



Tarrawonga Coal Mine Life of Mine Modification

Executive Summary



WHITEHAVEN COAL

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EXECUTIVE SUMMARY

This Modification Report has been prepared for Tarrawonga Coal Pty Ltd (TCPL) for the Tarrawonga Coal Mine Life of Mine Modification (the Modification).

The Tarrawonga Coal Mine is located approximately 42 kilometres north-northwest of Gunnedah in New South Wales (NSW) (Figure ES-1). The Tarrawonga Coal Mine is owned and operated by TCPL, a wholly owned subsidiary of Whitehaven Coal Limited (Whitehaven).

The Tarrawonga Coal Mine is an open cut coal mine which has been in operation since 2006. Run-of-mine (ROM) coal is crushed and screened on-site, and the sized ROM coal is loaded onto on-highway trucks for transport via the Approved ROM Coal Transport Route to the Whitehaven Coal Handling and Preparation Plant.

Mining operations at the Tarrawonga Coal Mine are conducted in accordance with Project Approval (PA) 11_0047, as modified.

The Modification is sought under section 4.55(2) of the *NSW Environmental Planning and Assessment Act, 1979*.

ES1 MODIFICATION OVERVIEW

The main activities associated with the Modification include (Figures ES-2 and ES-3):

- ROM coal production rate increase from 3.0 to 3.5 million tonnes per annum (Mtpa);
- increase in ROM coal transported along the Northern Section of the Approved ROM Coal Transport Route from 3.0 to 3.5 Mtpa (Figure ES-4);
- reduction of the open cut extent to avoid mining:
 - the Upper Namoi alluvium; and
 - Goonbri Creek.
- revision of the post-mining landform and land use;
- relocation of the ROM coal stockpile and associated infrastructure;

- construction of a new site access road and intersection to allow haulage of ROM coal along a section of Goonbri Road; and
- construction and use of a water transfer pipeline between the Tarrawonga Coal Mine and the proposed Vickery Extension Project (which is the subject of a separate Development Application for State Significant Development [SSD] 7480¹).

The Modification would result in no change to the following elements of the approved Tarrawonga Coal Mine:

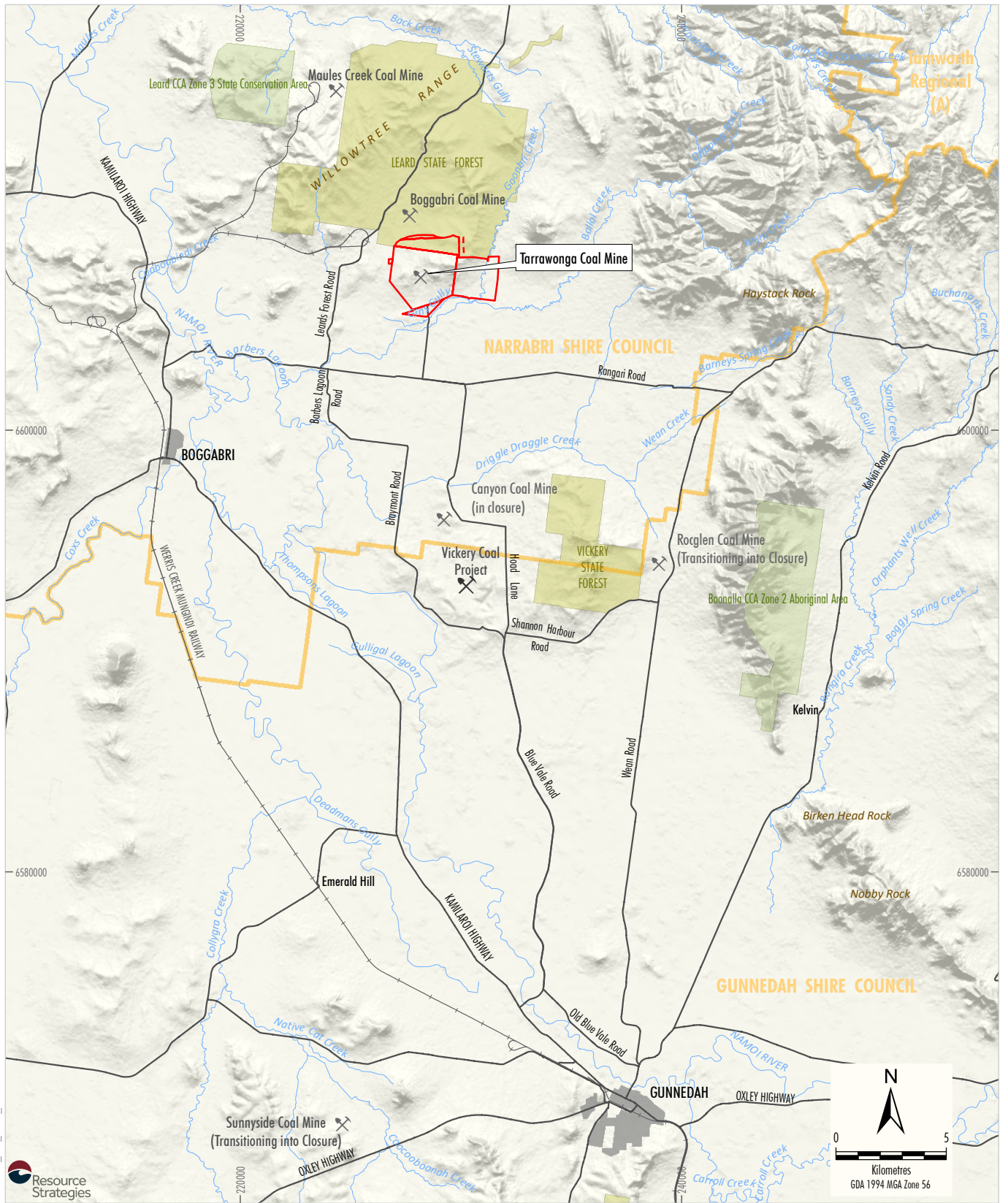
- mine life and operating hours;
- mining tenements;
- mining methods;
- employment; and
- domestic coal production.

The approved Tarrawonga Coal Mine open cut extent would intersect the Upper Namoi alluvium and Goonbri Creek.

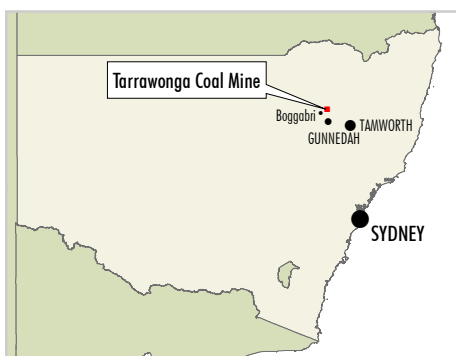
Condition 37, Schedule 3 of PA 11_0047 requires TCPL to construct the Goonbri Creek diversion and low permeability barrier prior to undertaking any mining operations within 200 m of the regionally mapped Upper Namoi alluvium. Other associated works would include realignment of a section of Goonbri Road and an 11 kilovolt electricity transmission line. TCPL considers the capital costs of these works to be economically prohibitive under the current market conditions. In the absence of these capital works, TCPL would cease mining at 200 m from the Upper Namoi alluvium under PA 11_0047.

The Modification proposes mining of coal within 200 m of the Upper Namoi alluvium (but would avoid mining the Upper Namoi alluvium itself). This would allow TCPL to maximise the extraction of economic coal without the requirement to construct the infrastructure described above (i.e. the low permeability barrier, Goonbri Creek diversion, road and electricity transmission line realignments). The Modification would result in forgoing coal extraction from some areas permitted under PA 11_0047 (i.e. underlying the Upper Namoi alluvium).

¹ The Vickery Extension Project (SSD 7480) is a proposed extension of the approved Vickery Coal Mine and was submitted to the NSW Department of Planning, Industry and Environment (DPIE) (formerly Department of Planning and Environment [DP&E]) on 14 August 2018.

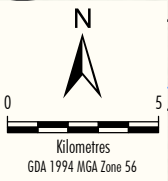


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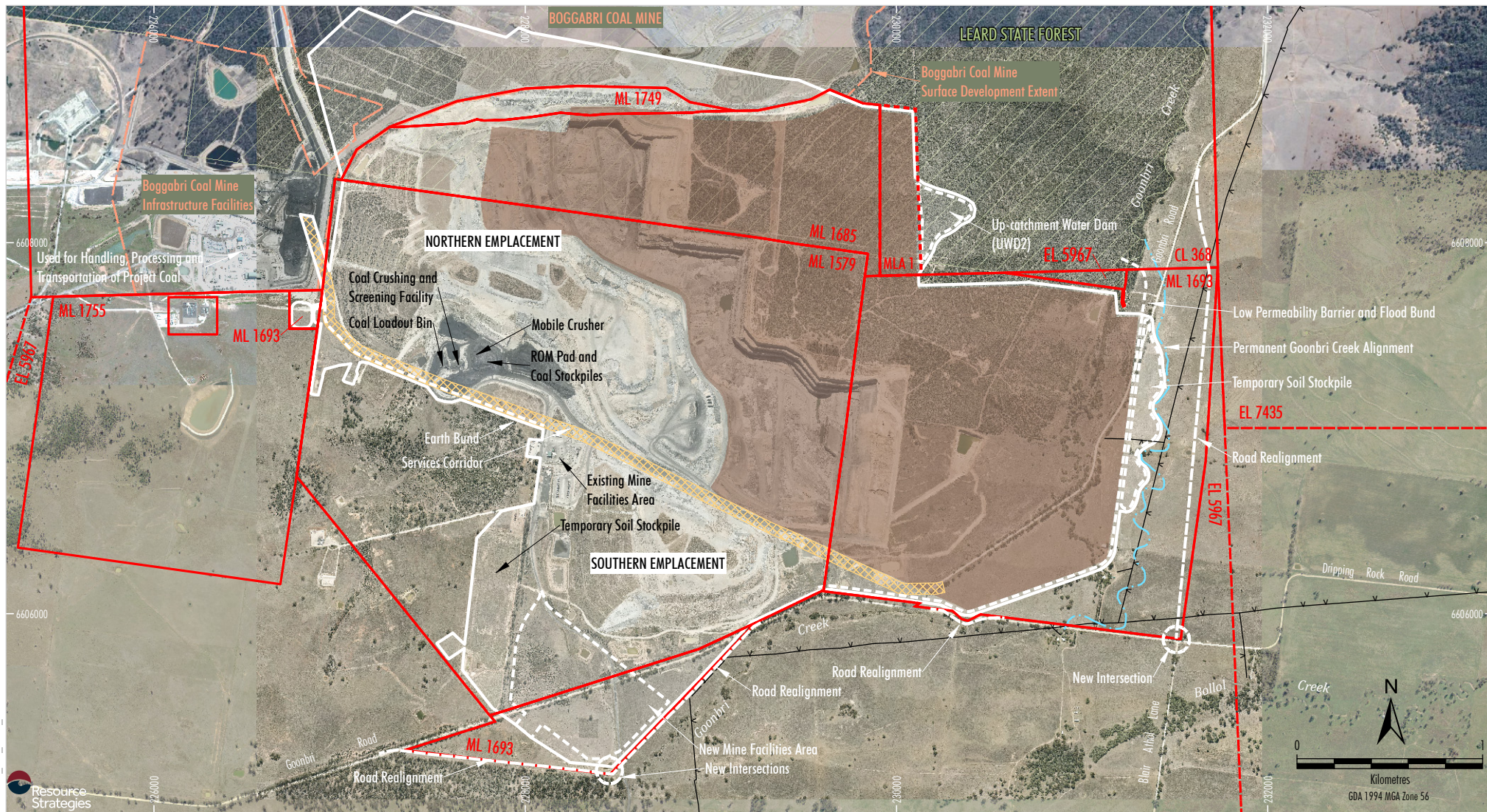
- LEGEND**
- Mining Tenement Boundary (ML, CL and AUTH)
 - Mining Lease Application Boundary (MLA 1)
 - NSW State Forest
 - State Conservation Area, Aboriginal Area
 - Major Roads
 - Railway
 - Local Government Boundary

Source: LPMA - Topographic Base (2010); NSW Department of Industry (2018)



TARRAWONGA COAL MINE
Regional Location

Figure ES-1



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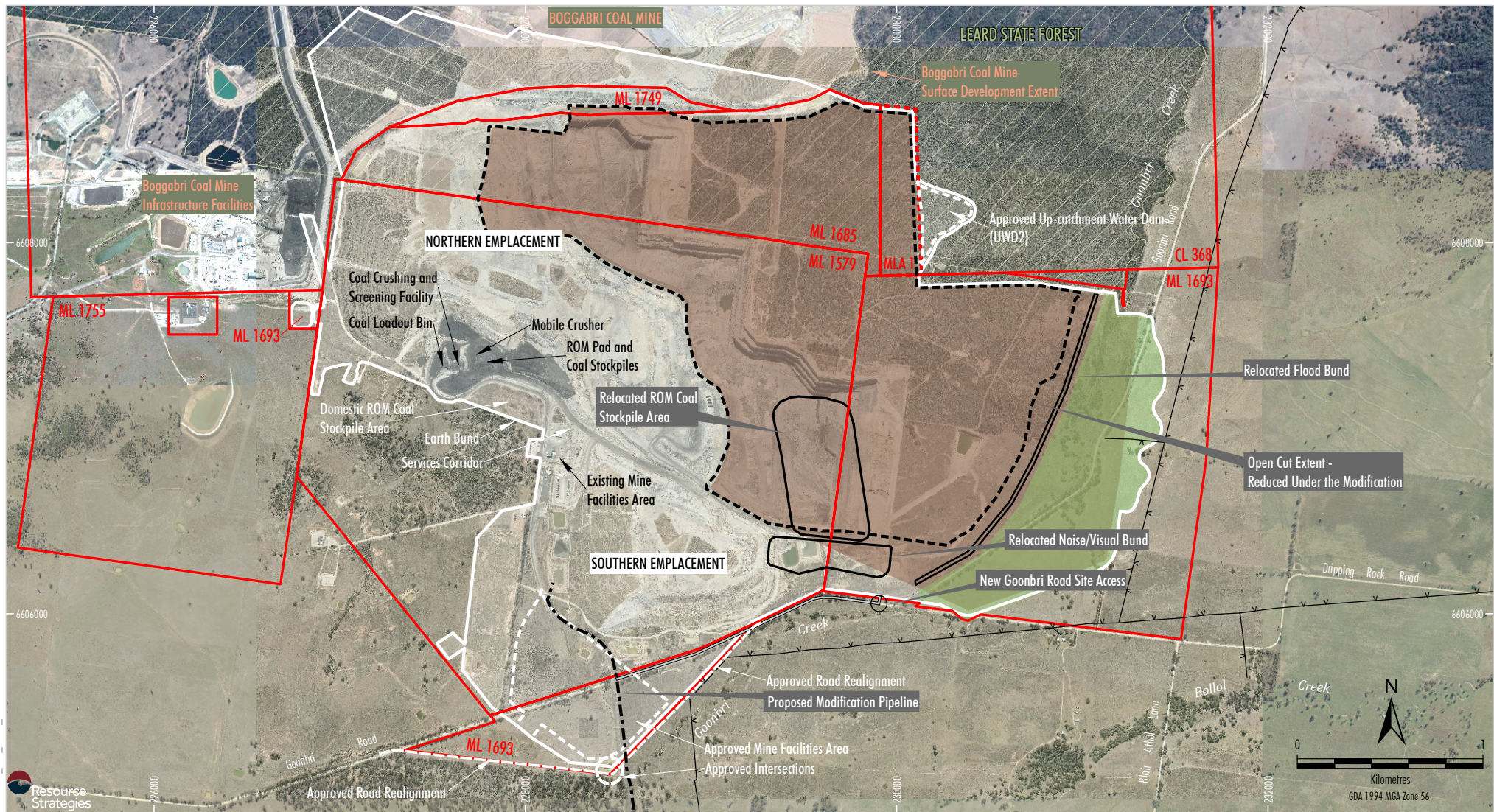


- LEGEND**
- Mining Lease Boundary (ML & CL)
 - Mining Lease Application Boundary (MLA 1)
 - Exploration Licence (EL)
 - 11kV Electricity Transmission Line
 - 11kV Electricity Transmission Line Realignment
 - Leard State Forest
 - Approximate Extent of Approved Surface Development
 - Approximate Extent of Approved Open Cut

Source: © State of New South Wales and Department of Planning and Environment (2017); © Department Finance, Services & Innovation (2017); Whitehaven Coal (2017); Orthophoto: Whitehaven Coal (2018)

TARRAWONGA COAL MINE
 Approved General Arrangement

Figure ES-2



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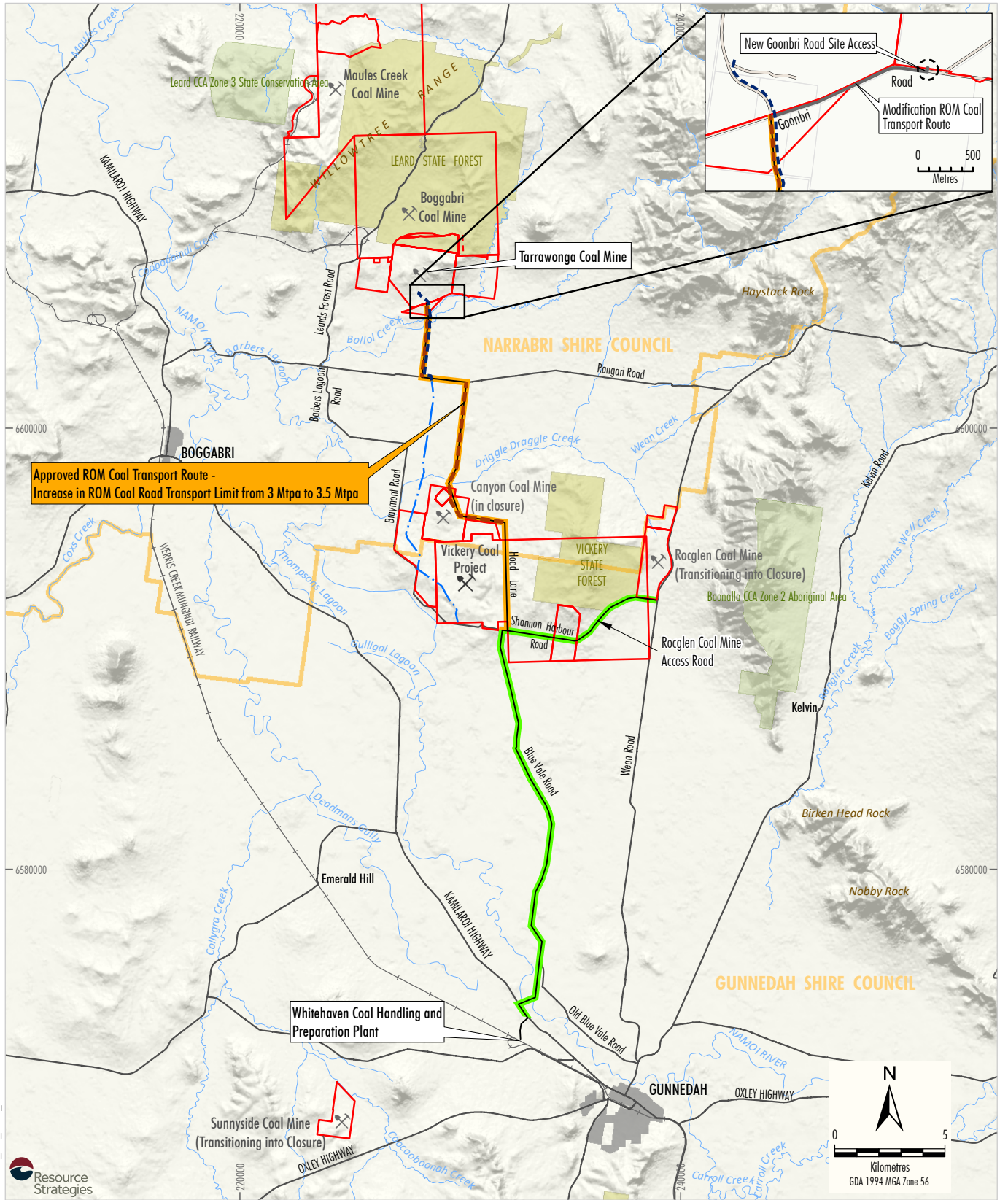
- LEGEND**
- Mining Lease Boundary (ML & CL)
 - Mining Lease Application Boundary (MLA 1)
 - 11kV Electricity Transmission Line
 - 11kV Electricity Transmission Line Realignment
 - Leard State Forest

- Approximate Extent of Approved Surface Development
- Approximate Extent of Approved Open Cut
- Modification Open Cut Extent
- Approved Surface Development Area - No Longer Proposed
- Modification ROM Coal Transport Route Along Goonbri Road
- Indicative Location of Modification Pipeline

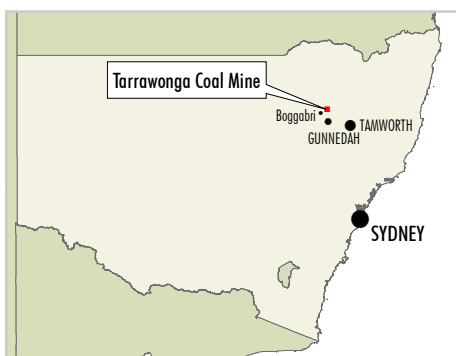
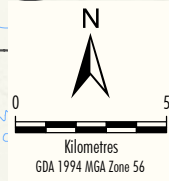
Source: © State of New South Wales and Department of Planning and Environment (2017); © Department Finance, Services & Innovation (2017); Whitehaven Coal (2018); Orthophoto: Whitehaven Coal (2018); Google (2018)

TARRAWONGA COAL MINE
Indicative Modification
General Arrangement

Figure ES-3



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- LEGEND**
- Mining Tenement Boundary (ML and CL)
 - Mining Lease Application Boundary (MLA 1)
 - NSW State Forest
 - State Conservation Area, Aboriginal Area
 - Major Roads
 - Railway
 - Local Government Boundary
 - WHC Private Haul Road
 - Indicative Location of Modification Pipeline
 - Proposed Vickery Extension Project Pipeline Location
 - Approved ROM Coal Transport Route - Northern Section
 - Approved ROM Coal Transport Route - Southern Section

Source: LPMA - Topographic Base (2010); NSW Department of Industry (2018)

WHITEHAVEN COAL
TARAWONGA COAL MINE
ROM Coal Road Transport Routes

Figure ES-4

ES2 JUSTIFICATION FOR MODIFICATION APPROVAL

Approval of the proposed changes to the Tarrawonga Coal Mine for the Modification is considered to be justified given it would:

- maximise the recovery of coal within the approved open cut extent by seeking approval to mine within 200 m of the Upper Namoi alluvium (but would avoid mining the Upper Namoi alluvium itself), while avoiding economically prohibitive capital costs;
- result in a reduction in some approved environmental impacts, including the Modification open cut extent no longer intersecting the Upper Namoi alluvium and Goonbri Creek (i.e. potential impacts on water resources) and associated surface disturbance;
- provide more efficient coal extraction via an increase in the ROM coal mining rate from 3.0 to 3.5 Mtpa;
- provide an alternative contingency water supply from surplus water from the proposed Vickery Extension Project (subject to the Vickery Extension Project’s approval, commissioning and water extraction/licensing limits); and

- allow the Tarrawonga Coal Mine to operate consistent with all other existing environmental limits for the Tarrawonga Coal Mine.

ES3 ENVIRONMENTAL MANAGEMENT AND MONITORING

To assess the potential environmental impacts of the Modification, the following specialist environmental reviews were completed:

- Groundwater Assessment;
- Surface Water Assessment;
- Noise Assessment;
- Air Quality and Greenhouse Gas Assessment;
- Road Transport Assessment;
- Biodiversity Development Assessment Report;
- Aboriginal Cultural Heritage Assessment; and
- Economic Assessment.

A summary of the key findings from the environmental reviews and the key management, mitigation or monitoring measures for the Modification is provided in Table ES-1.

Table ES-1
Key Outcomes of the Environmental Reviews

Environmental Aspect	Summary of Environmental Review	Key Management, Mitigation or Monitoring Measures for the Modification
Groundwater	<ul style="list-style-type: none"> ■ Updated and recalibrated groundwater model. ■ Modification open cut extent no longer intersecting the Upper Namoi alluvium and Goonbri Creek. ■ Maximum drawdown at privately-owned bores from the Upper Namoi Alluvium is predicted to be no more than 1 m, and would not materially affect the existing or potential future beneficial use of groundwater. ■ Operational and post-mining inflows well below current licensing requirements. ■ Level 1 minimal impact consideration of the Aquifer Interference Policy for Upper Namoi Zone 4 Alluvium and Murray Darling Basin Porous Rock. ■ Mining within 200 m of the Upper Namoi alluvium can occur without the requirement for a low permeability barrier. 	<ul style="list-style-type: none"> ■ Continued monitoring in accordance with the <i>Water Management Plan and Boggabri, Tarrawonga and Maules Creek Complex (BTM Complex) Water Management Strategy</i>, which would be updated to incorporate the Modification. ■ Five groundwater monitoring sites proposed under the Modification.

Table ES-1 (continued)
Key Outcomes of the Environmental Reviews

Environmental Aspect	Summary of Environmental Review	Key Management, Mitigation or Monitoring Measures for the Modification
Surface Water	<ul style="list-style-type: none"> ■ Modification open cut extent no longer intersecting the Upper Namoi alluvium and Goonbri Creek. ■ Flood modelling indicates the revised open cut extent would be above the elevation of the Probable Maximum Flood event. ■ No predicted uncontrolled releases from the Water Management System. ■ Water management would continue as per the existing Water Management Plan and Environmental Protection Licence 12365. 	<ul style="list-style-type: none"> ■ Continued monitoring in accordance with the <i>Water Management Plan</i> and <i>BTM Complex Water Management Strategy</i>, which would be updated to incorporate the Modification.
Noise	<ul style="list-style-type: none"> ■ Continued compliance with PA 11_0047 noise limits predicted. ■ Compliance with vacant land noise criterion specified under the <i>Voluntary Land Acquisition and Mitigation Policy (VLAMP)</i> and PA 11_0047. 	<ul style="list-style-type: none"> ■ Continued implementation of the <i>Noise Management Plan</i> and <i>BTM Complex Noise Management Strategy</i>, which would be updated to incorporate the Modification.
Air Quality and Greenhouse Gas	<ul style="list-style-type: none"> ■ No predicted exceedances of Modification-only particulate matter with diameter less than 10 microns (PM₁₀), particulate matter with diameter less than 2.5 microns or Total Suspended Particulate concentrations. ■ No privately-owned property predicted to experience exceedances of the VLAMP or PA 11_0047 criteria. ■ Reduction of total greenhouse gas emissions over the life of mine compared to the approved Tarrawonga Coal Mine (including scope 3 emissions). 	<ul style="list-style-type: none"> ■ Continued implementation of the Air Quality and Greenhouse Gas Management Plan which would be updated to incorporate the Modification. ■ Continued implementation of the <i>BTM Complex Air Quality Management Strategy</i> which is designed to prevent short-term exceedances, which would be updated to incorporate the Modification.
Road	<ul style="list-style-type: none"> ■ Increased haulage along the Northern Section of the Approved ROM Coal Transport Route (from 3 to 3.5 Mtpa). ■ Approved ROM Coal Transport Route slightly modified to incorporate the new site access point off Goonbri Road. ■ The approved realignment of Goonbri Road east and south of the Open Cut would no longer be required under the Modification. ■ The Modification would have no impact on the Level of Service of road users. 	<ul style="list-style-type: none"> ■ Continued implementation of <i>Whitehaven's Traffic Management Plan</i>, which would be updated to incorporate the Modification. ■ A portion of Goonbri Road would be upgraded and sealed to a standard consistent with the requirements of the <i>Guide to Road Design Part 3: Geometric Design</i>. Works would be undertaken in consultation with the Narrabri Shire Council (NSC). ■ A Basic Auxiliary Left turn treatment is required for vehicles making a left turn at the new T-intersection on Goonbri Road toward the relocated ROM coal stockpile.
Biodiversity	<ul style="list-style-type: none"> ■ Net reduction in disturbance of approximately 87 hectares (ha) compared to the approved Tarrawonga Coal Mine. ■ Approximately 2.35 ha of clearance outside of previously approved areas for the Modification pipeline and site access road off Goonbri Road. 	<ul style="list-style-type: none"> ■ Continued implementation of the Biodiversity Management Plan and <i>Leard Forest Regional Biodiversity Strategy Stage 2 – Strategy Report</i>, would be updated to incorporate the Modification. ■ Five ecosystem credits for disturbance outside of approved areas in accordance with the NSW Offset Policy. ■ Four species credits for the Slender Darling Pea (<i>Swainsona murrayana</i>) which was conservatively assumed to be present in accordance with the NSW Offset Policy.

Table ES-1 (continued)
Key Outcomes of the Environmental Reviews

Environmental Aspect	Summary of Environmental Review	Key Management, Mitigation or Monitoring Measures for the Modification
Aboriginal heritage	<ul style="list-style-type: none"> ■ Net reduction in disturbance of approximately 87 ha compared to the approved Tarrawonga Coal Mine, resulting in avoidance of sites in the approved development area. ■ Approximately 2.35 ha of clearance outside of previously approved areas for the Modification pipeline and site access road off Goonbri Road. ■ Consultation with Registered Aboriginal Parties, including surveys. ■ No additional Aboriginal cultural heritage sites identified within new disturbance areas. 	<ul style="list-style-type: none"> ■ Continued implementation of the <i>Tarrawonga Coal Mine Heritage Management Plan</i> and <i>BTM Complex Aboriginal Heritage Conservation Strategy</i>, which would be updated to incorporate the Modification.
Economic	<ul style="list-style-type: none"> ■ In consideration of the capital costs described in Section ES1, TCPL would cease mining at 200 m from the Upper Namoi alluvium under PA 11_0047. ■ Net economic benefits of \$37 million in net present value compared to the scenario where mining ceases at 200 m from the Upper Namoi alluvium and the capital works are not undertaken. 	<ul style="list-style-type: none"> ■ N/A
Visual	<ul style="list-style-type: none"> ■ General Tarrawonga Coal Mine landform concepts retained with some changes to the size and location of approved landforms. ■ Similar impact to that assessed in the Tarrawonga Coal Mine Environmental Assessment. 	<ul style="list-style-type: none"> ■ Continued progressive rehabilitation of the Tarrawonga Coal Mine landforms. ■ Relocated noise/visual bund.
Social	<ul style="list-style-type: none"> ■ No change to existing workforce or mine life resulting in no additional demand for services (e.g. housing and health services). 	<ul style="list-style-type: none"> ■ Continued implementation of social impact mitigation and management measures.