

Our ref: SSD-10418-PA-6

Mariah Lane  
Environmental Advisor  
Mach Energy Australia Pty Ltd

17/9/2024

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**Mount Pleasant Optimisation Project: Traffic Management Plan**

Dear Miss. Lane

Thank you for submitting the Traffic Management Plan in accordance with Condition B99, Schedule 2 of the consent for the Mount Pleasant Optimisation Project (SSD-10418). I also acknowledge your response to the Department's review comments and request for additional information.

I note the Traffic Management Plan has been prepared in consultation with TfNSW and Muswellbrook Shire Council, and contains the information required by the conditions of approval.

Accordingly, as nominee of the Planning Secretary, I approve the revised Traffic Management Plan (Rev 01, September 2024).

You are reminded that if there are any inconsistencies between the Plan and the conditions of approval, the conditions prevail.

Please ensure you make the document publicly available on the project website at the earliest convenience.

If you wish to discuss the matter further, please contact Charissa Pillay on 02 99955944.

Yours sincerely



Stephen O'Donoghue  
Director Resource Assessments  
As nominee of the Planning Secretary



# MOUNT PLEASANT OPERATION

## TRAFFIC MANAGEMENT PLAN

<b>Document ID:</b>	MP001-0000-TMP-PLN-0001		
<b>Company:</b>	MACH Energy Australia Pty Ltd		
<b>Effective Date:</b>	17 September 2024	<b>Status:</b>	Final
<b>Approved By:</b>	Andrew Reid	<b>Revision Number:</b>	01

MOUNT PLEASANT OPERATION TRAFFIC MANAGEMENT PLAN	
<b>Name of Mine:</b>	Mount Pleasant Operation
<b>Traffic Management Plan Commencement Date:</b>	17 September 2024
<b>Traffic Management Plan Revision Dates and Version Numbers</b>	Version 01 – This version addresses consultation comments from Muswellbrook Shire Council and Transport for New South Wales. Approved by the Department of Planning, Housing and Infrastructure in September 2024.
<b>Name of Mine Operator:</b>	MACH Energy Australia Pty Ltd
<b>Name of Lease Holder:</b>	MACH Energy Australia Pty Ltd and J.C.D Australia Pty Ltd

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## 1 INTRODUCTION

The Mount Pleasant Operation (MPO) is located in the Upper Hunter Valley of New South Wales (NSW), approximately 3 kilometres (km) north-west of Muswellbrook and approximately 50 km northwest of Singleton (Figure 1). The village of Aberdeen and locality of Kayuga are also located approximately 5 km north-northeast and 1 km north of the MPO boundary, respectively (Figure 1). MACH Energy Australia Pty Ltd (MACH Energy) purchased the MPO from Coal & Allied Operations Pty Ltd (Coal & Allied) in 2016.

MACH Mount Pleasant Operations Pty Ltd is the manager of the MPO as agent for, and on behalf of, the unincorporated Mount Pleasant Joint Venture between MACH Energy (95 per cent [%] owner) and J.C.D. Australia Pty Ltd (5% owner). This Traffic Management Plan (TMP) is implemented at the MPO by MACH Energy.

The initial development application for the MPO was made in 1997. This was supported by an Environmental Impact Statement (EIS) prepared by Environmental Resources Management (ERM) Mitchell McCotter (ERM Mitchell McCotter, 1997). On 22 December 1999, the then Minister for Urban Affairs and Planning granted Development Consent DA 92/97 to Coal & Allied. This allowed for the “Construction and operation of an open cut coal mine, coal preparation plant, transport and rail loading facilities and associated facilities” at the MPO. The consent allowed for operations 24 hours per day seven days per week and the extraction of 197 million tonnes (Mt) of run-of-mine (ROM) coal over a 21 year period, at a rate of up to 10.5 Mt of ROM coal per year.

The Mount Pleasant Project Modification (MOD 1) was submitted on 19 May 2010 with a supporting Environmental Assessment (EA) prepared by EMGA Mitchell McLennan (EMGA Mitchell McLennan, 2010). MOD 1 included the provision of an infrastructure envelope for siting the mine infrastructure, the provision of an optional conveyor/service corridor linking the MPO facilities with the Muswellbrook-Ulan Rail Line and modification of the existing Development Consent DA 92/97 boundaries to accommodate the optional conveyor/service corridor and minor administrative changes. MOD 1 was approved on 19 September 2011.

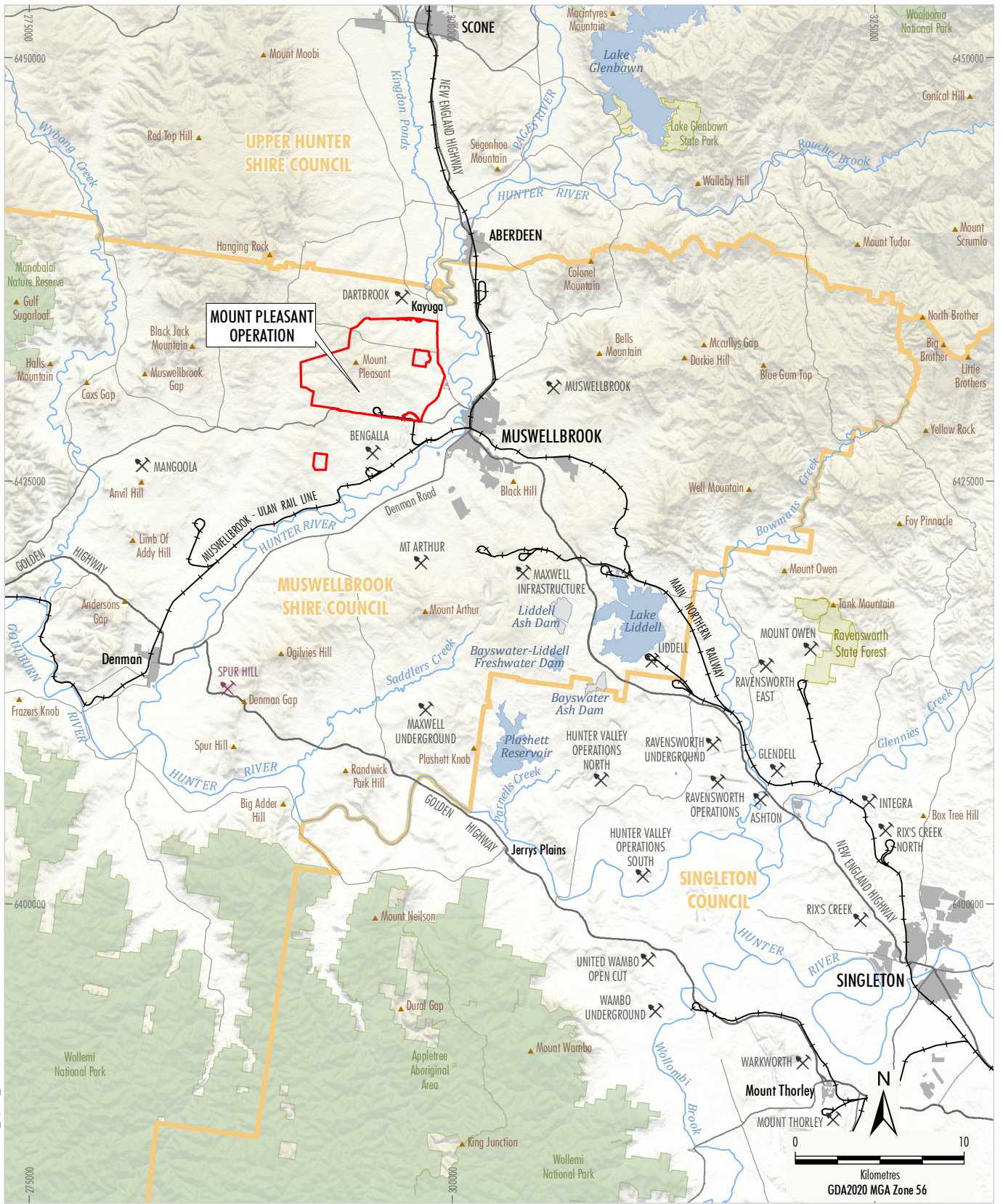
The MPO South Pit Haul Road Modification (MOD 2) was submitted on 30 January 2017 with a supporting EA prepared by MACH Energy (MACH Energy, 2017a). MOD 2 proposed to realign an internal haul road to enable more efficient access to the South Pit open cut, with no other material changes to the approved MPO. MOD 2 was approved on 29 March 2017.

The MPO Mine Optimisation Modification (MOD 3) was submitted on 31 May 2017 with a supporting EA prepared by MACH Energy (MACH Energy, 2017b). MOD 3 comprised an extension to the time limit on mining operations (to 22 December 2026) and extensions to the South Pit Eastern Out of Pit Emplacement to facilitate development of an improved final landform. MOD 3 was approved on 24 August 2018.

The MPO Rail Modification (MOD 4) was submitted on 18 December 2017 with a supporting EA prepared by MACH Energy (MACH Energy, 2017c). MOD 4 proposed the following changes:

- duplication of the approved rail spur, rail loop, conveyor and rail load-out facility and associated services;
- duplication of the Hunter River water supply pump station, water pipeline and associated electricity supply that followed the original rail spur alignment; and
- demolition and removal of the redundant approved infrastructure within the extent of the Bengalla Mine, once the new rail, product loading and water supply infrastructure has been commissioned and is fully operational.





AMC18-038.MP2023\_Figure 1\_Rev B

Source: NSW Spatial Services (2023)



- LEGEND**
- Mining Operation
  - Proposed Mining Operation (Application Lodged)
  - Railway
  - Local Government Boundary
  - State Forest/Reserve
  - National Parks and Wildlife Estate
  - Mining Lease Boundary (Mount Pleasant Operation)

**MACHEnergy**  
**MOUNT PLEASANT OPERATION**  
 Regional Location

**Figure 1**

MOD 4 was approved on 16 November 2018 by the Planning Secretary of the Department of Planning and Environment (DPE) (under Delegation). Appendix 2 of the modified Development Consent DA 92/97 illustrates the Conceptual Project Layout Plan of the approved MPO at 2021 and 2025, Approved Surface Disturbance Plan and Conceptual Final Landform incorporating the MOD 4 infrastructure relocations.

Modification 5 (MOD 5) was submitted to rectify an administrative error in Development Consent DA 92/97 and was approved by DPE on 29 June 2022.

Modification 6 (MOD 6) was submitted to modify Development Consent DA 92/97 and was approved on 6 November 2023. MOD 6 will allow for the construction and operation of a re-transmission facility including a tower or mast, shed and associated transmission infrastructure to re-transmit local digital television signals from the Broadcast Australia site at Rossgole Lookout.

On 22 January 2021, MACH Energy submitted the Mount Pleasant Optimisation Project (the Project) EIS in support of State Significant Development (SSD) 10418 under Part 4 of the NSW Environmental Planning and Assessment Act, 1979 (EP&A Act). Key aspects of the Project generally involve (among other things):

- increased open cut extraction within the MPO's existing Mining Leases (MLs);
- a staged increase in extraction, handling and processing of ROM coal up to 21 million tonnes per annum (Mtpa);
- upgrades to existing infrastructure and new infrastructure to support mining of the proposed Project; and
- an extension to the time limit on mining operations to 22 December 2048.

This TMP has been prepared to satisfy the relevant conditions in Part B, Condition B99 of Development Consent SSD 10418.

This TMP covers:

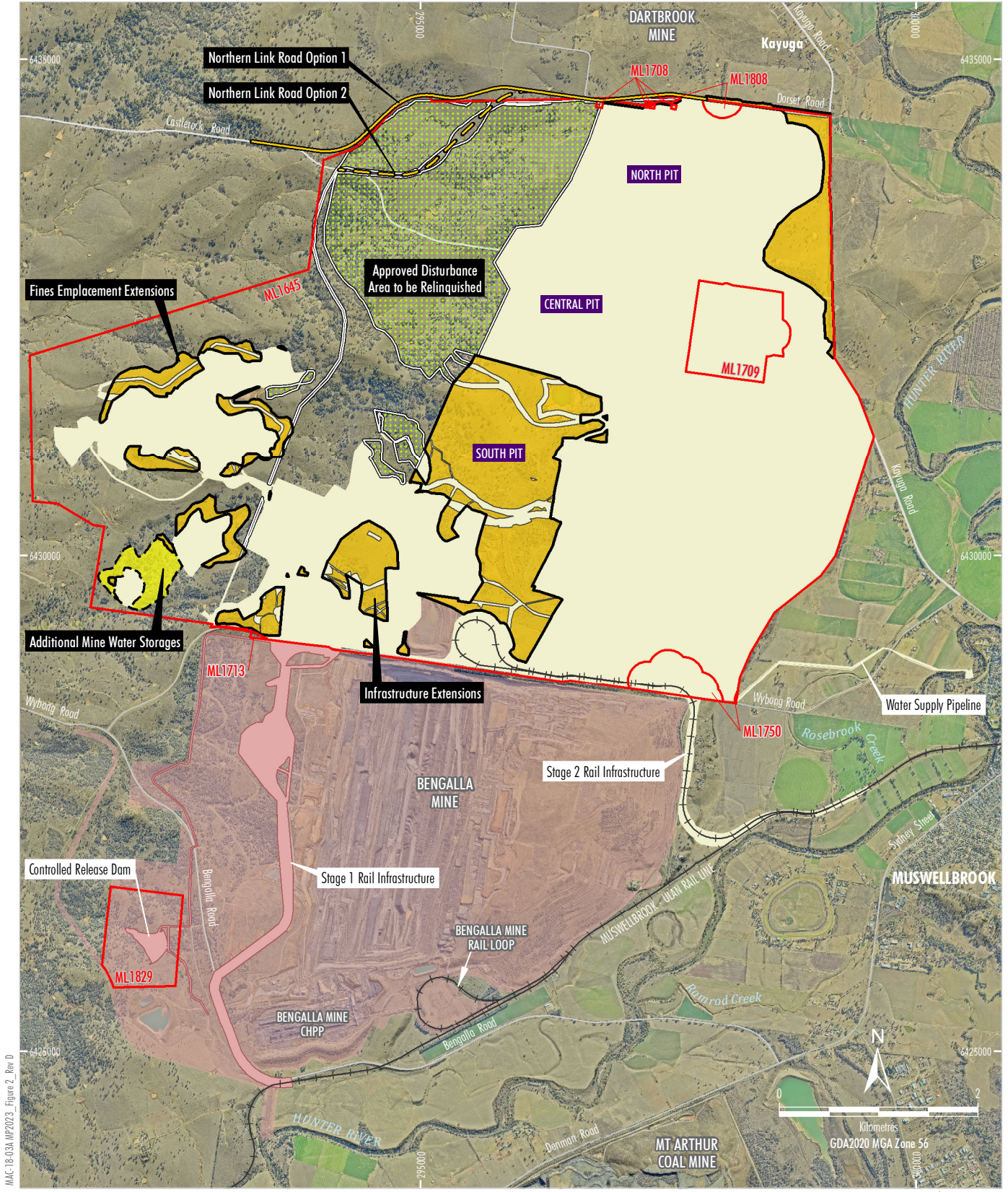
- construction phases at the MPO;
- the day to day operations of MPO;
- heavy vehicles accessing site; and
- staff and contractors for both construction and operations.

Contractors must develop their own TMP for their individual package of works which is consistent with the requirements of this TMP.

A detailed project description associated with Development Consent SSD 10418 is provided in Section 3 of the Project EIS (MACH Energy, 2021). The Project EIS was supported by a Road Transport Assessment (The Transport Planning Partnership [TTPP], 2020). The Road Transport Assessment findings and mitigation measures relevant to the preparation of this TMP have been incorporated into this document.

Figure 2 shows the indicative Project general arrangement and existing/approved surface development areas that would continue to comprise part of the Project and the areas that would be relinquished.





MACH-18-03A-MP2023-Figure 2\_Rev D

Source: MACH (2023); NSW Spatial Services (2023); Department of Planning and Environment (2016) Orthophoto: MACH (Jun 2023)

- LEGEND**
- Railway
  - Mining Lease Boundary (Mount Pleasant Operation)
  - Project Continuation of Existing/Approved Surface Development (DA92/97) <sup>1</sup>
  - Bengalla Mine Approved Disturbance Boundary (SSD-5170)
  - Existing/Approved Mount Pleasant Operation Infrastructure within Bengalla Mine Approved Disturbance Boundary (SSD-5170) <sup>1</sup>
  - Development Footprint 1 (Stage 1) - General Extension Areas <sup>1</sup>
  - Development Footprint 1 (Stage 2) - Mine Water Dam <sup>3</sup>
  - Relinquishment Area <sup>2</sup>
  - Northern Link Road Option 1 Centrelines
  - Northern Link Road Option 2 Centrelines

- NOTES**
1. Excludes some incidental Project components such as water management infrastructure, access tracks, topsoil stockpiles, power supply, temporary offices, other ancillary works and construction disturbance.
  2. Subject to detailed design of Northern Link Road.

**MACHEnergy**  
 MOUNT PLEASANT OPERATION  
 General Arrangement  
 of the Project

**Figure 2**



## 1.1 PURPOSE AND SCOPE

This TMP has been prepared by MACH Energy to satisfy the requirements of Part B, Condition B99 under Development Consent SSD 10418 and sets out the procedures for traffic-related activities associated with the MPO.

In accordance with Part B, Condition B99(b) of Development Consent SSD 10418, this TMP has been prepared by MACH Energy and Penny Dalton, Associate Director of TTPP, who has been endorsed by the Planning Secretary as a suitably qualified and experienced person. Penny is a Fellow of Engineers Australia, a Chartered Professional Engineer, registered on the National Engineering Register, and a Registered Professional Engineer of Queensland, with over 30 years of experience in consulting in the field of traffic and transport planning. A copy of the endorsement by the Planning Secretary is included in Attachment 1.

As required by Part B, Condition B101 of Development Consent SSD 10418, MACH Energy will not commence construction of the Mount Pleasant Northern Link Road or extract more than 10.5 Mt of ROM coal in a calendar year until this TMP is approved by the Planning Secretary.

MACH Energy will implement this Traffic Management Plan once approved by the Planning Secretary of DPHI, in accordance with Part B, Condition B102 of Development Consent SSD 10418.

Part B, Condition B99(c) of Development Consent SSD 10418 requires that the TMP be prepared in consultation with Transport for NSW (TfNSW) and Muswellbrook Shire Council (MSC) as the road authority for the local road network (Section 3). Details of the consultation undertaken, and the outcome of that consultation is detailed in Appendix B.

In accordance with Part B, Condition B100 of Development Consent SSD 1018, if the construction and/or decommissioning of Development Consent SSD 10418 is to be staged, the obligations in Part B, Condition B99 of Development Consent SSD 10418 (Section 2.1.1) apply to each stage of construction/decommissioning.



## 1.2 STRUCTURE OF THIS TMP

The remainder of the TMP is structured as follows:

- Section 2: Outlines the statutory obligations relevant to this TMP.
- Section 3: Describes the existing road network within the vicinity of the mine development area.
- Section 4: Describes the MPO related traffic details for the mine development area.
- Section 5: Describes the management measures to be implemented at the mine development area.
- Section 6: Describes the nearby mine traffic interactions.
- Section 7: Details the dilapidation protocols to be implemented.
- Section 8: Describes the performance measures and indicators that will be used at the mine development area.
- Section 9: Describes the program to review and report on the effectiveness of management measures and improvement of environmental performance.
- Section 10: Describes the contingency plans to manage unpredicted impacts.
- Section 11: Describes the protocol for the management and reporting of incidents, complaints and non-compliances with statutory requirements.
- Section 12: Lists the references cited in this TMP.

## 2 STATUTORY OBLIGATIONS

MACH Energy's statutory obligations relevant to traffic management are contained in:

- the conditions of Development Consent SSD 10418;
- Maintenance Management Plan for part of the Bengalla Road and Wybong Road developed with MSC;
- relevant approvals under the *Roads Act, 1993*;
- other relevant licences, permits and leases; and
- other relevant legislation.

Obligations relevant to this TMP are described below. Additional traffic related conditions from Development Consent SSD 10418 are described in Appendix A.

In addition to the above, activities associated with the MPO will be undertaken with the licences, permits and leases described in the MPO Environmental Management Strategy (EMS).

### 2.1 DEVELOPMENT CONSENT SSD 10418

The conditions of Development Consent SSD 10418 relevant to the content and structure of this TMP are described in Sections 2.1.1 and 2.1.2 below.

#### 2.1.1 TMP Requirements

Part B, Condition B99 of Development Consent SSD 10418 outlines the traffic management required at the MPO, including the preparation of a TMP (refer Table 1).

**Table 1**  
**Traffic Management Development Consent SSD 10418 Conditions**

MPO Development Consent SSD 10418 Part B	Section where addressed in this TMP document
<p><i>B99. The Applicant must prepare a Traffic Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:</i></p> <p>(a) <i>be submitted for approval within six months of the commencement of development under this consent;</i></p> <p>(b) <i>be prepared by a suitably qualified and experienced person/s whose appointment has been endorsed by the Planning Secretary;</i></p> <p>(c) <i>be prepared in consultation with TfNSW and Council;</i></p> <p>(d) <i>include details of all transport routes and traffic types to be used for development-related traffic;</i></p> <p>(e) <i>include a protocol for undertaking pre and post-dilapidation surveys and repairing any roads identified in the dilapidation surveys to have been damaged during construction and/or decommissioning works;</i></p>	<p>This document.</p> <p>Noted.</p> <p>Section 1.1 and Attachment 1</p> <p>Section 1.1 and Appendix B</p> <p>Sections 3.1 and 4.3</p> <p>Section 7</p>

**Table 1 (Continued)**  
**Traffic Management Development Consent SSD 10418 Conditions**

MPO Development Consent SSD 10418 Part B	Section where addressed in this TMP document
<p>(f) <i>include details of the measures to be implemented to minimise traffic safety issues and disruption to local road users during construction, operation and decommissioning phases of the development, including:</i></p> <p>(i) <i>temporary traffic controls, including detours and signage (where relevant);</i></p> <p>(ii) <i>notifying the local community about development-related traffic impacts;</i></p> <p>(iii) <i>define the major construction activities during which shuttle buses will be used to transport construction workers to the site;</i></p> <p>(iv) <i>minimising potential for conflict with school buses and stock movements;</i></p> <p>(v) <i>access and car parking arrangements;</i></p> <p>(vi) <i>staggering shift changes with other mining operations in the locality, where practicable, to minimise impacts during AM and PM peak traffic periods;</i></p> <p>(vii) <i>responding to any emergency repair requirements or maintenance during construction and/or decommissioning; and</i></p> <p>(viii) <i>a traffic management system for managing over-dimensional vehicles; and</i></p>	<p>Section 5.7</p> <p>Section 5.5</p> <p>Sections 4.3 and 5.4</p> <p>Sections 5.9 and 5.10</p> <p>Section 4.2</p> <p>Section 6.2</p> <p>Section 5.2</p> <p>Section 5.8</p>
<p>(g) <i>include a Driver's Code of Conduct that includes procedures to ensure that drivers:</i></p> <p>(i) <i>adhere to posted speed limits or other required travelling speeds;</i></p> <p>(ii) <i>adhere to the designated transport routes; and</i></p> <p>(iii) <i>implement safe driving practices.</i></p>	<p>Section 5.11 and Appendix C</p>
<p><i>B100. If the construction and/or decommissioning of the development is to be staged, the obligations in condition B99 apply to each stage of construction and/or decommissioning.</i></p>	<p>Section 1.1</p>
<p><i>B101. The Applicant must not commence construction of the Northern Link Road or extract more than 10.5 Mt of ROM coal in a calendar year until the Traffic Management Plan is approved by the Planning Secretary.</i></p>	<p>Section 1.1</p>
<p><i>B102. The Applicant must implement the Traffic Management Plan as approved by the Planning Secretary.</i></p>	<p>Section 1.1</p>

## 2.1.2 Management Plan (General) Requirements

Part D, Condition D5 of Development Consent SSD 10418 outlines general management plan requirements. Table 2 presents these requirements and indicates where each is addressed within this TMP.

**Table 2**  
**General Development Consent SSD 10418 Conditions**

MPO Development Consent SSD 10418 Part D	Section where addressed in this TMP document
<p><i>D5. Management plans required under this consent must be prepared in accordance with relevant guidelines, and include:</i></p> <p><i>(a) summary of relevant background or baseline data;</i></p> <p><i>(b) details of:</i></p> <p style="padding-left: 20px;"><i>(i) the relevant statutory requirements (including any relevant approval, licence or lease conditions);</i></p> <p style="padding-left: 20px;"><i>(ii) any relevant limits or performance measures and criteria; and</i></p> <p style="padding-left: 20px;"><i>(iii) the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures;</i></p> <p><i>(c) any relevant commitments or recommendations identified in the document/s listed in condition A2(c);</i></p> <p><i>(d) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;</i></p> <p><i>(e) a program to monitor and report on the:</i></p> <p style="padding-left: 20px;"><i>(i) impacts and environmental performance of the development; and</i></p> <p style="padding-left: 20px;"><i>(ii) effectiveness of the management measures set out pursuant to condition D4(c);</i></p> <p><i>(f) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;</i></p> <p><i>(g) a program to investigate and implement ways to improve the environmental performance of the development over time;</i></p> <p><i>(h) a protocol for managing and reporting any:</i></p> <p style="padding-left: 20px;"><i>(i) incident, non-compliance or exceedance of any impact assessment criterion or performance criterion;</i></p> <p style="padding-left: 20px;"><i>(ii) complaint; or</i></p> <p style="padding-left: 20px;"><i>(iii) failure to comply with other statutory requirements;</i></p> <p><i>(i) public sources of information and data to assist stakeholders in understanding environmental impacts of the development; and</i></p> <p><i>(j) a protocol for periodic review of the plan.</i></p>	<p>Section 3</p> <p>Section 2</p> <p>Section 8</p> <p>Section 8</p> <p>Sections 9.2 and 11.3</p> <p>Section 8</p> <p>Section 11</p> <p>Section 10</p> <p>Section 9</p> <p>Section 11.1</p> <p>Section 11.2</p> <p>Section 11.3</p> <p>Section 11.4</p> <p>Section 9.2</p>
<p><b>Note:</b> <i>The Planning Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans.</i></p>	

## 2.2 LICENCES, PERMITS AND LEASES

In addition to the requirements of Development Consent SSD 10418, activities associated with the MPO will be undertaken in accordance with the licences, permits and leases described in the MPO EMS under Development Consent SSD 10418.

## 2.3 OTHER LEGISLATION, POLICIES AND GUIDELINES

In addition to the statutory obligations described above, the following NSW legislation may be applicable to the conduct of the MPO:

- *Aboriginal Land Rights Act, 1983;*
- *Biosecurity Act, 2015;*
- *Contaminated Land Management Act, 1997;*
- *EP&A Act;*
- *Forestry Act, 2012;*
- *Local Government Act, 1993;*
- *Pipelines Act, 1967;*
- *Protection of the Environment Operations Act, 1997;*
- *Radiation Control Act, 1990;*
- *Roads Act, 1993;*
- *Rural Fires Act, 1997; and*
- *Water Act, 1912.*

Commonwealth Acts which may also be applicable to the conduct of the MPO include:

- *Environment Protection and Biodiversity Conservation Act, 1999.*

Relevant licences or approvals required under these acts will be obtained as required.

In addition to statutory obligations described above, the following regulations, guidelines and policies may be applicable to this TMP:

- *Australian Code for the Transport of Dangerous Goods by Road & Rail (National Transport Commission, 2022);*
- *Guide to Road Design series (Austroads, various);*
- *Guide to Traffic Management series (Austroads, various);*
- *Guidelines for Managing Heavy Vehicle Driver Fatigue (National Transport Commission, 2007);*
- *Fatigue Management Guide (NSW Resources Regulator, 2018); and*
- *Traffic Control at Work Sites Manual (TfNSW, 2022a).*

In addition to the licences, permits and leases listed above, a Works Authorisation Deed between MACH Energy and MSC will be obtained to undertake works associated with the construction of the Mount Pleasant Northern Link Road and other relevant works within road reserves (Section 5.1.2).

### 3 TRAFFIC NETWORK AND BASELINE DATA

#### 3.1 ROAD NETWORK

The existing road network in the vicinity of the Project is shown in Figure 3 and presented in Table 3. The main roads connecting the New England Highway to the MPO are Thomas Mitchell Drive, Denman Road, Bengalla Road, and Wybong Road.

All vehicles entering and exiting the site must adhere to the Drivers' Code of Conduct. The Drivers' Code of Conduct provides guidance and expectations to manage the traffic related aspects of the MPO. The Drivers' Code of Conduct is provided in Appendix C.

**Table 3**  
**Road Network Relevant to the MPO**

Road Name	Road Classification	Road Authority
New England Highway (HW9)	State	TfNSW
Golden Highway (HW27)	State	TfNSW
Denman Road (MR209)	State	TfNSW
Bengalla Road <sup>1</sup>	Local	MSC
Wybong Road <sup>1</sup>	Local	MSC
Kayuga Road <sup>1</sup>	Local	MSC
Blairmore Lane and Dartbrook Road	Local	Upper Hunter Shire Council (UHSC)/ MSC
Thomas Mitchell Drive	Local	MSC
Mount Pleasant Operation Mine Access Road	Private	MACH Energy
Mount Pleasant Northern Link Road (proposed)	Local	MSC

<sup>1</sup>Road may be reclassified to support the transport of wind turbine components to the New England Renewable Energy Zone (Section 3.5).

The key roads within the vicinity of the MPO are described below.

##### 3.1.1 New England Highway

New England Highway (HW9) is the main north-south link through the Hunter Region and connects Muswellbrook and Newcastle as part of its route between Hexham and the Queensland border. HW9 typically has a posted speed limit of 100 kilometres per hour (km/h) outside urban areas.

HW9 is an approved route for Higher Mass Limit (HML) B-doubles as indicated on the TfNSW online interactive Restricted Access Vehicle (RAV) Map (TfNSW, 2022b).

##### 3.1.2 Golden Highway

Golden Highway (HW27) provides a road link between New England Highway at Minimbah and Newell Highway at Dubbo. It is generally a two-lane rural highway with a posted speed limit of 100 km/h outside of urban areas. Golden Highway is an approved route for HML B-doubles.

HW27 is an approved route for HML 25/26 metre (m) B-doubles as indicated on the TfNSW online interactive RAV Map (TfNSW, 2022b).

### **3.1.3 Denman Road**

Denman Road (MR209) is a state road that is funded by the TfNSW but maintained by MSC. Denman Road forms the primary connection between the township of Denman and Muswellbrook and provides a road link between Golden Highway and New England Highway. Outside of the urban areas, Denman Road is a two-lane rural road, with a 7 m wide sealed carriageway, additional sealed shoulders, and a posted speed limit of 100 km/h, reducing to 80 km/h west of Bengalla Road.

Denman Road provides access to a number of existing mining operations via local roads such as Edderton Road and Thomas Mitchell Drive. As a result, Denman Road carries a significant proportion of mine-related traffic, particularly employee traffic accessing the mining operations. Denman Road is an approved route for HML B-doubles as indicated on the TfNSW online interactive RAV Map (TfNSW, 2022b).

### **3.1.4 Bengalla Road**

Bengalla Road was purpose-built to provide access for the mining lands west of Muswellbrook. Bengalla Road is an approved route for General Mass Limit (GML) and Concessional Mass Limit (CML) B-doubles between Denman Road and the entry to Bengalla Mine. It is a sealed road, with a single travel lane in each direction and sealed shoulders. The speed limit on Bengalla Road is 100 km/h. Together with Wybong Road, Bengalla Road provides a link between Denman Road south of Muswellbrook and Merriwa Road (Golden Highway) at Sandy Hollow. It provides vehicular access to Bengalla Mine and crosses the Muswellbrook-Ulan Rail Line at a road over rail crossing approximately 4 km from Denman Road. Bengalla Road is the only permitted heavy vehicle access road to and from the MPO.

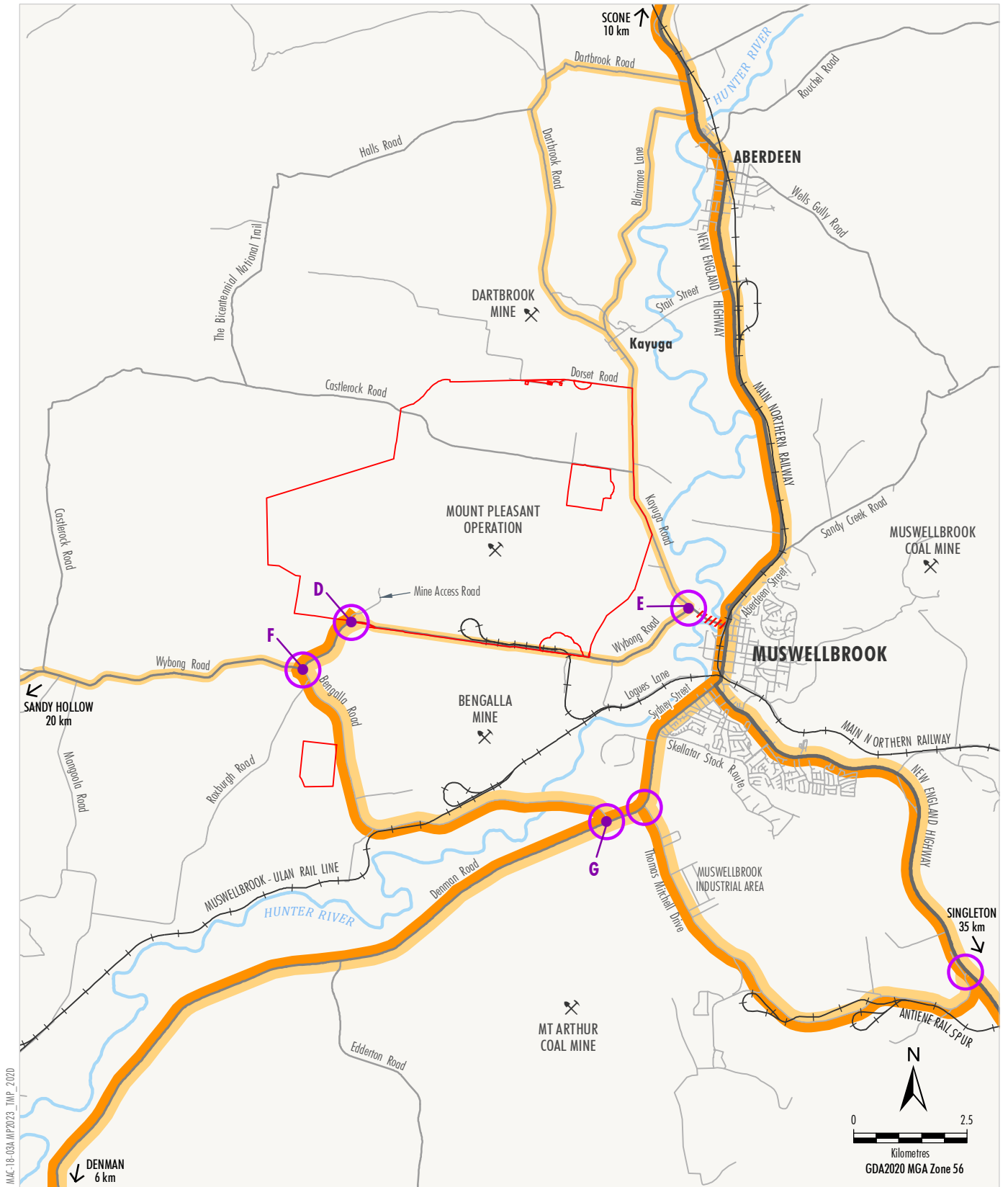
As use of the Kayuga Bridge is prohibited for all access to the MPO (with the exception of emergency vehicles), Bengalla Road is the route used for travel between Muswellbrook and the MPO for the workforce and deliveries. This does not apply to emergency vehicles accessing site and surrounding areas, nor to other road users and local traffic not accessing the MPO.

### **3.1.5 Wybong Road**

Wybong Road provides a link between Kayuga Road north-west of Muswellbrook and Merriwa Road (Golden Highway) at Sandy Hollow. The speed limit on Wybong Road is 100 km/h, reducing to 80 km/h for approximately 750 m on approach to Kayuga Road. The vehicular access for the MPO is provided from Wybong Road, approximately 8 km from Kayuga Road and 1.5 km from Bengalla Road. Signage indicates the road is subject to flooding in the vicinity of the Rosebrook Bridge east of Logues Lane. MACH Energy performed resurfacing works on the Wybong Road between the Mount Pleasant Operation Mine Road and Overton Road as part of the Stage 2 (MOD 4) rail spur construction.

### **3.1.6 Kayuga Road**

Kayuga Road provides a link between Aberdeen Street on the western side of the Main Northern Railway at Muswellbrook, and the locality of Kayuga. The speed limit on Kayuga Road is 80 km/h from Aberdeen Street to approximately 1.5 km north-west of Wybong Road, 100 km/h over the next 3.5 km, then reduces to 80 km/h through Kayuga.



Source: TTPP (2023); NSW Spatial Services (2023)

- LEGEND**
- Mining Operation
  - Railway
  - Mining Lease Boundary (Mount Pleasant Operation)
  - Kayuga Bridge - No Access
  - Workforce Light Vehicle Route<sup>#</sup>
  - Workforce Heavy Vehicle Route<sup>#</sup>
  - Road Intersection Survey Location
  - Road Intersection Assessment Location

<sup>#</sup>Access for construction of the Mount Pleasant Northern Link Road will be addressed as part of a separate Construction Traffic Management Plan and may vary from the routes shown.

**MACHEnergy**  
 MOUNT PLEASANT OPERATION  
 Local Road Network  
 and Traffic Survey Assessment Locations

**Figure 3**



### **3.1.7 Blairmore Lane and Dartbrook Road**

Blairmore Lane and Dartbrook Road are local roads which link Kayuga Road to New England Highway north of Aberdeen. Most of the length of both roads are under the control of UHSC, and a short length at the southern end of each road are under the control of MSC.

### **3.1.8 Thomas Mitchell Drive**

Thomas Mitchell Drive provides a link between Denman Road and New England Highway to the south of Muswellbrook township, thus providing a bypass of Muswellbrook for some traffic and is signposted as an alternative route to Singleton from Denman Road. Thomas Mitchell Drive provides access to the Mt Arthur Coal Mine, the Muswellbrook Industrial Area, and the Maxwell Underground Mine.

Thomas Mitchell Drive is an approved route for GML and CML B-doubles as indicated on the TfNSW online interactive RAV Map (TfNSW, 2022b). Part B, Condition B105 of Development Consent SSD 10418 (Appendix A) requires that MACH Energy contribute to the upgrade and maintenance of Thomas Mitchell Drive, proportionate to its impact (based on usage) on that infrastructure, in accordance with the *Thomas Mitchell Drive Contributions Study* (TMD Contributions Study) (GHD, 2015)<sup>1</sup>. MACH Energy will continue to contribute as necessary based in the requirements of the TMD Contributions Study.

MACH Energy has an established Voluntary Planning Agreement (VPA) under the existing Development Consent DA 92/97 with MSC. The updated general terms of a VPA with MSC in accordance with Development Consent SSD 10418 are provided in Appendix 7 of Development Consent SSD 10418. In addition to the contributions made as arising from the TMD Contributions Study, the VPA provides \$277,863 per annum (subject to Consumer Price Indexation) for general mine affected road maintenance works at the discretion of MSC.

### **3.1.9 Mount Pleasant Operation Mine Access Road**

Mount Pleasant Operation Mine Access Road is the private access road for the MPO and intersects with Wybong Road at a priority-controlled T-intersection.

### **3.1.10 Mount Pleasant Northern Link Road**

Mount Pleasant Northern Link Road is an approved road realignment that will provide an east-west link between Dorset Road and Castlerock Road, to the north of the MPO. This realignment will be constructed prior to closure of the eastern section of Castlerock Road to allow access to coal reserves in the MPO North Pit.

### **3.1.11 Castlerock Road**

In accordance with Part B, Condition B97(a) of Development Consent SSD 10418, MACH Energy will, as far as reasonable and feasible, implement strategies to minimise Project-related use of Castlerock Road through the Drivers' Code of Conduct, which outlines the alternative routes used to avoid Castlerock Road.

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<sup>1</sup> As amended by the supplementary report dated August 2018 (or its latest version as amended from time to time).

All drivers of MPO-related light and/or heavy vehicles and the drivers of any shuttle buses transporting employers/contractors must adhere to the Drivers' Code of Conduct.

### 3.2 INTERSECTIONS

As part of works undertaken in the Road Transport Assessment (TTPP, 2020), the peak hour operating characteristics of key intersections were modelled using industry standard micro-analytical traffic engineering software, SIDRA INTERSECTION (SIDRA). The following intersections were assessed (Figure 3):

- Mount Pleasant Operation Mine Access Road and Wybong Road;
- Wybong Road and Kayuga Road;
- Wybong Road and Bengalla Road;
- Bengalla Road and Denman Road;
- Denman Road and Thomas Mitchell Drive; and
- Thomas Mitchell Drive and New England Highway.

SIDRA calculates the intersection operating conditions, including the degree of saturation and average delays to vehicles, and assigns a Level of Service rating, that indicates the relative performance of the intersection.

From the SIDRA analyses, the key intersections were predicted to operate at good Levels of Service with spare capacity and acceptable delays to vehicles, with the exception of the intersection of Thomas Mitchell Drive and Denman Road, which was predicted to operate at a satisfactory Level of Service in 2026, but deteriorate thereafter (TTPP, 2020). The analysis assumed that the intersection was not upgraded. As detailed in Section 5.1.1, the upgrade of the intersection of Thomas Mitchell Drive and Denman Road is a condition of Project Approval 09\_0062 for the Mt Arthur Coal Mine, and has now been completed. The forecast poor conditions after 2026 are therefore no longer relevant.

### 3.3 EXISTING TRAFFIC VOLUMES AND CAPACITY

Traffic survey data within the vicinity of the MPO are summarised in Table 4. Traffic survey routes are shown in Figure 3.

**Table 4**  
**Existing Road Network Traffic Volumes 2020**

Site <sup>1</sup>	Road and Location	Total (vehicles per weekday)	Percent Heavy Vehicles
A	Mount Pleasant Operation Mine Access Road	888	17.3 %
B	Bengalla Road south-east of Wybong Road	2,010	18.7 %
C	Wybong Road north of Bengalla Road	1,349	15.0 %

Source: TTPP (2020).

<sup>1</sup> Refer to Figure 3.

From the traffic survey data, the distribution of traffic throughout the day on the surveyed roads shows that there is a distinct peak in traffic during the early morning, decreasing through the middle of the day before increasing to a peak in the evening. The peak traffic on Bengalla Road in the evening occurred earlier than that on the Mount Pleasant Operation Mine Access Road and on Wybong Road.

The traffic generated by the MPO displays a peak in inbound vehicles between 5:00 am and 7:00 am, and a lower and more spread peak in outbound vehicles between 4:00 pm and 7:00 pm.

### **3.4 EXISTING RAIL NETWORK**

Product coal produced at the MPO is transported via the Muswellbrook-Ulan Rail line and Main Northern Railway to the Port of Newcastle for export or to domestic customers for use in power generation.

Between the MPO and the Main Northern Railway, all road and rail crossings are grade separated so MPO-generated rail traffic does not interact with road network operations. Once trains are on the Main Northern Railway to Newcastle, the Project's additional contribution to total rail traffic is not significant.

### **3.5 RECLASSIFICATION OF LOCAL ROADS**

Current physical restrictions and limitations on the State road network through the surrounding roads of the MPO have been identified as barriers to the movement of oversize and/or overmass (OSOM) freight movements for the development of the State's Renewable Energy Zones and State Significant Developments. Discussions with MSC and TfNSW have commenced regarding the reclassification of a number of local roads including Bengalla Road, Wybong Road and Kayuga Road to enable transport of wind turbine componentry to the New England Renewable Energy Zone (Table 3).

Pending reclassification of Bengalla Road, Wybong Road and Kayuga Road, this TMP will be reviewed and updated (if required), in consultation with the relevant roads authorities (Section 9.2).

## 4 PROJECT TRAFFIC DETAILS

### 4.1 PROJECT ACTIVITIES

The Project would include the following development:

- increased open cut coal extraction within MPO ML by mining of additional coal reserves, including lower coal seams in the MPO North Pit;
- staged increase in extraction, handling and processing of ROM coal up to 21 Mtpa (i.e. progressive increase in ROM coal mining rate from 10.5 Mtpa over the Project life);
- staged upgrades to the existing Coal Handling and Preparation Plant (CHPP) and coal handling infrastructure to facilitate the handling and processing of additional coal;
- rail transport of up to approximately 17 Mtpa of product coal to domestic and export customers;
- upgrades to workshops, electricity distribution and other ancillary infrastructure;
- existing infrastructure relocations to facilitate mining extensions (e.g. local roads, powerlines and water pipelines);
- construction and operation of new water management and water storage infrastructure in support of the mine;
- additional reject dewatering facilities to allow co-disposal of fine rejects with waste rock as part of ROM waste rock operations;
- development of an integrated waste rock emplacement landform that incorporates geomorphic drainage design principles for hydrological stability, and varying topographic relief to be more natural in exterior appearance;
- construction and operation of new ancillary infrastructure in support of mining;
- extension to the time limit on mining operations to 22 December 2048;
- an average operational workforce of approximately 600 people, with a peak of approximately 830 people in 2041;
- ongoing exploration activities; and
- other associated infrastructure, plant, equipment and activities.

The following provides a summary of the key construction activities associated with the Project:

- development of additional key water management infrastructure in support of the mine;
- development of the Mount Pleasant Northern Link Road;
- staged upgrades to the existing CHPP and coal handling infrastructure to facilitate the handling and processing of additional coal; and
- progressive Fines Emplacement Area raises.

Construction activity is expected to occur over several distinct periods throughout the life of the Project, each requiring a construction workforce in addition to the ongoing operational activity. There are extended periods throughout the life of the Project during which no construction activity would occur.

## **4.2 MINE ACCESS AND CAR PARKING**

### **4.2.1 Mount Pleasant Operation Mine Access Road**

The main access to the mine site and administration office is provided via Wybong Road and Mount Pleasant Operation Mine Access Road (Figure 3). The intersection of Wybong Road and Mount Pleasant Operation Mine Access Road is a priority-controlled T-intersection with a channelised left turn deceleration lane in Wybong Road for vehicles entering the access road, and wide sealed shoulders and a wire rope barrier on the southern side of Wybong Road over approximately 300 m past the intersection. The Mount Pleasant Operation Mine Access Road has a single approach and single departure lane at the intersection.

### **4.2.2 Car Parking and Mine Infrastructure Area**

The Mine Infrastructure Area (MIA) comprises a range of supporting infrastructure, including administration, car parking, machinery, assembly and laydown areas, workshops, fuel and water storages and other supporting facilities.

The MIA will be expanded in stages from its current size of approximately 8 hectares to 12 hectares to accommodate the additional mobile equipment and facilities that would be required as the mining rate increases (MACH Energy, 2021).

Expansion of the MIA would include, but not be limited to:

- expansion of concreted areas;
- expansion of the existing heavy vehicle maintenance workshop and additional bays for larger trucks;
- relocation of the tyre bay;
- expansion of existing and/or construction of additional administration buildings and ablution facilities;
- expansion of car park facilities;
- an increase in the on-site fuel storage capacity;
- expansion of the warehouse and stores;
- expansion of the sewerage system and treatment plant; and
- construction of additional vehicle wash bays.

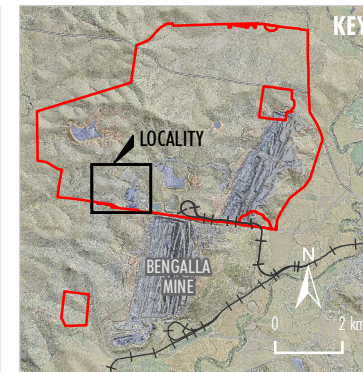
The main car park is for the use of on-site workers and visitors. The location and layout of the main car park are displayed in Figure 4.

## **4.3 VEHICLES AND TRANSPORT ROUTES**

### **4.3.1 Light Vehicles**

In accordance with Part B, Condition B97(b) of Development Consent SSD 10418, as far as reasonable and feasible, all MPO-related traffic is required to use Bengalla Road and Wybong Road for access into the MPO area. Use of the Kayuga Bridge is prohibited when travelling to or from the MPO.





**LEGEND**  
 [Red Outline] Mining Lease Boundary  
 (Mount Pleasant Operation)

Source: MACH (2023); NSW Spatial Services (2023)  
 Orthophoto: MACH (Dec 2022)

**MACHEnergy**  
 MOUNT PLEASANT OPERATION  
 Parking Facilities

**Figure 4**



The MPO construction and operations workforce will travel to the mine development area from towns in the surrounding area, including Muswellbrook, Aberdeen, Scone, Denman and Singleton. Table 5 summarises the travel routes the workers will use when approaching and departing the mine development area, and the expected residential distribution of the operational workforce.

The key light vehicle routes are displayed in Figure 3, and key routes for employees accessing and egressing the MPO based on residential location is displayed in Figure 5.

**Table 5  
Operational Workforce Travel Routes**

Residential Location	Estimated Percent of Workforce	Travel Route
Muswellbrook	40	Wybong Road – Bengalla Road – Denman Road (East)
Singleton and Lower Hunter	30	Wybong Road – Bengalla Road – Denman Road – Thomas Mitchell Drive – New England Highway (South)
Scone, Aberdeen and North	20	Wybong Road – Kayuga Road – Blairmore Lane or Dartbrook Road – New England Highway, or Wybong Road – Bengalla Road – Denman Road – New England Highway
Sandy Hollow, Merriwa and West	5	Wybong Road (West)
Denman and Jerrys Plains	5	Wybong Road – Bengalla Road – Denman Road (West)

With regard to access routes to and from Scone, Aberdeen and the north, drivers may use either Blairmore Lane or Dartbrook Road to travel between New England Highway and Kayuga Road. Residents of Aberdeen are more likely to use Blairmore Lane, as it is the most direct, while residents of Scone and farther north may choose to use either route. Blairmore Lane offers a slightly shorter route for those drivers, although the travel time differences are expected to be marginal between the two routes. Alternatively, drivers to and from Scone, Aberdeen, and the north may also travel through Muswellbrook.

### 4.3.2 Shuttle Buses

Construction activity is expected to occur over several distinct periods throughout the life of the Project, each requiring a construction workforce in addition to the ongoing operational activity. There are extended periods throughout the life of the Project during which no construction activity will occur. Table 6 summarises the anticipated construction activities and the average and peak construction workforce expected to be required for each construction activity.

**Table 6**  
**Provisional Construction Workforce Requirements**

Construction Activity	Average Workforce	Peak Workforce
Mine Water Dam (MWD) 2 Construction	14	30
Northern Link Road	44	104
Mine Infrastructure Area (MIA) Expansion Stage 2a CHPP Stage 2a Fines Emplacement Area Raise 2	186	414
Fines Emplacement Area Raise 3	14	30
MIA Expansion Stage 2b CHPP Stage 2b	130	309
Fines Emplacement Area Raise 4 MWD3 Construction	19	40
Fines Emplacement Area Raise 5	14	30
Fines Emplacement Area Raise 6	14	30

The use of Coaster-style buses with an approximate 22-passenger capacity will be used by MACH Energy where a work crew on a single shift consists of more than 40 people and that arrangement would continue over a period of more than three months. That is primarily during the upgrades to the CHPP and MIA.

Shuttle buses will transport the construction workforce to and from the site each day as per the methods employed during the major construction periods to date and as outlined in Section 5.4. Buses will be provided to meet demand, and services are expected to primarily operate from Muswellbrook, Scone and Aberdeen, and may operate to and from Singleton.

Table 7 summarises the routes that will be used by the construction shuttle buses when travelling to and from the Project, which are also presented in Figure 6. Use of Kayuga Bridge is prohibited when travelling to or from the MPO. Further details of the shuttle buses are provided in Section 5.4.



**Table 7**  
**Construction Workforce Shuttle Bus Travel Routes**

<b>Bus Service</b>	<b>Travel Route</b>
Muswellbrook	Wybong Road – Bengalla Road – Denman Road (East)
Scone and Aberdeen	Wybong Road – Kayuga Road – Blairmore Lane or Dartbrook Road – New England Highway
Singleton	Wybong Road – Bengalla Road – Denman Road – Thomas Mitchell Drive – New England Highway (South)

### 4.3.3 Heavy Vehicles

Table 8 presents the expected primary sources of construction and operational visitor and delivery trips and the routes the delivery and visitor vehicles would use to access the mine development area. Bengalla Road is the only permitted heavy vehicle access road to and from the MPO. In accordance with Part B, Condition B97(b) of Development Consent SSD 10418, as far as reasonable and feasible, all MPO-related traffic is required to use Wybong Road and Bengalla Road. Use of the Kayuga Bridge is prohibited for all vehicles travelling to and from the MPO, with the exception of emergency vehicles.

**Table 8**  
**Visitor and Delivery Sources and Travel Routes**

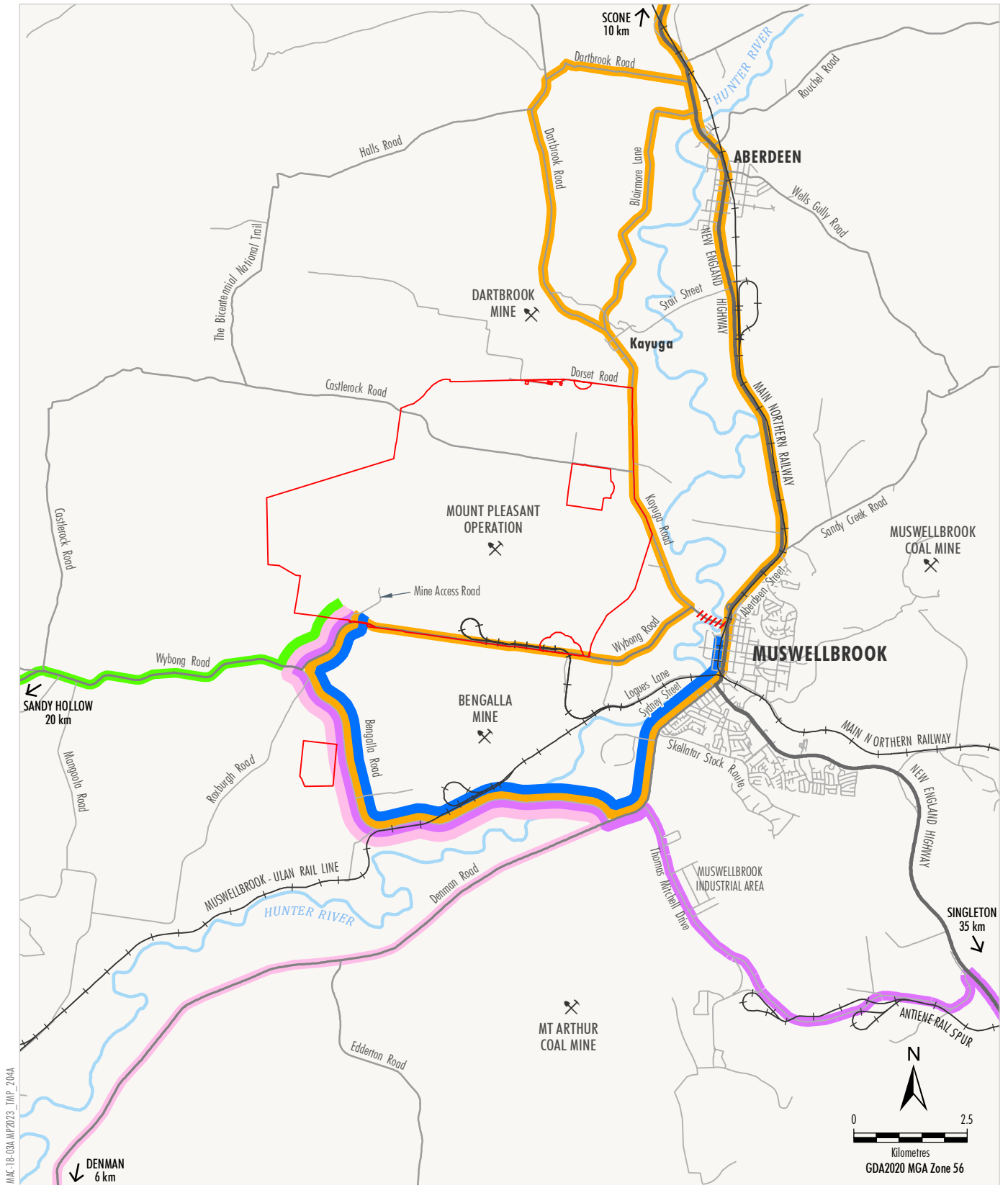
<b>Residential Location</b>	<b>Travel Route</b>
Muswellbrook	Wybong Road – Bengalla Road – Denman Road (East)
Singleton and Lower Hunter	Wybong Road – Bengalla Road – Denman Road – Thomas Mitchell Drive – New England Highway (South)
Denman	Wybong Road – Bengalla Road – Denman Road (West)

Heavy vehicles (with a gross vehicle mass or aggregate trailer mass greater than 4.5 tonnes) from the west must use Golden Highway and continue through to Denman Road and Bengalla Road for access to the MPO (Figure 3). Table 9 provides a breakdown of vehicle access controls for routes to the MPO.

**Table 9**  
**Vehicle Access Control Points**

Vehicle Type	Vehicle Classification	Description	Hours of Access	Speed Control	Access Route Restrictions			
					Bengalla Road and Wybong Road to Mine Access Road	Wybong Road West of Bengalla Road	Wybong Road East of Mine Access Road	Kayuga Bridge
LV	Light	Light Vehicle	Unrestricted	Road Limit	Permitted	Permitted	Permitted	No access
PMV – Fuel/ Explosives	Heavy	Fuel or Explosives Delivery Truck	Avoid (if possible) <sup>1</sup>	Road Limit	Permitted	No access	No access	No access
TPR	Heavy	Tipper	Unrestricted	Road Limit	Permitted	Permitted	No access	No access
TT	Heavy	Table Top	Unrestricted	Road Limit	Permitted	Permitted	No access	No access
VCT	Heavy	Vehicle Carrying Trailer	Unrestricted	Road Limit	Permitted	No access	No access	No access
PMV	Heavy	Prime Mover	Avoid (if possible) <sup>1</sup>	Road Limit	Permitted	No access	No access	No access
PMV	Heavy	Prime Mover – with float/trailer/dolly	Avoid (if possible) <sup>1</sup>	Road Limit	Permitted	No access	No access	No access
PMV	Heavy	Prime Mover – over 25 m long or 3.5 m wide	Avoid (if possible) <sup>1</sup>	Road Limit	Permitted, with vehicle escort if required by TfNSW	No access	No access	No access

<sup>1</sup> Where practicable, avoid (if possible) during commuter peak periods (from 5:30 am to 7:30 am and from 4:30 pm to 9:30 pm). Heavy vehicle haulage trips will be staggered to minimise impacts on the public road network.



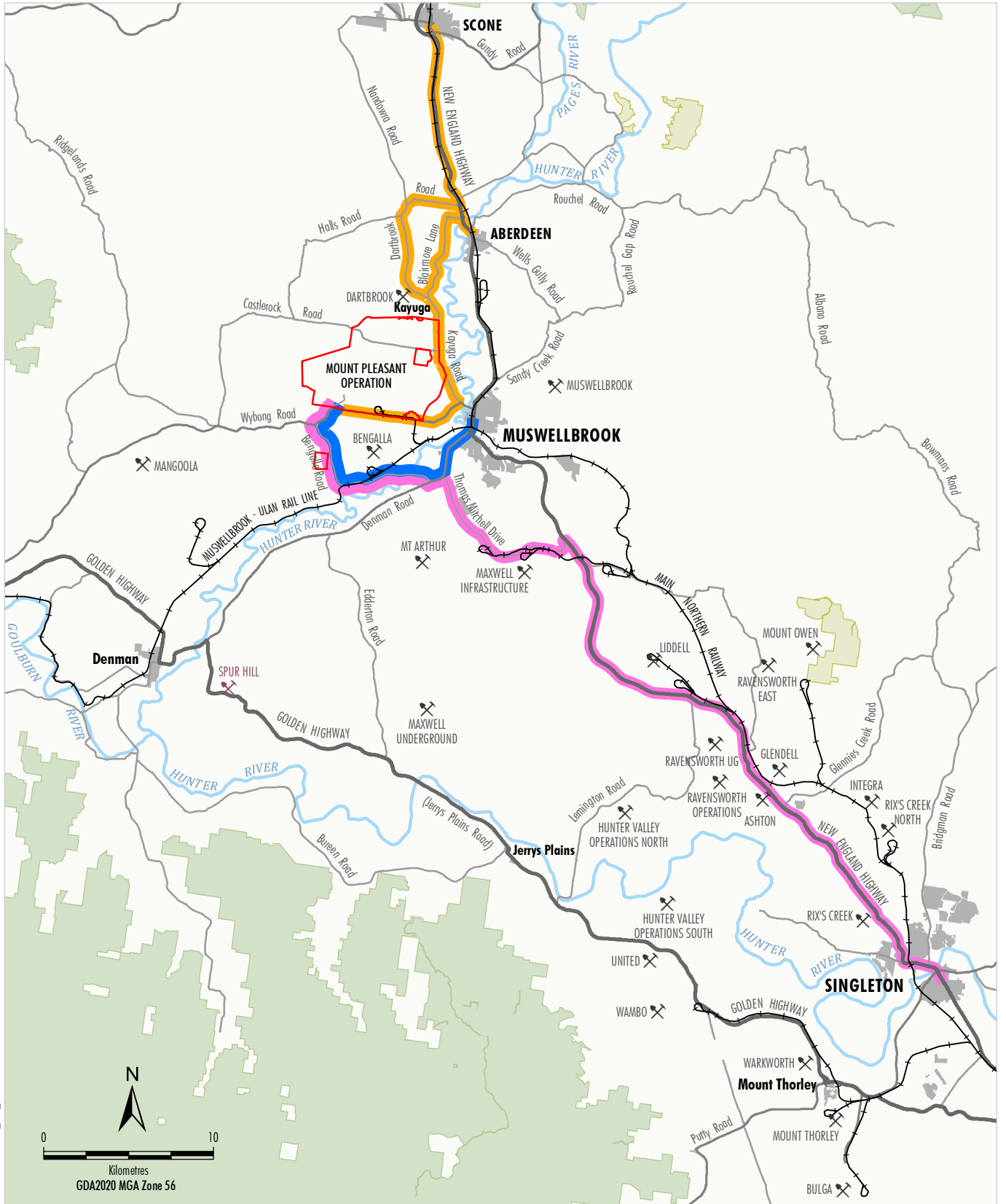
AMC-18-03A.MP2023\_TMP\_2024

Source: TTPP (2023); NSW Spatial Services (2023)

- LEGEND**
- Mining Operation
  - Railway
  - Mining Lease Boundary (Mount Pleasant Operation)
  - Kayuga Bridge - No Access
  - Workers travelling to/from Muswellbrook
  - Workers travelling to/from Singleton
  - Workers travelling to/from Aberdeen/Scone/North
  - Workers travelling to/from Denman/Jerries Plains
  - Workers travelling to/from Sandy Hollow/Merriwa West

**MACHEnergy**  
 MOUNT PLEASANT OPERATION  
 Key Access Routes

Figure 5



MACH18-038.MP2023\_TMP\_201A

Source: NSW Spatial Services (2023)

- LEGEND**
-  Mining Operation
  -  Proposed Mining Operation (Application Lodged)
  -  Railway
  -  State Forest/Reserve
  -  National Parks and Wildlife Estate
  -  Mining Lease Boundary (Mount Pleasant Operation)
  -  Shuttle Bus Route from Muswellbrook
  -  Shuttle Bus Route from Aberdeen/Scone
  -  Shuttle Bus Route from Singleton

**MACHEnergy**  
 MOUNT PLEASANT OPERATION  
 Shuttle Bus Travel Routes

**Figure 6**

TfNSW's website (TfNSW, 2022b) provides information on the enforceable network for all RAVs operating at General, Concessional and HMLs. The following routes are classified within the system as approved for HML B-doubles up to 25/26 m in length:

- New England Highway (HW9);
- Golden Highway (HW27); and
- Denman Road (MR209).

Thomas Mitchell Drive and Bengalla Road between Denman Road and the Bengalla Mine access road are approved routes for GML and CML B-doubles up to 25/26 m in length.

MPO-related heavy vehicles used during construction and operation will access the mine development area via these TfNSW-approved heavy vehicle routes.

#### **4.3.4 Access for Construction of the Mount Pleasant Northern Link Road**

The Project includes the closure of the eastern section of Castlerock Road and development of the Mount Pleasant Northern Link Road to connect Dorset Road and Castlerock Road, to the west of the MPO MLs. This is discussed in Sections 3.1.10 and 5.1.2.

Access for construction of the Mount Pleasant Northern Link Road will be addressed as part of a Construction Traffic Management Plan prepared under the Works Authorisation Deed with MSC. Access routes may vary to those presented above. Use of Kayuga Bridge to access the road construction area will be prohibited.

### **4.4 TRAFFIC TYPES**

#### **4.4.1 Construction Phase**

Key MPO-related traffic during the construction stage of the MPO will consist of:

- employees travelling to and from the mine development area (typically light vehicles and shuttle buses);
- construction visitors travelling to and from the mine development area (typically light vehicles); and
- deliveries of construction materials and equipment (typically heavy vehicles and some OSOM vehicles).

The construction workforce will generally commute to the mine development area from towns in the surrounding area including Muswellbrook, Aberdeen, Scone, Denman and Singleton (Section 4.3). During the peak construction phase, the workforce associated with construction activity is expected to be up to 414 people, of whom 20 to 50 personnel would be undertaking night work and the remainder would work during the day. Shifts would nominally changeover at 6:00 am and 6:00 pm.

The estimated predicted daily vehicle movements for the construction phase to the mine development area (two-way weekday traffic volume) would be 472 light vehicles/buses per day and 68 heavy vehicles per day (MACH Energy, 2021). Peak hours for construction-generated vehicle trips would be between 6:00 and 7:00 am, and between 4:00 pm and 5:00 pm.

The types of vehicles that are proposed to be used for construction of the Project comprise heavy rigid vehicles, truck and dogs, fuel tankers, water delivery trucks and other light vehicles such as passenger vehicles and light delivery trucks.

Buses transporting the construction workforce are expected to primarily operate from Muswellbrook. A small portion of less than 10% of workers would travel to and from Scone and Aberdeen. If required, buses may operate to and from Singleton. Shuttle buses would be Coaster-style small buses typically with a 22-passenger capacity.

Key MPO-related traffic routes are described in Section 4.3 and are shown on Figure 3.

#### **4.4.2 Operation Phase**

Key MPO-related traffic during the operation stage of the MPO will consist of:

- Employees and visitors travelling to and from the mine development area (typically light vehicles and shuttle buses); and
- Deliveries of consumables such as diesel, coolant, oil, grease and explosives (typically heavy vehicles and some OSOM vehicles).

During the peak construction phase in 2026, the total operational workforce is expected to be 555 people. The average longer-term operational workforce between 2033 and 2044 is expected to be 760 people. These additional personnel would work under similar shift arrangements to those currently occurring at the MPO, nominally 7:00 am to 5:00 pm weekdays for administration personnel 7:00 am to 7:30 pm for mining operations personnel on day shift and 7:30 pm to 7:00 am for mining operations personnel on night shift. The arrival and departure patterns are likely to be similar to those of the existing operational workforce.

The estimated predicted daily movements for the operation phase to the mine development area (two-way weekday traffic volume) would be 728 light vehicles/buses per day and 24 heavy vehicles per day (MACH Energy, 2021). Peak hours for operations-generated vehicle trips would be between 5:00 am and 6:00 am, and between 4:00 pm and 5:00 pm.

Key MPO-related traffic routes are described in Section 4.3 and are shown on Figure 3.

#### **4.5 PROJECT RAIL TRAFFIC**

Consistent with the existing MPO operations, product coal produced at the Project will be transported via the Muswellbrook-Ulan Rail line and Main Northern Railway to the Port of Newcastle for export or to domestic customers for use in power generation.

The number of daily train movements from the MPO is expected to increase from a maximum of nine laden trains per day to a maximum of 10 laden trains per day under the Project (SSD 10418).

Between the MPO and the Main Northern Railway, all road and rail crossings are grade separated and there is no potential for increased rail traffic to impact road network operations. Once Project-generated trains are on the Main Northern Railway to Newcastle, the Project's additional contribution to total rail traffic would not be significant, thus the potential impacts on delays experienced by road-based traffic would be negligible. The addition of one laden train per day at maximum production generated by the Project is therefore expected to have minimal impact on both delays to road traffic and safety at railway levels crossings (TTPP, 2020).

## 5 TRAFFIC MANAGEMENT MEASURES

### 5.1 ROAD UPGRADES

Road and intersection upgrade and maintenance contributions will be made to the MSC in accordance with the VPA (Section 3.1.8). Figure 7 show the location of road upgrades, the extent of road safety audit and road maintenance contributions.

#### 5.1.1 Thomas Mitchell Drive and Denman Road

The intersection of Thomas Mitchell Drive and Denman Road was previously identified as requiring upgrades to accommodate future demands, in the absence of the Project. Upgrading of the Thomas Mitchell Drive and Denman Road intersection was required by Condition 47(c) of Project Approval 09\_0062 for the Mt Arthur Coal Mine and Part B, Condition B97 of Development Consent SSD 8642 for the Mangoola Coal Continued Operations Project. MSC's initial preference for a seagull design was not supported by TfNSW, due to road safety issues associated with seagull treatments (MSC, 2022). Upgrading of the intersection was completed during 2022, with the intersection now constructed with channelised left and right turn lanes in Denman Road, a wide painted median on the northern approach, and separate left and right turn lanes in Thomas Mitchell Drive. Vehicles turning right into Thomas Mitchell Drive have priority over those turning left into Thomas Mitchell Drive.

#### 5.1.2 Mount Pleasant Northern Link Road

In accordance with Part B, Condition B96(a) of Development Consent SSD 10418 (Appendix A), prior to the closure of the eastern portion of Castlerock Road, MACH Energy must construct the Mount Pleasant Northern Link Road realignment (Figure 2). The realignment of the Mount Pleasant Northern Link Road has been revised to improve the safety of the intersection between the Mount Pleasant Northern Link Road and Castlerock Road. The Project EIS assessed two alternative Northern Link Road realignments; however, the detailed design of the preferred realignment is still being refined, pending property constraints.

The Mount Pleasant Northern Link Road will provide an east-west link between Castlerock Road and Dorset Road to the north of the MPO and be constructed prior to the closure of the eastern portion of Castlerock Road. This road link will not be used by MPO traffic. It will provide a local access function for lands to the north of the MPO, replacing the function currently served by Castlerock Road.

Development work for construction of the Mount Pleasant Northern Link Road would generally be limited to 7:00 am to 6:00 pm Monday to Sunday (MACH Energy, 2021). In accordance with Part B, Condition B96(b) of Development Consent SSD 10418, MACH Energy has undertaken a safety audit for the full length of Castlerock Road and the intersection of Dorset Road and Kayuga Road. This is discussed further in Section 5.3.

Prior to commencing any construction in relation to the Mount Pleasant Northern Link Road, MACH Energy and MSC will enter into a Works Authorisation Deed.

Consultation with MSC has been ongoing regarding traffic and transport related matters primarily associated with obtaining the relevant approvals under the *Roads Act, 1993* to facilitate the design and construction of the Mount Pleasant Northern Link Road. The Northern Link Road Works Authorisation Deed is currently being finalised with MACH Energy and MSC. As part of this Works Authorisation Deed, a Construction Traffic Management Plan will be prepared in consultation with MSC.



## 5.2 ROAD MAINTENANCE

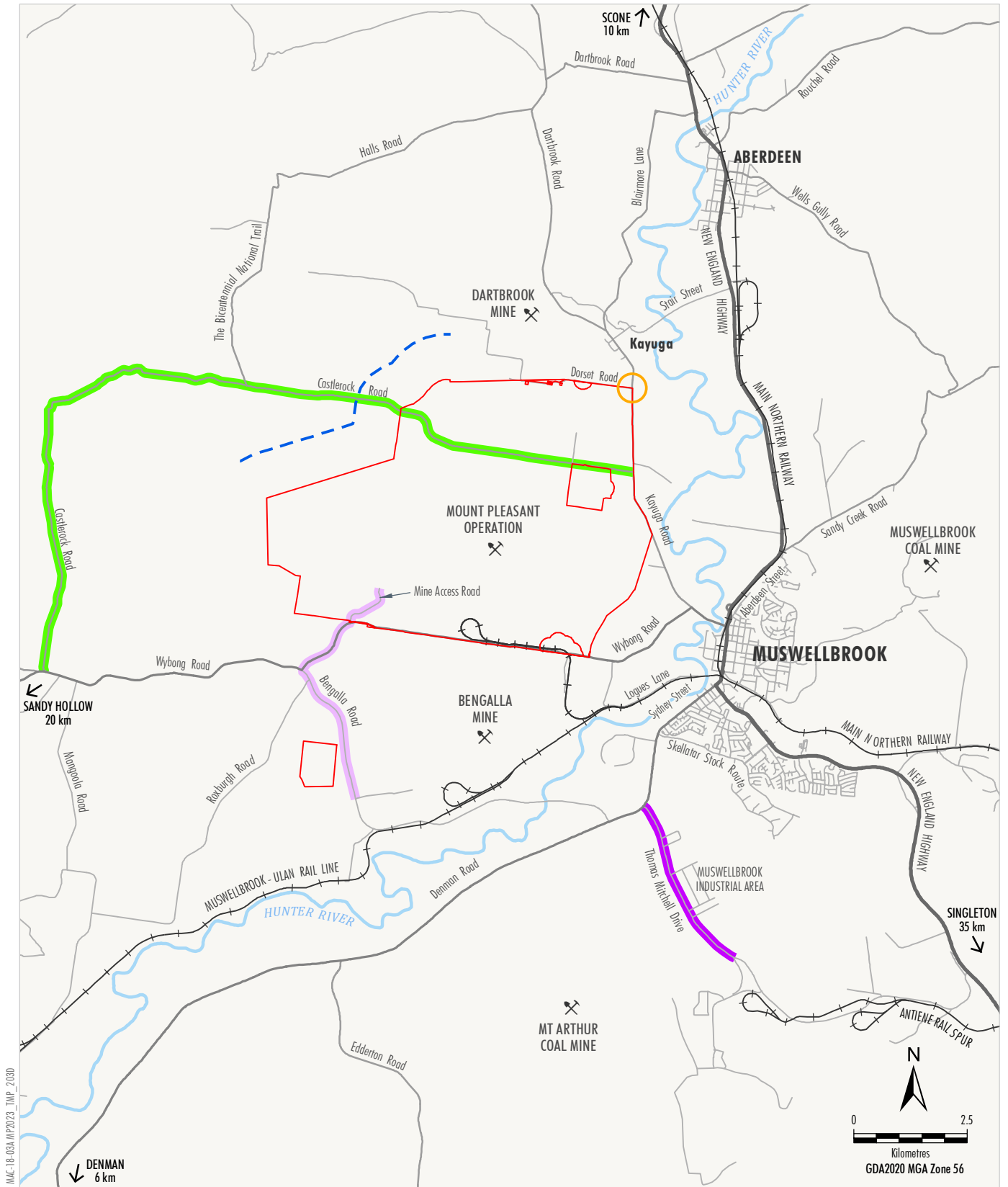
The roads and intersections between the Bengalla Mine main entrance and the Mount Pleasant Operation Mine Access Road, including part of Bengalla Road and part of Wybong Road (Figure 7) will be maintained by MACH Energy in accordance with Part B, Condition B103 of Development Consent SSD 10418 (Appendix A). In accordance with Part B, Condition B104 of Development Consent SSD 10418, MACH Energy will update the existing Maintenance Management Plan in respect to these roads, to the satisfaction of MSC.

The existing Maintenance Management Plan will be updated to include maintenance of the roads and intersections between the Bengalla Mine main entrance and the Mount Pleasant Operation Mine Access Road, including part of Bengalla Road and part of Wybong Road (Figure 7) during construction activities (including construction of the Mount Pleasant Northern Link Road).

In the event that MACH Energy identifies emergency repairs or maintenance requirements on the public road network during the Project construction or decommissioning phase, MACH Energy will notify TfNSW and MSC (as the relevant road authorities). Construction vehicles would access the construction site in accordance with the available road network and the designated site restrictions. Table 9 provides a breakdown of vehicle access controls for routes to the MPO and the designated site restrictions.

In the event of emergency repairs or maintenance being required on the Mine Access Road during construction and/or decommissioning, these will be undertaken as soon as practical, and MACH Energy will review and revise or place a hold on the construction or decommissioning schedule as required to enable the emergency works to be prioritised while minimising potential safety issues for mine personnel.

Some of the financial contributions made by MACH Energy to MSC in accordance with the VPA will be used for the purposes of the road maintenance (Section 3.1.8).



Source: TTPP (2023); NSW Spatial Services (2023)

- LEGEND**
- Mining Operation
  - Railway
  - Mining Lease Boundary (Mount Pleasant Operation)
  - Extent of Road Upgrade
  - Extent of Road Maintenance
  - Extent of Road Safety Audit
  - 1 km Western Portion Castlerock Road
  - Intersection Road Safety Audit

**MACHEnergy**  
 MOUNT PLEASANT OPERATION  
 Road Upgrades, Maintenance  
 and Safety Audit

Figure 7

### **5.3 ROAD SAFETY AUDIT**

In accordance with Part B, Condition B96(b) of Development Consent SSD 10418 (Appendix A), MACH Energy at its own expense, has undertaken a road safety audit for the full length of Castlerock Road and the intersection of Dorset Road and Kayuga Road (TTPP, 2024) and has provided the outcomes to MSC to consult on the identified non-conformances.

The findings of the road safety audit determined that along the entire audit route, no items were found with a high risk rating. Items identified with a medium risk rating included a culvert with a significant drop, unmarked crests, and a fence post located close to the edge of the road on a curve. Items identified with a low risk rating included poor delineation, minor pavement drop offs, minor rutting, trees located near the shoulder, and damaged and faded signs. The extent of the road safety audit is shown on Figure 7.

MACH Energy are currently in the process of reviewing all items with low and medium risk ratings within the western portion of Castlerock Road, within 1 km from the MPO, in consultation with MSC to determine whether any actions are required to be carried out. Implementation of the recommendations of the review will be captured in the Works Authorisation Deed with MSC.

### **5.4 EMPLOYEE SHUTTLE BUS**

As outlined in Section 4.3.2, MACH Energy will operate Coaster-style shuttle buses with an approximate 22-passenger capacity during major construction events, where a work crew on a single shift consists of more than 40 people and that arrangement would continue over a period of more than three months (that is, primarily during the upgrades to the CHPP and the MIA).

Buses will be provided to meet demand and workforce location. Services are expected to primarily operate from Muswellbrook, and may operate from Scone/Aberdeen and Singleton if there is sufficient demand.

At least one month prior to major construction activities where shuttle buses will be used, MACH Energy will consult with the relevant Council(s) on pick up and drop off locations and parking arrangements associated with the use of shuttle buses.

### **5.5 COMMUNITY NOTIFICATION OF TRAFFIC IMPACTS**

MACH Energy will communicate planned MPO-related traffic impacts to the community via the Community Consultative Committee, the regular Community Newsletters, and Project updates on the website. MACH Energy provides regular Community Newsletters to stakeholders and residents, and general Project updates on the website, which provide updates to residents with respect to the MPO activities, future construction and other mine-related news.

MACH Energy will prepare a Road Closure Management Plan as part of the Blast Management Plan, in accordance with Part B, Condition B24(f) of Development Consent SSD 10418 and in consultation with MSC. Any blasts within 500 m of Wybong Road, Kayuga Road or Castlerock Road trigger a road closure and implementation of relevant mitigation measures. No blasting will be undertaken within 500 m of Dorset Road.

In accordance with Part B, Condition B98 of Development Consent SSD 10418, MACH Energy will provide 24 hours' notice of temporary road closures to MSC and the local community. Where an event (e.g. an unexpected road closure due to an accident or other incident unrelated to MPO activity) occurs on the normal permitted route to site, then drivers of delivery vehicles are to stop and contact MACH Energy or their Contractor site representative for guidance.

An MPO nominated person will notify the MSC of the intention to blast and date and time of the planned road closure via MSC's website.

An MPO nominated person will also advise emergency service providers via email (or other method determined in consultation with the relevant emergency service) of the date and time of planned road closures.

MACH Energy will install and maintain road closure signs and give at least 24 hours' notice of temporary road closures in accordance with Part B, Condition B98 of Development Consent SSD 10418. Signs will indicate that **"Emergency Service Providers to contact the Environmental Superintendent for emergency vehicle access during a road closure."** The location and wording of the signs are to be approved by the MSC. The contact details of emergency service providers and MACH Energy key personnel are listed in the [MPO Pollution Incident Response Management Plan](#).

Public road closures resulting from blasting at the MPO will be scheduled to occur at times which do not impede school bus operations. The school buses operate on Wybong Road, Castlerock Road and Kayuga Road between 7:45 am and 8:20 am and between 3:40 pm and 4:00 pm, Monday to Friday (current as at June 2024).

MACH Energy provides notification to the general public regarding any blast requiring the closure of a public road. These blast notices are displayed on the company website:

<https://machenergyaustralia.com.au/blast-notice/>

Blast notifications are also displayed on the MSC public website:

<https://www.muswellbrook.nsw.gov.au/blast-notifications/>

MACH Energy undertakes communications with other mines in the Hunter Valley in the locality, so they can keep each other informed about any proposed temporary changes to the road network, associated with mining operations.

## 5.6 EXEMPTIONS TO REQUIREMENTS

Where need arises for vehicle movements outside of the requirements of this TMP, during emergency or exceptional events only, then an exemption to these requirements may occur and can only be authorised by a site manager. Such exemption is to be supported by a risk assessment which identifies the specific risk and controls of the activity required. Where time permits, exemptions will be undertaken in consultation with MSC.

## 5.7 TEMPORARY TRAFFIC CONTROLS

### 5.7.1 Traffic Signage

MACH Energy will liaise with MSC, UHSC, and TfNSW, as required, to obtain the necessary permits and approvals prior to implementing any traffic controls on public roads.

Temporary traffic controls (e.g. detours) will be implemented with the assistance and agreement of the relevant authorities. Temporary traffic controls will generally only be required during water pipeline construction and road and intersection upgrade works.

An indicative layout of the proposed traffic signs strategically located throughout all key road entrances is shown in Figure 8. Any update to traffic signs will be designed in accordance with Australian Standard AS 1742 and approved by MSC.

MSC, as the road authority, has control over the impacted roads, and any proposal to close roads requires MSC's permission. MACH Energy will minimise disruption to normal traffic conditions through the application of traffic control measures in accordance with *Austroads' Guide to Temporary Traffic Management* series and TfNSW's *Traffic Control at Worksites Technical Manual* (TfNSW, 2022a).

To facilitate construction of the Mount Pleasant Northern Link Road and advance of mining of coal from the North Pit, MACH Energy require the closure of the eastern portion of Castlerock Road (Section 3.1.10). MACH Energy will seek approval from MSC under the *Road Act, 1993* for the temporary and permanent closure of the affected portion of Castlerock Road.

Where practicable, temporary traffic controls will be implemented outside of peak traffic hours to minimise the disruption of road users.

In accordance with Part B, Condition B98 of Development Consent SSD 10418, MACH Energy will maintain signage and provide at least 24 hours' notice of temporary road closures. The location and wording of the signs will be submitted to MSC for approval.

Prior to commencement of construction at each construction site, MACH Energy will prepare Traffic Control Plans specific to each construction site generally in accordance with TfNSW's *Traffic Control at Work Sites Technical Manual* (TfNSW, 2022a).

**Figure 8**  
**Proposed Traffic Signs**





### **5.7.2 Emergency Response Protocol**

All transport contractors will comply with Regulation 14.5 of the *Road Transport Reform (Dangerous Goods) Regulations, 1997*.

MACH Energy will ensure that Transport Emergency Response Plans (TERPs) are prepared and implemented as per the guidelines for transportation of materials to site.

The objective of the TERP is to:

- minimise any adverse effects on people damage to property or harm to the environment in a transport emergency;
- facilitate a rapid and effective emergency response and recovery;
- provide assistance to emergency and security services; and
- communicate vital information to all relevant persons involved in the transport emergency (both internal personnel and external agencies) with a minimum of delay.

The TERP will provide the following details for MPO-related emergencies:

- plan activation;
- response tasks;
- resources; and
- preparedness.

Each transportation contractor will be responsible for the implementation of their respective TERPs.

## 5.8 OVERSIZE AND/OR OVERMASS VEHICLES

All OSOM vehicles will access the MPO site via Bengalla Road and Wybong Road, unless the applicable road authority agrees otherwise. MACH Energy will liaise with the National Heavy Vehicle Regulator, TfNSW and relevant councils to obtain the required permits to use any OSOM vehicles to and from the MPO.

In accordance with TfNSW's *Additional Access Conditions Oversize and overmass heavy vehicles and loads* (TfNSW, 2020), the transportation of all MPO-related OSOM vehicles and loads will:

- obtain the relevant permits and ensure vehicle configuration, overall dimension and total mass of loaded combination complies with permit conditions;
- be supported by an accredited escort vehicle; and
- be undertaken in accordance with a TfNSW approved Transport Management Plan specific to the over-dimensional trip where it is classified as High Risk (due to dimension, weight and/or route) or the load is Critical/Sensitive. The trip-specific Transport Management Plan will address the following:
  - vehicle and load details;
  - route survey details of the proposed route;
  - traffic management arrangements;
  - stakeholder and community consultations; and
  - rail infrastructure manager approval (if required).

In addition to a trip-specific Transport Management Plan, all OSOM loads that are required to be escorted will have a signed NSW Load Declaration, which certifies the mass and dimensions of the loaded vehicle.

Where practicable, OSOM vehicle movements will occur outside of commuter peak periods, minimise convoy and platoon lengths, and minimise interruption to stock movements and local events. MACH Energy will schedule the movement of OSOM vehicles outside of school bus operating hours on routes used by school buses (Section 5.9)<sup>2</sup>. The Project will align with the *Additional Access Conditions – Oversize and overmass heavy vehicles and loads* (TfNSW, 2020) for any oversize and overmass vehicles as specified in the table below.

The Project will comply with the pilot and escort requirements for any oversize and overmass vehicles as specified in *Additional Access Conditions – Oversize and overmass heavy vehicles and loads* (TfNSW, 2020). Table 10 provides an overview of the pilot and escort requirements for OSOM vehicles (TfNSW, 2020). Transport companies will be responsible for applying for all applicable permits and completion of road surveys for any routes which have not been driven before.

<sup>2</sup> MACH Energy will schedule OSOM movements outside of school bus operating hours based on estimated arrival/departure times, noting that actual traffic conditions are beyond the control of MACH Energy.



**Table 10  
Load Carrying Vehicles Daytime Pilot and Escort Requirements**

≤ (x) metres Width *	≤ (x) metres Length *																	
	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	>35
3.5	0	0	0	0	0	0	0	1	1	1	1	1	2	2	2	2	2	3
3.6	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	3
3.7	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	3
3.8	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	3
3.9	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	3
4.0	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	3
4.1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	3
4.2	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	3
4.3	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	3
4.4	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	3
4.5	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	3
4.6	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	3
4.7	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3
4.8	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3
4.9	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3
5.0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3
5.1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3
5.2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3
5.3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3
5.4	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3
5.5	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3
>5.5	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3

Source: TfNSW (2020).

- Legend:
- 0 = NO PILOT REQUIRED
  - 1 = ONE (1) PILOT REQUIRED
  - 2 = TWO (2) PILOTS REQUIRED
  - 3 = THREE (3) PILOTS REQUIRED

\* (≤) symbol indicates the pilot requirements is for dimensions up to and including the metre measurement shown in the table.  
LOADS 6 METRES WIDE OR WIDER AND/OR 40 METRES LONG OR LONGER CONTACT POLICE.

## 5.9 SCHOOL BUS INTERACTION

At the start of each school year, MACH Energy will consult with bus operators providing regular school bus services in the region, to confirm details of school bus routes and operating times for the upcoming school year. School buses operate on Wybong Road and Kayuga Road between 8:00 am to 8:20 am and 3:40 pm to 4:00 pm.

To the extent possible, the movement of heavy vehicles will be avoided during the school bus operating hours on routes used by school buses. MACH Energy will schedule the movement of OSOM vehicles outside of school bus operating hours on routes used by school buses<sup>3</sup>. Safe driving practices around schools and school buses are included in the Drivers' Code of Conduct. There is a 40 km/h school speed zone on Palace Street (Golden Highway) at Denman.

MACH Energy will continue to consult with the local school bus operators to confirm the latest bus routes, school children pick up and drop off points and service times. This will include providing each local school bus operator with the contact details of a MACH Energy representative so they can advise if any changes occur. Where practicable, staff and contractor shift changes will be scheduled to avoid coinciding with drop off and pick up times along school bus routes.

## 5.10 STOCK INTERACTION

Travelling Stock Routes (TSRs) are parcels of Crown land used for grazing and moving stock. A permit is required for moving stock on a TSR or along a public road, and approved black and yellow warning signs must be visibly displayed:

- when stock are being walked or grazed along or within 300 m of a public road, except where a stock-proof fence separates the stock from the road;
- positioned so that a motorist is warned at a fair and reasonable distance of the presence or likely presence of stock;
- clearly visible to motorists who approach stock in either direction; and
- positioned so that there are no more than 5 km and no less than 200 m between the sign and a place where a vehicle would encounter the stock.

In the region of the Project, there are three Category 2 TSRs (Crown Reserve Numbers R60238, R1002589 and R1002590) located in proximity of the MPO's light vehicle transport routes. TSR R60238 does not interact directly with the Project light vehicle transport route along Kayuga Road. TSR R1002589 has frontage to Wybong Road, at Castle Rock, and TSR R1002590 has frontage to Wybong Road west of Castle Rock.

The Drivers' Code of Conduct includes expectations regarding driver behaviour when travelling in the vicinity of stock being moved on a public road.

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<sup>3</sup> MACH Energy will schedule OSOM movements outside of school bus operating hours based on estimated arrival/departure times, noting that actual traffic conditions are beyond the control of MACH Energy.

## **5.11 DRIVERS' CODE OF CONDUCT**

A Drivers' Code of Conduct has been prepared to manage specific behavioural requirements applicable to inducted personnel (i.e. contractors and employees inducted to work on the mine site) driving vehicles to site. All drivers of MPO-related light and/or heavy vehicles and the drivers of any shuttle buses transporting employers/contractors must adhere to the Drivers' Code of Conduct. A copy of the Drivers' Code of Conduct is provided in Appendix C.

## 6 NEARBY MINE TRAFFIC INTERACTIONS

### 6.1 NEARBY MINES

There are a number of traffic sources in the vicinity of the Project that contribute to traffic volumes, including the following approved and planned developments. The following section describes the approved and planned developments in the vicinity of the MPO and their expected interactions with MPO-generated traffic. Appendix D includes an extract from the Road Transport Assessment (TTPP, 2020) for the Mount Pleasant Optimisation Project (SSD 10418) discussing the expected changes to traffic conditions associated with other developments in the region, and the cumulative impact of the Mount Pleasant Operation construction traffic and the traffic of the surrounding other development sites listed below.

#### 6.1.1 Bengalla Mine

Bengalla Mine is located immediately to the south of the MPO and has its vehicular access to/from Bengalla Road between Wybong Road and Denman Road. The Bengalla Continuation Project SSD 5170 (as modified) permits open cut coal mining operations and associated activities until 2039. From the Transport Impact Assessment (DC Engineering, 2013) undertaken for the Bengalla Continuation Project, the peak morning and evening hours for traffic generation of the Bengalla Mine occurs between 6:00 am and 7:00 am, and between 4:00 pm and 5:00 pm, respectively.

All access to Bengalla Mine will be via Bengalla Road and Bengalla Mine Access Road. Under SSD 5170, Bengalla Road (also referred to as the Bengalla Link Road) will be realigned to allow for mining to progress west of the Bengalla Mine (DC Engineering, 2013). In accordance with Part B, Condition B95 of Development Consent SSD 10418, following the completion of the Bengalla Road realignment under SSD 5170 (as modified), or as otherwise directed by the Planning Secretary, MACH Energy will demolish the Bengalla Road bridge and, unless otherwise agreed by the Planning Secretary, reinstate the road reserve to the satisfaction of MSC.

This TMP will be reviewed and updated (if required), following completion of the Bengalla Link Road realignment works to address the demolition of the Bengalla Road bridge and the reinstatement of the road reserve, in consultation with MSC.

#### 6.1.2 Mangoola Coal

Mangoola Coal is located approximately 20 km west of Muswellbrook and 10 km north of Denman and has its vehicular access to/from Wybong Road west of Bengalla Road. Mangoola's operational workforce operates on a four-panel roster in 12-hour shifts, as follows (Mangoola Coal, 2021):

- 6:30 am start time and a 6:50 pm finish time for dayshift rostered people.
- 6:30 pm start time and a 6:50 am finish time for nightshift rostered people.

Accordingly, operational personnel typically access and egress Mangoola Coal outside peak periods of road network operation. Support staff typically work weekdays and arrive at Mangoola between 5:00 am to 7:30 am and depart between 4:00 pm to 6:30 pm.

Since the Road Transport Assessment (TTPP, 2020) was prepared, the Mangoola Continued Operations Project has been approved and the construction stage was completed in 2022.

### **6.1.3 Maxwell Underground Mine**

The Maxwell Underground Mine is located south of Muswellbrook and has its vehicular access to/from Thomas Mitchell Drive. Construction commenced in May 2022 and the rail transport of product coal from the Mine commenced in June 2023. Mining operations at Maxwell Underground Mine are permitted until 30 June 2047. Peak hourly and daily traffic generated by the Maxwell Underground Mine operational activity is expected to occur between 6:00 am and 7:00 am and between 5:00 pm and 6:00 pm.

### **6.1.4 Maxwell Solar Project**

The Maxwell Solar Project is located within the Maxwell Underground Mine site and was approved by the Minister for Planning and Public Spaces on 19 August 2020 (TTPP, 2020). Once operational, the Maxwell Solar Project will operate with a small workforce of three staff, and its traffic impacts would be negligible.

Traffic generated during construction of the Maxwell Solar Farm is expected to be up to 120 vehicle trips per day, with minor or no impact on the midblock levels of service on Thomas Mitchell Drive and key intersections (Amber Organisation, 2019). Construction hours would be Monday to Friday 7:00 am to 6:00 pm, and Saturday 8:00 am to 1:00 pm, except for staff access and out of hours deliveries to the site.

### **6.1.5 Mt Arthur Coal Mine**

Mt Arthur Coal Mine is located approximately 5 km south-west of Muswellbrook and has its vehicular access to/from Thomas Mitchell Drive. The morning peak hour for Mt Arthur Coal Mine traffic generation occurs between 6:00 am and 7:00 am and evening peak hour occurs between 6:00 pm and 7:00 pm (TTPP, 2020).

### **6.1.6 Dartbrook Coal**

Dartbrook Mine is located immediately north of the MPO, and has its vehicular access to/from Dartbrook Western Access Road (Stair Street). Dartbrook Mine has been under care and maintenance since 2006 however has licence to extract 6 Mtpa of ROM coal until 5 December 2027. Traffic generated by the Dartbrook Mine may therefore coincide with the Project construction activity in 2026 (TTPP, 2020). Traffic generated by the Dartbrook Mine is expected to have little overlap with Project-generated traffic on the roads in proximity to the Project.

### **6.1.7 West Muswellbrook Mine**

The West Muswellbrook Mine is a proposed open cut coal mine located north-west of the Project. The West Muswellbrook Mine proposes the permanent closure of Halls Road, Dorset Road and the partial closure of Castlerock Road. However, no details of timing or travel characteristics of the proposed West Muswellbrook Mine are currently available.

## 6.2 SHIFT TIME COORDINATION

As detailed in Table 1, Part B, Condition B99(f)(vi) of Development Consent SSD 10418, measures will be implemented to consider '*staggering shift changes with other mining operations in the locality, where practicable, to minimise impacts during AM and PM peak traffic periods*'.

The Road Transport Assessment undertaken for the Project EIS concluded that there was a good Level of Services of the intersections and roads in proximity of the MPO (as detailed in Section 3.2) based on the current and proposed shift times at the mines in the region. Therefore, further changes to shift start and finish times at the local mines in the Hunter Valley are not considered to be necessary. Should changes to shift times at the MPO need to be made, due consideration will be given to the shift times at the other mining operations in the locality.

In consideration of shift times at Mangoola Coal and Bengalla Coal, MPO delivery coordinators and contractors will, where practicable, avoid the transport of wide loads on Bengalla Road between 5:00 am and 7:30 am and between 4:00 pm and 6:30 pm.

MACH Energy will monitor the potential for impact to local road users and, should it be necessary, implement measures, where practicable, to minimise impacts in consultation with other mining operations in the locality and relevant road authorities.

## 7 DILAPIDATION PROTOCOLS

In accordance with Part B, Condition B99(e) of Development Consent SSD 10418, MACH Energy will undertake pre- and post-dilapidation surveys and repair any roads identified in the dilapidation surveys to have been damaged during construction and/or decommissioning works. The dilapidation surveys will consist of visual inspection of the road network to assess the condition of pavements and associated infrastructure across the area. The aim of the dilapidation survey is to establish the increase in traffic load and the change in the condition of the pavement and associated infrastructure due to Project construction and decommissioning traffic. Pre- and post-construction dilapidation surveys will be undertaken in consultation with MSC.

The pre- and post-construction dilapidation surveys will involve:

- undertaking a pre-construction pavement condition assessment of the nominated transport route prior to the commencement of any Project construction activity. This will include visual condition assessment and a falling weight deflectometer test of the nominated route/s;
- undertaking a traffic count to establish baseline light and heavy vehicle traffic on the nominated route prior to commencement of Project construction activity;
- establishing the light and heavy vehicle traffic volumes during Project construction; and
- undertaking a visual condition assessment and a falling weight deflectometer test of the nominated route/s after completion of Project construction works.

The level of pavement and associated infrastructure damage that may be attributable to Project-generated construction or decommissioning traffic based on the change in traffic loads and the change in pavement/infrastructure conditions will be determined based on the assessments described above.

The nominated transport routes and timing for dilapidation surveys to be undertaken is summarised in Table 11.

**Table 11  
Dilapidation Survey Timing and Extent**

Objective	Applicable Roads	Timing
MACH Energy will prepare a pre-construction dilapidation survey of the applicable roads.	Roads and intersections between Bengalla Mine main entrance and Mount Pleasant main entrance, including part of Bengalla Road and part of Wybong Road (Figure 7).	Prior to commencement of bulk construction material delivery associated with key construction activities.
MACH Energy will prepare a post-construction dilapidation survey of the applicable roads.		Within 1 month of the completion of Project construction works, or other timeframe as agreed by the applicable road authority.
MACH Energy will rehabilitate and/or make good any construction related damage identified in the post-construction dilapidation survey.	Where identified in post-construction survey.	Within 6 months of completing the post-construction dilapidation survey, or other timeframe as agreed by the applicable road authority.
MACH Energy will prepare a pre-decommissioning dilapidation survey of the applicable roads.	Roads and intersections between Bengalla Mine main entrance and Mount Pleasant main entrance, including part of Bengalla Road and part of Wybong Road (Figure 7).	Following cessation of operational mining activity and prior to commencement of demolition or decommissioning works.
MACH Energy will prepare a post-decommissioning dilapidation survey of the applicable roads.		Within 1 month of the completion of decommissioning works, or other timeframe as agreed by the applicable road authority.
MACH Energy will rehabilitate and/or make good any decommissioning related damage identified in the post-decommissioning dilapidation survey identified above.	Where identified in post-decommissioning dilapidation survey.	Within 6 months of completing the post-decommissioning dilapidation survey, or other timeframe as agreed by the applicable road authority.



## 8 PERFORMANCE MEASURES AND INDICATORS

Table 12 outlines the performance indicators that will be used to assess the performance of the Project, and the monitoring that will be conducted to assess the performance indicators.

**Table 12**  
**Performance Measures and Indicators**

Performance Measure	Performance Indicator	Monitoring
Implement the TMP	No complaints associated with MPO-related driver behaviour <sup>4</sup> .	Monitoring entries in the complaints register described in Section 11.2.
	No complaints associated with MPO-related traffic volumes <sup>2</sup> .	
	No MPO-related driver fatigue or poor driver behaviour incidents.	Monitoring and reporting will be undertaken in accordance with the incident reporting described in Section 11.1.
	No unsafe interactions between school buses and MPO-related heavy vehicles.	
	No livestock losses attributable to MPO traffic.	
	No incidents associated with temporary traffic controls.	Monitoring of the implementation of Traffic Control Plans (Section 5.7).
	Shuttle buses used for major construction activities and Council(s) consulted at least one month prior.	Review of upcoming construction timetables and planning. Annual reporting of construction activities undertaken in the MPO Annual Review (Section 9.1).

<sup>4</sup> Excluding complaints which are deemed to be vexatious in nature.

## 9 REVIEW AND IMPROVEMENT OF ENVIRONMENTAL PROCEDURES

### 9.1 ANNUAL REVIEW

In accordance with Part D, Condition D11 of Development Consent SSD 10418 and Condition 3, Schedule 5 of Development Consent DA 92/97 (prior to its surrender), MACH Energy will review and evaluate the environmental performance of the MPO by the end of March each year (for the previous calendar year).

In relation to the TMP, the MPO Annual Review will (where relevant):

- describe the development that was carried out in the past calendar year, and the development that is proposed to be carried out over the current calendar year;
- include a comprehensive review of monitoring results and complaints recorded over the past year, which includes a comparison of these results against the:
  - relevant statutory requirements, limits or performance measures/criteria;
  - requirements of any plan or program required under Development Consent SSD 10418;
  - monitoring results of the previous year; and
  - relevant predictions in the document/s listed in Condition A2(c), Schedule 2 of Development Consent SSD 10418.
- identify any non-compliance or incident over the last year, and describe what actions were (or are being) taken to rectify the non-compliance and avoid reoccurrence;
- evaluate and report on compliance with the performance measures, criteria and operating conditions of this consent;
- identify any trends in the monitoring data over the life of the development;
- identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and
- describe what measures will be implemented over the next calendar year to improve the environmental performance of the development.

Copies of the MPO Annual Review will be submitted to MSC and made available to the Community Consultative Committee and any interested person upon request, in accordance with Part D, Condition D12 of Development Consent SSD 10418. The MPO Annual Review will also be made publicly available on the MACH Energy website (<https://machenergyaustralia.com.au/>).

As mentioned in Part D, Condition D11 of Development Consent SSD 10418 (above) relating to MPO Annual Reviews, MACH Energy will include a comprehensive review of environmental performance at the MPO in accordance with Part A, Condition A2 of Development Consent SSD 10418 requires that:

*A2. The development may only be carried out:*

- (a) in compliance with the conditions of this consent;*
- (b) in accordance with all written directions of the Planning Secretary;*
- (c) generally in accordance with the EIS and EAs;*
- (d) generally in accordance with the Development Layout in Appendix 2.*

## **9.2 TRAFFIC MANAGEMENT PLAN REVISION**

In accordance with Part D, Condition D7 of Development Consent SSD 10418, this TMP will be reviewed, and if necessary revised (to the satisfaction of the Planning Secretary), within three months of the submission of:

- an incident report (Condition D9 or D10 of Development Consent SSD 10418);
- an MPO Annual Review (Condition D11 of Development Consent SSD 10418);
- an Independent Environmental Audit (IEA) (D13 of Development Consent SSD 10418);
- any modifications to the conditions of the Development Consent SSD 10418 (unless the conditions require otherwise); and
- notification of a change in development phase under Part A, Condition A12 of Development Consent SSD 10418.

In accordance with Part D, Condition D8 of Development Consent SSD 10418, within 6 weeks of conducting any such review, the Planning Secretary will be advised of the outcomes of the review and any revised documents submitted to the Planning Secretary for approval.

In accordance Part A, Condition A24 of Development Consent SSD 10418, MACH Energy may submit a revised TMP for the approval of the Planning Secretary at any time and may also submit any revision to this TMP on a staged basis.

In accordance with Part A, Condition A25 of Development Consent SSD 10418, if agreed with the Planning Secretary, a revision to this TMP required under Development Consent SSD 10418 may be prepared without undertaking consultation with all parties nominated under the relevant conditions of Development Consent SSD 10418.

This TMP will be reviewed and updated (if required) following the reclassification of the roads discussed in Section 3.5, in consultation with the relevant roads authority.

This TMP will be reviewed and updated (if required), following completion of the Bengalla Road realignment works to address the demolition of the Bengalla Road bridge and, unless otherwise agreed by the Planning Secretary, reinstatement of the road reserve, in consultation with MSC (Section 6.1.1).

## **9.3 INDEPENDENT ENVIRONMENTAL AUDIT**

In accordance with Part D, Condition D13 of Development Consent SSD 10418, an IEA of the MPO will be conducted by a suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Planning Secretary.

The IEA will assess the environmental performance of the MPO and assess whether it is complying with the relevant requirements of Development Consent SSD 10418. In addition, the IEA will review the adequacy of the TMP, and if necessary, appropriate measures or actions to improve the environmental performance of the MPO will be recommended.

Within one year of commencement of development under Development Consent SSD 10418 and every 3 years after, MACH Energy shall commission an IEA of the MPO, unless the Planning Secretary directs otherwise.

In accordance with Part D, Condition D14 of Development Consent SSD 10418, within three months of undertaking the IEA, MACH Energy will submit a copy of the IEA report to the Planning Secretary and any other NSW agency that requests it, together with its response to any recommendations contained in the audit report.

## 10 CONTINGENCY PLAN

In accordance with Part D, Condition D5(f) of Development Consent SSD 10418, where any exceedance of performance measures (Section 8) has occurred, MACH Energy shall, at the earliest opportunity, implement the following Contingency Plan:

- The Environmental Superintendent will report the incident in accordance with Section 11.1.
- MACH Energy will apply adaptive management (Section 10.1).
- MACH Energy will identify the appropriate course of action with respect to the identified impact(s), in consultation with technical specialists, the DPE and any other relevant agencies, as necessary. For example, contingency measures, such as, but not limited to, those described in Section 10.2.
- MACH Energy will submit a report describing the proposed course of action to the DPE for approval.
- MACH Energy will implement the approved course of action to the satisfaction of the DPE.

### 10.1 ADAPTIVE MANAGEMENT

In accordance with Part D, Condition D4 of Development Consent SSD 10418, MACH Energy will assess and manage risks to comply with the criteria and/or performance measures outlined in Section 8.

Where any non-compliance with the criteria and/or performance measures occurs, at the earliest opportunity, MACH Energy will:

- take all reasonable and feasible steps to ensure that the exceedance ceases and does not recur;
- consider all reasonable and feasible options for remediation and submit a report to the DPE describing these options and preferred remediation measures; and
- implement remediation measures as directed by the Planning Secretary.

### 10.2 POTENTIAL CONTINGENCY MEASURES

Specific contingency measures for an exceedance of the performance measures specified in Section 8 may include:

- the conduct of additional monitoring (e.g. increase in monitoring frequency), which may inform further specific contingency measures;
- an audit of the transport management system, including existing transport management measures;
- toolbox talks and/or augmentation of induction procedure;
- the adoption of alternative transport routes or schedules; and
- the provision of suitable mitigation or compensation if warranted (e.g. in the event of loss of livestock due to MPO-related traffic).

MACH Energy will also implement any preferred contingency measures identified as reasonable and practicable to address an incident, as directed by the Planning Secretary.

## 11 REPORTING PROCEDURES

In accordance with Part D, Condition D5(h) of Development Consent SSD 10418, MACH Energy has developed protocols for managing and reporting the following:

- incidents;
- complaints;
- non-compliances with statutory requirements; and
- exceedances of the impact assessment criteria and/or performance criteria.

These protocols are described in detail in the [MPO EMS](#).

In accordance with Part D, Condition D17 of Development Consent SSD 10418, MACH Energy will provide regular reporting on the environmental performance of the Project on the MACH Energy website (<https://machenergyaustralia.com.au/>).

In accordance with Part D, Conditions D15 and D16 of Development Consent SSD 10418, any conditions of Development Consent SSD 10418 that require the carrying out of monitoring or an environmental audit, whether directly or by way of a plan, strategy or program, is taken to be a condition requiring monitoring or an environmental audit under Division 9.4 of Part 9 of the NSW EP&A Act. These conditions include incident notification (Part D, Condition D9 of Development Consent SSD 10418); non-compliance notification (Part D, Condition D10 of Development Consent SSD 10418); reporting and response; compliance reporting; and IEA (Part D, Condition D13 of Development Consent SSD 10418).

### 11.1 INCIDENT REPORTING

An incident is defined as an occurrence or a set of circumstances that causes or threatens to cause material harm to the environment and/or breaches or exceeds the limits or performance measures/criteria in Development Consent SSD 10418.

In the event that review of monitoring data or a complaint indicates an incident has occurred, the incident will be reported in accordance with Part D, Condition D9 of Development Consent SSD 10418. The Planning Secretary will be notified in writing via the Major Projects website immediately after MACH Energy becomes aware of an incident. The notification will identify the Project name and development application number and set out the location and nature of the incident.

In accordance with Part D, Condition D10 of Development Consent SSD 10418, within seven days of becoming aware of a non-compliance MACH Energy will notify DPE of the non-compliance.

The notification must be made in writing via the [Major Projects Website](#) and will:

- identify the MPO (including the Development Application number and name);
- set out the condition of Development Consent SSD 10418 that the incident is non-compliant with;
- describe the location and nature of the incident;
- the reason for the non-compliance (if known); and
- what actions have been, or will be, undertaken to address the non-compliance.



## 11.2 COMPLAINTS

MACH Energy maintains a Community Hotline (1800 886 889), which is dedicated to the receipt of community complaints. The Community Hotline is publicly advertised in a variety of MACH Energy's public communication tools and is available during operating hours (i.e. 24/7), to receive any complaints. Communication received from the hotline is recorded in a Community and Stakeholder Engagement Database.

MACH Energy has developed a procedure that outlines its commitment to receiving, responding to and maintaining a record of phone calls from the community. This procedure is supported by a Community and Stakeholder Engagement Register. This is described in MACH Energy's EMS.

In accordance with Part D, Condition D17 of Development Consent SSD 10418, a complaints register will be made available on the MACH Energy website (<https://machenergyaustralia.com.au/>) and updated monthly.

### **11.3 NON-COMPLIANCES WITH STATUTORY REQUIREMENTS**

A protocol for managing and reporting non-compliances with statutory requirements has been developed as a component of the MPO EMS and is described below.

Compliance with all approval plans and procedures is the responsibility of all personnel (staff and contractors) employed on or in association with MACH Energy and the Project. In accordance with Part A, Condition A2 of Development Consent SSD 10418, MACH Energy will carry out the development in accordance with:

- the conditions of Development Consent SSD 10418;
- all written directions of the Planning Secretary;
- the 1997 EIS, EA (MOD 1), EA (MOD 2), EA (MOD 3), EA (MOD 4), the Project EIS; and
- with the Development Layout in Appendix 2 of Development Consent SSD 10418.

MACH Energy will undertake regular inspections, internal audits and initiate directions identifying any remediation/rectification work required, and areas of actual or potential non-compliance.

As described in Section 11.1, MACH Energy will report incidents in accordance with Part D, Condition D9 of Development Consent SSD 10418.

A review of compliance with all conditions in Development Consent SSD 10418 and relevant MLs will be undertaken prior to (and included within) each MPO Annual Review (Section 9.1).

Additionally, in accordance with Part D, Condition D13 of Development Consent SSD 10418, an IEA (Section 9.3) will be conducted by a suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Planning Secretary to assess whether MACH Energy is complying with the requirements in Development Consent SSD 10418.

### **11.4 ACCESS TO INFORMATION**

In accordance with Part D, Condition D17 of Development Consent SSD 10418, the MACH Energy website will be maintained as a tool for the provision of information to stakeholders and interested parties about the operation and environmental performance of the MPO. Information required by MACH Energy to be available on the website is outlined in MACH Energy's EMS.

## 12 REFERENCES

- Amber Organisation (2019) *Maxwell Solar Farm – Traffic Impact Assessment*.
- Austrroads (various) *Guide to Road Design (Parts 1 to 7)*.
- Austrroads (various) *Guide to Traffic Management (Parts 1 to 10)*.
- DC Engineering (2013) *Bengalla Mining Company Pty Limited Continuation of Mining Project Traffic and Transport Impact Assessment*.
- EMGA Mitchell McLennan (2010) *Mount Pleasant Project Modification Environmental Assessment Report*. Prepared for Coal & Allied Operations Pty Ltd.
- Environmental Resources Management Mitchell McCotter (1997) *Mount Pleasant Operation Environmental Impact Statement*.
- GHD (2015) *Department of Planning and Environment Thomas Mitchell Drive Contributions Study*.
- MACH Energy Australia Pty Ltd (2017a) *Mount Pleasant Operation (DA 92/97) – South Pit Haul Road Modification*.
- MACH Energy Australia Pty Ltd (2017b) *Mount Pleasant Operation – Mine Optimisation Modification Environmental Assessment*.
- MACH Energy Australia Pty Ltd (2017c) *Mount Pleasant Operation – Rail Modification Environmental Assessment*.
- MACH Energy Australia Pty Ltd (2021) *Mount Pleasant Optimisation Project Environmental Impact Statement*.
- Mangoola Coal Operations Pty Ltd (2021) *Mangoola Open Cut Traffic Management Plan*.
- Muswellbrook Shire Council (2022) *Ordinary Council Meeting Business Paper 1 February 2022*.
- National Transport Commission (2007) *Guidelines for Managing Heavy Vehicle Driver Fatigue*.
- National Transport Commission (2022) *Australian Code for the Transport of Dangerous Goods by Road & Rail*.
- New South Wales Resources Regulator (2018) *Fatigue Management Guide*.
- Standards Australia (various) *Manual of uniform traffic control devices*.
- The Transport Planning Partnership (2020) *Mount Pleasant Optimisation Project Road Transport Assessment*.
- The Transport Planning Partnership (2024) *Castlerock Road, Muswellbrook Existing Road, Road Safety Audit*.
- Transport for New South Wales (2020) *Additional Access Conditions Oversize and overmass heavy vehicles and loads*.
- Transport for New South Wales (2022a) *Traffic Control at Work Sites Technical Manual*.

Transport for New South Wales (2022b) *NSW Combined Higher Mass Limits (HML) and Restricted Access Vehicle (RAV) Map*.

**ATTACHMENT 1**  
**ENDORSEMENT OF PENNY DALTON**



Mariah Lane  
Environmental Advisor  
Mach Energy Australia Pty Ltd  
PO Box 407  
Newcastle, NSW, 2300

17/05/2023

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**Subject: Endorsement of Suitably Qualified and Experience Specialists for Mount Pleasant Optimisation Project**

Dear Ms. Lane

I refer to your request for the Planning Secretary's endorsement of suitably qualified and experienced specialists to prepare management plans for the Mount Pleasant Optimisation Project (SSD-10418) and Mount Pleasant Coal Mine DA (92/97 until its surrender).

The Department has reviewed the nominations and information you have provided and is satisfied that the following specialists are suitably qualified and experienced. Accordingly, I can advise that the Planning Secretary approves/endorsees the appointment of the following specialists:

- Dr Colin Driscoll of Hunter Eco for preparation of the Biodiversity Management Plan
- Chloe Annandale of Landroc for preparation of the Rehabilitation Strategy
- John Wassermann of RWDI for the preparation of the Blast Management Plan and Noise Management Plan
- Jamie Reeves of Niche Environment and Heritage for the preparation of the Aboriginal Cultural Heritage Management Plan
- Aleks Todoroski of Aleks Air Sciences for the preparation of the Air Quality and Greenhouse Gas Management Plan
- Dr Andrew Sneddon of Extent for the preparation of the Historic Heritage Management Plan
- Penny Dalton of TTPP for the preparation of the Traffic Management Plan
- Camilla West of ATC Williams and Bryce McKay of AGEC for the preparation of the Water Management Plan

If you wish to discuss the matter further, please contact Wayne Jones on (02) 6575 3406.

Yours sincerely



Stephen O'Donoghue  
Director  
Resource Assessments  
As nominee of the Planning Secretary

**APPENDIX A**  
**TRAFFIC RELATED CONDITIONS –**  
**DEVELOPMENT CONSENT SSD 10418**

MPO Development Consent SSD 10418 Part B	Section where addressed in this TMP document
<p><b>Removal of Rail Loop and Infrastructure Corridor</b></p> <p><i>B94. By no later than 31 October 2022, unless otherwise agreed to by the Planning Secretary, the Applicant must:</i></p> <ul style="list-style-type: none"> <li><i>(a) remove all infrastructure associated with the development within Mining Lease No. 1645 (ML 1645) south of Wybong Road (other than infrastructure which the operator of the Bengalla mine agrees with the Applicant, in writing, can remain in situ);</i></li> <li><i>(b) do all things available to transfer or cause the grant of a mining lease over that part of ML 1645 south of Wybong Road to the operator of Bengalla mine (or its nominee);</i></li> <li><i>(c) transfer the freehold land owned by the Applicant within ML 1645 south of Wybong Road to the operator of Bengalla mine (or its nominee) at rural market value;</i></li> <li><i>(d) release any easements for pipeline and rail spur within or in the vicinity of ML 1645 south of Wybong Road which benefit land owned by the Applicant; and</i></li> </ul>	<p>As of 12 September 2022, all infrastructure associated with the development within ML 1645 (south of Wybong Road) has been removed and confirmed by Bengalla Mine. “Remain In Situ Items” have been agreed upon by both parties in writing, from consultation letters dated since September 2022.</p> <p>The transfer of the grant over ML 1645 was completed on 23 December 2023, in favour of the Bengalla Joint Venture.</p> <p>The transfer of the freehold land within ML 1645 was completed on 6 December 2019.</p> <p>The release of the relevant easements for the pipeline and rail spur within the vicinity of ML 1645 was completed on 14 October 2022.</p>
<p><i>B95. Following the completion of the Bengalla Link Road under SSD-5170, or as otherwise directed by the Planning Secretary, the Applicant must demolish the Bengalla Link Road bridge and, unless otherwise agreed by the Planning Secretary, reinstate the road reserve to the satisfaction of Council.</i></p>	<p>Section 6.1.1</p>
<p><b>Road Works</b></p> <p><i>B96. The Applicant must, at its own expense:</i></p> <ul style="list-style-type: none"> <li><i>(a) construct the Northern Link Road realignment (Option 1 or Option 2, as described in the documents in Condition A2(c)), prior to the closure of the eastern portion of Castlerock Road; and</i></li> <li><i>(b) undertake a safety audit for the full length of Castlerock Road and the intersection of Dorset Road and Kayuga Road, and implement any recommendations that may apply to the western portion of Castlerock Road within 1km of the site that would continue to serve public traffic, prior to the closure of the eastern portion of Castlerock Road; to the satisfaction of Council<sup>a</sup></i></li> </ul> <p><i><sup>a</sup> If there is a dispute between relevant parties about the implementation of this condition, then any party may refer the matter to the Planning Secretary for resolution.</i></p>	<p>Noted.</p> <p>Section 5.3</p>

MPO Development Consent SSD 10418 Part B	Section where addressed in this TMP document
<p><b>Road Access and Signage</b></p> <p><i>B97. The Applicant must, as far as reasonable and feasible:</i></p> <ul style="list-style-type: none"> <li><i>(a) implement strategies to minimise project-related use of Castlerock Road;</i></li> <li><i>(b) require all project-related traffic to use Bengalla Link Road and Wybong Road for access; and</i></li> <li><i>(c) ensure that workers associated with major construction activities as defined in the Traffic Management Plan are transported to the site via shuttle bus.</i></li> </ul> <p><i>B98. The Applicant must maintain signs and give at least 24 hours' notice of temporary road closures. The location and wording of the signs are to be approved by Council. A protocol is to be established, in consultation with the emergency service providers and Council, to permit the passage of emergency vehicles during road closures.</i></p>	<p>Sections 4.3.1 and 4.3.3</p> <p>Section 4.2</p> <p>Section 5.4</p> <p>Section 5.5</p>
<p><b>Road Maintenance</b></p> <p><i>B103. During the development, the Applicant must maintain the roads and intersections between the Bengalla Mine main entrance and the Mount Pleasant Mine main entrance, including:</i></p> <ul style="list-style-type: none"> <li><i>(a) part of Bengalla Link Road; and</i></li> <li><i>(b) part of the Wybong Road.</i></li> </ul> <p><i>B104. The Applicant must develop a Maintenance Management Plan in respect of these roads, to the satisfaction of Council.</i></p> <p><i>B105. The Applicant must contribute to the upgrade and maintenance of Thomas Mitchell Drive, proportionate to its impact (based on usage) on that infrastructure, in accordance with the Contributions Study prepared by GHD titled, "Thomas Mitchell Drive Contributions Study, August 2018" (as amended from time to time).</i></p> <p><i>For Thomas Mitchell Drive, the contributions must be paid to Council in accordance with:</i></p> <ul style="list-style-type: none"> <li><i>(a) the payment schedule in the Contributions Study for the upgrade works; and</i></li> <li><i>(b) the maintenance schedule established in accordance with the Contributions Study during the life of the development, unless otherwise agreed with Council.</i></li> </ul>	<p>Section 5.2</p> <p>Section 5.2</p> <p>Section 3.1.8</p>
<p><b>Notes:</b></p> <ul style="list-style-type: none"> <li><i>• In making a determination about the applicable contribution/s under this condition, the Planning Secretary will take into account the contributions already paid or required to be paid towards the upgrade and maintenance of the local road network in the Muswellbrook Local Government Area under this consent and any associated Planning Agreement with council.</i></li> <li><i>• If there is a dispute between the relevant parties about the implementation of this condition, then any party may refer the matter to the Planning Secretary for resolution.</i></li> </ul>	

**APPENDIX B**  
**CONSULTEE FEEDBACK – KEY CORRESPONDENCE**

**Enquiries**  
**Please ask for** Theresa Folpp  
**Direct** 02 6549 3700  
**Our reference** 24/4328

09 April 2024

**Andrew Reid**  
**Superintendent Environment (Operations)**  
**MACH Energy**

Dear Mr Reid

**Mount Pleasant Mine SSD 10418 – Muswellbrook Shire Council (Staff) Comments on Traffic Management Plan**

Reference is made the request via the Major Projects website to provide feedback on the 'Mount Pleasant Operation – Traffic Management Plan v1' (TMP). The TMP and consultation with Council is required under Condition B99 of SSD 10418.

Council staff appreciate the opportunity to provide feedback on the TMP and its submission is as follows:

**Northern Link Road**

01. Road and traffic related matters for construction of the Northern Link Road are being addressed within the following documentation:

- a. *Northern Link Works Deed* (Works Deed) currently being finalised between Council and MACH Energy (MACH); and
- b. *Construction Traffic Management Plan* prepared as part of the Works Deed.

To avoid duplication, Council staff request that the scope of the TMP be updated to reflect this. Section 4.3.4 should be deleted and Section 5.1.2 updated accordingly.

02. The Works Deed should be referenced in Section 2 of the TMP;

**Road Maintenance**

03. MACH Energy has an existing Maintenance Management Plan (MMP) with Council. Staff request the existing MMP be updated rather than develop a new one. Please update Section 5.2 accordingly.

04. The MMP must include provisions for maintenance during construction activities (including for construction of the Northern Link Road).

05. Specify roads to be maintained within Section 5.2.

06. Section 5.2 states that 'construction vehicles would access the construction site in accordance with the available road network and the designated site restrictions'. Please outline the designated site restrictions.



## **Road Safety Audit**

07. MACH Energy must consult with Council prior to undertaking the recommendations following the road safety audit of Castlerock Road. Council may provide input to the recommendations to improve the outcomes of the recommendations. Please update Section 5.3 accordingly.
08. MACH Energy should consult with Council following any non-compliances to determine whether any action should be carried out. Please update Section 5.3 accordingly.

## **Shuttle Buses**

09. Condition B99 part f)iii) of SSD 10418 states the following:

*Define the major construction activities during which shuttle buses will be used to transport construction workers to the site.*

This is not clear. Section 4.3.2 of the TMP states that shuttle buses will be used during 'major construction events (e.g CHPP module construction)'. Major construction events requiring shuttle buses needs to be clearly stated and an indicative timeline shown in the TMP, similar to that provided in Table 2.1 of the *Road Transport Assessment* (TPP, 2020).

10. Section 4.3.2 of the TMP states that shuttle buses would operate during major construction events 'as per the methods employed during the major construction periods to date'. Please update the TMP to include these methods, including pick up and drop off locations and parking arrangements at these locations.

## **Community Notification of Traffic Impacts**

11. The Road Closure Management Plan that forms part of the Blast Management Plan will need to be prepared in consultation with Council Staff and approved by Council's Local Traffic Committee. Please update Section 5.5 accordingly.
12. The TMP should note that school bus operation times were confirmed by local bus operators.

## **Exemptions to Requirements**

13. Staff assume that exemptions would only occur during emergency events only, please clarify in Section 5.6. Where time permits, an exemption should be undertaken in consultation with Council.

## **Traffic Signage**

14. The 'No Access to Kayuga Bridge Road' sign should identify that this applies to MACH Energy employees only. Other road users are able to use Kayuga Bridge.
15. The terms 'Local Traffic Only' should be removed from the sign on the Kayuga Bridge. Non-local road users are able to use Kayuga Bridge.
16. Any update to traffic signs will need to be approved by Council.

- a. The approved heavy vehicle route includes the section of Denman Road east of Thomas Mitchell Drive;
- b. The light vehicle access route is for employees who reside in specific locations;
- c. Please label the intersection assessment locations consistent with the *Road Transport Assessment* (TPP, 2020).

27. Please update Section 5.5 to state that Blast Notifications are placed on the MSC Public Website <https://www.muswellbrook.nsw.gov.au/blast-notifications/>

### **Resubmission for Final Approval**

28. Please update the TMP and reissue for final approval by Council Staff.

Council staff appreciates the opportunity to comment and would be pleased to provide additional information if requested. Should you need to discuss the above, please contact the undersigned on 02 6549 3700 or email [council@muswellbrook.nsw.gov.au](mailto:council@muswellbrook.nsw.gov.au).

Yours faithfully



Theresa Folpp  
**Environmental Planning Officer**

16 October 2023

File No: NTH23/00447/01  
Your Ref: SSD-10418-PA-6; PAE-62475974

Department of Planning & Environment  
GPO Box 39  
SYDNEY NSW 2001

**SSD-10418-PA-6**

**Review of TMP – Mount Pleasant Operation, Lot 2 DP735667, Wybong Road Muswellbrook**

I refer to the request by the Department of Planning and Environment (DPE) dated 19 September 2023 seeking input from Transport for NSW (TfNSW) to the Traffic Management Plan (TMP) for the abovementioned development proposal.

TfNSW key interests are the safety and efficiency of the transport network, the needs of our customers and the integration of land use and transport in accordance with the *Future Transport Strategy*.

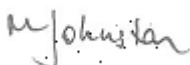
In accordance with Part B, Condition B99 of the development consent, TfNSW has reviewed the Traffic Management Plan prepared by MACH Energy Australia Pty Ltd and provides the following comments to assist the consent authority:

TfNSW response

- As per the requirements of the Work Health Safety (WHS) Regulations, the author and their qualifications are to be provided in the TMP.
- TfNSW recommends that the cumulative impact of the Mount Pleasant Operation construction traffic and the traffic of the surrounding mine sites, as outlined in the Road Transport Assessment prepared by TTPP and dated 14 December 2020, is provided as an appendix and referenced in Part 6 of the TMP.

On DPE's determination of this matter, please forward a copy of the Notice of Determination to TfNSW for record and / or action purposes. Should you require further information please contact Shelby Wells, Development Services Case Officer, on 1300 207 783 or 0429 155 086 by emailing [development.north@transport.nsw.gov.au](mailto:development.north@transport.nsw.gov.au).

Yours faithfully



**Marg Johnston**  
Team Leader Development Services  
North Region | Community & Place  
Regional & Outer Metropolitan

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OFFICIAL

## Over-dimension Vehicles and School Bus Interactions

17. The TMP must clearly state that MACH Energy will avoid movement of heavy vehicles, over-dimensional vehicles and avoid shift changes during school bus operating hours on routes used by school buses. The terms 'to the extent possible' or 'where practicable / possible' must be removed.

## Drivers Code of Conduct

18. The Drivers Code of Conduct should include requirements shuttle bus drivers.

## Dilapidation Protocols

19. MACH Energy propose to undertake pre- and post dilapidations surveys and repair any roads identified to have been damaged. Section 7 should be updated to clarify which roads will be surveyed and repaired (where applicable).
20. Pre- and Post-construction surveys must be undertaken in consultation with Council. Please update Section 7 accordingly.
21. The third paragraph in Section 7 is repeated, this should be removed.

## Reclassification of Local Roads

22. Council staff have commenced discussions with Transport for NSW (TfNSW) in relation to the reclassification of a number of local roads including Bengalla Link Road, Wybong Road and Kayuga Road to enable transport of wind turbine componentry to the New England Renewable Energy Zone. Further information can be found in the business paper for the January Council Ordinary Meeting (see link below).

<https://www.muswellbrook.nsw.gov.au/meetings/2024/>

Section 3 of the TMP should include a brief discussion on this (under relevant headings) and Table 3 updated accordingly.

23. Please add a commitment to Section 9 that the TMP will be reviewed and updated (if required) following the reclassification of the abovementioned roads, in consultation with the relevant roads authority.

## Voluntary Planning Agreement

24. Section 3.1.8 of the TMP states that 'the general terms of a **continuation of the current** VPA are provided in Appendix 7 of Development Consent SSD 10418'. This reads as though the VPA General Terms as provided in DA 92/97 will continue with SSD 10418. This is not the case. General Terms have been amended for SSD 10418. The wording in this section should be updated.

## Other

25. Table 8 - Please include a column and label whether vehicles are considered light or heavy vehicles.
26. Figure 3 of the TMP requires clarification:

**APPENDIX C**  
**DRIVERS' CODE OF CONDUCT**

## 1 PURPOSE

This Drivers' Code of Conduct has been prepared to comply with Part B, Condition B99(g) of Development Consent for State Significant Development (SSD) 10418 for the Mount Pleasant Optimisation Project. The aim of the Drivers' Code of Conduct is to minimise the impacts of traffic associated with the Mount Pleasant Operation (MPO) on local residents by reducing noise and limiting traffic, resulting in a safer road environment for the whole community. All employees, visitors and contractors engaged to work at the MPO are required to drive in a responsible manner and adhere to the requirements of the Drivers' Code of Conduct.

The purpose of the Drivers' Code of Conduct is to ensure drivers:

- adhere to posted speed limits or other required travelling speeds;
- adhere to the designated transport routes; and
- implement safe driving practices.

This Drivers' Code of Conduct applies to all MACH Energy Pty Ltd (MACH Energy) personnel and any person conducting business for the MPO, whether a direct employee or employed by another organisation providing a service or product to MACH Energy. The Drivers' Code of Conduct also applies to drivers operating shuttle buses transporting employees or contractors.

It applies 24 hours per day, seven days per week.



## 2 YOUR REQUIREMENTS

You are expected to comply with all relevant legal requirements and accepted community standards while conducting your business. Whether you are an employee of MACH Energy or operate any service to MACH Energy, your behaviour on the road reflects upon the community reputation of MACH Energy and your full compliance with this Drivers' Code of Conduct is required.

### 2.1 GENERAL REQUIREMENTS

All Drivers must:

- hold a valid Australian State or Territory issued driver licence and notify their employer or operator immediately should the status or conditions of their driver licence change in any way; and
- know and comply with all road rules pertaining to your vehicle.

### 2.2 SAFE DRIVING PRACTICES

All drivers of light and heavy vehicles must always:

- display courtesy and restraint towards other road users;
- observe road signs and adjust your driving to the existing conditions;
- observe any special limits or conditions that apply for road works;
- observe and, where safe to do so, avoid native fauna, particularly at dawn and dusk when increased fauna activity raises the potential for fauna strike;
- travel at no more than posted speed limit;
- drive cautiously past schools, school buses, parks, shopping centres or other high activity areas;
- drive in a manner that would help avoid an accident despite inappropriate or incorrect actions of other road users or poor driving conditions;
- avoid the need for heavy braking by being aware of conditions ahead and leaving an appropriate gap between your vehicle and other road users;
- only overtake when safe to do so;
- be alert to hazards on or near the road and adjust driving as necessary;
- slow down when stock warning signs are displayed, to allow time to react to avoid a collision with animals that are on or near the road, noting the behaviour of animals may be unpredictable;
- adhere to MACH Energy's drug and alcohol policies (employees will be required to sign this policy at the commencement of their employment/contract) and notify their employer if they are not fit for duty prior to commencement of their shift;
- have necessary documentation at hand and ready to present to security staff on entry and departure from site to avoid unnecessary delays to other vehicles;
- drive according to prevailing conditions (such as during inclement weather) and reduce speed, if necessary; and
- refrain from using mobile devices when driving a vehicle or operating equipment – if the use of a mobile device is required, the driver can use the phone hands-free or pull over in a safe and legal location prior to the use of any mobile device.

In addition to the above, all drivers of heavy vehicles must always:

- ensure loads are secured, restrained or covered (if relevant) and meet the current loading requirements and performance standards;
- brake with care, remembering that heavy vehicles will react differently according to loading and road conditions;
- minimise or avoid use of engine brakes near residences and built-up areas;
- consider avoidance of travel in fog or times of low visibility where practicable, or amend speed and driving practices accordingly;
- descend hills at no more than the signposted truck speed limit, or in the lowest gear to suit the conditions; and
- be aware that a heavy vehicle may become a hazard if it is parked close to or broken down on the roadway. Use portable warning signs alongside the vehicle and at least 50 metres (m) in front of and behind the vehicle if the vehicle must be stopped on or within 1 m of travel lanes.

All MPO-related employees and contractors will undergo an induction prior to commencing work at the MPO, which will include the Drivers' Code of Conduct and training regarding manager and personal responsibilities for traffic management.

### **2.3 DESIGNATED TRANSPORT ROUTES**

All drivers of light and heavy vehicles must comply with the designated transport routes when driving to and from the MPO site, with the exception of oversize or overmass (OSOM) vehicles which will be assessed on a case-by-case basis subject to relevant permits and load declarations.

For transparency and consistency with the Road Transport Assessment (TTPP, 2020) undertaken as part of the Mount Pleasant Optimisation Project Environmental Impact Statement and associated Traffic Management Plan under Development Consent SSD 10418, all possible transport routes have been identified below and identified on Figure 1.

There is **STRICTLY NO ACCESS** at any time to Kayuga Road between Wybong Road and Aberdeen Street (i.e. access is not available via Kayuga Bridge) (Figure 1).

As far as reasonable and feasible, all drivers must avoid the use of Castlerock Road. Designated transport routes to and from the MPO and alternative routes are outlined in Table 1.

Shift times from Mangoola and Bengalla Mines have been considered. Measures to avoid any wide loads between the times 5:00 am to 7:30 am and 4:00 pm and 6:30 pm are to be taken by delivery coordinators and contractors.

**Figure 1**  
**MPO Site Access**



**Table 1**  
**Designated Transport Routes**

Trip Origin or Destination	Access Route
<b>Light Vehicles</b>	
Muswellbrook	Wybong Road – Bengalla Road – Denman Road (East)
Singleton and Lower Hunter	Wybong Road – Bengalla Road – Denman Road – Thomas Mitchell Drive – New England Highway (South)
Scone, Aberdeen and North	Wybong Road – Kayuga Road – Blairmore Lane or Dartbrook Road – New England Highway
Sandy Hollow, Merriwa and West	Wybong Road (West)
Denman and Jerrys Plains	Wybong Road – Bengalla Road – Denman Road (West)
<b>Heavy Vehicles (GVM &gt; 4.5 tonnes, excluding OSOM)</b>	
Muswellbrook	Wybong Road – Bengalla Road – Denman Road (East)
Singleton and Lower Hunter	Wybong Road – Bengalla Road – Denman Road – Thomas Mitchell Drive – New England Highway (South)
Denman	Wybong Road – Bengalla Road – Denman Road (West)

In accordance with Part B, Condition B97(b) of Development Consent SSD 10418, as far as reasonable and feasible, all MPO-related traffic is required to use Bengalla Road and Wybong Road for access into the MPO area.

## 2.4 ACCESS TO SITE

Consistent with Development Consent SSD 10418, the principal access to the site (Figure 2) is to be via:

- Denman Road;
- Bengalla Road;
- Wybong Road; and
- Mine site entrance (1100 Wybong Road).

At no point in time is access to site via the Kayuga Bridge permitted. This applies to:

- all personnel travelling from to and from work; and
- all deliveries to the site arranged by contractors and MACH Energy.

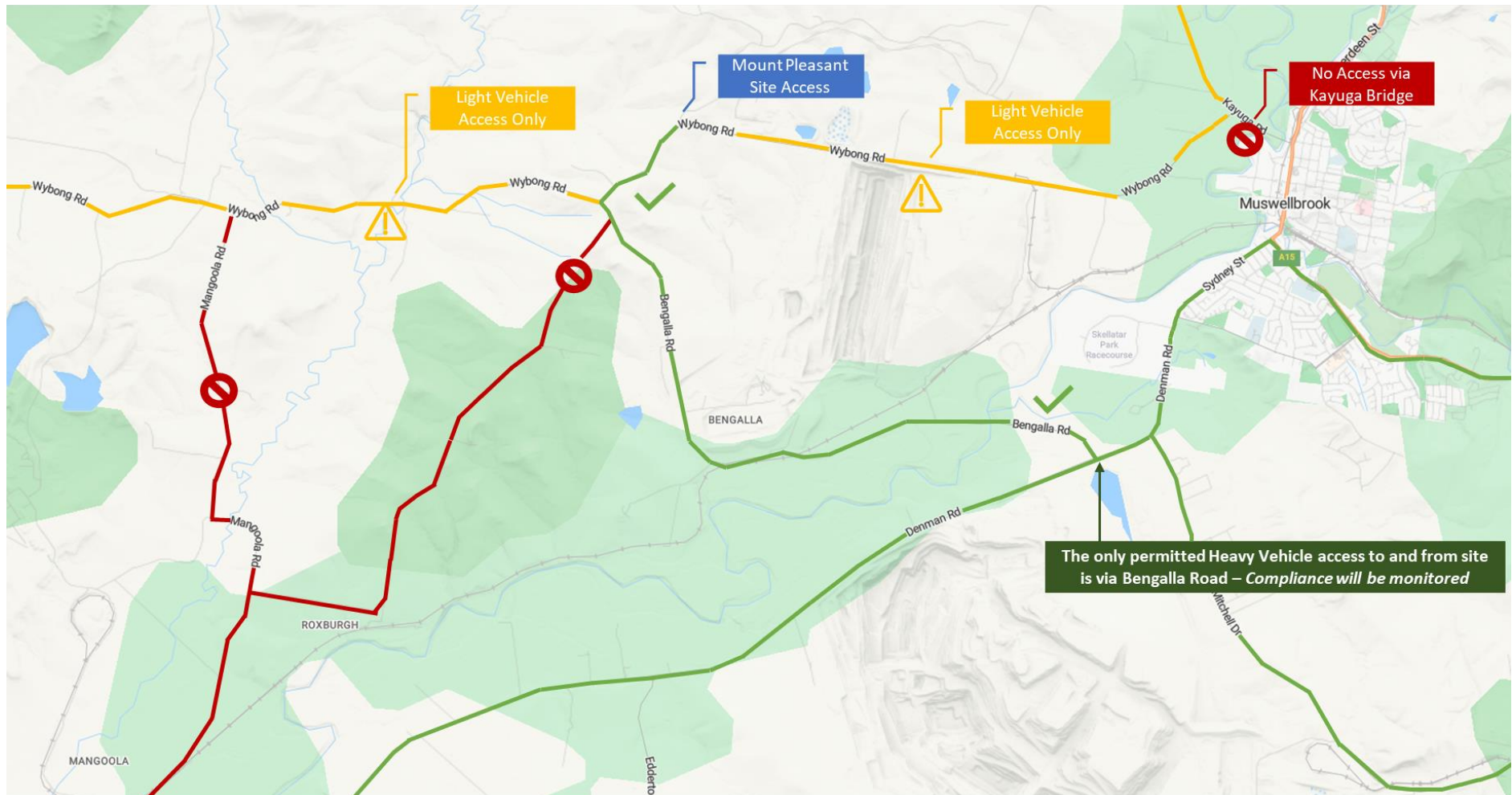
This does not apply to:

- emergency vehicles accessing site and surrounding areas; and
- local traffic, that is not accessing the MPO site.

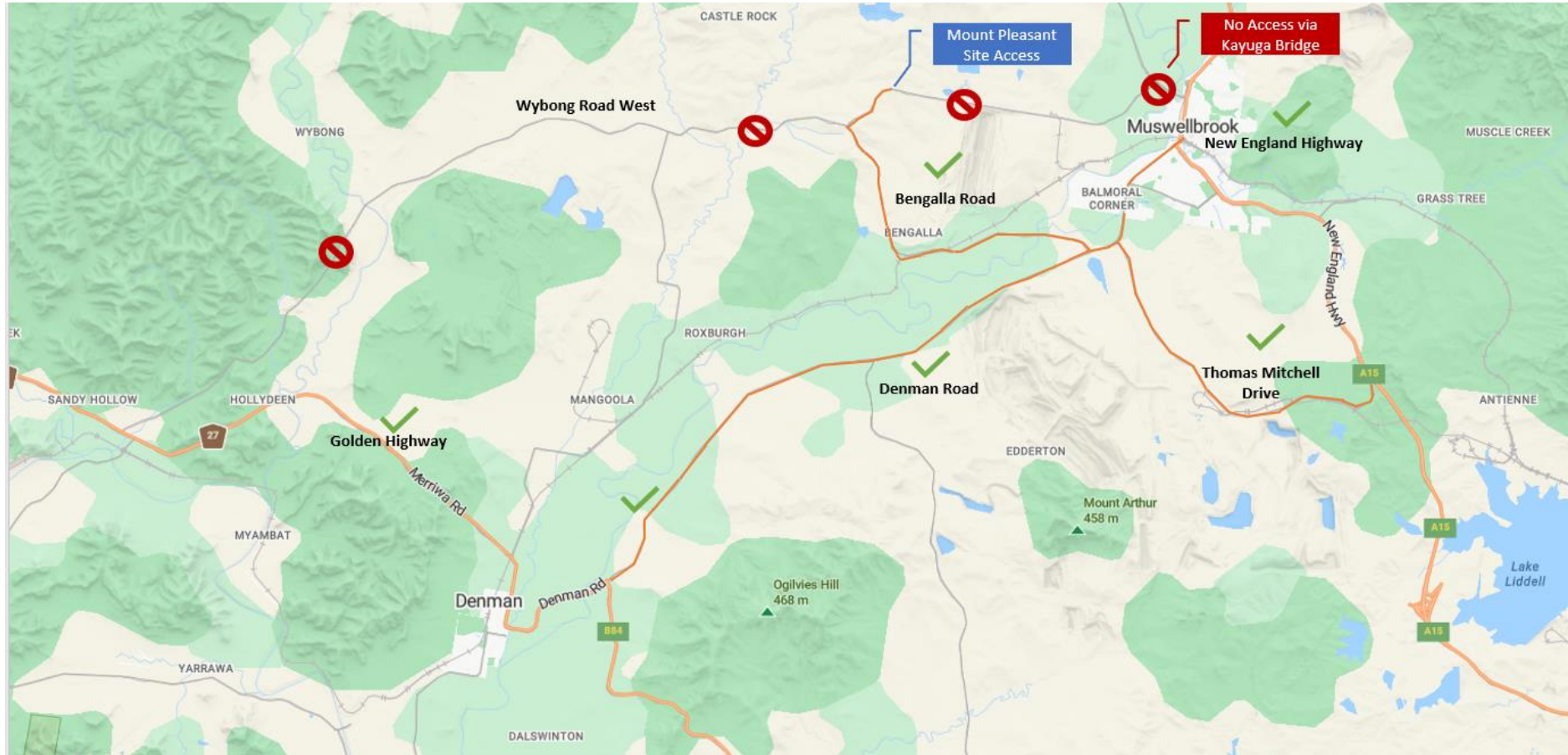
During both mine construction and mine operations, the mine traffic will be effectively controlled and directed by site and contractor coordinators to use Bengalla Road when travelling to and from site. Heavy vehicles from the west must use Golden Highway and continue through to Denman Road and enter Bengalla Road for access to the MPO (Figure 3).



**Figure 2**  
**Light Vehicle Access Roads**



**Figure 3**  
**Heavy Vehicle Access Roads**





### **3 FAILURE TO COMPLY**

Failure by any MACH Energy employee to comply with this Drivers' Code of Conduct will lead to disciplinary action. If the offending party represents another company, then the action may be referred to the employer for disciplinary action and/or may result in the suspension or cancellation of a service contract or arrangement between MACH Energy and the company.

#### **3.1 RECORDING OF BREACHES**

MACH Energy maintains a Community Hotline (1800 886 889), which is dedicated to the receipt of community complaints, including complaints against any driver observed contravening this Code. The Community Hotline is publicly advertised in a variety of MACH Energy's public communication tools, including on all MACH Energy owned/leased heavy vehicles, and is available during operating hours (i.e. 24/7), to receive any complaints. Communication received from the hotline is recorded in a Community and Stakeholder Engagement Database.

MACH Energy will maintain a record of complaints received from the community, including those regarding MPO-related heavy vehicles and unacceptable behaviour and will be investigated as described in MACH Energy's Environmental Management Strategy.

#### **3.2 PENALTIES FOR NON-COMPLIANCE**

If a person or company is found to be acting contrary to this Drivers' Code of Conduct, disciplinary action may be taken. This will include, but not be limited to:

- 1<sup>st</sup> occurrence – warning letter;
- 2<sup>nd</sup> occurrence – warning letter and suspension of driver from site for a defined period; and
- 3<sup>rd</sup> occurrence – final warning letter and review of the person's or company's continued working association with MACH Energy.

Note that these breach notices apply over a 12-month rolling period. MACH Energy reserves the right to review a person's or company's continued working association with the mine following any breaches of the Drivers' Code of Conduct.

**APPENDIX D**

**EXTRACT FROM THE ROAD TRANSPORT ASSESSMENT (TTPP, 2020)**

## 5 Baseline Future Traffic Conditions

This section describes the expected changes to traffic conditions in the region with approved and planned developments and growth in traffic compared with the surveyed traffic conditions. These are the conditions which are expected to occur without the Project, and thus their cumulative impacts form the baseline conditions against which the Project can be assessed.

### 5.1 Non-Project Developments in the Region

#### 5.1.1 Mount Pleasant Operation

Should the Project not proceed, the Mount Pleasant Operation can be expected to continue to operate with extraction of up to 10.5 Mtpa until 22 December 2026. Until that time, its traffic generation is expected to remain similar to that surveyed during the traffic survey program described in Section 0.

After 2026, mining activity would cease, and some traffic would be expected to continue to be generated as a result of decommissioning and rehabilitation activity, which would be completed prior to 2036. The small volume of traffic that would be generated by ongoing care and maintenance activity in the 2036 scenario has therefore not been considered for the purpose of this assessment.

Should the Project not proceed, the traffic generated by the Mount Pleasant Operation and captured by the traffic survey program would therefore be removed from the road network after 2026. Based on the surveyed midblock traffic volumes during the AM and PM Project peak hours, and the expected distribution of Mount Pleasant Operation traffic as forecast (GHD, 2017), the resulting changes to two-way traffic on the surrounding network in 2036 compared with those surveyed in 2020 have been estimated and are presented in Table 5.1.

**Table 5.1: Change in Mount Pleasant Operation Traffic from 2020 to 2036 – No Project**

Road and Location	AM Peak Hour		PM Peak Hour		Daily	
	Light	Heavy	Light	Heavy	Light	Heavy
Mount Pleasant Operation Road	-109	-19	-70	-7	-734	-154
Bengalla Road Wybong Road to Denman Road	-76	-19	-49	-7	-507	-154
Denman Road Golden Highway to Bengalla Road	-4	-1	-3	-1	-26	-16
Denman Road Bengalla Road to Thomas Mitchell Drive	-72	-18	-46	-6	-481	-138
Denman Road Thomas Mitchell Drive to Muswellbrook	-43	-10	-28	-4	-287	-76
Kayuga Road Wybong Road to Kayuga	-26	0	-17	0	-180	0
New England Highway Thomas Mitchell Drive to Singleton	-29	-8	-18	-2	-194	-62
Thomas Mitchell Drive Denman Road to New England Highway	-29	-8	-18	-2	-194	-62
Wybong Road Kayuga Road to Mount Pleasant Operation	-26	0	-17	0	-180	0
Wybong Road Mount Pleasant Operation to Bengalla Road	-83	-19	-53	-7	-554	-154
Wybong Road Bengalla Road to Golden Highway	-7	0	-4	0	-47	0

AM Project peak hour 6:00 am to 7:00 am (vehicles per hour).

PM Project peak hour 4:00 pm to 5:00 pm (vehicles per hour).

Daily (vehicles per day).

### 5.1.2 Bengalla Mine

The Bengalla Mine is an open cut coal mine located immediately to the south of the Mount Pleasant Operation, and 4 km west of Muswellbrook. Development Consent SSD-5170 (as modified) permits open cut coal mining operations and associated activities to 2039, with open cut mining at a rate of up to 15 Mtpa ROM coal, utilising a workforce of up to 900 FTE personnel at peak production. Modifications 1 to 4 to that Consent have been approved, which generally do not impact the traffic generation potential of the operational mine.

Bengalla Mining Company commenced operating under SSD-5170 from 1 October 2015 (Bengalla Mining Company, 2019). The production schedule anticipated by the Bengalla Continuation Project EIS (Hansen Bailey, 2013) suggested that coal production would reach its maximum in Year 4, and continue at that level throughout the life of the mine.

Bengalla Mine currently employs approximately 800 employees and contractors (Bengalla Mining Company, 2020), with production of 12.5 million tonnes (Mt) of ROM coal expected during 2019 (Bengalla Mining Company, 2019). Activity at the time of the traffic surveys was therefore below the approved peak production of 15 Mtpa of ROM coal and peak workforce of 900 people. It is therefore assumed that up to 100 additional people may work at the mine at any time throughout the remainder of the life of the mine above those working at the time of the traffic surveys.

Based on the travel characteristics presented by DC Engineering (2013), Table 5.2 summarises the additional traffic that may be expected to be generated by the potential increase in the workforce at Bengalla Mine. The DC Engineering assessment identified the AM and PM peak hours for traffic generation of Bengalla Mine as occurring between 6:00 am and 7:00 am, and between 4:00 pm and 5:00 pm, respectively.

**Table 5.2: Average Weekday Continuation of Bengalla Mine Project Additional<sup>A</sup> Operational Traffic**

Road and Location	AM and PM Peak Hours <sup>B</sup> (vehicles per hour)		Daily (vehicles per day)	
	Light	Heavy	Light	Heavy
Bengalla Mine Access Road	50	2	100	12
Bengalla Road Bengalla Mine to Wybong Road	14	0	28	0
Wybong Road Bengalla Road to Kayuga Road	14	0	28	0
Kayuga Road Wybong Road to Kayuga	14	0	28	0
Bengalla Road Bengalla Mine to Denman Road	36	2	72	12
Denman Road Bengalla Road to Denman	3	0	6	0
Denman Road Bengalla Road to Thomas Mitchell Drive	33	2	68	12
Denman Road Thomas Mitchell Drive to Muswellbrook	20	0	40	0
Thomas Mitchell Drive Denman Road to New England Highway	13	2	28	12
New England Highway South of Thomas Mitchell Drive	13	2	28	12

<sup>A</sup> Potential additional traffic above 2020 levels, until 2039.

<sup>B</sup> AM peak hour 6:00 am to 7:00 am, PM peak hour 4:00 pm to 5:00 pm.

### 5.1.3 Mangoola Coal

Mangoola Coal is an open cut coal mine located approximately 20 km west of Muswellbrook and 10 km north of Denman. It is owned by Mangoola Coal Operations Pty Limited (a subsidiary of Glencore plc), and is approved under PA 06\_0014 (as modified) to produce up to 13.5 Mtpa of ROM coal until November 2029. Product coal is transported by rail, and Mangoola Coal operates 24 hours per day, seven days per week.

The EIS for the proposed Mangoola Continued Operations Project (MCOP) is currently under assessment by the DPIE, and involves development of a new open cut pit to continue to extract approximately 13.5 Mtpa of ROM coal, extension of the life of the mine to late 2030, construction of a haul road overpass over Wybong Road and Big Flat Creek, and realignment of a section of Wybong Post Office Road (Umwelt, 2019).

GHD (2019) indicates that the MCOP proposes a 16-month construction phase with a peak construction workforce of approximately 145 people. The construction workforce and heavy vehicles associated with construction activity would increase the traffic generation of the mine during the construction stage only. The MCOP anticipates no change to the hours of operation, the number of operational employees or the coal transport methods at Mangoola Coal once the construction stage is completed.

If approved, the construction stage of the MCOP would be completed by 2022 (GHD, 2019), and when operational, would not impact the ongoing traffic conditions on the wider road network in the region, beyond the localised impact of the realignment of Wybong Post Office Road. This assessment therefore assumes that the MCOP will be approved and that the traffic generated by Mangoola Coal and captured in the Project traffic surveys in 2020 would continue at the same level until 2030. As a robust assessment of future traffic conditions (i.e., to ensure that potential cumulative future traffic demands are not understated), it has been assumed that for the Project 2036 scenario, post-mining rehabilitation activity at Mangoola Coal would generate the same volumes of traffic as the existing operational activity.

### 5.1.4 Maxwell Underground Project

The EIS for a proposed underground coal mining operation, known as the Maxwell Underground Project, at the site of the former Drayton Mine is currently under assessment. Mining activity at the Drayton Mine ceased in October 2016, and care and maintenance and rehabilitation activities have occurred at the site since then, with vehicular access via Thomas Mitchell Drive and the site access road. The Maxwell Underground Project would use existing Maxwell Infrastructure to produce coal over a period of approximately 26 years. TTPP (2019) assessed the road traffic generation of the Maxwell Underground Project during its initial construction phase (nominally 2020), its short-term peak operational stage (nominally 2026) and its longer-term peak operational stage (nominally 2033).



TTPP (2019) assessed the traffic being generated by care and maintenance and rehabilitation activities for the Maxwell Infrastructure (formerly known as Drayton Mine) occurring during June 2018 and expected to continue for five years. It was found that care and maintenance activity generates some 98 vehicle trips per day on the Maxwell Infrastructure Road, of which 66 vehicles per day travel to or from the east on Thomas Mitchell Drive and 32 vehicles per day travel to or from the west on Thomas Mitchell Drive. Care and maintenance activities would cease as a separate activity upon commencement of the Maxwell Underground Project if approved, and hence, that traffic would no longer be generated.

Table 5.3 summarises the peak hourly and daily traffic expected to be generated by the Maxwell Underground Project in 2026 as forecast in TTPP (2019). The morning peak hour for traffic generated by the Maxwell Underground Project is anticipated to occur between 6:00 am and 7:00 am, and the evening peak hour for traffic generated by the Maxwell Underground Project is anticipated to occur between 5:00 pm and 6:00 pm.

**Table 5.3: Average Weekday Maxwell Underground Project Traffic in 2026**

Road and Location	AM Peak Hour		PM Peak Hour		Daily	
	Light	Heavy	Light	Heavy	Light	Heavy
Site Access Road South of Thomas Mitchell Drive	98	6	90	6	414	80
Denman Road South of Thomas Mitchell Drive	7	0	7	0	28	2
Denman Road North of Thomas Mitchell Drive	1	1	1	1	12	14
New England Highway North of Thomas Mitchell Drive	44	3	40	3	184	32
New England Highway South of Thomas Mitchell Drive	46	2	42	2	190	32
Thomas Mitchell Drive East of Site Access Road	90	5	82	5	374	64
Thomas Mitchell Drive West of Site Access Road	8	1	8	1	40	16

AM peak hour 6:00 am to 7:00 am (vehicles per hour).

PM peak hour 5:00 pm to 6:00 pm (vehicles per hour).

Daily (vehicles per day).

Table 5.4 summarises the peak hourly and daily traffic expected to be generated by the Maxwell Underground Project in 2033 as forecast in TTPP (2019). As for 2026, the morning peak hour for traffic generated by the Maxwell Underground Project is anticipated to occur between 6:00 am and 7:00 am, and the evening peak hour for traffic generated by the Maxwell Underground Project is anticipated to occur between 5:00 pm and 6:00 pm.

**Table 5.4: Average Weekday Maxwell Underground Project Traffic in 2033**

Road and Location	AM Peak		PM Peak		Daily	
	Light	Heavy	Light	Heavy	Light	Heavy
Site Access Road South of Thomas Mitchell Drive	92	5	84	5	382	60
Denman Road South of Thomas Mitchell Drive	8	0	7	0	26	2
Denman Road North of Thomas Mitchell Drive	1	1	1	1	12	10
New England Highway North of Thomas Mitchell Drive	40	2	38	2	168	24
New England Highway South of Thomas Mitchell Drive	43	2	38	2	176	24
Thomas Mitchell Drive East of Site Access Road	83	4	76	4	344	48
Thomas Mitchell Drive West of Site Access Road	9	1	8	1	38	12

AM peak hour 6:00 am to 7:00 am (vehicles per hour).

PM peak hour 5:00 pm to 6:00 pm (vehicles per hour).

Daily (vehicles per day).

For the purpose of this assessment, it has been assumed that the Maxwell Underground Project will proceed, and that its forecast traffic generation for 2026 and 2033 will coincide with the Project traffic generation in 2026 and 2036. For a robust assessment to ensure future cumulative traffic demands are not understated, the traffic generated by care and maintenance activity and captured in the 2020 traffic surveys has not been removed from the road network for the future assessment periods.

### 5.1.5 Maxwell Solar Project

The Maxwell Solar Project (SSD 9820) was approved by the Minister for Planning and Public Spaces on 19 August 2020. The Maxwell Solar Project will comprise the installation of a solar plant with a capacity of 25 megawatts (MW) at the Maxwell Infrastructure, which will supply electricity to the Maxwell Underground Project and/or the National Energy Market.

Construction of the Maxwell Solar Project is expected to take 18 months if constructed in one stage, although construction may be staged and therefore take longer than 18 months. The Maxwell Solar Project is expected to operate for more than 25 years.

TTPP (2019) and Amber Organisation (2019) assessed the traffic impacts of the Maxwell Solar Project, which found that during peak construction periods, the Maxwell Solar Project will generate 100 to 110 light vehicle trips per day, and 20 heavy vehicle trips per day. TTPP (2019) anticipated that construction of the Maxwell Solar Project would coincide with construction of the Maxwell Underground Project in 2020. The Maxwell Solar Project construction activity would therefore not coincide with the Project construction or long-term operational stages, and has not been considered further in this assessment.

Once operational, the Maxwell Solar Project would operate with a very small workforce of three operational staff attending the Maxwell Solar Project each day via the site access road, and delivery and visitor trips would be negligible. Considering the traffic generated by the operational stage of the Maxwell Solar Project would be fewer than 10 vehicle trips per day, it has not been considered further in this assessment.

### 5.1.6 Mt Arthur Coal Mine

The Mt Arthur Coal Mine is located approximately 5 km south-west of Muswellbrook, accessed via Thomas Mitchell Drive. It is owned by Hunter Valley Energy Coal Pty Ltd, a wholly owned subsidiary of BHP. The open cut mining operation is approved to mine up to 32 Mtpa of ROM coal until 30 June 2026 under Project Approval 09\_0062. The approval includes realignment of the northern section of Edderton Road and its intersection with Denman Road. The Mt Arthur Underground has not yet commenced longwall extraction and is approved until 2030.

GTA Consultants (2012) assessed the road transport implications of the Mt Arthur Coal Open Cut Modification, which estimated the overall generation of the Mt Arthur Coal Mine to be as presented in Table 5.5.

**Table 5.5: Mt Arthur Coal Mine Traffic Generation Forecasts**

Road and Location	Peak Hours		Daily	
	Light	Heavy	Light	Heavy
<b>Forecast for 2019 and 2022</b>				
Thomas Mitchell Drive Access	322	23	3,505	289
Edderton Road Access	36	7	72	14
<b>Forecast for 2026</b>				
Thomas Mitchell Drive Access	322	23	3,505	289
Edderton Road Access	43	7	72	14

Source: GTA Consultants, 2012

Those forecasts assumed that the operational workforce at the Mt Arthur Coal Mine would remain stable at up to 2,600 employees throughout the period from 2012 to 2026, however over that period, the workforce at the Mt Arthur Coal Mine has decreased. As a result, it can be expected that the traffic generation of Mt Arthur Coal Mine has remained below these forecasts.

Based on the Mt Arthur Coal Mine's current workforce of 1,915 FTE workers (BHP, 2019), and expected future reductions in the workforce to 1,500 FTE in 2026 (as suggested by TfNSW in its consideration of the Maxwell Underground Project), the traffic generated by the mine at the time of the traffic surveys and during the future years assessed for the Project has been estimated as presented in Table 5.6. This assumes that by 2036, the Mt Arthur Coal Mine would have ceased operating, and that care and maintenance activity would generate low traffic volumes which are not considered here.

**Table 5.6: Mt Arthur Coal Mine Traffic Generation Estimates**

Road and Location	Peak Hours		Daily	
	Light	Heavy	Light	Heavy
<b>2020 – Workforce 1,915 FTE in June 2019<sup>A</sup></b>				
Thomas Mitchell Drive Access	242	17	2,628	218
Edderton Road Access	27	5	54	10
<b>2026 – Workforce 1,500 FTE<sup>B</sup></b>				
Thomas Mitchell Drive Access	193	14	2,104	174
Edderton Road Access	26	4	44	8
<b>2036 – Cessation of Operations</b>				
Thomas Mitchell Drive Access	0	0	0	0
Edderton Road Access	0	0	0	0

<sup>A</sup> Traffic generation estimated to be approximately 75 percent of 2019 forecast (Table 5.5).

<sup>B</sup> Traffic generation estimated to be approximately 60 percent of 2026 forecast (Table 5.5).

The effects of the reduced traffic generation of the Mt Arthur Coal Mine on its contribution to peak hourly and daily traffic on the road network has been estimated, with regard to the surveyed temporal distribution of Mt Arthur Coal Mine traffic (GTA Consultants, 2012). That distribution demonstrates that the AM peak hour for Mt Arthur Coal Mine traffic generation occurs between 6:00 am and 7:00 am, and that during the Project PM peak hour (4:00 pm to 5:00 pm), the total Mt Arthur Coal Mine traffic generation is approximately 60 percent of that occurring during its PM peak (6:00 pm to 7:00 pm).

Table 5.7 presents the forecast changes in traffic generated by the Mt Arthur Coal Mine in 2026 compared with those occurring during the traffic surveys in 2020 during the Project peak hours and average weekday total.

**Table 5.7: Change in Mt Arthur Coal Mine Traffic from 2020 Surveys to 2026**

Road and Location	AM Peak		PM Peak		Daily	
	Light	Heavy	Light	Heavy	Light	Heavy
Mt Arthur Coal Mine Main Access	-49	-3	-28	-2	-524	-42
Mt Arthur Coal Mine Edderton Road Access	-1	-1	-1	-1	-10	-2
Thomas Mitchell Drive Mt Arthur Coal Mine to Denman Road	-32	-2	-18	-1	-346	-26
Thomas Mitchell Drive Mt Arthur Coal Mine to New England Highway	-17	-1	-10	-1	-186	-16
New England Highway south of Thomas Mitchell Drive	-17	-1	-10	-1	-186	-16
Denman Road south of Thomas Mitchell Drive	-3	0	-1	0	-36	-2
Denman Road Thomas Mitchell Drive to Muswellbrook	-30	-3	-18	-2	-316	-28

AM peak hour 6:00 am to 7:00 am (vehicles per hour).

PM peak hour 4:00 pm to 5:00 pm (vehicles per hour).

Daily (vehicles per day).

Table 5.8 presents the forecast changes in traffic generated by the Mt Arthur Coal Mine in 2036 compared with those occurring during the traffic surveys in 2020 during the Project peak hours and average weekday total.

**Table 5.8: Change in Mt Arthur Coal Mine Traffic from 2020 Surveys to 2036**

Road and Location	AM Peak		PM Peak		Daily	
	Light	Heavy	Light	Heavy	Light	Heavy
Mt Arthur Coal Mine Main Access	-242	-17	-145	-10	-2,628	-218
Mt Arthur Coal Mine Edderton Road Access	-27	-5	-16	-3	-54	-10
Thomas Mitchell Drive Mt Arthur Coal Mine to Denman Road	-166	-12	-101	-7	-1,726	-134
Thomas Mitchell Drive Mt Arthur Coal Mine to New England Highway	-94	-9	-56	-5	-938	-90
New England Highway south of Thomas Mitchell Drive	-94	-9	-56	-5	-938	-90
Denman Road south of Thomas Mitchell Drive	-23	-2	-15	-1	-176	-4
Denman Road Thomas Mitchell Drive to Muswellbrook	-159	-13	-95	-8	-1,582	-136

AM peak hour 6:00 am to 7:00 am (vehicles per hour).

PM peak hour 4:00 pm to 5:00 pm (vehicles per hour).

Daily (vehicles per day).

A sensitivity analysis of the potential cumulative traffic volumes in 2036 if the Mt Arthur Coal Mine was to receive approval to extend operations until at least 2036 is provided in Section 6.11.

### 5.1.7 Dartbrook Mine

The Dartbrook Mine is an underground coal mine located immediately north of the Mount Pleasant Operation. DA 231-7-200 permits mining of up to 6 Mtpa of ROM coal until 5 December 2022, however the mine was placed in care and maintenance in 2006. AQC Dartbrook Management Pty Limited (a wholly owned subsidiary of Australian Pacific Coal Limited) has received consent to restart mining operations using bord and pillar methods and varied coal clearance and handling system. DA 231-7-200 continues to limit the mining operations to 5 December 2022, however Australian Pacific Coal Limited has indicated that it intends to appeal the rejection of an application to extend the life of the mine by an additional five years to 5 December 2027 (Newcastle Herald, 2019).

During care and maintenance, Dartbrook Mine employed 11 full-time personnel, and recommencement of mining operations would employ an additional 26 FTE construction workers during the short-term construction phase and 99 FTE operational workers until cessation of mining operations (Hansen Bailey, 2018). The workforce would primarily access the site via New England Highway and the Dartbrook Western Access Road (Stair Street).

Therefore, Dartbrook Mine may recommence operations, which would continue until 5 December 2022. However, should the aforementioned appeal be successful, mining activity may recommence and continue until 5 December 2027. Under this scenario, the Dartbrook Mine operations may coincide with the Project construction activity in 2026.

Considering the residential distribution of the mining workforce in the region, and the likely use of the Dartbrook Western Access Road, traffic generated by the Dartbrook Mine is expected to have little overlap with Project-generated traffic on the roads in proximity to the Project. Overlap may be expected on New England Highway north of Stair Street (employees travelling to and from Scone and Aberdeen) and on New England Highway south of Thomas Mitchell Drive (employees travelling to and from Singleton). Dartbrook Mine employees living in the west may use Wybong Road and Kayuga Road via Kayuga to access Dartbrook Mine, however this would represent only a small proportion of employees, and the impacts on the road conditions are not expected to be significant.

For the purpose of this assessment, therefore the potential traffic generation of the Dartbrook Mine should it be approved to be operating in 2026 has not been considered.

#### 5.1.8 West Muswellbrook Mine

The West Muswellbrook Mine is a proposed open cut coal mine north-west of the Project. The proposed West Muswellbrook Mine comprises the extraction of up to 621 Mt of coal over a 30-year period, with an expected 15 Mtpa of saleable thermal coal for export. A rail spur and loop and coal loading infrastructure and mining infrastructure area would be constructed. A workforce of about 900 people is anticipated for operations plus additional contractors from time to time. The West Muswellbrook Mine proposes the permanent closure of Halls Road and Dorset Road and partial closure of Castlerock Road.

A Gateway Certificate for the West Muswellbrook Mine was granted in 2015. In its most recent Project Update (November 2019), Muswellbrook Coal Company indicated it recently submitted its renewal application to extend its Assessment Lease over the West Muswellbrook project area for a period of five years, and that a drilling program will be undertaken in 2020.

No details of the timing or travel characteristics of the proposed West Muswellbrook Mine are currently available, and as it is not a currently approved project, it has not been considered further in this assessment.

Notwithstanding, it is expected that any proposal for the West Muswellbrook Mine would be accompanied by a road transport assessment incorporating a cumulative traffic assessment inclusive of the Project.

### 5.1.9 Cumulative Impacts of Non-Project Developments

Table 5.9 summarises how the activity and traffic generation of the various developments described above has been assumed to vary during the Project assessment years.

**Table 5.9: Consideration of Other Developments in Project Assessment Years**

Development	Surveyed 2020	Project Construction Stage 2026	Project Operational Stage 2036
Mount Pleasant Operation (no Project)	Operational traffic accounted for in surveyed traffic volumes		Cessation of mining, removal of existing operational traffic
Bengalla Mine	Operational traffic accounted for in surveyed traffic volumes	Additional workforce traffic (Table 5.2)	
Mangoola Coal	Operational traffic accounted for in surveyed traffic volumes		Rehabilitation traffic accounted for in surveyed traffic volumes.
Maxwell Underground Project	Existing activity accounted for in surveyed traffic volumes	Operational traffic (Table 5.3)	Operational traffic (Table 5.4)
Maxwell Solar Project	No activity	Operational, with negligible traffic generation	
Mt Arthur Coal Mine	Operational traffic accounted for in surveyed traffic volumes	Operational traffic reduced below that accounted for in the surveyed traffic volumes (Table 5.6 and Table 5.7)	Cessation of mining, removal of existing operational traffic. (Table 5.6 and Table 5.8)
Dartbrook Mine	Care and maintenance activity accounted for in surveyed traffic volumes		
West Muswellbrook Mine	No activity	Subject to future assessment and approval, not accounted for in this assessment	

Table 5.10 summarises the combined effects of the various developments in 2026 as described in Table 5.9 on weekday daily and peak hour traffic volumes at locations on the road network which are relevant to the Project. These baseline volumes assume that the Project is not constructed but represent the hours during which the Project traffic generation is expected to peak (Section 6.2).



**Table 5.10: Cumulative Impacts of Non-Project Developments on Traffic Volumes 2026**

Road and Location	6:00 am to 7:00 am (vehicles per hour)		4:00 pm to 5:00 pm (vehicles per hour)		Daily (vehicles per day)	
	Light	Heavy	Light	Heavy	Light	Heavy
Bengalla Road Wybong Road to Denman Road	14	0	14	0	28	0
Denman Road Bengalla Road to Golden Highway	7	0	9	0	2	0
Denman Road Bengalla Road to Thomas Mitchell Drive	37	2	39	2	64	12
Denman Road Thomas Mitchell Drive to Muswellbrook	-7	-2	4	-1	-258	-10
Kayuga Road Wybong Road to Kayuga	14	0	14	0	28	0
New England Highway Thomas Mitchell Drive to Singleton	43	1	45	4	36	28
New England Highway Thomas Mitchell Drive to Muswellbrook	45	0	40	3	184	32
Thomas Mitchell Drive Denman Road to Mt Arthur Coal Mine	-10	0	3	1	-274	2
Thomas Mitchell Drive Mt Arthur Coal Mine to Maxwell Underground Project	5	1	11	1	-114	12
Thomas Mitchell Drive Maxwell Underground Project to New England Highway	88	1	85	7	220	60
Wybong Road Mount Pleasant Operation to Kayuga Road	14	0	14	0	28	0
Wybong Road Mount Pleasant Operation to Bengalla Road	14	0	14	0	28	0
Wybong Road Bengalla Road to Golden Highway	0	0	0	0	0	0

Table 5.10 demonstrates that changes to other major developments in the region in 2026 are expected to result in significant decreases in traffic on some roads, notably Thomas Mitchell Drive between Denman Road and the Maxwell Underground Project, and Denman Road between Thomas Mitchell Drive and Muswellbrook. Increases in traffic are expected on Thomas Mitchell Drive between the Maxwell Underground Project and New England Highway, and New England Highway between Thomas Mitchell Drive and Muswellbrook.

Table 5.11 summarises the combined effects of the various developments in 2036 as described in Table 5.9 on weekday daily and peak hour traffic volumes at locations on the road network that are relevant to the Project. These baseline "No Project" volumes assume that the Project is not constructed but represent the hours during which the Project traffic generation is expected to peak (Section 6.2).

While the AM peak hour traffic generation of the Project in 2036 is expected to occur between 5:00 am and 6:00 am (Section 3.3), the AM peak hour for trips generated by the other major developments in the region tends to occur between 6:00 am and 7:00 am. Therefore, the AM peak hour assessed herein is nominally between 6:00 am and 7:00 am. This will tend to overestimate the total trips on the road network in that hour, however the difference is considered insignificant, noting that the Project's forecast trip generation between 6:00 am and 7:00 am (142 vehicles per hour) is similar to that expected to occur between 5:00 am and 6:00 am (159 vehicles per hour).

Table 5.11 demonstrates that, due to changes to other major developments in the region including closure of the Mount Pleasant Operation after 2026, significant decreases in traffic can be expected on many of the roads in 2036.

**Table 5.11: Cumulative Impacts of Non-Project Developments on Traffic Volumes 2036**

Road and Location	6:00 am to 7:00 am (vehicles per hour)		4:00 pm to 5:00 pm (vehicles per hour)		Daily (vehicles per day)	
	Light	Heavy	Light	Heavy	Light	Heavy
Bengalla Road Wybong Road to Denman Road	-62	-19	-35	-7	-479	-154
Denman Road Bengalla Road to Golden Highway	-8	-1	-3	-1	-152	-16
Denman Road Bengalla Road to Thomas Mitchell Drive	-46	-16	-16	-4	-545	-126
Denman Road Thomas Mitchell Drive to Muswellbrook	-164	-20	-93	-9	-1,785	-194
Kayuga Road Wybong Road to Kayuga Road	-12	0	-3	0	-152	0
New England Highway Thomas Mitchell Drive to Singleton	-57	-13	-16	-2	-910	-112
New England Highway Thomas Mitchell Drive to Muswellbrook	42	0	38	2	168	24
Thomas Mitchell Drive Denman Road to Mt Arthur Coal Mine	-164	-16	-93	-5	-1,836	-168
Thomas Mitchell Drive Mt Arthur Coal Mine to Maxwell Underground Project	-92	-13	-48	-3	-1,048	-124
Thomas Mitchell Drive Maxwell Underground Project to New England Highway	-15	-13	22	0	-742	-88
Wybong Road Mount Pleasant Operation to Kayuga Road	-12	0	-3	0	-152	0
Wybong Road Mount Pleasant Operation to Bengalla Road	-69	-19	-39	-7	-526	-154
Wybong Road Bengalla Road to Golden Highway	-7	0	-4	0	-47	0

## 5.2 Road Network Changes

### 5.2.1 Muswellbrook Bypass

A corridor for a future bypass of Muswellbrook is included in MSC's Local Environment Plan, and preserves a route to the east of Muswellbrook from south of Muscle Creek Road to north of Sandy Creek Road. A review of the options for the Muswellbrook Bypass (the Bypass) recommended an updated version of this route as the preferred route option, with minor route changes to improve its economic viability (RMS, 2018).

TfNSW has advised that funding for the Bypass was announced in February 2019, and the preferred route is currently being reviewed and is expected to be displayed for community feedback in late 2020. Opening of the Bypass is anticipated to occur in 2027, subject to project approval.

The preferred option proposes that at its southern end, the Bypass would connect to New England Highway approximately 4 km north of Thomas Mitchell Drive, and its northern end would connect to New England Highway approximately 4 km south of Stair Street. The Project-generated traffic would therefore only use New England Highway south of the southern end of the Bypass and north of the northern end of the Bypass. On these lengths of New England Highway, the traffic demands would not be directly impacted by the presence of the Bypass, although the Bypass may be expected to induce some additional demands due to improved travel conditions. The study of options for the Bypass prepared by RMS (2018) forecast traffic conditions on New England Highway (for the "do nothing" scenario) and on the Bypass only, in order to compare travel times, construction costs and economic viability of the options. Details of the nature of the future connections between the Bypass and New England Highway (and other roads) are not described, nor are forecasts of future traffic demands on New England Highway north and south of the Bypass presented.

Broadly, while the Bypass can be expected to reap significant benefits by removing conflicts between local and through traffic in the town centre, removing heavy vehicles from the town centre and reducing congestion for through traffic on New England Highway, its direct impacts on the roads to the west of Muswellbrook and directly serving the Mount Pleasant Operation are expected to be minimal.

## 5.2.2 Muswellbrook Mine Affected Roads Network Plan Review

MSC's *Muswellbrook Mine Affected Roads Network Plan Review* (Bitzios Consulting and Northrop [Bitzios], 2020) reviews and updates MSC's original *Mine Affected Road Network Plan* (Cardno, 2015) and was adopted by MSC on 19 May 2020. The assessment of options for the road network recommended key strategies to provide a road network that accommodates existing and future demands, including (option names are as presented in Bitzios [2020]):

- a Western Corridor connecting Golden Highway near Edderton Road with New England Highway south of Aberdeen, formed via:
  - upgrades to Edderton Road and retaining the northern deviation of Edderton Road to Denman Road (rather than reinstating the existing alignment following completion of mining at Mt Arthur Coal Mine);
  - a new link between Denman Road at the Edderton Road northern deviation and Bengalla Road, crossing the Hunter River and the railway line (Option W1);
  - connecting Wybong Road near Overton Road to Kayuga Road then east via a new bridge over the Hunter River and upgraded Burtons Lane to New England Highway north of Sandy Creek Road (Option W7);
  - connecting Castlerock Road to Dorset Road to offset the closure of Dorset Road (i.e. Mount Pleasant Operation's Northern Link Road);
- an Inner West Link created by connecting Bengalla Road to Wybong Road west of the rail line via Overton Road (Option 2B), which would then connect with the Option W7 link to New England Highway described above;
- upgrading the Wybong network including closure of Wybong Post Office Road west of the Wybong Community Hall and upgrading of Yarraman Road between Wybong Post Office Road and Wybong Road (Option W5), upgrading of Wybong Road between Sandy Hollow and Reedy Creek Road to collector standard (Option W6), manage Wybong Road between Sandy Hollow and Bengalla Road as an over-size over-mass route, and widen sections of Wybong Road to a consistent and acceptable standard; and
- improving other infrastructure including upgrading of the Hunter River bridge at Denman and Denman bypass, and reclassification of Thomas Mitchell Drive as a State road.

The Western Corridor envisaged by the *Muswellbrook Mine Affected Roads Network Plan Review* would form a western bypass route around Muswellbrook for traffic between Golden Highway and Denman Road south of Muswellbrook, and New England Highway north of Muswellbrook. The Inner West Link is intended to improve travel efficiency between Thomas Mitchell Drive and the mines, and provide a western local bypass of Muswellbrook town. Construction of the Inner West link between Bengalla Road and Wybong Road via Overton Road may have implications for the approved construction of the Stage 2 rail spur for the Mount Pleasant Operation, with a rail over road overpass at Wybong Road and a rail over road bridge at Overton Road (Section 2.1). The link from Wybong Road to New England Highway (Option W7) is noted to travel through a flood plain, with potential impacts on the flow of flood water and may have some property impacts. These aspects have not yet been investigated. Similarly, the Inner West link between Bengalla Road and Wybong Road (Option 2B) is noted to include road and bridge ramping in a flood plain area.

Even considering the high-level nature of the *Muswellbrook Mine Affected Roads Network Plan Review* (Bitzios, 2020) strategies, it is evident that further investigation of the recommended strategies would be required if it were to proceed to construction. Refinement of the options to address these and other constraints are beyond the scope of this study, which assumes that the connectivity of the road network would remain in its current state, with the known changes planned as a result of the approved Mount Pleasant Operation (Section 2.1) and other mining operations in the region (Section 5.1).

### 5.2.3 Cumulative Impacts of Road Network Changes

In the absence of detailed forecasts being available for the impacts of the Bypass and possible changes to the road network described in Bitzios (2020), the implications of the possible changes are discussed in Section 6.11.

## 5.3 Background Traffic Growth

Regardless of the status of specific developments, other changes in traffic may be expected as a result of general growth or changes in population or travel behaviour. In preparing the *Muswellbrook Mine Affected Roads Plan*, Cardno (2015) considered forecasts of background traffic growth on roads in the Muswellbrook region, taking into consideration advice from RMS Assets Branch and with reference to the study for the Bypass prepared by Hyder (2008). The Hyder study applied a marginal through traffic growth of 1.45 percent per annum on New England Highway between 2007 and 2020, and 1 percent until 2037. On that basis, the resulting background growth rates applied for the purpose of modelling future traffic volumes on the road network for the *Muswellbrook Mine Affected Roads Stage 1 Road Network Plan* (Cardno, 2015) were:

- Thomas Mitchell Drive 1.45 percent per annum for 20 years (2015 to 2035), reducing to 1 percent per annum thereafter; and

- all other local roads 1 percent per annum for 20 years (2015 to 2035) and 0.9 percent per annum thereafter.

The recent RMS (2018) study of options for the Bypass, future growth rates applied to all vehicles were:

- 1.1 percent per annum between 2024 (assumed opening date of the Bypass) and 2034; and
- 1 percent per annum thereafter to 2044 (10 to 20 years after assumed opening date).

The growth rate applied prior to 2024 is not explicitly stated, and used historical growth rates together with consideration of background population growth and higher growth rates from heavy vehicle through traffic. Rates over that period appear to be between 1.0 percent and 1.1 percent per annum.

On the basis of the above, traffic volumes on the key routes have been forecast by applying a background traffic growth rate of 1.0 percent per annum on all roads with the exception of the Mount Pleasant Operation Mine Access Road. As a robust assessment to ensure future cumulative traffic demands are not understated, the growth rate has been applied to all background traffic, including that associated with the non-Project developments described in Section 5.1, for which changes are also allowed for in the forecasts associated with each development as per Table 5.10. This effectively assumes that the existing mine-generated traffic captured by the traffic survey program will grow at the rates described above, irrespective of the expected changes in activity at each of the mines.

## 6 Project Traffic Impacts

### 6.1 Project Traffic Distribution

As described in Section 3.1.1, construction bus services would operate as required for the workforce between Muswellbrook, Scone and Aberdeen and Singleton. Table 6.1 summarises the routes that would be used by the construction shuttle buses when travelling to and from the Project. It is noted that shuttle buses operating to and from Scone and Aberdeen are likely to travel via Muswellbrook town to pick up and set down passengers, rather than running exclusive routes to/from the north. For the purpose of this assessment however, it has been assumed that exclusive services would operate to and from the north via Kayuga Road, which will overestimate the number of shuttle buses on the roads directly to the east of the Mount Pleasant Access Road should all buses operate via Muswellbrook.

**Table 6.1: Construction Workforce Shuttle Bus Travel Routes**

Bus Service	Travel Route
Muswellbrook	Wybong Road – Bengalla Road – Denman Road (East)
Scone and Aberdeen	Wybong Road – Kayuga Road – Blairmore Lane or Dartbrook Road – New England Highway
Singleton	Wybong Road – Bengalla Road – Denman Road – Thomas Mitchell Drive – New England Highway (South)

A review of the residential location of the workforce at the Mount Pleasant Operation undertaken by MACH in November 2019 found that 37 percent of the workforce resided within the Muswellbrook Local Government Area (LGA), 21 percent resided in Singleton LGA 16 percent resided in the Upper Hunter LGA, with the remainder in various other NSW LGAs and a small number living interstate. The distribution of the operational workforce for the Project is likely to differ from that of the 2019 workforce, because the latter was a combination of construction and operational workforces. Once construction is completed, a higher proportion of the workforce is expected to reside locally in the Muswellbrook, Upper Hunter and Singleton LGAs compared with that which occurred in 2019.

Table 6.2 summarises the expected residential distribution of the operational workforce and the routes those workers are likely to use when approaching and departing the Project. These generally assume that drivers will use the shortest route available, noting that some alternative routes exist and may be used by some drivers.



**Table 6.2: Operational Workforce Residential Locations and Travel Routes**

Residential Location	Percent of Workforce	Travel Route
Muswellbrook	40	Wybong Road – Bengalla Road – Denman Road (East)
Singleton and Lower Hunter	30	Wybong Road – Bengalla Road – Denman Road – Thomas Mitchell Drive – New England Highway (South)
Scone, Aberdeen and North	20	Wybong Road – Kayuga Road – Blairmore Lane or Dartbrook Road – New England Highway
Sandy Hollow, Merriwa and West	5	Wybong Road (West)
Denman, Jerrys Plains	5	Wybong Road – Bengalla Road – Denman Road (West)

With regard to access routes to and from Scone, Aberdeen and the north, drivers may use either Blairmore Lane or Dartbrook Road to travel between New England Highway and Kayuga Road. Residents of Aberdeen are more likely to use Blairmore Lane, as it is the most direct, while residents of Scone and farther north may choose to use either route. Blairmore Lane offers a slightly shorter route for those drivers, although the travel time differences are expected to be marginal between the two routes.

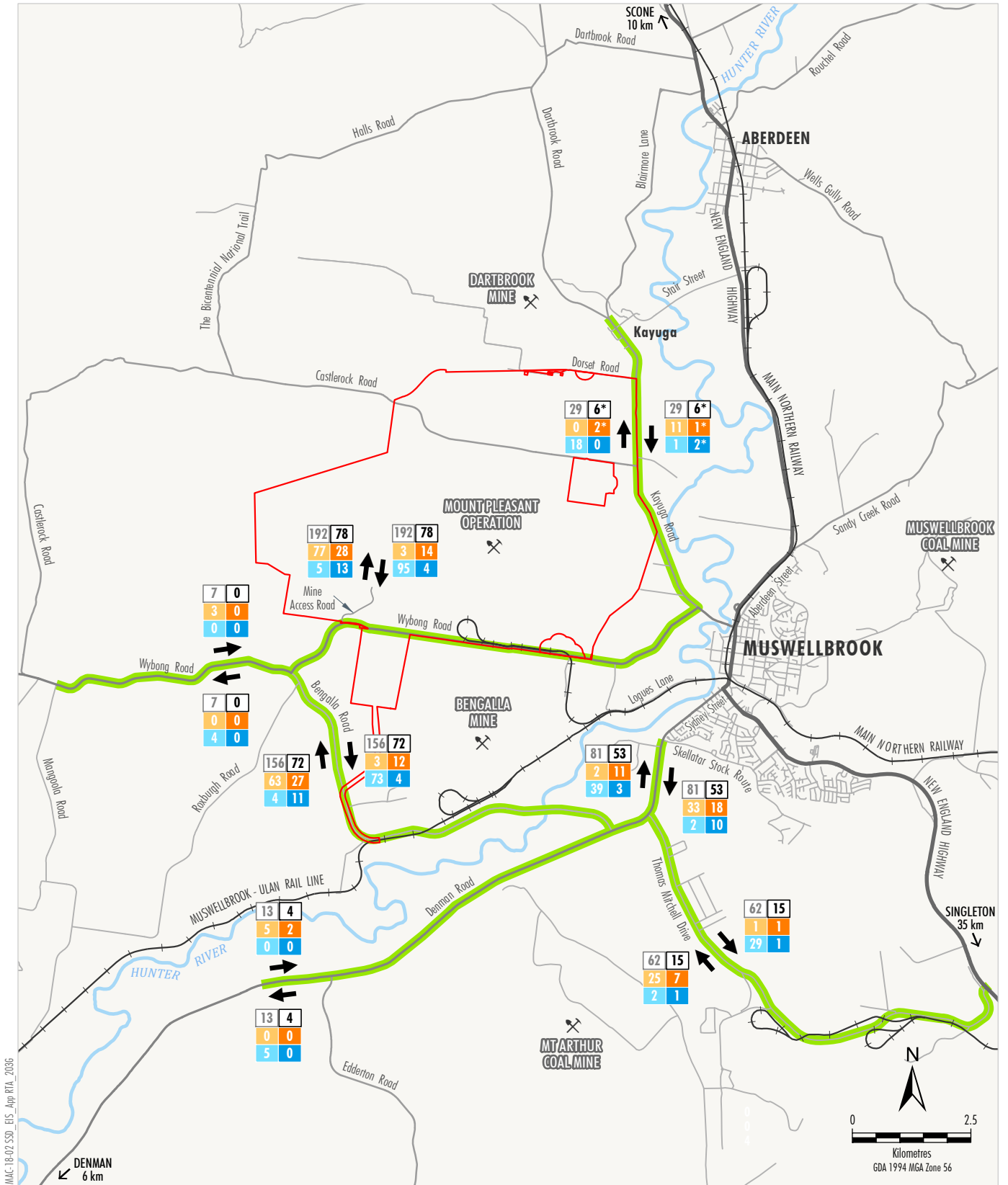
Table 6.3 presents the expected primary sources of construction and operational visitor and delivery trips, and the routes the delivery and visitor vehicles would use to access the Project. These are consistent with the existing SAMP, which requires all heavy vehicles access to and from the Mount Pleasant Operation to be via Bengalla Road.

**Table 6.3: Construction and Operational Visitor and Delivery Sources and Travel Routes**

Location	Percent	Travel Route
Muswellbrook	50	Wybong Road – Bengalla Road – Denman Road (East)
Singleton and Lower Hunter	40	Wybong Road – Bengalla Road – Denman Road – Thomas Mitchell Drive – New England Highway (South)
Denman	10	Wybong Road – Bengalla Road – Denman Road (West)

## 6.2 Total Additional Project Traffic on the Road Network

Taking into consideration the traffic forecast to be generated by the Project (Section 3.3) and its distribution on the road network (Section 6.1), the forecast additional contribution of the Project to future traffic on the road network has been determined and is presented in Figure 6.1 and summarised in Table 6.4 for 2026.



**MACHEnergy**  
 MOUNT PLEASANT OPTIMISATION PROJECT  
 Additional Project-generated Traffic  
 2026

Figure 6.1

**Table 6.4: Total Additional<sup>A</sup> Project-Generated Traffic on the Road Network 2026**

Road and Location	AM Peak Hour <sup>B</sup>		PM Peak Hour <sup>C</sup>		Daily <sup>D</sup>	
	Light	Heavy	Light	Heavy	Light	Heavy
Mount Pleasant Operation Road	80	42	100	17	384	156
Bengalla Road Wybong Road to Denman Road	66	39	77	15	312	145
Denman Road Golden Highway to Bengalla Road	5	2	5	0	26	8
Denman Road Bengalla Road to Thomas Mitchell Drive	61	37	72	15	286	137
Denman Road Thomas Mitchell Drive to Muswellbrook	35	29	41	13	162	109
Kayuga Road Wybong Road to Kayuga <sup>E</sup>	11	3 <sup>F</sup>	19	2 <sup>F</sup>	58	11 <sup>F</sup>
New England Highway Thomas Mitchell Drive to Singleton	26	8	31	2	124	28
Thomas Mitchell Drive Denman Road to New England Highway	26	8	31	2	124	28
Wybong Road Kayuga Road to Mount Pleasant Operation	11	3	19	2	58	11
Wybong Road Mount Pleasant Operation to Bengalla Road	69	39	81	15	326	145
Wybong Road Bengalla Road to Golden Highway	3	0	4	0	14	0

<sup>A</sup> Forecast additional traffic above 2020 levels.

<sup>B</sup> Vehicles per hour 6:00 am to 7:00 am.

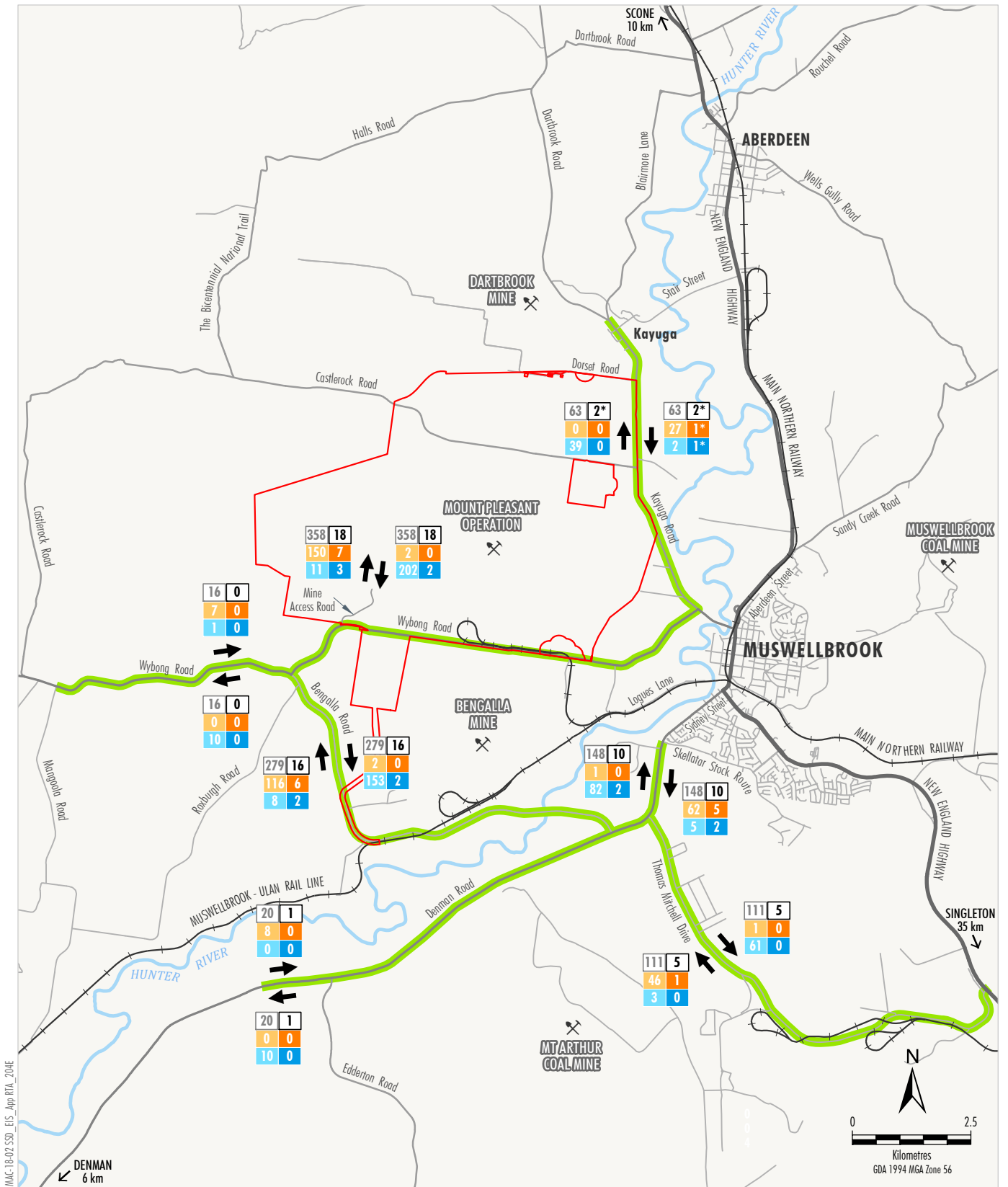
<sup>C</sup> Vehicles per hour 4:00 pm to 5:00 pm.

<sup>D</sup> Vehicles per day.

<sup>E</sup> These vehicles may use either Dartbrook Road or Blairmore Lane between Kayuga and New England Highway.

<sup>F</sup> Construction workforce shuttle buses.

Taking into consideration the traffic forecast to be generated by the Project (Section 3.3) and its distribution on the road network (Section 6.1), the forecast contribution of the Project to future traffic on the road network has been determined and is presented in Figure 6.2 and summarised in Table 6.5 for 2036.



**MACHEnergy**  
 MOUNT PLEASANT OPTIMISATION PROJECT  
 Additional Project-generated Traffic  
 2036

Figure 6.2

**Table 6.5: Total Additional<sup>A</sup> Project-Generated Traffic on the Road Network 2036**

Road and Location	AM Peak Hour <sup>B</sup>		PM Peak Hour <sup>C</sup>		Daily <sup>D</sup>	
	Light	Heavy	Light	Heavy	Light	Heavy
Mount Pleasant Operation Road	152	7	213	5	716	36
Bengalla Road Wybong Road to Denman Road	118	6	161	4	558	32
Denman Road Golden Highway to Bengalla Road	8	0	10	0	40	2
Denman Road Bengalla Road to Thomas Mitchell Drive	110	6	151	4	518	30
Denman Road Thomas Mitchell Drive to Muswellbrook	63	5	87	4	296	20
Kayuga Road Wybong Road to Kayuga <sup>E</sup>	27	1 <sup>F</sup>	41	1 <sup>F</sup>	126	4 <sup>F</sup>
New England Highway Thomas Mitchell Drive to Singleton	47	1	64	0	222	10
Thomas Mitchell Drive Denman Road to New England Highway	47	1	64	0	222	10
Wybong Road Kayuga Road to Mount Pleasant Operation	27	1	41	1	126	4
Wybong Road Mount Pleasant Operation to Bengalla Road	125	6	172	4	590	32
Wybong Road Bengalla Road to Golden Highway	7	0	11	0	32	0

<sup>A</sup> Forecast additional traffic above 2020 levels.

<sup>B</sup> Vehicles per hour 5:00 am to 6:00 am.

<sup>C</sup> Vehicles per hour 4:00 pm to 5:00 pm.

<sup>D</sup> Vehicles per day.

<sup>E</sup> These vehicles may use either Dartbrook Road or Blairmore Lane between Kayuga and New England Highway.

<sup>F</sup> Construction workforce shuttle buses.

## 6.3 Future Traffic Volumes

The future two-way peak hourly and daily traffic volumes on the average weekday have been forecast for 2026 with and without the Project. These forecasts are presented in Table 6.6 for the surveyed ATC locations, and include the cumulative impacts of expected changes at the other major developments in the region (Section 5.1), and background traffic growth (Section 5.3). Table 6.6 also presents the surveyed traffic volumes on those roads for ease of comparison against existing conditions.

**Table 6.6: Peak Hour and Daily Traffic Volumes with and without the Project in 2026**

Site <sup>A</sup>	Road	AM Peak <sup>B</sup>		PM Peak <sup>C</sup>		Daily <sup>D</sup>	
		Light	Heavy	Light	Heavy	Light	Heavy
<b>2020 – Surveyed</b>							
A	Mount Pleasant Operation Road	109	19	70	7	734	154
B	Bengalla Road south-east of Wybong Road	186	36	152	27	1,635	375
C	Wybong Road north of Bengalla Road	145	19	95	14	1,146	203
<b>2026 – Without Project</b>							
A	Mount Pleasant Operation Road	109	19	70	7	734	154
B	Bengalla Road south-east of Wybong Road	211	38	175	29	1,764	398
C	Wybong Road north of Bengalla Road	168	20	115	15	1,245	216
<b>2026 – With Project</b>							
A	Mount Pleasant Operation Road	189	61	170	24	1,118	310
B	Bengalla Road south-east of Wybong Road	277	77	252	44	2,076	543
C	Wybong Road north of Bengalla Road	237	59	196	30	1,571	361

<sup>A</sup> Refer to Figure 4.1.

<sup>B</sup> AM Project Peak 6:00 am to 7:00 am (vehicles per hour).

<sup>C</sup> PM Project Peak 4:00 pm to 5:00 pm (vehicles per hour).

<sup>D</sup> Daily (vehicles per day).

The future two-way peak hourly and daily traffic volumes on the average weekday have been forecast for 2036 with and without the Project. These forecasts are presented in Table 6.7 for the surveyed ATC locations, and include the cumulative impacts of expected changes at the other major developments in the region (Section 5.1), and background traffic growth (Section 5.3). Table 6.7 also presents the surveyed traffic volumes on those roads for ease of comparison against existing conditions.

**Table 6.7: Peak Hour and Daily Traffic Volumes with and without the Project in 2036**

Site <sup>A</sup>	Road	AM Peak <sup>B</sup>		PM Peak <sup>C</sup>		Daily <sup>D</sup>	
		Light	Heavy	Light	Heavy	Light	Heavy
<b>2020 – Surveyed</b>							
A	Mount Pleasant Operation Road	109	19	70	7	734	154
B	Bengalla Road south-east of Wybong Road	186	36	152	27	1,635	375
C	Wybong Road north of Bengalla Road	145	19	95	14	1,146	203
<b>2036 – No Project</b>							
A	Mount Pleasant Operation Road (cessation of activity)	0	0	0	0	0	0
B	Bengalla Road south-east of Wybong Road	156	23	143	25	1,438	286
C	Wybong Road north of Bengalla Road	101	3	72	10	818	84
<b>2036 – With Project</b>							
A	Mount Pleasant Operation Road	266	26	84	12	1,450	190
B	Bengalla Road south-east of Wybong Road	350	48	353	36	2,503	472
C	Wybong Road north of Bengalla Road	255	17	297	21	1,962	270

<sup>A</sup> Refer to Figure 4.1.

<sup>B</sup> AM Project Peak 6:00 am to 7:00 am (vehicles per hour).

<sup>C</sup> PM Project Peak 4:00 pm to 5:00 pm (vehicles per hour).

<sup>D</sup> Daily (vehicles per day).

## 6.4 Road Network Efficiency

The capacity of a road is the number of vehicles that can be accommodated on the road infrastructure before it fails to function as it was intended. Austroads (2020a) defines capacity as the maximum sustainable hourly rate at which vehicles can reasonably be expected to traverse a point or uniform section of a lane or roadway during a given time period under the prevailing roadway, traffic and control conditions. The capacity of a single traffic lane is affected by factors such as the pavement width and restricted lateral clearances, the presence of heavy vehicles and grades.



Austrroads (2020a) provides guidelines for the assessment of the capacity and performance of two-lane, two-way rural roads that, in turn, refer to the *Highway Capacity Manual (HCM)* (Transportation Research Board, 2016). Level of Service (LoS) represents road users' perceptions of the quality of service provided by a road link, and describes operational conditions in terms of factors such as speed and travel time, freedom to manoeuvre, traffic interruptions, comfort, convenience and safety. Levels of Service are designated A through F, with LoS A providing the best traffic conditions, with no restriction on desired travel speed or overtaking. LoS B to D describes progressively worse traffic conditions. LoS E occurs when traffic conditions are at or close to capacity, and there is virtually no freedom to select desired speeds or to manoeuvre in the traffic stream. The service flow rate for LoS E is taken as the capacity of a lane or roadway. In rural situations, LoS C is generally considered to be acceptable. At LoS C, most vehicles are travelling in platoons, and travel speeds are curtailed. At LoS D, platooning increases significantly, and the demand for passing is high, but the capacity to do so is low. The LoS experienced by drivers on two-way rural roads is dependent on the drivers' expectations regarding the road. The target for acceptable conditions is generally accepted as LoS D.

The LoS experienced by drivers on two-way rural roads is dependent on the drivers' expectations regarding the road, and three classes of road are defined in the HCM. Class I roads are those on which motorists expect to travel at relatively high speeds, and most often serve long-distance trips or provide connecting links between facilities that serve long-distance trips. Class II roads are those on which motorists do not necessarily expect to travel at high speeds, and may function as access routes to Class I facilities, serve as scenic or recreational routes or pass through rugged terrain. Class III roads serve moderately developed areas, and may be portions of a Class I or Class II highway that pass through small towns or developed recreational areas, where local traffic mixes with through traffic, and the density of unsignalised roadside access points increases.

On Class I roads, LoS is defined in terms of Percent Time Spent Following (PTSF) and Average Travel Speed (ATS), with the worst of these criteria being adopted as the LoS. On Class II roads, LoS is defined only in terms of PTSF. The PTSF is a measure of the level of opportunities to overtake, and is estimated from the demand traffic volumes, the directional distribution of that traffic, and the percentage of no-passing zones. On Class III roads, LoS is defined in terms of Percent of Free-Flow Speed (PFFS), which is the ratio of ATS to the free-flow speed, representing the ability of vehicles to travel at or near the posted speed limit. The LoS criteria for two-lane roads are as shown in Table 6.8.

**Table 6.8: Level of Service Criteria for Two-Lane, Two-Way Roads**

Level of Service	Class I		Class II	Class III
	Average Travel Speed (km/h)	PTSF (percent)	PTSF (percent)	PFFS (percent)
A	> 90	≤ 35	≤ 40	> 91.7
B	> 80 – 90	> 35 – 50	> 40 – 55	> 83.3 – 91.7
C	> 70 – 80	> 50 – 65	> 55 – 70	> 75.0 – 83.3
D	> 60 – 70	> 65 – 80	> 70 – 85	> 66.7 – 75.0
E	≤ 60	≥ 80	≥ 85	≤ 66.7

Source: Austroads (2020a).

For the purpose of this review, the surveyed Project access routes have been considered as Class II routes. It is noted that this assessment assumes a speed limit of 70 km/h applies on the Mount Pleasant Access Road. Table 6.9 summarises the LoS during the AM and PM peak hours respectively in 2026 with and without the Project.

**Table 6.9: Project Peak Hour Midblock Levels of Service in 2026**

Site <sup>A</sup>	Road	Inbound to Project		Outbound from Project	
		AM Peak	PM Peak	AM Peak	PM Peak
<b>2026 – Without Project</b>					
A	Mount Pleasant Operation Access Road	B	A	A	B
B	Bengalla Road south-east of Wybong Road	B	A	A	B
C	Wybong Road north of Bengalla Road	B	A	A	B
<b>2026 – With Project</b>					
A	Mount Pleasant Operation Access Road	C	A	A	C
B	Bengalla Road south-east of Wybong Road	C	A	A	C
C	Wybong Road north of Bengalla Road	C	A	A	C

<sup>A</sup> Refer to Figure 4.1.

AM Project Peak 6:00 am to 7:00 am (vehicles per hour).

PM Project Peak 4:00 pm to 5:00 pm (vehicles per hour).

Table 6.9 demonstrates that the midblock LoS would be satisfactory in 2026 with the additional Project-generated traffic.

Table 6.10 summarises the Levels of Service during the AM and PM peak hours in 2036 with and without the Project, respectively, noting that without the Project, the Mount Pleasant Operation would cease operating and there would be no traffic on the Mount Pleasant Operation Access Road.

**Table 6.10: Project Peak Hour Midblock Levels of Service in 2036**

Site <sup>A</sup>	Road	Inbound to Project		Outbound from Project	
		AM Peak	PM Peak	AM Peak	PM Peak
<b>2036 – Without Project</b>					
A	Mount Pleasant Operation Access Road	-	-	-	-
B	Bengalla Road south-east of Wybong Road	A	A	A	A
C	Wybong Road north of Bengalla Road	A	A	A	A
<b>2036 – With Project</b>					
A	Mount Pleasant Operation Access Road	C	A	A	B
B	Bengalla Road south-east of Wybong Road	C	A	A	C
C	Wybong Road north of Bengalla Road	C	A	A	C

<sup>A</sup> Refer to Figure 4.1.

AM Project Peak 6:00 am to 7:00 am (vehicles per hour).

PM Project Peak 4:00 pm to 5:00 pm (vehicles per hour).

Table 6.10 demonstrates that the midblock LoS on the key access roads would be satisfactory in 2036 with the Project.

The surveyed and forecast peak hourly traffic on Kayuga Road north of Wybong Road are sufficiently low that formal assessment of midblock LoS is not warranted. Drivers on Kayuga Road would experience negligible interaction with other vehicles on those roads. Similarly, volumes on Blairmore Lane and Dartbrook Roads are expected to be sufficiently low that the midblock LoS would remain satisfactory throughout the life of the Project.

## 6.5 Intersection Performance

The operating characteristics of the surveyed intersections have been assessed using SIDRA INTERSECTION 9, an analysis program that determines characteristics of intersection operating conditions including the degree of saturation, average delays, and intersection LoS. The degree of saturation, or x-value, is the ratio of the arrival rate of vehicles to the capacity. The average delay, expressed in seconds per vehicle, is measured over all movements at signalised intersections, and over the movement with the highest average delay at roundabout and priority intersections. Average vehicle delay is the commonly used measure of intersection performance defined by TfNSW. Table 6.11 shows the criteria adopted by TfNSW for assessing the intersection LoS.

**Table 6.11: Intersection Level of Service Criteria**

Level of Service	Average Delay per Vehicle (seconds per vehicle)	Traffic Signals, Roundabout	Give Way & Stop Sign
A	Less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Near capacity	Near capacity, accident study required
E	57 to 70	At capacity, at signals incidents will cause excessive delays	At capacity, requires other control mode
F	Greater than 70	Extra capacity required	Extreme delay, major treatment required

As the intersections are under priority control, the reported average delay is for the movement with the highest average delay per vehicle.

Table 6.12 presents a summary of the peak hour operating characteristics of the surveyed intersections in 2020. Detailed results, including 95<sup>th</sup> percentile vehicle queues per movement are presented in Appendix D. The table also presents indicative results for the intersections of Thomas Mitchell Drive with Denman Road and New England Highway, based on the results of the 2018 surveys of those intersections (Table 4.7). The surveyed volumes on Denman Road east of Thomas Mitchell Drive in 2018 were compared with those surveyed on Denman Road west of Bengalla Road in 2020 during the same hours. The comparison found that between 6:15 am and 7:15 am, the westbound flows on Denman Road were similar in both 2018 and 2020, while eastbound flows were lower during 2018 than 2020. The assessment has therefore increased the morning peak hour eastbound flows approaching the intersection to reflect the surveyed 2020 conditions. The comparison also found that between 4:00 pm and 5:00 pm, there was a good match between both eastbound and westbound flows along Denman Road at Bengalla Road and at Thomas Mitchell Drive. The surveyed 2018 volumes at the intersection of Denman Road with Thomas Mitchell Drive are therefore considered to be reasonably indicative of 2020 conditions, and no adjustments to those flows were made to reflect 2020 conditions.

In the absence of comparative data, the surveyed 2018 volumes at the intersection of Thomas Mitchell Drive with New England Highway have been assumed to have increased at a rate of 1 percent per annum between 2018 and 2020, consistent with the background growth rate assumptions described in Section 5.3.

**Table 6.12: Intersection Operating Conditions in 2020**

Site <sup>A</sup>	Intersection	AM Peak			PM Peak		
		X-Value	Average Delay <sup>B</sup>	LoS	X-Value	Average Delay <sup>B</sup>	LoS
D	Mount Pleasant Operation Road and Wybong Road	0.04	8.0	A	0.08	8.5	A
E	Wybong Road and Kayuga Road	0.02	7.1	A	0.04	7.1	A
F	Wybong Road and Bengalla Road	0.07	9.4	A	0.08	8.5	A
G	Bengalla Road and Denman Road	0.15	13.2	A	0.18	12.3	A
-	Denman Road and Thomas Mitchell Drive	0.26	13.1	A	0.52	15.8	B
-	Thomas Mitchell Drive and New England Highway	0.18	12.3	A	0.29	13.0	A

<sup>A</sup> Refer to Figure 4.1.

<sup>B</sup> Seconds per vehicle for movement with the highest average delay per vehicle.

Table 6.13 presents a summary of the peak hour operating characteristics of the surveyed intersections in 2026 with and without the Project-generated traffic. The 2026 forecast turning movements at the intersections include the combined effects of the changes from 2020 conditions resulting from non-Project developments described in Section 5.1, and background traffic growth described in Section 5.3. These changes have been applied to the surveyed turning movements at the intersections during the busiest hours identified for traffic generated at the intersection of the Mount Pleasant Operation Access Road and Wybong Road (Section 0). Detailed results, including 95<sup>th</sup> percentile vehicle queues per movement are presented in Appendix D.

**Table 6.13: Intersection Operating Conditions in 2026**

Site <sup>A</sup>	Intersection	AM Peak			PM Peak		
		X-Value	Average Delay <sup>B</sup>	LoS	X-Value	Average Delay <sup>B</sup>	LoS
<b>2026 Baseline – Without Project</b>							
D	Mount Pleasant Operation Road and Wybong Road	0.04	8.0	A	0.08	8.5	A
E	Wybong Road and Kayuga Road	0.03	7.1	A	0.05	7.1	A
F	Wybong Road and Bengalla Road	0.07	9.5	A	0.09	8.6	A
G	Bengalla Road and Denman Road	0.18	14.1	A	0.22	12.7	A
-	Denman Road and Thomas Mitchell Drive	0.28	14.3	A	0.58	18.1	B
-	Thomas Mitchell Drive and New England Highway	0.22	13.3	A	0.39	14.1	A
<b>2026 With Project</b>							
D	Mount Pleasant Operation Road and Wybong Road	0.11	8.5	A	0.17	9.5	A
E	Wybong Road and Kayuga Road	0.04	7.2	A	0.06	7.2	A
F	Wybong Road and Bengalla Road	0.15	10.6	A	0.16	8.9	A
G	Bengalla Road and Denman Road	0.27	16.7	B	0.30	12.9	A
-	Denman Road and Thomas Mitchell Drive	0.32	16.5	B	0.68	22.9	B
-	Thomas Mitchell Drive and New England Highway	0.23	13.5	A	0.44	14.5	B

<sup>A</sup> Refer to Figure 4.1.

<sup>B</sup> Seconds per vehicle for movement with the highest average delay per vehicle.

Review of the results in Table 6.13 indicate that in 2026, the intersections can be expected to operate at satisfactory levels of service during the Project peak hours, with spare capacity and acceptable delays to vehicles.

Table 6.14 presents a summary of the peak hour operating characteristics of the surveyed intersections in 2036 with and without the Project-generated traffic. Detailed results, including vehicle queues are presented in Appendix D. The table also presents indicative results for the intersections of Thomas Mitchell Drive with Denman Road and New England Highway, based on the results of the 2018 surveys of those intersections, with adjustments made as described above.

**Table 6.14: Intersection Operating Conditions in 2036**

Site <sup>A</sup>	Intersection	AM Peak			PM Peak		
		X-Value	Average Delay <sup>B</sup>	LoS	X-Value	Average Delay <sup>B</sup>	LoS
<b>2036 Baseline – Without Project</b>							
D	Mount Pleasant Operation Road and Wybong Road	-	-	-	-	-	-
E	Wybong Road and Kayuga Road	0.03	7.1	A	0.05	7.1	A
F	Wybong Road and Bengalla Road	0.05	9.0	A	0.05	8.6	A
G	Bengalla Road and Denman Road	0.15	13.3	A	0.19	11.7	A
-	Denman Road and Thomas Mitchell Drive	0.22	13.0	A	0.53	17.3	B
-	Thomas Mitchell Drive and New England Highway	0.19	13.2	A	0.36	14.4	A
<b>2036 With Project</b>							
D	Mount Pleasant Operation Road and Wybong Road	0.12	8.6	A	0.27	8.4	A
E	Wybong Road and Kayuga Road	0.05	7.1	A	0.08	7.1	A
F	Wybong Road and Bengalla Road	0.18	11.1	A	0.24	9.1	A
G	Bengalla Road and Denman Road	0.31	18.0	B	0.41	14.1	A
-	Denman Road and Thomas Mitchell Drive	0.28	16.5	B	0.73	29.3	C
-	Thomas Mitchell Drive and New England Highway	0.22	13.7	A	0.49	15.5	B

<sup>A</sup> Refer to Figure 4.1.

<sup>B</sup> Seconds per vehicle for movement with the highest average delay per vehicle.

Review of the results in Table 6.14 indicate that in 2036, the intersections can be expected to operate at satisfactory levels of service during the Project peak hours, with spare capacity and acceptable delays to vehicles. The exception to this is the intersection of Denman Road with Thomas Mitchell Drive, which has previously been identified as requiring upgrading to accommodate future demands.

The results of the sensitivity analysis of the potential cumulative traffic volumes in 2036 if the Mt Arthur Coal Mine was to receive approval to extend operations until at least 2036 (Section 6.11) are consistent with previous assessments, indicating the intersection of Thomas Mitchell Drive and Denman Road would require an upgrade in the future.

It is expected that upgrading of this intersection, which is the subject of Condition 47(c) of the Project Approval for the Mt Arthur Coal Mine Open Cut Consolidation Project, would also be required under any extension of the Mt Arthur Coal Mine Project Approval.



## 6.6 Intersection Designs

The forecast long-term peak hour traffic demands at the key intersections have been compared against the major road treatments required by Austroads (2020b).

The general minimum preferred treatment at rural road intersections in greenfields developments are Basic Left-turn (BAL) and Basic Right-turn (BAR) treatments. The rural BAL treatment on the major road has a widened shoulder, which assists turning vehicles to move further off the through carriageway, making it easier for through vehicles to pass. The rural BAR treatment features a widened shoulder on the major road that allows through vehicles, having slowed, to pass to the left of turning vehicles. The BAL treatment on the minor road allows turning movements to occur from a single lane, with a shoulder that is too narrow to be used by left-turning vehicles, so as to prevent vehicles from standing two abreast at the holding line. These design features are preferred to safely manage the movement of vehicles in the high-speed rural environment.

Auxiliary lane treatments have short lengths of auxiliary lane provided to improve safety, especially on high speed roads. The Auxiliary Right-turn (AUR) treatment on the major road is created by the use of a short lane with standard painted stripes, where the median lane is shared between through and right-turning vehicles, and the auxiliary kerbside lane allows through vehicles to pass a vehicle which has slowed to turn right. AUR treatments are not used in NSW, rather a channelised right-turn treatment with a short turn bay known as a Channelised Right-turn (Short Lane Type) (CHR[S]) treatment may be used. This is a modification of the channelised treatment described below.

Auxiliary Left-turn (AUL) treatments on the major and minor road are normal indented turn lanes, used only by vehicles turning left. The auxiliary lane treatment on the major road is safer than a basic treatment, however the channelised treatment described below is preferred where practicable, as the risk of collisions is lower. Consequently, Austroads (2020b) indicates that a Channelised Left-turn (CHL) treatment should be used wherever practicable. The AUL treatment on the minor road is less safe than a basic or channelised treatment, and while it is included in the warrants, it is not recommended. Austroads (2020b) indicates that a BAL or CHL treatment should be used wherever practicable.

Channelised treatments on the major road are CHL and Channelised Right-turn (CHR) treatments for left and right turns from the major road respectively. The channelised "CH" treatments separate conflicting vehicle paths by raised or painted medians and/or islands, and often use auxiliary lanes in conjunction with channelisation. The CHR treatment on the major road provides a continuous lane for through vehicles only, and an auxiliary turn lane for right-turning vehicles only. CHL treatments on the major or minor road provide a separate left-turn "slip" lane, separated from the adjacent lane by a painted or raised island. Channelised treatments are preferred over auxiliary lane treatments where practicable, as the risk of collisions is lower.

The existing treatments at the key intersections expected to be used by Project-generated traffic have been compared against those treatments warranted for the forecast long-term demands as set out in Austroads (2020b) for greenfields developments. The results are summarised in Table 6.15.

**Table 6.15: Intersection Major Road Turn Treatment Warrants 2036 with Project**

Site <sup>A</sup>	Intersection	Existing Treatment	AM Warrant Treatment	PM Warrant Treatment
D	Mount Pleasant Operation Road and Wybong Road	AUL BAR	BAL BAR	BAL BAR
E	Wybong Road and Kayuga Road	- -	BAL BAR	BAL BAR
F	Wybong Road and Bengalla Road	AUL CHR	BAL CHR(S)	BAL BAR
G	Bengalla Road and Denman Road	AUL(S) CHR	BAL CHR	BAL CHR

<sup>A</sup> Refer to Figure 4.1.

Table 6.15 indicates that the existing main road treatments at the intersections generally meet or exceed those required by application of the Austroads (2020b) warrants. The existing layout of the intersection of Kayuga Road with Wybong Road does not include formalised widened shoulders on either side of Kayuga Road. These minimum desirable treatments are warranted by the existing traffic demands at the intersection, not as a direct result of Project traffic.

Design or timing details regarding the planned upgrade of the intersection of Thomas Mitchell Drive with Denman Road are not known. However, it is anticipated that the intersection would be designed in accordance with current guidelines, and is therefore expected to provide a safe environment for all users, but notably for drivers turning right from Thomas Mitchell Drive by reducing delays to those vehicles.

The intersections of New England Highway with Blairmore Lane and Dartbrook Road are both constructed to a similar standard, with wide sealed shoulders on New England Highway, and no auxiliary lanes. Sight distances at both intersections are satisfactory, and the wide shoulders on New England Highway are generally consistent with the Austroads BAL and BAR treatments, which assist turning vehicles to move further off the through carriageway, making it easier for through vehicles to pass. The main difference between the two intersections is that at the Blairmore Lane intersection, the speed limit on New England Highway is 50 km/h, but it is 80 km/h at the Dartbrook Road intersection. The lower speed at the Blairmore Lane intersection means it can sustain higher turning volumes before higher level treatments may be warranted on safety grounds.

Excluding the possible shuttle buses, the Project would contribute peaks of 11 and 27 light vehicles entering both Dartbrook Road and Blairmore Lane from New England Highway during the AM peak hour in 2026 and 2036, respectively. These trips are likely to be distributed across the movements turning right into Dartbrook Road, and turning both right and left into Blairmore Lane. Excluding the possible shuttle buses, the Project would contribute peaks of 18 and 39 light vehicles exiting both Dartbrook Road and Blairmore Lane to New England Highway during the PM peak hour in 2026 and 2036, respectively. These trips are likely to be distributed across the movements turning left from Dartbrook Road, and turning both left and right from Blairmore Lane.

Overall, considering the spread of Project traffic across the movements at the two intersections, it is considered that the existing intersection layouts are satisfactory, with the Blairmore Lane intersection being somewhat preferred for Project access over that of Dartbrook Road due to the lower speeds on New England Highway.

## 6.7 Oversize and Overmass Vehicles

Consistent with the existing SAMP for the Mount Pleasant Operation, the movement of any oversize or overmass vehicles associated with the Project will conform with the relevant permits obtained in accordance with *Additional Access Conditions Oversize and overmass heavy vehicles and loads* (RMS, 2020), and any other licences and escorts as required by the regulatory authorities.

## 6.8 Railway Level Crossings

As a component of the Project, the increase in transport of product coal would require an increase in the annual train movements. Daily train movements would increase from a maximum of nine laden trains per day for the approved Mount Pleasant Operation to a maximum of 10 laden trains per day with the Project.

Between the Mount Pleasant Operation and the Main Northern Railway, all road and rail crossings are grade separated, so there is no potential for increased rail traffic to impact road network operations. Once Project-generated trains are on the Main Northern Railway to Newcastle, the Project's additional contribution to total rail traffic would not be significant, thus the potential impacts on delays experienced by road-based traffic would be negligible.

Furthermore, there is a very limited number of railway level crossings between Muswellbrook and Newcastle, and with only one exception (on Shamrock Street which provides access only to the Hunter Wetlands National Park), all those crossings are actively-controlled, with boom gates and flashing lights for the road traffic. These active controls warn motorists that a train is approaching the level crossing and the boom gates prevent vehicles from entering the crossing when a train is approaching, and so offer the highest level of safety at level crossings. The addition of one laden train per day at maximum production generated by the Project is therefore expected to have minimal impact on both delays to road traffic and safety at railway levels crossings.

## 6.9 Road Safety Implications

The road crash history of the roads serving the Project (Section 4.7) did not identify any causation factors associated with the existing road network that may be exacerbated by increased traffic demands.

The Road Safety Audit of existing conditions on the Project access routes (Appendix C) did not highlight any particular road safety concerns regarding the basic road alignment or width characteristics of the routes. No high risk items were identified. The majority of the medium risk and low risk items identified in the audit relate to a lack of road linemarking, signage or guide posts and protection barriers to roadside structures, together with some need for pavement or drainage improvements.

## 6.10 Mitigation Measures

The foregoing assessment suggests that the existing road network can satisfactorily accommodate the forecast traffic demands resulting from the Project without any specific additional road upgrade requirements. Upgrading of the intersection of Thomas Mitchell Drive with Denman Road is the subject of Condition 47(c) of the Project Approval for the Mt Arthur Coal Mine Open Cut Consolidation Project.

The existing SAMP for the Mount Pleasant Operation appropriately identifies those routes that may and may not be used by all traffic travelling to and from the Mount Pleasant Operation. All Project vehicular access would be consistent with the SAMP requirements, which will be reviewed and amended from time to time. The effectiveness of the SAMP would continue to be reviewed and monitored by MACH, with more appropriate procedures implemented if the original traffic management practices are proven to not be adequate.

The existing layout of the intersection of Wybong Road with Kayuga Road does not meet current Austroads standards with regard to major road treatments that would be provided for a greenfields rural road intersection. Based on Austroads (2020b), the existing demands at the intersection warrant its upgrading to include BAR and BAL treatments in Kayuga Road, i.e., widened shoulders. In the long term with the Project traffic, the forecast demands would

also warrant BAR and BAL treatments in Kayuga Road, thus the Project itself would not trigger a need for further upgrading of the intersection.

## 6.11 Implications of Road Network Changes

As discussed in Section 5.2, future changes to the road network in the region may include construction of the Bypass, and changes to local access roads suggested by the *Muswellbrook Mine Affected Roads Network Review Plan*. Detailed forecasts of the potential implications of these possible changes are not available at the time of writing, however the broad implications of the possible changes on the findings of this report have been considered and are discussed below.

Should these road network changes occur, all roads and intersections would be designed to accommodate the anticipated traffic demands resulting from those road network changes.

### 6.11.1 Muswellbrook Bypass

The Bypass is not expected to have a significant direct impact on the routes used by Project-generated traffic. Those Project vehicles assumed herein to travel to and from New England Highway north of Muswellbrook (i.e., Scone and Aberdeen) would continue to use Kayuga Road and Blairmore Lane or Dartbrook Road, with the northern end of the Bypass expected to join New England Highway south of Aberdeen. Similarly, those Project vehicles assumed herein to travel to and from New England Highway south of Muswellbrook (i.e. Singleton and Lower Hunter) would continue to use Thomas Mitchell Drive, with the southern end of the Bypass expected to join New England Highway north of Thomas Mitchell Drive.

As the Bypass would primarily serve those vehicles currently travelling through Muswellbrook along New England Highway, and is expected to pass to the east of Muswellbrook, its impact on general traffic conditions to the west of Muswellbrook would likely be minimal.

### 6.11.2 Mount Pleasant Northern Link Road

Mount Pleasant Northern Link Road will provide an east-west link to Dorset Road to the north of the Mount Pleasant Operation, and be constructed prior to closure of Castlerock Road. This road link would not be used by existing Mount Pleasant Operation traffic, nor by Project-generated traffic. It would provide a local access function for lands to the north of the Mount Pleasant Operation, replacing the function currently served by Castlerock Road. It is therefore not expected to have a significant impact on traffic conditions on those roads currently used by Mount Pleasant Operation traffic or expected to be used by Project traffic.

### 6.11.3 Muswellbrook Mine Affected Roads Network Plan

Considering the high-level nature of these strategies, and assuming that the constraints on their construction are able to be overcome, the potential implications of construction of the recommended strategy envisaged in the *Muswellbrook Mine Affected Roads Network Plan Review* (Bitzios, 2020) (primarily the Western Corridor and Inner West Link) are broadly expected to be as described below.

The Western Corridor and Inner West Link are intended to form a western bypass route around Muswellbrook for traffic between Golden Highway at Jerrys Plains, and New England Highway north of Muswellbrook. In the immediate vicinity of the Mount Pleasant Operation, the recommended plan includes a new link between Denman Road and Bengalla Road, a new link between Bengalla Road and Wybong Road via Overton Road, and a new link between Wybong Road near Overton Road to New England Highway to the east of the Mount Pleasant Operation via a new bridge over the Hunter River and an upgraded Burtons Lane (Bitzios, 2020).

The review's key network recommendations refer to a link north from Wybong Road to Dorset Road as part of the Western Corridor, however this is not reflected in the road network plan, or triggers and priorities contained in the report, and appears to relate to a previously proposed route which is no longer being considered.

It is unclear from the review what preferred route the Western Corridor traffic would follow between the intersection of the new link at Bengalla Road (northern end of Option W1) and the new link from Wybong Road near Overton Road (southern end of Option W7). Between these points, traffic may follow either Bengalla Road and the Inner West Link (Option 2B) or the existing (and longer-term realigned) Bengalla Road and Wybong Road past the Mount Pleasant Operation. The review states (Bitzios, 2020) "there is the potential to utilise the realigned Bengalla Link Road as part of a western corridor linking Denman Road to New England Highway" however the preferred route is not clarified.

The Western Corridor and Inner West Link would form an alternative route for traffic currently using Wybong Road and Kayuga Road to travel between New England Highway north of Muswellbrook (e.g., Scone and Aberdeen) and destinations to the west and south-west, including to and from Mangoola Coal, Bengalla Mine, Mount Pleasant Operation, Denman, and locations farther west along Golden Highway.

Bitzios (2020) indicates that the Inner West Link between Bengalla Road and Wybong Road would reduce traffic demands on Wybong Road west of Overton Road. Although not stated in the review, it is assumed that this is due to the likely diversion of traffic travelling between Bengalla Mine and New England Highway north of Muswellbrook currently using Aberdeen Street – Kayuga Road – Wybong Road – Bengalla Road. That traffic may divert to the Inner West Link and Bengalla Road to Bengalla Mine, which would likely offer reduced travel time. It is unlikely that vehicles currently using Wybong Road west of Overton Road to access Mangoola Coal and destinations farther to the west would divert from Wybong Road as the Inner West Link would be less direct. Mount Pleasant Operation and Project traffic would also continue to use that part of Wybong Road west of Overton Road should the Inner West Link be constructed.

Construction of the Inner West Link has the potential to increase the use of Wybong Road west of Overton Road by existing Mount Pleasant Operation traffic from Muswellbrook that is currently using Bengalla Road to avoid use of Kayuga Bridge. The extent to which this occurs would depend on the travel time savings offered by the new route, which may vary between those employees who reside in the northern part of Muswellbrook and those who reside in the south.

The overall impact of the Inner West Link would be to alter the forecast traffic volumes on Wybong Road to the east and west of the Mount Pleasant Operation from those anticipated in this assessment, with some increased demand from some sources, and decreased demand from other sources. If the Inner West Link were to be constructed, a portion of the Project-generated traffic assumed herein to use Kayuga Road would likely use the Inner West Link instead to travel between the Project and New England Highway. The Project's traffic on Kayuga Road, Blairmore Lane and Dartbrook Road would be reduced in that scenario.

Similarly, the portion of the Inner West Link envisaged between Wybong Road and Denman Road via Overton Road has the potential to form an alternative route for Mount Pleasant Operation and Project traffic travelling to and from the southern parts of the town of Muswellbrook. This assessment assumes that these vehicles would use Wybong Road – Bengalla Road – Denman Road to access Muswellbrook. The net effect of this would be to reduce the Project-generated traffic volumes on Bengalla Road between Wybong Road and the Inner West Link Road below those forecast herein, and increase traffic on Wybong Road between the Mount Pleasant Operation access and the Inner West Link.

Traffic would also likely be reduced on Bengalla Road west of Denman Road, and on Denman Road between the new link road opposite the proposed Edderton Road northern deviation and Bengalla Road.



Some traffic currently using Thomas Mitchell Drive to travel between destinations to the south along New England Highway south and the western region of Muswellbrook (including Mangoola Coal and Bengalla Mine) may instead use the Western Corridor (realigned Edderton Road) to travel to and from the south via Golden Highway. This would result in some reduction of traffic using Thomas Mitchell Drive below that forecast in this assessment.

Should the Inner West Link proceed, it is therefore likely that a higher proportion of traffic travelling to and from the Mount Pleasant Operation would use Wybong Road east of the Mount Pleasant Operation access road. It is expected the final design of the Inner West Link would be based on assessment of such potential changes to traffic flows and would identify any road and intersection upgrades required to support the Inner West Link.

Overall, this assessment has demonstrated that the existing road network can adequately accommodate the Mount Pleasant Operation and Project traffic without implementation of the recommended road network changes presented in the *Muswellbrook Mine Affected Roads Network Plan Review* (Bitzios, 2020). Aspects of that plan require further investigation, and would generally result in dispersion of traffic on to more routes than assumed herein. The Project is not reliant upon implementation of any of the road changes, so should further investigation of the feasibility of several aspects of those changes determine that they cannot proceed, no changes to the Project as proposed would be required.

## 6.12 Sensitivity Assessment

The foregoing assessment of 2036 conditions assumes that the Mt Arthur Coal Mine would cease operating before 2036, based on its current approvals (Section 5.1.6). To consider the future traffic conditions should the Mt Arthur Coal Mine extend its mine life beyond its current approved limits, a sensitivity assessment has been undertaken and is discussed below.

The sensitivity assessment assumes that in 2036, the Mt Arthur Coal Mine continues to operate with an estimated workforce of 1,500 people. On this basis, the change in traffic generated by the Mt Arthur Coal Mine from 2020 to 2036 would be the same as that reported in Table 5.7 for 2026. Vehicles travelling to and from the Mt Arthur Coal Mine would be expected to use:

- Denman Road;
- Edderton Road;
- Thomas Mitchell Drive; and
- New England Highway south of Thomas Mitchell Drive.

The operating conditions of the key intersections along those routes and relevant to the Project have been reanalysed using SIDRA INTERSECTION 9 assuming that the Mt Arthur Coal Mine continues to operate as described above, together with the Project. As Wybong Road would not be used by the Mt Arthur Coal Mine traffic, the intersections along Wybong Road are not included in this sensitivity assessment. The results of the analyses are summarised in Table 6.16.

**Table 6.16: Sensitivity – Intersection Operation with Mt Arthur Coal Mine and the Project 2036**

Site <sup>A</sup>	Intersection	AM Peak			PM Peak		
		X-Value	Average Delay <sup>B</sup>	LoS	X-Value	Average Delay <sup>B</sup>	LoS
G	Bengalla Road and Denman Road	0.31	18.2	B	0.41	14.3	B
-	Denman Road and Thomas Mitchell Drive	0.39	18.6	B	0.93	53.2	D
-	Thomas Mitchell Drive and New England Highway	0.26	14.2	B	0.55	16.2	B

<sup>A</sup> Refer to Figure 4.1.

<sup>B</sup> Seconds per vehicle for movement with the highest average delay per vehicle.

The results in Table 6.16 indicate that should the Mt Arthur Coal Mine continue operating to 2036, the operation of the intersection of Denman Road with Thomas Mitchell Drive would decline to LoS D during the PM peak hour, with long delays and limited capacity for vehicles turning right from Thomas Mitchell Drive in to Denman Road. The AM peak hour operation would be acceptable.

That intersection has previously been identified as requiring upgrading to accommodate future demands, and upgrading of the intersection is the subject of Condition 47(c) of the Project Approval for the Mt Arthur Coal Mine Open Cut Consolidation Project. It is understood the intersection upgrade will be completed by December 2026 (DPIE, 2020).

The other key intersections used by both the Mt Arthur Coal Mine traffic and Project traffic would operate at good levels of service.