AUGUST 2024

VICKERY EXTENSION PROJECT

MODIFICATION 1

WHITEHAVEN COAL

EXECUTIVE SUMMARY

ES.1 INTRODUCTION

The Vickery Extension Project (the Project) is an approved, open cut coal mine located in the Gunnedah Coalfield, approximately 25 kilometres (km) north of Gunnedah in New South Wales (NSW).

The Project involves the development of the Vickery Coal Mine within Coal Lease 316, Mining Lease (ML) 1718, ML 1464, ML 1471 and ML 1838 and associated infrastructure including a rail spur, coal handling and preparation plant and groundwater borefield.

Development Consent (State Significant Development [SSD] 7480) for the Project was issued under Part 4 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) by the Independent Planning Commission on 12 August 2020.

Whitehaven is proposing to modify Development Consent (SSD 7480) under section 4.55(2) of the EP&A Act to allow for changes identified during the detailed design phase of the Project (the Modification).

ES.2 OVERVIEW OF THE MODIFICATION

The Modification would include the following proposed changes to the Project:

- additional Project rail loop construction footprint;
- construction of pipelines from transfer points on the adjoining Mirrabinda and Ovenden properties and from the mine infrastructure area to the Rocglen Coal Mine;
- upgrade of an existing access road to provide temporary construction access to the Project rail spur;
- an alternative realignment of the approved Blue Vale Road diversion and commensurate reduction of the open cut extent;
- construction and use of a temporary concrete batching plant;
- extraction, crushing and screening of up to 90,000 cubic metres of gravel in any calendar year from the site for collection by customers (daytime hours only);
- disposal of waste heavy vehicle tyres in the waste rock emplacement areas;
- extended run-of-mine (ROM) coal road haulage hours;
- improve mine landform designs using best practice geomorphic design principles; and
- update of the Schedule of Lands and a minor change to a rehabilitation objective.

The Modification would not change the following approved Project components:

- mine tenements;
- open cut mining methods;
- indicative mining fleet;
- maximum annual coal extraction rate;
- processing method and maximum annual rate;
- product transport method; and
- mine life.

The Modification would facilitate the continuity and access to the State's resources by optimising the construction phase of the Project and operation of the Vickery Coal Mine.

ES.3 STAKEHOLDER ENGAGEMENT OVERVIEW

Whitehaven has consulted with a number of stakeholders during the development of the Modification, including:

- NSW Department of Planning, Housing and Infrastructure;
- NSW Department of Climate Change, Energy, the Environment and Water, including:
  - NSW Biodiversity, Conservation and Science Group; and
  - NSW Environment Protection Authority.
- Transport for NSW;
- Department of Primary Industries and Regional Development – NSW Resources (including the NSW Resources Regulator);
- Gunnedah Shire Council;
- Narrabri Shire Council;
- infrastructure providers;

- Aboriginal stakeholders; and
- Project Community Consultive Committee.

Key comments raised during consultation have been considered and addressed in preparation of this Modification Report.

ES.4 ASSESSMENT OF IMPACTS

Whitehaven has undertaken a review of the potential environmental impacts of the Modification to identify key potential environmental issues requiring assessment. The key environmental issues identified are summarised in Table ES-1 below.

ES.5 EVALUATION

Approval of the Modification is considered to be justified given the Modification would:

- facilitate rail construction works and efficient movement of the construction fleet by allowing an additional laydown area at the rail loop and upgrading an existing road;
- improve water security for the Project and reduce reliance on extraction from the Namoi River by constructing and operating pipelines to access alternative approved water sources on the adjoining Mirrabinda and Ovenden properties;
- improve water security for the Project and reduce reliance on extraction from the Namoi River through additional water pipelines from existing transfer points on the adjoining Mirrabinda and Ovenden properties and the Rocglen Coal Mine;
- provide an optimised alternative Blue Vale Road diversion by minimising the travel distance, reducing impact on Stratford Creek and improving the road design;
- allow for the use of an on-site temporary concrete batching plant to produce concrete within the approved disturbance footprint for the Project, rather than transporting the significant volumes of concrete from regional manufacturers by agitator trucks;
- allow for disposal of waste heavy tyres with minimal environment impact;
- prevent rostering challenges due to improved flexibility of haulage hours;
- allow the ability to produce gravel from overburden material which could be supplied to local council to improve gravel roads; and
- implement geomorphic landform design principles for the waste rock emplacement that better reflects natural topography.

In weighing up the main environmental impacts (costs and benefits) associated with the proposal as assessed and described in this Modification Report, the Modification is on balance, considered to be in the public interest of the State of NSW.

Table ES-1
Key Outcomes of Environmental Review for the Modified Project

Environmental Aspect	Summary of Key Environmental Review Conclusions
Land and Agricultural Resources	▪ The Modification is not expected to have a significant impact on land use and capability, and no significant changes to the approved potential hazards and/or risks are expected.
Biodiversity	▪ The Modification would require the clearance of approximately 55.2 hectares (ha) of native vegetation (of which approximately 21.4 ha is woodland/forest and 33.8 ha is derived native grassland). ▪ The Modification would result in a net increase in clearance of approximately 25.7 ha of additional native vegetation (or 1.1 % more than the existing approved Project). ▪ A range of measures to avoid and minimise impacts have been adopted during the design of the Modification and there are also measures to mitigate and manage impacts.

Table ES-1 (Continued)
Key Outcomes of Environmental Review for the Modified Project

Environmental Aspect	Summary of Key Environmental Review Conclusions
Aboriginal Cultural Heritage	▪ 14 previously unidentified Aboriginal cultural heritage sites and 8 registered on Aboriginal Heritage Information Management System (a total of 22) were identified within the Investigation Area for the Modification. ▪ 18 Aboriginal cultural heritage sites known to exist within the Investigation Area are considered to be of low scientific significance due to the low number of site contents, the disturbed context of the sites, and the common occurrence of these site types within the wider region. ▪ Of the 22 sites identified within the Investigation Area, 11 would be impacted by the development of the Modification. ▪ The Aboriginal Cultural Heritage Management Plan would continue to be implemented for the modified Project.
Noise	▪ The modified Project operations are expected to continue to comply with the Development Consent (SSD 7480) noise criterion and the *Noise Policy for Industry* Project noise trigger levels.
Air Quality	▪ The activities associated with the temporary concrete batching plant are predicted to generate between 0.2 percent (%) and 0.4% more dust relative to the approved Project operations. ▪ It is expected the modified Project would continue to comply with the relevant air quality criteria.
Greenhouse Gas	▪ Additional greenhouse gas emissions directly generated as a result of the temporary concrete batching plant (Scope 1 emissions) would be approximately 247 tonnes carbon dioxide equivalent. ▪ Electricity supplied to all of Whitehaven's operational mine sites are obtained through a scheme where eligible carbon offset units are purchased and retired to offset the emissions associated with the generation and delivery of electricity. Accordingly, the Scope 2 emissions associated with the operation of the temporary concrete batching plant would be offset by these schemes. ▪ The estimated annual greenhouse gas emissions generated from the temporary concrete batching plant are considered minor in comparison to the emissions associated with the Project.
Water	▪ No significant surface water impacts are expected as a result of the Modification with the implementation of the measures outlined in the approved Water Management Plan. ▪ Water to be transferred from the adjacent private properties would be extracted from the ground by the landholders in accordance with existing groundwater bores with Works Approvals, bore extraction limits and Water Access Licences issued under the *Water Management Act 2000.*
Road Transport	▪ The Modification would have acceptable impacts on the road network, with no additional measures or road upgrades required to accommodate the Modification.
Visual	▪ Given the mitigation measures to be implemented (i.e. vegetative screens and bunds would mitigate visual impacts over time along the revised Blue Vale Road realignment), a low level of visual impact would be expected as a result of the Modification.
Social	▪ The Modification would not require additional workforce at the Project. ▪ There are expected to be no additional impacts on the local population, access to community infrastructure and services.
Hazards and Risks	▪ As the Modification would not change the existing potential risks or hazard consequences identified in the Preliminary Hazard Analysis for the approved Project, no significant changes to the approved potential hazards and/or risks are expected.

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1 INTRODUCTION

The Vickery Extension Project (the Project) is an approved, open cut coal mine located in the Gunnedah Coalfield, approximately 25 kilometres (km) north of Gunnedah in New South Wales (NSW) (Figure 1-1).

The Project involves the development of the Vickery Coal Mine (VCM) within Coal Lease (CL) 316, Mining Lease (ML) 1718, ML 1464, ML 1471 and ML 1838 and associated infrastructure including a rail spur, coal handling and preparation plant (CHPP) and groundwater borefield (Figure 1-2).

Development Consent (State Significant Development [SSD] 7480) for the Project was issued under Part 4 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) by the Independent Planning Commission on 12 August 2020.

Whitehaven is proposing to modify Development Consent (SSD 7480) under section 4.55(2) of the EP&A Act to allow for changes identified during the detailed design phase of the Project (the Modification).

This Modification Report has been prepared in consideration of the *State Significant Development Guidelines* (NSW Department of Planning, Housing and Infrastructure [DPHI], 2024a), in particular *Appendix E – preparing a modification report* (NSW Department of Planning and Environment [DPE], 2022a).

1.1 OVERVIEW OF THE APPROVED VICKERY EXTENSION PROJECT

The Project involves extraction of up to 10 million tonnes per annum (Mtpa) of run-of-mine (ROM) coal by open cut mining methods over a mine life of 25 years.

The Project includes the open cut pit, waste rock emplacements, mine infrastructure area (MIA) (including a CHPP), water supply and water management infrastructure, and other infrastructure.

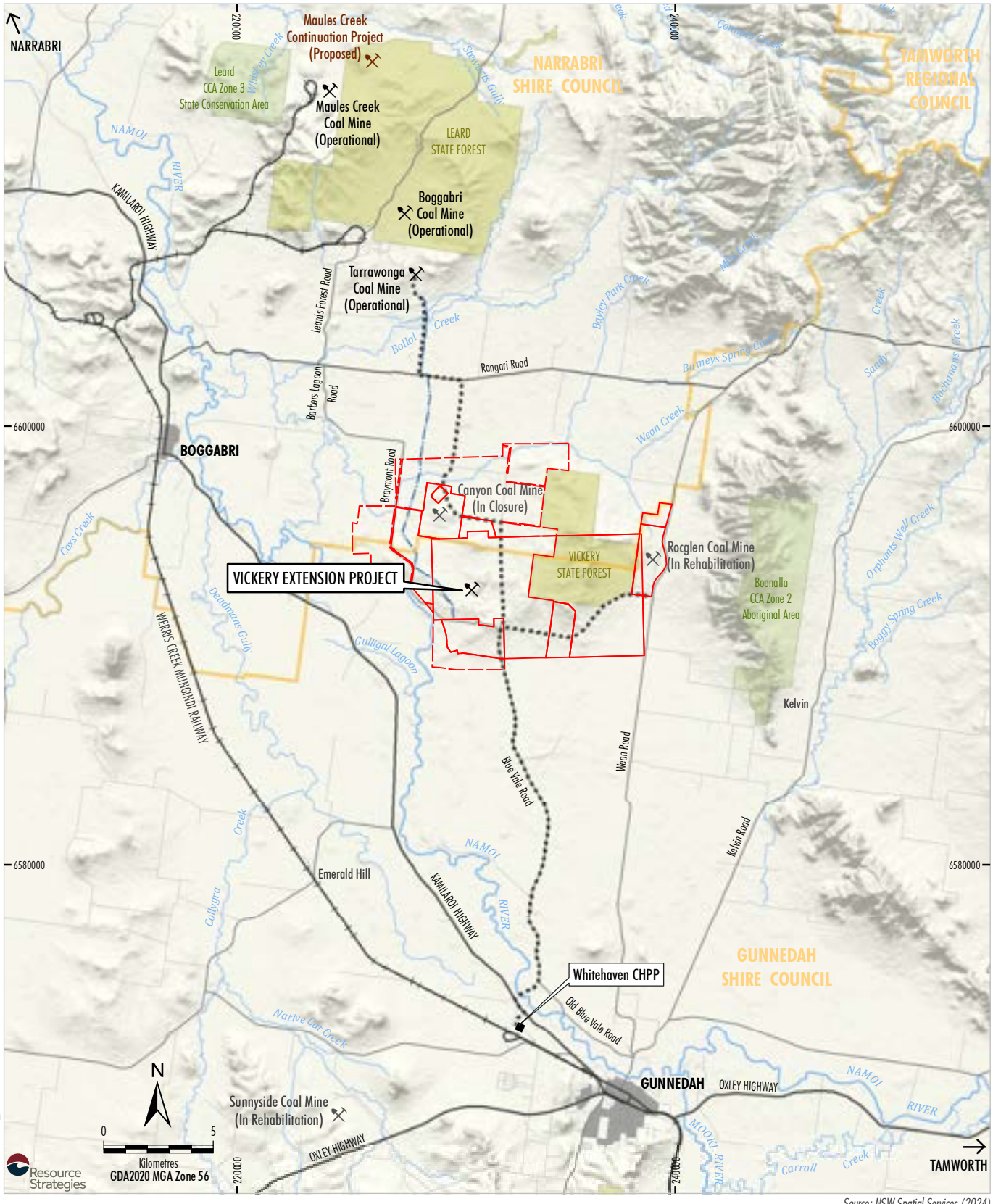
The Project CHPP will have the ability to receive ROM coal from the Project and via public roads from other Whitehaven mining operations for stockpiling and/or processing.

The Project includes construction and operation of the rail spur and loop connecting to the Werris Creek Mungindi Railway. The Project rail spur and train load-out facility would be used to transport up to approximately 11.5 Mtpa of product coal to the market.

1.1.1 Summary of Initial Development Activities

Initial development activities for the Project commenced in 2023 at the VCM. The initial development included the construction of a temporary infrastructure area, including administration and office facilities, workshops, water management infrastructure, laydown areas and other early mining works (Figure 1-3 and Plates 1-1 and 1-2).

Plate 1-1 – Initial Development Activities



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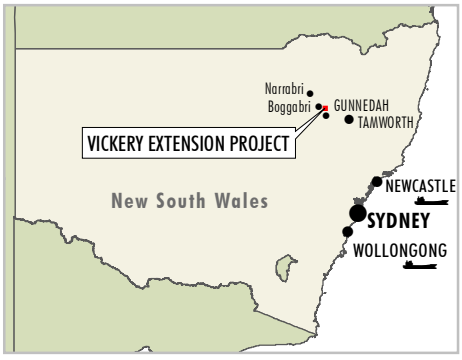
Source: NSW Spatial Services (2024)



LEGEND

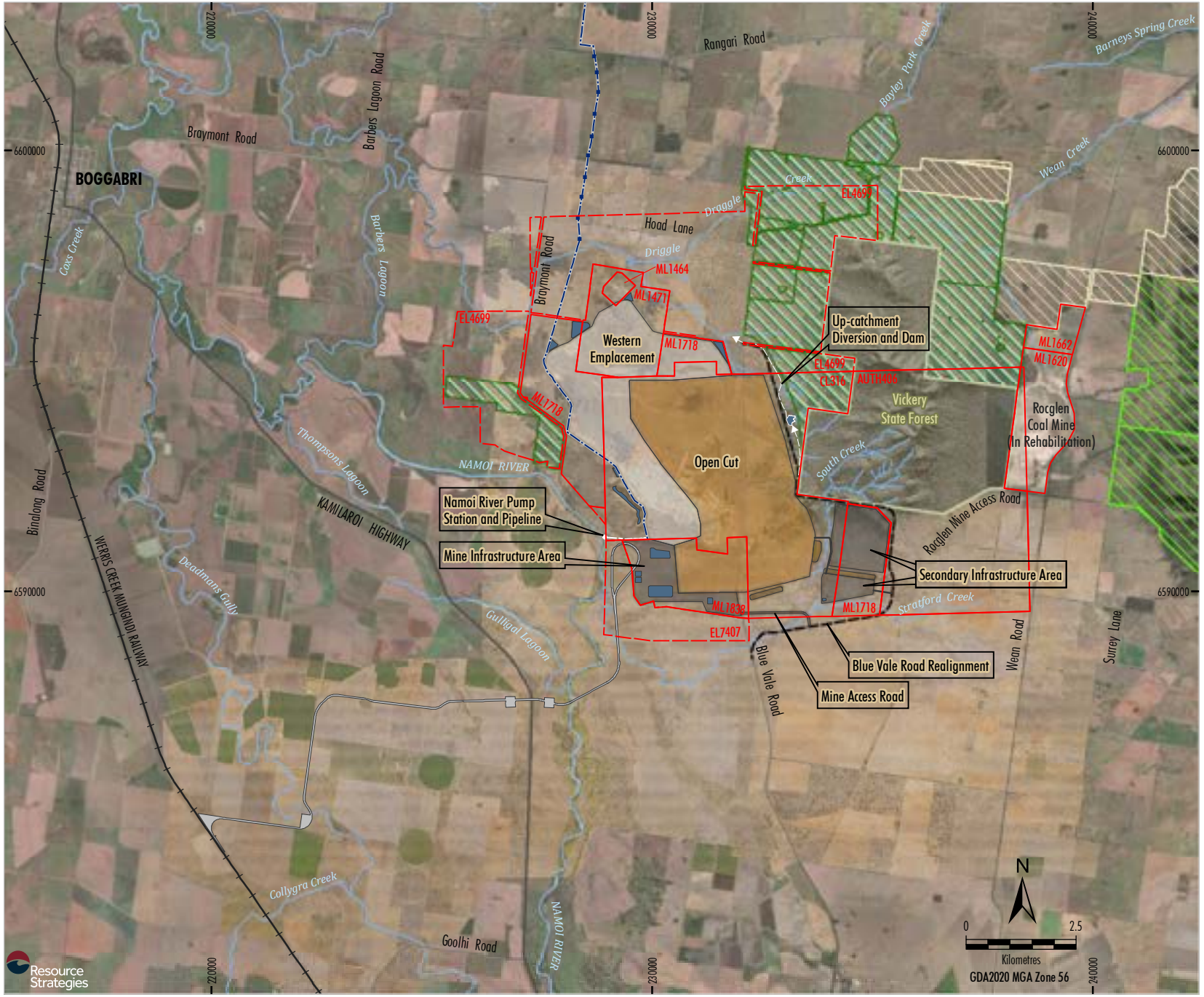
- Mine Site (Operational)
- Mine Site (Proposed)
- Mine Site (In Closure/Rehabilitation)
- Railway
- Major Road
- Local Road
- State Forest
- State Conservation Area, Aboriginal Area
- Local Government Boundary
- Exploration Licence Boundary (EL)
- Mining Tenement Boundary (ML, CL)
- Approved Road Transport Route
- Indicative Location of Tarrawonga to Vickery Pipeline

WHITEHAVEN COAL

VICKERY EXTENSION PROJECT

Regional Location

Figure 1-1



LEGEND

- Railway
- State Forest
- Whitehaven Biodiversity Stewardship Site
- Whitehaven Conservation Agreement Area
- Whitehaven Biobanking Agreement Area
- Exploration Licence Boundary (EL, AUTH)
- Mining Tenement Boundary (ML, CL)

Project Components

- Indicative Extent of Open Cut
- Indicative Extent of Out of Pit Waste Rock Emplacement
- Indicative Extent of Infrastructure Area
- Indicative Extent of Soil Stockpile
- Indicative Extent of Water Storage
- Indicative Mine Access Road Alignment
- Indicative Road Realignment
- Indicative Rail Spur Alignment
- Indicative Namoi River Pump Station and Pipeline
- Indicative Up-catchment Diversion and Dam Location
- Indicative Location of Groundwater Bores and Tarrawonga to Vickery Pipeline

Source: Whitehaven (2015, 2024); NSW Spatial Services (2024)
Orthophoto Mosaic: Whitehaven (March 2024); ESRI Basemap

WHITEHAVEN COAL

VICKERY EXTENSION PROJECT

Approved Vickery Extension Project General Arrangement

Figure 1-2

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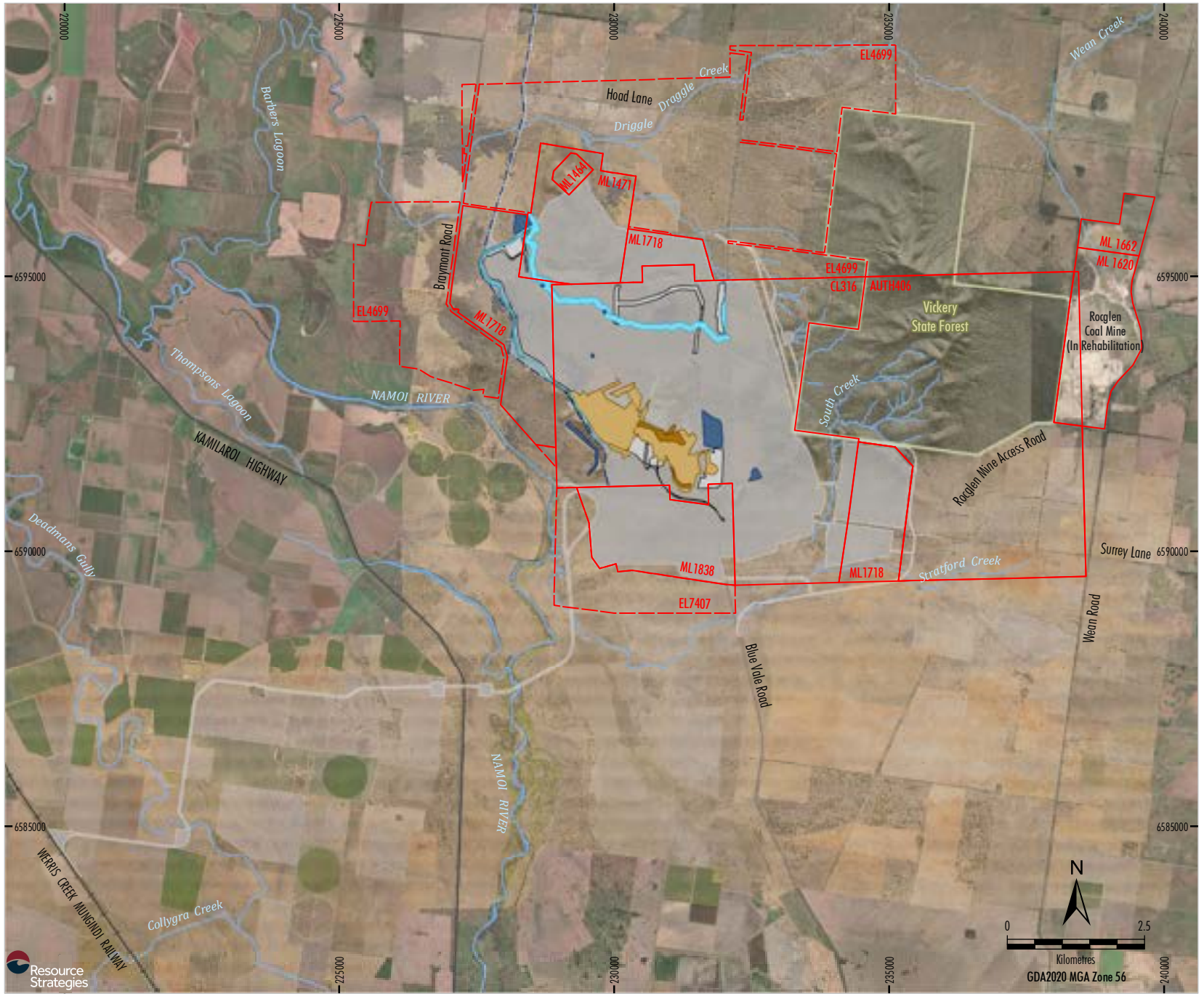

LEGEND

- Railway
- State Forest
- Exploration Licence Boundary (EL)
- Mining Tenement Boundary (ML, CL)
- Approximate Extent of Approved Vickery Extension Project
- Indicative Location of Tarrawonga to Vickery Pipeline

Initial Development Activities *

- Active Mining Area (Open Cut Void)
- Overburden Emplacement Area
- Infrastructure Area
- Water Management Area
- Water Storage

* Indicative Extent of Initial Development Acivities represents December 2023 mining domains as shown in Plan 1A of the 2024 Annual Rehabilitation Report.

Source: Whitehaven (2024); NSW Spatial Services (2024)
Orthophoto Mosaic: Whitehaven (March 2024); ESRI Basemap

WHITEHAVEN COAL

VICKERY EXTENSION PROJECT

Initial Development Activities
General Arrangement

Figure 1-3

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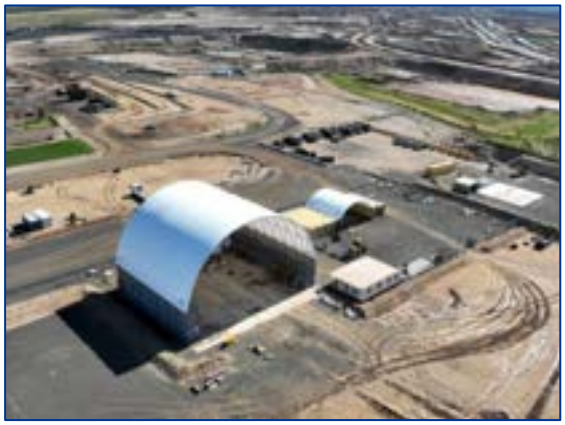


Plate 1-2 – Component of the Temporary Infrastructure Area

Initial development has supported commencement of early mining, with excavation of the box cut (Plate 1-3) and initial development of the waste rock emplacement commencing at the end of 2023.

Plate 1-3 – Initial Excavation of Box Cut

Initial development and early mining works are being conducted in accordance with a suite of management plans required under the Development Consent (SSD 7480), as well as the Forward Program, Annual Rehabilitation Report and Rehabilitation Management Plan prepared under the NSW *Mining Act 1992*, developed to reflect this initial stage of the Project.

The early mining phase will continue until such time as the Project rail spur, CHPP and MIA is commissioned, at which time mining intensity would increase with the commencement of off-site transport of product coal via the Project rail spur. Whitehaven is anticipating commencing relevant pre-construction activities of the Project once the Project has passed through Whitehaven capital allocation assessment process, expected in 2025.

Whitehaven has engaged with relevant stakeholders during the initial development and early mining stage and through the development of the detailed design of Project components. This has included development of detailed management measures, updates to management plans and revised assessment of specific Project components. A summary of this engagement is outlined in the subheadings below.

Social Impact Management Plan

The Social Impact Management Plan (SIMP) was prepared in consultation with the Gunnedah and Narrabri Shire Councils through the development of the Project SIMP, prepared for the initial construction and early mining stage.

The SIMP describes the measures to be implemented to mitigate and manage potential social impacts on local communities during the initial construction and early mining stage, describes how opportunities will benefit the local communities and presents a framework for monitoring the effectiveness of management measures and adjusting them over time.

An updated SIMP for full-scale development of the Project will be prepared in consultation with the local councils and DPHI, which will re-evaluate the potential impacts of the full-scale development of the Project, including consideration of any changes to the Project workforce profile assessed in the Environmental Impact Statement (EIS), and submitted to DPHI for approval.

Consultation with Transport for NSW

Consultation with Transport for NSW (TfNSW) was undertaken regarding the design of the Kamilaroi Highway rail overpass, including the design and operation temporary construction access points at the overpass location. TfNSW has provided in principle support for the temporary highway construction access and proposed traffic control measures for the overpass construction period and construction of the rail west of the Kamilaroi Highway.

A detailed Traffic Management Plan for the overpass construction period and construction of the rail west of the Kamilaroi Highway will be prepared and submitted to TfNSW for approval prior to commencement of the overpass construction.

Detailed Rail Design Flood Study

Consultation with DPHI was undertaken regarding the detailed design of the Project rail spur in accordance with Conditions B48 and B49, Schedule 2 of Development Consent (SSD 7480). Updated flood modelling incorporating the detailed design of the Project rail spur has been completed to demonstrate that the design is consistent with the objectives of the *Floodplain Management Plan for the Upper Namoi Valley Floodplain 2019*. The detailed design includes the elevation of the rail spur above the 1 percent (%) Annual Exceedance Probability flood event using a combination of piers, culverts and embankments.

On 23 July 2024, the Planning Secretary approved the detailed design of the Project rail spur.

The Project will create approximately 500 jobs during the construction phase and 450 jobs during operations. It is estimated the Project will generate approximately 170 new jobs in locally-based supplier businesses.

Consultation with Other NSW Government Agencies

Consultation with the NSW Department of Climate Change, Energy, the Environment and Water (NSW DCCEEW) – Water Group, NSW Environment Protection Authority (EPA) and DPHI was undertaken regarding the Project water management system and management of impacts on the receiving environment. DPHI approved the Project's Water Management Plan prepared for the initial construction and early mining stage (3-year period) in August 2023.

A revised Water Management Plan has been prepared to include the management of impacts to water resources for the subsequent stage of the Project, including the proposed management of the construction of the Project rail spur and the associated temporary construction bridge across the Namoi River, construction of the MIA and further development of the open cut mining operation.

A revised Water Management Plan has been prepared in consultation with NSW DCCEEW – Water Group and the EPA and will be submitted to DPHI for approval. The Water Management Plan would be revised again following approval of the Modification to incorporate the operation of the Ovenden, Mirrabinda and Rocglen pipelines and required adjustments to the water management system.

1.2 OVERVIEW OF THE MODIFICATION

1.2.1 Background to the Modification

Through the initial development of the VCM, detailed design of Project infrastructure has progressed. This work has identified opportunities to improve designs of the Project landforms and components, adjust the water management system to improve water security and reduce reliance on extraction from the Namoi River, improve construction traffic management and adjust construction footprints to accommodate detailed design requirements for Project infrastructure.

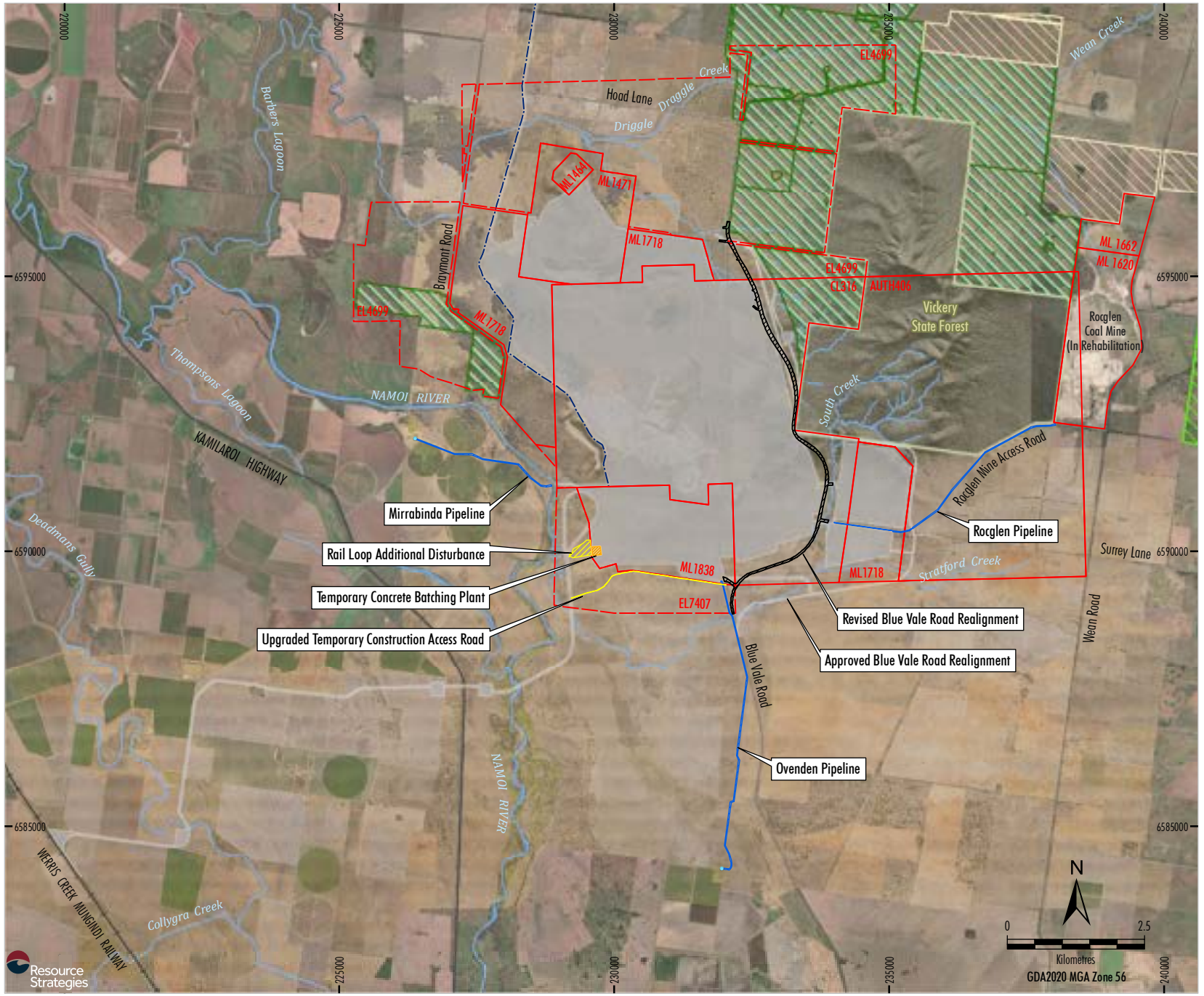
Other changes are also proposed to align ROM coal haulage and waste heavy vehicle tyre management at the Project with contemporary approval conditions for Whitehaven's nearby Tarrawonga Coal Mine and reinstate a historic approval for the production of gravel materials at the VCM to supply local councils and other customers.

The Modification would facilitate these improvements identified through the initial construction and detailed design phase of the Project elements at the VCM and detail design phase of the Project.

1.2.2 Description of the Modification

The Modification would include the following proposed changes to the Project (Section 3):

- additional Project rail loop construction footprint (Figure 1-4);
- construction of pipelines from transfer points on the adjoining Mirrabinda and Ovenden properties and from the MIA to the Rocglen Coal Mine (Figure 1-4);
- upgrade of an existing access road to provide temporary construction access to the Project rail spur (Figure 1-4);
- an alternative realignment of the approved Blue Vale Road diversion and commensurate reduction of the open cut extent (Figure 1-4);
- construction and use of a temporary concrete batching plant (Figure 1-4);
- extraction, crushing and screening of up to 90,000 cubic metres (m^3) of gravel in any calendar year from the site for collection by customers (daytime hours only);



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WHITEHAVEN COAL

VICKERY EXTENSION PROJECT

Modified Vickery Extention Project
General Arrangement

Figure 1-4

- disposal of waste heavy vehicle tyres in the waste rock emplacement areas;
- extended ROM coal road haulage hours;
- improve mine landform designs using best practice geomorphic design principles; and
- update of the Schedule of Lands and a minor change to a rehabilitation objective.

The Modification would not change the following approved Project components:

- mine tenements;
- open cut mining methods;
- indicative mining fleet;
- maximum annual coal extraction rate;
- processing method and maximum annual rate;
- product transport method; and
- mine life.

1.2.3 Requirement for the Modification

Project Rail Spur Construction Footprint and Access

Following approval of the Project, specialist rail engineering consultants through detailed design for the Project rail spur have identified the requirement for an increase in the construction footprint (i.e. an additional laydown area) to facilitate rail construction works and efficient movement of the construction fleet. An existing access road off Blue Vale Road is also proposed to be upgraded to improve access for the rail construction workforce and vehicles transporting construction material required for the Project rail spur during the Project construction period (Figure 1-4).

Water Supply and Pipelines

To improve water security for the Project and reduce reliance on extraction from the Namoi River, Whitehaven has negotiated agreements with adjacent landholders of the Mirrabinda and Ovenden properties to purchase water extracted by the landholders from existing approved groundwater bores under existing Water Access Licences (WALs). Pipelines and associated pumping infrastructure are proposed to be constructed to convey the water from transfer points on the Mirrabinda and Ovenden properties to the Project water management system (Figure 1-4).

Whitehaven's nearby Rocglen Coal Mine is currently in rehabilitation which provides an opportunity to use the final void as a temporary water storage facility for the Project. Construction of a pipeline between the Project and the Rocglen Coal Mine will enable the transfer of surplus water to the Rocglen Coal Mine final void, and the return transfer of this water and other water collected within the final void catchment to the Project for use in mining activities when required. This would reduce the requirement for the use of external water supplies from the Namoi River and groundwater sources when water temporarily stored in the Rocglen Coal Mine final void is available.

This Modification seeks approval for the construction of a pipeline between the Project and the Rocglen Coal Mine, however the use of the Rocglen final void for water storage and transfer of the water between the two sites would be subject to a separate modification of the Rocglen Coal Mine Project Approval (10_0015).

Revised Blue Vale Road Realignment

The Project includes the development of a secondary infrastructure area to the east of the open cut, south of the Vickery State Forest. At this stage, detailed design of the Project does not indicate that regular or frequent access by mining fleet would be required to this approved secondary infrastructure area, and therefore there may not be a requirement to divert Blue Vale Road around the eastern perimeter of the secondary infrastructure area.

Whitehaven has identified an alternative/revised Blue Vale Road realignment which could be constructed between the open cut extent and the secondary infrastructure area. This revised alignment minimises the diversion travel distance, reduces impact on Stratford Creek and improves the road design with fewer tight bends and less cut and fill requirements for construction.

Whitehaven intends to retain the approval for the development of the currently approved Blue Vale Road realignment as a future development opportunity in the event that future mine design requires more frequent use of the approved secondary infrastructure area.

The northern part of the revised Blue Vale Road realignment is located slightly to the west of the approved Blue Vale Road realignment. This revised alignment is based on the detailed design of the road infrastructure in consideration of the topography and road design requirements. The open cut in this area will be developed such that there is a sufficient distance remaining between the operational mining area and the road, with consideration for the siting of infrastructure such as fences, vegetation screening, light vehicle access roads along the pit crest, topsoil stockpiles, safety bunds and water management infrastructure.

Temporary Concrete Batching Plant

Development of Project mine infrastructure would require a significant number of concrete components. Rather than transporting the significant volumes of concrete from regional manufacturers by agitator trucks to the Project, the Modification would allow for the use of an on-site batching plant to produce concrete within the approved disturbance footprint for the Project (Figure 1-4).

Waste Tyre Disposal

Consistent with the requirements of Whitehaven's other operations, options for the reuse or recycling of waste heavy vehicle tyres are limited given the size of the tyres and the remoteness of mining operations. Further, tyre recycling facilities are generally designed for smaller tyres from passenger vehicles, and landfills have limited capacity. The option to dispose of waste heavy vehicle tyres in emplacement areas would prevent this limitation with minimal environment impact.

ROM Coal Haulage Hours

The same constraints to achieving the approved ROM coal haulage volumes being experienced by the Tarrawonga Coal Mine are anticipated to be experienced for the Project (i.e. rostering challenges due to limited flexibility provided by the current road haulage hours).

Given the Tarrawonga Coal Mine Modification 10 demonstrated there would be no increase in road traffic or road noise impacts associated with the extended road haulage hours, and the assessments were prepared on the basis of cumulative movements at the maximum approved annual limit for the Approved ROM Coal Transport Route, it is considered that the haulage hours for the Project should also be extended.

Gravel Production

Consultation with the local councils has identified a demand for gravel for construction projects in the region. Overburden material at the Project can provide a suitable material for gravel production, with crushing and screening of this material to produce gravel being an activity that was approved as part of the Vickery Coal Project[1].

Improved Landform Design

Consistent with best practice measures being implemented at Whitehaven's other open cut operations in NSW, the refined mine design has adopted geomorphic landform design principles for the waste rock emplacement. Design of the landform using these principles improves drainage characteristics, reduces erosion risk and produces a landform that better reflects natural topography, reducing visual impacts of the Project.

Updated Schedule of Lands

Whitehaven requires an update to the Schedule of Lands presented in Development Consent (SSD 7480) (Attachment 1) to account for subdivisions undertaken since approval of Development Consent (SSD 7480), additional land associated with the construction of pipelines from existing dams on the adjoining Mirrabinda and Ovenden properties and to the Rocglen Coal Mine.

1.2.4 Analysis of Feasible Alternatives

The alternative to proceeding with the Modification would be to proceed with the approved Project, which would not allow for the implementation of the improvements identified during the Project detailed design. A summary of alternatives considered is outlined in the subheadings below.

Project Rail Spur Construction Footprint and Access

Whitehaven investigated the use of the existing Project rail spur disturbance footprint (i.e. without the additional laydown area or upgrading the existing access road), however, identified that proceeding without the Modification would potentially result in delays and complications for the rail construction workforce during the transport of materials needed for construction of the Project rail spur.

[1] Development Consent (SSD 5000).

Alternative Water Supply and Pipelines

During the scoping phases of the Modification, Whitehaven considered alternative pipeline routes for both the Mirrabinda and Ovenden pipelines which were more direct alignments between the transfer points and the MIA. However, these initial pipeline routes were disregarded in consideration of the outcomes of baseline environmental surveys, with the final alignments presented in this Modification being chosen to avoid and minimise impacts on ecological and heritage values and the Namoi River.

Approved Blue Vale Road Realignment

The alternative to the revised Blue Vale Road realignment would be to construct the less optimised, approved Blue Vale Road realignment, resulting in an increase of 3.6 km in length compared to the revised Blue Vale Road realignment proposed for Modification.

Transport of Concrete Materials

Whitehaven would be required to transport materials (i.e. concrete products) from regional manufacturers by agitator trucks to the Project, as an alternative to construction and operation of a temporary concrete batching plant.

Recycling of Waste Tyres

Recycling facilities do not exist proximal to the Project and transport of waste heavy vehicle tyres to these facilities is not viable (i.e. would result in additional heavy vehicles on public roads). These recycling facilities are also generally designed on a local council scale for passenger tyres and thus processing capacity is an issue. Consistent with Whitehaven's other operations, recycling of waste heavy vehicle tyres is not considered to be feasible or viable for the Project and therefore on-site disposal is the preferred management strategy for this waste stream. Whitehaven would continue to investigate feasible and reasonable opportunities for recycling waste heavy vehicle tyres from the Project at a regional location if options become available during the remainder of the Project mine life.

Proceeding with Approved Haulage Hours

The ROM coal haulage operation has faced rostering challenges due to the restricted road haulage hours in the Project Approval (11_0047) for the Tarrawonga Coal Mine, which has resulted in driver availability issues. It was noted during consultation with the haulage operation that an increase in the permitted road haulage hours would increase driver availability due to the improvement in shift scheduling. If the Modification was not to proceed, the Project haulage operation may result in similar availability issues presented at the Tarrawonga Coal Mine.

1.3 APPLICANT DETAILS

The applicant for the Modification is:

Vickery Coal Pty Ltd
Level 28, 259 George Street
SYDNEY NSW 2000
Telephone: (02) 8222 1100
Website: https://whitehavencoal.com.au/

1.4 STRUCTURE OF THE DOCUMENT

This Modification Report has been prepared in consideration of the *State Significant Development Guidelines* (DPHI, 2024a), in particular *Appendix E – preparing a modification report* (DPE, 2022a), and is structured as follows:

Section 1	Provides an overview of the existing/approved Project and an overview of the Modification.
Section 2	Provides an overview of the strategic context for the Modification.
Section 3	Provides a description of the Modification.
Section 4	Describes the statutory context of the Modification.
Section 5	Provides a summary of the engagement undertaken for the Modification and key issues raised.
Section 6	Provides an assessment of the potential environmental impacts of the Modification.
Section 7	Evaluates the merits of the Modification, and provides justification for approval of the Modification.
Section 8	Lists the references cited in Sections 1 to 7.
Attachment 1	Updated Schedule of Lands
Attachment 2	Updated Condition B101 of Development Consent (SSD 7480)
Attachment 3	Statutory Compliance Reconciliation Table
Appendix A	Biodiversity Development Assessment Report
Appendix B	Aboriginal Cultural Heritage Assessment

Appendix C	Noise Assessment
Appendix D	Air Quality and Greenhouse Gas Assessment
Appendix E	Surface Water Review
Appendix F	Road Transport Review

2 STRATEGIC CONTEXT

This section outlines the strategic context for the Modification and summarises the strategic need and potential benefits of the Modification.

2.1 REGIONAL CONTEXT

The Project is located within the Gunnedah Shire Council and the Narrabri Shire Council Local Government Areas (LGAs), in NSW (Figure 1-1).

The Gunnedah Shire and Narrabri Shire LGAs have a long history of rural land use for a variety of agricultural activities, predominantly grazing. The Gunnedah Shire and Narrabri LGAs also have a strong history of coal mining. Both agriculture and coal mining have played an important role in the region from a social and economic perspective.

The Narrabri and Gunnedah LGAs are well located to use existing road and rail transport networks to access domestic and export markets. The key road transport routes servicing the area are the Kamilaroi and Newell Highways. The Newell Highway provides access to markets/ports in Brisbane and Melbourne, and the Kamilaroi Highway provides access to markets/ports in Newcastle and Sydney. The Werris Creek Mungindi Railway provides access to markets/ports in Newcastle, Sydney and Brisbane.

The Project has the potential to be one of the most significant sources of employment and investment in North West NSW over the coming years.

The majority of the Project area is cleared and is dominated by grassland areas with occasional re-growth trees. In addition, the Project area includes areas of land that have been previously disturbed by historic mining activities associated with the former VCM and the Canyon Coal Mine. The existing rehabilitated landform includes five final voids from the historical mining activities.

2.2 PROJECT CONTEXT

The Project objective is the development and operation of an open cut coal mine and associated infrastructure, for a period of approximately 25 years.

The Project coal resource is located within the Maules Creek sub-basin of the Early Permian Bellata Group. The target coal seams are contained within the Maules Creek Formation. The Maules Creek Formation is the primary coal bearing unit and consists of conglomerate, coal, lithic sandstone and mudstones.

Project infrastructure would include the construction and operation of a Project CHPP, train load-out facility and rail spur to connect the Project to the Werris Creek Mungindi Railway.

Whitehaven has commenced the initial development of the VCM (including topsoil stripping, development of temporary infrastructure, preliminary earthworks and ROM production) and identified a number of opportunities to improve the constructability of Project infrastructure, enhancing the Project's water security, and operational efficiency of the Project (Section 1.1.1).

During this initial development phase, Whitehaven has reviewed the footprint of the Project rail spur and identified specific constraints which may prevent efficient construction of the detailed designed Project rail spur by Whitehaven's rail construction contractor.

2.3 KEY STRATEGIC PLANNING DOCUMENTS

2.3.1 Strategic Statement on Coal Exploration and Mining in NSW

The *Strategic Statement on Coal Exploration and Mining in NSW* outlines how the NSW Government will continue to support responsible resource development for the benefit of the State (NSW Government, 2020) and recognises the value of coal production to the NSW economy, including:

- The potential for coal production to provide significant benefits to local communities, including jobs and investment.
- Coal production's significant contributions to export earnings as the State's biggest single export earner.
- Facilitating beneficial post-mining land uses representing an opportunity for NSW to harness the existing infrastructure, skilled workforce and transport links from mines approaching closure, to continue economic activity on mined land.

The Modification would facilitate the continuity and access to the State's resources by optimising the construction phase of the Project and operation of the VCM.

2.3.2 New England North West Regional Plan 2041

The *New England North West Regional Plan 2041* (DPE, 2022b) outlines strategies to address sustainable management of agricultural land and natural resources and acknowledges the ongoing contribution of mining to the region.

The *New England North West Regional Plan 2041* (DPE, 2022b) acknowledges the region has a strong history of coal mining and the potential to provide socio-economic benefits to the State:

> *The region has a long history of coal mining. Its diverse geology creates potential for mineral and energy exploration and production, with the Gunnedah coal basin containing the State's third largest coal reserves and coal seam gas potential.*

The approved VCM provides existing benefits to the New England North West region. The Modification would provide further benefit as a result of optimising and improving the constructability of the Project.

The *New England North West Regional Plan 2041* (DPE, 2022a) also outlines the key initiatives for land use and water planning for the New England North West region, particularly referencing consideration is needed to protect the region's water resources (emphasis added):

> *The early consideration of water quality and supply in strategic planning is needed to **ensure that the region's water supply is secure and resilient**. Planning needs to consider whether adequate supply is available to support new development and that new and intensified development is designed to protect the region's water resources.*

The Modification would utilise the water from the Rocglen Coal Mine final void[2], and existing dams on the Mirrabinda and Ovenden properties. This component of the Modification would reduce the reliance of water extraction from the Namoi River, which is a notable source of water for the region.

2.3.3 Gunnedah Shire Local Strategic Planning Statement Future 2040

The *Gunnedah Shire Local Strategic Planning Statement Future 2040* (Gunnedah Shire Council [GSC], 2020) sets planning priorities including: effective management of resources and renewable energy; protecting and enhancing areas of environmental value; and protecting and celebrating our unique sense of place.

The Namoi River is described as a key asset for tourism, increase visitation and bringing together the Gunnedah Shire community. The *Gunnedah Shire Local Strategic Planning Statement Future 2040* (GSC, 2020) states the following in regard to the strategic benefit of the Namoi River:

> *The Namoi River and its tributaries are vital for Gunnedah Shire's position as a major food producing area and food security in Australia. These water resources not only providing habitat for diverse flora and fauna, but it also provides amenity and recreation opportunities for residents, visitors and businesses including from tourism.*

The Modification facilitates the strategic context for the *Gunnedah Shire Local Strategic Planning Statement Future 2040* (GSC, 2020) by reducing the reliance of water extraction from the Namoi River and sourcing water from the existing dams on the Mirrabinda and Ovenden properties.

The Modification would improve water security for the Project in the event of adverse weather conditions (such as prolonged drought).

2.3.4 2022-2032 Narrabri Shire Community Strategic Plan

The *Narrabri Shire Community Strategic Plan 2022-2032* (NSCSP) (Narrabri Shire Council [NSC], 2022) is the NSC's strategic plan for the Narrabri LGA until 2032. The NSCSP has been structured into four key outcomes that the NSC will work with the community to achieve. The four key outcomes include:

1. *Society – An empowered, inclusive, and connected community*
2. *Environment – A sustainable and compatible natural and built environment*
3. *Economy – A strong, diverse, and sustainable economy*
4. *Civic Leadership – Council as strong leaders for the community*

[2] Subject to a future Modification of the Rocglen Coal Mine Project Approval (10_0015).

The Narrabri Shire Council is committed to achieving the goals set out in the NSCSP, including achieving "a resilient and sustainable environment" through applying strategies such as "responsibly manage, conserve, and protect water resources" (Strategy 2.3.3 of the NSCSP).

The Modification is considered generally consistent with the strategic outcomes provided in the NSCSP, particularly as a key strategic objective of the Modification is to improve the water security for the Project and reduce the reliance on taking water from the Namoi River (Strategy 2.3.3 of the NSCSP).

2.4 POTENTIAL CUMULATIVE INTERACTIONS

In accordance with the *Cumulative Impact Assessment Guidelines for State Significant Projects* (NSW Department of Planning, Industry and Environment [DPIE], 2022a) relevant cumulative impacts of the modified Project and other developments/projects have been considered in this Modification Report (where relevant) (Section 6).

Key proposed or approved mining projects that may potentially interact with or have potential cumulative impacts with the Project include (Figure 1-1):

- Tarrawonga Coal Mine (Project Approval 11_0047) (operational);
- Boggabri Coal Mine (Project Approval 09_0182) (operational);
- Maules Creek Coal Mine (Project Approval 10_0138) (operational);
- Whitehaven CHPP (Development Consent DA 79_2002) (operational);
- Maules Creek Continuation Project (Development Consent [SSD-63428218]) (EIS in preparation); and
- Rocglen Coal Mine (Project Approval 10_0015) (in rehabilitation).

3 DESCRIPTION OF THE MODIFICATION

3.1 OVERVIEW

Table 3-1 provides a comparison between the approved operations at the Project and the changes described in this Modification.

The following sub-sections provide a detailed description of the Modification components.

3.2 PROJECT RAIL SPUR CONSTRUCTION FOOTPRINT

Whitehaven and its specialist rail engineering consultants have completed the detailed design of the Project rail spur and identified the requirement to establish an additional construction footprint (i.e. laydown area) at the rail loop to facilitate safe and efficient construction of the Project rail spur (Figure 1-4).

The Modification seeks approval for the construction of additional construction footprint at the eastern side of the rail loop to establish a construction access point and laydown area for the rail loop (Figure 1-4). The footprint of this temporary construction footprint has been minimised to avoid impacts to small patches of threatened ecological communities (TECs) in this area (Section 6.3). Following completion of the construction of the Project rail spur this temporary construction area would be rehabilitated.

3.3 UPGRADED CONSTRUCTION ACCESS ROAD

The Project includes the development of access roads to the MIA, however an additional temporary access road from Blue Vale Road south of the MIA to the rail spur corridor has been identified as an opportunity to segregate the rail construction workforce and deliveries from the MIA construction area. This segregation would improve the safety and efficiency of vehicle movements by allowing vehicles associated with the rail construction to avoid travelling through the MIA construction area.

An existing local access track which connects to Blue Vale Road and provides access to a homestead and the broader network of tracks through the property to the south of the MIA is proposed to be upgraded to provide the temporary construction access to the rail spur corridor. This access track is in the order of 6 metres (m) wide with the majority of it being constructed with gravel.

Upgrade of the access track is proposed to provide all weather access to the rail corridor. This would include grading a 6 m wide section along the existing track and placing additional gravel across the road surface. Where required additional infrastructure such as cattle grates, gates and drainage controls would be installed.

Following completion of the Project rail spur, the temporary access road is not required for ongoing mining activities associated with the Project, however, would likely be maintained as an access track for agricultural activities and/or access for any ongoing monitoring associated with the Project.

3.4 WATER SUPPLY AND PIPELINES

The Project authorises the construction and operation of a pump station and associated infrastructure on the eastern bank of the Namoi River and a network of water supply bores and connecting pipelines to the north of the VCM (Figure 1-2).

To improve water security for the Project and reduce the reliance on taking water from the Namoi River, Whitehaven has negotiated agreements with two adjacent private landholders to purchase water in accordance with their existing entitlements. These landholders currently extract water from existing approved groundwater works in accordance with WALs under the *Water Management Act 2000* (WM Act).

Groundwater would be extracted by the landholders from the existing bores and stored within their existing dams before it would be pumped by the landholders to a transfer point near the dams. Whitehaven would construct transfer infrastructure (e.g. holding tanks, pumps and generators) at the transfer points to transfer the water into the proposed pipelines (Figures 1-4). The transfer of water would be conducted in accordance with the rules of the WM Act and the *Water Sharing Plan for the Namoi Alluvial Groundwater Sources 2020*.

Table 3-1
Comparison of the Approved and Modified Project

Project Component	Summary of Approved Project	Summary of the Modified Project
Mine life	Approximately 25 years.	No change.
Mining method	Open cut mining to a depth of approximately 250 m below ground level.	No change.
Operating hours	Mining would occur 24 hours per day, 7 days per week.	No change.
Annual production rate	Up to approximately 10 Mtpa ROM coal.	No change.
Management of waste rock, coal rejects and final landform	Co-disposal of waste rock and coal rejects within the Western Emplacement and within the footprint of the open cut void. Final landform with two final voids (the Project open cut final void and the existing Blue Vale final void) and incorporating micro- and macro-relief.	Waste rock would also be crushed and screened then used as input into the temporary concrete batching plant. Crushing and screening of up to 90,000 m^3 of gravel for off-site customers.
Rehabilitation	Progressive rehabilitation of mining landforms, predominantly to areas of native woodland with some areas suitable for agriculture (i.e. grazing).	Incorporation of geomorphic design.
Coal handling, processing and transport infrastructure	Use of the Approved Road Transport Route to haul ROM coal from the Project to the Whitehaven CHPP until the Project CHPP, train load-out facility and rail spur infrastructure reach full operational capacity. Ability to receive ROM coal via road from other Whitehaven mining operations for stockpiling and/or processing at the Project CHPP. On-site processing of up to approximately 13 Mtpa of ROM coal (combined) from the Project and other Whitehaven mining operations. Use of the Project train load-out facility and rail spur infrastructure to transport up to approximately 11.5 Mtpa of product coal (combined) to market from the Project and other Whitehaven mining operations.	Revised ROM coal haulage hours to: ▪ 4.00 am to 11.15 pm Monday to Friday; and ▪ 5.00 am to 7.15 pm Saturday.
Water management	On-site water management system, comprising water management storages and collection drains, up-catchment diversions, sediment control and open cut dewatering. Construction and use of a groundwater supply borefield to the north of the Project.	Construction of pipelines from the MIA to transfer points on adjacent properties. Construction of a pipeline to the Rocglen Coal Mine to transfer water for temporary storage at Rocglen, and transfer from Rocglen back to the Project*.
Water supply	Mine water supply to be obtained from inflows to open cut areas, sediment dams and storage dams, plus surface water and/or groundwater licences as required.	Mine water supply to be supplemented with alternative sources from adjacent properties (purchased under agreement) which has been extracted by the landholders in accordance with WALs and Works Approvals authorised under the WM Act. Ongoing transfer of water to and from the Rocglen Coal Mine final void. *
Road Network	Construction of the Blue Vale Road Diversion around the east and north of the secondary infrastructure area.	Alternative alignment of the Blue Vale Road Diversion to be constructed if future mine design requirements do not require frequent use of the secondary infrastructure area.
Waste management	No disposal of heavy vehicle waste tyres on site.	Stockpiling, ongoing management and disposal of heavy vehicle waste tyres within waste rock emplacement areas.
Workforce	Up to 500 full-time equivalent construction personnel. Up to 450 full-time equivalent on-site operational personnel.	No change.

* Subject to a future Modification of the Rocglen Coal Mine Project Approval (10_0015).

Three existing bores located on the Ovenden property are regulated under Works Approval 90CA806738 issued under the WM Act, with the following current annual extraction limits:

- 1,532 megalitres per year (ML/year) combined across all bores, with the following limits on individual bores:
  - 1,000 ML/year on ESID11055;
  - 1,000 ML/year on ESID11056; and
  - 50 ML/year on ESID73547.

The landholder currently extracts groundwater from these bores using the following WALs:

- WAL 20162 (128 ML);
- WAL 12608 (416 ML); and
- WAL 12688 (222 ML).

The existing bore located on the Mirrabinda property is regulated under Works Approval 90CA806958 with associated WAL 12696 (587 ML).

The landholders extract varying quantities of water from the bores in accordance with water allocations being assigned to the Works Approvals in each water year, subject to the bore extraction limits.

Under the agreements established between Whitehaven and the landholders, the landholders would extract water from the bores authorised by the Works Approvals described above, and in accordance with WALs assigned to the Works Approvals at the time. Water extracted from the bores would be transferred by the landholders to existing dams located on the properties before being transferred by the landholder to a connection point at the end of the pipelines proposed to be constructed as part of this Modification. Transfer infrastructure will include tanks, pumps and other associated infrastructure.

Given the groundwater would continue to be extracted by the landholders using existing infrastructure and in accordance with the already authorised extraction limits under the Works Approvals, it is considered that the impacts associated with the water extraction are already authorised.

The Modification also includes the construction of a water supply pipeline between the Project and the Rocglen Coal Mine (in rehabilitation) for the transfer and storage of water between the two sites (Figure 1-4).

Transfers would reduce the risk of surplus water needing to be stored at the Project during high rainfall events and allow for the utilisation of existing final void storages at the Rocglen Coal Mine while remaining consistent with the rehabilitation objectives and approved post-mining landform for the Rocglen Coal Mine. A future modification of the Rocglen Coal Mine Project Approval (10_0015) would be applied for to authorise the receipt, storage and transfer of water from the proposed Rocglen Pipeline.

This effective use of existing storage infrastructure at the Rocglen Coal Mine reduces the requirement for additional storage to be constructed at the Project, and allows for storage of surplus water which can be drawn upon at times of dryer climate conditions rather than entirely relying on water supply from the Namoi River and groundwater sources.

Pipeline Construction Methodology

The water supply pipelines would be constructed using 455 millimetres diameter HDPE pipes. The water supply pipelines would either be constructed to remain on ground where the pipeline would be located outside the 1:100 flood extent or trenched where located within the flood extent or within public road corridors. Associated infrastructure including tanks and pumps would be installed adjacent to the existing dams at the start of the pipelines.

Siting of the proposed pipelines has involved detailed site inspections by EcoPlanning (2024) and Whitehaven to identify areas of higher environmental values where impacts should be minimised or avoided. Measures to minimise and avoid impacts incorporated to the pipeline design include (Appendix A):

- adjusting the pipeline alignments to minimise impacts to TECs;
- aligning the pipelines along fence lines and road shoulders, where feasible to minimise disturbance;
- use of existing access tracks and public roads to minimise the requirement for construction of new access roads;
- delivering construction materials and pipeline sections direct to the construction corridor and minimising the requirement for clearing temporary laydown areas;

- reducing the construction corridor widths to the minimum required for safe construction to minimise disturbance footprints; and
- the use of directional drilling to avoid any direct impact on the Namoi River and its banks.

Sections of pipe would be delivered to the construction corridor by truck and unloaded into the construction corridor footprint. The sections of pipe would then be transported along the corridor by mobile cranes (or similar equipment) and laid out at regular intervals. Once the sections of pipe are welded together, the pipe would be dragged along ground within the construction corridor to the required location and placed within a trench where required, or otherwise laid on ground. Where laid on ground, the pipe would be secured with concrete and steel footings at regular intervals.

Rehabilitation Strategy

Following the completion of pipeline construction, the corridors would be rehabilitated. This would include backfilling trenches and replacing any removed topsoil. Given the surface disturbance is localised to the trench width, it is expected that ground cover would re-establish via the existing seedbank, however seeding of the disturbance areas would be carried out if considered necessary to prevent soil erosion.

Erosion and sediment controls would be implemented as required (e.g. in the vicinity of drainage paths or where activities are carried out in road shoulders where runoff is concentrated). Where practicable, pipeline construction activities would only be carried out during periods of dry weather to minimise the risk of erosion.

3.5 REVISED BLUE VALE ROAD REALIGNMENT

As described in Section 1.2.3, the Project includes the development of a secondary infrastructure area to the east of the open cut, south of the Vickery State Forest. At this stage, detailed design of the Project does not indicate that regular or frequent access by mining fleet would be required to the approved secondary infrastructure area, and therefore there may not be a requirement to divert Blue Vale Road around the eastern perimeter of the secondary infrastructure area.

Whitehaven has identified an alternative/revised Blue Vale Road realignment which could be constructed between the open cut extent and the secondary infrastructure area (Figure 1-4). The revised Blue Vale Road realignment minimises the diversion travel distance, reduces impact on Stratford Creek and improves the road design with fewer tight bends and less cut and fill requirements for construction.

The revised Blue Vale Road realignment would add approximately 1.4 km to the travel distance along Hoad Lane and Blue Vale Road, which is a reduction of approximately 3.6 km in length compared to the approved Blue Vale Road realignment.

Whitehaven intends to retain the approval for the development of the currently approved Blue Vale Road realignment as a future development opportunity in the event that future mine design requires more frequent use of the approved secondary infrastructure area. It is considered very unlikely that Whitehaven would ultimately decide to construct the currently approved Blue Vale Road realignment following construction of the revised Blue Vale Road realignment. However, if this does eventuate, Whitehaven would seek approval for any required changes to the mine plan and any additional disturbance requirements associated with the construction activity.

To minimise visual impact of the open cut pit, the revised Blue Vale Road realignment would result in a minor reduction to the conceptual open cut extent (Figure 1-2), however, vegetative screens, and in some cases bunds, would be installed along sections of the revised Blue Vale Road realignment where prominent views of the active mine operations would be available to road traffic (Section 6.10).

Vegetative screens would take some years to develop and, once developed, would only provide partial screening. The vegetative screens and bunds, over time, would mitigate some of the visual impact along the revised Blue Vale Road realignment, although it is anticipated that residual visual impacts would be experienced by motorists due to the close proximity to the Project landforms (Section 6.10).

Consistent with the approved Blue Vale Road realignment, the revised Blue Vale Road realignment would be constructed in accordance with Ausroad Guidelines and in consultation with the Narrabri Shire Council and Gunnedah Shire Council.

3.6 TEMPORARY CONCRETE BATCHING PLANT

Construction activities of the Project would be focused on the development of the following key Project infrastructure components:

- MIA (incorporating the Project CHPP) and mine access road;
- Project rail spur and rail loop;
- water management infrastructure; and
- water and electricity supply infrastructure.

Development of Project infrastructure components (i.e. MIA and Project rail spur) would require a significant number of concrete components to be transported to the Project.

The Modification would allow for an on-site temporary concrete batching plant for more accessible concrete during the construction phase of the Project (Figure 1-4).

The input material for the temporary concrete batching plant would be obtained from both local sand and/or aggregate suppliers and suitable material from on-site excavation and waste rock associated with open cut mining.

Plate 3-1 below shows an example of a typical concrete batching plant setup which would be similar to that proposed for the Modification.

Plate 3-1 – Typical Mobile Batching Plant Setup

Estimated total volumes of concrete (in m^3) produced from the concrete batching plant for Project components are shown in Table 3-2 below.

Table 3-2
Estimated Temporary Concrete Batching Plant Production

Project Component	Estimated Volume of Concrete Produced (m^3)
Project rail spur	28,000
MIA	8,000
Project CHPP	10,000
Total	**46,000**

It is anticipated that the temporary concrete batching plant would be in use until the end of construction which would be around 24 months after Project construction start date.

The temporary concrete batching plant would be located within the approved disturbance footprint for the Project (Figure 1-4).

3.7 WASTE TYRE DISPOSAL

Waste tyre management options are currently limited for mining operations in NSW and across Australia, due to a general lack of available recycling technologies and transport restrictions associated with remote locations.

Consistent with other Whitehaven open cut operations (Tarrawonga Coal Mine and Maules Creek Coal Mine), the Modification proposes to dispose of used waste heavy vehicle tyres in the Project emplacement areas. Used tyres from mining equipment would be stockpiled on-site prior to disposal within emplacement areas.

Disposal of waste heavy vehicle tyres would include stockpiling and transport to identified disposal locations within the waste rock emplacements, as determined by mine progression.

3.8 ROM COAL HAULAGE HOURS

The Tarrawonga Coal Mine was not able to achieve its consented 3.5 Mtpa road haulage tonnage in recent times, primarily due to low availability of road haulage drivers and impacts of flooding events.

The ROM coal haulage operation faced rostering challenges due to the restricted road haulage hours in the Tarrawonga Coal Mine Project Approval (11_0047), which resulted in driver availability issues.

The same constraints to achieving the approved ROM coal haulage volumes being experienced by the Tarrawonga Coal Mine are anticipated to be experienced at the VCM.

The Modification would involve a change to the underlying development approved under Development Consent (SSD 7480) by authorising additional road haulage hours via public and private roads. The Modification would update Condition A15, Schedule 2 of Development Consent (SSD 7480) as per the bolded amendments shown in Table 3-3.

If approved, the additional road haulage hours enable the Project to achieve the currently consented 3.5 Mtpa ROM movement from the Project to the Whitehaven CHPP located in Gunnedah.

3.9 ON-SITE PRODUCTION OF GRAVEL MATERIALS

Consultation with the local councils has identified a demand for gravel for construction projects in the region. Overburden material at the Project can provide a suitable material for gravel production, with crushing and screening of this material to produce gravel being an activity that was approved as part of the Vickery Coal Project.

Up to 90,000 m^3 per annum of gravel material would be produced by crushing and screening suitable overburden (excavated from within the open cut extent) in the on-site mobile crusher located within the open cut pit footprint or temporary infrastructure area.

On-site gravel crushing and screening operations would be conducted during daytime hours only (i.e. 7.00 am to 6.00 pm).

3.10 FINAL LANDFORM

The modified final landform would incorporate geomorphic design. Geomorphic design introduces macro and micro-relief (i.e. gently undulating surfaces) to replicate natural drainage systems and improve integration with the surrounding environment.

A conceptual geomorphic final landform design incorporating the Modification is shown on Figure 3-1.

The incorporation of macro-relief would result in emplacements having a more natural shape and look, rather than appearing “engineered” with blocky form and linear slopes. Emplacements would therefore have numerous spurs and valleys to shed water runoff sideways from ridge lines to the drainage lines.

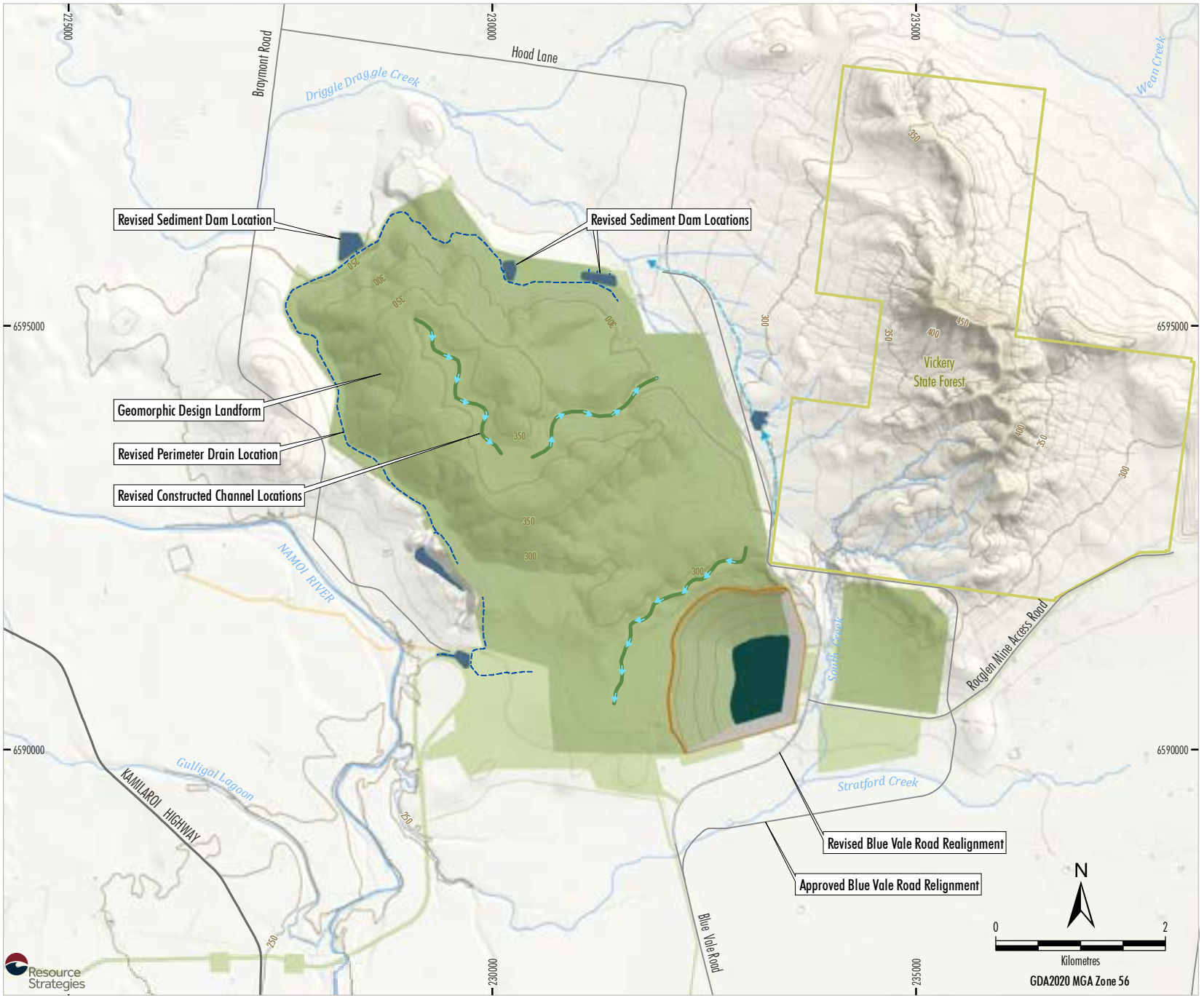
The modified final landform will incorporate sediment dams and a final void of proportions consistent with the approved Project final landform presented in the Project EIS.

The Modification would be implemented consistent with the Project’s approved post-mining land use, primary and secondary rehabilitation domains, rehabilitation practices and measures, rehabilitation monitoring and performance measures.

Table 3-3
Proposed Modified Development Consent (SSD 7480) Conditions

Condition Number	Existing Condition	Modified Condition
Condition A15, Schedule 2	The Applicant shall only transport coal from the site by road, receive coal from other mining operations or receive coal reject from the Whitehaven CHPP by road between the hours of: (a) 6 am to 9.15 pm Monday to Friday; (b) 7 am to 5.15 pm Saturday; and (c) at no time on Sundays or public holidays.	The Applicant shall only transport coal from the site by road, receive coal from other mining operations or receive coal reject from the Whitehaven CHPP by road between the hours of: (a) **4 am** to **11.15 pm** Monday to Friday; (b) **5 am** to **7.15 pm** Saturday; and (c) at no time on Sundays or public holidays.

Note: emphasis added (**bold**)



LEGEND

- State Forest
- Indicative Woodland/Forest Area
- Indicative Pasture Area *
- Indicative Mixed-use Agricultural Area
- Indicative Final Void Highwall
- Indicative Final Void Pit Lake
- Indicative Final Void Perimeter Bund
- Indicative Extent of Water Storage
- Indicative Up-catchment Diversion
- Indicative Constructed Channel
- Final Landform Perimeter Drain/Bund

* Refer to Figure 1-3 for full extent of Ovenden Pipeline that would be rehabilitated as Indicative Pasture Area.

Source: Whitehaven (2024); WRM (2024); NSW Spatial Services (2024)

WHITEHAVEN COAL

VICKERY EXTENSION PROJECT

Modified Vickery Extension Project Conceptual Final Landform

Figure 3-1

WHC-23-93 MOD1 MT_208C

3.11 UPDATE OF SCHEDULE OF LANDS AND MINOR CHANGE TO REHABILITATION OBJECTIVE

The Modification would include an update to the Schedule of Lands presented in Development Consent (SSD 7480) (Attachment 1) to account for subdivisions undertaken since approval of Development Consent (SSD 7480), additional land associated with the construction of pipelines from existing dams on the adjoining Mirrabinda and Ovenden properties and to the Rocglen Coal Mine.

The Modification would also seek a correction to an error in Condition B101, Schedule 2 of Development Consent (SSD 7480) rehabilitation objectives regarding the maximum slope angle of the final void highwalls (Attachment 2).

4 STATUTORY CONTEXT

This section outlines the statutory requirements relevant to the assessment of the Modification.

In accordance with the *State Significant Development Guidelines* (DPHI, 2024a), in particular, *Appendix E – preparing a modification report* (DPE, 2022a), Attachment 3 highlights where all relevant statutory requirements have been addressed in this Modification Report.

4.1 ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

The EP&A Act and *Environmental Planning and Assessment Regulation 2021* (EP&A Regulation) set the framework for planning and environmental assessment in NSW.

4.1.1 Applicability of section 4.55(2) of the Environmental Planning and Assessment Act 1979

The Project was approved under Part 4 of the EP&A Act in 2020 (Development Consent [SSD 7480]).

Section 4.55(2) of the EP&A Act relevantly states (emphasis added):

> ***4.55 Modification of consents—generally***
>
> *…*
>
> *(2)* ***Other modifications*** *A consent authority may, on application being made by the applicant or any other person entitled to act on a consent granted by the consent authority and subject to and in accordance with the regulations, modify the consent if:*
>
> *(a) it is satisfied that the development to which the consent as modified relates is substantially the same development as the development for which consent was originally granted and before that consent as originally granted was modified (if at all), and*
>
> *(b) it has consulted with the relevant Minister, public authority or approval body (within the meaning of Division 4.8) in respect of a condition imposed as a requirement of a concurrence to the consent or in accordance with the general terms of an approval proposed to be granted by the approval body and that Minister, authority or body has not, within 21 days after being consulted, objected to the modification of that consent, and*
>
> *(c) it has notified the application in accordance with:*
>
> *(i) the regulations, if the regulations so require, or*
>
> *(ii) a development control plan, if the consent authority is a council that has made a development control plan that requires the notification or advertising of applications for modification of a development consent, and*
>
> *(d) it has considered any submissions made concerning the proposed modification within the period prescribed by the regulations or provided by the development control plan, as the case may be.*
>
> *Subsections (1) and (1A) do not apply to such a modification.*

Substantially the Same Development

The Project demonstrably remains a large coal mining operation that incorporates the following key elements approved under Development Consent (SSD 7480):

- open cut mining;
- emplacement of waste rock in overburden emplacement areas;
- coal handling and processing facilities;
- rail and train load out infrastructure;
- water supply and water management systems; and
- supporting infrastructure and facilities.

4.1.2 Environmental Planning and Assessment Act 1979 Objects

Section 1.3 of the EP&A Act describes the objects of the EP&A Act as follows:

> *(a) to promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources,*

(b) to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment,

(c) to promote the orderly and economic use and development of land,

(d) to promote the delivery and maintenance of affordable housing,

(e) to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats,

(f) to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage),

(g) to promote good design and amenity of the built environment,

(h) to promote the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants,

(i) to promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State,

(j) to provide increased opportunity for community participation in environmental planning and assessment.

The Modification is considered to be generally consistent with the objects of the EP&A Act, as the Modification:

- would contribute to the financial resilience of the Project which would be achieved through efficient operation and construction of the Project;
- would facilitate ecologically sustainable development (ESD), as economic efficiencies can be achieved with no change to the accepted emissions-based environmental performance measures;
- would include implementation of avoidance to limit impacts on biodiversity and Aboriginal cultural heritage items; and
- would be developed in a manner that incorporates community engagement, with a wide range of stakeholders consulted through the preparation of this Modification Report (Section 5).

4.1.3 Evaluation under Section 4.55(3) of the Environmental Planning and Assessment Act 1979

Section 4.55(3) of the EP&A Act states:

(3) In determining an application for modification of a consent under this section, the consent authority must take into consideration such of the matters referred to in section 4.15(1) as are of relevance to the development the subject of the application. The consent authority must also take into consideration the reasons given by the consent authority for the grant of the consent that is sought to be modified.

As required by section 4.55(3) of the EP&A Act, Section 4.1.4 provides an evaluation of the Modification under section 4.15(1) of the EP&A Act. In addition, the consent authority must also take into consideration the reasons given by the consent authority for the grant of the consent that is sought to be modified. In the case of the Project, the Independent Planning Commission issued its Statement of Reasons[3] on 12 August 2020.

4.1.4 Evaluation under section 4.15(1) of the Environmental Planning and Assessment Act 1979

In evaluating the Modification under section 4.15(1) of the EP&A Act, the consent authority is required to take into consideration a range of matters as they are of relevance to the subject of the application.

While this is a requirement of the consent authority, this Modification Report has been prepared to generally address the requirements of section 4.15(1) of the EP&A Act to assist the consent authority, as follows:

- Consideration of the requirements of relevant environmental planning instruments is provided in Section 4.3.
- Clause 2.10 of the *State Environmental Planning Policy (Planning Systems) 2021* states that development control plans do not apply to State Significant Developments.
- This Modification Report has been prepared in consideration of the prescribed matters in the EP&A Regulation.

[3] Vickery Extension Project SSD 7480 - Statement of Reasons for Decision

- The predicted impacts of the Modification, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality are provided in Section 6.
- Consideration of whether, on evaluation, the Modification is considered to be in the public interest is provided in Section 7.

4.1.5 Site Verification Certificate

A Site Verification Certificate (SVC) for was issued on 8 February 2016 by the Secretary of the DPHI in accordance with Division 3 of the NSW *State Environmental Planning Policy (Resources and Energy) 2021*.

The SVC certifies that ML 1838 does not contain Biophysical Strategic Agricultural Land.

4.2 OTHER NSW LEGISLATION

Other NSW legislation that may be applicable to the Project were described in the relevant Project environmental approval documentation (i.e. Project EIS).

Whitehaven would continue to obtain relevant licences or approvals required under this NSW legislation for the Project incorporating the Modification.

4.2.1 Mining Act 1992

The objects of the NSW *Mining Act 1992* are to encourage and facilitate the discovery and development of mineral resources in NSW, having regard to the need to encourage economic sustainable development.

Whitehaven holds CL 316, ML 1718, ML 1464, ML 1471 and ML 1838 for the Project and has applied for a Mining Lease for the Project rail spur (MLA 635). There would be no need for the amendment or variation of the existing authorities under the NSW *Mining Act 1992* as a result of the Modification.

4.2.2 Biodiversity Conservation Act 2016

The NSW *Biodiversity Conservation Act 2016* (BC Act) provides the approach to be followed for conducting an assessment of a development's impacts on threatened species and ecological communities.

Potential impacts of the Modification on threatened species and biodiversity are described in Section 6.3 and Appendix A.

Potential ecological impacts and the associated offset liability for unavoidable residual impacts from the Modification have been assessed in accordance with the *Biodiversity Assessment Method* (DPIE, 2020) (BAM), which sets a standard that would result in a net positive biodiversity value in NSW.

4.2.3 National Parks and Wildlife Act 1974

The NSW *National Parks and Wildlife Act 1974* contains provisions for the protection and management of national parks, historic sites, nature reserves and Aboriginal heritage in NSW.

An Aboriginal Cultural Heritage Assessment (ACHA) has been undertaken for the Modification by Whincop Archaeology Pty Ltd (Whincop) (2024) to assess the potential impacts of the Modification on Aboriginal cultural heritage (Appendix B).

4.2.4 Protection of the Environment Operations Act 1997

The NSW *Protection of the Environment Operations Act 1997* (PoEO Act) is the primary NSW legislation that regulates pollution control and licensing. One key feature of the PoEO Act is the statutory requirement to apply for and obtain an Environment Protection Licence (EPL) in circumstances where a scheduled activity or activities are being carried out (those activities being defined in Schedule 1 of the PoEO Act).

The approved Project is currently licensed under EPL 21283 to conduct "coal works", "crushing, grinding or separating", "chemical storage" and "mining for coal" as defined in Schedule 1 of the PoEO Act. Whitehaven would review EPL 21283 in consultation with the NSW EPA, and if necessary, vary EPL 21283 under the PoEO Act to incorporate the Modification.

4.2.5 Water Management Act 2000

The WM Act contains provisions for the licensing, allocation, capture and use of water resources. Under the WM Act, water sharing plans establish rules for sharing water between different users and between the various environmental sources (namely rivers or aquifers).

The water sharing plans in the vicinity of the Project are:

- Groundwater:
  - *Water Sharing Plan for the NSW Murray Darling Basin Porous Rock Groundwater Sources 2020*.
  - *Water Sharing Plan for the Namoi Alluvial Groundwater Sources 2020.*
- Surface water:
  - *Water Sharing Plan for the Upper Namoi and Lower Namoi Regulated River Water Sources 2016.*
  - *Water Sharing Plan for the Namoi and Peel Unregulated Rivers Water Sources 2012.*

The open cut is located wholly within the Gunnedah-Oxley Basin MDB Groundwater Source under the *Water Sharing Plan for the NSW Murray Darling Basin Porous Rock Groundwater Sources 2020*.

The Upper Namoi Zone 4, Namoi Valley (Keepit Dam to Gin's Leap) Groundwater Source under the *Water Sharing Plan for the Namoi Alluvial Groundwater Sources 2020* is located adjacent to the open cut and is the water source from which the existing approved groundwater bores on the Mirrabinda and Ovenden properties draw water from. Water would be extracted from the approved groundwater bores in accordance with the existing Works Approvals and WALs held by the landholders and temporarily stored within existing farm dams. Water would be pumped out of the farm dams and transferred into the proposed pipelines for pumping to the Project. No additional water licences under the WM Act are required for the Modification.

With regard to surface water, the Project is located wholly within the Bluevale Water Source under the *Water Sharing Plan for the Namoi and Peel Unregulated Rivers Water Sources 2012*. The Namoi River in the vicinity of the Project is located within the Lower Namoi Regulated River Water Source under the *Water Sharing Plan for the Upper Namoi and Lower Namoi Regulated River Water Sources 2016*.

4.2.6 Crown Land Management Act 2016

The NSW *Crown Land Management Act 2016* (Crown Land Act) provides for the management of Crown land in NSW.

Relevant licences or approvals required under the Crown Land Act would continue to be obtained for the Project, incorporating the Modification, where required.

4.2.7 Climate Change (Net Zero Future) Act 2023

The *Climate Change (Net Zero Future) Act 2023* (the Net Zero Act) sets out NSW's approach to climate change and legislates whole-of-government climate action.

The objects of the Net Zero Act are identified in section 4 of the Act as follows:

> *(a) to promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources,*
>
> *(b) to establish guiding principles for action to address climate change,*
>
> *(c) to set targets for the reduction in net greenhouse gas emissions in New South Wales until 2050,*
>
> *(d) to set an objective for New South Wales to be more resilient to a changing climate,*
>
> *(e) to establish the Net Zero Commission to independently monitor, review and report on progress in New South Wales towards the targets, the adaptation objective and other matters.*

Part 2 of the Net Zero Act sets out guiding principles (section 8), targets for reducing net greenhouse gas emissions in NSW (section 9), an adaptation objective (section 10) and a provision relating to achieving the 2050 net zero target (section 11).

The Net Zero Act sets progressive reduction targets for NSW's net greenhouse gas emissions as follows:

- 50% reduction on 2005 levels by 30 June 2030;
- 70% reduction on 2005 levels by 30 June 2035; and
- 'net zero' by 30 June 2050.

Section 6.7 provides an assessment of the potential change to the Project's greenhouse gas profile as a result of the Modification. The key change to the greenhouse gas profile associated with the Modification is in regard to additional diesel use for the transport of raw materials to the temporary concrete batching plant.

The assessment shows that the increase in diesel use would have a negligible change in the emissions estimated for the approved Project operations (Appendix D).

In accordance with Development Consent (SSD 7480), Whitehaven will continue to employ best practice management to minimise the Project's Scope 1 and 2 greenhouse gas emissions and improve energy efficiency. The Project's Air Quality and Greenhouse Gas Management Plan would be updated on a regular basis to incorporate the adoption of best practice greenhouse gas management measures over the life of the Project.

4.3 ENVIRONMENTAL PLANNING INSTRUMENTS

State environmental planning policies relevant to the Project were described in the Project EIS and subsequent modifications. Detail on potential Modification requirements under the key environmental planning instruments is included in the statutory compliance table provided in Attachment 3.

4.4 COMMONWEALTH LEGISLATION

4.4.1 Environment Protection and Biodiversity Conservation Act 1999

The objective of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is to provide for the protection of the environment, especially those aspects of the environment that are matters of national environmental significance (MNES).

Proposals that are likely to have a significant impact on a MNES are defined as a controlled action under the EPBC Act. A proposal that is, or may be, a controlled action is required to be referred to the Commonwealth Department of Climate Change, Energy, the Environment and Water (Commonwealth DCCEEW) to determine whether the action is a controlled action.

The Project is a controlled action approved to be undertaken in accordance with EPBC 2016/7649.

Potential impacts of the Modification on flora and fauna have been assessed in the Biodiversity Development Assessment Report (BDAR) (Appendix A) and summarised in Section 6.3.

The Project's EPBC Approval (2016/7649) requires compliance with the biodiversity offsetting conditions of the Development Consent (SSD 7480). This Modification proposes to modify the biodiversity offsetting conditions in Development Consent (SSD 7480) such that they reflect the additional impacts on biodiversity values associated with the Modification. Accordingly, it is considered that the compliance with Development Consent (SSD 7480) biodiversity offsetting conditions (as modified) would result in demonstrating compliance with biodiversity offsetting requirements under EPBC (2016/7649).

The potential impacts of the Modification on water resources have been assessed in the Surface Water Review (Appendix E) and summarised in Section 6.8.

The Project's EPBC Approval (2016/7649) requires information on management and mitigation strategies to minimise potential impacts on MNES to be included in the Project's Water Management Plan required under Condition B53, Schedule 2 of the Development Consent (SSD 7480). In accordance with EPBC (2016/7649), Whitehaven will notify the Commonwealth DCCEEW of any change to the Water Management Plan required to incorporate the Modification and provide a copy of any approved revision of the Water Management Plan.

4.4.2 National Greenhouse and Energy Reporting Act 2007

The Commonwealth *National Greenhouse and Energy Reporting Act 2007* introduced a single national reporting framework for the reporting and dissemination of corporations' greenhouse gas emissions and energy use.

The Modification would not significantly change greenhouse gas emissions compared to the approved Project (Section 6.7 and Appendix D).

5 ENGAGEMENT

Whitehaven has consulted with relevant NSW Government agencies and local councils during the preparation of this Modification Report in consideration of the *Undertaking Engagement Guidelines for State Significant Projects* (DPHI, 2024b). A summary of this consultation is provided below.

It is anticipated that consultation with relevant NSW Government agencies and local councils will continue during the assessment of the proposal by the NSW Government.

5.1 NSW GOVERNMENT AGENCIES

Whitehaven continues to consult with relevant NSW Government agencies on a regular basis in relation to the current activities at the Project.

5.1.1 Department of Planning, Housing and Infrastructure

Whitehaven met with the DPHI on 7 March 2024 to provide an overview of the Modification, proposed approval pathway and the proposed scope of the environmental assessment.

Feedback received from DPHI has been incorporated into this Modification Report.

5.1.2 Environment Protection Authority

Whitehaven met with the EPA on 30 February 2024 and 3 July 2024 to provide an overview of the Modification and preliminary findings of the air and noise studies for the temporary concrete batching plant (Appendices C and D).

Feedback received from EPA has been incorporated into this Modification Report.

5.1.3 Biodiversity, Conservation and Science Group

Whitehaven met with the NSW Biodiversity, Conservation and Science Group (BCS) of the NSW DCCEEW on 17 June 2024 to provide an overview of the Modification and preliminary findings of the BDAR (Appendix A).

Feedback received from BCS has been incorporated into this Modification Report.

5.1.4 Department of Primary Industries and Regional Development – NSW Resources

Whitehaven met with the Department of Primary Industries and Regional Development – NSW Resources on 1 August 2024 to provide an overview of the Modification, proposed approval pathway and the proposed scope of the environmental assessment.

Feedback received from NSW Resources has been incorporated into this Modification Report.

Whitehaven is committed to respectful and meaningful engagement with all stakeholders and to operating with openness and transparency.

5.1.5 Other NSW Government Agencies

Whitehaven has consulted with the following regulatory agencies to provide an overview description of the Modification and proposed scope of environmental assessment relevant to their respective areas of interest:

- NSW Resources Regulator;
- TfNSW; and
- NSW DCCEEW.

At the time of writing, none of these government agencies had requested any further information regarding the Modification.

5.2 LOCAL COUNCILS

Whitehaven regularly meets with representatives of the Gunnedah Shire Council and Narrabri Shire Council regarding the approved Project.

Consultation with the Gunnedah Shire Council and Narrabri Shire Council regarding the temporary concrete batching plant was undertaken initially in December 2022. Whitehaven has regularly engaged with representatives of the Gunnedah Shire Council and Narrabri Shire Council in relation to the Modification.

5.3 INFRASTRUCTURE PROVIDERS

Whitehaven continues to engage with ARTC to provide an overview of the detailed design Project rail spur and expected construction commencement.

5.4 ABORIGINAL STAKEHOLDERS

Aboriginal stakeholders were consulted throughout the preparation of the ACHA for the Modification (Appendix B).

Consultation was conducted with reference to the policy *Aboriginal cultural heritage consultation requirements for proponents 2010* (Department of Environment, Climate Change and Water [DECCW], 2010a).

Further detail on consultation with Aboriginal stakeholders for the Modification is provided in Section 6.4 and Appendix B.

5.5 COMMUNITY CONSULTATIVE COMMITTEE

Whitehaven engages with the local community through the established CCC for the Vickery Coal Project. This engagement will continue for the Project.

The Vickery Coal Project CCC meets quarterly. Whitehaven provided a briefing regarding the Modification and updates at the Vickery Coal Project CCC meetings on 11 April 2024 and 25 July 2024.

Minutes for the Project CCC meetings are made publicly available on the Whitehaven website (Section 1.3).

6 ASSESSMENT OF IMPACTS

6.1 IDENTIFICATION OF KEY ISSUES

Whitehaven has undertaken a review of the potential environmental impacts of the Modification to identify key potential environmental issues requiring assessment.

The key potential impacts of the Modification are related to the additional construction footprint (including upgrades to the existing access road and Project rail spur laydown area), water supply pipelines, revised Blue Vale Road realignment and temporary concrete batching plant.

The additional construction footprint would result in potential impacts to land and agricultural resources; biodiversity; and Aboriginal cultural heritage.

The construction and operation of the temporary concrete batching plant would result in changes to the existing/approved noise and air quality impacts, greenhouse gas emissions and changes to traffic movements.

Sections 6.2 to 6.11 and the relevant appendices include a description of the methodology undertaken for each assessment, the existing environment, an assessment of the potential impacts of the Modification, and, where relevant, a description of measures that would be implemented to avoid, minimise and/or mitigate the potential impacts.

Section 6.12 discusses the potential environmental impacts of the Modification on other aspects, including social and hazards and risk.

6.2 LAND RESOURCES AND AGRICULTURAL PRODUCTION

A description of the existing environment relating to land resources and agricultural production is provided in Section 6.2.1. Section 6.2.2 describes the potential impacts of the Modification on land resources and agricultural production, and Section 6.2.3 describes applicable management, mitigation and monitoring measures.

6.2.1 Existing Environment

Land Use

The majority of the Project area is currently cleared and is dominated by grassland areas with occasional re-growth trees. Scattered remnants of woodland, semi-cleared woodland and White Cypress Pine (*Callitris glaucophylla*) re-growth occur in the Project area. In addition, the Project area includes small areas of land that have been previously disturbed by mining activities and are now rehabilitated.

The Vickery State Forest is located to the east of the Project and is used for forestry and limited recreational purposes.

Soils

A number of soils surveys of the Project area have been undertaken, including:

- *Vickery Coal Project Agricultural Resource Assessment* (McKenzie Soil Management, 2012);
- *Vickery Coal Project BSAL Assessment Report* (SESL, 2015); and
- *Vickery Extension Project Soil Resource Assessment* (SESL, 2018).

The main soil types mapped in the Project area are Dermosols and Sodosols, with smaller areas of Anthroposols, Vertosols, Stratic Rudosols, Chromosols, Ferrosols, Tenosols and Kandosols also observed (SESL, 2018).

SESL (2018) also determined the land and soil capability of the Project area in accordance with the *Land and Soil Capability Assessment Scheme* (OEH, 2012) and assessed the land and soil capability as ranging from Class II to Class VI.

Agricultural Activities, Productivity and Services

The Project is located within broad areas of known agricultural significance, including the New England North West Region, as defined in the *New England North West Strategic Regional Land Use Plan* (the New England North West SRLUP) (DPI, 2012).

The New England North West Region is an area of 9.9 million hectares (ha), including the LGAs of Armidale Dumaresq, Glen Innes Severn, Gunnedah, Guyra, Gwydir, Inverell, Liverpool Plains, Moree Plains, Narrabri, Tamworth Regional, Tenterfield, Uralla and Walcha (DPI, 2012).

The Project mining area is located on Whitehaven-owned land, which was predominantly used for cattle grazing under licence agreements with Whitehaven, prior to commencement of mining. The carrying capacity of the Project area is generally considered to be relatively low (SESL, 2018).

Land adjacent to the Project rail spur is used for grazing and cropping. The proposed pipeline routes are located within public and private road corridors, and in proximity or within cattle grazing paddocks on both Whitehaven-owned land and privately owned land.

Bushfire Regime

The Project is located partially on land mapped as Bush Fire Prone by the NSW Rural Fire Services (RFS). Potential bushfire hazard management measures are implemented in accordance with the Bushfire Management Plan.

Land Resources Management and Monitoring Regime

Management of land resources and agricultural production is conducted in accordance with the following management plans:

- Biodiversity Management Plan;
- Water Management Plan; and
- Bushfire Management Plan.

The Biodiversity Management Plan includes the following:

- measures to minimise the amount of clearing and impacts on fauna;
- measures to translocate and protect Winged Peppercress;
- maximisation of salvaging resources (i.e. tree hollows);
- various measures to be implemented on site, including:
  - weed and feral pest control;
  - management of grazing and agriculture;
  - control access to vegetated and revegetated areas; and
  - management of bushfire hazards.

The Water Management Plan includes the following:

- measures to ensure compliance with water management performance measures;
- surface and groundwater monitoring programs recommended by the Commonwealth Independent Expert Scientific Committee on Coal Seam Gas and Large Mining Development (IESC);
- recent meteorological and climate data;
- site water and salt balance;
- an Erosion and Sediment Control Plan;
- a Surface Water Management Plan; and
- a Groundwater Management Plan.

The Bushfire Management Plan prepared in consultation with the NSW RFS includes the following:

- procedures for the detection, response, coordination and reporting of bushfire events;
- details of bushfire management activities;
- an Emergency/Evacuation Plan for bushfire emergency response procedures and evacuation procedures; and
- contingency measures.

6.2.2 Potential Impacts

The Modification would include approximate 66.12 ha net increase in the extent of surface disturbance at the Project. Additional surface disturbance as a result of the Modification would be associated with the following components:

- additional Project rail loop construction footprint (Figure 1-4);
- construction of pipelines from transfer points on the adjoining Mirrabinda and Ovenden properties and from the MIA to the Rocglen Coal Mine (Figure 1-4);

- upgrade of an existing access road to provide temporary construction access to the Project rail spur (Figure 1-4); and
- an alternative realignment of the approved Blue Vale Road diversion and commensurate reduction of the open cut extent (Figure 1-4).

Potential impacts of the Modification on land and agricultural production are described below.

Soils

Potential impacts of the Modification on soils would relate primarily to:

- disturbance of *in-situ* soil resources within the disturbance areas;
- alteration of soil structure beneath infrastructure items, hardstand areas, roads and water management structures;
- possible soil contamination resulting from spillage of fuels, lubricants and other chemicals;
- increased erosion and sediment movement due to exposure of soils during construction; and
- alteration of physical and chemical soil properties (e.g. structure, fertility, permeability and microbial activity) due to soil stripping and stockpiling operations.

It can be noted that the previous assessment of the physical and chemical properties of the soils within the Project area has established that there are soil resources present that would be suitable as a rehabilitation medium for native plant revegetation and for agricultural land uses (i.e. grazing) on the Project area post-mining (SESL, 2018).

Land Use – Agricultural Activities, Productivity and Services

The Modification would result in the disturbance or alteration of existing agricultural lands within the additional disturbance areas. The majority of this land consists of Class 4 Agricultural Suitability land. The areas of Class 3 and 2 Agricultural Suitability land that would be lost are currently only used for cattle grazing and are not considered to be highly productive or of strategic agricultural importance within the region.

Consistent with Condition B101, Schedule 2 of Development Consent (SSD 7480), modified components would be rehabilitated to ensure the areas are suitable for either 'native ecosystem' or 'agricultural land', depending on the Modification component.

Whitehaven-owned land surrounding the Modification disturbance footprint would continue to be used for agricultural activities under licence agreements.

Bushfire Hazard

Any uncontrolled fires originating from Project (as modified) activities may present potentially serious impacts to nearby rural properties and the Vickery State Forest.

Similarly, fires originating in nearby rural areas could pose a significant risk to Project infrastructure and Whitehaven staff, contractors and equipment. The degree of potential impacts of a bushfire would vary with climatic conditions (e.g. temperature and wind) and the quantity of available fuel.

The development of Modification components could increase the risk for potential fire generation, however, given the range of management measures undertaken in accordance with the Bushfire Management Plan, the overall risk of increased bushfire frequency due to the Modification is likely to be low.

6.2.3 Mitigation Measures, Management and Monitoring

The Biodiversity Management Plan, Water Management Plan and Bushfire Management Plan would continue to be implemented for the modified Project.

In addition, the Biodiversity Management Plan, Water Management Plan and Bushfire Management Plan would be reviewed and, if necessary, revised for the Modification (subject to any modified Development Consent conditions).

6.3 BIODIVERSITY

A BDAR has been prepared for the Modification by Resources Strategies (2024) and is presented in Appendix A.

A summary of the assessment is provided below.

6.3.1 Methodology

Biodiversity Development Assessment Report

The BDAR (Appendix A) was prepared in accordance with the BAM established under Section 6.7 of the BC Act.

The BDAR covers the land subject to the development of the Modification (referred to as the Subject land/Development Footprint within the BDAR), which is approximately 66.12 ha in size. A larger footprint was initially intended for proposed new surface disturbance activities including additional laydown areas for the Project rail spur, soil stockpiles and other temporary/auxiliary clearance areas (the Study Area).

After review of preliminary environmental survey outcomes (including the preliminary findings of the BDAR), the surface disturbance area to be impacted by the Modification was refined to the proposed Subject land/Development Footprint.

Extensive flora and fauna surveys have been conducted within and in the vicinity of the Study Area in 2023 and 2024 by EcoPlanning (2024). These survey reports are included in the BDAR, and the relevant methodology is summarised below.

Baseline Flora and Fauna Report

A previous biodiversity assessment was prepared in 2013 for the initial Vickery Coal Project. A second biodiversity assessment was prepared in 2018 for the Project. Both of these previous biodiversity assessments included baseline ecological surveys and targeted surveys for potentially occurring threatened flora and fauna then listed under the BC Act or preceding legislation.

EcoPlanning undertook ecological surveys and targeted surveys for threatened flora and fauna specifically for this Modification in accordance with contemporary requirements.

A detailed description of the methodology employed by EcoPlanning (2024) for the Modification is provided in Attachment B of Appendix A.

Vegetation Surveys

EcoPlanning (2024) undertook vegetation sampling and mapping within the Study Area encompassing the Subject land and surrounds. Five vegetation validation field surveys were undertaken by EcoPlanning in December 2023, February 2024, April 2024 and May 2024.

The surveys included sampling from 23 vegetation integrity plots within the Subject land. Data collected to measure the condition of the vegetation included attributes relating to composition, structure, and function.

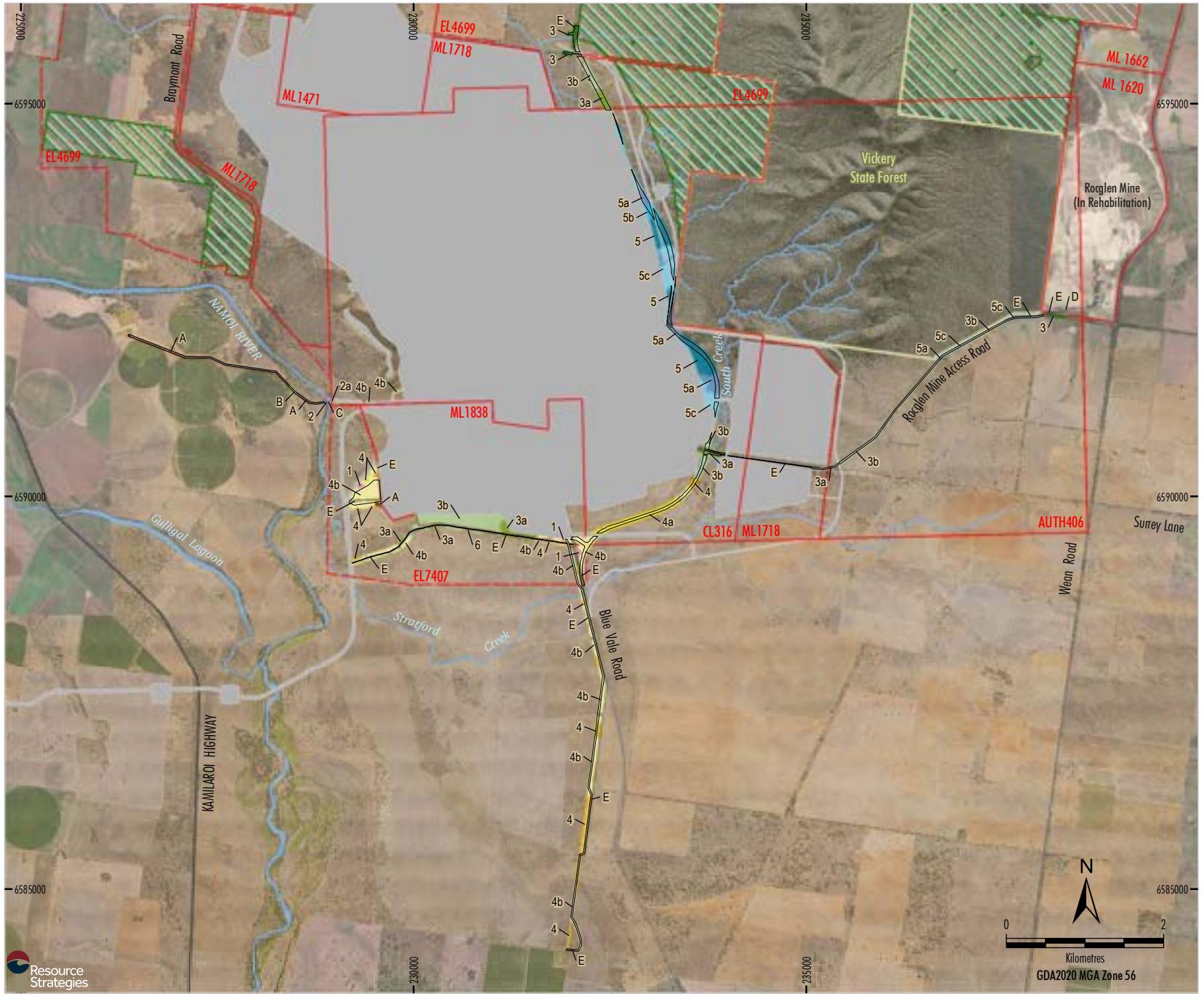
The Plant Community Type (PCTs) and vegetation zones on the Subject land were identified and mapped by EcoPlanning (2024) (Appendix A) in accordance with the BAM (DPIE, 2020) and the *BioNet Vegetation Classification* (NSW DCCEEW, 2024e). Detailed methods and results are provided in Appendix A.

Threatened Flora and Fauna Surveys

Targeted surveys for threatened species and populations listed under the BC Act and EPBC Act were also undertaken by EcoPlanning (2024). Survey techniques included:

- parallel threatened flora transects;
- two-phase grid-based systematic threatened flora surveys;
- funnel traps;
- Anabat bat echolocation recorders;
- arboreal and terrestrial camera traps;
- call playback surveys;
- Koala Spot Assessment Technique surveys;
- bird surveys;
- habitat assessments; and
- spotlighting.

Three threatened flora field surveys were undertaken by EcoPlanning in December 2023, February 2024 and March 2024, which included targeted surveys for threatened flora in accordance with *Surveying Threatened Plants and Their Habitats: NSW Survey Guide for the Biodiversity Assessment Method* (DPIE, 2020b) (Appendix A).



LEGEND

- State Forest
- Whitehaven Biodiversity Stewardship Site
- Whitehaven Conservation Agreement Area
- Exploration Licence Boundary (EL)
- Mining Tenement Boundary (ML, CL)
- Approximate Extent of Approved Vickery Extension Project
- Subject Land/Development Footprint

Vegetation Communities

- 1. Weeping Myall Open Woodland (Disturbed) (PCT 27)
- 2. River Red Gum Woodland (Good) (PCT 78)
- 2a. River Red Gum Woodland (Disturbed) (PCT 78)
- 3. Western Grey Box Woodland (Good) (PCT 81)
- 3a. Western Grey Box Woodland (Disturbed) (PCT 81)
- 3b. Derived Native Grassland (PCT 81)
- 4. Poplar Box Woodland (Good) (PCT 101)
- 4a. Poplar Box Woodland (Scattered Trees) (PCT 101)
- 4b. Derived Native Grassland (PCT 101)
- 5. Narrow-leaved Ironbark - Cypress Pine - White Box Shrubby Open Forest (Good) (PCT 592)
- 5a. Narrow-leaved Ironbark - Cypress Pine - White Box Shrubby Open Forest (Disturbed) (PCT 592)
- 5b. Narrow-leaved Ironbark - Cypress Pine - White Box Shrubby Open Forest (Callitris Regen) (PCT 592)
- 5c. Derived Native Grassland (PCT 592)
- 6. Silver-leaved Ironbark - White Cypress Pine Shrubby Open Forest (Disturbed) (PCT 594)
- A. Crops
- B. Planted Native Vegetation
- C. Waterbody
- D. Infrastructure
- E. Road

Source: NSW Spatial Services (2024); Ecoplanning (2024)
Orthophoto Mosaic: Whitehaven (March 2024); ESRI Basemap (2023)

WHITEHAVEN COAL

VICKERY EXTENSION PROJECT

Vegetation Communities within the Development Footprint

Figure 6-1

Five threatened fauna field surveys were undertaken by EcoPlanning in December 2023, February 2024, March 2024 and April 2024.

The methods and results of these surveys are provided in Attachment A of Appendix A.

6.3.2 Existing Environment

Landscape Setting

The Modification is located in a landscape that has been subject to past and present agricultural land uses, mainly livestock grazing with some dry land cropping, hence the extant native woodland/forest is highly fragmented. The largest continuous areas of woodland/forest near the Project occur immediately to the east of the proposed mining area in Vickery State Forest and to the west along the Namoi River.

Whitehaven has established a number of Biodiversity Stewardship Sites within the wider assessment area surrounding the Subject land (Figures 1-2 and 1-4).

Native Vegetation and Threatened Ecological Communities

Three PCTs were identified within the Subject Land (Table 6-1 and Figure 6-1):

- *PCT 81 Western Grey Box – cypress Pine Shrub Grass Shrub Tall Woodland in the Brigalow Belt South Bioregion* (PCT 81);
- *PCT 101 Poplar Box – Yellow Box – Western Grey Box Grassy Woodland on Cracking Clay Soils Mainly in the Liverpool Plains, Brigalow Belt South Bioregion* (PCT 101); and
- *PCT 592 Narrow-leaved Ironbark – Cypress Pine-White Box Shrubby Open Forest in the Brigalow Belt South Bioregion and Nandewar Bioregion* (PCT 592).

As shown in Table 6-1, most of the Subject land is derived native grassland (33.8 ha [51 %]) (Plate 6-1) with areas of woodland (21.4 ha [33 %]) and cleared land (10.7 ha [16 %]).

One TEC listed under the BC Act was recorded within the Subject land, namely the Inland Grey Box Woodland endangered ecological community (EEC) listed under the BC Act (Appendix A). The Myall Woodland EEC listed under the BC Act is also present but was specifically avoided by the Modification so occurs outside of the Subject land (Appendix A).

The Inland Grey Box Woodland EEC listed under the BC Act is represented by the Western Grey Box Woodland (PCT 81) and Poplar Box Woodland (PCT 101). The evidence used to determine TEC status was gathered via detailed field surveys, involving ground truthing the extent of the TECs and collection of supporting floristic data (Appendix A).

Plate 6-1 – Derived Native Grassland (PCT 81)

Threatened Flora Species

No threatened flora species or populations were recorded in the Subject Land (Appendix A).

Due to seasonal survey requirements not aligning with the submission of this BDAR, some threatened flora listed under the BC Act needed to be assumed present as required by the BAM. A list of the flora species assumed present in provided in Appendix A.

Threatened Fauna Species

The Masked Owl (*Tyto novaehollandiae*), Brown Treecreeper (eastern subspecies) (*Climacteris picumnus victoriae*), Speckled Warbler (*Chthonicola sagittata*), Grey-crowned Babbler (eastern subspecies) (*Pomatostomus temporalis temporalis*) and Diamond Firetail (*Stagonopleura guttata*) were the only threatened fauna species recorded in the Subject Land (Appendix A).

Due to seasonal survey requirements not aligning with the submission of this BDAR, some threatened fauna listed under the BC Act needed to be assumed present as required by the BAM. A list of the fauna species assumed present in provided in Appendix A.

Table 6-1
Plant Community Types within the Subject Land

Veg Zone	Vegetation Community	PCT ID*	Total Area (ha)	Percent Cleared in NSW (%)*
Semi-arid Woodlands (Grassy sub-formation) - Riverine Plain Woodlands Class				
1	Weeping Myall Open Woodland (Disturbed) (PCT 27)[1]	*PCT 27 Weeping Myall Open Woodland of the Darling Riverine Plains Bioregion and Brigalow Belt South Bioregion*	0	86 % (+/-60 %)
Forested Wetlands - Inland Riverine Forests Class				
2	River Red Gum Woodland (Good) (PCT 78)	*PCT 78 River Red Gum Riparian Tall Woodland / Open Forest Wetland in the Nandewar Bioregion and Brigalow Belt South Bioregion*	0	60 % (+/-50 %)
2a	River Red Gum Woodland (Disturbed) (PCT 78)		0	
Grassy Woodlands - Floodplain Transition Woodlands Class				
3	Western Grey Box Woodland (Good) (PCT 81) [2, 3]	*PCT 81 Western Grey Box - cypress Pine Shrub Grass Shrub Tall Woodland in the Brigalow Belt South Bioregion*	1.6	78 % (+/-50 %)
3a	Western Grey Box Woodland (Disturbed) (PCT 81) [2, 3]		3	
3b	Derived Native Grassland (PCT 81) [2, 3]		9.8	
4	Poplar Box Woodland (Good) (PCT 101) [2, 4]	*PCT 101 Poplar Box - Yellow Box - Western Grey Box Grassy Woodland on Cracking Clay Soils Mainly in the Liverpool Plains, Brigalow Belt South Bioregion*	1.9	75 % (+/-60 %)
4a	Poplar Box Woodland (Scattered Trees) (PCT 101) [2]		3.8	
4b	Derived Native Grassland (PCT 101) [2, 5]		19.3	
Dry Sclerophyll Forest (Shrubby Sub-formation) – Western Slopes Dry Sclerophyll Forests Class				
5	Narrow-leaved Ironbark – Cypress Pine – White Box Shrubby Open Forest (Good) (PCT 592)	*PCT 592 Narrow-leaved Ironbark – Cypress Pine – White Box Shrubby Open Forest in the Brigalow Belt South Bioregion and Nandewar Bioregion*	6.2	52 % (+/-50 %)
5a	Narrow-leaved Ironbark - Cypress Pine - White Box Shrubby Open Forest (Disturbed) (PCT 592)		3.3	
5b	Narrow-leaved Ironbark - Cypress Pine - White Box Shrubby Open Forest (Callitris Regen) (PCT 592)		1.6	
5c	Derived Native Grassland (PCT 592)		4.7	
Dry Sclerophyll Forest (Shrub/Grass Sub-formation) – North-west Slopes Dry Sclerophyll Woodlands Class				
6	Silver-leaved Ironbark - White Cypress Pine Shrubby Open Forest (Disturbed) (PCT 594)	*PCT 594 Silver-leaved Ironbark - White Cypress Pine Shrubby Open Forest of Brigalow Belt South Bioregion and Nandewar Bioregion*	0	52 % (+/-50 %)
		Total Woodland	*21.4*	
		Planted Native Vegetation	*0.22*	
		Total Derived Native Grassland	*33.8*	
		Overall Total Native Vegetation	55.42	
		Cleared Land	*10.7*	
		Overall Total Subject Land/Development Footprint	66.12	

Source: Appendix A

* NSW DCCEEW (2024d).

1 Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes Bioregions Endangered Ecological Community listed under the BC Act (Myall Woodland EEC listed under the BC Act).

2 Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions Endangered Ecological Community listed under the BC Act (Inland Grey Box Woodland EEC listed under the BC Act).

3 Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia Endangered Ecological Community listed under the EPBC Act (Grey Box Grassy Woodlands and Derived Native Grasslands EEC listed under the EPBC Act).

4 Poplar Box Grassy Woodland on Alluvial Plains Endangered Ecological Community listed under the EPBC Act (Poplar Box Grassy Woodland EEC listed under the EPBC Act).

5 Approximately 2.8 ha Poplar Box Grassy Woodland EEC listed under the EPBC Act.

Groundwater Dependent Ecosystems

A review of the *Groundwater Dependent Ecosystems Atlas* (Bureau of Meteorology, 2020) (GDE Atlas) was undertaken. It concluded there are no GDEs listed in the GDE Atlas within the Subject land (Appendix A).

6.3.3 Potential Impacts

The potential direct and indirect impacts of the Modification on biodiversity have been assessed in the BDAR and are described below.

As per the BAM (DPIE, 2020), the Development Footprint is the terminology that applies to impact assessment and is defined as the area of land that is directly impacted by a proposed development, which is equivalent to the Subject land for this assessment.

Measures to Avoid and Minimise Impacts

The Modification was designed to avoid and minimise clearance of native vegetation/habitats. Key measures to avoid direct and indirect impacts on biodiversity values are as follows (Appendix A):

- The Modification would avoid clearance of River Red Gum Woodland (PCT 78) along the Namoi River by using directional drilling equipment to drill the proposed water supply pipeline beneath the Namoi River and the vegetation along the river banks.
- The additional temporary rail loop construction footprint was reduced to avoid clearance of patches of the Weeping Myall Open Woodland (PCT 27) (which is equivalent to the Myall Woodland EEC listed under the BC Act).
- The revised Blue Vale Road realignment design at the connection with the existing Blue Vale Road was varied to avoid clearance of Weeping Myall Open Woodland (PCT 27).
- The construction footprints for the water supply pipelines have been designed to avoid direct impact to canopy trees, with access to the pipeline construction footprints using existing adjacent access roads/tracks where possible.
- An initial proposed soil stockpile to the south of the approved disturbance footprint was excluded from the Modification to avoid clearance of patches of Western Grey Box Woodland (PCT 81) (which is equivalent to the Inland Grey Box Woodland EEC listed under the BC Act).

As described previously, the option to construct the revised Blue Vale Road realignment would result in retention of approximately 29.5 ha of native vegetation clearance required for construction of the approved Blue Vale Road realignment (Appendix A).

Other key measures to minimise direct and indirect impacts on biodiversity values are (Appendix A):

- The initial design of the proposed Mirrabinda pipeline was not co-located with an approved disturbance corridor connecting the MIA to the Namoi River pump station. The final design of the Mirrabinda pipeline was realigned to the north of the rail loop into the approved disturbance footprint.
- The additional temporary rail loop construction footprint was reduced to minimise clearance of the Poplar Box Woodland (PCT 101) (which is listed as Poplar Box Grassy Woodland EEC listed under the EPBC Act).
- The expansion of the rail construction footprint was minimised to only the area necessary to assist construction of the rail loop according to the detailed design phase of the Project.
- The width of the temporary access road from Blue Vale Road south of the MIA to the rail spur corridor was reduced to minimise clearance of Western Grey Box Woodland (PCT 81).
- A variation in the revised design for the approved realignment of the Blue Vale Road at the connection with the existing Blue Vale Road to avoid clearance of Weeping Myall Open Woodland (PCT 27).
- The proposed Ovenden pipeline heading south from the approved disturbance footprint was realigned in sections to avoid clearance of Poplar Box Woodland (PCT 101).

Direct Impacts

After applying the measures to avoid and/or minimise impacts on biodiversity values as described above, the Modification would require the clearance of approximately 55.2 ha of native vegetation (of which approximately 21.4 ha is woodland/forest and 33.8 ha is derived native grassland) (Appendix A).

However, approximately 29.5 ha of native vegetation (comprising approximately 13.5 ha of woodland/forest and 16 ha of derived native grassland) is no longer required to be cleared for the previous approved realignment of Blue Vale Road (Appendix A).

This means that the Modification would result in a net increase in clearance of approximately 25.7 ha of additional native vegetation (or approximately 1.1 % more than the existing approved Project), predominantly for the construction of the water pipelines. This also does not take into account that derived native grassland which would be cleared for temporary construction areas would be re-instated following construction (Appendix A).

Indirect Impacts

The potential for the Modification to result in indirect impacts on native vegetation and habitat has been assessed. The Modification has the potential to cause the following indirect impacts (Appendix A):

- inadvertent impacts on adjacent habitat or vegetation caused by human error;
- trampling of threatened flora;
- reduced viability of adjacent habitat due to edge effects and noise, dust or light spill;
- transport of weeds and pathogens from the site to adjacent vegetation;
- increase in pest animal or predatory species populations;
- increased risk of fauna starvation, exposure and loss of shade or shelter; and
- other indirect impacts.

After the measures to mitigate and manage impacts, there would be a negligible risk to biodiversity associated with the indirect impacts as a result of the Modification.

Serious and Irreversible Impacts

No entities recorded in Development Footprint are potential SAII entities (Appendix A).

6.3.4 Mitigation Measures, Management and Monitoring

There is an existing approved Biodiversity Management Plan for the Project (in accordance with Condition B63 Schedule 2 of Development Consent [SSD 7480]) which documents the measures to mitigate and manage impacts. The approved Biodiversity Management Plan (Whitehaven, 2022) would be reviewed and, if necessary, revised by Whitehaven to include the Modification (subject to any modified Development Consent conditions).

There is also an existing approved Koala Management Plan for the Project (in accordance with Condition B65 Schedule 2 of Development Consent [SSD 7480]) which aims to provide management strategies to minimise potential adverse impacts that may occur to the Koala and/or its habitat (Appendix A).

The BAM (DPIE, 2020) sets a standard of no net loss of biodiversity values. To achieve this, reasonable measures to mitigate and manage impacts are required to be implemented. The key measures to mitigate and manage impacts would include (Appendix A):

- Various measures to mitigate and manage impacts during land clearance.
- Retention and reuse of key habitat features (tree hollows, logs and stags).
- Standard measures to manage weeds, animal pests, bushfire risk, and potential for erosion.
- Continuation of established measures for the Koala, including sightings register, habitat management, sick/injured/relocation management, strike management, and local research.
- Specific additional measures for the Modification described in Appendix A.

6.4 ABORIGINAL CULTURAL HERITAGE

An ACHA was prepared for the Modification by Whincop (2024) and is presented in Appendix B.

A summary of the assessment is provided below.

6.4.1 Methodology

The ACHA for the Modification has been undertaken in consideration of the following codes, guidelines and regulations (Appendix B):

- *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW, 2010a);
- *Aboriginal Cultural Heritage: Standards and Guidelines Kit* (NSW National Parks and Wildlife Service, 1997);
- *Ask First: A guide to respecting indigenous heritage places and values* (Australian Heritage Commission, 2002);
- *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW, 2010b);
- *Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation* (NSW Department of Environment and Conservation, 2005);
- *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (DECCW, 2010c);
- *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH, 2011);
- *National Parks and Wildlife Act 1974: Part 6 Approvals – Interim Community Consultation Requirements for Applicants* (NSW Department of Environment and Climate Change, 2004);
- *NSW Minerals Industry Due Diligence Code of Practice for the Protection of Aboriginal Objects* (NSW Minerals Council, 2010);
- *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance* (Australia International Council on Monuments and Sites, 2013); and
- *Engage Early* (Commonwealth Department of Environment and Energy, 2016).

6.4.2 Existing Environment

Previous Archaeological Investigations

A number of Aboriginal heritage surveys and assessments have been undertaken in the Project area and surrounds over the past 40 years, including survey and assessment for the Project EIS.

The investigations and surveys undertaken in the immediate area included:

- a survey for a proposed mining operation at Boggabri, which included an inspection of the original VCM area (Kamminga, 1978);
- a survey and assessment of the original VCM (Thompson, 1981);
- extensive archaeological investigations undertaken for areas now associated with the Boggabri, Tarrawonga and Maules Creek Coal Mines, including portions of the Project area (Haglund, 1985);
- a comprehensive assessment for Vickery Coal Project (Landskape, 2012);
- various due diligence assessments (University of Queensland Culture and Heritage Unit 2015, 2016); and
- an ACHA for the Project EIS (Whincop, 2018).

The ACHA prepared by Whincop (2018) as part of the Project EIS covered a large portion of the Investigation Area and included extensive surveys and community consultation. A total of 62 Aboriginal heritage sites were identified within the Project area and immediate surrounds.

A detailed description of the investigations and surveys undertaken in the Project area and surrounds is provided in Appendix B.

Desktop Review

An Aboriginal Heritage Information System search was undertaken for the areas directly associated with the Modification (the Investigation Area) and surrounds. The search identified 89 Aboriginal heritage sites located within the Investigation Area (Appendix B).

Consultation

The ACHA included consultation with 79 Registered Aboriginal Parties (RAPs), who were identified during the registration process undertaken for the Project, consistent with the *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW, 2010a) (Appendix B).

Consultation with the Aboriginal community regarding the Project has been extensive and involved various methods of communication including public notices, meetings, written and verbal correspondence, archaeological survey attendance, review of the draft Aboriginal Cultural Heritage Management Plan and archaeological salvage at the Project.

A detailed description of the consultation undertaken with the RAPs for the Modification is provided in Appendix B, and a summary is provided below.

Information Session

Information regarding the Modification was provided in writing to all RAPs on 19 January 2024, which included an invitation to attend an information session about the Modification, proposed to be held on 15 February 2024 in Boggabri. Nine RAPs attended the information session (Appendix B). An additional information session was held on 6 June 2024.

Aboriginal Cultural Heritage Field Survey

All RAPs were invited to attend a field survey of the Investigation Area, which was completed on 19 to 23 February 2024, with a follow up field survey on 12 May 2024. Six RAPs attended the field survey (Appendix B).

Review of Draft Aboriginal Cultural Heritage Assessment

A copy of the draft ACHA was provided to all RAPs on 21 May 2024. No comments were received on the draft ACHA (Appendix B).

Archaeological Survey and Results

As described previously, the field survey of the Investigation Area was undertaken by suitably qualified archaeologist Dr Matthew Whincop and RAP representatives on 19 to 23 February 2024 and 12 May 2024, in accordance with the requirements of DECCW (2010b) and OEH (2011) (Appendix B). A total of 22 Aboriginal cultural heritage sites were identified within the Investigation Area (Table 6-2 and Figure 6-2). A detailed description of each Aboriginal heritage site identified in the ACHA is provided in Appendix B.

Aboriginal Cultural Heritage Management Regime

In accordance with Condition B70, Schedule 2 of Development Consent (SSD 7480), an Aboriginal Cultural Heritage Management Plan has been prepared for the Project. The Aboriginal Cultural Heritage Management Plan:

- identifies Aboriginal heritage sites and values;
- details the management of Aboriginal heritage sites, including:
  - protocol for the ongoing involvement of the Aboriginal community; and
  - monitoring, management and avoidance measures for known and unknown Aboriginal objects.
- establishes a strategy for the care, control and storage of Aboriginal objects salvaged on site, both during the life of the development and in the long term; and
- establishes the roles and responsibilities of Whitehaven staff with regard to the Aboriginal Cultural Heritage Management Plan.

6.4.3 Potential Impacts

Potential impacts on Aboriginal cultural heritage would be associated with the following Modification components:

- additional Project rail loop construction footprint (Figure 1-4);
- construction of pipelines from transfer points on the adjoining Mirrabinda and Ovenden properties and from the MIA to the Rocglen Coal Mine (Figure 1-4);
- upgrade of an existing access road to provide temporary construction access to the Project rail spur (Figure 1-4); and
- an alternative realignment of the approved Blue Vale Road diversion and commensurate reduction of the open cut extent (Figure 1-4).

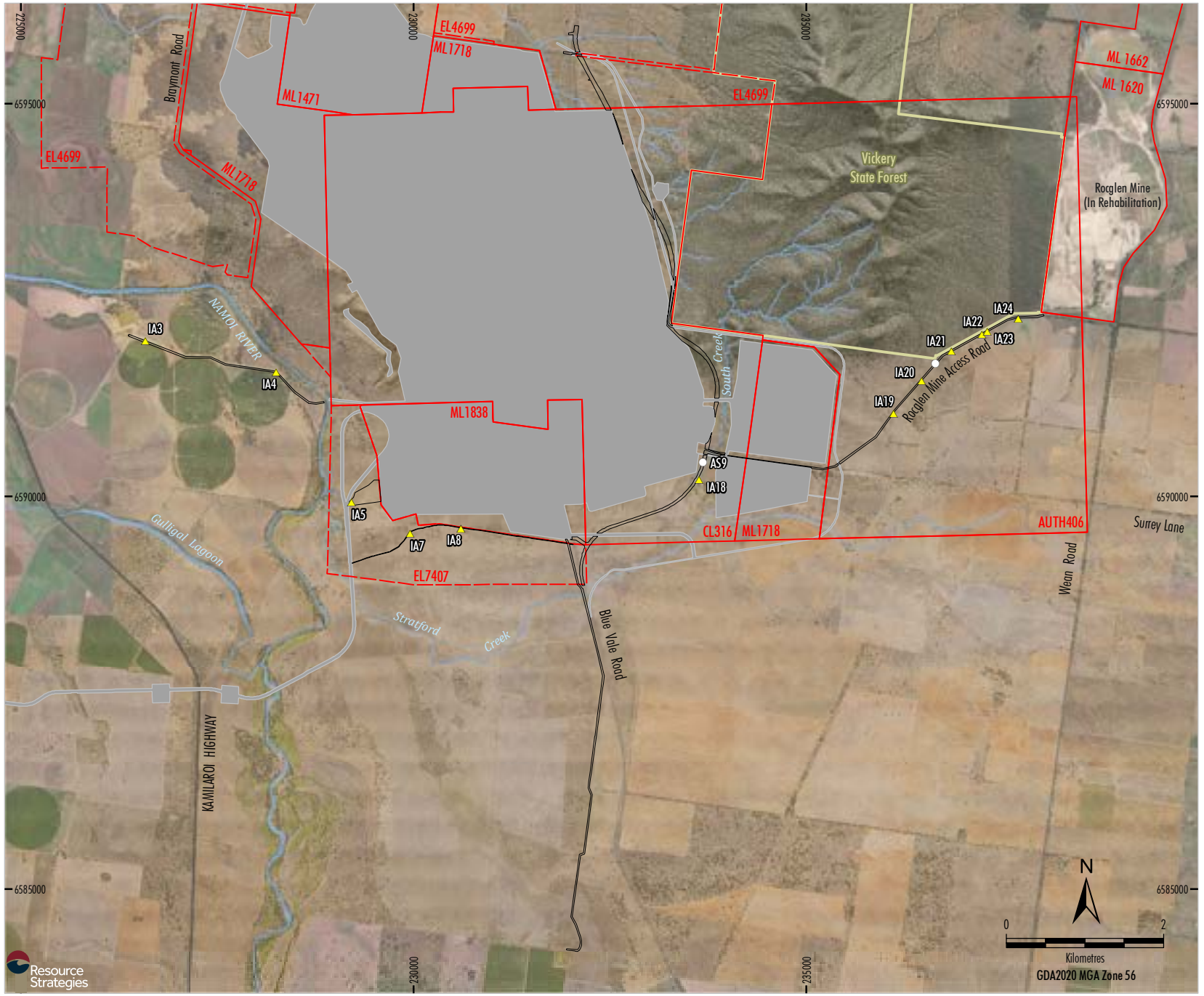
Of the 22 sites identified within the Investigation Area, 11 would be impacted by Modification. Impact to three sites of high scientific significance within the Investigation Area would be avoided by underboring the Mirrabinda pipeline beneath these sites (Appendix B).

Table 6-2
Aboriginal Heritage Sites within Investigation Area and Potential Impact

Site Name	Type	Scientific Significance	Project Element	Type of Harm
Broadwater 1	Artefact Scatter	High	Mirrabinda pipeline	None
Broadwater 2	Artefact Scatter	High	Mirrabinda pipeline	None
VCP-OS-049	Artefact Scatter	Moderate	Blue Vale Road diversion	Direct (partial)*
VEP AS19	Artefact Scatter	High	Mirrabinda pipeline	None
VEP AS21	Artefact Scatter	Low	Rail spur additional surface development	Direct (partial)
VEP AS35	Artefact Scatter	Low	Temporary access road	None
VEP IA40	Isolated Artefact	Low	Rail spur additional surface development	None
VEP IA51	Isolated Artefact	Low	Temporary access road	None
Vickery Mod AS9	Artefact Scatter	Low	Blue Vale Road diversion	Direct (partial)
Vickery Mod AS11	Artefact Scatter	Low	Rocglen pipeline	Direct (total)
Vickery Mod IA3	Isolated Artefact	Low	Mirrabinda pipeline	None
Vickery Mod IA4	Isolated Artefact	Low	Mirrabinda pipeline	Direct (total)
Vickery Mod IA5	Isolated Artefact	Low	Rail spur additional surface development	Direct (total)
Vickery Mod IA7	Isolated Artefact	Low	Temporary access road	None
Vickery Mod IA8	Isolated Artefact	Low	Temporary access road	None
Vickery Mod IA18	Isolated Artefact	Low	Blue Vale Road diversion	None
Vickery Mod IA19	Isolated Artefact	Low	Rocglen pipeline	Direct (partial)
Vickery Mod IA20	Isolated Artefact	Low	Rocglen pipeline	Direct (total)
Vickery Mod IA21	Isolated Artefact	Low	Rocglen pipeline	Direct (total)
Vickery Mod IA22	Isolated Artefact	Low	Rocglen pipeline	Direct (total)
Vickery Mod IA23	Isolated Artefact	Low	Rocglen pipeline	Direct (total)
Vickery Mod IA24	Isolated Artefact	Low	Rocglen pipeline	None

Source: Appendix B

* Site has been partially salvaged as part of a 2023 salvage program (Appendix B).



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Location of Aboriginal Cultural Heritage Sites within the Development Footprint

Figure 6-2

Direct Impacts

The Modification may result in direct disturbance (either total or partial) of 11 known Aboriginal heritage sites within the Investigation Area (Appendix B). No sites of high scientific significance would be impacted by the Modification (Appendix B).

Where avoidance of known Aboriginal cultural heritage sites is not practicable (e.g. artefact scatters extending over large areas), appropriate management measures would be implemented, including salvage activities where necessary, and avoidance of portions of the site that would not be impacted.

Indirect Impacts

Possible causes of indirect impacts to Aboriginal heritage sites in close proximity to the modified Project include (Appendix B):

- accidental disturbance by peripheral activities; and
- inappropriate visitation of known Aboriginal cultural heritage sites, including the unauthorised removal of Aboriginal objects.

Potential impacts associated with accidental disturbance by peripheral activities and inappropriate visitation would be effectively managed by the measures described in Aboriginal Cultural Heritage Management Plan and are not considered material risks.

Potential Cumulative Impacts

The Project is located within the Gunnedah Basin. For the past 150 years, the Gunnedah Basin has been subject to a range of ground impacts associated with pastoral activities, including widespread clearing (Appendix B).

The Gunnedah Basin also contains a number of currently operational mine sites (Figure 1-1 and Section 2.4). These mine sites have operated for some years, and the approved mining operations have caused adverse heritage impacts to a range of Aboriginal cultural heritage sites, principally archaeological ones (Appendix B).

The results of the ACHA indicated that the types of Aboriginal cultural heritage sites within the Investigation Area that may be impacted by the Modification generally comprise part of a region-wide 'background scatter' of isolated artefacts and disturbed artefact scatters of low (or occasionally moderate or high) scientific significance (Appendix B). Given the generally low scientific significance of these sites, the cumulative effect that may result from the development of the Modification is considered to be low and would be mitigated by the ongoing program of archaeological recording provided in the Aboriginal Cultural Heritage Management Plan.

6.4.4 Mitigation Measures, Management and Monitoring

The Aboriginal Cultural Heritage Management Plan would be reviewed and, if necessary, revised by Whitehaven to include the Modification (subject to any modified Development Consent conditions).
The Aboriginal Cultural Heritage Management Plan would continue to be implemented for the modified Project.

6.5 NOISE

A Noise Assessment for the Modification was undertaken by RWDI Consulting Engineers and Scientists (RWDI) (2024) and is presented in Appendix C.

A summary of the assessment is provided below.

6.5.1 Methodology

The Noise Assessment (Appendix C) includes an assessment of construction noise and operational noise associated with the temporary concrete batching plant.

The assessment considered overall site noise emissions from the approved Project incorporating the temporary concrete batching plant (Appendix C). Total predicted noise levels were then compared with the Development Consent (SSD 7480) operational noise criteria.

A qualitative assessment was also conducted to consider potential noise impacts associated with other components of the Modification (Appendix C).

The Noise Assessment (Appendix C) was prepared in consideration of the following guidelines:

- *Noise Policy for Industry* (NPfI) (EPA, 2017); and
- *Voluntary Land Acquisition and Mitigation Policy* (DPE, 2018).

6.5.2 Existing Environment

Previous Assessments

The most recent noise assessment was prepared by Wilkinson Murray for the Project EIS (Wilkinson Murray, 2018).

In summary, Wilkinson Murray (2018) predicted the following in regard to the operational noise assessment for the Project:

- During the daytime, operational noise levels (assessed under relevant meteorological conditions) are not predicted to exceed the 40 decibels A-weighting (dBA) $L_{Aeq,15\ min}$ criterion at privately-owned receivers throughout the Project mine life (Figure 6-3).
- During the evening and night-time, exceedances of the 35 dBA $L_{Aeq,15\ min}$ criterion by between 1 to 2 dBA (i.e. negligible exceedances) are predicted for privately-owned receivers 131a (throughout the Project mine life), 131b (approximately from Year 7) and 132 (approximately from Year 16) during adverse meteorological conditions.
- During the evening and night-time, an exceedance of the 35 dBA $L_{Aeq,15\ min}$ criterion of 3 to 5 dBA (i.e. a marginal to moderate exceedance) is predicted for privately-owned receiver 127b during adverse meteorological conditions throughout the Project mine life.
- During the evening and night-time, exceedances of the 35 dBA $L_{Aeq,15\ min}$ criterion by greater than 5 dBA (i.e. significant exceedances) are predicted for privately-owned receiver 127c during adverse meteorological conditions throughout the Project mine life.

Under Development Consent (SSD 7480), the owner of property 127 has the right to mitigation and acquisition upon request based on the predicted impacts of the Project. In addition, Whitehaven has been in discussions with the owner of this property in regard to at receiver noise mitigation actions (Figure 6-3).

Wilkinson Murray (2018) concluded the relatively limited number of exceedances predicted indicates that, with the implementation of Project noise mitigation measures, noise from the Project would be managed to the maximum extent reasonable, and no other measures would be of material benefit.

Noise Criteria

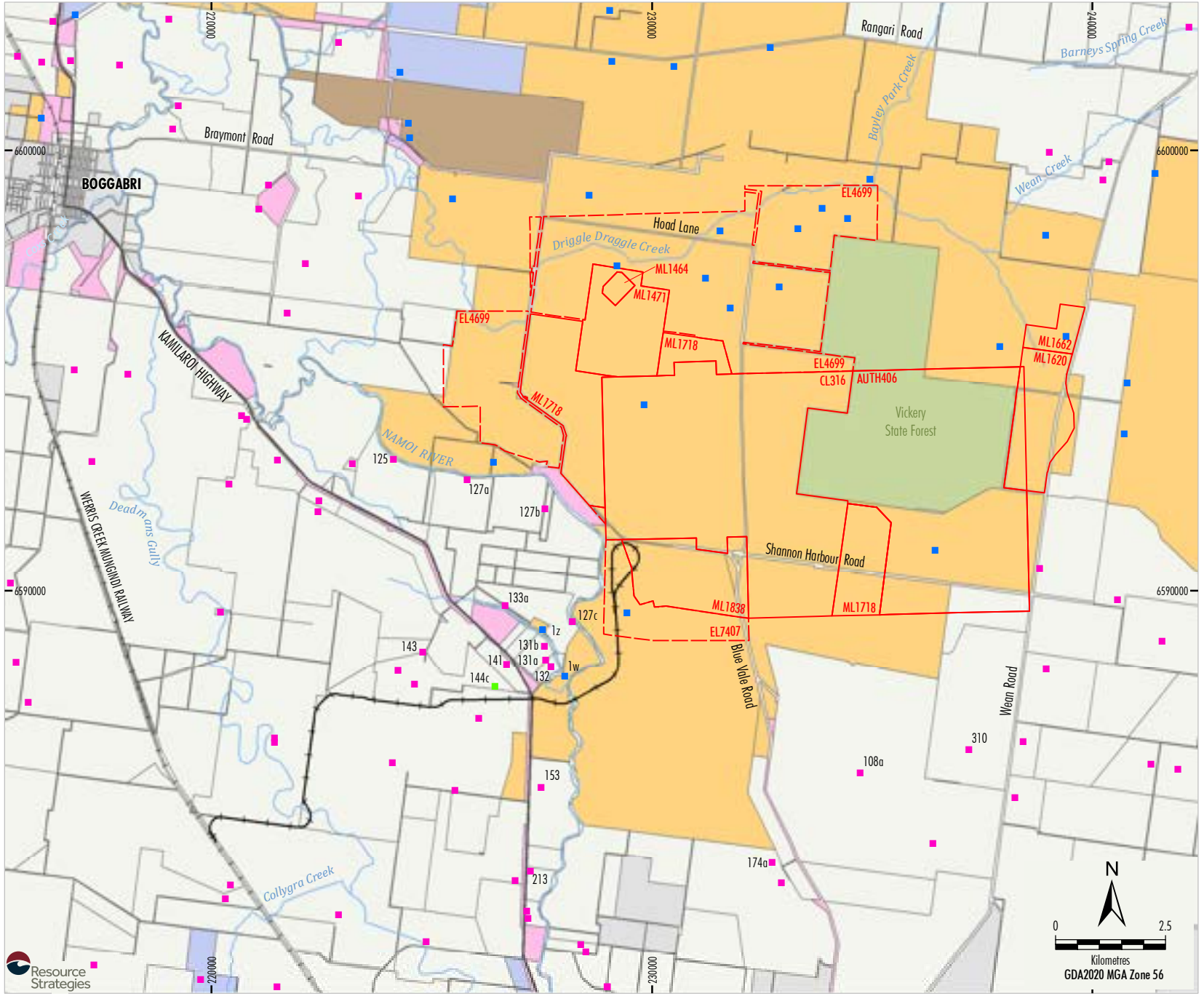
Condition B1, Schedule 2 of Development Consent (SSD 7480) requires Whitehaven to ensure that the noise generated by the operation of the Project does not exceed the criteria in Table 6-3 at any residence on privately-owned land, excluding the receivers located on property 127 which are currently subject to acquisition and mitigation rights (Figure 6-3).

6.5.3 Potential Impacts

Potential noise impacts would be associated with the construction and operation of the temporary concrete batching plant.

Table 6-3
Development Consent (SSD 7480) Operational Noise Criteria (dBA)

Receiver	Day	Evening	Night	
	$L_{Aeq,15min}$	$L_{Aeq,15min}$	$L_{Aeq,15min}$	L_{AFmax}
131a	40	37	37	52
131b, 132	40	36	36	52
All other privately-owned residences	40	35	35	52



LEGEND

- Exploration Licence Boundary (EL)
- Mining Tenement Boundary (ML, CL)
- Indicative Vickery Rail Spur and Loop
- State Forest
- Crown Land
- Whitehaven Owned Land
- Whitehaven/Idemitsu Boggabri Coal Joint Owned Land
- Idemitsu Boggabri Coal Owned Land
- Privately Owned Land
- Owner Not Identified
- Mine-owned Dwelling
- Private Dwelling
- Approved Dwelling Site

Source: Whitehaven (2024); NSW Spatial Services (2024)

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Receiver Locations

Figure 6-3

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The construction and operation of the temporary concrete batching plant would occur during the construction/development stages of the MIA, rail loop and Project rail spur. Consistent with the Project Noise and Blasting Assessment (Wilkinson Murray, 2018), the Project Year 3 operational noise scenario has been used as the baseline representation of the approved operation (Appendix C).

Operational Noise

Predicted noise levels associated with the operation of the temporary concrete batching plant would comply with the operational L_{AFmax} noise criteria outlined in Table 6-2 during day, evening and night time assessment periods (Appendix C).

Given the above, the Project incorporating the operation of the temporary concrete batching plant is not anticipated to impact on the acoustic amenity of the surrounding community (Appendix C).

Construction Noise

Noise results indicate that compliance would be achieved at all the key receivers during construction activities for the temporary concrete batching plant. As such, the Project with construction activities associated with the temporary concrete batching plant would not impact on the acoustic amenity of the surrounding community (Appendix C).

Results show that overall noise levels may increase by 0-3 dB at the receivers within the vicinity of the temporary concrete batching plant as a result of the construction activities, however, would not result in exceedances of the noise criteria outlined in Development Consent (SSD 7480) (Appendix C).

Potential Qualitative Impacts

Project Rail Spur Construction Footprint

Although the Modification proposes a temporary increase in construction footprint (i.e. additional laydown area), no additional construction equipment would be required (Appendix C).

Due to the relatively large distances separating the construction activities and the closest noise-sensitive receivers to the west, the additional construction footprint is not expected to result in increases in the operations approved noise levels (Wilkinson Murray, 2018).

Water Supply and Infrastructure

The construction of the water pipeline near the water supply dam located on the Mirrabinda property may affect receivers 127a and 127b for a relatively short period of time (Appendix C). However, both receivers are located within property 127 (Figure 6-3), which has the right to acquisition upon request in Development Consent (SSD 7480) for predicted noise impacts. Whitehaven has formed agreements with the landholder for the construction and operation of the Mirrabinda pipeline which covers all activities associated during the construction period.

Construction noise associated with the water pipelines from Ovenden and to the Rocglen Coal Mine were also reviewed (Appendix C). Due to the distances separating the proposed pipeline alignments and the closest privately-owned residential receivers, construction noise impacts are expected to be negligible (Appendix C).

Revised Blue Vale Road Realignment

Construction activities associated with the revised Blue Vale Road realignment would occur later in the Project life. Consistent with the finding of the Project Noise and Blasting Assessment (Wilkinson Murray, 2028), it is expected that construction noise associated with the revised Blue Vale Road realignment would be negligible in consideration operational noise emissions associated with the Project.

It can also be noted that the revised Blue Vale Road realignment is located further from the nearest privately-owned receiver compared to the approved Blue Vale Road realignment (Appendix C).

ROM Coal Haulage Hours

The use of the Approved ROM Coal Transport Route, shared by the Project and the Tarrawonga Coal Mine, is subject to a cumulative coal transport limit of 3.5 Mtpa to the Whitehaven CHPP and both governed by common road traffic noise criteria (Condition B9, Schedule 2 of Development Consent [SSD 7480]) (Appendix C).

The same extension of hours for the use of the Approved ROM Coal Transport Route proposed for the Modification was assessed as part of the approved Tarrawonga Coal Mine Road Haulage Hours Modification (RWDI, 2023), which demonstrated compliance with the road traffic noise criteria. It is therefore expected the extended ROM coal road haulage hours proposed as part of the Modification would comply with the relevant road traffic noise criteria (Appendix C).

Waste Tyre Disposal

Disposal of waste heavy vehicle tyres in the waste rock emplacement areas is not expected to result in any material changes to the overall noise envelop of the approved Project (Appendix C).

On-site Production of Gravel Materials

Gravel would be extracted (from mining overburden/interburden material), crushed and screened by a mobile crusher within the open cut pit or temporary infrastructure area (i.e. approximately 4 km away from the nearest private receiver not subject to acquisition upon request) (Appendix C).

Given the location of the mobile crusher during its operation, crushing and screening of overburden/interburden to produce gravel is not expected to increase the approved noise levels relative to the Project during a Year 3 scenario (Appendix C).

Final Landform

As described in Sections 1 and 3, there would be no change to open cut mining methods, indicative mining fleet or maximum annual coal extraction rate, mining footprint or approved final landform height, therefore, it is not anticipated that the change to the approved final landform would result in any material differences to the approved Project noise envelope (Appendix C).

Potential Cumulative Impacts

Potential cumulative noise from the Project (as modified) and nearby operational mining projects (i.e. Tarrawonga Coal Mine, Boggabri Coal Mine and Maules Creek Coal Mine) were also considered as part of the assessment (Appendix C).

As the noise contribution from the construction and operation of the temporary concrete batching plant is not predicted to make material differences to the overall noise profile of the approved Project, no changes are expected to the Project's cumulative noise assessment (Wilkinson Murray, 2018) and cumulative noise levels would remain in compliance with the relevant NPfI recommended amenity noise levels (Appendix C).

6.5.4 Mitigation Measures, Management and Monitoring

The Noise Management Plan would continue to be implemented for the Modification.

Given the Modification is not expected to contribute to any additional exceedances of the relevant noise criteria at any sensitive receptors in the vicinity of the Project, Whitehaven does not propose any additional noise management measures.

Notwithstanding, the Noise Management Plan would be reviewed and, if necessary, revised by Whitehaven to include the Modification (subject to any modified Development Consent conditions).

6.6 AIR QUALITY

An Air Quality Impact and Greenhouse Gas Assessment for the Modification was undertaken by Todoroski Air Sciences (TAS) (2024) and is presented as Appendix D.

A summary of the assessment is provided below.

6.6.1 Methodology

The air quality assessment criteria within the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (EPA, 2022) (the Approved Methods) were adopted for the assessment of impacts at any privately-owned receivers.

A qualitative assessment was also conducted to consider potential air quality impacts associated with other components of the Modification (Appendix D).

6.6.2 Existing Environment

Previous Assessments

The most recent Air Quality Impact Assessment was prepared by Ramboll Australia Pty Ltd (Ramboll) for the Project EIS (Ramboll, 2018).
Ramboll (2018) predicted no exceedances of the relevant EPA criteria (Table 6-4) at any privately-owned receiver for Project-only 24-hour average particulate matter 10 micrometres or less in diameter (PM_{10}) or particulate matter 2.5 micrometres or less in diameter ($PM_{2.5}$) concentrations, annual average PM_{10}, $PM_{2.5}$, total suspended particles (TSP) concentrations or dust deposition levels.

Ramboll (2018) also concluded Project construction activities would potentially generate particulate matter emissions which would typically be contained to specific areas (e.g. MIA), be of limited duration and relatively easy to manage through dust control measures (Ramboll, 2018).

Local Meteorological Conditions

Whitehaven operates an on-site weather station to assist with the environmental management of the Project. On an annual basis, winds generally follow along a southeast to northwest axis, with the greatest proportion of winds from the southeast (Appendix D).

Local Air Quality Monitoring

The main sources of particulate matter in the wider Project area include active mining, agricultural activities, and emissions from local anthropogenic activities such as motor vehicle exhausts, unsealed roads and domestic wood heaters (Appendix D).

Monitoring data collected from the nearest ambient air quality monitors from the NSW DCCEEW at Narrabri and Gunnedah (Figure 6-4) were reviewed as part of the Air Quality Impact and Greenhouse Gas Assessment for the Modification (Appendix D).

Monitoring data shows that the annual average PM_{10} concentrations for the Vickery TEOM, Gunnedah and Narrabri monitoring stations was below the relevant criterion of 25 micrograms per cubic metre (µg/m³) for all years of the review period except in 2019, indicating that overall, air quality is good in relation to PM_{10} levels (Appendix D).

Air Quality Criteria

TAS (2018) has assessed the Modification in consideration of the air quality criteria outlined the Approved Methods (Section 6.6.1 and Table 6-4).

The air quality criteria outlined in Condition B32, Schedule 2 of Development Consent (SSD 7480) is consistent with Table 6-4.

Air Quality Management and Monitoring Regime

In accordance with Condition B36, Schedule 2 of Development Consent (SSD 7480), an Air Quality and Greenhouse Gas Management Plan has been prepared for the Project. The Air Quality and Greenhouse Gas Management Plan:

- describes the air quality management to be implemented for the Project;
- describes the air quality management system in detail; and
- details the air quality monitoring program undertaken in accordance with the Approved Methods.

6.6.3 Potential Impacts

Potential air quality impacts would be associated with the construction and operation of the temporary concrete batching plant.

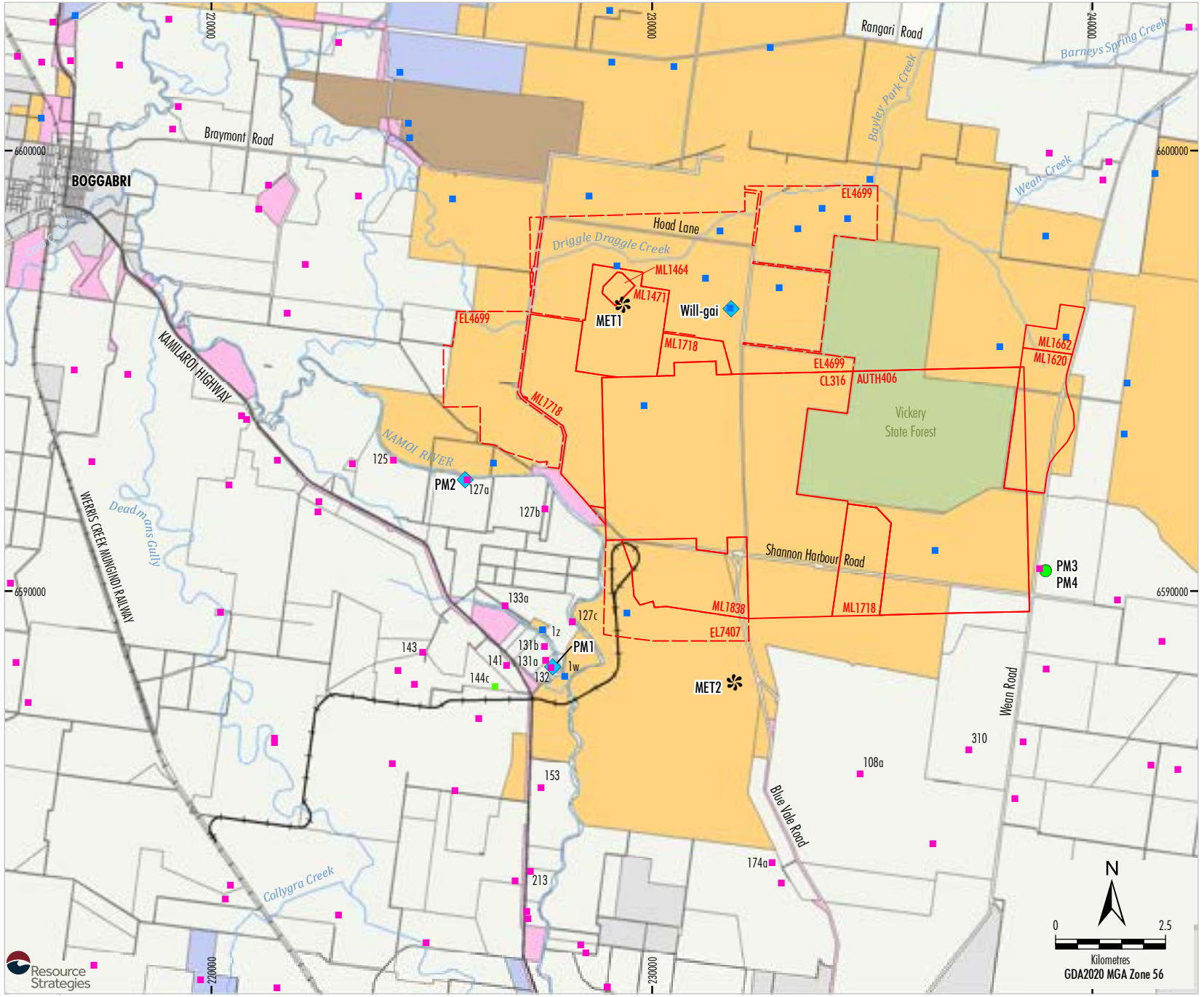
The construction and operation of the temporary concrete batching plant would occur during the construction/development stages of the MIA, rail loop and Project rail spur. Consistent with the Project Air Quality Impact Assessment (Ramboll, 2018), the Project Year 3 scenario has been used as the baseline representation of the approved operation (Appendix D). For completeness, TAS (2024) also considered Project Years 7 and 21 in their assessment of the Modification.

Table 6-4
NSW EPA Air Quality Impact Assessment Criteria

Pollutant	Averaging Period	Impact	Criterion
TSP	Annual	Total	90 µg/m³
PM_{10}	Annual	Total	25 µg/m³
	24 hour	Total	50 µg/m³
$PM_{2.5}$	Annual	Total	8 µg/m³
	24 hour	Total	25 µg/m³
Deposited dust	Annual	Incremental	2 g/m²/month
		Total	4 g/m²/month

Source: NSW EPA (2022).

Note: µg/m³ = micrograms per cubic metre, g/m²/month = grams per square metre per month



LEGEND

- Exploration Licence Boundary (EL)
- Mining Tenement Boundary (ML, CL)
- Indicative Vickery Rail Spur and Loop
- State Forest
- Crown Land
- Whitehaven Owned Land
- Whitehaven/Idemitsu Boggabri Coal Joint Owned Land
- Idemitsu Boggabri Coal Owned Land
- Privately Owned Land
- Owner Not Identified
- Mine-owned Dwelling
- Private Dwelling
- Approved Dwelling Site

Monitoring Sites

- Met Station
- HVAS
- TEOM

Source: Whitehaven (2024); NSW Spatial Services (2024)

WHITEHAVEN COAL

VICKERY EXTENSION PROJECT

Montioring Locations

Figure 6-4

WHC-23-93 MOD1 MT_214C

Emission Inventory

To consider the potential effect of dust emissions associated with the operation of the temporary concrete batching plant in more detail, the estimated dust emissions were compared with the levels of dust for the approved operations for the Project (Appendix D).

The significant emission source was predicted to be associated with delivering sand and aggregate material via unpaved roads to the temporary concrete batching plant (Appendix D).

Further, TAS (2024) predicted that the temporary concrete batching plant would generate dust emissions ranging from 0.2% to 0.4% of the approved PM_{10} emissions for the Project.

Dispersion Modelling Results

The CALPUFF and TAPM modelling system were both used by TAS (2024) to assess the potential air quality impacts associated with the temporary concrete batching plant.

The dispersion modelling predictions for the temporary concrete batching plant indicate the estimated increase in dust emissions due to the temporary concrete batching plant is minor and would be unlikely to be discernible beyond the existing approved levels of dust in the area surrounding the Project (Appendix D).

Potential Qualitative Impacts

Project Rail Spur Construction Footprint, Water Supply and Infrastructure

Both the rail loop construction footprint expansion (i.e. additional laydown area), upgrades to an existing access track and water pipelines construction would likely occur during the major construction period associated with the construction of the rail loop and MIA (Appendix D).

Given the nature of the activities associated with construction of the Project rail spur and MIA, the additional dust emissions as a result of the Modification are expected to comprise a small part of the total construction phase emissions for the Project and are significantly less than the total dust generated for the operational mine as assessed in Ramboll (2018).

Overall, it is expected that there will be no significant or long-lasting impact on nearby areas due to the construction activities for the Modification components (Appendix D).

Revised Blue Vale Road Realignment

Air emissions generated from vehicle movements on the revised Blue Vale Road realignment would be reduced due to shorter travel distance, minimising potential air quality impacts at sensitive receptors and/or within the surrounding environment, compared to the approved Blue Vale Road realignment. Overall, the revised Blue Vale Road realignment would enhance air quality and operational efficiency.

ROM Coal Haulage Hours

The extension of the ROM coal haulage hours does not include any change to the maximum approved annual limit for ROM transport for the Project, and thus the total quantum of dust generated from this activity would not change, only the period in which it can occur (i.e. for an additional 4 hours per day) (Appendix D). This change would see the dust generated from this activity be distributed over a longer period which can reduce the intensity of dust level in the short-term (Appendix D).

Waste Tyre Disposal

Disposal of waste heavy vehicle tyres in the waste rock emplacement areas is not expected to result in any material changes to approved air quality impacts for the Project.

On-site Production of Gravel Materials

As described previously, the proposed extraction and processing of up to 90,000 m^3 (or approximately 207,000 tonnes per annum) of gravel material (from mining overburden/interburden material) would occur within the open pit or temporary infrastructure area (i.e. approximately 4 km away from the nearest private receiver not subject to acquisition upon request) (Appendix D).

The *Vickery Coal Project – Air Quality and Greenhouse Gas Assessment* (PAEHolmes, 2012) included similar gravel processing activities proposed for the Modification. The air quality modelling for the Vickery Coal Project, did not indicate that gravel processing would have any tangible impact in the surrounding environment and comprises only a small component of total dust emissions associated with mining operations.

It is expected that a similar outcome for the Project (as modified) is expected.

Final Landform

As described in Sections 1 and 3, there would be no change to open cut mining methods, indicative mining fleet or maximum annual coal extraction rate, mining footprint or approved final landform height, therefore, it is not anticipated that the change to the approved final landform would result in any material differences to the approved air quality impacts for the Project.

Potential Cumulative Impacts

Potential cumulative air quality impacts from the Project (as modified) and nearby operational mining projects (i.e. Tarrawonga Coal Mine, Boggabri Coal Mine and Maules Creek Coal Mine) were considered as part of the assessment (Appendix D).

The Tarrawonga Coal Mine, Boggabri Coal Mine and Maules Creek Coal Mine are currently active coal mining operations and would generate dust emissions and any potential impact likely to be experienced close to these operations (Appendix D). Considering the distance of the Project relative to these mining operations being approximately 10 km, the potential for cumulative impacts to arise is likely to be negligible (Appendix D).

6.6.4 Mitigation Measures, Management and Monitoring

The Air Quality and Greenhouse Gas Management Plan would continue to be implemented for the Modification.

Given the Modification is not expected to contribute to any additional exceedances of the relevant noise criteria at any sensitive receptors in the vicinity of the Project, Whitehaven does not propose any additional noise management measures.

Notwithstanding, the Air Quality and Greenhouse Gas Management Plan would be reviewed and, if necessary, revised by Whitehaven to include the Modification (subject to any modified Development Consent conditions).

6.7 GREENHOUSE GAS

6.7.1 Methodology

Greenhouse gas emissions associated with the Modification have been assessed in Appendix D in accordance with relevant *National Greenhouse Accounts Factors* (NGA Factors) (DCCEEW, 2023).

6.7.2 Greenhouse Gas Emission Scopes

Under the *Greenhouse Gas Protocol* (World Business Council for Sustainable Development and World Resources Institute, 2020), establishing operational boundaries involves identifying emissions affiliated with a corporations' operations, categorising them as potential direct or indirect emissions, and determining the scope of accounting and reporting for indirect emissions.

Three "Scopes" of emissions (Scope 1, Scope 2 and Scope 3) are defined for greenhouse gas accounting and reporting purposes. These scopes are briefly outlined below.

Scope 1 – Direct Greenhouse Gas Emissions

Scope 1 emissions are direct greenhouse gas emissions within the boundary of the operation. Direct greenhouse gas emissions are defined as those emissions that occur from sources that are owned or controlled by the entity. In the case of the Modification, the direct emissions are associated with the carbon dioxide (CO_2) emissions from the transportation of input materials to supply the temporary concrete batching plant.

Scope 2 – Electricity Indirect Greenhouse Gas Emissions

Scope 2 emissions are indirect emissions outside the boundary of the operation, however, are controlled by the operation (such as electricity use). Purchased electricity is defined as electricity that is purchased or otherwise brought into the organisational boundary of the entity. The main source of Scope 3 emissions associated with the Project would be from the transportation and end use (i.e. combustion) of product coal from the Project.

Scope 3 – Other Indirect Greenhouse Gas Emissions

Scope 3 emissions are indirect emissions outside the boundary of the operation that the operation has no direct control over.

6.7.3 Potential Impacts

Potential generation of greenhouse gas emissions would be associated with the construction and operation of the temporary concrete batching plant.

The amount of greenhouse gas emissions likely to be generated due to the temporary concrete batching plant has been estimated based on the maximum daily concrete production rate and emission factors obtained from the NGA Factors (Appendix D).

Scope 1 – Direct Greenhouse Gas Emissions

The quantity of diesel fuel required to transport the materials for the temporary concrete batching plant to and from the Project has been estimated based on an approximate return travel distance and the total amount of material required in an annual period (Appendix D).To estimate the consumption of diesel fuel required for these activities, the average fuel consumption of 53 litres per 100 km for articulated trucks was applied (Australian Bureau of Statistics, 2022) (Appendix D).

Additional greenhouse gas emissions directly generated as a result of the temporary concrete batching plant (Scope 1 emissions) would be approximately 247 tonnes carbon dioxide equivalent (t CO_2-e).

TAS (2024) predicted the estimated Scope 1 emissions associated with the temporary concrete batching plant would increase the Project total Scope 1 emissions by 0.1% to 0.5%.

A summary of the estimated Scope 1 greenhouse gas emissions likely to be generated by the temporary concrete batching relative to the approved Project operations is provided in Table 6-5.

Scope 2 – Electricity Indirect Greenhouse Gas Emissions

Electricity supplied to all of Whitehaven's operational mine sites are obtained through a scheme where eligible carbon offset units are purchased and retired to offset the emissions associated with the generation and delivery of electricity (Appendix D).

Accordingly, the Scope 2 emissions associated with the operation of the temporary concrete batching plant would be offset by these schemes and therefore no potential impact is expected (Appendix D).

Scope 3 – Other Indirect Greenhouse Gas Emissions

There would be no Scope 3 emissions associated with the construction and operation of the temporary concrete batching plant (Appendix D).

6.7.4 Mitigation Measures, Management and Monitoring

Given the Modification components potentially resulting in greenhouse gas emissions would not significantly change approved impacts described in the Project EIS (Table 6-5), no minimal impact management measures would be required as a result of the Modification.

Ongoing monitoring and management of greenhouse gas emissions and energy consumption at the Project (as modified) would occur through Whitehaven's participation in the Commonwealth Government's *National Greenhouse and Energy Report Scheme* (NGERS).

Under NGERS requirements, relevant sources of greenhouse gas emissions and energy consumption must be measured and reported on an annual basis, allowing major sources and trends in emissions/energy consumption to be identified.

Notwithstanding, the Air Quality and Greenhouse Gas Management Plan would be reviewed and, if necessary, revised by Whitehaven to include the Modification (subject to any modified Development Consent conditions).

Table 6-5
Summary of Scope 1 Greenhouse Gas Emissions Estimates

Year	Approved Project (t CO_2-e)	Modified Project (t CO_2-e)	Percentage Increase
Year 3	49,309	49,556	0.5%
Year 7	151,453	151,700	0.2%
Year 21	177,697	177,938	0.1%

Source: Appendix D

6.8 SURFACE WATER

A Surface Water Review has been prepared by WRM Water & Environment (WRM) (2024) for the Modification and is presented in Appendix E.

6.8.1 Methodology

A review of the potential surface water impacts of the Modification in the context of past assessments has been conducted and is presented below.

6.8.2 Existing Environment

With the exception of the Vickery State Forest, the majority of land within and adjacent to the Project has been cleared for agricultural purposes. The surface water quality and flow regimes in the Project area reflect the influences of the historical clearing associated with agricultural and mining land uses and the elevated catchments within the Vickery State Forest.

Regional Hydrology

The Namoi catchment is part of the Murray-Darling System and covers an area of approximately 4.2 million ha.

The catchment is bordered by the Great Dividing Range east of Tamworth, the Liverpool Ranges and Warrumbungle Ranges in the south, and the Nandewar Ranges and Mount Kaputar to the north.

The Project area is situated within the Lower Namoi Regulated River Water Source under the *Water Sharing Plan for the Upper Namoi and Lower Namoi Regulated River Water Sources 2016*.

The Namoi River is a tributary of the Barwon River that ultimately flows to the Murray-Darling System.

Local Hydrology

The Project area is largely located within the Stratford Creek and Driggle Draggle Creek sub-catchments, which ultimately flow into the Namoi River south of Boggabri. The south-western extent of the Project area is within the Namoi catchment.

The Project rail spur traverses the flatter land south-west of the Project area associated with the Namoi River floodplain, including Stratford Creek and Deadmans Gully.

Surface Water Quality

Baseline surface water quality modelling was presented in the Project EIS. Due to the ephemeral nature of most local watercourses around the Project (apart from the Namoi River), there was little water quality monitoring data available (Appendix E). The available monitoring data revealed that water quality around the Project was characterised by moderate alkalinity and elevated electrical conductivity (Advisian, 2018).

Surface Water Management and Monitoring Regime

Management of surface water resources for the Project is conducted in accordance with the Water Management Plan. The Water Management Plan includes the following:

- measures to ensure compliance with water management performance measures;
- surface and groundwater monitoring programs recommended by the IESC;
- recent meteorological and climate data;
- site water and salt balance;
- an Erosion and Sediment Control Plan;
- a Surface Water Management Plan; and
- a Groundwater Management Plan.

6.8.3 Potential Impacts

Potential surface water impacts associated with the Modification would be related to the following components:

- additional Project rail loop construction footprint (Figure 1-4);
- construction of pipelines from transfer points on the adjoining Mirrabinda and Ovenden properties and from the MIA to the Rocglen Coal Mine (Figure 1-4);
- upgrade of an existing access road to provide temporary construction access to the Project rail spur (Figure 1-4);
- an alternative realignment of the approved Blue Vale Road diversion and commensurate reduction of the open cut extent (Figure 1-4); and
- improved mine landform designs using best practice geomorphic design principles (i.e. the modified final landform).

Surface Water Flow Regimes

The additional surface disturbance areas for the Modification (e.g. where pipelines are above ground) may slightly alter local water flow direction and result in localised temporary surface ponding (e.g. immediately following rainfall events). Given the minor nature of additional surface disturbance, no significant surface water flow impacts are expected as a result of the Modification.

Surface Water Quality

Surface water runoff from the additional disturbance areas during and immediately following construction could potentially contain sediments, dissolved solids, oil, grease, metals and salts. The existing erosion and sediment controls would be implemented for the Modification and are described in Water Management Plan.

Post-Mining Surface Water Impacts

The potential post-mining surface water impacts as a result of the modified final landform is presented in Appendix E. A summary is provided below.

Final Void

Consistent with the approved final landform, the final void within the perimeter drainage will be bounded by highwalls on its eastern, northern and southern sides, with shallower slopes (i.e. 10 to 15 degrees [°]) on the western side. A Preliminary Geotechnical Assessment of the final void has been undertaken by Lambert Geotech (2016) for the Project EIS (Appendix E).

The Project EIS indicates maximum highwall slopes in the order of 30 to 50° would be constructed within the final void (depending on water recovery levels in the final void) which would maintain a suitable factor of safety for long-term stability of the final void highwalls (Lambert Geotech, 2016).

Maximum highwall slopes of 30 to 50° will not change as a result of the modified final landform (Appendix E). Therefore, it is expected the final void as a result of the modified final landform would result in negligible change to approved surface water impacts described in the Project EIS (Appendix E).

Considering the above, the modified final void meets the rehabilitation objectives[4] for the final void as it is consistent with the approved final void (Appendix E).

Rehabilitated Mine Landforms

The modified final landform for the Project (as modified) presents a more contemporary landform design and overall better outcome compared to the approved final landform (Figure 3-1 and Appendix E).
The geomorphic design of the rehabilitated waste rock emplacement is more natural in appearance and drainage patterns and incorporates more variability in surface gradients than the approved final landform (Appendix E).

The location and extent of the rehabilitated waste rock emplacement are negligibly altered by the Modification (Appendix E). The altered catchment areas and resultant distribution of runoff from the modified final landform are closer to pre-mining conditions than the approved final landform (Appendix E).

The modified final landform would be consistent with the rehabilitation objectives relevant to surface water outlined in Condition B101, Schedule 2 of the Development Consent (SSD 7480) (Appendix E).

6.8.4 Mitigation Measures, Management and Monitoring

Given that the Modification would not result in any significant material surface water impacts, no additional management measures are proposed as part of the Modification. Surface water will continue to be managed at the Project in accordance with the Water Management Plan.

Notwithstanding, the Water Management Plan would be reviewed and, if necessary, revised by Whitehaven to include the Modification (subject to any modified Development Consent conditions).

[4] It is noted that the Modification is seeking to correct an error in the Development Consent (SSD 7480) rehabilitation objectives regarding the maximum slope angle of the final void highwalls. Given there is no change to the final void proposed as part of the Modification there is no change to the ability to achieve the approved final void highwall slope angle.

6.9 ROAD TRANSPORT

A Road Transport Review for the Modification has been undertaken by The Transport Planning Partnership (TTPP) and is presented in Appendix F.

A summary of the assessment is provided below.

6.9.1 Methodology

The Road Transport Review has reviewed the potential road transport implications of the Modification. With regard to the road transport environment, the Modification proposes (Appendix F):

- coincidence of Project rail spur and MIA construction activity with initial mining activity that produces approximately 1 Mtpa of ROM coal;
- construction and use of a temporary on-site concrete batching plant during Project rail spur and MIA construction;
- extension of the ROM coal road haulage hours;
- extraction, crushing and screening of up to 90,000 m^3 of gravel in any calendar year from the site for collection by customers; and
- changes to the alignment of the approved Blue Vale Road realignment.

The review was prepared in accordance with the *Guide to Traffic Generating Developments* (NSW Roads and Traffic Authority, 2002), the RMS *Road Design Guides* and where relevant, makes reference to the Austroads standards.

6.9.2 Existing Environment

Road Network

The following key roads are of relevance to the Project:

- The Kamilaroi Highway runs generally north-south, located to the west of the Project area and provides a link between the Upper Hunter region and the north-west of NSW.
- Rangari Road runs generally east-west, located to the north of the Project and links between Kamilaroi Highway to the west and Manilla to the east.
- Hoad Lane provides a connection northward from Blue Vale Road at the Braymont Road/Blue Vale Road intersection, then an east-west connection to Braymont Road.
- Blue Vale Road provides a north-south connection from the Kamilaroi Highway to the north-west of Gunnedah to the intersection of Hoad Lane and Braymont Road.
- Shannon Harbour Road forms part of the Approved Road Transport Route connecting Rocglen Coal Mine Access Road and Hoad Lane.
- Braymont Road provides a link from the township of Boggabri east and south-east to meet with Blue Vale Road some 20 km north of Gunnedah.

Approved ROM Coal Transport Route

The Approved ROM Coal Transport Route is an approved haul route used to transport coal from the Tarrawonga and Rocglen Coal Mines and the Project to the Whitehaven CHPP in Gunnedah (Figure 1-1).
The Approved ROM Coal Transport Route consists of:

- the Whitehaven private haul road between the Tarrawonga Coal Mine and Rangari Road;
- a section of Rangari Road;
- the Whitehaven private haul road south of Rangari Road, which crosses Hoad Lane and passes through the former Canyon Coal Mine and past the Project to Hoad Lane;
- a section of Hoad Lane between the Whitehaven private haul road and Blue Vale Road;
- a section of Shannon Harbour Road between the Rocglen Coal Mine Access Road and Hoad Lane;
- Blue Vale Road between Hoad Lane and the Kamilaroi Highway;
- a section of the Kamilaroi Highway between Blue Vale Road and Whitehaven CHPP access road; and
- the Whitehaven CHPP access road.

Existing Traffic Volumes

TTPP has collated available traffic volume data on routes of relevance to the Project and Modification. Key results of those surveys for the average weekday and during the peak hours for Project and Modification trip generation are summarised in Appendix F.

Road Safety

A review of TfNSW road crash data of the key roads for the Project was undertaken by TTPP (2024) as a component of the Road Transport Review. Crash data were reviewed for Approved ROM Coal Transport Route and Rangari Road west of the haul road, being the routes of principal relevance to the Modification.

Traffic Management and Monitoring Regime

Management of traffic for the Project is conducted in accordance with the Traffic Management Plan includes the following:

- details of the measures to be implemented to minimise traffic safety issues and disruption to local users during construction or decommissioning works;
- arrangements to comply with cumulative coal haulage limits from the Project and the Tarrawonga Coal Mine;
- a protocol to facilitate graziers access to the Travelling Stock Route from Blue Vale Road;
- monitoring program top audit vehicle movements; and
- Drivers' Code of Conduct.

6.9.3 Potential Impacts

Potential impacts on traffic would be associated with the following Modification components:

- an alternative realignment of the approved Blue Vale Road diversion and commensurate reduction of the open cut extent (Figure 1-4); and
- construction and use of a temporary concrete batching plant (Figure 1-4);
- extended ROM coal road haulage hours; and
- extraction, crushing and screening of up to 90,000 m^3 of gravel in any calendar year from the site for collection by customers (daytime hours only).

Potential impacts of the Modification on traffic are summarised below.

Traffic Generation

The assessment scenario for the Modification assumes that the Project rail spur, MIA construction activity and initial mining activities may coincide in 2025. The ongoing impacts of the Modification due to ROM coal haulage hours and gravel truck movements after the 2025 assessment scenario are also considered (Appendix F).

The Modification anticipates that during the combined construction and initial mining stage (and conservatively assuming initial mining activity would produce up to 3.5 Mtpa of ROM coal) 334 to 348 vehicle trips would be generated by the Project during peak hours, and 1,628 vehicle trips per day (Appendix F).

Consistent with the findings of TTPP (2023), the extended haulage hours proposed for the Modification would be consistent with the haulage hours for Tarrawonga Coal Mine and would not contribute additional trips on the Approved ROM Coal Transport Route during the extended hours above those already approved for haulage from Tarrawonga Coal Mine to the Whitehaven CHPP.

TTPP (2024) concluded that the Modification would have acceptable impacts on the road network, with no additional measures or road upgrades required to accommodate the changes proposed.

Cumulative Traffic Sources

Key traffic sources (i.e. Tarrawonga Coal Mine) in the vicinity of the Project that may contribute to existing and/or future traffic volumes have been considered in the Road Transport Review (Appendix F).

The cumulative haulage of ROM coal from Whitehaven's mines (i.e. inclusive of ROM coal from the Project and Tarrawonga Coal Mine) is) is limited to a maximum of 3.5 Mtpa prior to commissioning of the Kamilaroi Highway overpass.

The extended ROM coal road haulage hours proposed for the Modification would be consistent with the haulage hours for Tarrawonga Coal Mine and would not contribute additional trips on the Approved ROM Coal Transport Route during the extended hours above those already approved for haulage from Tarrawonga Coal Mine to the Whitehaven CHPP (Appendix F).

Future Traffic Volumes

Considering the most recent available traffic volume data on the Approved ROM Coal Transport Route and Rangari Road, the impacts of the Modification-generated traffic on conditions during 2025 have been forecast together with background growth in traffic over the period since the traffic surveys were undertaken (Appendix F). The resulting hourly traffic volumes during the Project peak hours are presented in Appendix F.

Impact on the Approved ROM Coal Transport Route

The extension of hours for ROM coal haulage from the Project would reduce the average number of truck trips per hour generated to/from the Project during the approved Project haulage hours from 40 trips per hour (based on the fleet of trucks used at the time of the Project assessment) or 28 trips per hour (based on the current fleet of trucks) to 22 trips per hour (Appendix F).

The implications of the haulage of ROM coal from Tarrawonga Coal Mine to Whitehaven CHPP during the extended haulage hours on weekdays and Saturdays was assessed by TTPP (2023), which found that there would be no capacity concerns with the operation of the roads and intersections on the Approved ROM Coal Transport Route.

Impacts on Intersections

The operating characteristics of key intersections on Kamilaroi Highway have been assessed under the forecast demands with the Modification using an analysis program which determines characteristics of intersection operating conditions including the degree of saturation, average delays, and levels of service (Appendix F).

The operation of the key intersections of Kamilaroi Highway with Rangari Road and Blue Vale Road have been assessed based on the surveyed volumes between 7:00 am and 8:00 am, and between 5:00 pm and 6:00 pm (Appendix F).

TTPP (2024) concluded the intersections of Kamilaroi Highway with Rangari Road and Blue Vale Road can be expected to operate at good levels of service with background growth and the peak hourly traffic generated by the Modification.

Realignment of Blue Vale Road

The revised Blue Vale Road realignment would increase the travel distance by approximately 1.4 km which is a reduction of approximately 3.6 km in length compared to the approved Blue Vale Road realignment. Assuming a travel speed of 100 km/h, the revised Blue Vale Road realignment would increase travel time along the route by 50 seconds above that of the existing route (Appendix F).

The revised Blue Vale Road realignment would therefore reduce the travel time along the route compared to the approved Blue Vale Road realignment (Appendix F).

Consistent with the approved Blue Vale Road Realignment, the revised Blue Vale Road realignment would consist of a sealed two-way, two-lane road suitable for use by heavy vehicles. It would be designed and constructed in accordance with Austroads requirements, and in consultation with Narrabri Shire Council and Gunnedah Shire Council as relevant (Appendix F).

Road Safety Review

A review of TfNSW road crash data of the key roads for the five-year period from 1 January 2018 to 31 December 2022 was undertaken by TTPP (2024) as a component of the Road Transport Review.

The review of the road safety history found that there was no significant clustering of crashes on the Approved ROM Coal Transport Route that might suggest there is an inherent safety concern with the design of the principal access roads and intersections used by the Project generated traffic (Appendix F).

6.9.4 Mitigation Measures, Management and Monitoring

Given that the Modification would not result in any significant material traffic impacts, no additional management measures are proposed as part of the Modification. Traffic will continue to be managed at the Project in accordance with the Traffic Management Plan.

Notwithstanding, the Traffic Management Plan would be reviewed and, if necessary, revised by Whitehaven to include the Modification (subject to any modified Development Consent conditions).

6.10 VISUAL

A review of the potential visual impacts of the Modification in the context of past assessments has been conducted and is presented below.

6.10.1 Methodology

It is noted that there are no guidelines outlining a standardised methodology for the assessment of landscape and visual impacts for coal mining developments in NSW. In relation to reviewing potential visual impacts associated with the Modification, consideration has been made to the following guidelines (where relevant):

- *Dark Sky Planning Guideline* (DPE, 2023).
- *Technical Supplement – Landscape and Visual Impact Assessment: Large-Scale Solar Energy Guideline* (DPE, 2022c).

6.10.2 Existing Environment

The Project area and surrounds comprise a number of distinct land use types and landscape units. These include agricultural areas, the existing Rocglen, Tarrawonga, Boggabri and Maules Creek Coal Mines, the former Canyon Coal Mine, the Vickery State Forest, residential dwellings, an unnamed wooded range approximately 9 km east and the Namoi River. Land use and key landscape features that contribute to visual character and scenic quality are described below in the context of the regional, sub-regional and local settings.

Regional Setting (>5 km)

The regional setting has attributes of moderate scenic quality due to the contrast between the vegetation and topography of the ranges (e.g. the unnamed wooded range 9 km to the east of the Project) and agricultural areas of the valley that add to visual interest.

The regional setting also has many attributes of low scenic quality due to the presence of coal mines and the generally flat, cleared dryland agricultural areas that dominate the landscape.

Gunnedah and Boggabri are the closest towns to the Project regional setting, located approximately 25 km to the south and 10 km to the north-west of the Project, respectively.

Sub-regional Setting (1 to 5 km)

The sub-regional setting has generally low scenic quality due to the presence of flat, cleared dryland agricultural areas.

Attributes of moderate scenic quality in the sub-regional setting include the Vickery State Forest and the meandering form of the Namoi River, with its associated riparian remnant vegetation.

Within the sub-regional setting, the eastern section of the Vickery State Forest is a heavily vegetated and elevated area. The remainder of the sub-regional setting is generally free of vegetation, apart from remnants located along waterways and road reserves.

The Rocglen Coal Mine is the only coal mine in the sub-regional setting and is located approximately 4.5 km to the east of the Project.

Local Setting (<1 km)

The local setting, apart from the Vickery State Forest, has been heavily modified over time with the majority of vegetation disturbed by historic agricultural clearing and previous mining operations, including the former Vickery and Canyon Coal Mines.

The visual character of the local setting is considered to be of low scenic quality with the exception of the Vickery State Forest, which is considered to be of moderate scenic quality.

There are no villages, towns or privately-owned dwellings in the local setting of the Project area.

6.10.3 Potential Impacts

Potential impacts on the visual landscape setting would be associated with the modified final landform and the alternative realignment of the approved Blue Vale Road diversion and commensurate reduction of the open cut extent.

The modified final landform design of the waste rock emplacement incorporates elements of macro- and micro-relief and would improve the integration of the landform with the surrounding environment (i.e. Vickery State Forest) and mitigate potential visual impacts (Figure 3-1).

The Vickery State Forest is not routinely accessed by the public and views of the Project from parts of the Vickery State Forest that are accessible are obstructed by dense vegetation. Therefore, visual impacts from the Vickery State Forest due to the Project (as modified) are expected to be very low.

Consistent with the EIS, the Blue Vale Road and Braymont Road are expected to have moderate to high levels of visual modification, given their close proximity to Project landforms and infrastructure areas. Given the low visual sensitivities of the local roads, low to moderate levels of potential visual impact would be expected in the local setting due to the Modification. Following progressive and final rehabilitation, levels of visual impact on the local roads would reduce to low or very low.

Views of the Project area (as modified) to vehicles travelling along the revised Blue Vale Road realignment would in part be screened by existing vegetation and vegetative screens that would develop over time, and in some cases, bunds are proposed to be installed along sections of the Blue Vale Road realignment (Section 3.5).

These vegetative screens and bunds would mitigate visual impacts over time along the revised Blue Vale Road realignment, although it is anticipated that residual visual impacts would be experienced by motorists due to the close proximity to the Project mining landforms.

6.10.4 Mitigation Measures, Management and Monitoring

Given the Modification components potentially resulting in visual impacts would not significantly change approved impacts described in the Project EIS, no additional specific visual impact management measures are proposed for the Modification.

6.11 GROUNDWATER

A review of the potential groundwater impacts of the Modification in the context of past assessments has been conducted and is presented below.

6.11.1 Methodology

The Modification would not result in the direct extraction of groundwater; however, transfer of the water would occur by pumping from existing dams which are used to store the groundwater after extraction.

6.11.2 Existing Environment

Overview of the Groundwater Regime in the Project Area and Surrounds

The Project area is located within an area of surface expression of the Permian-aged sedimentary rocks of the Maules Creek Formation. The Upper Namoi Alluvium associated with the floodplains of the Namoi River is located to the north, west and south of the Project area.

A conceptual geological model of the existing groundwater regime was developed by HydroSimulations (2018), based on a review of the available baseline groundwater data and relevant water sharing plans.

The two groundwater systems identified in the relevant water sharing plans, within the Project mining area and surrounds, are:

- **Alluvial groundwater system** – associated with the unconsolidated alluvial sediments of the Namoi River floodplains.
- **Porous rock groundwater system** – including coal measures of the Maules Creek Formation.

Alluvial Groundwater System

The Project area is bordered by alluvial sediments deposited by the Namoi River, Driggle Draggle Creek and Stratford Creek. These alluvial sediments are subdivided into two formations, although they are not always distinguishable. The uppermost Narrabri Formation consists predominantly of clays with minor sand and gravel beds. Underlying the Narrabri Formation is the Gunnedah Formation, which consists predominantly of gravel and sand with minor clay beds.

The alluvium grades into colluvium material at the lower break of slope on the western boundary of the Project area. Colluvium is distinct from alluvium as it is derived from loose, unconsolidated sediments that are deposited at the base of slopes by rain-wash, sheet-wash, slow continuous downslope creep, or a combination of these processes. Colluvium in the Project area consists predominantly of clays and is typically unsaturated.

Maules Creek Formation Groundwater System

Contour maps of recent measured and inferred watertable levels at regional and local scales were prepared as part of the Project EIS Groundwater Assessment, based on long-term average groundwater levels at NSW DCCEEW – Water Group and mine-owned monitoring sites in the vicinity of the Project area (HydroSimulations, 2018).

The data indicate groundwater levels follow topography, with a groundwater mound corresponding with the higher elevations in the Vickery State Forest and decreasing groundwater levels as elevations decrease towards the Namoi River. This results in an overall direction of groundwater flow towards the west, south-west and north-west (i.e. from the hills of the Vickery State Forest towards the adjoining floodplains).

The groundwater level data indicate the watertable within the Project mining area typically occurs approximately 20 m to 50 m below ground level (HydroSimulations, 2018).

Groundwater Dependent Ecosystems

There are no high priority GDEs identified in the Upper Namoi Groundwater Sources or Porous Rock Groundwater Sources in the vicinity of the Project (HydroSimulations, 2018).

Groundwater Quality

Groundwater quality within and surrounding the Project area (i.e. on the eastern side of the Namoi River) is highly variable but generally poor, with most groundwater suitable only for livestock and irrigation of some salt tolerant crops. The highest groundwater salinity is associated with the Maules Creek Formation, but is also apparent in the shallow alluvium and colluvium in the vicinity of the northern extent of the Project (HydroSimulations, 2018).

6.11.3 Potential Impacts

As described in Section 3.4, direct groundwater extraction from bores located on the Mirrabinda and Ovenden properties would be conducted by the private landholders in accordance with the existing Works Approvals 90CA806738 and 90CA806958. Groundwater would be extracted in accordance with the bore extraction limits defined by the Works Approvals and in accordance with WALs assigned to the Works Approvals.

Accordingly, it is considered that the extraction of the water has already been assessed through the process of establishing the bore extraction limits in the Works Approvals under the WM Act and therefore the impact of extraction of the groundwater is already authorised.

Notwithstanding, given no change to the maximum annual rate of groundwater extraction from these bores is proposed as part of the Modification, there is no mechanism for any additional groundwater impacts to those already authorised.

6.11.4 Mitigation Measures, Management and Monitoring

Given the Modification components would not result in changes to approved groundwater impacts described in the Project EIS, no additional specific groundwater impact management measures are proposed for the Modification. Notwithstanding, the Water Management Plan would be revised to recognise the transfer of water from the Mirrabinda and Ovenden properties as part of the water management system.

6.12 OTHER ENVIRONMENTAL ASPECTS

6.12.1 Social

The Modification would not require additional workforce at the Project or extend the Project life. Therefore, there are expected to be no additional impacts on the local population, access to community infrastructure and services.

6.12.2 Hazard and Risk

As the Modification would not change the existing potential risks or hazard consequences identified in the Preliminary Hazard Analysis for the approved Project, no significant changes to the approved potential hazards and/or risks are expected.

7 EVALUATION OF MERITS

This section provides a justification of the Modification and conclusion for the Modification Report.

As part of the justification of the Modification consideration has been given to:

- the engagement undertaken for the Modification (Section 7.1);
- key environmental assessment outcomes including the potential impacts of the Modification (Section 7.2);
- the relevant planning and policy objectives (Section 7.3); and
- the benefits of the Modification and the Project (Section 7.4).

7.1 STAKEHOLDER ENGAGEMENT OVERVIEW

Whitehaven has consulted with a number of stakeholders during the development of this Modification report (Section 5), including:

- key NSW Government agencies;
- local councils; and
- Aboriginal stakeholders.

Key comments and issues raised during consultation have been considered and addressed in the preparation of this Modification Report.

7.2 CONSOLIDATED SUMMARY OF IMPACTS

Whitehaven has undertaken a review of the potential environmental impacts of the Modification to identify key potential environmental issues requiring assessment. The key environmental issues identified are summarised in Section 6.

7.3 COMPLIANCE WITH RELEVANT STATUTORY AND POLICY REQUIREMENTS

An outline of the statutory requirements relevant to the assessment of the Modification is provided in Section 4.

The Modification is considered to be generally consistent with the objects of the EP&A Act (Section 4.1.2).

A detailed statutory compliance table for the Project incorporating the Modification that identifies all the relevant statutory requirements and the relevant sections in this Modification Report that address these requirements is provided in Attachment 3.

In evaluating the Modification under section 4.15(1) of the EP&A Act, the consent authority is required to take into consideration a range of matters as they are of relevance to the subject of the application.

While this is a requirement of the consent authority, this Modification Report has been prepared to generally address the requirements of section 4.15(1) of the EP&A Act to assist the consent authority (Section 4.1.4).

7.4 JUSTIFICATION FOR THE MODIFICATION

The Modification would include the following proposed changes to the Project (Section 3):

- additional Project rail loop construction footprint (Figure 1-4);
- construction of pipelines from transfer points on the adjoining Mirrabinda and Ovenden properties and from the MIA to the Rocglen Coal Mine;
- upgrade of an existing access road to provide temporary construction access to the Project rail spur (Figure 1-4);
- an alternative realignment of the approved Blue Vale Road diversion and commensurate reduction of the open cut extent (Figure 1-4);
- construction and use of a temporary concrete batching plant (Figure 1-4);
- extraction, crushing and screening of up to 90,000 m^3 of gravel in any calendar year from the site for collection by customers (daytime hours only);

- disposal of waste heavy vehicle tyres in the waste rock emplacement areas;
- extended ROM coal road haulage hours;
- improve mine landform designs using best practice geomorphic design principles; and
- update of the Schedule of Lands and a minor change to a rehabilitation objective.

Approval of the Modification is considered to be justified given it would:

- facilitate rail construction works and efficient movement of the construction fleet by allowing an additional laydown area at the rail loop and upgrading an existing road;
- improve water security for the Project and reduce reliance on extraction from the Namoi River by constructing and operating pipelines to access alternative approved water sources on the adjoining Mirrabinda and Ovenden properties;
- improve water security for the Project and reduce reliance on extraction from the Namoi River by being able to temporarily store excess water in the Rocglen Coal Mine final void for future use at the Project;
- optimise the Blue Vale Road diversion by minimising the travel distance, reducing impact on Stratford Creek and improving the road design;
- allow for the use of an on-site batching plant to produce concrete within the approved disturbance footprint for the Project, rather than transporting the significant volumes of concrete from regional manufacturers by agitator trucks;
- allow for disposal of waste heavy tyres with minimal environment impact;
- prevent rostering challenges due to improved flexibility of haulage hours;
- allow the ability to produce gravel from overburden material which could be supplied to local council to improve gravel roads; and
- implement geomorphic landform design principles for the waste rock emplacement that better reflects natural topography.

7.5 CONCLUSION

The modified Project would be substantially the same as the originally/approved Project.

In weighing up the main environmental impacts (costs and benefits) assessed and described in this Modification Report, the Modification is, on balance, considered to be in the public interest of the State of NSW.

REFERENCES

Advisian (2018). *Vickery Extension Project Surface Water Assessment.* Prepared for Whitehaven Coal Limited.

Australia International Council on Monuments and Sites (2013). *The Burra Charter – The Australia ICOMOS Charter for Places of Cultural Significance.*

Australian Bureau of Statistics (2022). *Survey for Motor Vehicle Use, Australia*.

Australian Heritage Commission (2002). *Ask First: A guide to respecting indigenous heritage place and values.*

Bureau of Meteorology (2020). *Groundwater Dependent Ecosystems Atlas*.

Commonwealth Department of the Environment (2016) *Engage Early.*

Department of Climate Change, Energy, the Environment and Water (2023) *Australian National Greenhouse Accounts Factors.*

Department of Climate Change, Energy, the Environment and Water (2024). *BioNet Vegetation Classification*.

Department of Environment and Climate Change (2004). *National Parks and Wildlife Act 1974 Part 6 Approvals – Interim Community Consultation Requirements for Applicants*.

Department of Environment and Conservation (2005). *Draft Guidelines for Aboriginal and Community Consultation*.

Department of Environment, Climate Change and Water (2010a) *Aboriginal cultural heritage consultation requirements for proponents 2010.*

Department of Environment, Climate Change and Water (2010b). *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW.*

Department of Environment, Climate Change and Water (2010c). *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales*.

Department of Planning and Environment (2018). *Voluntary Land Acquisition and Mitigation Policy.*

Department of Planning and Environment (2022a). *State significant development guidelines – preparing a modification report.* Appendix E to the state significant development guidelines.

Department of Planning and Environment (2022b). *New England North West Regional Plan 2041.*

Department of Planning and Environment (2022b). *Technical Supplement – Landscape and Visual Impact Assessment: Large Scale Solar Energy Guideline.*

Department of Planning and Environment (2023). *Dark Sky Planning Guideline.*

Department of Planning and Infrastructure (2012). *Strategic Regional Land Use Plan – New England North West.*

Department of Planning, Housing and Infrastructure (2024a). *State Significant Development Guidelines.*

Department of Planning, Housing and Infrastructure (2024b). *Undertaking Engagement Guidelines for State Significant Projects*.

Department of Planning, Industry and Environment (2020). *Biodiversity Assessment Method.*

Department of Planning, Industry and Environment (2022a). *Cumulative Impact Assessment Guidelines for State Significant Projects.*

Department of Planning, Industry and Environment (2022b). *Surveying Threatened Plants and Their Habitats: NSW Survey Guide for the Biodiversity Assessment Method*.

EcoPlanning (2024). *Vickery Extension Project Modification 1 – Baseline Flora and Fauna Report.*

Environmental Protection Authority (2017). *Noise Policy for Industry.*

Environmental Protection Authority (2022). *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales.*

Gunnedah Shire Council (2020). *Future 2040 – Gunnedah Shire Local Strategic Planning Statement.*

Haglund, L. (1985). *Archaeological investigations of areas that may be affected by proposed mining for coal in the Gunnedah area, NSW*. Unpublished report to the Vickery Joint Venture.

HydroSimulations (2018). *Vickery Extension Project Groundwater Assessment*.

Kamminga, J. (1978). *Amax Proposed Coal Mining Operation at Boggabri.*

Lambert Geotech (2016). *Preliminary Geotechnical Stability Assessment.*

Landskape (2012). *Vickery Coal Project Aboriginal Cultural Heritage Assessment. Report prepared for Whitehaven Coal Limited.*

McKenzie Soil Management (2012). *Vickery Coal Project Agricultural Resource Assessment.* Report prepared for Whitehaven Coal Limited.

Narrabri Shire Council (2022). *2022/2023 Community Strategic Plan*.

New South Wales Government (2020). *Strategic Statement on Coal Exploration and Mining in NSW.*

New South Wales Minerals Council (2010). *NSW Minerals Industry Due Diligence Code of Practice for the Protection of Aboriginal Objects.*

New South Wales National Parks and Wildlife Service (1997). *Aboriginal Cultural Heritage: Standards & Guidelines Kit.*

Office of Environment and Heritage (2011). *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW.*

Office of Environment and Heritage (2012). *Land and Soil Capability Assessment Scheme.*

PAEHolmes (2012). *Vickery Coal Project – Air Quality and Greenhouse Gas Assessment*.

Ramboll Australia Pty Ltd (2018). *Vickery Extension Project Air Quality and Greenhouse Gas Assessment.* Report.

Resource Strategies Pty Ltd (2024). *Vickery Extension Project Modification 1 – Biodiversity Development Assessment Report*.

Roads and Traffic Authority (2002) *Guide to Traffic Generating Developments.*

RWDI Consulting Engineers and Scientists (2023). *Tarrawonga Road Haulage Hours Modification – Noise Impact Assessment*.

RWDI Consulting Engineers and Scientists (2024). *Vickery Extension Project Modification 1 – Noise Assessment*

SESL Australia (2015). *Vickery Coal Project BSAL Assessment Report.*

SESL Australia (2018). *Vickery Extension Project Soil Resource Assessment.*

Thompson (1981). *Environmental Impact Statement for the proposed Vickery Coal Mine Project.*

The Transport Planning Partnership (2023). *Tarrawonga Haulage Hours Modification – Road Transport Assessment*.

The Transport Planning Partnership (2024). *Vickery Extension Project Modification 1 – Road Transport Review*

Todoroski Air Sciences (2024). *Vickery Extension Project Modification 1 – Air Quality and Greenhouse Gas Assessment*.

University of Queensland Culture and Heritage Unit (2015). *Maules Creek Coal Mine Aboriginal Archaeology and Cultural Heritage Management Plan (revised).*

University of Queensland Culture and Heritage Unit (2016). *Vickery Extension Project Soil Assessment – Aboriginal Cultural Heritage Due Diligence.*

Whincop Archaeology Pty Ltd (2018). *Aboriginal Cultural Heritage Assessment for the Vickery Extension Project in the Gunnedah and Narrabri Shires, New South Wales.*

Whincop Archaeology Pty Ltd (2024). *Vickery Extension Project Modification 1 – Aboriginal Cultural Heritage Assessment*.

Whitehaven Coal Limited (2022). *Biodiversity Management Plan*.

Wilkinson Murray (2018). *Vickery Extension Project Noise and Blasting Assessment.* Report prepared for Whitehaven Coal Limited.

World Business Council for Sustainable Development and World Resources Institute (2020). *The Greenhouse Gas Protocol.*

WRM Water & Environment (2024). *Vickery Extension Project Modification 1 – Surface Water Review*.

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