the cessation of mining operations at Tahmoor Mine. The DMCP will include details covering the evaluation of re-use opportunities for facilities, infrastructure and services on the site. Most decommissioning works will be planned and undertaken as soon as practicable following the cessation of mining activities, unless alternative post mining land uses are identified or proposed for these assets at the time.

Further detail regarding recommission and demolition activities will be included in the DMCP.

a. Site Security

Detail the security measures to be implemented during and following the decommissioning process to prevent access by members of the public (e.g. during shaft filling operations) and secure rehabilitation areas, including any heritage places or objects and any retained infrastructure items.

Site security will be implemented during decommissioning activities with security to be further reviewed during the development of the DMCP. Security measures to be implemented include:

- Fencing, signage and locked gates, where required
- Security patrols, where necessary
- Site inductions and restricted access

b. Infrastructure to be Removed or Demolished

Identify and describe those site features (e.g. sediment dams), site services (e.g. electricity, water, telecommunications, sewerage, security) and structures to be decommissioned and demolished to achieve the final land use.

Identify and describe those site features (e.g. sediment dams), site services (e.g. electricity, water, telecommunications, sewerage, security) and structures to be decommissioned and demolished to achieve the final land use. identify the key actions, assessments, studies, detailed designs, and regulatory approvals required to decommission and/or demolish built infrastructure in accordance with the development consent granted under the Environmental Planning and Assessment Act 1979, mining lease conditions and any approvals or licences issued by other regulatory agencies.

Infrastructure and services which are not proposed to be utilised by subsequent approved land uses will be removed including:

- Workshop and administration infrastructure
- CHPP and rail infrastructure
- Rail and train loading infrastructure
- Gas drainage facilities
- Drifts and shaft equipment
- Water storage dams not required as part of the final landform
- Services such as power supply and water pipelines etc

Former infrastructure areas will be revegetated unless proposed for other land uses. Prior to demolition, the infrastructure will be evaluated in terms of the presence of hazardous substances and waste. Waste streams will be identified with waste disposed. If applicable, appropriate management strategies to protect employees and the public, and to minimise harm to the environment will be developed. Demolition works will be carried out in accordance with Australian Standard AS 2601-2001: The Demolition of Structures (or the latest version).

Services will be removed unless they are to be utilised as part of the post mining land use. Electricity services to any remaining infrastructure will be removed prior to the commencement of any associated building demolition works. Telecommunications, water supply and other services will also be disconnected and removed, where practical. Where services are buried (i.e. pipelines, cables, etc.) and their retrieval may lead to further disturbance, the infrastructure may be left in situ provided they do not pose constraints to the postmining land use. In this situation, the location of the services will be surveyed and marked on the record tracings and a suitable caveat developed to provide that they are readily identifiable for future land holders.

Dams forming part of the mine water management system will be removed unless they are repurposed and utilised for habitat purposes, are associated with long-term stability and water management, or are beneficial to subsequent land uses (e.g. stock dams). As part of this, process water from existing dams that are no longer required maybe pumped underground workings.

Removal of sediment from mine or dirty water dams will occur as required as part of the closure and rehabilitation processes, regardless of the suitability of the dams for other purposes.

c. Buildings, Structures and Fixed Plan to be Retained

Identify and describe those areas and structures (including infrastructure) to be retained for future use as part of the final land use.

All infrastructure is currently planned to be decommissioned following the cessation of mining, however as part of the mine closure process, infrastructure which is proposed to be utilised by subsequent approved land uses will be retained, as required.

For infrastructure that is to remain, a structural assessment will be prepared by a suitably qualified and experienced person. The assessment will:

- Determine the integrity of the structure
- Identify the associated risks to public safety, the environment and any potential modes of failure.

Decommissioning of infrastructure will be further discussed in the DMCP.

d. Management of Carbonaceous/Contaminated Material

Detail the process that will be implemented to identify and appropriately manage any risks associated with the potential occurrence of carbonaceous and or contaminated material.

Excess material remaining at closure will be collected and either reprocessed or disposed of within the reject emplacement area, underground workings, or as per applicable waste legislation.

Carbonaceous material will be suitably capped to support the final land use, or removed to the reject emplacement area and rehabilitated. Management of carbonaceous material at the decommissioning phase will be undertaken in accordance with the process described in Section 6.2.1 (a).

Soils within and surrounding former infrastructure areas will be assessed for potential contamination. Any contamination present will either be remediated, or appropriately disposed of. Contaminated material will be managed in accordance with the guidelines under the *Contaminated Land Management Act 1997*. Management of contaminated material will also be undertaken in accordance with the process described in Section 6.2.1 (e).

e. Hazardous Materials Management

Detail the process that will be implemented to identify and appropriately manage, including any treatment or removal, of any hazardous materials (e.g. hydrocarbons and chemicals) that exist following the cessation of an operation.

Hazardous materials will be managed as per the Tahmoor Mine Waste Management Plan (TAH-HSEC-00106) and applicable Australian Standard (AS) requirements, including AS 1940:2017 - The storage and handling of flammable and combustible liquids, relevant Safety Data Sheets (SDS), as well as applicable legislation relating to hazardous material management and disposal.

All remaining materials on site at closure including hydrocarbons such as diesel, lubricants and other hazardous materials will be either utilised or disposed of at an authorised facility. The storage tanks will be removed and depending on their condition, either sold or disposed of at an authorised facility.

Hazardous materials management will be further discussed in the DMCP.

f. Underground Infrastructure

Identify and describe how underground mining infrastructure will be decommissioned to achieve the final land use.

Decommissioning of underground mining infrastructure will occur as soon as practicable following the completion of mining operations. All decommissioning works will be undertaken in accordance with agency approval conditions, legislation and guidelines, including (but not limited to):

- CCL 716
- ML 1376

- ML 1308
- ML 1539
- ML 1642
- CCL 747
- MDG6001 Guideline for the Permanent Filling and Capping of Surface Entries to Coal Seams (Department of Trade and Investment, Regional Infrastructure and Services – Mine Safety Operations, 2012).
- EDG01 Borehole Sealing Requirements on Land: Coal Exploration (Department of Trade and Investment, Resources and Energy, 2012)
- Section 92 (1) of the Coal Mine Health & Safety Act, 2002 (as amended)

Underground Sealing

In preparation for decommissioning a number of activities will be undertaken, including:

- Preparation of an accurate survey plan of the drift or ventilation shaft, including documentation of the conditions at the time of closure.
- Removal of any disused equipment where practicable and any material that has the potential to cause pollution.
- Removal of any hazardous materials and disposal at an approved waste disposal facility.
- Consideration of the potential for accumulation of gas and groundwater within the workings and any measures required to seal the shaft and / or mitigate the potential risks.
- Consideration of security measures to be implemented post sealing.
- Liaison with the relevant regulatory bodies regarding the specific decommissioning and rehabilitation requirements.
- Preparation of detailed plans specifying the proposed engineered seal for the drift.

The final design of the shaft fill and type of fill material to be used will be dependent upon whether it is acceptable by the Resources Regulator.

Gas Extraction Plant

Following the removal/demolition of the gas drainage plant, the gas drainage boreholes will be sealed in accordance with relevant guidelines.

Power Station

The power station, which is fed from the adjacent gas drainage plant, is operated and maintained by Environment Development Leaders (EDL), and has been excluded from the Tahmoor Mine mining lease. The plant and equipment will be decommissioned and removed by EDL; however, as owner of the land, Tahmoor Coal will be required to undertake rehabilitation of the site. Decommissioning of the plant will occur concurrently with the demolition of the gas extraction plant.

6.2.3 Landform establishment

Provide an overview of the key characteristics of the final landform as shown in the final landform and rehabilitation plan.

The following sections provide an overview of the key characteristics of the final landform as shown in the final landform and rehabilitation plan **FLRP Plan 1** and **FLRP Plan 2** in **Section 5.1**). The design and establishment of the final landform will include the continued use of natural landform design processes incorporating micro-relief principles, consistent with the existing mining operations.

Tahmoor Mine aims to return the site to a condition where the landforms, soils, hydrology and vegetation are safe, stable, non-polluting and sustainable and compatible with the surrounding land uses.

a. Water management infrastructure

Detail the location, treatment and or rehabilitation of water management infrastructure.

The final design of the water management system will be dependent upon the outcomes of the final land use study and will be detailed within the DMCP. However, depending on the chosen final land use, issues that will need to be considered as part of future water management system may include removal of excess sediment from the dams for future use by the subsequent landowner or alternatively filling and shaping of the dams if they are no longer required, and the installation of sediment and erosion control measures for areas where drainage by-passes the surface dams and is discharged off site.

For the purpose of the planned mine closure costs; provision has been included for de-silting the M4 dam as well as any temporary dams within the domain. It is proposed to undertake contamination assessments as well as any necessary remedial works on M3 and M4 dams prior to rehabilitation in these areas. The assumptions should be revised following the selection of a final land use option and design of the final landform for the site.

b. Final landform construction: general requirements

Detail how the final landform design will be constructed to address the following issues:

- **potential geotechnical/geochemical and erosional issues**
- **incorporating characteristics of surrounding landforms into the final landform design (e.g. macro and micro-relief) and general considerations for the visual amenity of the final landform**
- **surface water management to optimise landform stability and integration with surrounding catchments.**

The final landform design for rehabilitated areas of the Tahmoor Coal lease area will be subject to a geotechnical review to be undertaken by a suitably qualified and experienced engineer during the DMCP. The purpose of this review is to ensure the final landform will be constructed to a condition that supports the preferred final land use and is safe, stable and non-polluting.

Construction of the final landform will involve reprofiling the site to reduce slope lengths and ensuring all benches are geotechnically stable. Where necessary, contour banks will be constructed and drainage channels will be armoured to achieve landform stability. The final landform design will aim to mirror the natural and existing geography of the land adjacent to rehabilitation areas.

The final landform design may also incorporate water management infrastructure as required to support the preferred final land uses. Specific details of water management strategies to be incorporated into the final landform design will be assessed as part of the conceptual mine closure planning process.

c. Final landform construction: Reject emplacement areas and tailings dams

Detail:

- **methods to construct the final landform over reject emplacement areas and tailings dams to a condition/capability that supports the final land use**
- **how the rehabilitation design and management measures (e.g. capping design and dewatering strategies) will be implemented (and their associated timeframes) to address potential geotechnical/geochemical/erosional risks of achieving a sustainable rehabilitation outcome.**

There are no tailings dams associated with the operation and rehabilitation of Tahmoor Mine. The Reject Emplacement Area (REA) will continue to be rehabilitated on a stage-by-stage basis to a condition which is safe, stable, non-polluting and is supportive of the proposed final land use of the site.

Tahmoor Mine will consider the following during the ongoing development of the final REA landform:

- Adequate definition of the final land use
- Geotechnical stability, structural integrity and potential to create long term issues

- Capping and cover types, including volumes of material required for construction
- Erosion stability and drainage.

The TAH-HSEC-00053 Rehabilitation and Topsoil Management Procedure details the reject emplacement handling and deposition processes.

d. Final landform construction: final voids, highwalls and low walls

Identify the key design features (e.g. size, depth, orientation and location) and processes associated with any final void(s) approved in the development consent, and how the design minimises impacts to public safety and reduces the sterilization of land available for future final land uses. Describe any additional strategies or requirements prescribed in the development consent that relate to final voids.

There are no final voids, highwalls or low walls associated with the operation and rehabilitation of Tahmoor Mine .

e. Construction of creek/river diversion works

Describe studies required for the detailed design including (but not limited to) geomorphological and hydraulic modelling and aquatic ecological assessments. Detail the construction of any creek or river diversion works that will form part of the final landform, including relevant approvals from government agencies required for the construction/diversion.

There are no designated creek or river diversion works proposed to be undertaken during the operation and rehabilitation of Tahmoor Mine however drainage diversion works will be undertaken as required to the ensure appropriate separation of clean and mine water systems across site.

6.2.4 Growth medium development

Outline how rehabilitation areas will be prepared with growth media (e.g. vegetation substrate) suitable for establishing vegetation in accordance with the approved final land use (e.g. agriculture, native ecosystems).

Tahmoor Mine has developed rehabilitation methodologies to assist the site in achieving the rehabilitation objectives and completion criteria. Rehabilitation to achieve objectives generally take the form of direct seeding of tree, shrub and groundcover species into a growing medium established using stockpiled soil and mulch material.

Surface preparation activities for rehabilitation areas will be conducted as soon as practicable following the completion of bulk shaping activities.

Growth medium development management activities include:

- Analysis and benchmarking of topsoil material, including depth and chemical composition prior to application
- Use of erosion and sediment controls to reduce soil loss
- Topsoil stockpile management (refer Section 6.2.1a)
- Placement of topsoil on prepared rehabilitation surfaces
- Application of appropriate ameliorants, if required
- Integration of topsoil, ameliorants and seed bed preparation work through double ripping
- Seeding and planting to appropriate find land use
- Weed management including herbicide treatment application prior to use of topsoil and follow up treatments, as required

Topsoil and growth medium development management is further detailed in the TAH-HSEC-00053 Rehabilitation and Topsoil Management Procedure.

6.2.5 Ecosystem and land use establishment

Describe how the target vegetation associated with the final land use will be established and subsequently managed to progress to the ecosystem and land use development phase

Tahmoor Mine has planned the final landform vegetation types based on the final landform design presented in FLRP Plan 1 and Plan2. Vegetation establishment practices will generally be consistent with those outlined within **Section 6.2.1b.**

Vegetation Types

Tahmoor Coal will rehabilitate the REA and any other applicable disturbed land via direct seeding or planting with tube stock, depending on the rehabilitation objectives for the area, in accordance with the TAH-HSEC-00053 Rehabilitation and Topsoil Management Procedure.

Native tree and shrub seed are appropriately pre-treated to break innate dormancy mechanisms and mixed with a cover crop of oats. Species chosen for rehabilitation are comprised of a large portion of diagnostic species of the plant community types recorded in undisturbed adjacent habitat. Areas of revegetation will aim to mimic the species composition of Shale Sandstone Transition Forest. The list below was originally derived from Reject Emplacement Area Permanent Rehabilitation Monitoring – Establishment and First Phase Monitoring Plan (AECOM, 2011). Species likely to be utilised to achieve final rehabilitation outcomes include:

- Acacia decurrens
- A. longifolia
- A. falcata
- A. suaveolens
- A. terminalis
- Angophora floribunda
- Allocasuarina littoralis
- Banksia spinulosa
- Brachychiton populneus
- Dianella revoluta
- Eucalyptus globoidea
- E. punctata
- E. scerophylla
- E. tereticornis
- E. agglomerata
- Hakea dactyloides
- Hakea sericea
- Hardenbergia violaceae
- Kunzea ambiqua
- Kennedia rubicunda
- Lomandra obliqua
- Syncarpia glomulifera

This list will be revised as required during the DMCP process.

Monitoring

Annual inspections (further detailed in Part 8 – Rehabilitation Monitoring Program (TAH-HSEC-00012)) of rehabilitated areas will be undertaken over the life of the mine to assess soil conditions and erosion, drainage and sediment control structures, assessment of runoff water quality, revegetation germination rates, plant health and weed infestation. In preparation for the walkover inspection aerial photography, LIDAR and field observations from site staff may be considered to target any areas where adverse rehabilitation outcomes may be potentially occurring.

Outcomes of the annual rehabilitation inspection will be recorded and any required management actions that are identified as part of the inspection implemented as required. Where necessary, rehabilitation procedures will be amended accordingly with the aim of continually improving rehabilitation standards.

The monitoring program will be undertaken in association with offset monitoring, using similar monitoring methods. The results of the offset monitoring will be used to provide recommendations for mine rehabilitation maintenance work.

6.2.6 Ecosystem and land use development

Detail how rehabilitated lands will be actively managed to achieve the approved final land use.

Rehabilitated lands are actively managed to ensure that the rehabilitation is sustainable and can be demonstrated to have achieved the approved rehabilitation objectives, rehabilitation completion criteria and the final landform and rehabilitation plan.

A provision for management and maintenance of rehabilitated areas has been included in the planned closure costing. The management and maintenance program will include, as required, measures such as:

- weeds and feral animal control
- erosion and drainage control works
- environmental monitoring and management of surface water, groundwater, acid drainage, spontaneous combustion, ecology and land capability in line with other approved environmental management plans required by the development
- re-seeding/planting of rehabilitation areas that may have failed (e.g. lack of germination, high plant mortality rate, adverse weather conditions, bushfire etc) or require the establishment of later phase successional species
- repair of fence lines, access tracks and other general related land management activities.

A monitoring program will be completed in accordance with Part 8 – Rehabilitation Monitoring Program (TAH-HSEC-00012). Information from the program will also be used to refine closure criteria and modify rehabilitation procedures as required. The monitoring will be completed until it can be demonstrated that rehabilitation has satisfied the completion criteria.

6.3 Rehabilitation of areas affected by subsidence

Describe subsidence remediation processes that may be required to rehabilitate subsidence impacts.

Where surface cracks as a result of subsidence are small, it is not anticipated that intervention will be required, as these cracks tend to self-seal after a few rainfall events as fine sediments wash into and seal up the cracks. Where cracks are large, or are not self-sealing, further remediation works will then be undertaken where required behind the advancing face of the longwall as soon as practical post-subsidence.

Rehabilitation of subsidence cracks will be undertaken as soon as practical post-subsidence. This will include as appropriate:

- Carrying out inspections over subsided areas and locating surface cracking.
- Undertaking minimal clearing, if required, of areas around cracks to allow for ripping and seeding.
- Ripping and seeding of areas where required. Following initial ripping and seeding, if trees are to be planted, they will not be planted until sufficient rain has fallen. This will enable the soil to consolidate, and finer particles to fill underground air pockets. Otherwise, if not done, air pockets can cause roots to dry out which will result in poor growth rates or seedling deaths.

- Seeding and/or planting appropriate species of vegetation to achieve a post-subsidence land use the same as that pre-subsidence (i.e. low intensity cattle grazing).
- Subsided areas to be regraded and some may be backfilled with mine spoil to control surface water flow and minimise erosion and sedimentation. Drainage works such as graded banks and diversion drains may be used to partially drain the larger subsidence voids and direct water into stable areas or sediment control dams.

For areas where ripping is not feasible due to the width of cracks:

- Topsoil will be stripped and stockpiled;
- Clay material will be imported to fill and seal cracks;
- Topsoil will be respread once cracks have sealed; and
- The area will be seeded with appropriate plant species

Where required, stock will be excluded from subsided and rehabilitated areas, including riparian areas, to prevent injury to animals and to increase grass cover and seed store. This will be achieved through the erection of fences in consultation with the relevant landholder(s). Where required, people will also be excluded and appropriate signage warning of the potential hazards due to subsidence will be erected. The rehabilitation undertaken on subsided areas will be monitored annually. Where the regeneration of dominant species disturbed by remediation works does not occur within one year, additional vegetation will be seeded or planted as required. Further information will be available in the relevant Extraction Plan.

7 Part 7 – Rehabilitation quality assurance process

Describe the rehabilitation quality assurance process that will be implemented throughout the life of an operation.
The rehabilitation quality assurance process addresses the key actions and processes for each of the rehabilitation phases. The purpose of the process is to: • Implement the rehabilitation in accordance with the nominated methodologies • Adequately identify risks to rehabilitation before proceeding to the next phase of rehabilitation. The quality assurance process will be implemented throughout the life of the operation, refer to **Table 5 Rehabilitation Quality Assurance.** Further, in accordance with Conditions E15 – E20 of the SSD 8445, Tahmoor Coal will complete Independent Environmental Audits of the development at the frequencies determined within DPE's Independent Audit Post Approval Requirements (2020).

Table 5 Rehabilitation Quality Assurance

Rehabilitation Phase	Quality Assurance Actions and Processes	Responsibilities for Implementation	Method for documenting and recording process	Method and timeframe for reviewing and refining process
Active Mining	Up to date mine plans. Pre-clearance surveys. Maintenance of topsoil inventory to document stripped, stockpiled and re spread of resources. Inspections of erosion and sediment controls. Weed management, control programs and inspections. Routine and ad-hoc inspections and monitoring.	Technical Services Manager Environment and Community Manager	Inspections and documentation. Pre-clearing survey forms. Annual Rehabilitation Inspection including topsoil inventory. Long-term Rehabilitation Monitoring Annual rehabilitation monitoring and reporting in the ARRFP. TAH-HSEC-00053 Rehabilitation and Topsoil Management Procedure. Weed management monthly reports.	Process reviewed annually and/or following an incident.
Decommissioning	Inspections and demolition reports to confirm all infrastructure has been removed. Validation testing to ensure any contamination has been appropriately remediated and/or removed prior to commencing the next phase of rehabilitation.	Environment and Community Manager	Inspections and documentation. Validation Reports. Waste Disposal Records. Compliance reporting.	Process reviewed annually and/or following an incident.
Landform Establishment	Survey and preparation of as-constructed drawings of final constructed slopes, landforms and water drainage structures. Constructed landforms are to be confirmed as being generally in accordance with the final landform prior to commencing to the next rehabilitation phase.	Technical Services Manager Environment and Community Manager	As-built landform survey records. Rehabilitation handover form. Annual Rehabilitation Inspection including topsoil inventory. Long-term Rehabilitation Monitoring Annual rehabilitation monitoring and reporting in the ARRFP. TAH-HSEC-00053 Rehabilitation and Topsoil Management Procedure.	Process reviewed annually and/or following an incident.

Rehabilitation Phase	Quality Assurance Actions and Processes	Responsibilities for Implementation	Method for documenting and recording process	Method and timeframe for reviewing and refining process
Growth Medium Development	Maintenance of topsoil inventory. Soil testing. Weed management of topsoil stockpiles prior to application. Ameliorants applied as required. Geochemical parameter testing. Recording depths of ripping and rehabilitation. Inspection to confirm growth medium materials have been applied appropriately prior to application of seed and/or tube stock.	Environment and Community Manager	Inspections and documentation. Annual Rehabilitation Inspection including topsoil inventory. Long-term Rehabilitation Monitoring Annual rehabilitation monitoring and reporting in the ARRFP. TAH-HSEC-00053 Rehabilitation and Topsoil Management Procedure. Weed management monthly reports.	Process reviewed annually and/or following an incident.
Ecosystem and Land Use Establishment	Verification of correct seed mix/plant species and application area prior to seeding. Seeding and planting activities. Weed and feral pest management. Rehabilitation monitoring.	Environment and Community Manager	Rehabilitation monitoring procedure. Weed management monthly reports. Vertebrate pest control reports Ecological monitoring reports Annual Rehabilitation Inspection including topsoil inventory. Long-term Rehabilitation Monitoring Annual rehabilitation monitoring and reporting in the ARRFP.	Process reviewed annually and/or following an incident.

Rehabilitation Phase	Quality Assurance Actions and Processes	Responsibilities for Implementation	Method for documenting and recording process	Method and timeframe for reviewing and refining process
Ecosystem and Land Use Development	Weed and feral pest management. Rehabilitation monitoring.	Environment and Community Manager	Rehabilitation monitoring procedure. Weed management monthly reports. Vertebrate pest control reports Ecological monitoring reports Annual Rehabilitation Inspection including topsoil inventory. Long-term Rehabilitation Monitoring Annual rehabilitation monitoring and reporting in the ARRFP.	Process reviewed annually and/or following an incident.

8 Part 8 – Rehabilitation monitoring program

Develop and implement a Rehabilitation Monitoring Program to evaluate the progress of rehabilitation towards fulfilling rehabilitation objectives and rehabilitation completion criteria (including any baseline monitoring at analogue sites).

Tahmoor Coal has developed and implemented an annual rehabilitation monitoring program in accordance with Biodiversity Management Plan (TAH-HSEC-00378), which has been developed based on various Australian government guidelines for mine closure and rehabilitation, and various scientific research papers on soil science and rehabilitation.

The annual rehabilitation program consists of two main parts:

- Annual Rehabilitation Inspection (assessment of all rehabilitated areas to confirm trajectory towards completion criteria).
- Long-term Rehabilitation Monitoring Sites (detailed evaluation of permanent monitoring transects located throughout rehabilitated areas compared to analogue sites to monitor progress over time towards achieving completion criteria).

The intent of Tahmoor Coal's rehabilitation monitoring program is to measure the success of rehabilitation, using consistent methods year to year, so results are comparable and improvement actions can be tracked over time. Rehabilitation monitoring is conducted over all phases of rehabilitation, with the greatest emphasis on the Ecosystem Development stage of the rehabilitation phase.

Outcomes of the annual rehabilitation monitoring inspections are recorded and compiled into a report, with improvement actions that are identified as part of the inspection entered into the site action database for tracking and implementation. Improvement actions include care and maintenance activities such as additional seeding or fertilizer, weed management, and erosion repair to improve the quality of rehabilitation areas where deficiencies are identified during the annual monitoring. Improvement actions may also trigger changes to rehabilitation procedures, so rehabilitation methods and standards can be continually improved.

The Annual Rehabilitation Inspection includes an assessment of the following **indicators** for sites:

- Evidence of soil profile development;
- Visual assessment of surface materials;
- Evidence of erosion;
- Stability and function of erosion and sediment control structures;
- Growth rates;
- Evidence of plant mortality or dieback;
- Species diversity, including both native and weed species;
- Presence of overstorey, mid-storey and understorey species;
- Evidence of reproductive potential;
- Evidence of biological nutrient cycling;
- Occurrence of potholing or slumping;
- Evidence of spontaneous combustion; and
- Evidence of contamination or other limitations to vegetative establishment.

The long-term Rehabilitation Monitoring includes an assessment of the following **indicators** at permanently established monitoring transects each year:

- General site description of vegetation;
- Assessment of reproductive potential of the existing vegetation and soils (soil sampling and lab analysis);
- Number of plants of all species (excluding grasses);
- Measure live vegetation cover for under storey and grasses (separately) using a line intercept method;

- Record details of ground cover (leaf litter, logs and rocks);
- Tag and measure DBH of trees >1.6 m tall, to a maximum of 10 for any one species;
- Record canopy cover over 20 m centreline (when trees are tall enough);
- Subjectively describe tree health, by species if relevant, noting signs of drought stress, nutrient deficiencies, disease and severe insect attack as percentage;
- Record any new plant species not present in the smaller plots, including any problem and declared noxious weeds;
- Record the location, number and dimension of all gullies, rill and slope wash features; and
- Photographic monitoring of all sites and repair to permanent transect markers (star pickets) as required.

8.1 Analogue site baseline monitoring

Document the baseline monitoring that has and/ or will be carried out to develop rehabilitation completion criteria for approval by the Secretary

Flora and fauna assessments of the Tahmoor Landholdings were undertaken during 2008 as part of fieldwork undertaken for the former owner Glencore Coal New South Wales Biodiversity and Land Management Strategy (BLMS) by Umwelt. The field surveys included general field reconnaissance and non-quantitative flora sampling throughout the study area by car and on foot. The survey was completed from 26 to 28 May 2008. Numerous project specific environmental assessments have been completed since the BLMS surveys, returning consistent results. This baseline information has been utilised as part of the establishment of closure criteria, and for the selection of native species for rehabilitation activities at the site.

Justify the analogue site(s) selection with respect to the final land use(s) for rehabilitation areas.

Two analogue sites (Analogue Site 1 and Analogue Site 2) have been established within nearby areas are used for condition monitoring to measure and evaluate seasonal variation for comparison with rehabilitation vegetation health. Additionally, the sites are used to inform flora species diversity and composition, as an aid to developing final rehabilitation vegetation communities. Analogue sites may also be used in the refinement of completion criteria in conjunction with other scientific studies and data gathered.

8.2 Rehabilitation establishment monitoring

Document the inspection regime that will be implemented at commencement of the ecosystem establishment phase. Describe the appropriate monitoring parameters and methods that will:

- **enable early identification of actual or emerging issues that have the potential to delay revegetation establishment**
- **identify if triggers have been met for preventative or mitigation controls to minimise the impacts of emerging issues in accordance with the trigger action response plan**
- **provide data that may inform continuous improvement of rehabilitation methods.**

Tahmoor Mine undertakes rehabilitation monitoring for newly established and existing rehabilitation monitoring sites in accordance with **Section 8.0**. The monitoring indicators for newly established sites relate to identifying key and dominant species (native and exotic including high threat/priority weeds) to determine germination success and landform stability.

Results against indicators gathered as part of the Annual Rehabilitation Inspection are assessed to determine:

- if there are any emerging risks to rehabilitation, including areas where rehabilitation may be failing and require early intervention.
- identify if triggers have been met for preventative or mitigation controls to minimise the impacts of emerging issues in accordance with the Trigger Action Response Plan.
- provide data that may inform continuous improvement of rehabilitation records.

Maintenance of rehabilitated areas potentially includes fertilising, sediment and erosion control and re-planting or re-seeding as required. The intensity of these activities will be highest over a likely period of two (2) years

following Ecosystem Establishment, however depending on the success of rehabilitation, care and maintenance may be required beyond this period to achieve the identified completion criteria for Ecosystem Development for each domain.

8.3 Measuring performance against rehabilitation objectives and rehabilitation completion criteria

Document the monitoring activities to assess performance against the approved, or if not yet approved, the proposed rehabilitation objectives and rehabilitation completion criteria, and ultimately demonstrate that rehabilitation objectives and rehabilitation completion criteria have been met.

The objective of the rehabilitation monitoring program is to track the progress of rehabilitation works and document any changes in floristics, structure and habitat condition, specifically in relation to rehabilitation objectives and completion criteria. Where appropriate, management recommendations are provided to improve biodiversity values.

This information is included during the Annual Rehabilitation Monitoring walkover and documented in the subsequent Annual Rehabilitation Monitoring Reports.

9 Part 9 - Rehabilitation research, modelling and trials

9.1 Current rehabilitation research, modelling and trials

Summarise the status of any current and ongoing rehabilitation research, modelling and trials carried out by the lease holder (as required) to address any knowledge gaps (as relevant) in relation to:

- **the control or management of risks identified in the rehabilitation risk assessment**
- **the development and further refinement of rehabilitation completion criteria and**
- **the achievement of rehabilitation objectives and rehabilitation completion criteria.**

Creek Remediation

Subsidence impacts from longwall (LW) mining at Redbank Creek (LW25 to LW32) and Myrtle Creek (LW26 to LW28) have resulted in the rock bed fracturing, reduced of pool holding capacity and diversion of surface flow at some impacted sites. Accordingly, Tahmoor Coal developed and implemented a Corrective Management Action Plan (CAMP) to remediate the impact of subsidence effects to Myrtle Creek and Redbank Creek.

Works have been developed in consultation with relevant government departments including, Department of Planning, Housing and Industry (DPHI) – Resources Regulator, DPIE – Planning, Department of Primary Industries (DPI) – Fisheries, Natural Resources Access Regulator (NRAR), Wollondilly Shire Council and the Tahmoor Coal Community Consultative Committee.

The remediation works have been carried at impacted sites in Myrtle Creek and Redbank Creek with the aim to restore post-mining hydrological, ecological and aesthetic characteristics. Specifically, as defined in the Myrtle Creek and Redbank Creek CMAP, the remediation works aims to:

- Protect, to the greatest practicable extent, the ecological values of the area;
- As close as practicably possible, restore the post-mining ecosystem function and aquatic ecology to that of pre-mining conditions;
- Improve the post-mining aesthetic conditions of the creeks;
- As close as practicably possible, restore the post-mining pool water level recession rates to pre-mining water level recession rates; and
- Reduce the interaction between surface water and groundwater where this has been enhanced through mining impacts.

Myrtle Creek Pool 23 was the first site remediated in February 2020. Pool 23 trial involves the construction of a grout curtain wall at a depth where the fracture network has been detected. Boreholes are drilled across the creek bed, polyurethane grout (PUR) is then injected into the boreholes to create an impermeable layer providing a barrier for subsurface stream flow, with the objective to reduce subsurface flow pathways promoting surface flow and pool holding capacity. PUR has been used successfully for creek rehabilitation in Sydney Catchment Authority areas as it has minimal ecotoxicological effects and has proven highly effective.

Learnings from Pool 23 trial were used to confirm and refine the remediation methodology to subsequent pools within Myrtle and Redbank Creek. Mapping of pools including geomorphological characteristics, ground characterisation studies (including drilling and permeability testing), and remediation of 21 pools have been completed to date at Myrtle and Redbank Creek. The extent of the remediation works at Myrtle and Redbank Creek is expected to be completed in 2023.

Grass Planting Trials (REA)

Grass planting trials where the survival and growth of planted grass species in areas where the existing vegetation (within revegetation areas) was sparse will continue to be assessed as part of the annual rehabilitation monitoring program. The findings will be used to develop and refine seed mixes and completion criteria as an ongoing process.

Details on the progress of these research and trial programs will be reported in the ARRFP.

9.2 Future rehabilitation research, modelling and trials

Outline future rehabilitation research, modelling or trials proposed to be carried out by the lease holder to address any risks identified in the rehabilitation risk assessment and any knowledge gaps to meet the rehabilitation objectives and rehabilitation completion criteria (if applicable).
Revegetation techniques will be continually developed and refined through a continual process of research, trialling, monitoring, and improvement associated with the update and review of the relevant plans and procedures, in line with the Tahmoor Coal Rehabilitation Strategy. There are currently no specific rehabilitation trials proposed for Tahmoor Mine, however Tahmoor Coal will investigate potential opportunities for rehabilitation trials over the next reporting period and will update this plan accordingly. Further assessments of topsoil material availability will be undertaken in Year 3 of the Forward Program and further assessed as part of the mine closure planning process to quantify any material imbalances that may exist.

10 Part 10 – Intervention and adaptive management

Outline the rehabilitation trigger action response plans (TARPs) and other contingency strategies that will be implemented when rehabilitation monitoring indicates that there are emerging threats to rehabilitation or rehabilitation is not on a trajectory to achieving the final land use. In addition, this part must outline how the results of rehabilitation research and trials will be integrated to continually improve rehabilitation practices.
The rehabilitation monitoring program as outlined in **Section 8** will be used to identify any maintenance actions required and whether further works are required to achieve specific closure criteria. The rehabilitation care and maintenance program will be undertaken following the completion of rehabilitation activities at the site and will be utilised to facilitate the sites rehabilitation progression towards achieving the closure criteria. The following Trigger Action Response Plans (TARP) have been developed to identify required management actions in the event of impacts to rehabilitation, or where rehabilitation outcomes are not achieved in an acceptable timeframe. Where necessary, rehabilitation procedures will be amended accordingly with the aim of continually improving rehabilitation standards. The rehabilitation monitoring program will trigger response actions as specified in the TARP. The TARP below will be reviewed and may be revised as conditions at Tahmoor Mine change or new threats to rehabilitation are identified.

Trigger Action Response Plan

Aspect/ Category	Key Element	Trigger Response	Level 1 No action required	Level 2 Actions required to be completed within 12 months if deemed necessary, otherwise continue monitoring	Level 3 Actions required to be completed within 12 months
Landform stability	Slope gradient	Trigger	Rehabilitated overburden areas have slopes that are generally <10˚.	Rehabilitated overburden areas have slopes >10° but <14˚.	Rehabilitated overburden areas have slopes >15°.
		Response	No response required. Continue monitoring program.	Undertake a review of the landform design and if required undertake regrading and revegetation of the area, if it is not designed to be >10° <14˚.	Undertake a review of the landform design, including survey if required. Undertake regrading and revegetation of the area, if required.
	Erosion control	Trigger	No gully or tunnel erosion. No rilling present.	Minor gully or tunnel erosion present and/or rilling <200 mm deep.	Significant gully or tunnel erosion present and/or rilling >200 mm deep.
		Response	No response required. Continue monitoring program.	A suitably trained person to inspect the site. Investigate opportunities to address erosion issues. Remediate as appropriate.	Undertake a review of the drainage of the area and provide recommendations to appropriately remediate the erosion. Remediate as soon as practicable.
	Drainage Condition	Trigger	Drainage condition is in accordance with the design criteria established within this document.	Landforms exhibiting minor drainage issues but does not threaten to cause rehabilitation failure.	Landforms exhibiting significant drainage issues, threatening or causing rehabilitation failure.
		Response	No response required. Continue monitoring program.	A suitably trained person to inspect the site. Investigate opportunities to address issues. Remediate as appropriate.	Undertake a review of the drainage design and provide recommendations to appropriately remediate the area. Remediate as soon as practicable.

Aspect/ Category	Key Element	Trigger Response	Level 1 No action required	Level 2 Actions required to be completed within 12 months if deemed necessary, otherwise continue monitoring	Level 3 Actions required to be completed within 12 months
Water Quality	Monitoring parameters	Trigger	Surface water quality of runoff from rehabilitation areas is within EPL criteria and rehabilitation performance criteria established within this document or is managed by the site dirty water management system.	Water quality exceeds EPL or performance criteria but does not indicate a long term rehabilitation issue or is managed by the site dirty water management system.	Water quality exceeds criteria, indicating a long term rehabilitation liability, and not contained within the site dirty water management system.
		Response	No response required. Continue monitoring program.	Review and investigation of water quality monitoring and management where appropriate. Implement relevant remedial measures where required.	Reporting as per PIRMP and all statutory reporting requirements. Implement relevant responses and undertake immediate review to determine source of issues and implement identified remediation measures as soon as practicable.
Spontaneous Combustion	Evidence of Spontaneous Combustion	Trigger	No evidence of spontaneous combustion in rehabilitation areas.	Isolated incidence of heating in rehabilitation areas.	Widespread or repeated incidences of ignition in rehabilitation areas.
		Response	No response required. Continue monitoring program.	Investigate sources of potential ignition. Excavate material with propensity for spontaneous combustion in proximity to rehabilitated surface. Review overburden/coarse reject emplacement practices.	Develop remediation plan to mitigate spontaneous combustion such as increased capping. Review Spontaneous Combustion Management Plan and material emplacement practices.
Topsoil Availability	Topsoil quantity	Trigger	Sufficient topsoil identified for rehabilitation over the RMP term and for the LOM.	Topsoil balance indicates a deficiency in topsoil available for rehabilitation over the LOM.	Deficiency significant enough to delay rehab progression during the RMP term

Aspect/ Category	Key Element	Trigger Response	Level 1 No action required	Level 2 Actions required to be completed within 12 months if deemed necessary, otherwise continue monitoring	Level 3 Actions required to be completed within 12 months
		Response	No response required.	Investigate options and alternatives to be able to meet future topsoil requirements. Continue direct seeding on spoil where possible and approved.	Source and budget for purchasing topsoil for use in rehabilitation. Investigate use of alternatives.
Vegetation	Ground cover	Trigger	Five years following revegetation to woodland, a minimum of 70% total ground cover (vegetation, leaf litter, mulch) is present within rehabilitated areas.	Five years following revegetation to woodland, total ground cover (vegetation, leaf litter, mulch) of between 55-70% in rehabilitated areas.	Five years following revegetation to woodland, total ground cover (vegetation, leaf litter, mulch) is <55% within rehabilitated areas.
		Response	No response required. Continue monitoring program.	Review procedures where required to increase vegetation cover.	A suitably trained person to inspect the site. Investigate use of appropriate management options to remediate. Remediate as appropriate.
		Trigger	Five years following revegetation to grassland, vegetative cover is at least 80% over a minimum of 95% of areas treated.	Five years following revegetation to grassland, vegetative cover is between 65-80% over a minimum of 95% of areas treated.	Five years following revegetation to grassland, vegetative cover is <65% over a minimum of 85% of areas treated.
		Response	No response required. Continue monitoring program.	Review procedures where required to increase vegetation cover.	A suitably trained person to inspect the site. Investigate use of appropriate management options to remediate. Remediate as appropriate.
	Weed presence	Trigger	Twelve months following revegetation, no significant weed infestations present.	Twelve months following revegetation, >10% but <25% cover of undesirable species present.	Twelve months following revegetation, >25% cover of undesirable species present.

Aspect/ Category	Key Element	Trigger Response	Level 1 No action required	Level 2 Actions required to be completed within 12 months if deemed necessary, otherwise continue monitoring	Level 3 Actions required to be completed within 12 months
		Response	No response required. Continue monitoring program.	Engage weed management contractor to remove introduced species from the site.	Engage weed management contractor to remove introduced species from the site as soon as practicable. Investigate management measures to assist native plant establishment including use of ameliorants and additional ground covers and implement as soon as practicable.
	Species composition	Trigger	Five years following revegetation to woodland, species composition comprises native tree and shrub species consistent with analogue site.	Five years following revegetation to woodland, native tree and shrub species composition comprises <75% consistent with analogue site.	Five years following revegetation to woodland, native tree and shrub species composition comprises <60% consistent with analogue site.
		Response	No response required. Continue monitoring program.	Review native seed mix and amend accordingly. Consider remedial actions such as tube stock planting or re-seeding to achieve required species composition.	An inspection of the site will be undertaken by a suitably trained person. Investigate remedial options to achieve required species composition.
		Trigger	Two years following revegetation to grassland, species composition consists of grasses and groundcover species are consistent with analogue site.	Two years following revegetation to grassland, <75% of grasses and groundcover species are consistent with analogue site.	Five years following revegetation to grassland, species composition comprises <50% consistency with analogue site.
		Response	No response required. Continue monitoring program.	Investigate additional weeding and re-seeding where required and ensure seed mix utilised is consistent with desired species composition.	An inspection of the site will be undertaken by a suitably trained person. Investigate remedial options to achieve required species composition.

Aspect/ Category	Key Element	Trigger Response	Level 1 No action required	Level 2 Actions required to be completed within 12 months if deemed necessary, otherwise continue monitoring	Level 3 Actions required to be completed within 12 months
Biodiversity	Habitat features	Trigger	Monitoring indicates rehabilitation is being successfully established and consistent with the desired vegetation community composition and being utilised for fauna species movement.	Revegetation is being successfully established and consistent with the desired vegetation community composition however are not being utilised for fauna species movement.	Monitoring indicates that rehabilitation vegetation does not contain the desired vegetation community composition and is not being utilised for the movement of fauna species.
		Response	No response required. Continue monitoring program.	Investigate whether sufficient habitat features (rock piles, felled hollow bearing trees, nest boxes etc.) are available and have been incorporated into the rehabilitation areas.	Engage ecologist to recommend remedial rehabilitation works such as additional planting or seeding, soil amelioration, or weed reduction. Ensure sufficient habitat features are available for fauna.
Pest Species	Damage to rehabilitation by Pest Species	Trigger	Monitoring indicates rehabilitation is being successfully established and consistent with no ongoing impacts from feral animal species.	Monitoring indicates rehabilitation is being moderately impacted by feral animal species, affecting vegetation cover and seedling recruitment.	Monitoring indicates rehabilitation is being heavily impacted by feral animal species, affecting vegetation cover and soil stability.
		Response	No response required. Continue monitoring program.	Engage vertebrate pest contractor to implement management program in rehabilitation areas.	Engage vertebrate pest contractor to implement management program. Investigate longer term management actions in rehabilitation and surrounding areas.
Bushfire	Fuel load	Trigger	Fuel loads are assessed and managed as required (including maintaining firebreaks) and there is firefighting access across rehabilitation areas and water resources available for fighting fires.	Monitoring indicates fuel loads have not been managed and fire breaks have not been maintained. In the event of a fire, this would result in firefighters not being able to access the site or water resources.	A fire on site damages rehabilitated areas.

Aspect/ Category	Key Element	Trigger Response	Level 1 No action required	Level 2 Actions required to be completed within 12 months if deemed necessary, otherwise continue monitoring	Level 3 Actions required to be completed within 12 months
		Response	No response required. Continue monitoring program.	Reduce fuel loads and ensure access tracks are cleared. Inspect water sources are and ensure sufficient water is available.	Review and update (if required) the Bushfire Management Plan to ensure monitoring and maintenance is completed for fuel loads, access tracks, and water bodies.
Seed collection	Local provenance seed availability	Trigger	Sufficient availability of local provenance seed available for rehabilitation activities.	Temporary shortage of local provenance seed available from existing seed collection contractor.	Longer term shortage of local provenance seed available from existing seed collection contractor.
		Response	No response required.	Purchase local provenance seed from alternative supplier.	Source and engage alternative seed collection contractor to ensure reliable supply of local provenance seed resources.

11 Part 11 – Review, revision and implementation

11.1 Review and revision

Condition	Review Trigger Requirement
SSD 8445 Condition E7	Within three months of: (a) The submission of an incident report under Condition E9; (b) The submission of an Annual Review under Condition E11; (c) The submission of an Independent Environmental Audit under Condition E15; (d) The approval of any modification of the conditions of this consent (unless the consent require otherwise); or (e) Notification of a change in development phase under Condition A19. The suitability of existing strategies, plans and programs required under this consent must be reviewed by the Applicant.
SSD 8445 Condition E8	If necessary, to either improve the environmental performance of the, cater for a modification or comply with a direction, the strategies, plans and programs required under this consent must be revised, to the satisfaction of the Planning Secretary/Where revisions are required, the revised document must be submitted to the Planning Secretary for approval within six weeks of the review.
Mining Amendment Regulation 2021 Clause 11 Schedule 8A	The holder of a mining lease must amend the rehabilitation management plan for the mining lease as follows— (a) to substitute the proposed version of a rehabilitation outcome document with the version approved by the Secretary—within 30 days after the document is approved, (b) as a consequence of an amendment made under clause 14 to a rehabilitation outcome document—within 30 days after the amendment is made, (c) to reflect any changes to the risk control measures in the prepared plan that are identified in a rehabilitation risk assessment—as soon as practicable after the rehabilitation risk assessment is conducted, (d) whenever given a written direction to do so by the Secretary—in accordance with the direction.

11.2 Implementation

Position	Responsibility/Implementation
Head of Operations	Implement the procedures referenced in this RMP Undertake training in relevant Management Plans and procedures as required Provide resources required and support to implement these procedures Implement the procedures referenced in this RMP Develop mine plans to allow for progressive rehabilitation of mined land.
Environment and Community Manager	Implement, monitor and review the programs and procedures linked to this RMP Consult with regulatory authorities as required Provide measures for continual improvement to this RMP and procedures Ensure all personnel undertaking works in relation to this RMP are trained and competent Report the progress of any rehabilitation and monitoring of biodiversity in the Annual Review Undertake site-based actions to implement this RMP in cooperation with the Operations Manager Coordinate the development of Annual Rehabilitation Plans to guide rehabilitation activities Coordinate the completion of rehabilitation activities in accordance with this document Coordinate the development of the site rehabilitation objectives and closure criteria in consultation with key stakeholders
Environmental Specialist/Officer	Coordinate the rehabilitation monitoring program and an annual review of monitoring results to provide a continual improvement process for rehabilitation. Undertake monitoring as required Undertake maintenance as required
Technical Services Manager	Development of short, medium and long term mine plans. Coordinate survey of landform to verify conformance to design. Coordinate survey of completed rehabilitation areas for reporting.

11.3 Reporting

Reporting Requirements

Annual review

Tahmoor Mine will prepare an Annual Review, which reports on the environmental performance of the site, in accordance with:

- Relevant approval conditions of:
  - SSD 8445 (as modified)
  - DA 1975
  - DA 1979 (as modified)
  - DA 190/85
  - DA 57/93
  - DA 67/98
- Conditions of existing mining authorisations including:
  - CCL 716
  - CCL 747
  - ML 1308
  - ML 1376
  - ML 1539
  - ML 1642
- The NSW Government Annual Review Guideline (October 2015)
- Outcomes from Annual Review feedback and inspection.

Annual Rehabilitation Report and Forward Program

Tahmoor Mine will prepare an Annual Rehabilitation Report and Forward Program, which reports on:

- Annual rehabilitation performance in accordance with Clauses 9 and 13 of Schedule 8A to the *Mining Regulation 2016*
- Three year forward works program for the site in accordance with Clauses 9 and 13 of Schedule 8A of the *Mining Regulation 2016*

Report on non-compliance

Tahmoor Coal will provide the Minister with a written report detailing any non-compliance with—

a) a condition of the mining lease, or
Note— The Act, section 364A contains provisions relating to the use and disclosure of information provided under this condition.
b) a requirement of the Act or this Regulation relating to activities under the mining lease.

Tahmoor Coal will provide the report within 7 days after becoming aware of the non-compliance. Tahmoor Coal will ensure the report:

a) identifies the condition of the mining lease, or the requirement of the Act or this Regulation, to which the non-compliance relates, and
b) describes the non-compliance and specifies the date or dates on which, or the period during which, the non-compliance occurred, and
c) describes the causes or likely causes of the non-compliance, and
d) describes the action that has been taken, or will be taken, to mitigate the effects, and to prevent any recurrence, of the non-compliance.

Website

The following reporting will also be provided on Tahmoor Coals website as required:

- Rehabilitation Management Plan, Forward Program and Annual Rehabilitation Report (within 14 days after it is prepared or amended)

- Quarterly Myrtle and Redback Creek Reporting. From December 2019 onwards a report will be provided for the Redbank and Myrtle Creeks CMAPs
- Incident reporting
- Independent Environmental Audit (2020 – triennial basis)
- Compliance reporting (Six monthly extraction plan reporting)

12 Document Information

12.1 Reference Information

Related documents, listed in the below table, are internal and external documents directly related to or referenced from this document

Title
TAH-HSEC-00053 - Rehabilitation and Topsoil Management Procedure
TAH-HSEC-00117 - Biodiversity and Land Management Plan
TAH-HSEC-00401 - Rehabilitation Strategy
Environmental Planning & Assessment Act (NSW)
Environmental Planning & Assessment Regulation (NSW)
Protection of the Environment Operations Act (NSW)
National Parks & Wildlife Act (NSW)
Environment Protection & Biodiversity Conservation Act (Commonwealth)
Environmental Management Systems
Environmental Management Systems – General guidelines on principles, systems and support
Australian Handbook – Initial Environment Review (IER)
Independent Audit Post Approval Requirements (2000) NSW Department of Planning, Industry and Environment
SLR 2020, Tahmoor South Rehab Strategy Amendment prepared for Tahmoor Coal Pty Ltd by SLR.
Tahmoor South Project – Environmental Impact Statement, prepared for Tahmoor Coal Pty Ltd by AECOM Australia Pty Ltd (AECOM, 2018).
AECOM 2020a, Tahmoor South Project – Response to Submissions, prepared for Tahmoor Coal Pty Ltd by AECOM Australia Pty Ltd (AECOM, 2020a).
AECOM 2020b, Tahmoor South Project – Project Amendment Report, prepared for Tahmoor Coal Pty Ltd by AECOM Australia Pty Ltd (AECOM, 2020b).
AECOM, 2010, Soil Survey and Materials Management Plan – Tahmoor Colliery
Hazelton, P.A. & Tille, P.J., 1990, Soil Landscapes of the Wollongong – Port Hacking 1:100,000 Sheet

13 Change Information

Table 6 Full details of the document history are recorded in the document control register, by version

Version	Date Reviewed	Review team (Consultation)	Change Summary
1.0	01/07/2022	Michel Grierson, Natalie Brumby, Thomas O'Brien, Zina Ainsworth	Initial Document
2.0	19/10/2022	Natalie Brumby	Reviewed in accordance with Condition E7(c), (d) and (e) following an Independent Environmental Audit (10th August 2022), following the approval of any modification (Mod 1 approved 19th July 2022) and following the commencement of first and second workings (18th Oct 2022) of the Consent SSD 8445. Updated Section 6.2
3.0	16/06/2023	Natalie Brumby	Updated Life of Mine Figures and Figure f. Reviewed in accordance with Condition E7(b) following the submission of an Annual Review (31st March 2023), Condition E7(c) following the submission of an Independent Environmental Audit (2nd June 2023) and Condition E7 (d) following the approval of any modification (MOD 2 - 13th June 2023) of the Consent SSD 8445.
4.0	28/06/2024	Natalie Brumby	Reviewed in accordance with Condition E7(b) following the submission of an Annual Review (28th March 2024)

Appendix A

<table>
<tr><th>Instrument</th><th>Reference</th><th>Requirement</th><th>Applicable Area</th><th>Timing</th><th>Where addressed</th></tr>
<tr><td>SSD 8445</td><td>B56</td><td>Rehabilitation Objectives
The Applicant must rehabilitate the site in accordance with the conditions imposed on the mining lease(s) associated with the development under the Mining Act 1992. This rehabilitation must be generally consistent with the proposed rehabilitation activities described in the EIS (and shown conceptually in the Rehabilitation Plan in Appendix 5) and must comply with the objectives in Table 6.
Table 6: Rehabilitation objectives
<table>
<tr><th>Feature</th><th>Objective</th></tr>
<tr><td>All areas of the site affected by the development</td><td>• Safe, stable and non-polluting
• Fit for the intended post-mining land use/s
• Achieve the final landform and post-mining land use/s as soon as practicable after cessation of mining operations
• Minimise post-mining environmental impacts
• Establish/restore self-sustaining native woodland ecosystems, with a focus on establishing local plant community types, as described in the EIS and in Table 5</td></tr>
<tr><td>Areas proposed for native ecosystem re-establishment</td><td>• Establish:
o habitat, feed and foraging resources for threatened fauna species;
o local vegetation connectivity and wildlife corridors, as far as is reasonable and feasible</td></tr>
<tr><td>Final landform</td><td>• Stable and sustainable for the intended post-mining land use/s
• Consistent with surrounding topography to minimise visual impacts
• Incorporate relief patterns and design principles consistent with natural drainage that mimic natural topography and mitigate erosion to the greatest extent practicable</td></tr>
<tr><td>Surface infrastructure of the development</td><td>• To be decommissioned and removed, unless the Resource Regulator agrees otherwise</td></tr>
</table></td><td>All Areas</td><td>Ongoing for Life of Mine</td><td>Section 4.2</td></tr>
</table>

<table>
<tr><th>Instrument</th><th>Reference</th><th>Requirement</th><th>Applicable Area</th><th>Timing</th><th>Where addressed</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><td></td><td>• All surface infrastructure sites are to be revegetated with suitable local native plant species to a landform consistent with the surrounding environment</td></tr>
<tr><td>Portals and vent shafts of the development</td><td>• To be decommissioned and made safe and stable</td></tr>
<tr><td>Watercourses subject to mine water discharges</td><td>• Hydraulically and geomorphologically stable
• Aquatic ecology and riparian vegetation that is the same or better than prior to grant of this consent</td></tr>
<tr><td>Watercourse damaged by subsidence impacts</td><td>• Restore pre-mining surface flow and pool holding capacity as soon as reasonably practicable
• Hydraulically and geomorphologically stable, with riparian vegetation and aquatic ecology that is the same or better than prior to secondary extraction</td></tr>
<tr><td>Water quality</td><td>• Water retained on the site is fit for the intended post-mining land use/s
• Water discharges are consistent with the regional catchment management water quality objectives</td></tr>
<tr><td>Built features damaged by mining operations</td><td>• Repair to pre-mining condition or equivalent unless the:
o owner agrees otherwise; or
o damage is fully restored, repaired or compensated for under the Coal Mine Subsidence Compensation Act 2017</td></tr>
<tr><td>Cliffs, minor cliffs, rock face features and steep slopes</td><td>• No additional risk to public safety compared to prior to mining</td></tr>
<tr><td>Community</td><td>• Ensure public safety
• Minimise adverse socio-economic effects associated with mine closure</td></tr>
</table>
Note: These rehabilitation objectives apply to all subsidence impacts and environmental consequences caused by all underground mining of the development and to all surface infrastructure components of the development.
</td><td></td><td></td><td></td></tr>
</table>

Instrument	Reference	Requirement	Applicable Area	Timing	Where addressed
SSD 8445	B57	Progressive Rehabilitation The Applicant must rehabilitate the site progressively, that is, as soon as reasonably practicable following disturbance. All reasonable steps must be taken to minimise the total area exposed at any time. Interim stabilisation and temporary vegetation strategies must be employed when areas prone to dust generation, soil erosion and weed incursion cannot be permanently rehabilitated. Note: It is accepted that some parts of the site that are progressively rehabilitated may be subject to further disturbance at some later stage of the development.	All Areas	Ongoing for Life of Mine	Section 6.1
SSD 8445	B59	Rehabilitation Management Plan The Applicant must prepare a Rehabilitation Management Plan for the development, in accordance with the conditions imposed on the mining lease(s) associated with the development under the Mining Act 1992. This plan must: (a) include a life of mine rehabilitation and mining schedule which outlines the key progressive rehabilitation milestones from the commencement of operations through to decommissioning and mine closure; (b) include Rehabilitation Objectives, Rehabilitation Completion Criteria and a Final Landform and Rehabilitation Plan; (c) include detailed performance indicators and completion criteria for each rehabilitation domain, and triggers for remedial actions, including actions to be undertaken in the event that vegetation establishment is impacted by spontaneous combustion; (d) include an overview of the identified risks to achieving successful rehabilitation; (e) describe the measures to be implemented on the site to achieve the Rehabilitation Objectives in Table 6 and to address the identified risks; (f) include a program to monitor, independently audit and report on progress against the criteria in paragraph (c) (a) and the effectiveness of the measures in paragraph (e); (g) describe any further studies, work, research or consultation that will be undertaken to expand the site-specific rehabilitation knowledge base, reduce uncertainty and improve rehabilitation outcomes; and	All Areas	Ongoing for Life of Mine	This Plan

Instrument	Reference	Requirement	Applicable Area	Timing	Where addressed
		(h) outline intervention and adaptive management techniques to ensure rehabilitation remains on a trajectory of achieving the Rehabilitation Objectives, Rehabilitation Completion Criteria and the Final Landform and Rehabilitation Plan as soon as reasonably practical. Notes: • The Rehabilitation Management Plan should address all land impacted by the development. • The Rehabilitation Management Plan may be combined with a Mining Operations Plan, or similar plan, required under mining /easel s granted for the development. • The Biodiversity Management Plan and Rehabilitation Management Plan require substantial integration to achieve the biodiversity objectives for the rehabilitated site."			
Environmental Impact Statement	LUR-4	Land use and resources Potential impact: Impacts of the surface aspects of the Project on land use Management and mitigation measures: Re-establishing agricultural lands following mine closure in accordance with the Conceptual Mine Closure Plan to ensure successful restoration of agricultural land to target Rural Land Capability Classification.	All Areas	Ongoing for Life of Mine	Section 5
Environmental Impact Statement	MCR-3	Mine Closure and Rehabilitation Potential impact: Process of rehabilitation Management and mitigation measures: A detailed Mine Closure Plan will be prepared at least 5 years before expected mine closure and submitted to the Resource Regulator.	All Areas	Ongoing for Life of Mine	Section 6.1
DA 57/93	49	The applicant shall provide an annual report on progress of disposal and rehabilitation to the Council, Department of Mineral Resources, Department of Conservation and Land Management, and the EPA.	All Areas	Ongoing for Life of Mine	See ARRFP
ML 1376, ML 1308, ML 1539, ML 1642, CCL 716, CCL 747	4	***Must prevent or minimise harm to environment*** (1) The holder of a mining lease must take all reasonable measures to prevent, or if that is not reasonably practicable, to minimise, harm to the environment caused by activities under the mining lease.	All Areas	Ongoing for Life of Mine	SSD 8445 Tahmoor Mine EMS and associated

Instrument	Reference	Requirement	Applicable Area	Timing	Where addressed
		(2) In this clause— (i) harm to the environment has the same meaning as in the *Protection of the Environment Operations Act 1997.*			management plans
ML 1376, ML 1308, ML 1539, ML 1642, CCL 716, CCL 747	5	***Rehabilitation to occur as soon as reasonably practicable after disturbance*** The holder of a mining lease must rehabilitate land and water in the mining area that is disturbed by activities under the mining lease as soon as reasonably practicable after the disturbance occurs.	All Areas	Ongoing for Life of Mine	Sections 6 and 10
ML 1376, ML 1308, ML 1539, ML 1642, CCL 716, CCL 747	6	***Rehabilitation must achieve final land use*** (1) The holder of a mining lease must ensure that rehabilitation of the mining area achieves the final land use for the mining are a hazard is identified under this subclause.	All Areas	Ongoing for Life of Mine	Sections 4 and 6
ML 1376, ML 1308, ML 1539, ML 1642, CCL 716, CCL 747	6	(2) The holder of the mining lease must ensure any planning approval has been obtained that is necessary to enable the holder to comply with subclause (1).	All Areas	Ongoing for Life of Mine	Section 1.2
ML 1376, ML 1308, ML 1539, ML 1642, CCL 716, CCL 747	6	(3) The holder of the mining lease must identify and record any reasonably foreseeable hazard that presents a risk to the holder's ability to comply with subclause (1). *Note— Clause 7 requires a rehabilitation risk assessment to be conducted whenever*	All Areas	Ongoing for Life of Mine	Section 3
ML 1376, ML 1308, ML 1539, ML 1642, CCL 716, CCL 747	6	(4) In this clause— final land use for the mining area means the final landform and land uses to be achieved for the mining area— (a) as set out in the rehabilitation objectives statement and rehabilitation completion criteria statement, and (b) for a large mine—as spatially depicted in the final landform and rehabilitation plan, and (c) if the final land use for the mining area is required by a condition of development consent for activities under the mining lease—as stated in the condition planning approval means—	All Areas	Ongoing for Life of Mine	Sections 4 and 5

Instrument	Reference	Requirement	Applicable Area	Timing	Where addressed
		(i) a development consent within the meaning of the *Environmental Planning and Assessment Act 1979*, or (ii) an approval under that Act, Division 5.1.			
ML 1376, ML 1308, ML 1539, ML 1642, CCL 716, CCL 747	7	***Rehabilitation risk assessment*** (1) The holder of a mining lease must conduct a risk assessment (a rehabilitation risk assessment) that— (a) identifies, assesses and evaluates the risks that need to be addressed to achieve the following in relation to the mining lease— (i) the rehabilitation objectives, (ii) the rehabilitation completion criteria, (iii) for large mines—the final land use as spatially depicted in the final landform and rehabilitation plan, and (b) identifies the measures that need to be implemented to eliminate, minimise or mitigate the risks.	All Areas	As required	Section 3
ML 1376, ML 1308, ML 1539, ML 1642, CCL 716, CCL 747	7	(2) The holder of the mining lease must implement the measures identified.	All Areas	As required	Section 3
ML 1376, ML 1308, ML 1539, ML 1642, CCL 716, CCL 747	7	(3) The holder of a mining lease must conduct a rehabilitation risk assessment— (a) for a large mine—before preparing a rehabilitation management plan, and (b) for a small mine—before preparing the rehabilitation outcome documents for the mine, and (c) whenever a hazard is identified under clause 6(3)—as soon as reasonably practicable after it is identified, and (d) whenever given a written direction to do so by the Secretary.	All Areas	As required	Section 3

Instrument	Reference	Requirement	Applicable Area	Timing	Where addressed
ML 1376, ML 1308, ML 1539, ML 1642, CCL 716, CCL 747	8	***Application of Division*** This Division does not apply to a mining lease unless— (a) the security deposit required under the mining lease is greater than the minimum deposit prescribed under the Act, section 261BF in relation to that type of mining lease, or (b) the Secretary gives a written direction to the holder of the mining lease that this Division, or a provision of this Division, applies to the mining lease.	All Areas	N/A	N/A to this RMP
ML 1376, ML 1308, ML 1539, ML 1642, CCL 716, CCL 747	9	***General requirements for documents*** A document required to be prepared under this Division must— (a) be in a form approved by the Secretary, and *Note— The approved forms are available on the Department's website.* (b) include any matter required to be included by the form, and (c) if required to be given to the Secretary—be given in a way approved by the Secretary.	All Areas	As required	This RMP
ML 1376, ML 1308, ML 1539, ML 1642, CCL 716, CCL 747	10	***Rehabilitation management plans for large mines*** (1) The holder of a mining lease relating to a large mine must prepare a plan (a rehabilitation management plan) for the mining lease that includes the following: (a) a description of how the holder proposes to manage all aspects of the rehabilitation of the mining area, (b) a description of the steps and actions the holder proposes to take to comply with the conditions of the mining lease that relate to rehabilitation, (c) a summary of rehabilitation risk assessments conducted by the holder, (d) the risk control measures identified in the rehabilitation risk assessments, the rehabilitation outcome documents for the mining lease,	All Areas	As required	This RMP

Instrument	Reference	Requirement	Applicable Area	Timing	Where addressed
		(e) a statement of the performance outcomes for the matters addressed by the rehabilitation outcome documents and the ways in which those outcomes are to be measured and monitored.			
ML 1376, ML 1308, ML 1539, ML 1642, CCL 716, CCL 747	10	(2) If a rehabilitation outcome document has not been approved by the Secretary, the holder of the mining lease must include a proposed version of the document.	All Areas	Ongoing for Life of Mine	This RMP
ML 1376, ML 1308, ML 1539, ML 1642, CCL 716, CCL 747	10	(3) A rehabilitation management plan is not required to be given to the Secretary or approval. (4) The holder of the mining lease— (a) must implement the matters set out in the rehabilitation management plan, and (b) if the forward program specifies timeframes for the implementation of the matters—must implement the matters within those timeframes.	All Areas	As required	Tahmoor Coal will implement this RMP
ML 1376, ML 1308, ML 1539, ML 1642, CCL 716, CCL 747	11	***Amendment of rehabilitation management plans*** The holder of a mining lease must amend the rehabilitation management plan for the mining lease as follows— (a) to substitute the proposed version of a rehabilitation outcome document with the version approved by the Secretary—within 30 days after the document is approved, (b) as a consequence of an amendment made under clause 14 to a rehabilitation outcome document—within 30 days after the amendment is made, (c) to reflect any changes to the risk control measures in the prepared plan that are identified in a rehabilitation risk assessment—as soon as practicable after the rehabilitation risk assessment is conducted, (d) whenever given a written direction to do so by the Secretary—in accordance with the direction.	All Areas	As required	Section 11

Instrument	Reference	Requirement	Applicable Area	Timing	Where addressed
ML 1376, ML 1308, ML 1539, ML 1642, CCL 716, CCL 747	12	***Rehabilitation outcome documents*** (1) The holder of a mining lease must prepare the following documents (the rehabilitation outcome documents) for the mining lease and give them to the Secretary for approval— (a) the rehabilitation objectives statement, which sets out the rehabilitation objectives required to achieve the final land use for the mining area, (b) the rehabilitation completion criteria statement, which sets out criteria, the completion of which will demonstrate the achievement of the rehabilitation objectives, (c) for a large mine, the final landform and rehabilitation plan, showing a spatial depiction of the final land use.	All Areas	As required	Sections 4 and 5
ML 1376, ML 1308, ML 1539, ML 1642, CCL 716, CCL 747	12	(2) If the final land use for the mining area is required by a condition of development consent for activities under the mining lease, the holder of the mining lease must ensure the rehabilitation outcome documents are consistent with that condition.	All Areas	Ongoing for Life of Mine	Section 2
ML 1376, ML 1308, ML 1539, ML 1642, CCL 716, CCL 747	13	***Forward program and annual rehabilitation report*** (1) The holder of a mining lease must prepare a program (a forward program) for the mining lease that includes the following— (a) a schedule of mining activities for the mining area for the next 3 years, (b) a summary of the spatial progression of rehabilitation through its various phases for the next 3 years, (c) a requirement that the rehabilitation of land and water disturbed by mining activities under the mining lease must occur as soon as reasonably practicable after the disturbance occurs. (2) The holder of a mining lease must prepare a report (an annual rehabilitation report) for the mining lease that includes— (a) a description of the rehabilitation undertaken over the annual reporting period,	All Areas	Annual	Addressed in ARRFP

Instrument	Reference	Requirement	Applicable Area	Timing	Where addressed
		(b) a report demonstrating the progress made through the phases of rehabilitation provided for in the forward program applying to the reporting period, (c) a report demonstrating progress made towards the achievement of the following— (i) the objectives set out in the rehabilitation objectives statement, (ii) the criteria set out in the rehabilitation completion criteria statement, (iii) for large mines—the final land use as spatially depicted in the final landform and rehabilitation plan. (3) If a rehabilitation outcome document has not been approved by the Secretary, the holder of the mining lease must rely on a proposed version of the document. (4) The holder of the mining lease must give the forward program and annual rehabilitation report to the Secretary. (5) In this clause— annual reporting period means each period of 12 months commencing on: (a) the date on which the mining lease is granted, or (b) if the Secretary approves			
ML 1376, ML 1308, ML 1539, ML 1642, CCL 716, CCL 747	14	***Amendment of rehabilitation outcome documents and forward program*** (1) This clause applies to— (a) a rehabilitation outcome document if it has been approved by the Secretary, and (b) a forward program if it has been given to the Secretary. (2) The holder of a mining lease must not amend a document to which this clause applies that relates to the mining lease unless— (a) the Secretary gives the holder a written direction to do so, or	All Areas	To be determined following submission	Not triggered

Instrument	Reference	Requirement	Applicable Area	Timing	Where addressed
		(b) the Secretary, on written application by the holder, gives a written approval of the amendment. (3) The holder of the mining lease must amend the document in accordance with the Secretary's direction or approval. (4) Nothing in this clause prevents the holder of a mining lease preparing a draft amendment for submission to the Secretary for approval.			
ML 1376, ML 1308, ML 1539, ML 1642, CCL 716, CCL 747	15	***Times at which documents must be prepared and given*** (1) The holder of a mining lease must do the following before the end of the initial period— (a) prepare a rehabilitation management plan, and (b) prepare rehabilitation outcome documents and give them, other than the rehabilitation completion criteria statement, to the Secretary for approval, and (c) prepare a forward program and give it to the Secretary. (2) The holder of the mining lease must prepare a forward program and annual rehabilitation report and give them to the Secretary before— (a) 60 days after the last day of each annual reporting period, commencing with the annual reporting period in which the forward program was given to Secretary under subclause (1)(c), or (b) a later date approved by the Secretary. (3) A rehabilitation completion criteria statement relating to completion of rehabilitation during a period covered by a forward program must be given to the Secretary for approval when the forward program is required to be given to the Secretary. (4) The holder of the mining lease must prepare updated rehabilitation outcome documents for the mining lease and give them to the Secretary for approval before—	All Areas	Ongoing for Life of Mine	This RMP

Instrument	Reference	Requirement	Applicable Area	Timing	Where addressed
		(a) 60 days after a development consent is modified following an application referred to in clause 20(1)(b), or (b) a later date approved by the Secretary. (5) A rehabilitation completion criteria statement is not required to be given to the Secretary under subclause (4) unless a rehabilitation completion criteria statement has already been given to the Secretary under subclause (3). (6) The Secretary may, by written notice, direct the holder of a mining lease to prepare, or give to the Secretary, a document required to be prepared under this Division at a time other than that specified in this clause. (7) The holder of the mining lease must comply with the direction. (8) In this clause— initial period means the period commencing when the mining lease is granted and ending— (a) 30 days, or other period approved by the Secretary, after this Division first applies to the mining lease, or (b) if this Division applies to the mining lease because of an increase in the required security deposit— (i) when the surface of the mining area is disturbed by activities under the mining lease, or (ii) at a later date approved by the Secretary.			
ML 1376, ML 1308, ML 1539, ML 1642, CCL 716, CCL 747	16	***Certain documents to be publicly available*** (1) This clause applies to the following documents— (a) a rehabilitation management plan, (b) a forward program, (c) an annual rehabilitation report. (2) The holder of a mining lease must make a document to which this clause applies publicly available by—	All Areas	Within 14 days of the document being prepared, amended or submitted, as required	Section 11.3

Instrument	Reference	Requirement	Applicable Area	Timing	Where addressed
		(a) publishing it on its website in a prominent position, or (b) if the holder does not have a website— providing a copy of it to a person— (i) on the written request of a person, and (ii) without charge, and (iii) within 14 days after the request is received. (3) If a document is published on the website of the holder of the mining lease, the holder must ensure that it is published— (a) for a rehabilitation management plan—within 14 days after it is prepared or amended, or (b) for a forward program or an annual rehabilitation report—within 14 days after it is given to the Secretary or amended, (4) Personal information within the meaning of the Privacy and Personal Information Protection Act 1998 is not required to be included in a document made available to a person under this clause.			
ML 1376, ML 1308, ML 1539, ML 1642, CCL 716, CCL 747	17	***Records demonstrating compliance*** The holder of a mining lease must create and maintain records of all actions taken that demonstrate compliance with each of the conditions set out in this Part. *Note— The Act, sections 163D and 163E provide for the form in which records must be kept and the period for which they must be retained.*	All Areas	Ongoing for Life of Mine	Section 11
ML 1376, ML 1308, ML 1539, ML 1642, CCL 716, CCL 747	18	***Report on non-compliance*** (1) The holder of a mining lease must provide the Minister with a written report detailing any non-compliance with— (a) a condition of the mining lease, or *Note— The Act, section 364A contains provisions relating to the use and disclosure of information provided under this condition*.	All Areas	Ongoing for Life of Mine	Section 10 and 11

Instrument	Reference	Requirement	Applicable Area	Timing	Where addressed
		(b) a requirement of the Act or this Regulation relating to activities under the mining lease. (2) The holder of the mining lease must provide the report within 7 days after becoming aware of the non-compliance. (3) The holder of the mining lease must ensure the report— (a) identifies the condition of the mining lease, or the requirement of the Act or this Regulation, to which the non-compliance relates, and (b) describes the non-compliance and specifies the date or dates on which, or the period during which, the non-compliance occurred, and (c) describes the causes or likely causes of the non-compliance, and (d) describes the action that has been taken, or will be taken, to mitigate the effects, and to prevent any recurrence, of the non-compliance.			