NSW GOVERNMENT

NSW Resources Regulator

FWP0001157

NARRABRI COLLIERY FORWARD PROGRAM

Sunday 1 January 2023 to Wednesday 31 December 2025

Contents

Summary

DETAIL	
Mine	Narrabri Colliery
Reference	FWP0001157
Forward program commencement date	Sunday 1 January 2023
Forward program end date	Wednesday 31 December 2025
Forward program revision (if applicable)	
Contact	Shane Rily
Mining leases	ML 1609 (1992)
Project location	NARRABRI COAL PTY LTD
Date of submission	Monday 5 June 2023

Important

The department may make the information in your program and any supporting information available for inspection by members of the public, including by publication on its website or by displaying the information at any of its offices. If you consider any part of your program to be confidential, please communicate this to the department via the message function on this submission within the NSW Resources Regulator Portal.

Three-year forecast – surface disturbance activities

Project description

The Narrabri Mine is an existing underground coal mining operation situated in the Gunnedah Coalfield, approximately 25 kilometres (km) southeast of Narrabri and approximately 60 km northwest of Gunnedah, within the Narrabri Shire Council (NSC) Local Government Area, in New South Wales (NSW).

The Narrabri Mine is operated by Narrabri Coal Operations Pty Ltd (NCOPL), on behalf of the Narrabri Mine Joint Venture, which consists of Whitehaven Coal Limited's (WHC) wholly owned subsidiaries Narrabri Coal Pty Ltd (NCPL) and Narrabri Coal Australia Pty Ltd, Upper Horn Investments (Australia) Pty Ltd, J-Power Australia Pty Limited, Posco International Narrabri Investment Pty Ltd and Kores Narrabri Pty Limited. ROM coal is processed at the Narrabri Mine to produce thermal and Pulverised Coal Injection (PCI) product coal. Product coal is transported from the Narrabri Mine to Newcastle by rail.

Description of surface disturbance activities

Exploration activities

Exploration activities will be undertaken in accordance with the requirements of the Exploration Code of Practice: Rehabilitation. Disturbance from previous exploration activities will be rehabilitated as soon as practicable following the completion of activities on that site. All exploration drill holes will be sealed in accordance with relevant RR guidelines, at the time.

Exploration will be undertaken within ML 1609 for coal quality, geotechnical and/or hydrogeological evaluation purposes.

All proposed exploration holes are within the current mining footprint and are planned primarily for coal quality, water pressure and geotechnical monitoring.

Construction activities

Planned construction activities over the next three years will include:

- Brine Dam construction completion.
- Construction of ventilation shaft pad.
- Gas drainage infrastructure.
- Staged rehabilitation of the rejects emplacement area (REA).
- Drill pads, boreholes and associated tracks.

Mining schedule

Mining development method and sequencing and general mine features.

Mining development method and sequencing and general mine features:

Under PA 08_0144 MOD7, mining is approved at Narrabri up until 2031 and incorporates the following key activities:

• Continued underground coal mining operations in the Hoskissons Seam to facilitate a ROM coal production rate of up to 11.0 Mtpa.

• Goaf gas drainage will be conducted behind the progressing longwall mining operations. Access tracks will be cleared and maintained for as long as the goaf gas drainage is required to be maintained.

• Service bores will be drilled for the installation of services (compressed air, water, power or monitoring) or for gas extraction from underground to inseam (UIS) gas drainage. These holes are drilled in a similar manner to a goaf hole.

• Mine safety pre-conditioning will be undertaken by drilling holes above the coal seam into the overlying strata and injecting water under high pressure to fracture the rock.

Areas identified for emplacements, the sequencing of emplacements, construction, and management.

Construction of the REA will progress throughout the forward program period. Disposal of rejects within this REA landform will occur in "cells", with cells being formed contiguously in an anti-clockwise direction, initially along the northern margin of the landform, then along the southern margin. Each cell would create a similar disposal capacity, each providing an operating life of the order of 2 years. The final landform is not expected to be achieved within the forward program period however all works will be conducted in accordance with the REA Capping Strategy and Closure Plan to ensure final landform is constructed as per final design requirements.

Processing infrastructure activities and the location of tailings facilities and schedule for emplacement.

See emplacement above.

Waste disposal and materials handling operations.

Waste streams will be managed in accordance with the Waste Management Plan.

Key waste streams (apart from waste rock) that will be generated over the next three years comprise of:

• Production waste such as Brine generated by the Water Conditioning Plant, drill cuttings, coarse reject.

• Nonproduction waste such as recyclable and non-recyclable general wastes; Sewage and effluent; and other wastes from mining and workshop activities (e.g. waste oils, scrap metal and used tyres).

General waste minimisation principles (i.e. reduce, re-use and recycling) will continue to be applied at the Narrabri Coal Operations (NCO) to minimise the quantity of wastes that require off-site disposal.

Removal of hazardous materials will be undertaken by a licenced waste disposal contractor and disposed / recycled at a licenced waste facility.

Prior to decommissioning, Phase 1 and 2 Assessments will be undertaken to identify potential land contamination. Should contamination be identified, consideration will be given to the remediation and management of contaminated soil onsite.

Key production milestones

MATERIAL	UNIT	YEAR 1	YEAR 2	YEAR 3
Stripped topsoil (if applicable)	(m^3)	31,340	28,280	32,040
Rock/overburden	(m^3)	0	0	0
Ore	(Mt)	0	0	0
Reject material[1]	(Mt)	0.19	0.24	0.29
Product	(Mt)	4.6	5.8	7.02

[1] This includes coarse rejects, tailings and any other wastes resulting from beneficiation.

Three-year rehabilitation forecast

Rehabilitation planning schedule

Rehabilitation planning schedule

Rehabilitation scheduling is undertaken on an annual basis as part of the Forward Program development. Progressive rehabilitation of exploration and gas drainage disturbance areas is conducted as soon as reasonably practical once the infrastructure assets are no longer required by the mining operation. Once a site is nominated to be rehabilitated, rehabilitation procedures as presented in the RMP are followed to achieve the final land use nominated for that area. Risks associated with rehabilitation progression have been identified during a rehabilitation risk assessment undertaken for NCOLP in May 2022. Details of these risks and how they are managed are provided in the NCOPL Rehabilitation Management Plan (July 2022).

Stakeholder consultation

See Section 4.4 of the RMP.

Narrabri has prepared a Stakeholder Engagement Plan (SEP) to facilitate stakeholder consultation for Narrabri's rehabilitation objectives and completion criteria. The SEP will be regularly revised to reflect the outcomes of technical investigations and the ongoing development and execution of the RMP as well as the outcomes of ongoing engagement.

Engagement will continue over the next three years in the following areas:

- Rehabilitation objectives and completion criteria
- Stage 3 Approval and related management plans
- Community consultative committee

Key stakeholders include the Resource Regulator, DPE, CCC, other agencies and community interest groups.

Rehabilitation studies, risk assessments and/or design work

NCO is currently improving systems around record keeping for rehabilitation actions undertaken. Web-based GIS system are being developed to provide operational staff access to data in the field and the ability to capture and store records of actions undertaken directly into cloud-based database whilst in the field. Reporting dashboards are being developed to report the data collected and help with the planning of rehabilitation activities going forward. NCO sees this as an important step in improving record management and operational control of the rehabilitation and other field-based activities being undertaken.

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Rehabilitation research and trials

RRT NUMBER	PROJECT/TRIAL NAME	OBJECTIVE OF TRIAL/PROJECT	METHODOLOGY	EXPECTED DATE OF COMPLETION	STATUS
FWP0001157					

Rehabilitation maintenance and corrective actions

Activities associated with the ecosystem and land use development phase of rehabilitation are generally ongoing maintenance, land management activities and rehabilitation monitoring. Maintenance at rehabilitated areas will include, but not be limited to:

- Weeds and pest animal control.
- Managing bushfire risks.
- Minor earthworks to remediate any significant erosion features, including contour banks and diversion channels.
- Infill planting and/or seeding to meet vegetation community requirements.
- Maintaining erosion and sediment controls.

Annual rehabilitation monitoring is undertaken each year as sites are established in rehabilitation that has been seeded since the previous monitoring event. Annual rehabilitation monitoring of the newly established sites will identify issues and success within developing rehabilitation.

Annual rehabilitation monitoring results will link to the TARP management system in Section 10 of the RMP.

The data obtained from the monitoring program allows an adaptive management approach by providing information to inform the type and implementation of management activities and determining the status of rehabilitation performance in relation to completion criteria.

Rehabilitation schedule

Mining and rehabilitation will continue at NCO as per the Forward Program figures (Plan 2A-2C) and within the Project Approval limits.

NCO will undertake rehabilitation as soon as reasonably practical once areas of disturbance are made available for rehabilitation activities. This will be dependent on factors such as availability of land for rehabilitation, current and future use of infrastructure and disturbance areas.

Subsidence remediation for underground operations

Subsidence will be remediated in accordance with the approved Extraction Plans. Inspections are undertaken as the longwall progresses to identify subsidence impacts. These impacts are recorded into a spatial database. Remediation of these features are undertaken based on the Trigger Action Response Plan (TARP) in Section 10 of the RMP. Records of the remediation actions are captured in the spatial

database for future reference. Follow up inspections of these subsidence features are undertaken to ensure that the rehabilitation has been successful, and no further impacts have developed.

Progressive mining and rehabilitation statistics

Three-yearly forecast cumulative disturbance and rehabilitation progression

	FORECAST	UNIT	YEAR 1	YEAR 2	YEAR 3
A	**Total surface disturbance footprint**	(ha)	452.83	466.97	482.99
B	**Total active disturbance**	(ha)	271.29	278.33	286.94
C	**Land prepared for rehabilitation**	(ha)	12.33	19.43	26.84
D	**Ecosystem and land use establishment**	(ha)	0	0	0

Rehabilitation key performance indicators (KPIs)

	FORECAST	UNIT	YEAR 1	YEAR 2	YEAR 3
O	**Total new active disturbance area**	(ha)	15.67	14.14	16.02
P	**Area proposed for active rehabilitation**	(ha)	12.33	7.1	7.41
Q	**Annual rehabilitation to disturbance ratio**		0.79	0.5	0.46

Attachment 1 – Reporting Definitions

REPORTING CATEGORY		DEFINITION
A	Total disturbance footprint – surface disturbance	All areas within a mining lease that either have at some point in time or continue to pose a rehabilitation liability due to surface disturbance activities. The total disturbance footprint is the sum of the total active disturbance, decommissioning, landform establishment, growth medium development, ecosystem and land use establishment, ecosystem and land use development and rehabilitation completion (see definitions below). Underground mining operations should not include the footprint of underground mining areas/subsidence management areas in the total disturbance footprint.
B	Total active disturbance	Includes on-lease exploration areas, stripped areas ahead of mining, infrastructure areas, water management infrastructure, sewage treatment facilities, topsoil stockpile areas, access tracks and haul roads, active mining areas, waste rock emplacements (active/unshaped/in or out-of-pit), tailings dams (active/unshaped/uncapped) and temporary stabilised areas (e.g. areas sown with temporary cover crops for dust mitigation and temporary rehabilitation).
C	Rehabilitation – land preparation	Includes the sum of all disturbed land within a mining lease that have commenced any, or all, of the following phases of rehabilitation– decommissioning, landform establishment and growth medium development. Refer to the glossary of terms in this document for the definition of these phases of rehabilitation.
D	Ecosystem and land use establishment	Includes the area which has been seeded/planted with the target vegetation species for the intended final land use. However, vegetation has not matured to a stage where it can be demonstrated that it will be sustainable for the long term and or require only a maintenance regime consistent with target reference/analogue sites. Typically, rehabilitation areas would be in this phase for at least two years (and usually more) before rehabilitation can be classified as being in the ecosystem and land use development phase. This phase does not apply to infrastructure areas that are being retained as part of final land use for the site.

REPORTING CATEGORY		DEFINITION
O		The area of any new active disturbance that will be created during the next three years, as defined under definition A1 (definition A1 Table 5).
P		The sum of any new rehabilitation to be commenced in the next three years. These areas may be in the phases "Rehabilitation - Land Preparation" or the "Ecosystem & Land Use Establishment" (definitions C & D in Table 5).
Q		The rehabilitation to disturbance ratio (S / R) indicates how many hectares of new rehabilitation are undertaken for each hectare of land disturbed during the three years. A ratio of 1/1 indicates that the area of new rehabilitation and disturbance in that period are the same.

Attachment 2 – Definitions

WORD	DEFINITION
Active	In the context of rehabilitation, land associated with mining domains is considered 'active' for the period following disturbance until the commencement of rehabilitation.
Active mining phase of rehabilitation	In the context of rehabilitation, the active mining phase of rehabilitation constitutes the rehabilitation activities undertaken during mining operations such as salvaging and managing soil resources, salvaging habitat resources, and native seed collection. This phase also includes management actions taken during operations to manage risks to rehabilitation and enhance rehabilitation outcomes such as selective handling of waste rock and management of tailings emplacements.
Analogue site	In the context of rehabilitation, an analogue site is a 'reference site' that represents an example of the defining characteristics (such as vegetation composition and structure or agricultural productivity) of the final land use. Characteristics of analogue sites can be assessed to develop the rehabilitation objectives and completion criteria for final land use domains.
Annual rehabilitation report and forward program	As described in the Mining Regulation 2016.
Annual reporting period	As defined in the Mining Regulation 2016.
Closure	A whole-of-mine-life process, which typically culminates in the relinquishment of the mining lease. It includes decommissioning and rehabilitation to achieve the approved final land use(s).
Decommissioning	The process of removing mining infrastructure and removing contaminants and hazardous materials.
Decommissioning Phase of Rehabilitation	Activities associated with the removal of mining infrastructure and removal and/or remediation of contaminants and hazardous materials. In the context of the rehabilitation management plan this phase of rehabilitation may also include studies and assessments associated with decommissioning and demolition of infrastructure or works carried out to make safe or 'fit for purpose' built infrastructure to be retained for future use(s) following lease relinquishment.

WORD	DEFINITION
Department	The Department of Regional NSW.
Disturbance	See Surface Disturbance.
Disturbance area	An area that has been disturbed and that requires rehabilitation. This may include areas such as on-licence exploration areas, stripped areas ahead of mining, infrastructure areas, water management infrastructure, sewage treatment facilities, topsoil stockpile areas, access tracks and haul roads, active mining areas, waste emplacements (active/unshaped/in or out-of-pit), tailings dams (active/unshaped/uncapped), and areas requiring rehabilitation that are temporarily stabilised (i.e. managed to minimise dust generation and/or erosion).
Domain	An area (or areas) of the land that has been disturbed by mining and has a specific operational use (mining domain) or specific final land use (final land use domain). Land within a domain typically has similar geochemical and/or geophysical characteristics and therefore requires specific rehabilitation activities to achieve the associated final land use.
Ecosystem and Land Use Development	This phase of rehabilitation consists of the activities to manage maturing rehabilitation areas on a trajectory to achieving the approved rehabilitation objectives and completion criteria. For vegetated land uses this phase may include processes to develop characteristics of functional self-sustaining ecosystems, such as nutrient recycling, vegetation flowering and reproduction, and increasing habitat complexity, and development of a productive, self-sustaining soil profile. This phase of rehabilitation may include specific vegetation management strategies and maintenance such as tree thinning, supplementary plantings and weed management.
Ecosystem and Land Use Establishment	This phase of rehabilitation consists of the processes to establish the approved final land use following construction of the final landform. For vegetated land uses this rehabilitation phase includes establishing the desired vegetation community and implementing land management activities such as weed control. This phase of rehabilitation may also include habitat augmentation such as installation of nest boxes.
Exploration	Has the same meaning as that term under the State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007.

WORD	DEFINITION
Final landform and rehabilitation plan	As defined in the Mining Regulation 2016.
Final land use	As defined in the Mining Regulation 2016.
Form and way	Means the form and way approved by the Secretary. Approved form and way documents are available on the Department's website.
Growth Medium Development	This phase of rehabilitation consists of activities required to establish the physical, chemical and biological components of the substrate required to establish the desired vegetation community (including short lived pioneer species. This phase may include spreading the prepared landform with topsoil and/or subsoil and/or soil substitutes, applying soil ameliorants to enhance the physical, chemical and biological characteristics of the growth media, and actions to minimise loss of growth media due to erosion.
Habitat	Has the same meaning as that term under the *Biodiversity Conservation Act 2016* and the *Fisheries Management Act 1994* (as relevant).
Indicator	An attribute of the biophysical environment (e.g. pH, topsoil depth, biomass) that can be used to approximate the progression of a biophysical process. It can be measured and audited to demonstrate (and track) the progress of an aspect of rehabilitation towards a desired completion criterion (i.e. defined end point). It may be aligned to an established protocol and used to evaluate changes in a system.
Land	As defined in the *Mining Act 1992.*
Landform Establishment	This phase of rehabilitation consists of the processes and activities required to construct the final landform. In addition to profiling the surface of rehabilitation areas to the approved final landform profile this phase may include works to construct surface water drainage features, encapsulate problematic materials such as tailings, and prepare a substrate with the desired physical and chemical characteristics (e.g. rock raking or ameliorating sodic materials).
Large mine	As defined in the Mining Regulation 2016.
Lease holder	The holder of a mining lease.

WORD	DEFINITION
Life of mine	The timeframe of how long a mine is approved to mine, from commencement to closure.
Mine rehabilitation portal	Means the NSW Resources Regulator's online portal that lease holders must use (via a registered account) to: ■ upload rehabilitation geographical information system (GIS) spatial data ■ develop rehabilitation GIS spatial data (using online tracing functions) ■ generate rehabilitation plans and rehabilitation statistics using the map viewer and Rehabilitation Key Performance Indicator functionalities. Data submitted to the mine rehabilitation portal is collated in a centralised geodatabase for use by the NSW Resources Regulator to regulate rehabilitation performance of lease holders.
Mining area	As defined in the *Mining Act 1992*.
Mining domain	A land management unit with a discrete operational function (e.g. overburden emplacement), and therefore similar geophysical characteristics, that will require specific rehabilitation treatments to achieve the final land use(s).
Mining land	As defined in the *Mining Act 1992.*
Native vegetation	Has the same meaning as that term under section 60B of the *Local Land Services Act 2013.*
Overburden	Material overlying coal or a mineral deposit.
Performance indicator	An attribute of the biophysical environment (for example pH, slope, topsoil depth, biomass) that can be used to demonstrate achievement of a rehabilitation objective. It can be measured and audited to demonstrate (and track) the progress of an aspect of rehabilitation towards a desired completion criterion, that is, a defined end point. It may be aligned to an established protocol and used to evaluate changes in a system.

WORD	DEFINITION
Phases of rehabilitation	The stages and sequences of actions required to rehabilitate disturbed land to achieve the final land use. The phases of rehabilitation are: ■ active mining ■ decommissioning ■ landform Establishment ■ growth medium development ■ ecosystem and land use establishment ■ ecosystem and land use development.
Progressive rehabilitation	The progress of rehabilitation towards achieving the approved rehabilitation completion criteria. This may be described in terms of domains, phases, performance indicators and rehabilitation completion criteria.
Rehabilitation Completion	The final phase of rehabilitation when a rehabilitation area has achieved the approved rehabilitation objectives and rehabilitation completion criteria for the final land use. Rehabilitation areas may be classified as complete when the NSW Resources Regulator has determined in writing that the relevant rehabilitation obligations have been fulfilled following submission of *Form ESF2 Rehabilitation completion and/or review of rehabilitation cost estimate* application by the lease holder.
Rehabilitation Completion criteria	As defined in the Mining Regulation 2016.
Rehabilitation cost estimate	As defined in the Mining Regulation 2016.
Rehabilitation management plan	As defined in the Mining Regulation 2016.
Rehabilitation objectives	As defined in the Mining Regulation 2016.
Rehabilitation risk assessment	As defined in the Mining Regulation 2016.
Rehabilitation schedule	The defined timeframes for progressive rehabilitation set out in the forward program.

WORD	DEFINITION
Relevant stakeholders	Means any persons or bodies who may be affected by the mining operations, including rehabilitation, carried out on the lease land, and includes: ■ the relevant development consent authority ■ the local council ■ the relevant landholder(s) ■ community consultative committee (if required under the development consent) or equivalent consultative group ■ affected land holder(s) ■ government agencies relevant to the final land use ■ affected infrastructure authorities (electricity, telecommunications, water, pipeline, road, rail authorities) ■ local Aboriginal communities, and ■ any other person or body determined by the Minister to be a relevant stakeholder in relation to a mining lease.
Risk	The effect of uncertainty on objectives. It is measured in terms of consequences and likelihood (AS/NZS ISO 31000:2009).
Secretary	The Secretary of the Department.
Security deposit	An amount that a mining lease holder is required to provide and maintain under a mining lease condition, to secure funding for the fulfilment of obligations under the lease (including obligations that may arise in the future).
Surface disturbance	Includes activities that disturb the surface of the mining area, including mining operations, ancillary mining activities and exploration.
Tailings	A combination of the fine-grained solid material remaining after the recoverable metals and minerals have been extracted from the mined ore, and any process water[2].
Waste	Has the same meaning as that term under the *Protection of the Environment Operations Act 1997*.

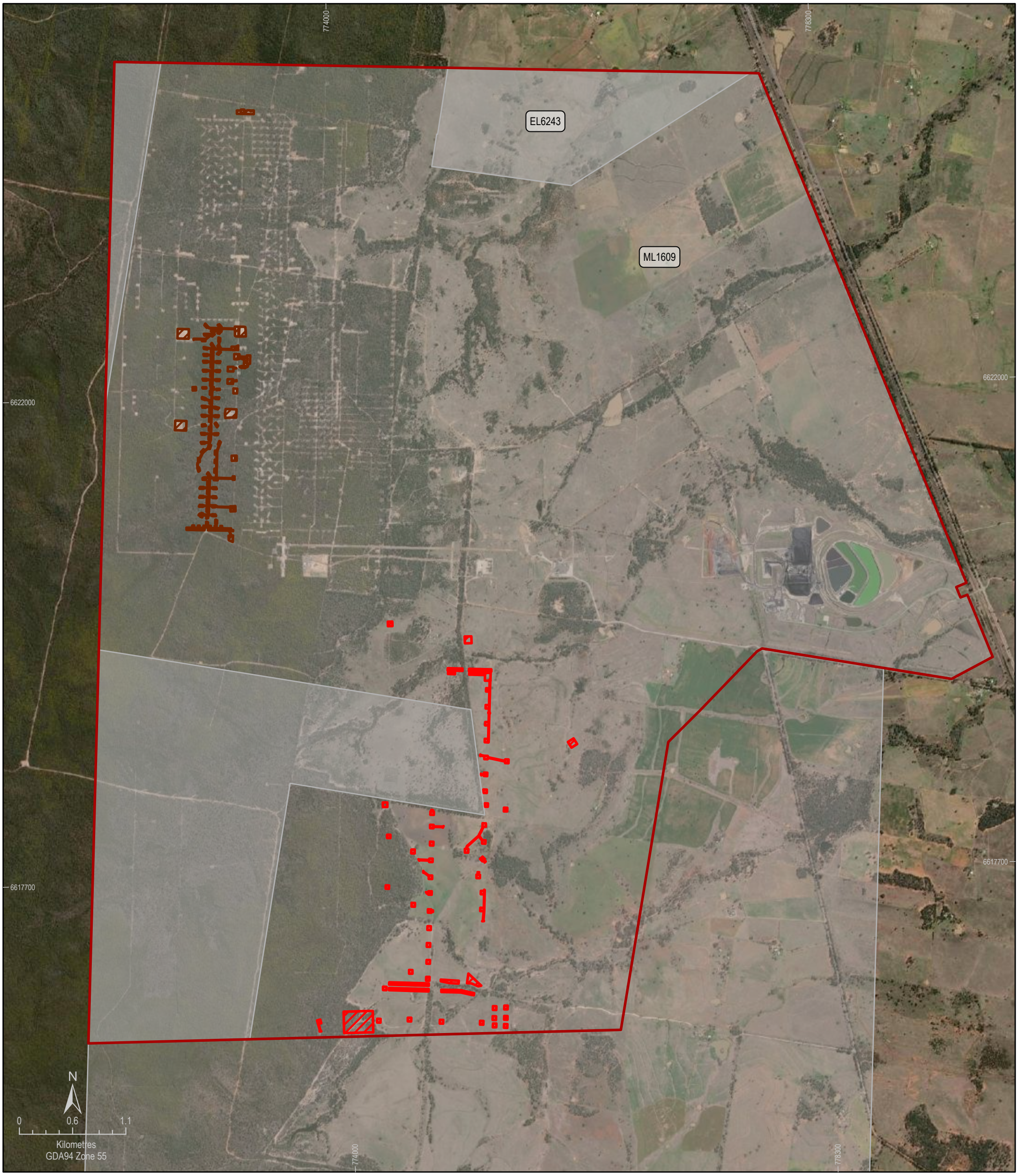
[2] Commonwealth of Australia (DITR), 2007. *Tailings Management.*

Attachment 3 – Plans

Plan 2a - Forward program Yr1_v4.pdf

Plan 2b - Forward program Yr2_v4.pdf

Plan 2c - Forward program Yr3_v4.pdf



LEGEND

- Project Approval Boundary
- Coal - Current Titles

Forecast Area

- Forecast disturbance
- Forecast land prepared for rehabilitation

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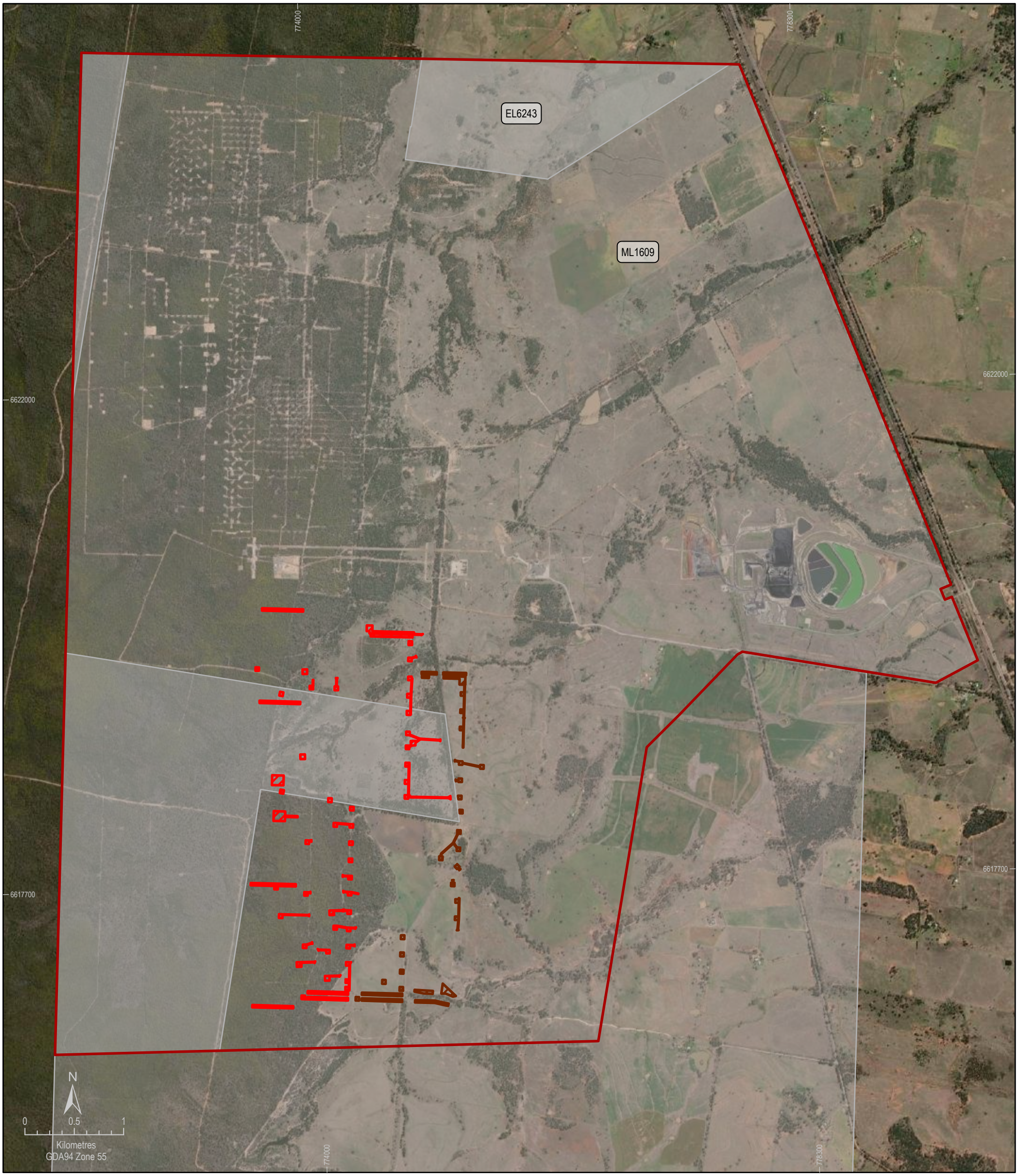
NARRABRI MINE

Figure 2a

Mining and Rehabilitation - Year 1 (2023)

Map created: 3 April 2023
Portal submission ID # 4583



LEGEND

- Project Approval Boundary
- Coal - Current Titles

Forecast Area

- Forecast disturbance
- Forecast land prepared for rehabilitation

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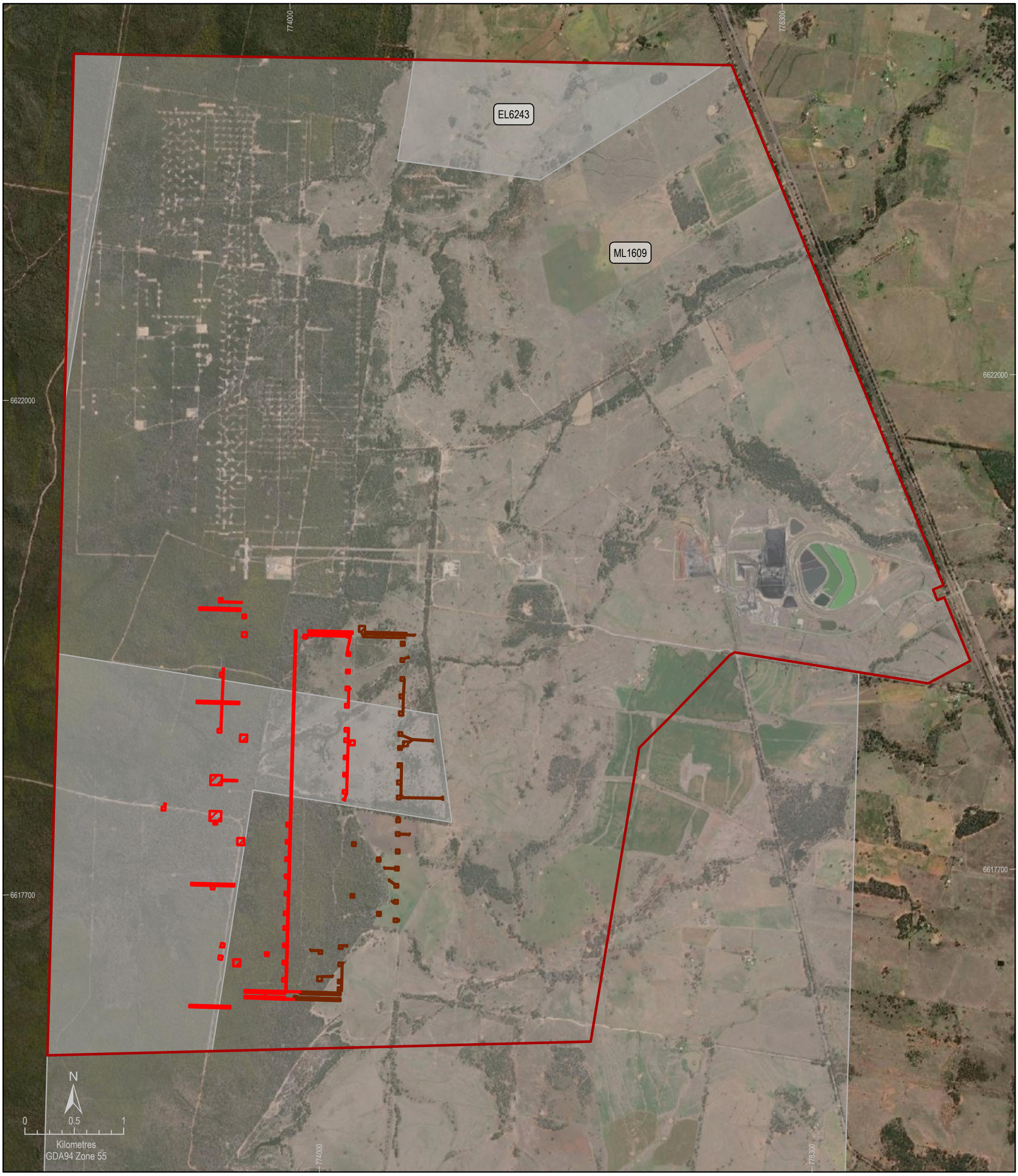
NARRABRI MINE

Figure 2b

Mining and Rehabilitation - Year 2 (2024)

Map created: 3 April 2023
Portal submission ID # 4584



LEGEND

- Project Approval Boundary
- Coal - Current Titles

Forecast Area

- Forecast disturbance
- Forecast land prepared for rehabilitation

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NARRABRI MINE

Figure 2c

Mining and Rehabilitation - Year 3 (2025)

Map created: 3 April 2023
Portal submission ID # 4585