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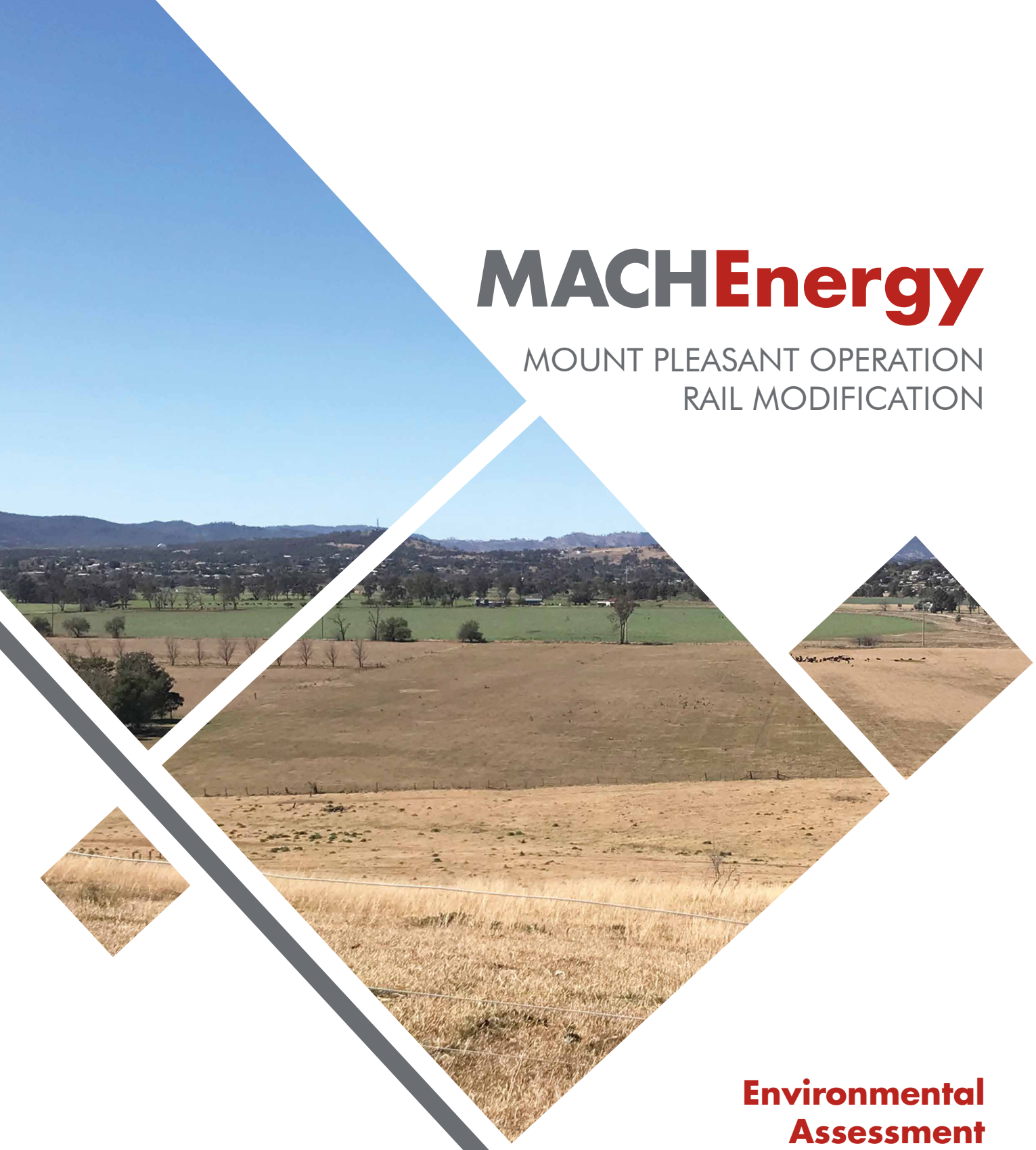
MOUNT PLEASANT OPERATION
RAIL MODIFICATION



Environmental Assessment

MACH Energy Australia Pty Ltd
GPO Box 94, Brisbane QLD 4001
ABN 34 608 495 441

t: +61 7 3493 3600
e: info@machenergyaustralia.com.au
www.machenergyaustralia.com.au

18 December 2017

NSW Department of Planning and Environment
GPO Box 39
Sydney NSW 2001

Attention: Oliver Holm,
Executive Director, Resources Assessments and Compliance

Dear Oliver,

RE: MOUNT PLEASANT OPERATION DA92/97 - MODIFICATION 4 ENVIRONMENTAL ASSESSMENT

The enclosed Environmental Assessment for the Mount Pleasant Operation Rail Modification has been prepared for MACH Energy Australia Pty Ltd (MACH Energy) by Resource Strategies Pty Ltd.

MACH Energy believes the Environmental Assessment represents an accurate statement of MACH Energy's development intentions and commitments in regard to environmental management and monitoring for the Mount Pleasant Operation Rail Modification.

Yours sincerely,

Scott Winter
Mount Pleasant Operation – Managing Director

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1 INTRODUCTION

MACH Energy Australia Pty Ltd (MACH Energy) acquired the Mount Pleasant Operation from Coal and Allied Operations Pty Ltd (Coal & Allied) on 4 August 2016.

The approved Mount Pleasant Operation includes the construction and operation of an open cut coal mine and associated infrastructure, located approximately 3 kilometres (km) north-west of Muswellbrook in the Upper Hunter Valley of New South Wales (NSW) (Figures 1 and 2).

The Mount Pleasant Operation is being developed in accordance with a Development Consent granted by the (then) NSW Minister for Urban Affairs and Planning on 22 December 1999 (Development Consent DA 92/97), as subsequently modified (Section 2.1). The major facilities of the Mount Pleasant Operation are currently being constructed by MACH Energy.

This document is an Environmental Assessment (EA) for a proposed modification to the Mount Pleasant Operation product coal transport facilities, primarily comprising the replacement of the current approved rail infrastructure (the Modification).

1.1 OVERVIEW OF THE MOUNT PLEASANT OPERATION

The Mount Pleasant Operation is located in a significant mining region of the Sydney Basin (Figure 1) that includes a wide range of existing operational coal mines and a number of proposed coal mining projects.

The Mount Pleasant Operation Mining Leases (MLs) are wholly located within the Muswellbrook Local Government Area (LGA), north-west of Muswellbrook (Figure 2).

Kayuga is located immediately to the north of the mine and the town of Aberdeen is located further north-east, in the Upper Hunter LGA, on the eastern side of the Hunter River (Figure 2).

The town of Denman is also located approximately 18 km to the south-west, near the confluence of the Hunter and Goulburn Rivers (Figure 2).

When Development Consent DA 92/97 was granted in 1999, the mine was permitted to carry out mining operations for a period of 21 years from the date of the granting of the development consent.

This was reflected by Condition 5, Schedule 2 of Development Consent DA 92/97, which permitted mining operations until 22 December 2020.

The Mount Pleasant Operation was also determined in 2011 to be a Controlled Action and was subsequently approved in 2012 under the *Environment Protection and Biodiversity Conservation Act, 1999* (EPBC Act) (EPBC 2011/5795).

This EPBC Act approval remains in effect until October 2035 (i.e. approximately 18 years).

When the Mount Pleasant Operation was purchased by MACH Energy from Coal & Allied, only limited engineering and construction works had been undertaken (e.g. surveying, geotechnical investigation, construction of a dam, etc.) and no mining operations had yet been conducted at the site.

Construction of the Mount Pleasant Operation re-commenced in November 2016 and the mine is approved to produce up to 10.5 million tonnes per annum (Mtpa) of run-of-mine (ROM) coal.

In March 2017, MACH Energy sought and obtained a minor modification to Development Consent DA 92/97 for the relocation of the South Pit Haul Road. At this time, the Department of Planning and Environment (DPE) made some minor amendments to contemporise some conditions (Attachment 1).

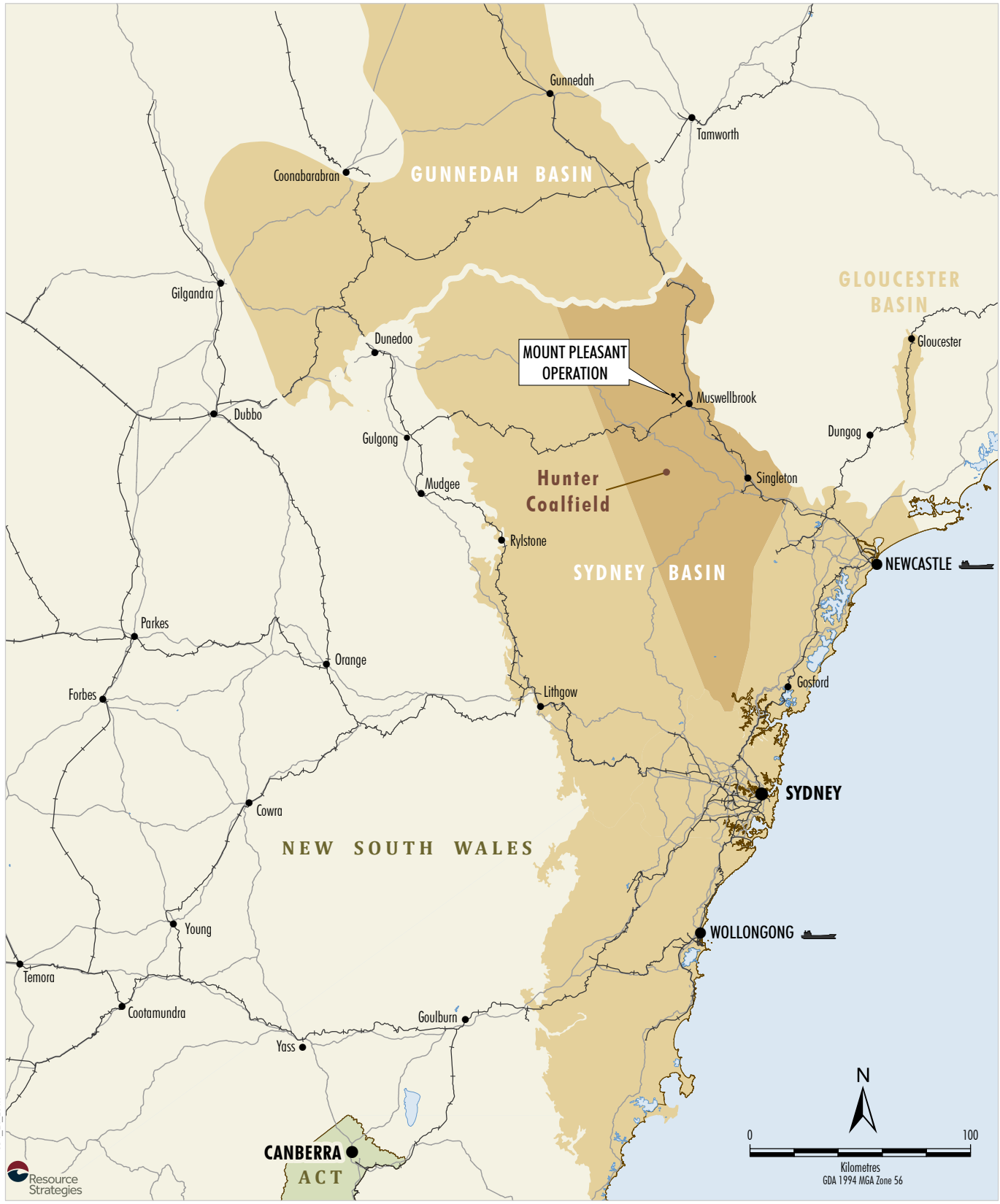
In June 2017, MACH Energy sought approval for a further Modification to Development Consent DA 92/97 (Modification 3) for an extension to the mine life to December 2026 and extensions to the South Pit Eastern Out of Pit Emplacement. At the time of writing, Modification 3 is yet to be determined.

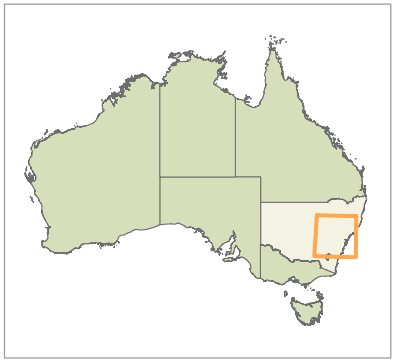
MACH Energy commenced mining operations in October 2017, in accordance with Development Consent DA 92/97 and Commonwealth Approval EPBC 2011/5795.

Up to approximately nine trains per day of thermal coal product from the Mount Pleasant Operation will be transported by rail to the port of Newcastle for export, or to domestic customers for use in electricity generation.

The Mount Pleasant Operation is located to the immediate north of the Bengalla Mine, which mines the same geological sequence to the south of Wybong Road (Figure 3).

As part of the acquisition of the Mount Pleasant Operation and site, MACH Energy acquired a range of rural properties and lands.





LEGEND
- Highway
- Major Railway
- Coalfield

Source: Geoscience Australia (2011)

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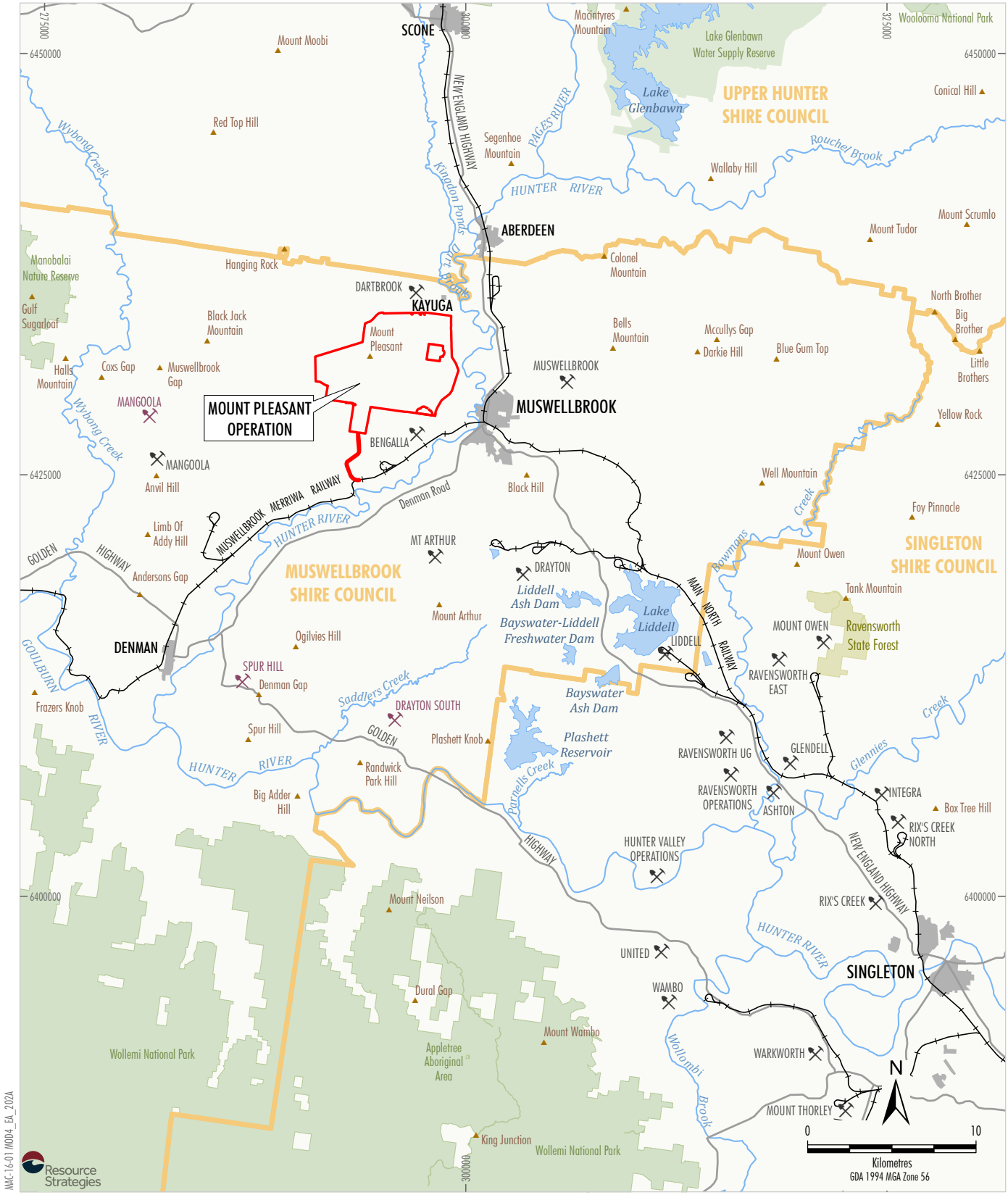
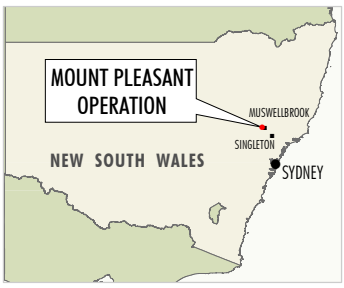
MOUNT PLEASANT OPERATION

Regional Location

Figure 1





LEGEND

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

Source: Geoscience Australia (2006); NSW Division of Resources & Geoscience (2017); Office of Environment and Heritage NSW (2017); Land and Property Information (2017)

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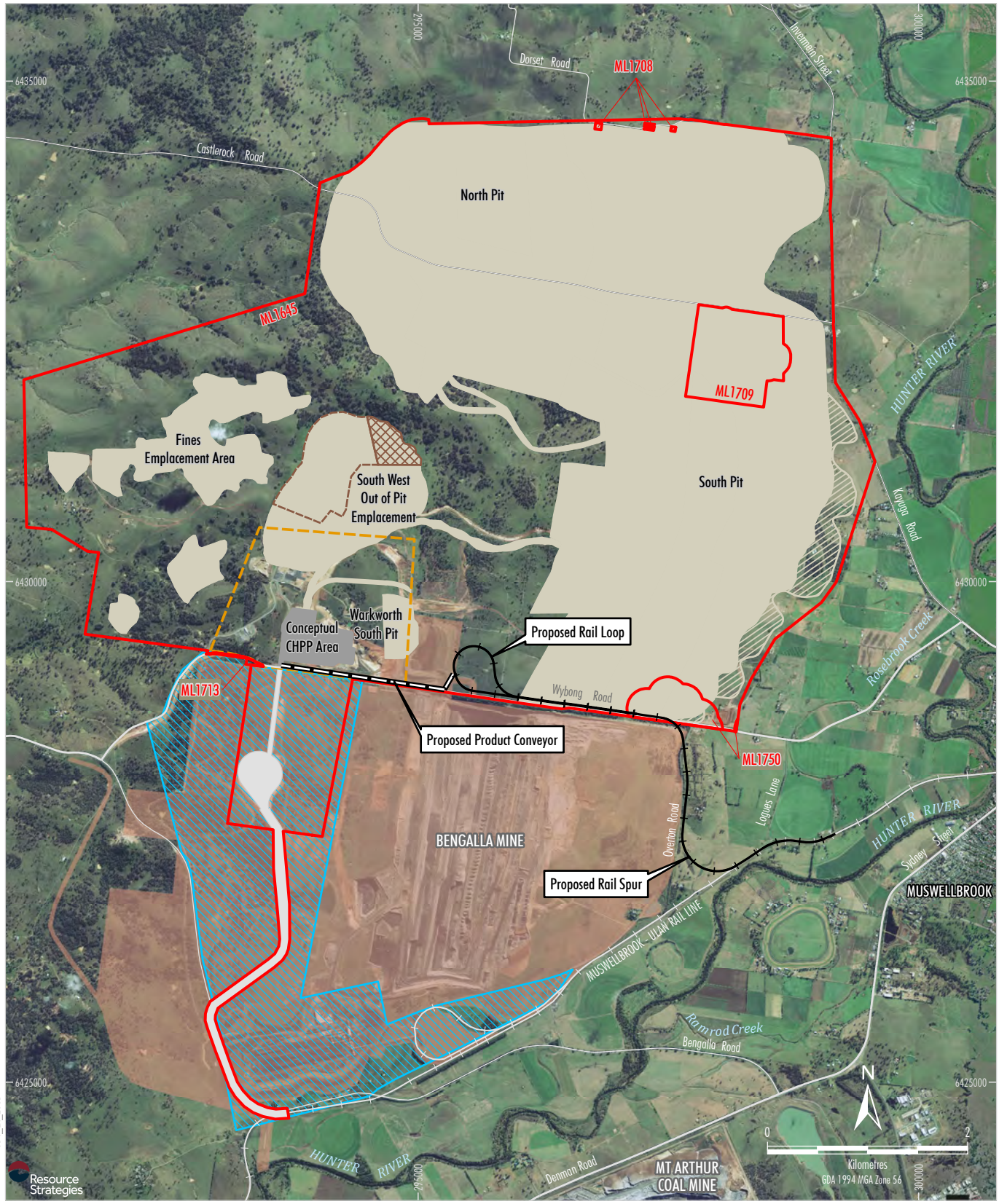
MOUNT PLEASANT OPERATION

Project Location

Figure 2



LEGEND

- Mining Lease Boundary
- Infrastructure Area Envelope
- Indicative Off-site Coal Transport Infrastructure
- Approximate Extent of Approved Surface Development (1997 EIS Year 20)*
- Conveyor/Services Corridor Envelope
- Bengalla Mine Approved Disturbance Boundary (SSD-5170)

Subject to Separate Modification (Modification 3)

- Emplacement Extension
- Area Relinquished for Overburden Emplacement and Major Infrastructure

Key Elements of the Modification #

- Proposed Rail
- Proposed Product Conveyor
- Additional Area Relinquished for Major Infrastructure

Notes:

* Excludes some project components such as water management infrastructure, infrastructure within the Infrastructure Area Envelope, offsite coal transport infrastructure, road diversions, access tracks, topsoil stockpiles, power supply, temporary offices, other ancillary works and construction disturbance.

\# Modification would also include additional minor components not shown, e.g. water pipelines, pump station, electricity transmission lines, signalling, access tracks, etc.

Source: NSW Land & Property Information (2017); NSW Division of Resources & Geoscience (2017); Department of Planning and Environment (2016); MACH Energy (2017)
Orthophoto: MACH Energy (July 2017)

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MOUNT PLEASANT OPERATION

General Arrangement of the Mount Pleasant Operation and Key Modification Infrastructure

Figure 3

In 2017, MACH Energy also purchased a number of properties north of Wybong Road from the Bengalla Mine, in accordance with the Master Cooperation Agreement between the two mines.

Current areas of both private and mining company land ownership, and verified residences in the vicinity of the Mount Pleasant Operation, are shown on Figure 4. A detailed land ownership plan and an ownership list are provided in Attachment 2.

1.2 OVERVIEW OF THE MODIFICATION

The Modification would primarily comprise the following components:

- 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 currently follows the 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.

Table 1 provides a comparative summary of the currently approved Mount Pleasant Operation, the Operation incorporating Modification 3 (yet to be determined) and this Modification.

Figure 3 illustrates the general arrangement of the approved Mount Pleasant Operation, the Modification 3 emplacement extension and the location of the proposed new product coal transport infrastructure.

Figure 5 illustrates the conceptual alignment and location of the Hunter River water pipeline and associated pump station and the proposed conveyor and rail infrastructure in more detail.

1.3 CONSULTATION FOR THE MODIFICATION

State Government Agencies

MACH Energy consults with relevant State Government agencies on a regular basis regarding the approved Mount Pleasant Operation construction and mining activities.

Department of Planning and Environment

In August 2017, a meeting was held with representatives of the DPE to provide an overview of the proposed Modification, and to discuss environmental assessment requirements and provisional timing for lodgement of the Modification application.

MACH Energy subsequently provided an application for the Modification in September 2017.

MACH Energy further consulted with representatives of the DPE in November 2017, with respect to the noise policy applicable to the assessment of the Modification.

In December 2017, a letter was also provided to representatives of the Division of Resources and Geoscience (DRG) within the DPE (formerly the NSW Division of Resources and Energy [DRE] within the Department of Industry) that discussed the potential resource sterilisation associated with the proposed rail alignment.

Environment Protection Authority

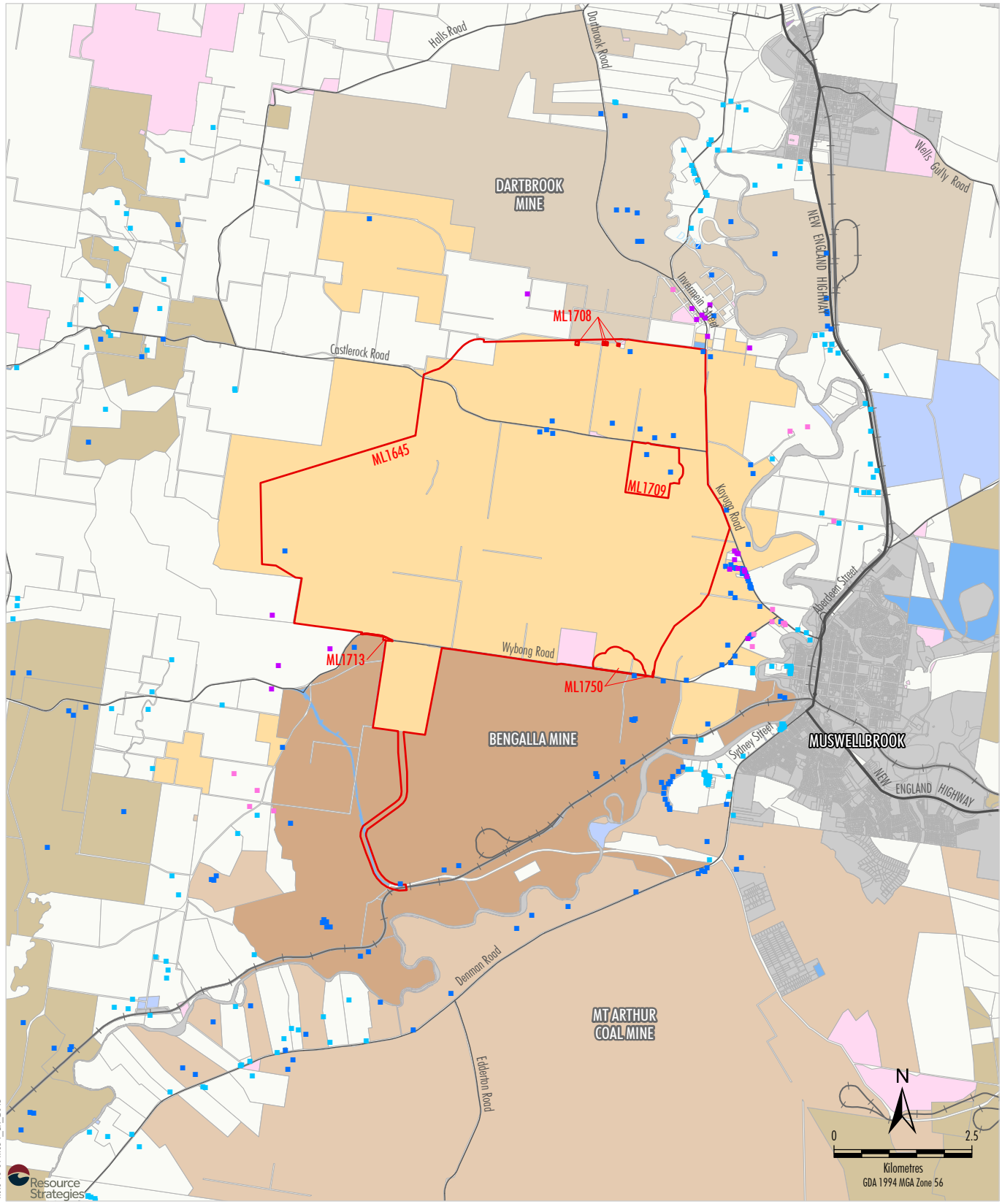
MACH Energy has been in regular contact with representatives of the NSW Environment Protection Authority (EPA) during 2016 and 2017 in regard to the grant of Environment Protection Licence (EPL) 20850 for the Mount Pleasant Operation and associated environmental monitoring.

In October and December 2017, MACH Energy further consulted with representatives of the EPA regarding the Modification, providing an overview of the Modification and draft results of the key specialist studies.

Office of Environment and Heritage

MACH Energy has regularly consulted with representatives of the NSW Office of Environment and Heritage (OEH) during 2016 and 2017, regarding the management of Aboriginal and historic heritage sites at the Mount Pleasant Operation.

Further consultation with representatives of the OEH was undertaken with respect to the Modification in October 2017. At this meeting, MACH Energy provided an overview of both the Modification and the proposed assessment methodology.



LEGEND

- Mining Lease Boundary
- Muswellbrook and Upper Hunter LEPs Zones B2, B5, IN1, SP2, R2, R5, RE1, RE2 and W1
- Crown
- Crown/State of NSW
- State of NSW
- Muswellbrook Shire Council
- Upper Hunter Shire Council
- Mount Pleasant Controlled
- Bengalla Controlled
- Dartbrook Controlled
- Mt Arthur Controlled
- Other Mining/Resource Company Controlled
- Privately-owned Land
- Mine-owned Dwelling
- Privately-owned Residence - MPO Acquisition on Request
- Privately-owned Residence - MPO Mitigation on Request
- Other Privately-owned Residence

Source: NSW Land & Property Information (2017); NSW Division of Resources & Geoscience (2017)

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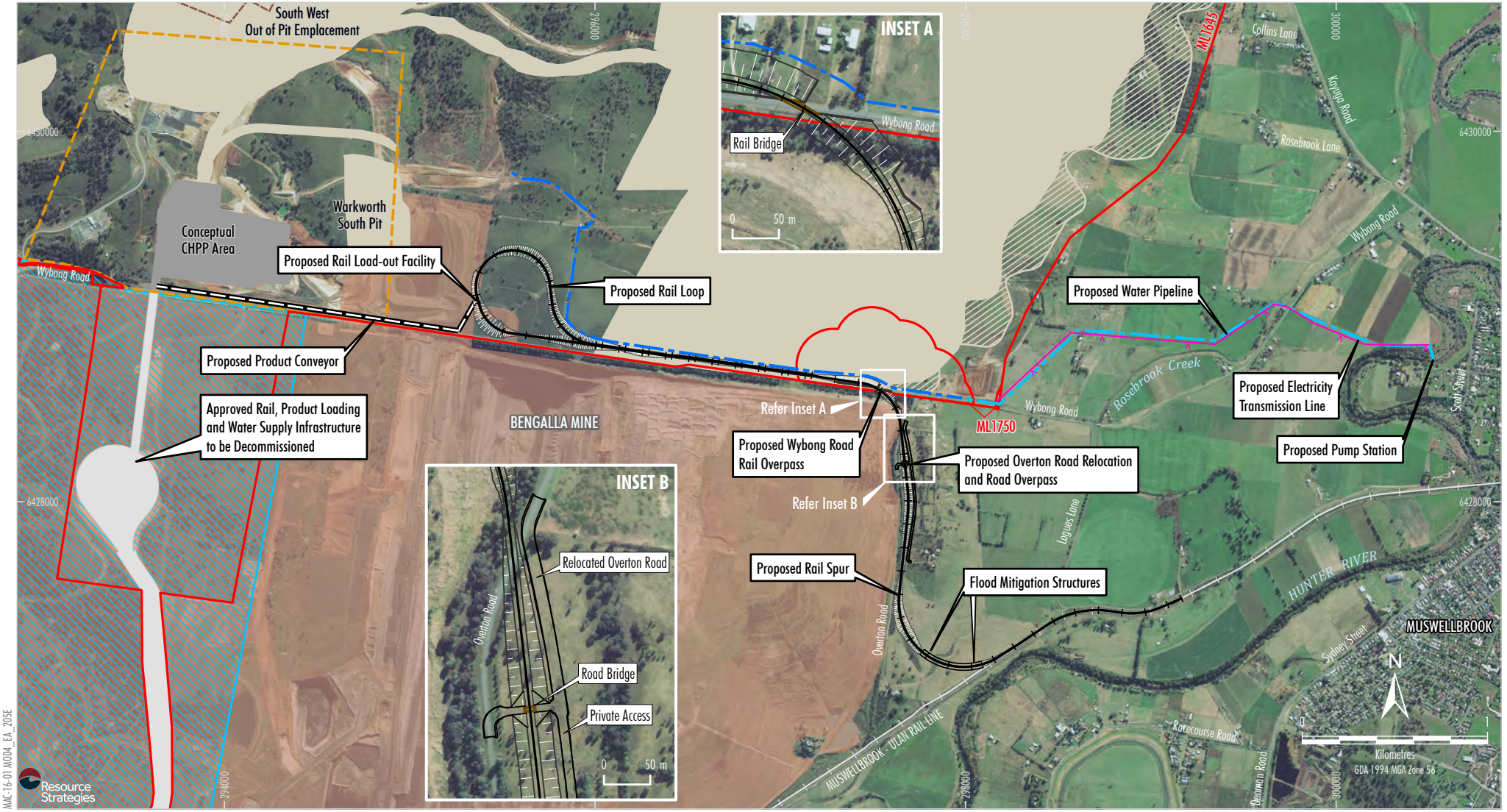
MOUNT PLEASANT OPERATION

Land Ownership Overview

Figure 4



LEGEND

- Mining Lease Boundary
- Infrastructure Area Envelope
- Indicative Off-site Coal Transport Infrastructure
- Approximate Extent of Approved Surface Development (1997 EIS Year 20)*
- Conveyor/Services Corridor Envelope
- Bengalla Mine Approved Disturbance Boundary (SSD-5170)

Subject to Separate Modification (Modification 3)

- Emplacement Extension
- Area Relinquished for Overburden Emplacement and Major Infrastructure

Key Elements of the Modification #

- Proposed Rail
- Proposed Product Conveyor
- Proposed Water Pipeline - Above Ground
- Proposed Water Pipeline - Buried
- Proposed Pump Station Electricity Transmission Line

Notes:

* Excludes some project components such as water management infrastructure, infrastructure within the Infrastructure Area Envelope, off-site coal transport infrastructure, road diversions, access tracks, topsoil stockpiles, power supply, temporary offices, other ancillary works and construction disturbance.

\# Modification would also include additional minor components not shown, e.g. access tracks, rail signalling and electricity supply, etc.

Source: NSW Land & Property Information (2017); NSW Division of Resources & Geoscience (2017); Department of Planning and Environment (2016); MACH Energy (2017)
Orthophoto: MACH Energy (July 2017)

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MOUNT PLEASANT OPERATION

General Arrangement of the Key Modification Elements

Figure 5

Table 1
Overview of the Approved Mount Pleasant Operation, Modification 3 and the Modification

Project Component	Approved Mount Pleasant Operation	Modification 3 [1]	Rail Modification
ROM Coal Production	ROM coal production at a rate of up to 10.5 Mtpa.	Unchanged.	Unchanged.
General Waste Rock Management	Waste rock will be placed within mine voids, out-of-pit emplacements and the Fines Emplacement Area, and will also be used to construct visual bunds.	Unchanged.	Unchanged.
Waste Rock Production	Waste rock removal at a rate of up to approximately 53 million bank cubic metres per annum.	Unchanged.	Unchanged.
Waste Emplacements	Waste rock emplaced both in-pit, and in four major out-of-pit emplacement areas located to the east of the open cuts and to south-west and north-west of the open cuts.	67 hectare (ha) extension of the Eastern Out of Pit Emplacement.	Unchanged from Modification 3.
Coal Beneficiation	Beneficiation of ROM coal in an on-site Coal Handling and Preparation Plant (CHPP).	Unchanged.	Unchanged.
Coal Transport	Coal will be transported to the Port of Newcastle for export along the Muswellbrook – Ulan Rail Line and then the Main Northern Railway.	Unchanged.	Unchanged – except for the physical location of the product conveyor and rail infrastructure.
	An average of three and a maximum of nine laden trains per day leaving the mine.	Unchanged.	Unchanged.
Coal Rejects	Coarse rejects will be placed within mined out voids and out-of-pit emplacements, and used to build fines emplacement walls. Fine rejects will be stored in the Fines Emplacement Area.	Unchanged.	Unchanged.
Mining Method	Open cut mining incorporating truck and shovel and dragline operations.	Open cut mining method comprising truck and shovel in the Modification period.	Unchanged from Modification 3.
Water Supply and Disposal	Water requirements for the mine and CHPP will be met from pit groundwater inflows, catchment runoff and make-up water from the Hunter River. Potable water for the industrial area will be sourced from the Hunter River and treated on-site to the required standards. Surplus water will be discharged into the Hunter River (or its tributaries) in compliance with the Hunter River Salinity Trading Scheme (HRSTS) and the EPL.	Largely unchanged. Excess mine water may also be sourced from the Bengalla and Dartbrook Mines.	Unchanged from Modification 3, except for the physical location of the pump station and pipeline from the Hunter River.
Mine Life	21 years from the date of grant of Development Consent DA 92/97 (i.e. from 22 December 1999 until 22 December 2020).	Extended to 22 December 2026*.	Unchanged from Modification 3.
Hours of Operation	Operations are approved to be undertaken 24 hours per day, seven days per week.	Unchanged.	Unchanged.
Operational Workforce	Average operational workforce throughout the life of the mine of approximately 330 people, and an estimated peak of approximately 380 people.	Unchanged.	Unchanged.
Construction Workforce	A construction workforce of up to approximately 250 people will be required.	Construction workforce is expected to peak at approximately 350 people.	Peak construction workforce would be unchanged. The Modification workforce is anticipated to be up to approximately 60 people.

[1] Yet to be determined.

* Remains less than 21 years from commencement of operations.

Muswellbrook Shire Council

The Mount Pleasant Operation is wholly located within the Muswellbrook LGA. MACH Energy regularly consults with the Muswellbrook Shire Council (MSC) regarding mine development, workforce, infrastructure and services to the community.

The Modification was discussed with key staff of the MSC at a number of meetings in 2017.

A further meeting with representatives of the MSC was held in December 2017 to provide an update on the draft findings of the Modification specialist assessments.

Australian Rail Track Corporation

MACH Energy has been in regular contact with the Australian Rail Track Corporation (ARTC) concerning the construction of the existing approved rail spur at the Mount Pleasant Operation.

In December 2017, MACH Energy also met with representatives of the ARTC to discuss the proposed relocation of the Mount Pleasant Operation rail spur and the associated tie-in on the Muswellbrook – Ulan Rail Line.

The ARTC indicated some technical requirements associated with the proposed tie-in, but did not raise any major problems with the location of the new rail spur.

Hunter Valley Coal Chain Coordinator

MACH Energy has been in regular contact with the Hunter Valley Coal Chain Coordinator (HVCCC) with respect to the operational train movements of the approved Mount Pleasant Operation.

In November 2017, MACH Energy also sought feedback on the Modification and the HVCCC did not raise any particular concerns with the Modification.

Department of Industry - Lands

MACH Energy has been in regular contact with the Department of Industry – Lands for the management of crown land parcels within the Mount Pleasant Operation. In December 2017, MACH Energy provided Department of Industry – Lands with an overview of the Modification.

Local Community

A Community Consultative Committee (CCC) has been established for the Mount Pleasant Operation in accordance with Development Consent DA 92/97 (Attachment 1). The CCC provides a mechanism for ongoing communication between MACH Energy and the local community.

MACH Energy has also undertaken individual consultation with a number of private landholders and lessees that reside in the vicinity of the mine to discuss the ongoing development of the Mount Pleasant Operation.

In September and December 2017, MACH Energy provided an overview of the Modification to the CCC. MACH Energy also briefed private landholders located in close proximity to the proposed rail spur alignment and water pipeline/pump station in November and December 2017.

Key environmental concerns that were raised during consultation included rail and operational noise, air quality and visual impacts. Consideration of the environmental impacts of the Modification, including these issues, is provided in Section 4.

Aboriginal Community

MACH Energy has conducted extensive consultation with the Aboriginal community as part of the archaeological assessment of the proposed Modification. Further detail on the consultation process with the Aboriginal community is provided in Section 4.8 and Appendix E.

Local Resource Companies

MACH Energy regularly consults with neighbouring mining operations in regard to the development of the approved Mount Pleasant Operation and cumulative environmental management and monitoring.

In addition, the Mount Pleasant Operation and Bengalla Mine have a Master Cooperation Agreement to manage the interaction of the two adjoining mining operations. Consultation is undertaken between the two mines under this agreement which provides MACH Energy access to Bengalla Mine land for the purposes of the alternative rail infrastructure.

Bengalla Mine was also provided a copy of this EA to review, as it is the underlying landholder for some of the proposed infrastructure.

Potential cumulative interactions with neighbouring mining operations are also described in Section 2.17.

1.4 STRUCTURE OF THIS DOCUMENT

An outline of the main text sections of this EA is presented below:

Section 1	Provides an overview of the Mount Pleasant Operation, the Modification and the consultation undertaken in relation to the Modification.
Section 2	Provides a description of the existing approved Mount Pleasant Operation, (plus the proposed and yet to be determined Modification 3).
Section 3	Provides a description of the Modification.
Section 4	Provides an environmental assessment of the Modification and describes the existing MACH Energy environmental management systems and measures that would be available to manage and monitor any potential impacts.
Section 5	Describes the general statutory context of the Modification and identifies Development Consent conditions and site management documents that would require revision in support of the Modification.
Section 6	Concludes the document.
Section 7	References.

Attachments 1 and 2 and Appendices A to I provide supporting information as follows.

Attachment 1	Consolidated Development Consent
Attachment 2	Relevant Land Ownership Details (List and Insets)
Appendix A	Noise Assessment
Appendix B	Air Quality Assessment
Appendix C	Visual Assessment
Appendix D	Flood Assessment
Appendix E	Aboriginal Cultural Heritage Assessment
Appendix F	Statement of Heritage Impact
Appendix G	Terrestrial Ecology Assessment
Appendix H	Aquatic Ecology Assessment
Appendix I	Detailed Site Investigation

2 EXISTING MOUNT PLEASANT OPERATION

2.1 APPROVALS HISTORY

NSW Approvals History

The potential environmental impacts associated with the development of the Mount Pleasant Operation were assessed in the *Mount Pleasant Mine Environmental Impact Statement* (1997 EIS) (ERM Mitchell McCotter, 1997). The Mount Pleasant Operation was approved under Part 4 of the NSW *Environmental Planning and Assessment Act, 1979* (EP&A Act), by the (then) NSW Minister for Urban Affairs and Planning, on 22 December 1999 following a Commission of Inquiry (Development Consent DA 92/97).

Under Development Consent DA 92/97, Coal & Allied was permitted to extract up to 10.5 Mtpa of ROM coal for a period of 21 years (from the date of the granting of the development consent, i.e. until 2020), using open cut mining methods. The approved mine includes a rail loop, load-out facility and conveyor, connecting the mine to the Muswellbrook – Ulan Rail Line for transport of coal to the Port of Newcastle.

On 19 May 2010, Coal & Allied submitted an application to modify the Minister's consent for the Mount Pleasant Operation under section 75W of the EP&A Act. The modification (Mod 1) was approved on 19 September 2011 and included:

- construction of a conveyor and service corridor to the existing rail facilities at Bengalla Mine, as an alternative to the approved rail loop, load-out facility and conveyor;
- an extension to the development consent boundary to accommodate the proposed conveyor/service corridor;
- relocation of approved mine infrastructure (within a design envelope), rather than the specific locations identified in the 1997 EIS (ERM Mitchell McCotter, 1997), to provide flexibility during the detailed design and construction of the facilities; and
- contemporising operational noise conditions in the development consent.

In December 2016, MACH Energy submitted an application for a minor modification to Development Consent DA 92/97, to relocate the South Pit Haul Road under section 75W of the EP&A Act.

The South Pit Haul Road Modification (Mod 2) was approved on 29 March 2017.

A copy of the consolidated Development Consent DA 92/97 incorporating Mod 1 and Mod 2 is provided as Attachment 1.

In June 2017, MACH Energy submitted an application to modify Development Consent DA 92/97 to extend both the time limit for open cut mining to 22 December 2026 and extend the Eastern Out of Pit Emplacement (Modification 3).

Modification 3 is currently being assessed by the DPE. Sections 2.1 to 2.15 provide a description of the currently approved Mount Pleasant Operation. The changes proposed by Modification 3 are summarised in Section 2.16.

Federal Approvals History

The EPBC Act commenced in 2000, after development consent for the Mount Pleasant Operation was granted.

In June 2010, Coal & Allied submitted a Referral of Proposed Action (EPBC 2010/5529) to the Commonwealth Department of the Environment, Water, Heritage and the Arts that was subsequently withdrawn and was not determined.

On 16 December 2010, Coal & Allied submitted a Referral of Proposed Action (EPBC 2011/5795) to the Commonwealth Department of Sustainability, Environment, Water, Population and Communities (SEWPAC). On 4 February 2011, SEWPAC determined that the Mount Pleasant Operation was a controlled action and required assessment and approval under the EPBC Act before it could proceed.

Relevant controlling provisions were:

- listed threatened species and communities (sections 18 and 18A of the EPBC Act); and
- listed migratory species (sections 20 and 20A of the EPBC Act).

Subsequent to the controlled action decision, Coal & Allied submitted a Public Environment Report (EMGA Mitchell McLennan, 2011), addressing the relevant controlling provisions, to SEWPAC for consideration.

On 29 February 2012, the Mount Pleasant Operation was granted approval, subject to conditions, by the Minister's delegate, under sections 130(1) and 133 of the EPBC Act (EPBC 2011/5795).

The conditions attached to the EPBC Act approval have since been varied on a number of occasions.

2.2 CONSTRUCTION

The Mount Pleasant Operation facilities are being constructed in accordance with the existing approvals over the course of 2017 and 2018.

Key construction activities include development of fine rejects and water management infrastructure, electricity network relocations and upgrades, road upgrades, development of a haul road between the South Pit and the mine infrastructure area (MIA), mobile plant assembly, mine access road, ROM pads, CHPP, rail spur, rail loop and rail load-out facility.

Additional construction activities will occur as required during the life of the mine and will include progressive development of components such as the Northern Link Road (Section 2.9.12).

2.3 OPEN CUT MINING

The open cuts at the Mount Pleasant Operation comprise four named open cuts (South Pit, North Pit, Warkworth South Pit and Piercefield Pit[1]) (Figure 3).

The mining operation is approved to use a combination of truck and excavator mining and a dragline to mine coal and waste rock, and to operate 24 hours per day, seven days per week.

Steady state mining consists of a combination of truck and excavator mining and the operation of a dragline for waste rock removal. Waste rock will initially be placed in major out-of-pit waste emplacements, prior to the backfilling of the mined void behind mining operations, once sufficient space is available for backfill operations.

Coal will be mined with dozers to rip and push the coal, followed by truck loading using excavators or front end loaders.

Open cut blasting will be undertaken in accordance with the blast limits described in Development Consent DA 92/97 (Attachment 1), that include limitations on the days, times and frequency of blasts that can be undertaken.

ROM coal will be mined at a rate of up to 10.5 Mtpa and transported by haul trucks along internal haul roads to the ROM pad, where it will be directly dumped into the ROM hopper or temporarily stockpiled and then rehandled to the hopper.

2.4 COAL HANDLING AND PREPARATION

ROM coal will be hauled to the ROM dump hopper and either fed to the CHPP or, if quality permits, supplied directly to product stockpiles following sizing (i.e. bypass coal).

The CHPP will comprise two coal processing modules that will include:

- coal sizing;
- screening;
- de-sliming; and
- washing.

A diagram illustrating key materials handling components at the Mount Pleasant Operation is provided on Figure 6.

Product coal from the CHPP will be conveyed to a product stockpile for subsequent reclaim and loading onto trains.

2.5 PRODUCT COAL TRANSPORT

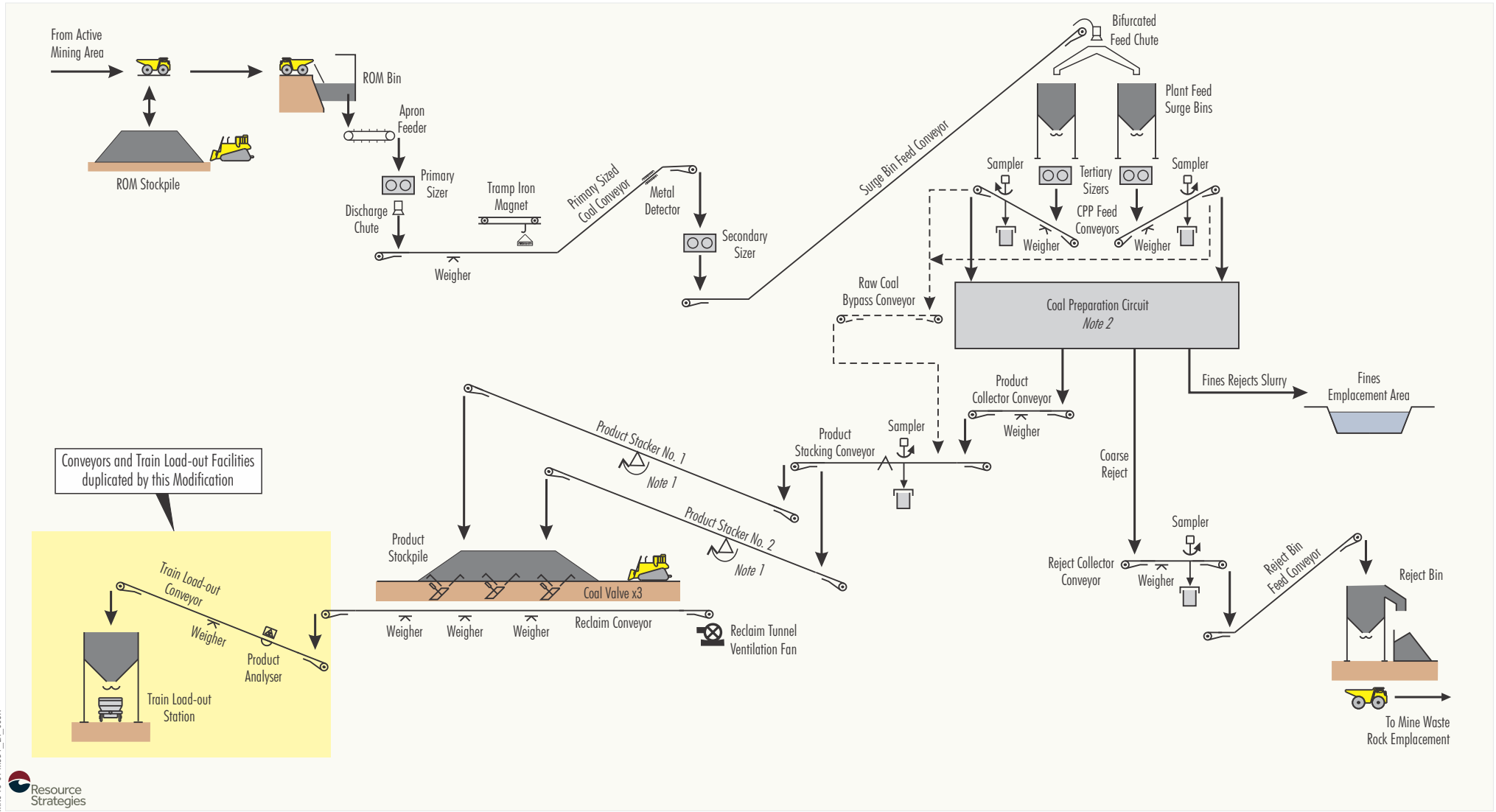
A train load-out facility is being constructed at the head of the rail loop, to the south of Wybong Road.

Product coal will be reclaimed from the product stockpile using coal valves, which will feed onto a reclaim conveyor in a tunnel located beneath the product coal stockpile. The reclaim conveyor will feed a train load-out conveyor that will pass beneath Wybong Road. Product coal will then be loaded onto trains via a rail load-out bin.

Laden trains will join the Muswellbrook – Ulan Rail Line from the Mount Pleasant Operation rail loop. From the Muswellbrook – Ulan Rail Line, product coal will be transported via the Main Northern Railway to domestic customers or to the Port of Newcastle for export.

Product coal will be loaded onto trains 24 hours per day, seven days per week.

[1] The Piercefield Pit is an open cut that was planned to commence early in the development of the Mount Pleasant Operation before being ultimately subsumed by the South Pit.



Source: MACH Energy (2017); CalibreDRAIV (2016)

Notes
1. Product Stacker No.1 and No.2 are luffing, slewing and telescoping stackers.
2. The Coal Processing Plant includes two modules.

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MOUNT PLEASANT OPERATION

Materials Handling Schematic

Figure 6

2.6 WASTE ROCK MANAGEMENT

Initially all mined waste rock (including overburden and interburden) will be hauled out-of-pit to either the Eastern Out of Pit Emplacement, the South West Out of Pit Emplacement or used to construct visual bunds.

The Eastern Out of Pit Emplacement will also form a noise and visual barrier between the South Pit and Muswellbrook, facilitating the mining fleet operating in less exposed areas during the night-time.

As mining continues, waste rock will be progressively placed within the mine void once the coal has been mined.

2.7 COAL REJECT MANAGEMENT

CHPP rejects consist of fine rejects (in a slurry) and coarse rejects. Disposal of each reject material is discussed in the following subsections.

2.7.1 Coarse Rejects

Coarse reject will be conveyed from the CHPP to a bin located north-west of the CHPP (Figure 6).

It will then be hauled by truck to the waste emplacements for disposal as a component of general ROM waste emplacement operations.

2.7.2 Fine Rejects

Fine rejects will be pumped to the Fines Emplacement Area, which is located north-west of the CHPP (Figure 3). The Fines Emplacement Area was located in this position to minimise potential impacts and avoid viable open cut coal reserves.

The Fines Emplacement Area will be constructed progressively in a series of lifts throughout the life of the operation.

Fine rejects will be pumped into the emplacement as a slurry. Excess water will be returned to the mine water management system for re-use on-site.

2.8 WATER MANAGEMENT

The Mount Pleasant Operation water management system comprises a number of dams, the open cut and the Fines Emplacement Area, together with a system of pumped transfers and drains.

Figure 7 provides a schematic diagram of the Mount Pleasant Operation water management system.

Water will be required to operate the CHPP, for dust suppression and washdown of mobile equipment. The main water sources for the Mount Pleasant Operation are:

- catchment runoff and infiltration;
- groundwater inflows into the open cut mine void;
- water recovered from the Fines Emplacement Area;
- surface water extraction from the Hunter River; and
- potable water imported to site.

The Mine Water Dam (MWD) will be the main water storage on-site and will supply make-up water to the CHPP.

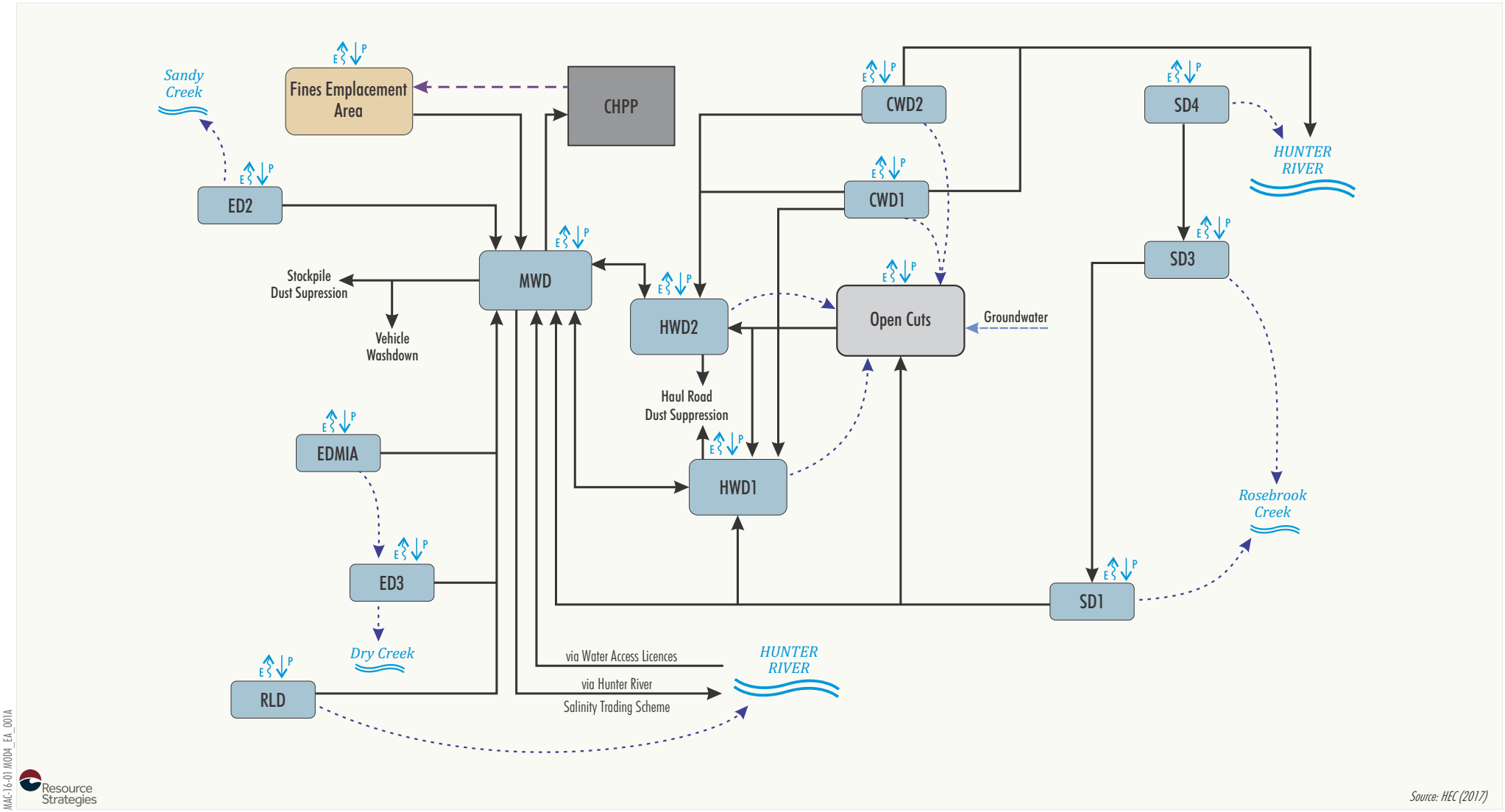
Other key site water storages include:

- Environmental Dam MIA;
- Environmental Dam 3;
- Sediment Dam 1;
- Sediment Dam 3;
- Sediment Dam 4;
- High Wall Dam 1;
- High Wall Dam 2; and
- Rail Loop Dam.

The MWD can receive water from the Hunter River via Water Access Licences, and discharge to the Hunter River in accordance with the HRSTS and EPL 20850 (subject to obtaining relevant secondary approvals).

A water balance model has been developed, and is periodically reviewed to inform water management at the Mount Pleasant Operation.

The water balance model simulates future changes in stored volumes of water on-site in response to inflows (e.g. rainfall-runoff, groundwater inflows, return from the Fines Emplacement Area and pumping from the Hunter River via the water supply pipeline), outflows (evaporation, CHPP make-up, dust suppression usage, licensed discharge to the Hunter River) and pumped transfers within the site.



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LEGEND

- Water Storage
- Fine Rejects Storage
- Pumped Flow
- Overflow Due to Rainfall in Excess of Design Criteria
- Seepage Flow
- Fine Reject Slurry Flow
- Precipitation
- Evaporation

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MOUNT PLEASANT OPERATION

Water Management System Schematic

Figure 7

2.9 GENERAL INFRASTRUCTURE

2.9.1 Site Access

The main access to the mine site and administration office is provided from Wybong Road.

A second mine access road is provided for access to the rail corridor and associated infrastructure south of Wybong Road.

In consultation with the MSC, there will be continued use of ancillary site accesses from local roads for environmental monitoring, general land management, exploration activities, construction activities and local deliveries.

2.9.2 Mine Service and Construction Roads

Mine service and construction roads will be constructed, as required, to provide access to facilities. These roads will typically be service roads for light vehicles and construction plant only.

2.9.3 Haul Roads

Major haul roads will connect the active mining areas with the MIA and CHPP (Figure 3).

2.9.4 Mine Infrastructure Area

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

2.9.5 Coal Handling and Preparation Plant

The CHPP area is shown on Figures 3 and 5 and includes:

- coal handling areas (ROM pads, ROM dump stations and raw coal stockpiles – including stacking and reclaiming equipment);
- Coal Preparation Plant (two coal processing modules, including a washery building, thickener and reagent farm, coarse reject truck load-out bin); and
- product coal stockpiles, reclaim and conveyors.

2.9.6 Construction Area

A construction area has been developed adjacent to the main site access and will be maintained during construction.

The construction area may continue to be used as a satellite infrastructure area following establishment of the MIA.

2.9.7 Explosive Storage Facilities

Explosive storage facilities have been constructed to service the Mount Pleasant Operation in accordance with the Mining Operations Plan.

2.9.8 Hazardous Materials

Hazardous substances are managed through the Mount Pleasant Operation procedures for site contamination prevention and control.

The Mount Pleasant Operation registers all chemicals used on-site in a central database.

Hazardous and explosive materials are transported and stored on-site in accordance with the *Australian Standard 2187.2:2006 Explosives – Storage and Use – Use of Explosives*, the NSW *Work Health and Safety Act, 2011* and the NSW *Work Health and Safety (Mines and Petroleum Sites) Act, 2013*, as well as the NSW *Explosives Act, 2003* and supporting *Explosives Regulation, 2013*.

Mount Pleasant Operation procedures and controls minimise the potential for land and water contamination from the handling, storage and disposal of hazardous substances.

Controls include storage within properly sealed containers and controlled areas, bunded for medium to long-term storage requirements.

2.9.9 Electricity Supply and Distribution

A 66 kilovolt (kV) overhead transmission line previously ran through the approximate centre of the Mount Pleasant Operation in a north-south direction. This line has been relocated to accommodate the Mount Pleasant Operation development activities.

Site power from the relocated transmission line will be transferred via an intake switching station and distributed by overhead or underground cables.

A range of 11 kV overhead electricity transmission lines and underground cabling present at the Mount Pleasant Operation will be decommissioned and, where feasible, removed.

2.9.10 Communication Systems

Fibre cable networks have been re-established for the Mount Pleasant Operation.

2.9.11 Potable Water

Once the water supply pipeline is established, potable water may be pumped from the Hunter River and stored in local potable water tanks. As required, water will be treated to appropriate potable water standards prior to use.

A contractor may also continue to deliver potable water to the site via trucks.

2.9.12 Public Road Relocations

Condition 38, Schedule 3 of Development Consent DA 92/97 requires MACH Energy to construct:

- The Mount Pleasant Northern Link Road to Dorset Road, prior to the closure of Castlerock Road.
- The Mount Pleasant Western Link Road from the intersection of the Bengalla Link Road to the intersection of the Mount Pleasant Northern Link Road, prior to the closure of Wybong Road.

These link roads, or suitable alternatives agreed with the MSC and the DPE, will be constructed when required.

2.10 WORKFORCE

The Mount Pleasant Operation has an approved operational workforce of approximately 380 personnel.

The 1997 EIS (ERM Mitchell McCotter, 1997) described that construction and development activities will require up to approximately 250 additional people for a period of up to approximately 18 months.

The operational hours of the Mount Pleasant Operation are 24 hours per day, seven days per week. Nominal shift start and finish times during mining operations are as follows:

- Administration Personnel – 7.00 am to 5.00 pm weekdays.
- Mining Operations Personnel (Day) – 7:00 am to 7.30 pm.
- Mining Operations Personnel (Night) – 7.00 pm to 7.30 am.

These nominal shift times would be subject to periodic review throughout the life of the operation.

2.11 REHABILITATION AND FINAL LANDFORM

Rehabilitation at the Mount Pleasant Operation is undertaken in accordance with the approved Mining Operations Plan/Rehabilitation Management Plan and the Rehabilitation Strategy (as updated from time to time).

The final land use goals for the Mount Pleasant Operation are based on the following:

- successful design and rehabilitation of landforms to ensure structural stability, revegetation success and containment of wastes; and
- post-mining land use compatible with surrounding land uses.

The approved conceptual final landform of the Mount Pleasant Operation is an undulating, free draining landform with a post-mining land capability that supports grassland and woodland.

The approved final landform also includes two final voids associated with the North Pit and South Pit open cuts as well as a smaller third final void located in a low lying area between the two larger final voids.

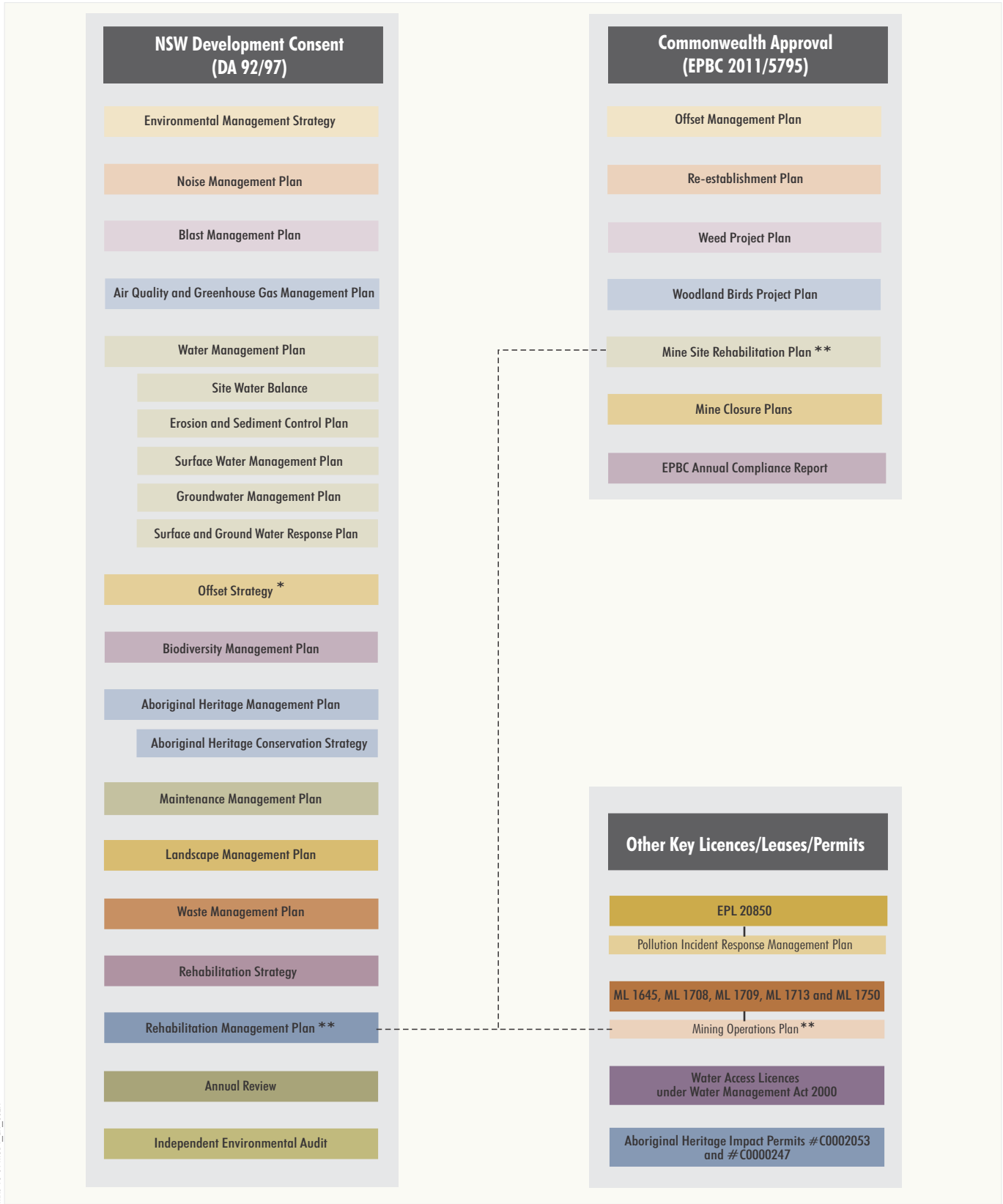
2.12 BIODIVERSITY OFFSET

MACH Energy holds and manages a 13,522 ha biodiversity offset that was established as part of the Mount Pleasant Operation approval under the EPBC Act in 2012 (Coal & Allied, 2015).

Development Consent DA 92/97 only requires a biodiversity offset for disturbance associated with development of the off-site coal transport conveyor option. MACH Energy is not progressing the conveyor option for off-site coal transport and, therefore, a biodiversity offset has not been required under Development Consent DA 92/97.

2.13 ENVIRONMENTAL MANAGEMENT AND MONITORING

MACH Energy has developed an Environmental Management Strategy for the Mount Pleasant Operation (Figure 8).



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Notes:

* In accordance with Condition 29, Schedule 3 of Development Consent (DA 92/97), this Offset Strategy is not required if MACH Energy Australia Pty Ltd does not carry out any development in the conveyor/service corridor.

** The approved Mining Operations Plan has been developed to meet the requirements for a Rehabilitation Management Plan (Condition 56, Schedule 3 of Development Consent [DA 92/97]). The Mine Site Rehabilitation Plan (Conditions 19 and 20 of EPBC 2011/5795) may be incorporated into the Mining Operations Plan.

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MOUNT PLEASANT OPERATION

Environmental Management System
Structure Summary

Figure 8

The Environmental Management Strategy includes some management plans that were previously developed by Coal & Allied and approved by the relevant regulatory authority (typically DPE). MACH Energy is progressively preparing updated management plans for the Mount Pleasant Operation.

Key management plans required under Development Consent DA 92/97 include:

- A Noise Management Plan that details the real-time noise monitoring and management system, noise mitigation measures and a protocol developed with neighbouring mines to minimise cumulative impacts.
- A Blast Management Plan including a road closure management plan and a protocol developed with neighbouring mines to minimise cumulative impacts.
- An Air Quality and Greenhouse Gas Management Plan that details the real-time air quality management system, air quality monitoring network and a protocol developed with neighbouring mines to minimise cumulative impacts.
- An Aboriginal Heritage Management Plan that describes measures that will be implemented to comply with relevant Aboriginal Heritage Impact Permits (AHIPs), manage Aboriginal heritage sites and engage with Aboriginal stakeholders.
- A Biodiversity Management Plan that details measures to manage remnant vegetation and habitat, implement revegetation and regeneration and a programme to monitor and report on the effectiveness of biodiversity management measures.
- A Water Management Plan, including a Site Water Balance, Erosion and Sediment Control Plan (ESCP), Surface Water Management Plan, Groundwater Management Plan and a Surface and Ground Water Response Plan.
- A Waste Management Plan, including a Fines Emplacement Plan.
- A Rehabilitation Management Plan, prepared in accordance with *ESG3: Mining Operations Plan (MOP) Guidelines, September 2013* (DRE, 2013).
- A Rehabilitation Strategy that considers the post-mining final land use and includes strategies and objectives to achieve the final land use.
- A Landscape Management Plan that describes the measures that will be implemented to manage visual impacts of the Mount Pleasant Operation.
- A Maintenance Management Plan that describes the maintenance measures to be applied to the roads and intersections relevant to the Mount Pleasant Operation.

MACH Energy will continue to implement the existing Coal & Allied management plans until revisions to these plans have been approved by the relevant regulatory authorities.

Where relevant, further discussion of these plans is provided under the relevant sub-sections in Section 4.

2.14 COMMUNITY CONTRIBUTIONS

As part of the acquisition of the Mount Pleasant Operation, MACH Energy has maintained the Aboriginal Community Development Fund developed by Coal & Allied. The fund was a community benefit specified in the Native Title Agreement made with the Wonnarua People in 2005.

Since the acquisition, MACH Energy representatives have joined the existing Aboriginal Community Development Fund community members to administer funds, manage its current projects and to seek out new partnerships. Partnerships formed in 2016 include:

- Many Rivers Microfinance;
- Gundi Programme – St Helier's Correctional Centre;
- Polly Farmer Foundation – Enrichment Centre; and
- Parents and Learning.

MACH Energy is currently preparing a Mount Pleasant Operation community development funding framework, to provide an avenue to support other community development projects throughout the life of the operation.

2.15 COMPLAINTS

Seven community complaints were received by the Mount Pleasant Operation in 2017 (up to mid-December 2017), related to:

- noise;
- air quality; and
- Wybong Road maintenance.

2.16 DESCRIPTION OF THE PROPOSED MODIFICATION 3

MACH Energy submitted an application to modify Development Consent DA 92/97 to extend the time limit of open cut mining to 22 December 2026 and extend the Eastern Out of Pit Emplacement in June 2017 (Section 2.1).

The following subsections provide an overview of the changes associated with the proposed Modification 3 (refer to Table 1) that is currently being assessed by the NSW Government and may be determined during the assessment of this Modification.

2.16.1 Construction

Modification 3 would not involve any material additional construction activities to the approved Mount Pleasant Operation.

2.16.2 Operations

Open Cut Extent

Modification 3 would not alter the open cut extent of the approved Mount Pleasant Operation.

Mining Sequence

The planned commencement of mining operations in the south-east of the site, as presented in Modification 3, is generally consistent with the initial development sequence presented in the 1997 EIS.

However, Modification 3 involves some alteration of the mining sequence, as MACH Energy does not currently intend to employ a dragline.

MACH Energy's planned truck and excavator mining methodology, as presented in Modification 3, provides potential flexibility to the mining operation to manage noise and air quality emissions, which will be a key focus of operations in the first five years.

Mine Schedule

The Modification 3 production schedule within the period to 2026 remains within both the total and annual maximum ROM coal and waste rock production levels of the approved Mount Pleasant Operation.

Mobile Fleet

MACH Energy does not currently intend to use a large dragline to assist with the mining of overburden/interburden in the period to 2026 and, therefore, requires some other additional mobile equipment.

Throughout the life of the operation the mobile fleet is expected to vary based on equipment availability, mining requirements and advances in technology, and noise mitigation that may be employed by MACH Energy to maintain compliance with Development Consent DA 92/97, while maximising mining efficiency.

Coal Handling and Preparation

Modification 3 would not involve any material change to coal handling and preparation, or coal reject management associated with the approved Mount Pleasant Operation.

Waste Rock Handling and Emplacement

The extent and depth of the approved open cuts would be unchanged by Modification 3. The total volume of waste rock to be extracted throughout the life of the Mount Pleasant Operation would, therefore, be unchanged.

MACH Energy has, however, identified some incremental improvements to the proposed waste emplacement strategy for the Mount Pleasant Operation.

The Modification 3 emplacement extension (approximately 67 ha) and avoidance of any waste rock emplacement[2] in the approved South West Out of Pit Emplacement would provide operational benefits to MACH Energy in the form of reduced waste rock haulage costs.

Extent of Major Surface Development

The Modification 3 emplacement extension would not materially alter the total surface development of the approved Mount Pleasant Operation. This would be achieved by a reduction in the disturbance area associated with the approved South West Out of Pit Emplacement.

Supporting Infrastructure

Modification 3 would not involve the construction of any material additional supporting infrastructure.

[2] Excluding emplacement of waste rock that may be used for the construction of infrastructure.

Product Coal Transport

Modification 3 would not involve any material change to the approved Mount Pleasant Operation rates of product coal transport.

Workforce

Modification 3 would not involve any material change to the operational workforce of the approved Mount Pleasant Operation.

Traffic Generation

Modification 3 would not involve any material change to the Mount Pleasant Operation approved road transport movements.

2.16.3 Water Management

Modification 3 would not include any significant changes to the approved water management system at the site.

MACH Energy will continue to undertake regular reviews of the water balance, which is inherently highly influenced by site rainfall.

2.16.4 Final Landform

Final landforms and associated visual impacts in Muswellbrook, and the progress of rehabilitation of mine landforms, have been recognised as particular points of interest to the local community and the MSC.

The revision to the waste emplacement strategy associated with Modification 3 provided MACH Energy with the opportunity to improve the Mount Pleasant Operation final landform design in comparison to the landform originally approved in 1999.

In particular, MACH Energy has adopted a range of measures to make the Modification 3 final landform more consistent with the natural topography when viewed from Muswellbrook and other key public vantage points.

2.17 CONSIDERATION OF POTENTIAL INTERACTIONS WITH OTHER NEARBY MINING OPERATIONS

2.17.1 Bengalla Mine

Bengalla Mining Company owns the existing Bengalla Mine, which is an open cut coal mine located immediately south of the Mount Pleasant Operation.

Bengalla Mine is approved to produce up to 15 Mtpa of ROM coal until 28 February 2039 under Development Consent SSD-5170, as modified.

The Mount Pleasant Operation and Bengalla Mine entered into a Master Cooperation Agreement, which has been developed to manage interactions between the two mining operations.

The ultimate extent of the approved Bengalla Mine open cut intersects the Mount Pleasant Operation rail spur that is currently being constructed by MACH Energy.

Although the intersection of the Bengalla Mine open cut with the approved rail spur alignment is some years away, MACH Energy is proposing this Modification to seek relevant authorisations required for the future product transport facilities for the Mount Pleasant Operation.

Potential cumulative interactions between the Bengalla Mine and the Mount Pleasant Operation, where relevant to this Modification, are discussed in Section 4 and the relevant environmental studies (e.g. noise, air quality and visual assessments).

2.17.2 Mt Arthur Coal Mine

Hunter Valley Energy Coal (a wholly owned subsidiary of BHP Billiton Limited) owns the existing Mt Arthur Coal Mine, which is an open cut coal mine located approximately 8 km south of the Mount Pleasant Operation.

The Mt Arthur Coal Mine is approved to mine up to 32 Mtpa of ROM coal until 30 June 2026 under Project Approval 09_0062, as modified.

Potential cumulative interactions between the Mt Arthur Coal Mine and the Mount Pleasant Operation, where relevant to the Modification, are considered in the relevant environmental studies (e.g. noise and air quality).

2.17.3 Mangoola Coal

Mangoola Coal Operations Pty. Limited owns and operates Mangoola Coal, which is an open cut coal mine located approximately 8 km west of the Mount Pleasant Operation.

Mangoola Coal is approved to mine up to 13.5 Mtpa of ROM coal for 21 years under Project Approval 06_0014, as modified.

Mangoola Coal Operations Pty. Limited has also obtained Secretary's Environment Assessment Requirements for the Mangoola Continued Operations Project.

The Mangoola Continued Operations Project is a proposed mine extension to extend the life of Mangoola Coal by some 7 years and primarily comprises a north-western open cut extension of the operations (Mangoola Coal Operations Pty. Limited, 2017).

The Mangoola Continued Operations Project Environmental Impact Statement will be required to consider potential cumulative impacts with the approved Mount Pleasant Operation.

Cumulative air quality emissions of the approved Mangoola Coal have been considered in the Air Quality Assessment (Appendix B).

2.17.4 Dartbrook Mine

Australian Pacific Coal Limited owns the Dartbrook Mine, which is an approved underground coal mine located immediately north of the Mount Pleasant Operation. The Dartbrook Mine was placed in care and maintenance in 2006.

The Dartbrook Mine is approved to mine up to 6 Mtpa of ROM coal for a period of 21 years.

Potential cumulative interactions between the Dartbrook Underground Mine (including the pit top) and the Mount Pleasant Operation, where relevant to the Modification, have been considered in relevant environmental studies (e.g. noise and air quality).

Following the acquisition of the asset from Anglo American and Marubeni in May 2017, Australian Pacific Coal Limited has indicated on its website that it intends to apply for an open cut development at the Dartbrook Mine at some stage in the future.

Any future application to undertake open cut mining at the Dartbrook Mine would be subject to a separate assessment process that would be required to consider potential cumulative impacts with the approved Mount Pleasant Operation.

2.17.5 Muswellbrook Coal Mine

Muswellbrook Coal Company (a wholly owned subsidiary of Idemitsu Australia Resources Pty. Ltd.) owns the Muswellbrook Coal Mine which is an open cut and underground coal mine located north-east of Muswellbrook.

The Muswellbrook Coal Mine is currently operated as an open cut coal mine that is consented to carry out mining operations to 2022, producing a maximum of 2 Mtpa of product coal.

MACH Energy notes that a Gateway Certificate has also been issued for a potential open cut known as the West Muswellbrook Project to the north-west of the Mount Pleasant Operation. However, an Environmental Impact Statement for the Project has not yet been exhibited.

Any future application to undertake open cut mining at West Muswellbrook would be subject to a separate assessment process that would be required to consider potential cumulative impacts with the approved Mount Pleasant Operation.

Potential cumulative interactions between the approved Muswellbrook Coal Mine and the Mount Pleasant Operation, where relevant to the Modification, are considered in the relevant environmental studies (e.g. noise and air quality).

2.17.6 Other Regional Operations

A number of other mines are located in the Hunter region. Potential interactions with these mines are typically limited to shared use of the Main Northern Railway, shared use of supporting contractors, contributions to regional background air quality and traffic movements and socio-economic effects on the area (e.g. support industries based in Muswellbrook and other centres in the Hunter Valley).

3 DESCRIPTION OF THE MODIFICATION

3.1 NEED FOR THE MODIFICATION

The ultimate extent of the approved Bengalla Mine open cut under Development Consent SSD-5170 intersects the approved Mount Pleasant Operation rail spur.

While the intersection of the Bengalla Mine open cut with the approved rail infrastructure is still some years away, MACH Energy is proposing this Modification to obtain approval for alternative product transport facilities for the Mount Pleasant Operation.

The rail infrastructure currently being constructed at the Mount Pleasant Operation is, therefore, expected to operate for a number of years before the new infrastructure is constructed and commissioned.

Once the new infrastructure has been commissioned, relevant components of the redundant infrastructure (e.g. rail track) would be decommissioned and removed prior to the Bengalla Mine advancing through the same area.

3.2 CONSTRUCTION

The Modification would involve the construction of:

- approximately 5 km of private rail spur;
- a rail loop to the east of the CHPP;
- a new rail load-out facility and associated services and water management infrastructure located on the rail loop;
- a new product conveyor and associated services and water management infrastructure, linking the product stockpiles located at the CHPP and the rail load-out facility;
- a new water pipeline (buried where located in the floodplain of the Hunter River), associated electricity supply and pump station facility located on the Hunter River;
- a rail overpass of Wybong Road and road overpass at Overton Road to maintain uninterrupted public road access, avoiding the need for new rail level crossings;
- some relocation of internal property access and farm tracks, electrical infrastructure and services to accommodate the new rail spur;
- suitable flood mitigation infrastructure, in the new rail spur;
- removal of redundant infrastructure associated with the current approved rail spur, loop, conveyors, rail load-out facility and water pipeline; and
- access tracks, hardstands and minor supplementary works that may be required to facilitate the proposed construction activities.

The provisional locations of the key elements to be constructed are shown on Figures 3 and 5.

The following discussion on the Modification is provisional, subject to the completion of detailed engineering design prior to construction.

3.2.1 Construction Period

It is anticipated that the construction of the new infrastructure would occur over a period of approximately 12 months, and the removal of redundant rail infrastructure would then occur over approximately the subsequent six month period.

Based on current planning, it is anticipated that the construction of the new infrastructure would commence before approximately Q1 2020, subject to MACH Energy obtaining all necessary environmental authorisations.

The timing of the Modification construction activities would also be subject to the outcomes of ongoing consultation with the Bengalla Mine, which is the underlying landowner for a portion of the Modification infrastructure.

3.2.2 Construction Hours

Within the Mount Pleasant Operation MLs, construction activities would be undertaken up to 24 hrs per day and seven days per week, where the activities can be undertaken in compliance with the Development Consent DA 92/97 noise criteria.

Earthmoving construction activity for the private rail spur occur outside of the Mount Pleasant Operation MLs would generally be limited to standard construction hours. Where practical, works outside of the standard construction hours would prioritise lesser noise generating activities (e.g. welding and electrical works).

Construction of the water pipeline and Hunter River pump station would be limited to standard construction hours.

3.2.3 Construction Workforce

The workforce for the Modification construction activities would typically remain below a peak of 60 people (estimated 50 people on average). This peak is anticipated to occur after the construction of the majority of the Mount Pleasant Operation facilities is completed.

Therefore, the construction peak of up to 350 people at the Mount Pleasant Operation would be unchanged.

3.2.4 Construction Equipment

The equipment used during construction of the relocated infrastructure would be very similar to the equipment that is currently operating on-site to construct the approved rail and conveyor infrastructure.

MACH Energy's anticipated key infrastructure construction fleets for the Modification are presented in the Noise Assessment (Appendix A).

3.2.5 Public Road Crossings

The proposed rail spur crosses both Overton Road and Wybong Road (Figure 5).

Overton Road is a local access road that extends south from Wybong Road, is partly sealed, and is a no through road (Figure 5). Overton Road services a small number of Bengalla Mine-owned residences.

Wybong Road is a local road connecting Kayuga Road at Muswellbrook, and Golden Highway at Sandy Hollow (Figure 3).

The new rail spur has been designed to incorporate rail or road overpasses for both Overton Road and Wybong Road to avoid the need for any new public road level crossings. In both cases, public road access would be maintained during construction.

It is anticipated that a rail bridge would be constructed over Wybong Road, subject to detailed design. Due to a difference in topography, Overton Road would require a minor road realignment in the north to facilitate a road bridge over the private rail cutting (Figure 5).

The realigned section of Overton Road would comprise a 6 metre (m) wide road with 1 m wide shoulders, and would incorporate a one lane rail spur overpass bridge (3 m lane and 0.5 m shoulders) to reconnect to Overton Road. It is noted that the new public road bridge would service one residential property and provide general ancillary access to Bengalla Mine land.

The realigned Overton Road would also connect with a new 3 m wide sealed private access road to the east of the new road bridge and rail spur to connect Overton Road to the Overdene Homestead (Figure 5).

3.2.6 Rail Spur and Loop

The private rail spur construction will primarily comprise earthworks (i.e. cut and fill), provision of rail ballast (gravel material) to support rail sleepers, rail track, rail fixings and signalling.

Sections of the new rail spur would also require flood mitigation works (e.g. series of box culverts) and signalling/switching facilities (Section 3.2.13).

Rapid construction of the rail spur and loop would be facilitated by splitting the construction task into two or three construction crews that would each work on different sections of the rail infrastructure in parallel.

Limited short-term truck haulage of some fill material along the corridor, or between the rail corridor and the Mount Pleasant Operation mining or temporary borrow pit areas authorised in the Mining Operations Plan, may be required to manage the cut and fill materials balance or geotechnical requirements.

3.2.7 Rail Spur Train Lighting Mitigation

MACH Energy recognises that the new rail spur is, in part, aligned with Wybong Road, hence MACH Energy product coal trains travelling eastwards on the new spur may result in additional train lighting effects in Muswellbrook.

The rail spur design therefore provisionally includes three separate sections of lighting screens that would nominally be constructed from a steel frame, chain wire mesh and shade cloth to minimise potential direct train lighting impacts on the town. The lighting screens would be approximately 5 m tall.

Further discussion of this proposed measure is provided in Section 4.6.3.

3.2.8 Infrastructure Works in the ARTC Rail Corridor

The new rail turnout associated with the Modification would require the construction of new supporting infrastructure within the ARTC-controlled rail corridor on the Muswellbrook – Ulan Rail Line.

This infrastructure is anticipated to comprise rail interlocking systems, trenching beside the existing rail line to establish electrical connections to an existing Signal Equipment Room (signal hut), establishment of new location cases and train signals located up to approximately 400 m up-rail or down-rail of the rail spur turnout.

If required, works in the ARTC rail corridor may also involve upgrades to, or relocation of, an existing passive level crossing that provides property access across the Muswellbrook – Ulan Rail Line to two residences in the vicinity of the new rail turnout.

The final location and layout of this infrastructure would be refined in consultation with the ARTC as part of the Modification detailed engineering design.

3.2.9 Water Pipeline and Hunter River Pump Station

Approximately 6.4 km of new water supply pipeline would be constructed between the Hunter River and the MWD.

The pipeline would comprise a high density polyethylene pipe, with a series of concrete pipe supports where above ground (approximately 3.4 km) or, alternatively, will be buried at a minimum depth of approximately 600 millimetres (mm) within the Hunter River floodplain (approximately 2.8 km). The pipeline diameter would be subject to detailed design but would nominally be between 650 mm and 850 mm in diameter.

The pump station would be supplied with electricity by a 22 kV electricity transmission line from the Mount Pleasant Operation substation (Figure 5). The main transfer pumps would nominally comprise two 400 kilowatt electrical 200 litres per second centrifugal pumps and associated electrical supply and enclosures/hardstands.

The pump station facility would largely be above ground; however, it would also include submerged pumps and a water inlet system adjacent to the Hunter River. The pump station would be designed and operated to minimise potential impacts on fish in the vicinity of the inlet (Section 4.10.3).

The pump station facility would be located following detailed design and would comprise the pump infrastructure and noise attenuation enclosure (e.g. insulated cladding) on a concrete pad.

3.2.10 Supporting Infrastructure

MACH Energy has designed the proposed new rail infrastructure in consultation with the Bengalla Mine and the MSC to minimise potential impacts on existing infrastructure, where practicable.

The new rail spur has also been designed so that it would not preclude the future development of a local public eastern link road to potentially connect Kayuga Road and Bengalla Road, which is advocated by MSC (MSC, 2015).

The Modification would involve the relocation of supporting infrastructure, such as electricity transmission lines, optical cable and water pipelines where required to maintain services to relevant local dwellings and/or the Bengalla Mine and Mount Pleasant Operation, to the satisfaction of the relevant service provider.

3.2.11 Extent of Major Surface Development

The Modification proposed linear infrastructure would involve approximately 50 ha of additional land disturbance.

However, the majority of works would be located on Mount Pleasant Operation and Bengalla Mine-owned land and the ARTC rail corridor. Much of the disturbance area is existing cleared agricultural land associated with farming enterprises on the highly disturbed Hunter River floodplain and surrounds.

Figure 5 illustrates the provisional location of the key Modification infrastructure on an aerial photograph. Consideration of the potential impacts of the land disturbance associated with the Modification is presented in Section 4 and Appendices E to I.

As part of the Modification, MACH Energy would also further restrict the area in the South West Out of Pit Emplacement footprint that could be used for development of major infrastructure, thereby reducing the area of native vegetation and associated potential fauna habitat to be disturbed by the Modification (Figure 3).

3.2.12 Construction Water Management

An ESCP has been developed at the Mount Pleasant Operation to manage potential erosion impacts and to monitor the effectiveness of erosion and sediment controls and is included in the Water Management Plan.

The ESCP would be updated if required for the Modification, and the following measures would be adhered to in areas where disturbance from construction occurs:

- relevant internal approvals and permits would be obtained before commencement of surface disturbance (e.g. Ground Disturbance Permits);
- the extent of disturbance (including trafficable areas) would be minimised and identified using appropriate pegging, barriers or signage;
- appropriate erosion and sediment controls would be approved and established prior to land disturbance and would remain in place until exposed areas are stabilised;
- clean water runoff from undisturbed catchments would be diverted around the disturbance areas via diversion drains and banks to discharge into natural watercourses, where practical;
- runoff from disturbed areas would be diverted into sediment dams;
- drains, diversion banks and channels would be stabilised and scour protection would be provided as necessary;
- temporary erosion and sediment control measures would be used, and may include silt fences, hay bales, jute mesh, check dams, cross banks, contour banks, armouring and straw mulching; and
- topsoil in disturbance areas would be stockpiled for reuse.

Construction water supply (e.g. for use in dust suppression) would be obtained from the MWD or from existing licensed bores located on MACH Energy-owned land in the vicinity of the construction activities.

3.2.13 Floodplain Mitigation Measures

The final detailed design of the proposed rail spur (and associated hydraulic structures) would be designed to meet the following criteria for potential flooding impacts for a 1% Annual Exceedance Probability (AEP) flood event:

- no more than 0.1 m increase in flood levels on any privately-owned land;
- no more than 0.01 m increase in flood levels at any privately-owned dwellings or commercial spaces;
- no more than 0.01 m increase in flood levels at any public roads servicing privately-owned properties; and
- no more than 0.1 metres per second (m/s) increase in flood velocities at privately-owned dwellings or commercial spaces.

A conceptual mitigation design was modelled by WRM Water and Environment (2017) to confirm that the proposed rail spur can meet the criteria above (Appendix D).

3.2.14 Local Land Contamination Management Measures

A Detailed Site Investigation for the Modification was undertaken by SESL Australia (2017) and is presented in Appendix I. The Detailed Site Investigation was conducted to augment a preliminary site investigation conducted in October 2017 to identify if any particular land contamination was present in the vicinity of the Modification (Appendix I).

Several features of interest within (and/or immediately adjacent to) the Modification area were identified and subject to soil sampling and analysis. Four areas were identified as having some minor level of contamination, however the only contaminants requiring specific management are associated with asbestos (e.g. fragments of fibrous cement building material) in the surface soil (Appendix I).

An Asbestos Management Plan would be developed for the management of the identified asbestos contamination and procedures would also be developed so any potential additional contaminants (e.g. further asbestos containing material) that may be uncovered during earthworks is correctly identified and appropriately managed during construction of the Modification.

In addition, elevated levels of lead and/or nickel were identified at several locations (Appendix I). If off-site disposal (i.e. outside of the proposed Modification disturbance footprint) of any soil materials from these locations is required for the Modification, further test work may be required to reduce potential off-site disposal costs (Appendix I).

3.3 OPERATIONS

3.3.1 Open Cut Operations

The Modification would not materially alter the open cut operations of the approved Mount Pleasant Operation, except with respect to a minor reduction in the southern limit of the South Pit.

This reduction in the extent of the South Pit open cut is required to maintain a suitable setback distance from the new rail spur of approximately 50 m to maintain a suitable geotechnical factor of safety.

3.3.2 Coal Handling and Preparation

The Modification would not involve any material change to coal handling and preparation, or coal reject management associated with the approved Mount Pleasant Operation, except with respect to the proposed duplication of the product coal conveyors and train loading facilities to service the new rail loop.

3.3.3 Product Coal Transport

The Modification would not involve any change to the approved Mount Pleasant Operation rates of product coal rail transport, as the rates of coal production would be unchanged.

The location of the rail load-out facility would be altered, and the location at which the Mount Pleasant Operation rail spur intersects the Muswellbrook – Ulan Rail Line would be located approximately 6 km closer to the Port of Newcastle.

3.3.4 Workforce

The Modification would not involve any change to the operational workforce of the approved Mount Pleasant Operation.

3.3.5 Traffic Generation

The Modification would not involve any material change to Mount Pleasant Operation approved road transport movements during operations.

The modest construction activity associated with the Modification would not coincide with peak operational mining activities at the mine.

Cumulative traffic generation associated with the Modification and operational activities in 2020/2021 would remain below the operational peak traffic generation that would occur later in the life of the operation.

3.3.6 Operational Water Management

The Modification would not include any significant changes to approved water management systems, apart from the relocation of the approved Hunter River pipeline and associated pump station facilities.

3.4 FINAL LANDFORM

With respect to the removal of redundant infrastructure within the footprint of the Bengalla Mine open cut, no regrading of the rail spur and rail loop batters, replacement of topsoil or other rehabilitation measures would be implemented, as these areas will subsequently be disturbed by the Bengalla Mine.

Other redundant infrastructure decommissioning areas would be rehabilitated in accordance with the requirements of the Mount Pleasant Operation Mining Operations Plan (including any necessary works within the ARTC rail corridor).

The Modification would not materially alter the final landform of the Mount Pleasant Operation.

At the cessation of mining operations it is anticipated that the conveyors and rail infrastructure would be removed, the rail corridor cut and fill areas regraded and the rail corridor and rail loop would be rehabilitated.

This outcome would be subject to consultation with regulatory agencies, including the MSC and the DRG, with respect to final land use of the mine site (i.e. the rail infrastructure could alternatively represent a valuable facility for use by other intensive employment-generating industries) and the Bengalla Mine (with respect to Bengalla Mine land that is the subject of the Modification).

4 ENVIRONMENTAL ASSESSMENT

4.1 IDENTIFICATION OF KEY ISSUES

The approved open cut extents would not be increased and the depth of mining at the Mount Pleasant Operation would be unchanged by the Modification (Section 3).

There would also be no increase to the site operational workforce or to the annual maximum or total coal or waste rock that would be produced throughout the life of the operation.

Therefore there would be no material alteration to the impacts of the approved Mount Pleasant Operation, as modified by Modification 3[3], on the following environmental aspects:

- mining method, open cut operations, blasting and waste rock management;
- coal processing, handling and stockpile management;
- fine and coarse reject management;
- water resources;
- final landform; and
- regional population effects associated with the operation of the mine.

The proposed changes to the approved Mount Pleasant Operation that may have some material effect on the approved environmental impacts of the mine therefore comprise:

- construction related impacts (e.g. noise and air quality);
- potential impacts associated with the land disturbance required for construction; and
- the product coal conveyors, rail load-out facility and rail spur being located further to the east during operations.

The short-term increase in construction workforce (i.e. approximately 50 people on average) associated with the Modification anticipated in 2020/2021 would not coincide with the site peak operational workforce.

Cumulative Modification construction workforce and deliveries, plus coincident operational traffic generation in the period 2020/2021 would remain below the peak of approved operational traffic generation that would occur later in the mine life.

[3] Yet to be determined.

On the basis of the above, it can be concluded that potential environmental impacts of the Modification are largely restricted to the following areas:

- potential changes to off-site air and noise emissions associated with the modified product loading and rail load-out facilities between the Mount Pleasant Operation CHPP product coal stockpiles and the Muswellbrook – Ulan Rail Line;
- potential flooding impacts associated with construction of new rail spur infrastructure within the floodplain of the Hunter River;
- any potential implications of the Mount Pleasant Operation rail spur intersection with the Muswellbrook – Ulan Rail Line being some 6 km closer to port;
- visual implications of the Modification rail infrastructure elements that are visible from privates residences and public roads; and
- land disturbance activities associated with the construction of the new infrastructure and associated potential impacts on heritage, biodiversity and existing land use.

It is noted that MACH Energy has consulted with the ARTC and the HVCCC with respect to the proposed new rail spur junction with the Muswellbrook – Ulan Rail Line (Section 1.3) and no material concerns were raised with the location of the tie-in.

Key supporting specialist appendices are listed below, along with the relevant subsections where these potential impacts are considered in this EA:

- Noise Assessment (Appendix A) and Sections 4.2 to 4.4.
- Air Quality Assessment (Appendix B) and Section 4.5.
- Visual Assessment (Appendix C) and Section 4.6.
- Flood Assessment (Appendix D) and Sections 3.2.13 and 4.7.
- Aboriginal Cultural Heritage Assessment (Appendix E) and Section 4.8.
- Statement of Heritage Impact (Appendix F) and Section 4.9.
- Terrestrial Ecology Assessment (Appendix G) and Aquatic Ecology Assessment (Appendix H) and Section 4.10.
- Detailed Site Investigation (Appendix I) and Section 3.2.14.

4.2 OPERATIONAL NOISE

A Noise Assessment for the Modification was undertaken by Wilkinson Murray (2017a) and is presented in Appendix A.

The operational noise assessment was conducted in accordance with the NSW *Industrial Noise Policy* (INP) (EPA, 2000).

On 30 October 2017 the *Noise Policy for Industry* (EPA, 2017a) was released, which replaces the INP. Under the *Implementation and transitional arrangement for the Noise Policy for Industry (2017)* (EPA, 2017a), the INP continues to be applicable for the assessment of an application under certain circumstances.

MACH Energy sought confirmation from the DPE that the Modification would be determined in accordance with the INP rather than the *Noise Policy for Industry* (2017) (EPA, 2017a). The DPE confirmed this via a letter dated 30 November 2017.

Potential rail transport noise and construction noise impacts of the Mount Pleasant Operation incorporating the Modification are discussed in Sections 4.3 and 4.4, respectively.

Operational noise associated with the duplication of the Hunter River water supply pump station was also assessed. Given the distance separating the pump station and the closest privately-owned receivers, operational noise levels of this relatively minor component of the Modification are expected to comply with the relevant noise criteria (Appendix A).

4.2.1 Background

Noise Measurement and Description

The assessed noise levels presented in Appendix A and summarised in this section are expressed in A-weighted decibels (dBA). The logarithmic dBA scale simulates the response of the human ear, which is more sensitive to mid to high frequency sounds and relatively less sensitive to lower frequency sounds.

Hearing 'nuisance', for most people, begins at noise levels of about 70 dBA, while sustained (i.e. eight hours) noise levels of 85 dBA can cause hearing damage.

Measured or predicted noise levels are expressed as statistical noise exceedance levels (L_{AN}) which are the levels exceeded for a specific percentage (N) of the interval period. For example, L_{A10} is the noise level that is exceeded for 10% of the sampling period and is also considered to be the average maximum noise level.

The equivalent continuous noise level (L_{Aeq}) refers to the steady sound level, which is equal in energy to the fluctuating levels recorded over the sampling period.

Background Noise Levels and Criteria

Given the local setting (i.e. proximity to the township of Muswellbrook, rural landholdings and neighbouring mines) the background noise environment in the vicinity of the Mount Pleasant Operation is complex.

To reflect this complexity, a number of Noise Assessment Groups (NAGs) were adopted in Development Consent DA 92/97 to account for the variance in background noise levels surrounding the Mount Pleasant Operation.

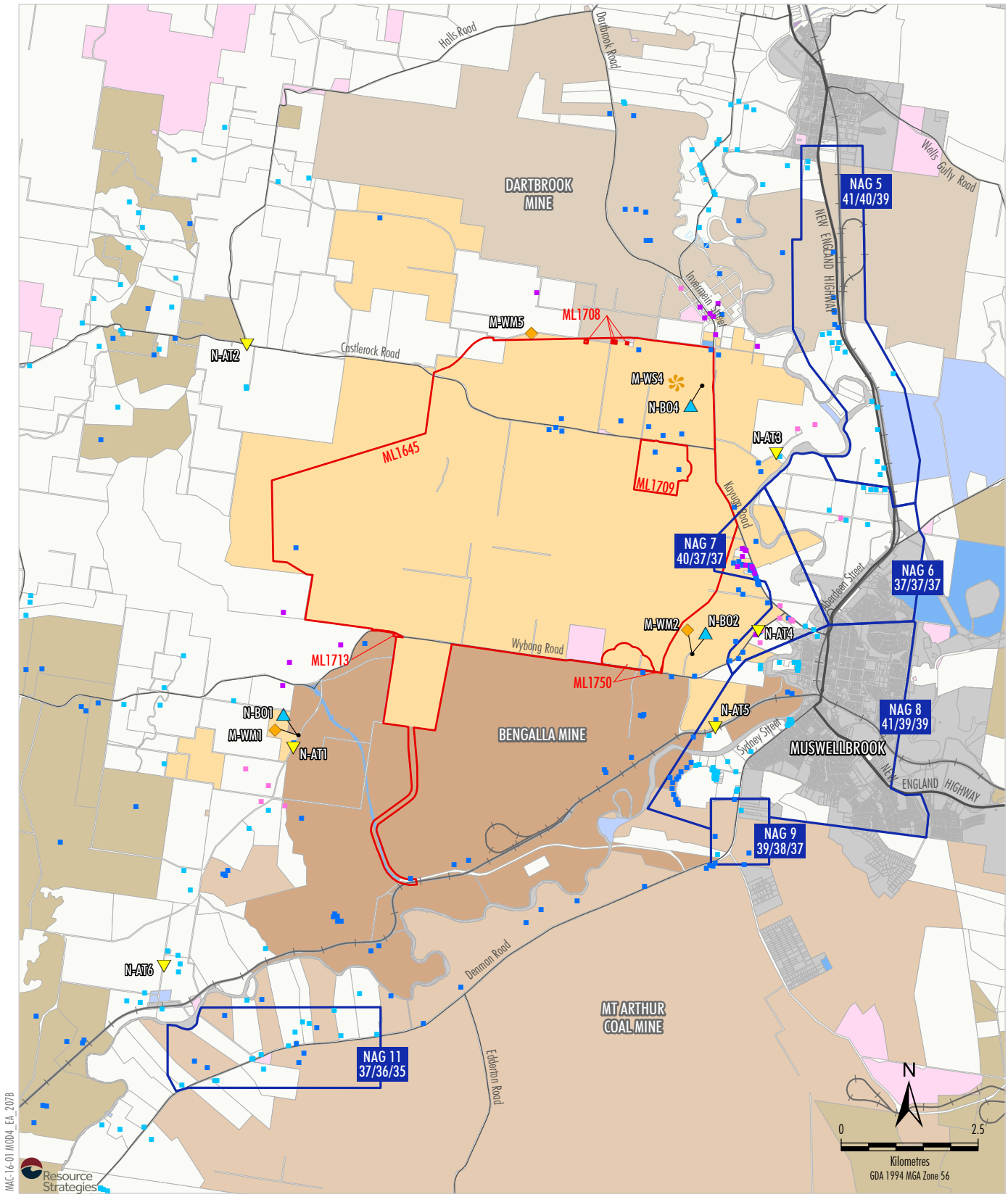
Based on the background levels for each NAG and the predicted noise impacts of the approved Mount Pleasant Operation, general noise criteria for each NAG, and specific higher noise criteria for a selection of proximal private residences, are described in Table 3 of Development Consent DA 92/97.

In the Modification 3 Noise and Blasting Assessment (Wilkinson Murray, 2017b), Wilkinson Murray recommended simplification of the NAGs and revisions to the Development Consent DA 92/97 noise criteria based on changes to land ownership and contemporary noise assessment results. Further detail regarding Wilkinson Murray's recommendations as part of the Modification 3 Noise and Blasting Assessment is included in Appendix A.

It is noted that the EPA (2017c) has generally endorsed the proposed Modification 3 updates to the Development Consent DA 92/97 noise limits.

The simplified NAGs (Figure 9) and criteria recommended by Wilkinson Murray in the Modification 3 Noise and Blasting Assessment (Wilkinson Murray, 2017b) have been applied for the Modification noise assessment (Table 2).

The cumulative noise criteria from Table 5 of Development Consent DA 92/97 are provided in Table 3 and have also been considered in the Noise Assessment.



LEGEND

- Mining Lease Boundary
- Muswellbrook and Upper Hunter LEPs Zones B2, B5, IN1, SP2, R2, R5, RE1, RE2 and W1
- Crown
- Crown/State of NSW
- State of NSW
- Muswellbrook Shire Council
- Upper Hunter Shire Council
- Mount Pleasant Controlled
- Bengalla Controlled
- Dartbrook Controlled
- Mt Arthur Controlled
- Other Mining/Resource Company Controlled
- Privately-owned Land
- Mine-owned Dwelling
- Privately-owned Residence - MPO Acquisition on Request
- Privately-owned Residence - MPO Mitigation on Request
- Other Privately-owned Residence
- Revised Noise Assessment Group (NAG)
- 37/36/35 Default NAG Noise Criteria for Day/Evening/Night

Monitoring Site

- Attended Noise
- Real-Time Noise
- Weather Mast
- Weather Station

Source: NSW Land & Property Information (2017); NSW Division of Resources & Geoscience (2017)

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MOUNT PLEASANT OPERATION

Proposed Noise Assessment Groups and Monitoring Locations

Figure 9

Table 2
Proposed Noise Criteria (dBA)

Location		Day	Evening	Night	
		$L_{Aeq(15min)}$	$L_{Aeq(15min)}$	$L_{Aeq(15min)}$	$L_{A1(1min)}$
N/A	139, 154, 257, 258a	40	40	40	45
	140, 259	39	39	39	45
	260, 261	37	37	37	45
	169, 272	36	36	36	45
NAG 5	All privately-owned land	41	40	39	45
NAG 6	140c	41	41	41	45
	203	40	40	40	45
	86b, 202	39	39	39	45
	198, 204	38	38	38	45
	All other privately-owned land	37	37	37	45
NAG 7	68, 74	43	42	42	45
	86	42	42	42	45
	77	42	41	41	45
	79, 80, 526	41	41	41	45
	83	40	39	39	45
	All other privately-owned land	40	37	37	45
NAG 8	35, 35b	42	41	41	45
	289	41	40	40	45
	23, 84	40	40	40	45
	All other privately-owned land	41	39	39	45
NAG 9	All privately-owned land	39	38	37	45
NAG 11	All privately-owned land	37	36	35	45
All other privately-owned land		35	35	35	45

After: Wilkinson Murray (2017b).

Note: Noise generated by the development is to be measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NSW INP.

Table 3
Development Consent DA 92/97 Cumulative Noise Criteria (dBA) $L_{Aeq(period)}$

Location	Day	Evening	Night
NAG 8, 9	55	45	40
All other privately-owned land	50	45	40

After: Development Consent DA 92/97.

Note: Cumulative noise is to be measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NSW INP.

Noise Monitoring Programme and Noise Management Strategy

MACH Energy has prepared a Noise Management Plan for the Mount Pleasant Operation, which describes the noise monitoring programme and noise management strategies for the approved mine.

The monitoring programme consists of a combination of off-site operator-attended monitoring sites and continuous real-time monitors. Current attended and real-time noise monitoring locations are shown on Figure 9.

In accordance with the Noise Management Plan, operator-attended noise monitoring is used for demonstrating compliance with noise impact assessment criteria. Continuous real-time monitoring (which measures both mine and other noise sources) is used as a noise management tool to assist MACH Energy with implementing proactive and reactive noise management actions to minimise potential noise impacts from the Mount Pleasant Operation at private residences.

The noise management strategy for the Mount Pleasant Operation includes the following:

- operating mobile equipment in less exposed areas during the evening and night;
- the use of noise attenuation on all major mobile plant;
- procurement of contemporary technology fixed plant; and
- implementation of additional proactive and reactive mitigation measures based on the predictive modelling system and real-time monitoring.

The real-time monitoring triggers are set at levels designed to maintain compliance with Development Consent DA 92/97 noise criteria. The protocol for responding to real-time noise monitoring triggers is described in the Noise Management Plan.

4.2.2 Environmental Review

Operational Noise Modelling

The Environmental Noise Model was used by Wilkinson Murray (2017a) to simulate the Mount Pleasant Operation incorporating Modification 3 (yet to be determined) and the Modification using noise source information (i.e. indicative sound power levels and locations) to predict resultant noise levels at relevant receiver locations.

The Environmental Noise Model is recommended by the INP (EPA, 2000) and has been previously accepted by the NSW EPA for use in environmental noise assessments (Appendix A).

The Environmental Noise Model considers meteorological effects, surrounding terrain, the distance from source to receiver and noise attenuation. The locations of modelled receivers (i.e. dwellings) are shown on Figure 9.

Wilkinson Murray (2017a) considered the noise sensitive receivers potentially impacted by the Modification (i.e. privately-owned and mine-owned dwellings located to the east, south and south-east of the Mount Pleasant Operation, Appendix A).

Assessment of Meteorological Conditions

The INP generally directs the use of a simple set of adverse meteorological data in the assessment of noise impacts (EPA, 2000). However, for noise modelling in this and other projects, Wilkinson Murray (2017a) has adopted the approach of predicting noise levels at nearby receivers for a range of meteorological conditions based on meteorological data obtained from the locality.

A 10th percentile exceedance noise level is calculated (i.e. the level that is exceeded for 10% of all assessed meteorological conditions), which is then compared with relevant criteria. The meteorological conditions are assessed for the day, evening and night across all seasons (i.e. summer, autumn, winter and spring) and include noise-enhancing conditions such as temperature inversions and source to receiver winds (Appendix A).

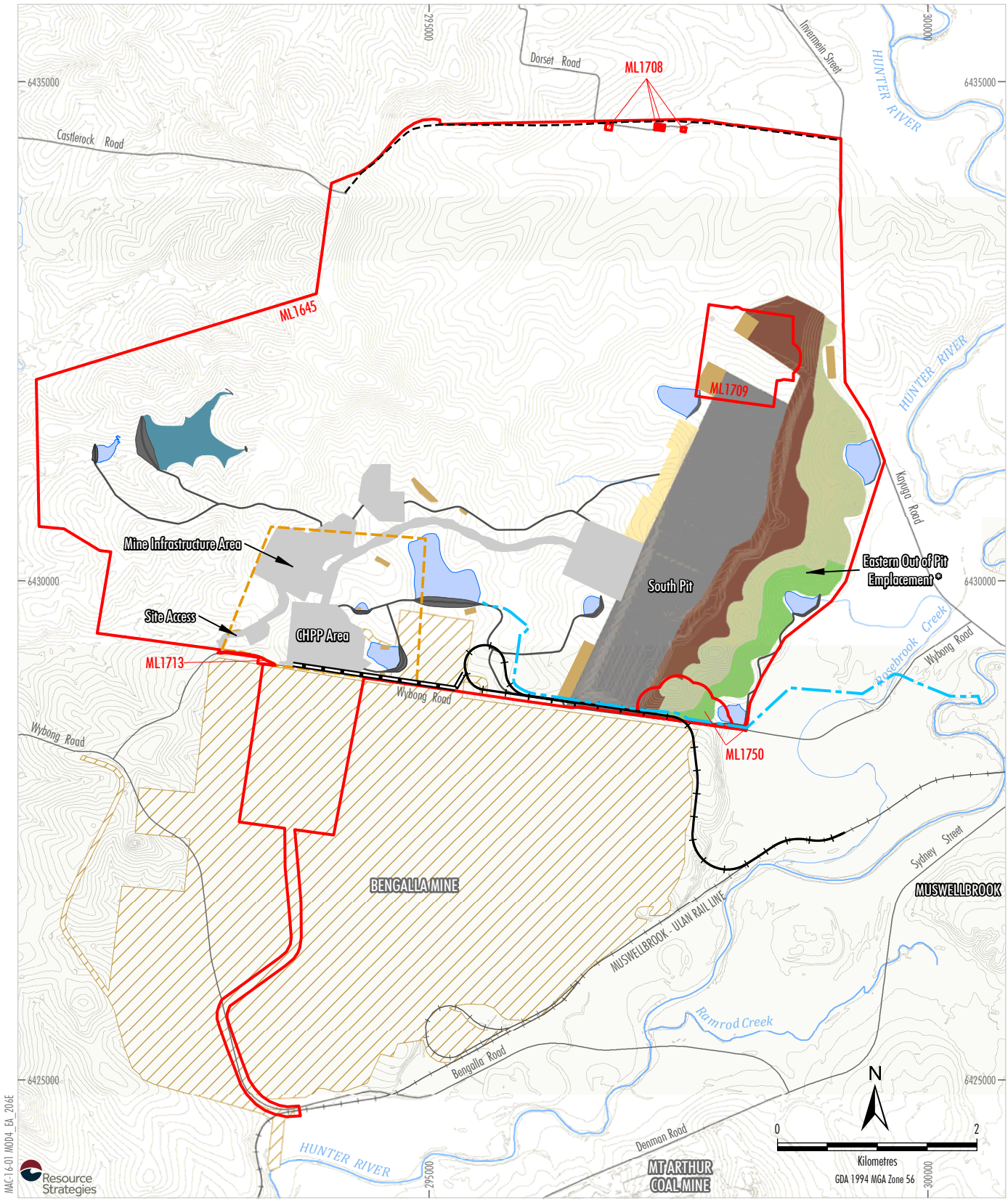
The noise modelling completed for the Modification uses the same data as for the Modification 3 Noise and Blasting Assessment (Wilkinson Murray, 2017b) and is based on meteorological data sourced from on-site monitoring, other local meteorological monitoring (NSW OEH monitors) and regional Bureau of Meteorology monitoring stations.

Noise Modelling Scenario

A single operational scenario of the Modification was assessed for potential noise impacts, using the most relevant operational scenario assessed for Modification 3 (2021). The provisional general arrangement for the Mount Pleasant Operation incorporating Modification 3[4] and the Modification is provided on Figure 10. The modified product coal conveyor, train load-out bin and rail transport within the Mount Pleasant Operation MLs were incorporated into the Modification 3 year 2021 noise model (Appendix A).

The most conservative scenario for rail transport within the Mount Pleasant Operation MLs was assessed in conjunction with the Modification 3 proposal. That is, a train approaching the loop, stopping and then loading was modelled, rather than a single train loading or a train loading and another train waiting to be loaded (Appendix A).

[4] Yet to be determined.



LEGEND

- Mining Lease Boundary
- Bengalla Mine Approved Disturbance Boundary (SSD-5170)
- Infrastructure Area Envelope
- Active Stripping Area
- Active Mining Area
- Active Overburden Emplacement Area
- Topsoil Stockpile
- Initial Rehabilitation
- Established Rehabilitation
- Infrastructure and Borrow/Stockpile Area
- Access Road
- Northern Link Road
- Water Dam
- Fines Emplacement Area

Key Elements of the Modification #

- Proposed Rail
- Proposed Product Conveyor
- Proposed Water Pipeline

Notes:

* Emplacement Extension subject to Approval of Modification 3.

\# Modification would also include additional minor components not shown, e.g. pump station, electricity transmission lines, signalling, access tracks etc.

Source: NSW Land & Property Information (2017); NSW Division of Resources & Geoscience (2017); MACH Energy (2017)

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MOUNT PLEASANT OPERATION

Provisional 2021 General Arrangement Incorporating the Modification

Figure 10

Reasonable and Feasible Mitigation

Wilkinson Murray (2017b) conducted an assessment of reasonable and feasible noise mitigation measures for the Modification 3 Noise and Blasting Assessment, particularly in relation to evening and night-time operations.

The assessment determined a range of reasonable and feasible mitigation measures would be available to MACH Energy, including operational controls incorporated into the modelling (i.e. optimised operational shielding and use of noise attenuated major mobile plant).

In practice, these measures would be employed as required throughout the life of the Mount Pleasant Operation in order to maintain compliance with the relevant criteria in Development Consent DA 92/97.

Additional proactive/reactive mitigation scenarios considered and adopted in the noise modelling ranged from shutting down a single item of mobile plant (e.g. a drill) to shutting down a series of items that are co-operatively engaged in a specific mining activity (e.g. one waste removal haul fleet, including haul trucks, dozers, excavator and drill) (Wilkinson Murray, 2017b).

Wilkinson Murray (2017a) adopted the same operational noise mitigation measures for the Modification. That is, operational noise predictions include mitigation such as optimised shielding of equipment and the use of noise attenuated major mobile plant, and where required, additional proactive/reactive mitigation measures were adopted in the modelling.

Predicted Noise Levels

Project-only Noise Emissions

With the continued implementation of the adopted controls (i.e. operational shielding, use of noise attenuated major mobile plant and contemporary fixed plant) and the proactive and reactive measures described above, all relevant privately-owned receivers are predicted to achieve the recommended noise criteria (Table 2) (Appendix A).

The predicted Modification noise levels are therefore considered consistent with those described for Modification 3 and would not materially change the approved noise envelope of the Mount Pleasant Operation (Appendix A).

Cumulative Noise Emissions

Cumulative noise impacts resulting from the concurrent operation of the Mount Pleasant Operation incorporating the Modification and the Bengalla Mine, the Mt Arthur Coal Mine and the Dartbrook Mine (should it re-commence) were assessed against the cumulative noise criteria in Development Consent DA 92/97 (reproduced in Table 3) (Appendix A).

The methodology used for cumulative assessment was to logarithmically add the respective day, evening and night-time predictions during adverse meteorological conditions of the four mines for key receivers and compare the overall noise levels against the relevant criteria. This approach is inherently conservative as the chance of maximum noise emissions from each mine coinciding with adverse weather conditions is unlikely.

The conservative assessment indicated that cumulative noise levels from concurrent operation of the four mines would comply with the relevant criteria at all privately-owned receivers assessed (Appendix A).

Vacant Land Assessment

Wilkinson Murray (2017a) has completed a vacant land assessment for the Modification in accordance with contemporary policy and concluded that no additional properties are likely to exceed the relevant criteria based on potential impacts on vacant land (Appendix A).

Sleep Disturbance

Wilkinson Murray (2017a) has conducted an assessment of potential sleep disturbance impacts. A sleep disturbance criterion of $L_{A1(1min)}$ 45 dBA applies to privately-owned receivers in the vicinity of the Mount Pleasant Operation (except those subject to acquisition upon request) as shown in Table 2.

All privately-owned receivers where sleep disturbance criteria apply are predicted to receive $L_{A1(1min)}$ noise levels below the criterion from the Mount Pleasant Operation incorporating Modification 3 and the Modification (Appendix A).

4.2.3 Mitigation Measures

MACH Energy would continue to implement the noise mitigation and management measures, and predictive and real-time noise management system and associated response protocols, detailed in the Noise Management Plan for the Mount Pleasant Operation.

The Noise Management Plan would be reviewed and, if required, revised to reflect any changes to Development Consent DA 92/97 that arise from the Modification.

4.3 RAIL NOISE

The Modification does not propose any changes to the maximum or average daily rail movements and therefore rail noise associated with the approved Mount Pleasant Operation rail movements on the Muswellbrook – Ulan Rail Line do not require assessment. Notwithstanding, the Modification does involve relocating the private Mount Pleasant Operation rail spur to the east of the Bengalla Mine. Rail transport noise on the relocated rail spur has therefore been considered.

4.3.1 Rail Noise Criteria

Appendix 3 of the NSW *Rail Infrastructure Noise Guideline* (EPA, 2013) provides guidance on the assessment of non-network rail lines on or exclusively servicing industrial sites (i.e. the relocated rail spur). The relevant criteria for rail noise associated with a non-network rail line are the recommended acceptable L_{Aeq} noise levels described in Table 2.1 of the INP and reproduced in Table 4 (Appendix A).

Relevant criteria on network rail lines (e.g. the Muswellbrook – Ulan Rail Line) are some 20 dBA higher than for non-network rail lines.

4.3.2 Environmental Review

Rail Noise Modelling

The NSW *Rail Infrastructure Noise Guideline* (EPA, 2013) does not make any provisions on how to assess the zone where a non-network rail line connects to the main line. However, rail noise impacts at receivers are typically determined based on the proximity to either the non-network rail line or the main line (i.e. if a receiver is closer to the main line than the non-network rail line, it would be assessed as per the main line noise criteria) (Appendix A).

For the Modification, no proximal privately-owned receivers are closer to the Mount Pleasant Operation relocated rail spur than to the Muswellbrook – Ulan Rail Line. Notwithstanding, a quantitative assessment in accordance with Appendix 3 of the NSW *Rail Infrastructure Noise Guideline* (EPA, 2013) has been undertaken (Appendix A).

The Environmental Noise Model was used to model rail noise associated with the relocated rail spur at the closest and potentially most impacted receivers, with noise levels and spectra sourced from the Transport for New South Wales standard rail noise database (Appendix A).

Predicted Noise Levels

Rail noise modelling of the relocated rail spur in isolation indicates up to 10 privately-owned receivers are predicted to exceed the night-time non-network rail noise criteria provided in Table 4.

In accordance with the NSW Government's (2014) *Voluntary Land Acquisition and Mitigation Policy For State Significant Mining, Petroleum and Extractive Industry Developments* (Voluntary Land Acquisition and Mitigation Policy), one privately-owned dwelling would be afforded acquisition upon request rights (receiver 23) and up to four privately-owned receivers would be afforded mitigation upon request rights (Appendix A).

However, in practice the approved Mount Pleasant Operation rail movements would be relocated from the Muswellbrook – Ulan Rail Line to the private rail spur, which is generally to the north of, and further away from, the closest sensitive receivers (Appendix A).

Noise levels generated by all approved rail movements would therefore remain unchanged at the closest privately-owned receivers.

Table 4
Relevant Rail Noise Criteria

Type of Receiver	Indicative Noise Amenity	Time of Day	Acceptable L_{Aeq} Noise Level (dBA)
Residence	Rural	Day	50
		Evening	45
		Night	40

After: EPA (2000).

Rail Vibration

Wilkinson Murray (2017a) conducted an assessment of vibration associated with the operation of the new rail spur in accordance with *Assessing Vibration: a technical guideline* (NSW Department of Environment and Conservation, 2006).

The assessment indicates no adverse vibration impacts would be experienced at any privately-owned receivers or at the Overdene Homestead historic heritage structure (Appendix A).

4.3.3 Mitigation Measures

MACH Energy would continue to implement the noise mitigation and management measures detailed in the Noise Management Plan for the Mount Pleasant Operation, including confirming with RailCorp and/or ARTC that locomotives and rolling stock are approved to operate on the NSW rail network in accordance with the noise limits in RailCorp and ARTC's EPLs (EPL 12208 and EPL 3142, respectively).

The Noise Management Plan would be reviewed and, if required, revised to reflect any changes to Development Consent DA 92/97 that arise from the Modification.

4.4 CONSTRUCTION NOISE

Potential noise associated with the construction of key Modification infrastructure, including the product coal conveyor, train load-out bin, rail loop, rail spur and the duplication of the Hunter River water supply pump station and pipeline has been assessed by Wilkinson Murray (2017a).

4.4.1 Construction Noise Criteria

Construction Activities in the Mining Leases

Noise generated by construction activities in the vicinity of the Mount Pleasant Operation open cut activities and facilities (e.g. construction of the product coal conveyor, train load-out bin, rail loop and rail spur within ML 1645 and ML 1750) would largely be indistinguishable from operational mining activities at the closest privately-owned receivers (Appendix A).

These construction activities would be conducted 24 hours per day, seven days per week, and the assessment of construction noise associated with these activities has therefore adopted the Mount Pleasant Operation proposed noise criteria (Table 2) (Appendix A).

External Construction Activities

Noise generated by construction activities associated with linear infrastructure more remote from mining activities at the Mount Pleasant Operation (e.g. construction of the water pipeline and the rail spur outside of ML 1645 and ML 1750) would be distinct local construction noise sources (Appendix A).

The assessment of construction noise associated with these activities has therefore adopted the construction noise management levels described in the *Interim Construction Noise Guideline* (ICNG) (NSW Department of Environment and Climate Change [DECC], 2009) (Appendix A). The ICNG construction noise management levels are provided in Table 5.

Construction of the new rail spur would occur outside the ICNG's recommended standard hours (e.g. in the afternoon on a Saturday or on a Sunday during the day). This would allow continuity of work for the construction crew, which would assist in reducing the length of the construction period and therefore the potential period of construction-related impacts at proximal privately-owned receivers.

Where practical, works outside of the standard construction hours would prioritise lesser noise generating activities (e.g. welding and electrical works).

4.4.2 Environmental Review

Modelling Construction Noise in the Mining Leases

Construction of the product coal conveyor, train load-out bin, rail loop and rail spur within ML 1645 and ML 1750 was conservatively modelled as two working areas undertaking construction activities simultaneously (i.e. one working group associated with the rail spur and another working group associated with the other components). The indicative noise sources, including assumed sound power levels, are detailed in Appendix A.

The Environmental Noise Model was used by Wilkinson Murray (2017a) to simulate the Mount Pleasant Operation incorporating Modification 3 (yet to be determined) and the Modification construction activities to conservatively predict resultant 10^{th} percentile exceedance noise levels at relevant receiver locations.

Table 5
Construction Noise Guideline Noise Management Levels

Time of Day	Management Level $L_{Aeq(15min)}$	How to Apply
***Recommended standard hours**:* *Monday to Friday* *7.00 am to 6.00 pm* *Saturday* *8.00 am to 1.00 pm* *No work on Sundays or public holidays*	*Noise affected RBL + 10 dBA*	*The noise affected level represents the point above which there may be some community reaction to noise:* • *Where the predicted or measured $L_{Aeq(15min)}$ is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to meed the noise affect level.* • *The proponent should also inform all potentially impacted residents of the nature of the works to be carried out, the expected noise levels and duration, as well as contact details.*
	Highly noise affected 75 dBA	*The highly noise affected level represents the point above which there may be strong community reaction to noise:* • *Where noise is above this level, the relevant authority (consent, determining or regulatory) may require respite periods by restricting the hours that the very noisy activities can occur, taking into account:* *1. Times identified by the community when they are less sensitive to noise (such as before and after school for works near schools, or mid-morning or mid-afternoon for works near residences).* *2. If the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.*
Outside recommended standard hours	*Noise affected RBL + 5 dBA*	• *A strong justification would typically be required for works outside the recommended standard hours.* • *The proponent should apply all feasible and reasonable work practices to meed the noise affected level.* • *Where all feasible and reasonable practices have been applied and noise is more than 5 dBA above the noise affected level, the proponent should negotiate with the community.*

After: DECC (2009).

Predicted Noise Levels – Construction Activities in the Mining Leases

All privately-owned receivers are predicted to achieve the relevant operational criteria described in Table 2 (Appendix A).

Modelling External Construction Activities

Construction of the rail spur outside of ML 1645 and ML 1750 was conservatively modelled as two working areas undertaking construction activities simultaneously (i.e. one working group associated with the rail overpass and another working group associated with the rest of the rail spur).

Construction of the duplicated water pipeline was modelled as a single working group moving along the proposed water pipeline route. The indicative noise sources, including assumed sound power levels, are detailed in Appendix A. The Environmental Noise Model was used by Wilkinson Murray (2017a) to simulate the Modification construction activities to conservatively predict resultant 10th percentile exceedance noise levels for construction noise at relevant receiver locations.

Predicted Noise Levels – External Construction Activities

Rail Spur Construction

A number of proximal privately-owned receivers are predicted to exceed the 'Noise affected' noise management levels described in Table 5 both within and outside of the ICNG's recommended standard hours (Appendix A).

The predicted exceedances would only occur under more adverse weather conditions and for a limited period of time when the rail spur working group is at, or near, the proximal receivers. Most of the time, construction noise levels would comply with the 'Noise affected' noise management levels in Table 5 when the rail spur working group is further away from the individual receiver (Appendix A).

No privately-owned receivers are predicted to experience rail spur construction noise levels above the 'Highly noise affected' noise management level described in Table 5.

Water Pipeline and Pump Station Construction

A number of proximal privately-owned receivers are predicted to exceed the 'Noise affected' noise management levels described in Table 5 during ICNG recommended standard hours (Appendix A).

The predicted exceedances would only occur under more adverse conditions and for a limited period of time when the construction activity is at, or near, the proximal receivers. Most of the time, construction noise levels would comply with the 'Noise affected' noise management levels in Table 5 when the activity is further away from the individual receiver (Appendix A).

No privately-owned receivers are predicted to experience water pipeline and pump station construction noise levels above the 'Highly noise affected' noise management level described in Table 5 and construction of these elements would be restricted to ICNG recommended standard hours.

Construction Vibration Associated with the Rail Spur

Wilkinson Murray (2017a) conducted an assessment of construction vibration associated with the rail spur in accordance with *Assessing Vibration: a technical guideline* (NSW Department of Environment and Conservation, 2006) and British Standard *Evaluation and measurement for vibration in buildings* BS 7385-2:1993.

The assessment indicates no cosmetic damage would be expected at any proximal privately-owned receivers, however receiver 23 is predicted to exceed the human response vibration criteria when the rail spur construction group is located immediately adjacent to this receiver. When the working group is more than 100 m from this receiver, no adverse vibration impacts are predicted (Appendix A).

Potential vibration impacts to the Overdene Homestead historic heritage structure were also assessed against the German Standard *Vibrations in Building – Part 3: Effects on structures* DIN 4150-3, which sets a cosmetic damage limit of 3 millimetres per second (mm/s) for heritage buildings. The predicted construction vibration levels comply with the relevant cosmetic damage criteria at the Overdene Homestead (Appendix A).

4.4.3 Mitigation Measures

MACH Energy would continue to implement the noise mitigation and management measures relevant to construction activities detailed in the Noise Management Plan for the Mount Pleasant Operation.

These mitigation measures include planning controls (e.g. developing an awareness and understanding of potential noise issues through site inductions) and construction and operational controls (e.g. regular maintenance of equipment to minimise noise generation and proper and efficient operation of equipment).

The Noise Management Plan would be reviewed and revised to include specific mitigation measures associated with construction activities occurring outside ML 1645 and ML 1750, as required, and to reflect any changes to Development Consent DA 92/97 that arise from the Modification.

MACH Energy has been undertaking consultation with nearby landholders with respect to Modification 3 and this Modification (Section 1.3). This consultation would continue during construction of the new linear infrastructure associated with the Modification.

4.5 DUST AND PARTICULATE MATTER

An Air Quality Assessment for the Modification was undertaken by Todoroski Air Sciences (2017a) and is presented as Appendix B.

While the Modification construction activities have the potential to generate emissions of dust, the total amount of dust generated is unlikely to be significant given the nature of the construction activities in comparison to other activities at the Mount Pleasant Operation. As the construction activities would occur for a limited period, no significant or prolonged effect at any privately-owned receivers is predicted (Appendix B).

As described in the Modification 3 Air Quality and Greenhouse Gas Assessment (Todoroski Air Sciences, 2017b), the potential for any adverse air quality impacts associated with coal dust generation during rail transport would be low and would not make any appreciable difference to local air quality. This would continue to apply to the operation of the relocated rail spur (Appendix B).

4.5.1 Background

Mining activity at the Mount Pleasant Operation has the potential to generate particulate matter (e.g. dust) emissions in the form of:

- total suspended particulate matter (TSP);
- particulate matter with an aerodynamic diameter less than or equal to 10 micrometres (PM_{10}) (a subset of TSP); and
- particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometres ($PM_{2.5}$) (a subset of TSP and PM_{10}).

Air Quality Monitoring Programme and Air Quality Management

MACH Energy has an approved Air Quality and Greenhouse Gas Management Plan for the Mount Pleasant Operation. The Plan describes the air quality monitoring programme and air quality management strategies for the approved mine.

The monitoring programme consists of a combination of dust deposition gauges, High Volume Air Samplers and continuous real-time Palas Fidas monitors. Locations of air quality monitoring sites are shown on Figure 11.

While all air quality monitoring is used for demonstrating compliance with air quality impact assessment criteria, continuous real-time monitoring is also used as an air quality management tool to assist MACH Energy with implementing proactive and reactive dust management actions to minimise potential air quality impacts from the Mount Pleasant Operation.

The air quality management strategy for the Mount Pleasant Operation, as described in the Air Quality and Greenhouse Gas Management Plan, includes the following:

- implementation of general dust mitigation measures (e.g. haul road watering) as part of operations to minimise potential dust emissions;
- predictive meteorological and air quality forecasting to guide daily operations;
- real-time air quality management including the implementation of additional proactive and reactive dust mitigation measures to avoid potential non-compliances;
- implementation of preventative measures to reduce the potential for spontaneous combustion events (e.g. effective stockpile management); and
- implementation of preventative measures to reduce the potential for blast fumes.

4.5.2 Environmental Review

An emission inventory for the Mount Pleasant Operation incorporating Modification 3 (yet to be determined) and the Modification was prepared by Todoroski Air Sciences (2017a).

Given the Modification would change only a small number of minor dust generating sources (i.e. an increase to the length of the product coal conveyor and additional transfer points), the change in predicted overall TSP emissions was determined to be an increase of only 0.03% in comparison to Modification 3 (Appendix B).

Dispersion Modelling

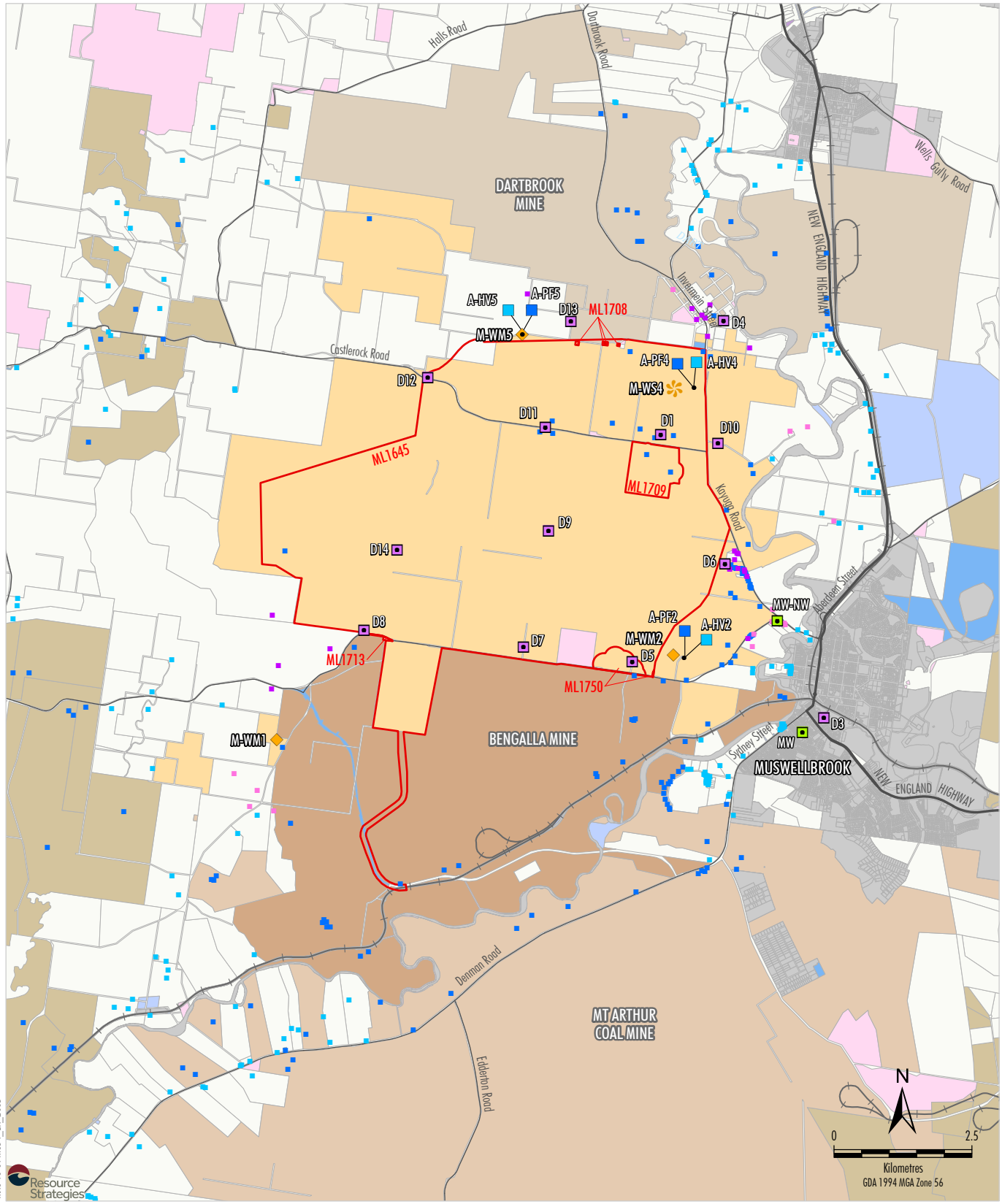
To determine the effect of the Modification on proximal privately-owned receivers (i.e. due to the relocation of sources and minor change to overall dust generation), Todoroski Air Sciences (2017a) altered the dispersion model used for Modification 3 to also account for the Modification.

Relevant emission sources within the Year 2021 dispersion model used for Modification 3 were adjusted (i.e. product coal conveying and train loading), and other emission sources and parameters (including meteorology) were unchanged. Detail of the modelling methodology and model input parameters is available within the Modification 3 *Air Quality and Greenhouse Gas Assessment* (Todoroski Air Sciences, 2017b).

Dispersion Modelling Results

Results of the dispersion modelling indicate the Modification would have a negligible effect at proximal receivers in comparison to the Mount Pleasant Operation incorporating Modification 3 (yet to be determined) with regard to potential Project-only and cumulative impacts (Appendix B).

No additional privately-owned receivers are predicted to exceed any of the relevant air quality criteria as a result of the Modification (Appendix B).



LEGEND

- Mining Lease Boundary
- Muswellbrook and Upper Hunter LEPs Zones B2, B5, IN1, SP2, R2, R5, RE1, RE2 and W1
- Crown
- Crown/State of NSW
- State of NSW
- Muswellbrook Shire Council
- Upper Hunter Shire Council
- Mount Pleasant Controlled
- Bengalla Controlled
- Dartbrook Controlled
- Mt Arthur Controlled
- Other Mining/Resource Company Controlled
- Privately-owned Land

- Mine-owned Dwelling
- Privately-owned Residence - MPO Acquisition on Request
- Privately-owned Residence - MPO Mitigation on Request
- Other Privately-owned Residence

Monitoring Sites

- Air Quality - High Volume Sampler
- Air Quality - Palas Fidas
- Dust Deposition Gauge
- Upper Hunter Air Quality Monitoring Network
- Weather Mast
- Weather Station

Source: NSW Land & Property Information (20176); NSW Division of Resources & Geoscience (2017)

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MOUNT PLEASANT OPERATION

Air Quality Monitoring Locations

Figure 11

Vacant Land Assessment

As the Modification would not materially change the predicted air quality impacts of Modification 3, the vacant land assessment conducted for Modification 3 by Todoroski Air Sciences (2017b) would be unchanged.

4.5.3 Mitigation Measures

MACH Energy would continue to implement the air quality mitigation and management measures, and predictive and real-time air quality management system and associated response protocols, detailed in the Air Quality and Greenhouse Gas Management Plan for the Mount Pleasant Operation.

The Air Quality and Greenhouse Gas Management Plan would be reviewed and, if required, revised to reflect any changes to Development Consent DA 92/97 that arise from the Modification.

4.6 VISUAL AMENITY

A Visual Assessment for the Modification was undertaken by VPA Visual Planning and Assessment (VPA) (2017) and is presented in Appendix C.

4.6.1 Background

Previous Visual Assessments

A Visual Assessment was prepared for the 1997 EIS by Geoffrey Britton and Associates (1997) and described the visual impacts of the Mount Pleasant Operation in the context of the sensitivity of surrounding viewpoints.

The Modification 3 Environmental Assessment (MACH Energy, 2017a) also considered the potential incremental visual impacts associated with the proposed extension to the Eastern Out of Pit Emplacement and reduction in visual impacts associated with not constructing the approved South West Out of Pit Emplacement.

Visual Setting

The Mount Pleasant Operation is located north-west of Muswellbrook in the Upper Hunter Valley of NSW.

The visual landscape in the vicinity of the Modification is defined by the Hunter River floodplain to the east, the topography of Mount Pleasant and adjacent foothills to the north-west, the altered topography of Bengalla Mine to the south and west and Kayuga to the north. Muswellbrook is located further east and the existing Mt Arthur Coal Mine is located further south.

The regional visual landscape is heavily modified by agricultural and pastoral land uses and mining activities and supporting infrastructure. Some remnant woodland remains along the Hunter River floodplain and surrounding foothills.

4.6.2 Environmental Review

Visual Assessment Methodology

The potential visual impacts of the Modification were assessed by evaluating the level of potential visual effect in the context of the visual sensitivity of relevant potential receivers.

Visual effect is a measure of the level of visual contrast and integration of the Modification with the existing landscape. Visual sensitivity is a measure of how critically a change to the existing landscape is viewed by people from different land use areas.

VPA has developed matrices for determining visual effect and visual sensitivity based on visual properties of a proposal, proportion of view occupied, proximity and sensitivity of land use. These matrices are provided in Appendix C.

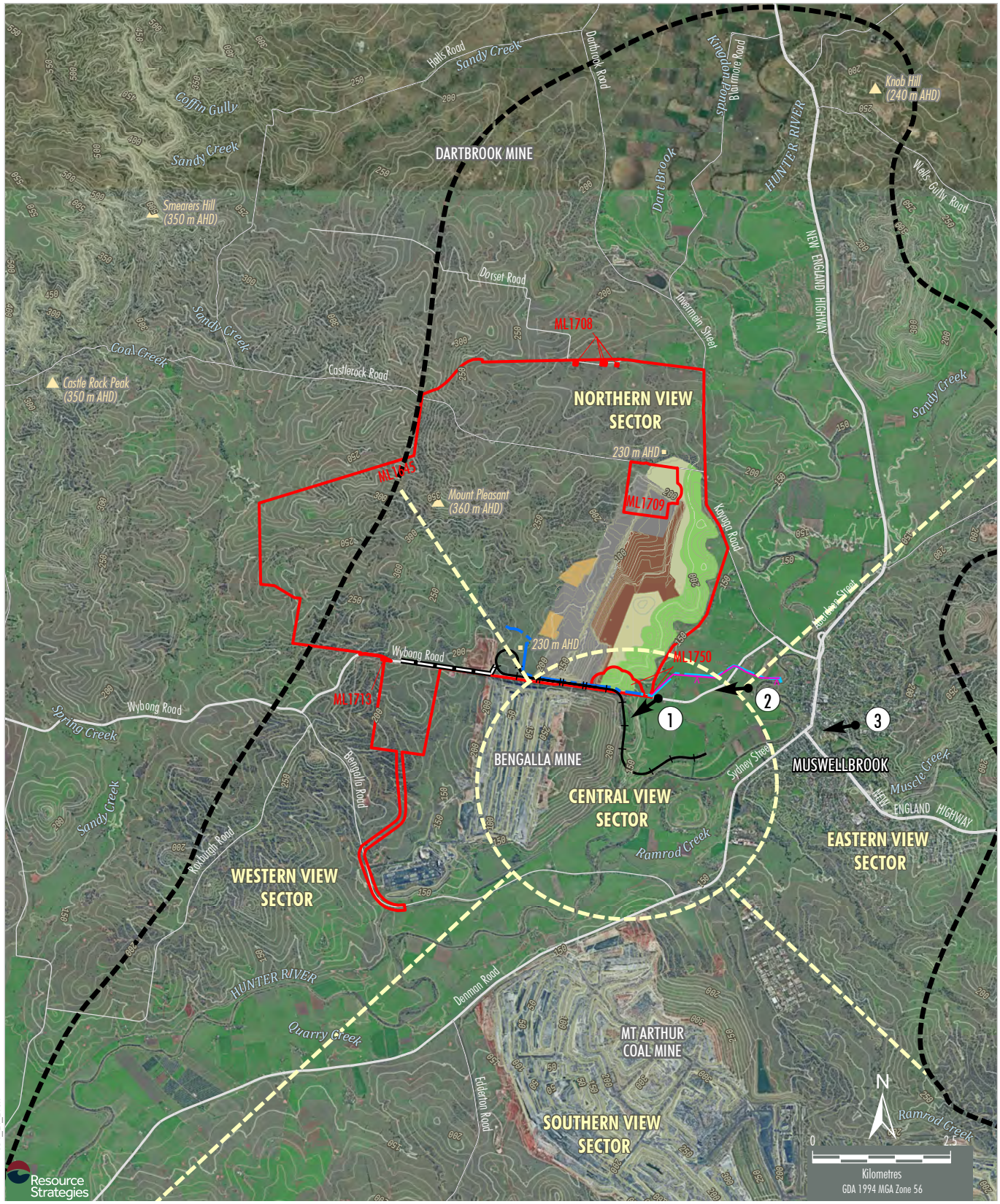
Potential alternative levels of visual impact resulting from a combination of differing visual effect and receiver sensitivity is provided in the matrix in Table 6.

Table 6
Visual Impact Matrix

Visual Effect \ Viewer Sensitivity	H	M	L
H	H	H/M	M/L
M	H/M	M	M/L
L	M/L	M/L	L
VL	L	VL	VL

VL = Very Low
L = Low
M = Moderate
H = High

Source: Appendix C.



LEGEND

- Mining Lease Boundary
- Contour (10 m Intervals)
- Viewpoint Location
- Visual Catchment

Modification 3 - 2025 Mine Landform

- Active Mining Area
- Active Overburden Emplacement Area
- Topsoil Stockpile
- Initial Rehabilitation
- Established Rehabilitation

Key Elements of the Modification

- Proposed Rail
- Proposed Product Conveyor
- Proposed Water Pipeline - Above Ground
- Proposed Water Pipeline - Buried
- Proposed Pump Station Electricity Transmission Line

Source: NSW Land & Property Information (2016); NSW Division of Resources & Geoscience (2017); VPA Visual Planning & Assessment (2017)
Orthophoto: MACH Energy (July 2017); © Department of Finance, Services & Innovation (2017)

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Visual Catchment Features

Figure 12

Visual Catchment

For the purposes of assessing the potential visual impacts of the Modification, VPA has identified the following key visual sectors (Figure 12).

- the Central View Sector that includes the Modification and surrounding rural areas on foothills and floodplain;
- the Northern View Sector that includes Kayuga;
- the Eastern View Sector that includes the town of Muswellbrook and adjoining foothills;
- the Southern View Sector that includes foothills south of the Hunter River Floodplain; and
- the Western View Sector that includes the foothills in the vicinity of Denman Road and a section of Wybong Road.

Visual Impact Assessment

Visual simulations were prepared for the following viewpoints in order to characterise views of the Modification from Muswellbrook and other key local vantage points (Figure 12):

- Wybong Road (Viewpoint 1);
- Horne Residence (Viewpoint 2); and
- Muswellbrook – Foley Street/Dolahenty Street in the vicinity of the High School (Viewpoint 3).

Potential visual impacts of the Modification at other sensitive receivers were assessed using photographs and computer generated model renders. A summary of the potential visual impacts of the Modification in the context of the approved Mount Pleasant Operation is provided in Table 7.

Table 7
Summary of Visual Impacts

Receiver	Existing/Approved Visual Impact[1]	Visual Sensitivity	Incremental Modification Effect	Incremental Modification Impact	Combined Visual Impact
Central View Sector					
Rural Residences on Floodplain	High	High	Low	Moderate	High
Racecourse	N/A[2]	High	Low	Moderate/Low	Moderate/Low
Wybong Road	Moderate	Moderate/Low	Low	Low	Moderate
Denman Road	Moderate	Moderate/Low	Low	Low	Moderate
Sydney Road	N/A[2]	Moderate/Low	Low	Low	Low
Racecourse Road	N/A[2]	Moderate/Low	Low	Low	Low
Northern View Sector					
Rural Residences on Floodplain	High	High	Low	Moderate	High
New England Highway	High	Moderate	Low	Low	High
Northern Railway Line	High	Moderate	Low	Low	High
Eastern View Sector					
Muswellbrook	High	High/Moderate	Low	Moderate/Low	High
Rural Residences on Floodplain	High	High	Low	Low	High
New England Highway	High	Moderate	Low	Low	High
Sydney Road	N/A[2]	Moderate	Low	Low	Low
Southern View Sector					
Rural Residences on Denman Road	Moderate	High/Moderate	Low	Moderate/Low	Moderate
Denman Road	Moderate	Moderate	Low	Low	Moderate
Thomas Mitchell Drive	N/A[2]	Moderate	Low	Low	Low
Edderton Road	N/A[2]	Nil	Low	Low	Low
Western View Sector					
Wybong Road	Moderate	Moderate/Low	Low	Low	Moderate

[1] Existing/approved visual impact described in Geoffrey Britton and Associates (1997) and described in the *Mount Pleasant Operation Mine Optimisation Modification Environmental Assessment* (MACH Energy, 2017a) (yet to be determined). Note that the existing/approved visual impact considers the sensitivity of the receiver.

[2] Viewpoint not previously assessed in Geoffrey Britton and Associates (1997) as limited views of the approved Mount Pleasant Operation are available from these vantage points due to intervening topography/vegetation.

Wybong Road (Viewpoint 1)

Geoffrey Britton and Associates (1997) determined that Wybong Road would be subject to high residual visual impacts (with the implementation of mitigation measures) from the following components of the approved Mount Pleasant Operation:

- visual bund;
- emplacements;
- ancillary structures;
- active mine areas; and
- construction of the Fines Emplacement Area.

A visual simulation has been prepared from Wybong Road facing west towards the rail spur, rail lighting screens and Wybong Road overpass (Figure 13).

As a local road, Wybong Road has a low sensitivity land use. Due to its low sensitivity and proximity to the Modification, Wybong Road has been assigned a moderate/low sensitivity (Appendix C).

The visual effect of the rail lighting screens, earth works for rail spur cuttings and the embankments are considered low due to the scale and moderate levels of visual contrast with the surrounding landscape (Appendix C).

The potential visual impact of the Modification on Wybong Road is considered to be Low, which is less than the previously assessed impact associated with the approved Mount Pleasant Operation (e.g. mine landforms).

Horne Residence (Viewpoint 2)

The Horne residence is the nearest private property on the floodplain to the north-west of the Hunter River (i.e. where views are not largely screened by riparian vegetation). A visual simulation has been prepared from the Horne residence which is also considered representative of other private residences on the Hunter River floodplain (Figure 14).

Geoffrey Britton and Associates (1997) determined that high visual impacts would occur at rural properties on the floodplain due to the development of the Eastern Out of Pit Emplacement (including the initial development of the outer face) and the initial development of the active mining areas.

The rural properties on the floodplain are considered to have a high visual sensitivity, given they house residents (i.e. permanence) and the sensitivity of the land use (Appendix C).

The Horne residence is located approximately 2.3 km from the nearest visible Modification elements. At this distance, the visual effect of the Modification is considered to be low due to the scale and limited visual contrast with the surrounding landscape (Appendix C).

The potential visual impact of the Modification on the Horne residence is considered to be moderate, which is less than the previously assessed impact associated with the approved Mount Pleasant Operation (e.g. mine landforms). The potential visual impact of the Modification at other residences on the floodplain with views of the Modification would also be moderate or low (Appendix C).

Muswellbrook – High School (Viewpoint 3)

The Muswellbrook High School is considered to be representative of potential views of the Modification from elevated locations in Muswellbrook (Appendix C).

The approved visual impact and viewer sensitivity of receivers in Muswellbrook were both determined to be high (Geoffrey Britton and Associates, 1997).

Since preparation of the 1997 EIS, residents of Muswellbrook may have become more accustomed to significant modifications to the landscape due to the ongoing development of the Bengalla and Mt Arthur Coal Mines. However, tourists visiting Muswellbrook may not be accustomed to views of mine operations. Given the high concentration of residents with views of the approved Mount Pleasant Operation, Muswellbrook is considered to have a high viewer sensitivity (Appendix C).

A visual simulation has been prepared from Viewpoint 3 in the vicinity of Muswellbrook High School (Figure 15).

Muswellbrook High School is located approximately 4.2 km from the nearest visible Modification elements. At this distance, the water pipeline and associated electricity transmission line, signal lights and rail line would be barely discernible (Appendix C).

Some larger components of the Modification, such as the Wybong Road rail overpass and rail lighting screens, would be visible from Muswellbrook in areas without foreground screening vegetation. At this distance, the visual effect of these more visible components of the Modification is considered to be low due to the scale and moderate levels of visual contrast with the surrounding landscape (Appendix C).

MAC16-01 MOD4 EA 004C

Resource Strategies

LEGEND
Modification 3
This Modification

Source: VPA Visual Planning & Assessment (2017)

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Viewpoint 1 - Simulation

Figure 13

MAC 16-01 MOD4_EA_006C

Resource Strategies

LEGEND
Modification 3
This Modification

Source: VPA Visual Planning & Assessment (2017)

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Viewpoint 2 - Simulation

Figure 14

MAC16-01 MOD4 EA 005C

LEGEND
Modification 3
This Modification

Source: VPA Visual Planning & Assessment (2017)

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Viewpoint 3 - Simulation

Figure 15

The potential visual impact of the Modification on Muswellbrook is therefore considered to be moderate/low, which is less than the impact associated with the approved Mount Pleasant Operation (e.g. mine landforms) (Appendix C).

Night Lighting

The proposed rail spur is, in part, aligned with Wybong Road and hence product coal trains travelling eastwards on the new spur may result in additional train lighting effects at night in Muswellbrook (Appendix C).

Diffuse lighting effects from the rail load-out infrastructure are approved in a location behind the Bengalla Mine waste emplacement. The proposed location of the rail load-out infrastructure potentially results in more exposure to Wybong Road and reduced intervening topography between the facilities and Muswellbrook. However, lighting associated with these Modification components represents only a very small proportion of the total diffuse lighting generated by the Mount Pleasant Operation and therefore would have negligible additional impact on the town (Appendix C).

4.6.3 Mitigation and Management Measures

Rail Lighting Screens

The rail spur design provisionally includes three separate sections of rail lighting screens that would nominally be constructed from a steel frame, chain wire mesh and shade cloth to minimise potential direct train lighting impacts in Muswellbrook. The rail lighting screens would be approximately 5 m tall in order to screen train lights.

Overhead rail lighting screens would extend across the rail spur at two locations along Wybong Road. The width and height for the two screens would vary dependent upon position and detailed design.

An overpass screen at ground level would also comprise a continuous screen on the eastern side of rail spur as it turns south across Wybong Road (Figure 13).

Both types of screen would be constructed of a galvanised metal frame supporting chain wire mesh and shade cloth. Dark green shade cloth or other suitable colouring would be used to reduce visual contrast with the surrounding area.

In addition, while not a specific night-lighting mitigation measure, those locations where the Modification rail spur is located in cuttings would reduce both direct lighting and indirect lighting impacts due to the physical containment of the cutting walls.

Rehabilitation

MACH Energy would prioritise the rapid rehabilitation of disturbed areas (e.g. establishment of a cover crop on rail batters) to reduce visual contrast of these elements with the surrounding area.

In addition, where practical, additional native tree and shrub species would be established between the ground level lighting screen and Muswellbrook to improve visual integration over time.

Landscape Management Plan

The Mount Pleasant Operation Landscape Management Plan would be reviewed and where necessary updated to reflect the additional visual impact mitigation measures associated with the Modification.

4.7 FLOODING

WRM Water and Environment (2017) has undertaken an assessment of the potential impacts of the Modification on the Hunter River floodplain. The Flood Assessment is presented in Appendix D.

As the Modification involves construction of a new rail spur across part of the floodplain of the Hunter River, the spur has been designed to meet specific flood mitigation criteria (Section 3.2.13).

The Modification also includes the construction of a water supply pump station and associated water pipeline, however, these are not considered to have any material potential effect on flooding given the water supply pipeline would be buried within the Hunter River floodplain and therefore would not impede overland flow during a flood event.

4.7.1 Background

The Modification rail spur remains at the same elevation as the existing Muswellbrook – Ulan Rail Line for approximately 1 km from the turnout location before it begins rising toward the foothills adjacent to the Bengalla Mine waste emplacement.

Where the proposed rail spur is increasing in elevation relative to the existing rail line on the floodplain, it will potentially impede flows that would have previously overtopped the existing Muswellbrook – Ulan Rail Line. MACH Energy would therefore incorporate additional hydraulic structures to reduce the amount of flood flow that is impeded in order to maintain potential changes in flood levels/velocity at private properties and public infrastructure at acceptable limits.

Worley Parsons undertook the regional *Hunter River Flood Study (Muswellbrook to Denman)* (the Hunter River Flood Study) on behalf of MSC in 2014. The findings of the Hunter River Flood Study have been considered where relevant.

Baseline information obtained from the Hunter River Flood Study has been supplemented with:

- contemporary rainfall and Hunter River flow data; and
- survey data obtained by MACH Energy for key hydraulic structures (e.g. existing culverts on the Muswellbrook – Ulan Rail Line and Wybong Road) located within the extent of the flood model.

Anecdotal observations of historical flood behaviour from local landholders was compiled as part of the Hunter River Flood Study and this information was also considered for the Modification.

4.7.2 Environmental Review

WRM Water & Environment (2017) estimated potential changes in flood depths and velocity resulting from the development of the proposed rail spur.

Flood Model

Two models were used by WRM Water and Environment (2017) to assess the potential flood-related impacts of the Modification.

For the purposes of estimating flood flows for storms of different frequency, flood discharges within the Hunter River catchment were estimated using the hydrologic RAFTS runoff-routing model developed by Worley Parsons for the Hunter River Flood Study (Appendix D).

Design flow floods have been estimated in accordance with *Australian Rainfall and Runoff 2016* (Geoscience Australia, 2016) which post-dates the Hunter River Flood Study (Appendix D).

A TUFLOW hydraulic model was used to estimate design flood levels and flood velocities in the vicinity of the proposed rail spur. The hydraulic model covers approximately 70 square kilometres (km^2) of the Hunter River catchment (Appendix D).

The hydraulic model was calibrated using flood data from the August 1998 and November 2000 historical events (Appendix D).

Design flood levels for the 5% AEP and 1% AEP flood events have been developed based on historical rainfall data and the calibrated hydrology model for the Hunter River catchment. An additional design flood event 20% greater than the 1% AEP was undertaken for sensitivity analysis (Appendix D).

Flood Depths

WRM Water and Environment (2017) predicted that the Modification may result in increased flood depths in areas immediately upstream and minor reductions immediately downstream of the proposed rail spur.

No privately-owned dwellings are predicted to be within the extent of afflux as a result of the Modification infrastructure during a 1% AEP flood event (Appendix D).

Flood Velocity

The predicted change in flood velocity due to the Modification is negligible at surrounding privately-owned dwellings during a 1% AEP flood event (Appendix D).

Localised areas of increased velocity would be investigated further during detailed design to develop suitable management measures (e.g. rock lining or vegetation at culverts) to minimise erosion potential during flood events.

4.7.3 Mitigation Measures, Management and Monitoring

Infrastructure Design

Various culverts and bridge crossings have been included in the provisional design of the proposed rail embankment to mitigate potential flood impacts. These mitigation measures would be reviewed and developed further as part of the detailed design process to comply with the proposed design criteria in Section 3.2.13.

Monitoring

A visual inspection of the Modification infrastructure within and adjacent to inundated areas would be carried out following significant flood events to identify any potential issues with erosion, settlement or slumping.

4.8 ABORIGINAL CULTURAL HERITAGE

An Aboriginal Cultural Heritage Assessment (ACHA) was undertaken for the Modification by Niche Environment and Heritage Pty Ltd (Niche) (2017) and is presented in Appendix E.

The ACHA for the Modification has been undertaken in accordance with (but not limited to) a range of guidelines, codes and regulations including the *Aboriginal cultural heritage consultation requirements for proponents 2010* (ACHCRs) (NSW Department of Environment, Climate Change and Water [DECCW], 2010a), *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW, 2010b) and the NSW *National Parks and Wildlife Regulation, 2009* (NPW Regulation).

The ACHA has also been prepared in consideration of the currently approved Mount Pleasant Operation Aboriginal Heritage Management Plan.

As described in Section 3, portions of the Modification area are located within approved disturbance areas associated with the Mount Pleasant Operation. Aboriginal heritage sites within approved disturbance areas are managed in accordance with the existing approved AHIPs #C0002053 and #C0000247.
AHIP #C0002053 is the relevant permit for the southern and eastern portions of the approved Mount Pleasant Operation.

Although the ACHA for the Modification (Appendix E) considered the entire Modification area, the focus of the field surveys and impact assessment was on those elements that are located outside of the extent of the existing approved AHIP #C0002053 boundary.

4.8.1 Background

Aboriginal History

It is generally accepted that Aboriginal occupation of Australia dates back at least 40,000 years. Although archaeological evidence for the east coast regions of NSW show occupation from at least 20,000 years ago, the majority of sites in the Upper Hunter are believed to be mid-late Holocene.

Between the years of 1820 to 1825 the issuing of land grants in the Upper Hunter contributed to an exponential increase in settlers and agricultural activity, which in turn had a dramatic effect on the landscape through clearing, grazing and cultivation (Appendix E).

By the late 1830s the impact of European settlement meant that the traditional life of the Wanaruah had been irreversibly affected. Many remaining Aboriginal people were also removed from Country into Aboriginal missions and reserves, where the Protector of Aborigines (1881) and the Aborigines Protection Board (1883) established a system of protective segregation (Appendix E).

Despite this, aspects of traditional knowledge and culture survive today, and the Wanaruah retain strong cultural attachments to land and Country. (Appendix E).

Previous Assessments

The ACHA (Appendix E) incorporates relevant information from previous assessments, the results of additional Modification field surveys (including an archaeological test excavation program) and associated consultation with the Aboriginal community, including:

- results from extensive fieldwork and archaeological and cultural investigations previously undertaken at the Mount Pleasant Operation and surrounds;
- search results from the OEH Aboriginal Heritage Information Management System (AHIMS) database;
- results from extensive consultation with the Aboriginal community regarding archaeological and cultural heritage values;
- results from ongoing salvage, investigations and Aboriginal heritage management activities at the Mount Pleasant Operation;
- a description of the methods implemented and the results of archaeological and cultural surveys conducted by archaeologists and representatives of the Aboriginal community for the Modification during 2017; and
- an archaeological test excavation program undertaken for the Modification in 2017, representative of the landforms traversed by the Modification infrastructure components.

The Modification area has been subjected to a high level of disturbance since the colonisation of the area by European settlers (Appendix E).

This disturbance is visible both on aerial imagery and evident on the ground. The post depositional disturbance caused by intensive agricultural activities has significantly impacted the spatial and stratigraphic integrity of archaeological resources in the area (Appendix E).

4.8.2 Environmental Review

This sub-section summarises the community consultation, additional surveys and archaeological test excavations undertaken, and provides a summary of the potential impacts of the Modification on Aboriginal cultural heritage.

Community Consultation

Consultation for the Modification was undertaken in accordance with the ACHCRs (DECCW, 2010a) and clause 80C of the NPW Regulation.

Table 8 summarises the main stages of the Aboriginal heritage consultation process undertaken for the Modification. A detailed account of the consultation process (including consultation records and a consultation log) is provided in Appendix E.

Consultation with the Registered Aboriginal Parties (RAPs) regarding the Mount Pleasant Operation and the Modification has been extensive and involved various methods including public notices, on-site meetings, written and verbal correspondence, field survey attendance, archaeological test excavation attendance, and additional on-site inspections. A list of the RAPs for the Modification is provided in Appendix E.

During the fieldwork and throughout the consultation process, the representatives of the RAPs were also asked of their knowledge of any areas of cultural significance within the Modification area and surrounds. All cultural comments relating to the Modification area and/or the wider region were recorded (Appendix E).

Table 8
Summary of Aboriginal Heritage Consultation Undertaken for the Modification

Date	Consultation
Notification of Project and Registrations	
4 May 2017	Letters requesting the names of Aboriginal parties or groups that may have been interested in registering for the consultation process were sent to the Office of the Registrar (*Aboriginal Land Rights Act, 1983*), the OEH Newcastle Environment Protection and Regulation Group, the MSC, Native Title Services Corporation Limited, Wanaruah Local Aboriginal Land Council (LALC), Hunter Local Land Services and the National Native Title Tribunal, in order to identify Aboriginal stakeholders.
10 May to 26 May 2017	Responses to the above request were received from the MSC, OEH, Wanaruah LALC and the Office of the Registrar (*Aboriginal Land Rights Act, 1983*).
29 May 2017	Letters seeking registrations of interest were sent to the Aboriginal parties identified by the above step.
29 May 2017	Letters advising of automatic registration for the consultation process were sent to all existing RAPs who had previously registered an interest in the Mount Pleasant Operation.
31 May and 2 June 2017	A public notice was placed in the Singleton Argus and Koori Mail on 31 May 2017, and the Muswellbrook Chronicle on 2 June 2017 inviting interested Aboriginal parties or groups to register.
June 2017	A total of 88 organisations and/or individuals were registered as RAPs.
July 2017	Record of names of RAPs provided to the OEH and Wanaruah LALC in accordance with the ACHCRs (DECCW, 2010a) (except for the RAPs who requested that their names not be provided).
Proposed Methodology Review and Information Session	
8 September 2017	Provision of the Proposed Methodology for undertaking the ACHA to the RAPs, including a request for comments on the Proposed Methodology.
19 September 2017	An invitation to attend an information session on 10 October 2017 regarding the Proposed Methodology was sent to all RAPs.
10 October 2017	Information session held on 10 October 2017 at the John Hunter Motel in Muswellbrook regarding the Proposed Methodology.
September to October 2017	Feedback from the RAPs in regard to the Proposed Methodology was received, and consideration was given to all comments.

Table 8 (Continued)
Summary of Aboriginal Heritage Consultation Undertaken for the Modification

Date	Consultation
Test Excavation Methodology, Sampling Strategy and Additional Information Session	
19 September 2017 and 13 October 2017	Provision of the Test Excavation Proposed Methodology and Sampling Strategy to the RAPs for review and comment on 19 September 2017. Further details and mapping were provided on 13 October 2017.
19 September 2017	An invitation to attend an information session on 17 October 2017 regarding the Test Excavation Proposed Methodology and Sampling Strategy was sent to all RAPs.
17 October 2017	Additional information session held at the John Hunter Motel in Muswellbrook following the receipt of feedback from the RAPs during the initial information session (10 October 2017). The purpose of the additional information session was to describe the test excavation methodology in greater detail.
Field Surveys*	
3 and 4 October 2017	Aboriginal cultural heritage survey was conducted by archaeologists from Niche accompanied by representatives from the RAPs. The cultural significance of the Modification area and the identified Aboriginal heritage sites was discussed with the RAPs.
23 to 27 October 2017	Test excavation program undertaken by archaeologists from Niche accompanied by representatives from the RAPs. Test excavation program also attended and informed by a geomorphologist from Fluvial Systems (Appendix E).
Draft ACHA Review, Information Sessions and Site Inspection	
10 November 2017	A copy of the draft ACHA was provided to all RAPs for their review and comment. The draft ACHA included survey results, archaeological and cultural significance assessment (based on feedback received during consultation and fieldwork), potential impacts and proposed mitigation and management measures. Feedback was requested by 13 December 2017.
22 November 2017	Invitation provided to all RAPs to attend an information session to discuss the draft ACHA findings, provide any information on cultural knowledge/significance, provide an opportunity to comment on the draft ACHA and to take part in a site inspection of a selection of identified Aboriginal heritage sites.
7 December 2017	Information session held and opportunity for on-site inspection provided.
December 2017	Comments received on the draft ACHA were considered and included in the final ACHA.

Source: After Appendix E.

* The fieldwork participation process is described in detail in Appendix E.

Summary of Archaeological Findings and Cultural Values

No Aboriginal heritage sites have been previously recorded within the additional areas outside of AHIP #C0002053 to be potentially disturbed by the Modification. Fieldwork undertaken for the Modification (surveys and archaeological test excavations) recorded five new Aboriginal heritage sites in the vicinity of the Modification infrastructure, including four isolated finds (MPO 1 to MPO 4) and one artefact scatter (MPO 5) (Figure 16) comprising approximately 17 stone artefacts.

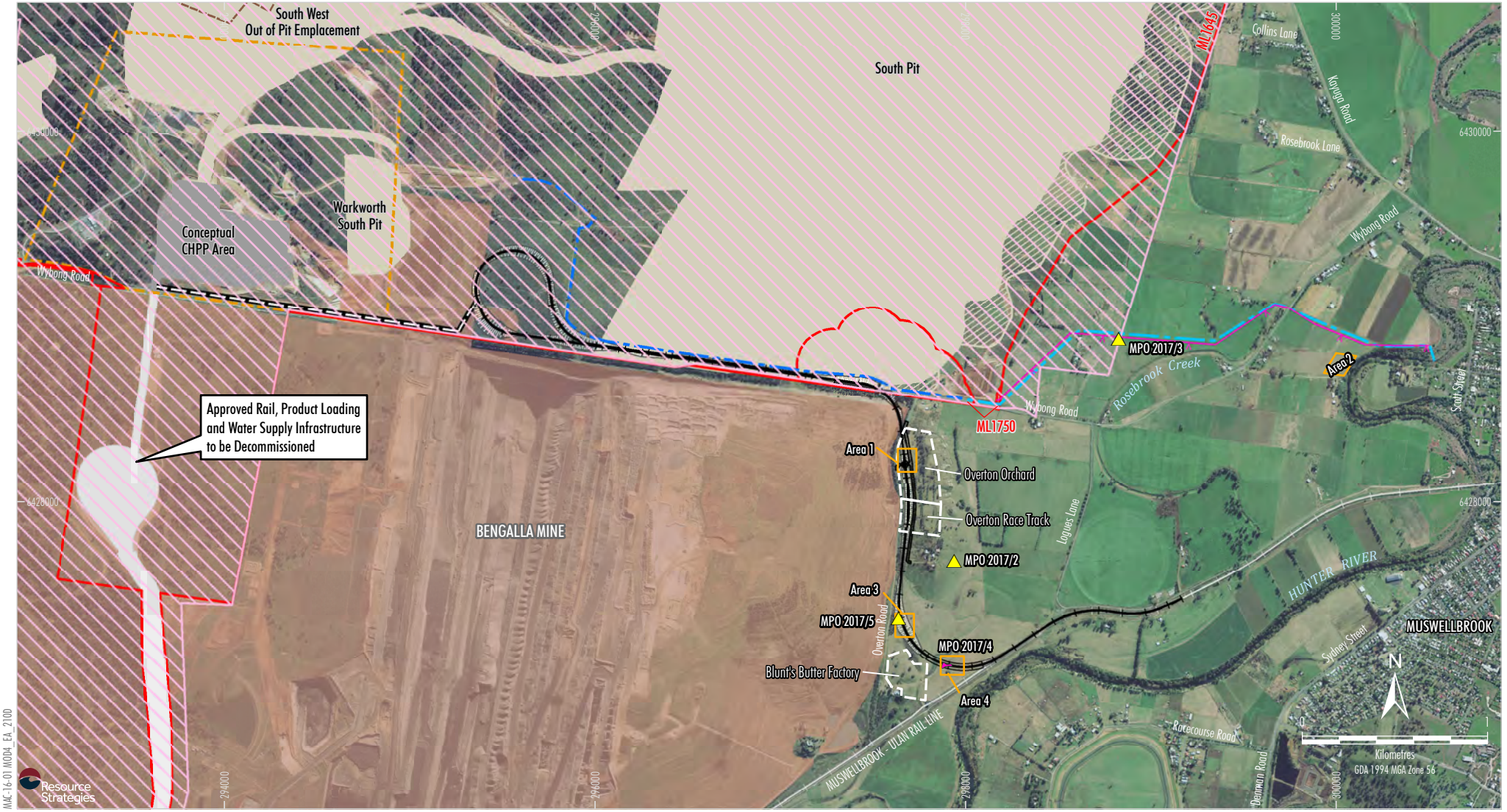
There were no spiritual, traditional, historical or contemporary associations/attachments identified by the RAPs with respect to the Modification area (Appendix E). Notwithstanding, the contemporary view held by the RAPs is that all Aboriginal objects and sites are important within the region due to their interconnectivity with the natural landscape and past occupation of the region (Appendix E).

Potential Impacts

All new Aboriginal heritage sites identified within the additional survey and test excavation areas were of low archaeological significance and were not identified by the RAPs as having particular cultural value.

Two of the identified isolated finds (MPO 1 and MPO 2) are located outside of the proposed Modification disturbance area, and would be avoided by the Modification. The artefact scatter (MPO 5) and the remaining two isolated finds (MPO 3 and MPO 4) would be disturbed by the Modification (Appendix E) (Figure 16).

Niche (2017) (Appendix E) concluded that the Modification is located in an area of low archaeological potential that has been subject to systematic survey and previous disturbance, and unanticipated impacts and harm to cultural values are not likely.



LEGEND

- Mining Lease Boundary
- Infrastructure Area Envelope
- Indicative Off-site Coal Transport Infrastructure
- Approximate Extent of Approved Surface Development (1997 EIS Year 20)
- Bengalla Mine Approved Disturbance Boundary (SSD-5170)

Subject to Separate Modification (Modification 3)

- Emplacement Extension
- Area Relinquished for Overburden Emplacement and Major Infrastructure

Key Elements of the Modification

- Proposed Rail
- Proposed Product Conveyor
- Proposed Water Pipeline - Above Ground
- Proposed Water Pipeline - Buried
- Proposed Pump Station Electricity Transmission Line

- AHIP #C0002053
- Test Excavation Area
- Historic Heritage Site Boundary

Aboriginal Cultural Heritage Sites

- Isolated Find
- Artefact Scatter

Source: NSW Land & Property Information (2017); NSW Division of Resources & Geoscience (2017); NSW Department of Primary Industries (2017); Department of Planning and Environment (2016); Extent (2017); MACH Energy (2017)
Orthophoto: MACH Energy (July 2017)

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Relevant Aboriginal and Historic Heritage Sites

Figure 16

The Modification is not expected to cause a loss of heritage resources that could be viewed as being very rare or unique or unlikely to exist elsewhere. Therefore, the Modification would not result in any significant cumulative impact on Aboriginal heritage in the region (Appendix E).

4.8.3 Mitigation Measures, Management and Monitoring

The management of all Aboriginal heritage sites located within the Modification area would be undertaken consistent with the requirements of relevant AHIPs and the approved Mount Pleasant Operation Aboriginal Heritage Management Plan.

Consistent with the approved Mount Pleasant Operation Aboriginal Heritage Management Plan and existing approved AHIP #C0002053, if any previously unrecorded Aboriginal heritage sites are identified during the course of construction, disturbance works in that area would cease until the site has been recorded.

Consistent with AHIP #C0002053, the currently approved Mount Pleasant Operation Aboriginal Heritage Management Plan outlines the management requirements for Aboriginal heritage at the Mount Pleasant Operation. A new AHIP (and/or a variation to an existing AHIP[s]) would be applied for as part of the Modification, and the management plan would be updated to include the Modification and any additional measures prescribed in the new (or varied) AHIP (if granted).

On this basis, the following management measures would be undertaken for the Modification:

- MACH Energy would continue to liaise with the RAPs for the construction of the Modification. Consultation would be undertaken consistent with the consultation requirements in the approved Mount Pleasant Operation Aboriginal Heritage Management Plan and the ACHCRs.
- Following final design of all supporting ancillary infrastructure (e.g. power supply to the pump station, access tracks etc.), additional inspection would be undertaken by archaeologists and representatives of the RAPs, where the location has not already been subject to systematic archaeological survey.
- AHIMS site cards for any new sites would be lodged, as well as Aboriginal Site Impact Recording Forms for any sites disturbed.
- The Mount Pleasant Operation Aboriginal Heritage Site Database and the currently approved Mount Pleasant Operation Aboriginal Heritage Management Plan (MACH Energy, 2017b) would be updated to incorporate the Modification and the newly identified sites.
- MACH Energy would seek a new area based AHIP (and/or a variation to an existing AHIP) to allow for impacts associated with the Modification. The ACHA in Appendix E would form part of the application.
- Prior to any surface disturbance impacts occurring, site MPO 3 would be subject to salvage (i.e. surface collection) and would be stored at the Mount Pleasant Operation temporary storage facility at the Broomfield Homestead Complex.
- Once analysis of the artefacts collected during the archaeological test excavation program (MPO 4 and MPO 5) is complete, these artefacts would be stored at the Mount Pleasant Operation temporary storage facility at the Broomfield Homestead Complex.
- For any previously unrecorded Aboriginal heritage sites that may be identified during the Modification, they would be managed consistent with the requirements outlined in the approved Mount Pleasant Operation Aboriginal Heritage Management Plan.
- MACH Energy would implement response procedures for any discovery of unexpected skeletal remains during construction activities for the Modification, in accordance with the approved Mount Pleasant Operation Aboriginal Heritage Management Plan.
- In accordance with the approved Mount Pleasant Operation Aboriginal Heritage Management Plan, Aboriginal cultural heritage would continue to be a component of all employee and contractor inductions.

4.9 HISTORIC HERITAGE

A Statement of Heritage Impact was undertaken for the Modification by Extent Heritage Pty Ltd (Extent) (2017) and is presented in Appendix F.

The assessment was prepared in consideration of the relevant principles and articles contained in *The Burra Charter* (International Council on Monuments and Sites Australia, 2013), the *NSW Heritage Manual* (NSW Heritage Office and NSW Department of Urban Affairs and Planning, 1996), *Statements of Heritage Impact* (NSW Heritage Office, 2002) and *Assessing Significance for Historical Archaeological Sites and Relics* (OEH, 2009).

As described in Section 3, portions of the Modification area are located within approved disturbance areas associated with the Mount Pleasant Operation. Items of historic heritage significance located within existing approved disturbance areas are managed in accordance with existing Mount Pleasant Operation commitments and are therefore not considered further for the Modification.

4.9.1 Background

Historical Overview

Non-Aboriginal settlement of Muswellbrook dates to as early as 1824, when government surveyor Henry Dangar set aside 640 acres for a village that was to become Muswellbrook (Appendix F). Following Dangar's survey, large grants of land in the area were awarded to wealthy settlers in return for taking on convict labourers.

The *Crown Lands Acts* of 1861 and the opening of a railway to Muswellbrook in 1869 saw rapid population increase. This early period of Muswellbrook saw the establishment of a number of estates, including two in proximity to the Modification area, i.e. Bengalla and Overton Estates (Appendix F).

Around 1912, subdivision led to the dismantling of the Overton Estate. The riverfront sections of the estate were divided into 10 to 200 acre lots, with only the section containing the butter factory, cottage (Overdene Homestead) and steam engine remaining with the property (Appendix F).

Following this subdivision the property became known as Overdene, named after the sandstone cottage (Overdene Homestead) (Appendix F).

The Bengalla Mine has developed a Conservation Management Plan for the Overdene Homestead.

Previous Archaeological Investigations

The Statement of Heritage Impact (Appendix F) incorporates relevant information from previous assessments (including for the approved Mount Pleasant Operation), the results of the Modification site investigation, associated background research and review of existing heritage registers, including (but not limited to):

- *Muswellbrook Shire-Wide Heritage Study: Final Report* (EJE Group, 1996).
- *Hunter Estates: A Comparative Heritage Study of pre-1850s Homestead Complexes in the Hunter Region* (OEH, 2013).
- *Mount Pleasant Historic Heritage Study* (VAHS, 2014).
- *Bengalla Mine Historic Heritage Management Plan* (AECOM, 2015).
- Searches of heritage registers including the *Muswellbrook Local Environmental Plan 2009* (Muswellbrook LEP).

4.9.2 Environmental Review

Following a desktop assessment and review of previous investigations, Extent (2017) conducted a site investigation of the potential Modification disturbance areas and immediate surrounds that are outside the extent of the approved Mount Pleasant Operation (Appendix F).

Summary of Findings

Several historic heritage items of local significance were identified within the additional Modification disturbance areas and immediate surrounds (Table 9). Several items are listed on the Muswellbrook LEP, however, none of the identified items are listed on NSW or Commonwealth heritage registers (Appendix F).

The Statement of Heritage Impact (Appendix F) discusses a number of components of the original Overton Estate (now called Overdene) as separate heritage items.

Appendix F also describes other items of interest that were identified during the assessment that were determined not to be heritage items.

Table 9
Relevant Historic Heritage Items in the Vicinity of the Modification

Item	Description	Existing Listing	Significance	Potentially Impacted by Modification
Items within the Overton/Overdene Estate				
Overdene Homestead	1860's sandstone cottage	Muswellbrook LEP.	Local significance.	No
Overton Orchard and Race Track[1]	Planted trees and remains of a race track	Not listed. Partially within curtilage of the Muswellbrook LEP listing for the Overdene Homestead.		Partial
Blunt's Butter Factory	Concrete foundations and other building remains	Muswellbrook LEP.		Curtilage only

Source: after Appendix F.
[1] Referred to as site M403 in Appendix F.

Potential Impacts

Components of the Modification (particularly the new rail spur) would disturb, or would be located in proximity to, some historic heritage items (Figure 16). A summary is provided in Table 9 and the potential impacts on these items is further described below.

The Overdene Homestead is a sandstone building that, while it would not be directly impacted by the Modification, is located approximately 135 m from the proposed rail spur (Figure 16).

The predicted vibration at this structure from the construction and operation of the proposed rail spur would not exceed the relevant 3 mm/s cosmetic damage criteria and therefore it is not predicted to be impacted (Appendix A and Sections 4.3.2 and 4.4.2).

Further, it is noted that the Overdene Homestead is currently secured and fenced (maintained by Bengalla Mine), and hence accidental damage as a result of the Modification is unlikely.

The rail spur construction activities would impact a portion of the Overton Orchard and Race Track (Appendix F).

A small section of the Muswellbrook LEP listed curtilage associated with the Blunt's Butter Factory may also be impacted by the construction of the rail spur. However, there are no known historic items or relics in this area. Extent (2017) considers that there would be no material impact to the heritage values of Blunt's Butter Factory as a result of the Modification.

Extent (2017) also considers a number of additional items of interest in the Modification disturbance footprint, including a work building (MP404), a previously recorded potential historic heritage item (MP13 – building remains) and the Overton Colliery. Extent (2017) concludes that these items are not heritage places and have low potential to contain 'relics' as defined by the NSW *Heritage Act, 1977*.

Notwithstanding, management measures specific to the Overdene Homestead, Overton Orchard and Race Track, Blunt's Butter Factory and other relevant non-historic heritage items (i.e. MP13) are detailed in Appendix F and summarised in Section 4.9.3.

4.9.3 Mitigation Measures, Management and Monitoring

Items of historic heritage significance located within existing approved Mount Pleasant Operation disturbance areas are managed in accordance with existing commitments.

The following additional management measures would be undertaken for the Modification:

- Avoidance of direct impacts from the Modification on the Overdene Homestead.
- The movement of heavy vehicles and machinery over the parts of the Overton Orchard and Race Track that are outside of the Modification disturbance footprint would be minimised where practicable. Particular areas (identified in Appendix F) would be demarcated to avoid damage during construction.

- Prior to disturbance, a photographic record would be made of the Overton Orchard and Race Track (Appendix F). A copy of the photographic record would be provided to the MSC Library.
- Demarcation of the extent of disturbance (including heavy vehicle movements) associated with the Modification within the curtilage of Blunt's Butter Factory to avoid unnecessary damage.

Further, it is understood that continued maintenance of the Overdene Homestead by Bengalla Mine would continue to be undertaken consistent with the requirements of the existing Conservation Management Plan.

In addition, disturbance at MP13 (not a heritage item) would proceed without the need for an excavation permit pursuant to section 140 of the NSW *Heritage Act, 1977* or the presence of an archaeologist. However, if potential artefacts are exposed during disturbance works in this area, works would cease and an archaeologist would be consulted with respect to any applicable management requirements.

4.10 BIODIVERSITY

A Terrestrial Ecology Assessment for the Modification was undertaken by Hunter Eco (2017a) and is presented in Appendix G. Appendix G also includes the results of targeted threatened fauna surveys undertaken by Eco Logical Australia (2017).

An Aquatic Ecology Assessment for the Modification was undertaken by Bio-Analysis Pty Ltd (2017) and is presented in Appendix H.

4.10.1 Background

Various biodiversity studies have been undertaken at the Mount Pleasant Operation, or surrounds, including:

- *1997 EIS* (ERM Mitchell McCotter, 1997).
- *Mount Pleasant Project Modification Environmental Assessment Report* (EMGA Mitchell McLennan, 2010a).
- *Mount Pleasant Project Referral of Proposed Action* (Rio Tinto Coal Australia, 2010).
- *Mount Pleasant Project Referral of Proposed Action - EPBC No 2011/5795* (EMGA Mitchell McLennan, 2010b).
- *Bengalla Continuation Project Environmental Impact Statement Appendix O – Ecological Assessment* (Cumberland Ecology, 2013).
- *Mount Pleasant Upper Hunter Strategic Assessment BCAM Project Biodiversity Assessment Report* (Cumberland Ecology, 2015).
- *Mount Pleasant Operation (DA 92/97) – South Pit Haul Road Modification* (MACH Energy, 2017c).
- *Mount Pleasant Operation – Mine Optimisation Modification Environmental Assessment – Biodiversity Assessment* (Hunter Eco, 2017b).

Components of the Modification traverse existing approved disturbance areas (i.e. within the approved extent of the Mount Pleasant Operation). Therefore, the Terrestrial Ecology Assessment and the Aquatic Ecology Assessment focus on additional disturbance areas associated with the Modification, comprising parts of the proposed rail spur, rail loop, water supply pipeline and electricity transmission line.

Documents that currently relate to managing terrestrial ecology at the Mount Pleasant Operation include the Biodiversity Management Plan, Mining Operations Plan, Rehabilitation Management Plan, Landscape Management Plan and internal MACH Energy ground disturbance procedures.

Key biodiversity management measures in these guidance documents include:

- Vegetation clearance procedures including habitat tree identification, ecological supervision during felling and additional fauna mitigation measures as required.
- Native seed collection for use in rehabilitation.
- Progressive rehabilitation.

In addition, while not required for Development Consent DA 92/97, MACH Energy holds and manages a 13,522 ha biodiversity offset that was established as part of the Mount Pleasant Operation approval under the EPBC Act in 2012 (Coal & Allied, 2015 – *Offset Management Plan Mount Pleasant Project*).

4.10.2 Environmental Review

Terrestrial Ecology

Relevant regional vegetation mapping undertaken by Sivertsen et al (2011) and Peake (2006), did not map any remnant native vegetation in the areas to be disturbed by the Modification, except along the bank of the Hunter River.

Based on local and regional studies, vegetation in the vicinity of the Modification is a highly disturbed combination of exotic pastures, derived grassland, plantings (both native and exotic), scattered mature trees and predominantly exotic riparian vegetation along the Hunter River.

Because the landscape is highly modified, vegetation within the Modification additional disturbance areas could not be clearly classified as discrete vegetation communities. Inferred communities have been described, however, the vegetation has been modified to the extent that it does not warrant further assessment as natural communities (Appendix G).

There are no threatened ecological communities or threated flora species present within the Modification additional disturbance areas (Appendix G).

There are several trees in the vicinity of the proposed pump station (on the bank of the Hunter River) that provide potential marginal camp habitat for select threatened fauna species (i.e. the Grey-headed Flying-fox). This includes native (River Oak) and exotic (Weeping Willow and Poplar) tree species (Appendix G). Mature individuals of these species, including the exotic species, would be retained and would not be cleared for the Modification.

Terrestrial fauna habitat has similarly been impacted by past agricultural practices. Notwithstanding, some fauna habitat values remain where trees (including non-endemic and exotic species) are present. Trees containing hollows (six isolated trees located within the proposed rail loop) as well as areas containing planted trees (including species naturally occurring locally and species only endemic to other parts of the country) provide potential habitat for threatened fauna species (particularly bats and birds) (Appendix G) (Figure 17).

Surveys undertaken for the Modification recorded several threatened bats and a threatened bird in these areas (Appendix G):

- Eastern Bentwing-Bat *(Miniopterus orianae [schreibersii] oceanensis)* – vulnerable (NSW *Biodiversity Conservation Act, 2016* [BC Act]);
- East Coast Freetail Bat / Eastern Freetail Bat (*Mormopterus norfolkensis*) – vulnerable (BC Act); and
- Speckled Warbler *(Chthonicola sagittata*) – vulnerable (BC Act).

Surveys also conservatively identified possible calls of three other threatened bats, including Eastern False Pipistrelle (*Falsistrellus tasmaniensis*), Yellow-bellied Sheath-tailed Bat (*Saccolaimus flaviventris*) and Greater Broad-Nosed Bat (*Scoteanax rueppellii*) (all listed as vulnerable under the BC Act).

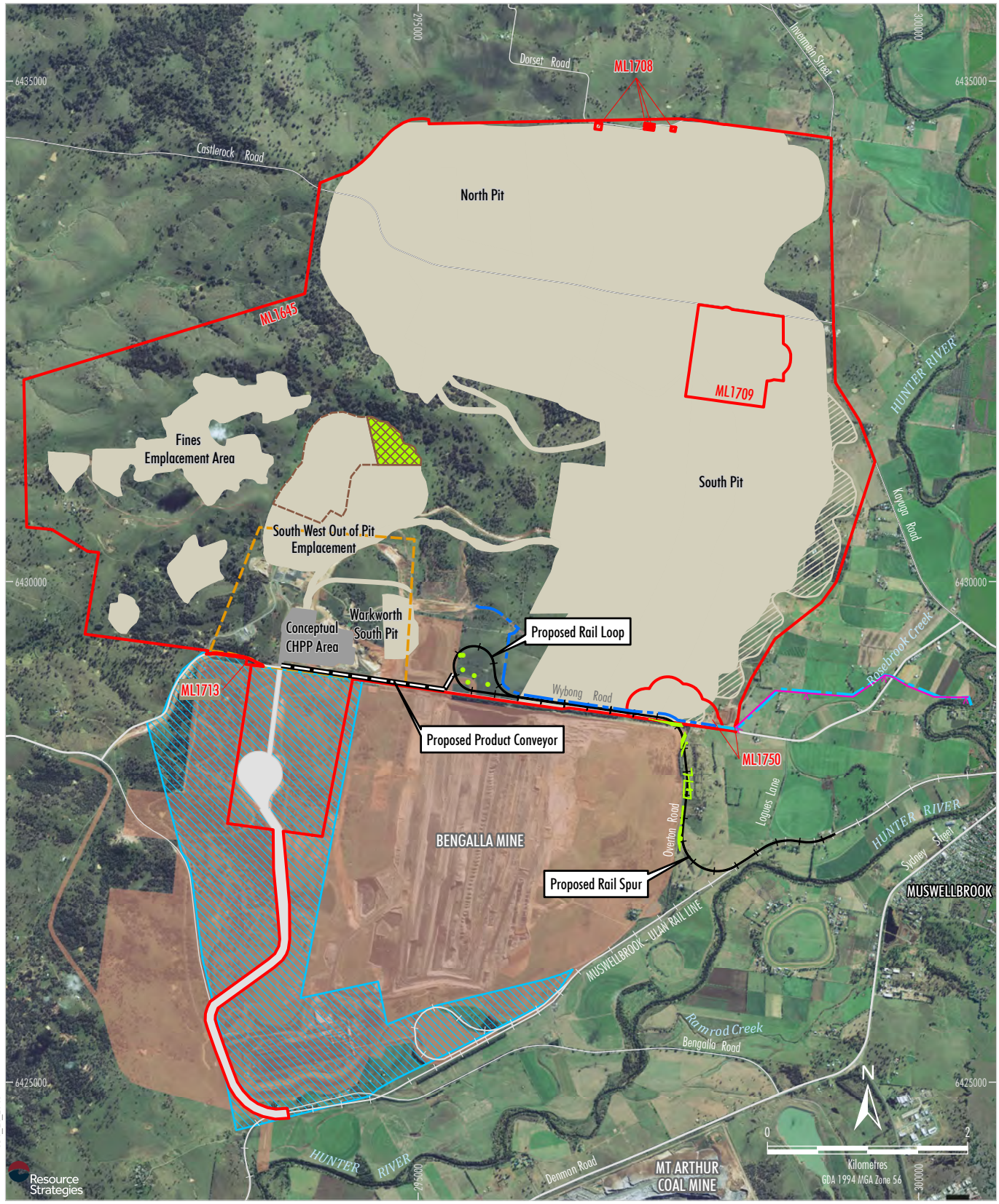
As part of the Modification, MACH Energy would further restrict the area in the South West Out of Pit Emplacement footprint used for major infrastructure (Section 3.2.11).

The eastern portion of the South West Out of Pit Emplacement footprint being relinquished via this Modification is shown on Figure 17. Fauna surveys undertaken in this area and surrounds also recorded several threatened species (Appendix G):

- Yellow-bellied Sheath-tailed Bat (*Saccolaimus flaviventris*) – vulnerable (BC Act);
- Eastern Cave Bat (*Vespadelus troughtoni*) – vulnerable (BC Act);
- Speckled Warbler (*Chthonicola sagittata*) – Vulnerable (BC Act); and
- Squirrel Glider (*Petaurus norfolcensis*) – Vulnerable (BC Act).

Surveys also identified possible calls of two other threatened bats, including Eastern False Pipistrelle and Greater Broad-nosed Bat, both listed as vulnerable (BC Act).

The area is also considered to provide potential habitat for several other threatened terrestrial fauna species, including the threatened bats recorded (and possibly recorded) by the Modification surveys in the vicinity of the rail spur alignment.



LEGEND

- Mining Lease Boundary
- Infrastructure Area Envelope
- Indicative Off-site Coal Transport Infrastructure
- Approximate Extent of Approved Surface Development (1997 EIS Year 20)*
- Conveyor/Services Corridor Envelope
- Bengalla Mine Approved Disturbance Boundary (SSD-5170)

Subject to Separate Modification (Modification 3)

- Emplacement Extension
- Area Relinquished for Overburden Emplacement and Major Infrastructure

Key Elements of the Modification

- Proposed Rail
- Proposed Product Conveyor
- Proposed Water Pipeline - Above Ground
- Proposed Water Pipeline - Buried
- Proposed Pump Station Electricity Transmission Line
- Additional Area Relinquished for Major Infrastructure
- Threatened Fauna Habitat

Source: NSW Land & Property Information (2017); NSW Division of Resources & Geoscience (2017); Department of Planning and Environment (2016); Hunter Eco (2017); MACH Energy (2017)
Orthophoto: MACH Energy (July 2017)

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Relevant Threatened Fauna Habitat

Figure 17

Tables 10 and 11 present the relative areas of threatened terrestrial fauna habitat present within the Modification additional disturbance areas and also the eastern portion of the South West Out of Pit Emplacement footprint being relinquished via this Modification.

The eastern portion of the South West Out of Pit Emplacement footprint being relinquished contains approximately 9 ha of grassland and 6 ha of woodland with mature trees providing potential foraging, nesting and roosting habitat for threatened fauna (Appendix G) (Figure 17).

The eastern portion of the South West Out of Pit Emplacement footprint also contains approximately 15 ha of threatened ecological communities (Table 11).

In summary, when comparing the area to be disturbed and the area being relinquished, the Modification would have the following ecological gains (Appendix G):

- 12 ha less threatened fauna species habitat disturbed (15 ha versus 3 ha approximately).
- 15 ha less BC Act listed threatened ecological community disturbed (15 ha versus 0 ha approximately).

Aquatic Ecology

In relation to aquatic ecology, as described in Section 4.12.2, the Modification would not result in a material change to the groundwater and surface water impacts of the approved Mount Pleasant Operation, given the Modification would not:

- significantly alter the approved general arrangement of the Mount Pleasant Operation;
- significantly increase the development area of the mine;
- increase the approved annual maximum ROM coal and waste rock production rates; or
- include any significant changes to the approved water management system at the site.

The Modification would involve some minor amendments to the construction erosion and sediment controls, pump and pipeline infrastructure at the Mount Pleasant Operation.

In relation to aquatic ecology, these changes would be associated with the replication of the existing water pipeline and Hunter River pump station.

Table 10
Comparison of Threatened Terrestrial Fauna Habitat

Potential Threatened Terrestrial Fauna Habitat	Area to be Disturbed (ha)	Eastern Portion of South West Out of Pit Emplacement (ha)
Grassland	0	9.2
Planted Trees/Woodland	3.0[1]	5.9
Total	**3.0**	**15.1**

Source: Appendix G.

Note:

[1] Consists solely of planted trees used as a visual screen of the Bengalla Emplacement at the corner of Wybong Road and Overton Road and trees planted in the Overton Orchard (total 2.9 ha), as well as six hollow trees in the rail loop (approximately 0.1 ha).

Table 11
Comparison of BC Act Listed Threatened Ecological Communities

Threatened Ecological Community		Area to be Disturbed (ha)	Eastern Portion of South West Out of Pit Emplacement (ha)
Central Hunter Ironbark-Spotted Gum-Grey Box Forest in the NSW North Coast and Sydney Basin Bioregion	Grassy Woodland	0	3.9
White Box Yellow Box Blakely's Red Gum Woodland	Derived Native Grassland	0	9.1
	Grassy Woodland	0	1.7
	Total	**0**	**14.7**

Source: Appendix G.

An aquatic habitat assessment was undertaken across the Modification additional disturbance areas (Appendix H). The habitat assessment found that drainage lines away from the Hunter River (i.e. an un-named tributary and Rosebrook Creek) traversed by either the proposed rail or water supply pipeline/ electricity transmission line provide limited aquatic habitat values due to high levels of existing agricultural disturbance (Appendix H).

The bank of the Hunter River at the proposed pump station was found to contain high levels of weeds, consistent with the terrestrial ecology findings. However, the Hunter River does contain habitat for two threatened fish species (listed under the *Fisheries Management Act, 1994*), the Southern Purple Spotted Gudgeon (*Mogurnda adspersa) (*Endangered) and the Darling River Hardyhead Population in the Hunter River catchment (Endangered Population).

Measures to minimise potential impacts on these species from the proposed pump station inlet are described in Section 4.10.3.

Construction of the rail spur and water supply infrastructure would traverse existing drainage channels (including the ephemeral Rosebrook Creek) and disturb the bank of the Hunter River. Erosion and sediment controls would be implemented to minimise potential sediment impacts into these drainage lines and water management structures (e.g. culverts) would be included in the design to maintain surface water flow (when present) (Section 4.10.3).

On the basis of the above, the Modification is considered to result in a net biodiversity gain without the need for a biodiversity offset (Appendix G), and therefore assessment under the Framework for Biodiversity Assessment is not required.

4.10.3 Mitigation Measures, Management and Monitoring

The management of biodiversity at the Mount Pleasant Operation would continue in accordance with existing procedures (Section 4.10.1), including erosion and sediment controls to minimise potential sediment impacts during construction. Additional mitigation to be implemented as part of the Modification includes:

- Avoidance of mature River Oak and exotic Weeping Willow and Poplar trees in the vicinity of the proposed pump station.
- Orientating the pump station intake on the Hunter River perpendicular to stream flow so that most fish would be swept across the screen and downstream.
- Operating pump station high velocity pumps so as to ramp water velocity up and down gradually.
- Minimising the area of native vegetation cleared for construction of the rail spur where practical.

In addition, while not required for Development Consent DA 92/97, MACH Energy holds and manages a 13,522 ha biodiversity offset that was established as part of the Mount Pleasant Operation approval under the EPBC Act in 2012 (Coal & Allied, 2015 – *Offset Management Plan Mount Pleasant Project*).

It is also noted that the Modification would also involve the removal of the existing Mount Pleasant Operation Hunter River pump station and associated water pipeline at the approved Mount Pleasant Operation, and rehabilitation of any residual disturbance areas in the vicinity of the Hunter River.

4.11 LAND RESOURCES

4.11.1 Background

Landforms and Topography

Landforms in the vicinity of the Mount Pleasant Operation are characterised by the broad floodplain of the Hunter River surrounded by the undulating foothills and ridges of the surrounding terrain, including more elevated areas within Muswellbrook.

Elevations in the vicinity of the Mount Pleasant Operation range from approximately 360 m Australian Height Datum (AHD) at Mount Pleasant to approximately 140 m AHD at the existing Hunter River pump station.

In the Modification area the Hunter River floodplain comprises a broad area of very gently sloping land with intervening meandering creek and river channels.

At the present time the Hunter River channel is located proximal to the proposed Modification rail spur where a meander is located east of Bengalla Mine and immediately south of the Muswellbrook – Ulan Rail Line. However, further upstream, in the vicinity of the proposed pump station, the Hunter River is located some 2 km to the east of the Mount Pleasant Operation (Figure 3).

The floodplain is bordered by gentle slopes formed from colluvium with some areas rising sharply onto slopes formed from in-situ rock (Figure 13).

Land Use

Land use in the vicinity of the Mount Pleasant Operation is characterised by a combination of coal mining operations, agricultural land uses and the commercial, industrial and residential areas of the towns of Muswellbrook and Aberdeen.

Land use in the Mount Pleasant Operation MLs primarily comprises a combination of approved mining activities, mining related infrastructure, public roads, remnant vegetation and cleared grazing land.

Parts of the Hunter River floodplain are subject to intensive agricultural uses including irrigation and cropping that are evident on aerial photography (Figure 5).

The majority of the approved Mount Pleasant Operation is located on MACH Energy-owned land or Bengalla Mine-owned land (Figure 4).

The Modification would also be primarily located on land owned by these two operations, but would also include residual areas of Crown Land (e.g. public road crossings) railway land and a small area of private land adjacent to the Hunter River. MACH Energy has consulted with this land owner and other proximal private landholders with respect to the proposed location of the Hunter River pump station (Section 1.3).

MACH Energy has also established a compensation agreement with respect to parcels of Crown Land within the Mount Pleasant Operation MLs.

Biophysical Strategic Agricultural Land

Agricultural land across NSW has been assessed against specific criteria, including soil fertility, land and soil capability classes and access to reliable water (NSW Government, 2012a).

Agricultural land that meets suitable criteria has been designated as Biophysical Strategic Agricultural Land (BSAL).

In the vicinity of the Mount Pleasant Operation the majority of the Hunter River floodplain has been mapped as BSAL by the NSW Government (Figure 18).

Critical Industry Clusters

The NSW Government has identified a concentration of equine (horse) and viticulture (wine) industries in the Upper Hunter and mapped these locations as Critical Industry Clusters (CICs).

CICs are concentrations of highly productive industries within a region that are related to each other, contribute to the identity of that region and provide significant employment opportunities.

In the vicinity of the Modification, the two CICs largely overlap and include parts of the Hunter River floodplain as well as parts of Muswellbrook (Figure 18).

Soil Management and Rehabilitation

Land preparation, soil stripping, soil resource management and rehabilitation at the Mount Pleasant Operation are conducted in accordance with the Mining Operations Plan.

These measures would be extended to earthworks associated with the construction of the proposed infrastructure associated with the Modification.

4.11.2 Environmental Review

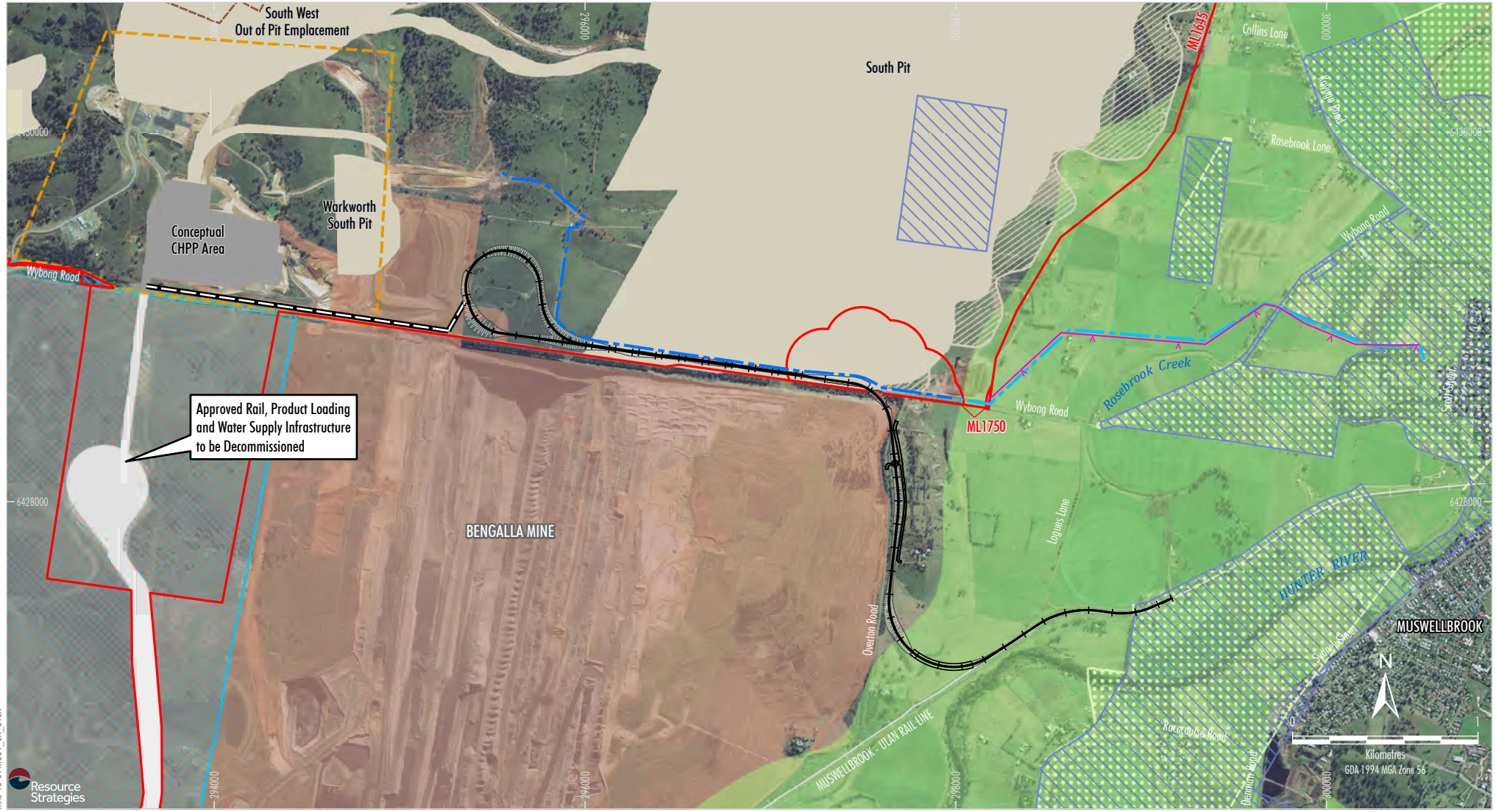
Land Use

The Modification would be primarily located on land owned by MACH Energy or Bengalla Mining Company.

The construction of the rail spur and associated laydown areas would result in the disturbance of approximately 44 ha of additional land. The rail spur would remain in place for the duration of the Mount Pleasant Operation. The provisional alignment of the rail spur avoids established existing cropping paddocks and key water management infrastructure.

Where necessary, MACH Energy would provide necessary infrastructure for the continued access to land and residences that may require crossings of the new rail spur (Section 3.2.5).

The pipeline would be buried at a minimum depth of approximately 600 mm within the Hunter River floodplain (approximately 2.8 km). Establishment of the pipeline would involve short term disturbance of approximately 6 ha of additional land. Once the underground pipeline has been established, the land would be rehabilitated to its existing land use.



LEGEND

- Mining Lease Boundary
- Infrastructure Area Envelope
- Indicative Off-site Coal Transport Infrastructure
- Approximate Extent of Approved Surface Development (1997 EIS Year 20)
- Conveyor/Services Corridor Envelope
- Bengalla Mine Approved Disturbance Boundary (SSD-5170)

Subject to Separate Modification (Modification 3)

- Emplacement Extension
- Area Relinquished for Overburden Emplacement and Major Infrastructure

Key Elements of the Modification

- Proposed Rail
- Proposed Product Conveyor
- Proposed Water Pipeline - Above Ground
- Proposed Water Pipeline - Buried
- Proposed Pump Station Electricity Transmission Line

Strategic Agricultural Land

- Equine Critical Industry Cluster
- Viticulture Critical Industry Cluster
- Biophysical Strategic Agricultural Land

Source: NSW Land & Property Information (2017); NSW Division of Resources & Geoscience (2017); NSW Department of Primary Industries (2017); Department of Planning and Environment (2016); MACH Energy (2017)
Orthophoto: MACH Energy (July 2017)

MACHEnergy

MOUNT PLEASANT OPERATION

Relevant Mapped Strategic Agricultural Land

Figure 18

Based on the above, the Modification is not expected to result in a material impact to land uses outside the Mount Pleasant Operation MLs.

Strategic Agricultural Land

As part of the *Strategic Regional Land Use Policy*, the NSW Government introduced a Gateway Process for the upfront assessment of the impacts of State significant mining and coal seam gas proposals on Strategic Agricultural Land (BSAL and CICs) (NSW Government, 2012a).

The *Interim Protocol for Site Verification and Mapping of Biophysical Strategic Agricultural Land* states that the Gateway Process does not apply to any associated development, such as linear infrastructure, outside the area of a proposed mining or production lease (NSW Government, 2013).

Notwithstanding, it is anticipated that up to approximately 16 ha of BSAL (outside of the approved development footprint of the Mount Pleasant Operation) would be disturbed by the proposed Modification.

In addition, some 3 ha of CIC (i.e. primarily comprising overlapping areas of Equine and viticulture CIC) would be disturbed by the Modification.

It is noted that approximately two million ha of strategic agricultural land has been mapped in the Upper Hunter and New England North West (NSW Government, 2012b). The proposed areas of BSAL and CIC disturbed by the Modification represent less than 0.001% of the mapped strategic agricultural land in NSW.

Land Contamination

A Detailed Site Investigation for the Modification was undertaken by SESL Australia (2017) and is presented in Appendix I. The assessment considered those components of the Modification that are located outside of the existing Mount Pleasant Operation MLs.

The assessment identified a total of 22 features of interest, of which only 13 are located within the Modification potential disturbance area (Appendix I).

These features include areas associated with previous land uses (i.e. fill material, agricultural disturbance, dams) and areas of confirmed asbestos contamination (SESL Australia, 2017).

Contaminated materials have the potential to be disturbed by construction activities and therefore may require the implementation of appropriate management measures to minimise the potential for impacts to human health and the environment.

4.11.3 Mitigation Measures, Management and Monitoring

Land Resource Management

Land resource management measures implemented for the Modification would include:

- minimisation of disturbance to agricultural lands and supporting infrastructure, where practicable;
- continued use of adjoining MACH Energy-owned land for agricultural uses, where practicable;
- management of soil resources at the Mount Pleasant Operation site so that they can be used for rehabilitation; and
- regrading and rehabilitating land following removal of infrastructure, unless otherwise agreed with the relevant stakeholder (e.g. if there is some other beneficial use of the rail spur post mining).

Land Contamination

Land contamination management measures that would be implemented for the Modification are described in Section 3.2.14. Further details regarding the management recommendations are provided in Appendix I.

Mining Operations Plan

Construction and rehabilitation activities at the Mount Pleasant Operation would continue to be undertaken in accordance with an approved Mining Operations Plan.

The Mining Operations Plan would be reviewed and revised to incorporate the Modification.

4.12 OTHER ENVIRONMENTAL ASPECTS

4.12.1 Final Landform

The final landform of the Mount Pleasant Operation would be largely unchanged by the Modification.

Infrastructure would be removed following the completion of the Mount Pleasant Operation and any material cut and fill areas (e.g at the rail loop) associated with the Modification would be regraded to approximate the pre-mining landform (Section 3.4).

4.12.2 Water Resources

The Modification would not result in a material change to the groundwater and surface water impacts of the approved Mount Pleasant Operation, given the Modification would not:

- significantly alter the approved general arrangement of the Mount Pleasant Operation;
- significantly increase the development area of the mine;
- increase the approved annual maximum ROM coal and waste rock production rates; or
- include any significant changes to the approved water management system at the site.

The Modification would involve some minor amendments to the construction erosion and sediment controls, pump and pipeline infrastructure at the Mount Pleasant Operation.

These changes would be associated with the replication of the existing water pipeline and Hunter River pump station, rail spur, rail loop and associated product loading infrastructure.

Contemporary site water balance modelling and water management system design for the Mount Pleasant Operation (incorporating Modification 3) has been undertaken by Hydro Engineering and Consulting (2017) and this modelling would be effectively unchanged by the Modification.

Consideration of the potential impacts of construction of new rail and water supply infrastructure in the floodplain of the Hunter River is provided in Appendix D and Section 4.7 and relevant flood mitigation measures that would be adopted are described in Section 3.2.13.

Water management at the Mount Pleasant Operation would continue to be undertaken in accordance with an approved Water Management Plan. The Water Management Plan would be reviewed, and if necessary, revised to incorporate the Modification.

MACH Energy will also continue to maintain surface water licences under the *Water Sharing Plan for the Hunter Regulated River Water Source 2016* to account for any water pumped from the Hunter River.

4.12.3 Road Transport

The Modification would not change the maximum production rate at the Mount Pleasant Operation or result in any additional demand for operational employees/contractors. Therefore, no change in the maximum daily operational vehicle movements is anticipated.

The construction activities that are currently being undertaken at the Mount Pleasant Operation include development of the site workshops, administration, CHPP, rail infrastructure, materials handling systems, haul roads, supporting facilities, electrical supply infrastructure, water transfer systems, fines emplacement area and water management dams.

The construction of the new infrastructure for the Modification would not require a large workforce (i.e. up to 60 people) or significant numbers of heavy vehicle deliveries, in comparison to the current peak construction activities at the Mount Pleasant Operation.

In addition, the Modification construction activity would occur after the completion of the major on-site construction activity, but well before the operational workforce and delivery demand peaks.

Cumulative traffic generation of the Modification in conjunction with the progressive ramping up of operations would therefore be below the peak operational traffic generation of the Mount Pleasant Operation in the Modification 3 operational period to 2026.

GHD (2017) has previously investigated the potential cumulative traffic and road network impacts of the Mount Pleasant Operation at peak operations in the context of other mining developments and background traffic growth in the Modification 3 operational period to 2026.

This assessment indicated that traffic generated by the Mount Pleasant Operation during peak periods would not adversely impact on the operation of key intersections in the period to 2026 (GHD, 2017).

Review of the crash history for relevant roads also did not suggest any particular road safety deficiencies which might be exacerbated by the extension of the life of the approved Mount Pleasant Operation by Modification 3 (GHD, 2017).

All Modification construction works that are required within public road easements (e.g. bridge work, pipeline crossings and Overton Road relocation) would be completed in consultation with the MSC and in accordance with the requirements of relevant NSW *Roads Act, 1993* approvals (Section 5.1.1).

It is anticipated that an existing minor public road in the vicinity of the proposed rail loop (Skippens Lane) would already be closed prior to construction of the Modification as it is located within the extent of the approved Mount Pleasant Operation.

4.12.4 Greenhouse Gas Emissions

The Modification does not include any additional coal or waste rock extraction and would not materially affect the approved greenhouse gas emissions of the Mount Pleasant Operation.

A contemporary greenhouse gas emissions inventory for the Mount Pleasant Operation incorporating the Modification was prepared by Todoroski Air Sciences (2017b) for Modification 3.

In accordance with the *National Greenhouse Accounts Factors* (Commonwealth Department of the Environment and Energy, 2016), direct greenhouse gas emissions are referred to as Scope 1 emissions, and indirect emissions are referred to as Scope 2 and Scope 3 emissions.

The major sources of greenhouse gas emissions associated with the Mount Pleasant Operation include:

- the combustion of diesel during mining operations (Scopes 1 and 3);
- the combustion of fuel oil (Scopes 1 and 3);
- fugitive emissions of methane from the exposed coal seams (Scope 1);
- off-site generation of electricity that is consumed at the Mount Pleasant Operation (Scopes 2 and 3); and
- transport and end-use (combustion) of product coal (Scope 3).

Annual average Scope 1 and 2 emissions for the Mount Pleasant Operation incorporating Modification 3 were estimated to be approximately 0.22 million tonnes of carbon dioxide equivalent (Mt CO_2-e), which is approximately 0.04% of the estimated greenhouse gas emissions for Australia during 2014 (Todoroski Air Sciences, 2017b).

The Modification would not materially alter these estimates, as no change to the rate or sequence of mining described in Modification 3 are proposed.

Greenhouse gas abatement measures undertaken at the Mount Pleasant Operation are generally focused on reducing fuel usage, through optimisation of haul roads, minimising rehandling and maintaining fleet in good operating order.

Greenhouse gas emissions from the Mount Pleasant Operation would continue to be monitored and where relevant reported annually in accordance with obligations under the *National Greenhouse and Energy Reporting Scheme* (Section 5.1.3).

4.12.5 Hazard and Risk

It is considered that the Modification would not materially change the existing potential risks identified in the previous assessments for the Mount Pleasant Operation.

The proposed activities associated with the Modification (i.e. construction and operation of duplicate infrastructure for off-site transport of product coal and water supply and subsequent decommissioning of the redundant infrastructure) are consistent with the approved Mount Pleasant Operation, and would not significantly alter the risk profile of the operation.

Notwithstanding, specific flood mitigation works would be included in the design of infrastructure in the Hunter River floodplain to minimise the potential for any additional flood afflux on private land (Section 3.2.13). In addition, environmental management plans and monitoring programmes would be reviewed, and where necessary, revised to include the Modification and manage any associated environmental risks.

4.12.6 Socio-Economics

The Modification would not involve any material change to the operational workforce of the approved Mount Pleasant Operation of up to approximately 380 people. The Modification also would not involve any change to the proposed rates or duration of mining proposed in Modification 3 (yet to be determined).

The Modification would involve MACH Energy investing approximately $105M of further capital on infrastructure development following the completion of development of the approved Mount Pleasant Operation (excluding additional costs to be incurred for the removal of redundant infrastructure in the path of the Bengalla Mine).

The estimated average construction workforce of approximately 50 people would provide an extension (albeit at a much lower level) of the positive construction employment effects of the existing approved Mount Pleasant Operation. It is therefore anticipated that the Modification would extend the existing employment and business opportunities presented by the construction of the approved Mount Pleasant Operation.

5 STATUTORY CONTEXT

The Mount Pleasant Operation was approved under Part 4 of the EP&A Act by the NSW Minister for Urban Affairs and Planning, in December 1999 (Development Consent DA 92/97).

At the time of the Modification application, Clause 12 of Schedule 6A of the EP&A Act provides that section 75W of Part 3A of the EP&A Act continues to apply to modifications of development consents referred to in clause 8J(8) of the *Environmental Planning and Assessment Regulation, 2000* (EP&A Regulation) following the repeal of Part 3A in October 2011.

The Mount Pleasant Operation Development Consent is a development consent that falls within clause 8J(8) of the EP&A Regulation, because it is a consent granted by the Minister under section 101 of the EP&A Act.

Therefore, section 75W of the EP&A Act continues to apply to modifications to the Mount Pleasant Operation Development Consent DA 92/97, notwithstanding its repeal.[5]

As outlined in Section 1.3, MACH Energy consulted with the DPE in August, September and December 2017 in regard to seeking the necessary approvals for the Modification and, based on this consultation, this EA has been prepared under section 75W of the EP&A Act.

Section 75W of the EP&A Act states:

> **75W Modification of Minister's approval**
>
> *(1) In this section:*
>
> ***Minister's approval** means an approval to carry out a project under this Part, and includes an approval of a concept plan.*
>
> ***Modification of approval** means changing the terms of a Minister's approval, including:*
>
> *(a) revoking or varying a condition of the approval or imposing an additional condition of the approval, and*
>
> *(b) changing the terms of any determination made by the Minister under Division 3 in connection with the approval.*
>
> *(2) The proponent may request the Minister to modify the Minister's approval for a project. The Minister's approval for a modification is not required if the project as modified will be consistent with the existing approval under this Part.*
>
> *(3) The request for the Minister's approval is to be lodged with the Director-General. The Director-General may notify the proponent of environmental assessment requirements with respect to the proposed modification that the proponent must comply with before the matter will be considered by the Minister.*
>
> *(4) The Minister may modify the approval (with or without conditions) or disapprove of the modification.*
>
> ….

5.1 GENERAL STATUTORY CONSIDERATIONS

5.1.1 State Legislation

Environmental Planning and Assessment Act, 1979

The EP&A Act and EP&A Regulation set the framework for planning and environmental assessment in NSW. As noted above, the Modification is to be assessed under section 75W (Part 3A) of the EP&A Act.

Section 5 of the EP&A Act describes the objects of the EP&A Act as follows:

> *(a) to encourage:*
>
> *(i) the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment,*
>
> *(ii) the promotion and co-ordination of the orderly and economic use and development of land,*
>
> *(iii) the protection, provision and co-ordination of communication and utility services,*
>
> *(iv) the provision of land for public purposes,*
>
> *(v) the provision and co-ordination of community services and facilities, and*

[5] Part 3A of the EP&A Act (as in force immediately before its repeal) continues to apply for the Mount Pleasant Operation. The description and quotation of relevant references to clauses of Part 3A in this document are to be understood as references to Part 3A as it was in force immediately prior to its repeal on 1 October 2011.

(vi) the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats, and

(vii) ecologically sustainable development, and

(viii) the provision and maintenance of affordable housing, and

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

(c) to provide increased opportunity for public involvement and participation in environmental planning and assessment.

The Modification is considered to be generally consistent with the objects of the EP&A Act, because it is a Modification that:

- incorporates measures to minimise potential impacts associated with noise, air quality and visual amenity on surrounding land uses (Sections 4.2 to 4.6);
- promotes the orderly economic use and development of land as it facilitates the development of the approved Bengalla Mine (Development Consent SSD-5170), consistent with the requirements of the Master Cooperation Agreement between the two mines;
- incorporates measures to relocate communication and utility services to maintain provision of these services to local residences;
- incorporates measures for the protection of the environment, including the management of impacts on land resources and protection of native plants and animals, threatened species and their habitats;
- incorporates relevant ecologically sustainable development considerations through adoption of high standards for environmental and occupational health and safety performance;
- is an application under section 75W of the EP&A Act that would be determined by the Minister for Planning and Environment; however, consultation with the MSC and a range of stakeholders has been undertaken, and issues raised have been considered and addressed where relevant (Section 1.3); and
- involves public involvement and participation through the public exhibition of this EA document and DPE assessment of the Modification in accordance with the requirements of the EP&A Act.

The *Environmental Planning and Assessment Amendment Act 2017* (EP&A Amendment Act) was assented on 23 November 2017, but had not yet commenced[6]. It is not currently clear when the EP&A Amendment Act will commence.

MACH Energy recognises that the EP&A Amendment Act may impact on the statutory considerations and matters raised in this EA once it comes into effect as law. If necessary, MACH Energy will address any matters arising from the commencement of the EP&A Amendment Act by the appropriate means in due course (e.g. addressing the impact of any amendments made by the EP&A Amendment Act on this Modification to the Mount Pleasant Operation in an addendum or in the Response to Submissions process).

Other State Legislation

In addition to the EP&A Act, the following NSW Acts may be applicable to the Mount Pleasant Operation, incorporating the Modification:

- *Aboriginal Land Rights Act, 1983*;
- BC Act*;*
- *Contaminated Land Management Act, 1997*;
- *Crown Lands Act, 1989* (Crown Lands Act);
- *Dams Safety Act, 1978*;
- *Dams Safety Act, 2015*;
- *Dangerous Goods (Road and Rail Transport) Act, 2008*;
- *Explosives Act, 2003*;
- *Fisheries Management Act, 1994*;
- *Heritage Act, 1977*;
- *Mining Act, 1992*;
- *National Parks and Wildlife Act,1974;*
- *Native Vegetation Act, 2003*;
- *Noxious Weeds Act, 1993*;
- *Protection of the Environment Operations Act, 1997* (PoEO Act);

[6] As at 14 December 2017.

- *Roads Act, 1993*;
- *Water Management Act, 2000*; and
- *Work Health and Safety (Mines and Petroleum Sites) Act, 2013*.

Relevant licences or approvals required under these Acts would continue to be obtained for the Mount Pleasant Operation as required. Key plans, licences and agreements that would require revision to incorporate the Modification are outlined in Section 5.3.

Additional details on the likely requirements of key acts are provided in the sub-sections below.

Mining Act, 1992

Under the NSW *Mining Act, 1992*, environmental protection and rehabilitation are regulated by conditions of mining leases, including requirements for the submission of a Mining Operations Plan prior to the commencement of operations, and subsequent Annual Environmental Management Reports (or Annual Reviews).

The current Mining Operations Plan (MACH Energy, 2017d) would require revision to reflect the duplication and subsequent removal of the redundant product loading and rail loop infrastructure within the Mount Pleasant Operation MLs (Section 5.3).

Roads Act, 1993

Works or structures that disturb the surface of a public road or connect a road to a classified road require consent under section 138 of the NSW *Roads Act, 1993*. The *Roads Act, 1993* applies to all public roads in NSW, and is typically administered by the local council for local roads.

The approved Mount Pleasant Operation involves both the closure and construction of new sections of public local roads (Section 2.9.12).

The Modification would also involve construction activities within the public road network in order to develop underpasses or overpasses of Wybong Road and Overton Road and for water supply pipeline crossings.

If the Modification is approved, MACH Energy would apply to the relevant roads authority for the necessary consents under section 138 of the *Roads Act, 1993* for the new infrastructure within the public road network.

Subject to final design, it may also be necessary to relocate a small section of Overton Road and purchase the underlying residual land from the MSC in accordance with the requirements of the *Roads Act, 1993*.

Detailed design for any roadworks would be undertaken in accordance with the *Austroads Guide to Road Design* and to the satisfaction of the MSC.

Protection of the Environment Operations Act, 1997

The PoEO Act and the NSW *Protection of the Environment Operations (General) Regulation, 2009* set out the general obligations for environmental protection for development in NSW, which is regulated by the EPA.

The Mount Pleasant Operation operates under EPL 20850, granted under the PoEO Act. The EPL contains conditions that relate to emission and discharge limits, environmental monitoring and reporting.

Approval of the Modification may necessitate a variation of EPL 20850 such as updates to environmental monitoring sites.

Crown Lands Act, 1989

The *Crown Lands Act* aims to ensure that Crown land is managed for the benefit of the people of NSW.

For any Crown land directly affected by the Modification (e.g. at the Hunter River pump station), MACH Energy would enter into necessary leases or licences under the *Crown Lands Act, 1989*. MACH Energy has already established a compensation agreement with respect to parcels of Crown Land within the Mount Pleasant Operation MLs.

Water Management Act, 2000

The NSW *Water Management Act, 2000* contains provision for the licensing, allocation, capture and use of water resources.

Water sharing plans establish rules for sharing water between different users and between the various environmental sources (namely rivers or aquifers).

MACH Energy would be required to establish a new Works Approval and transfer existing Water Access Licences under the *Water Management Act, 2000*, prior to extracting water from the Hunter River at the new pump station facility.

Biodiversity Conservation Act, 2016

The BC Act was recently enacted by the NSW Parliament to replace:

- the *Threatened Species Conservation Act, 1995*;
- the *Nature Conservation Trust Act, 2001*; and
- the animal and plant provisions of the *National Parks and Wildlife Act, 1974*.

The overarching objective of the BC Act is to 'maintain a healthy, productive and resilient environment for the greatest well-being of the community, now and into the future, consistent with the principles of ecologically sustainable development'.

One of the main purposes served by the BC Act is to prescribe the approach to be followed for conducting assessment of biodiversity for different activities and developments: see Part 7 of the BC Act.

This Modification proposes to modify a development consent that was granted before the commencement of the BC Act and, more specifically, before the commencement of Part 7, Division 4 of the BC Act. Section 7.17(1) of the BC Act states that:

> *(1) Subsection (2) applies to an application for the modification of a development consent, or State significant infrastructure approval, that was granted after the commencement of this Division.*

Because the development consent for the Mount Pleasant Operation was not granted 'after the commencement of this Division', section 7.17 of the BC Act will not apply to this Modification.

One of the regulations made under the BC Act is the *Biodiversity Conservation (Savings and Transitional) Regulation, 2017* (BC Savings Regulation).

Clause 28 of the BC Savings Regulation states that:

> *(1) The former planning provisions continue to apply (and Part 7 of the new Act does not apply) to the determination of a pending or interim planning application.*

The phrase 'pending or interim planning application' is defined within clause 27(1) of the BC Savings Regulation. The application made by MACH Energy for this Modification satisfies the criteria contained in the definition of 'pending or interim planning application' in clause 27(1) of the BC Savings Regulation.

As such, it enjoys the benefit of the savings provision in clause 28 of the BC Savings Regulation which provides that the former planning provisions continue to apply to the determination of this Modification.

5.1.2 Environmental Planning Instruments

State environmental planning policies and the local environmental plan that may be relevant to the Modification are discussed below.

It is noted that many of the clauses from environmental planning instruments that are considered below impose conditions precedent on the relevant consent authority when determining an application for development consent. Given that this Modification is a modification application under section 75W, rather than an application for development consent, the Minister (or delegate) would not, strictly speaking, need to be satisfied of these conditions precedent before determining MACH Energy's application in respect of this Modification.

Nevertheless, MACH Energy has found it to be instructive to have regard to these various provisions from environmental planning instruments in preparing this EA.

State Environmental Planning Policies

State Environmental Planning Policy (State and Regional Development) 2011

The *State Environmental Planning Policy (State and Regional Development) 2011* is not relevant to this Modification under section 75W of the EP&A Act, as the Modification does not constitute State significant development, State significant infrastructure, critical State significant infrastructure or a development application that would be determined by a joint regional planning panel.

State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007

The *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007* (Mining SEPP) consolidates the various environmental planning instruments that previously controlled mining activities.

Clause 5(3) of the Mining SEPP gives it primacy where there is an inconsistency between the provisions of the Mining SEPP and the provisions of any other environmental planning instrument (except the *State Environmental Planning Policy No. 14 [Coastal Wetlands]* and the *State Environmental Planning Policy No. 26 [Littoral Rainforest]*).

Clause 2

Clause 2 sets out the aims of the Mining SEPP as follows:

> *(a) to provide for the proper management and development of mineral, petroleum and extractive material resources for the purpose of promoting the social and economic welfare of the State, and*
>
> *(b) to facilitate the orderly and economic use and development of land containing mineral, petroleum and extractive material resources, and*
>
> *(b1) to promote the development of significant mineral resources, and*
>
> *(c) to establish appropriate planning controls to encourage ecologically sustainable development through the environmental assessment, and sustainable management, of development of mineral, petroleum and extractive material resources.*
>
> *(d) to establish a gateway assessment process for certain mining and petroleum (oil and gas) development:*
> *…*

Clause 7

Clause 7(1) of the Mining SEPP states that development for any of the following purposes may be carried out only with development consent:

> *(a) underground mining carried out on any land,*
>
> *(b) mining carried out:*
>
> *(i) on land where development for the purposes of agriculture or industry may be carried out (with or without development consent), or*
>
> *(ii) on land that is, immediately before the commencement of this clause, the subject of a mining lease under the Mining Act 1992 or a mining licence under the Offshore Minerals Act 1999,*
>
> *c) mining in any part of a waterway, an estuary in the coastal zone or coastal waters of the State that is not in an environmental conservation zone,*
>
> ...

Further discussion of the permissibility of mining in accordance with the Mining SEPP is provided in the sub-section below.

Clause 12

Clause 12 of the Mining SEPP requires that, before determining an application for consent for development for the purposes of mining, the consent authority must:

> *(a) consider:*
>
> *(i) the existing uses and approved uses of land in the vicinity of the development, and*
>
> *(ii) whether or not the development is likely to have a significant impact on the uses that, in the opinion of the consent authority having regard to land use trends, are likely to be the preferred uses of land in the vicinity of the development, and*
>
> *(ii) any ways in which the development may be incompatible with any of those existing, approved or likely preferred uses, and*
>
> *(b) evaluate and compare the respective public benefits of the development and the land uses referred to in paragraph (a) (i) and (ii), and*
>
> *(c) evaluate any measures proposed by the applicant to avoid or minimise any incompatibility, as referred to in paragraph (a) (iii).*

Land use in the vicinity of the Mount Pleasant Operation is characterised by a combination of coal mining operations, agricultural land uses and the commercial, industrial and residential areas of the towns of Muswellbrook and Aberdeen.

Land use in the Mount Pleasant Operation Development Application area primarily comprises a combination of approved mining activities, mining related infrastructure, public roads, remnant vegetation, cleared grazing land and areas of cropping land on the alluvial landforms adjacent to the Hunter River.

The majority of the approved Mount Pleasant Operation is located on MACH Energy-owned land or Bengalla Mine-owned land (Figure 4).

The proposed Modification would not materially change impacts on surrounding land uses from the Mount Pleasant Operation as originally approved, as it primarily comprises duplication of the product rail infrastructure and water supply infrastructure and subsequent removal of redundant infrastructure within the ultimate Bengalla Mine footprint.

The Modification would involve the approved Mount Pleasant Operation train movements joining the Muswellbrook – Ulan Rail Line some 6km closer to Muswellbrook and the Port of Newcastle.

MACH Energy would, where practicable, continue to implement a range of measures to avoid or minimise any potential incompatibility of the Mount Pleasant Operation with existing and future land uses in the Development Application area.

This would be achieved through the implementation of the Mount Pleasant Operation Environmental Management Strategy (Section 2.13).

In addition, MACH Energy has identified and proposes mitigation measures specifically aimed at reducing rail-related lighting effects on Muswellbrook that may be associated with the movement of product coal trains on the relocated rail spur (Section 4.6.3).

Clause 14

Clause 14(1) of the Mining SEPP requires that, before granting consent for development for the purposes of mining, the consent authority must consider whether or not the approval should be issued subject to conditions aimed at ensuring that the development is undertaken in an environmentally responsible manner, including conditions to ensure the following:

> *(a) that impacts on significant water resources, including surface and groundwater resources, are avoided, or are minimised to the greatest extent practicable,*
>
> *(b) that impacts on threatened species and biodiversity, are avoided, or are minimised to the greatest extent practicable,*
>
> *(c) that greenhouse gas emissions are minimised to the greatest extent practicable.*

In addition, clause 14(2) requires that, without limiting clause 14(1) in determining a development application for development for the purposes of mining, the consent authority must consider an assessment of the greenhouse gas emissions (including downstream emissions) of the development, and must do so having regard to any applicable State or national policies, programs or guidelines concerning greenhouse gas emissions.

The potential impacts of the Modification on water resources are limited, due to the fact that the mine would continue to be limited to the open cut and waste emplacement extents of the approved mine, as amended by Modification 3 (Table 1). However, Modification construction-related surface water management measures are described in Section 3.2.12 and flood mitigation measures associated with the construction of the rail spur are provided in Section 3.2.13.

The Modification is not expected to have material additional impacts on threatened species and biodiversity as the total native vegetation disturbance of the Mount Pleasant Operation would not increase significantly (Section 4.10) and the existing biodiversity management measures would continue to be applied (Section 4.10.3).

A quantitative assessment of potential Scope 1, 2 and 3 greenhouse gas emissions of the Mount Pleasant Operation inclusive of Modification 3 was conducted as part of the Air Quality and Greenhouse Gas Assessment for that proposal (Todoroski Air Sciences, 2017b).

Amongst other State or national policies, programmes or guidelines concerning greenhouse gas emissions, regard has been had to the following in the preparation of this Modification application:

- the terms of the 'Paris Agreement' that was recently agreed by the 21st Conference of the Parties under the UN Framework Convention on Climate Change;
- Australia's 2030 target of a 26-28% reduction on 2005 emissions under the Paris Agreement; and
- NSW's net-zero emissions by 2050 target under the 2016 NSW *Climate Change Policy Framework*.

As the Modification would not materially alter the sequence of mining, the annual rates of mining or increase the open cut extent, the previous annual average greenhouse gas emissions estimates would not be materially altered by the Modification.

Clause 15

Clause 15 of the Mining SEPP requires that:

> *(1) Before granting consent for development for the purposes of mining, petroleum production or extractive industry, the consent authority must consider the efficiency or otherwise of the development in terms of resource recovery.*
>
> *(2) Before granting consent for the development, the consent authority must consider whether or not the consent should be issued subject to conditions aimed at optimising the efficiency of resource recovery and the reuse or recycling of material.*
>
> *(3) The consent authority may refuse to grant consent to development if it is not satisfied that the development will be carried out in such a way as to optimise the efficiency of recovery of minerals, petroleum or extractive materials and to minimise the creation of waste in association with the extraction, recovery or processing of minerals, petroleum or extractive materials.*

The Modification would involve the sterilisation of approximately 1.2 Mt of South Pit ROM coal reserves to provide a sufficient geotechnical factor of safety for the new Mount Pleasant Operation rail spur that will be located north of Wybong Road.

While these ROM coal reserves at the southern limit of the South Pit would otherwise be available for extraction, MACH Energy may need to sterilise this coal to facilitate the timely construction of the proposed rail spur, enabling the progression of the Bengalla Mine (Development Consent SSD-5170) open cut in accordance with the Master Cooperation Agreement between the two operations.

It is in MACH Energy's financial interest to maximise coal recovery and this would be optimised as part of detailed design, while maintaining suitable factors of safety for the rail spur from the South Pit open cut endwall.

Clause 16

Clause 16(1) of the Mining SEPP requires that, before granting consent for development for the purposes of mining that involves the transport of materials, the consent authority must consider whether or not the consent should be issued subject to conditions that do any one or more of the following:

> *(a) require that some or all of the transport of materials in connection with the development is not to be by public road,*
>
> *(b) limit or preclude truck movements, in connection with the development, that occur on roads in residential areas or on roads near to schools,*
>
> *(c) require the preparation and implementation, in relation to the development, of a code of conduct relating to the transport of materials on public roads.*

Mount Pleasant Operation product coal would continue to be transported from site by rail.

The primary public road network transport routes to and from the Mount Pleasant Operation include potential routes that are adjacent to rural areas, industrial/commercial areas, residential areas and schools.

The cumulative traffic generation of the proposed Modification construction traffic with the operational workforce and delivery traffic in 2020/2021 would remain below the peak operational traffic generation of the Mount Pleasant Operation in the Modification 3 period to 2026 (i.e. peak traffic generation is anticipated later in the mine life).

Therefore no significant impacts on the performance, capacity, efficiency and safety of the road network are expected to arise as a result of the Modification.

Clause 17

Clause 17 of the Mining SEPP requires that before granting consent for development for the purposes of mining, the consent authority must consider whether or not the approval should be issued subject to conditions aimed at ensuring the rehabilitation of land that will be affected by the development.

In particular, the consent authority must consider whether conditions of the consent should:

> *(a) require the preparation of a plan that identifies the proposed end use and landform of the land once rehabilitated, or*
>
> *(b) require waste generated by the development or the rehabilitation to be dealt with appropriately, or*
>
> *(c) require any soil contaminated as a result of the development to be remediated in accordance with relevant guidelines (including guidelines under section 145C of the Act and the Contaminated Land Management Act 1997), or*

> *(d) require steps to be taken to ensure that the state of the land, while being rehabilitated and at the completion of the rehabilitation, does not jeopardize public safety.*

At the cessation of mining at the Mount Pleasant Operation, a rehabilitation programme would be implemented (Section 2.11) and this would be maintained for the Modification.

One of the key Mount Pleasant Operation rehabilitation objectives is the creation of a safe, stable and adequately drained post-mining landform.

At the cessation of mining operations MACH Energy anticipates that the Modification conveyors and rail infrastructure would be removed, the rail corridor cut and fill areas regraded and the rail corridor and rail loop would be rehabilitated (subject to a consultation with regulatory agencies, including the MSC and the DRG, with respect to the final land use of the mine site).

MACH Energy's Mining Operations Plan will comply with the Rehabilitation Management Plan requirement in Condition 56, Schedule 3 of Development Consent DA 92/97.

In addition, with respect to clauses 12, 14, 15, 16 and 17 of the Mining SEPP, as noted above, this Modification application takes the form of a section 75W modification application and the Minister (or delegate) would not need to consider and/or satisfy himself or herself of the matters referred to in these clauses prior to approving this Modification.

State Environmental Planning Policy No. 33 (Hazardous and Offensive Development)

Clause 13 of the *State Environmental Planning Policy No. 33 (Hazardous and Offensive Development)* relevantly requires the consent authority, in considering a Development Application for a potentially hazardous or a potentially offensive industry, to take into account:

> *(c) in the case of development for the purpose of a potentially hazardous industry—a preliminary hazard analysis prepared by or on behalf of the applicant, and*
>
> *(d) any feasible alternatives to the carrying out of the development and the reasons for choosing the development the subject of the application (including any feasible alternatives for the location of the development and the reasons for choosing the location the subject of the application)…*

The Modification would not significantly alter the consequences or likelihood of a hazardous event occurring at the Mount Pleasant Operation (Section 4.12.5), as the operational activities on-site would be largely unchanged from the mine as previously approved.

Operations at the Mount Pleasant Operation would continue to be carried out in accordance with the site's safety and environmental management systems to mitigate the risk of hazardous events.

Notwithstanding, environmental management plans and monitoring programmes would be reviewed and, if necessary, revised by MACH Energy to include the Modification.

In any event, as noted above, this Modification application takes the form of a section 75W modification application and the Minister (or delegate) would not need to consider and/or satisfy himself or herself of the matters referred to in clause 13 of this SEPP prior to approving this Modification.

State Environmental Planning Policy No. 55 (Remediation of Land)

State Environmental Planning Policy No. 55 (Remediation of Land) (SEPP 55) aims to provide a State-wide planning approach to the remediation of contaminated land. Under SEPP 55, planning authorities are required to consider the potential for contamination to adversely affect the suitability of a site for its proposed use.

A consent authority must consider the following under clause 7(1):

> *(a) whether the land is contaminated, and*
>
> *(b) if the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purpose for which the development is proposed to be carried out, and*
>
> *(c) if the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land will be remediated before the land is used for that purpose.*

Further, under clause 7(2), before determining an application for consent to carry out development that would involve a change of use of land, the consent authority must consider a report specifying the findings of a preliminary investigation of the land concerned, carried out in accordance with the contaminated land planning guidelines.

The Modification would involve a 'change of use' because the Modification would include the development of a new rail spur and pipeline that extend beyond the extent of the existing mining tenements held by MACH Energy.

Clause 7 of SEPP 55 further provides:

> *(2) Before determining an application for consent to carry out development that would involve a change of use on any of the land specified in subclause (4), the consent authority must consider a report specifying the findings of a preliminary investigation of the land concerned carried out in accordance with the contaminated land planning guidelines.*
>
> *(3) The applicant for development consent must carry out the investigation required by subclause (2) and must provide a report on it to the consent authority. The consent authority may require the applicant to carry out, and provide a report on, a detailed investigation (as referred to in the contaminated land planning guidelines) if it considers that the findings of the preliminary investigation warrant such an investigation.*
>
> *(4) The land concerned is:*
>
> *(a) land that is within an investigation area,*
>
> *(b) land on which development for a purpose referred to in Table 1 to the contaminated land planning guidelines is being, or is known to have been, carried out,*
>
> *…*

Clause 7(2) provides that before a consent authority determines an application for development consent, a 'preliminary investigation' is required where:

- the application for consent is to carry out development that would involve a 'change of use'; and
- that 'change of use' applies to certain land specified in clause 7(4).

The certain land specified in clause 7(4) on which the 'change of use' must relate is either:

- land that is an 'investigation area' – defined in SEPP 55 as land declared to be an investigation area by a declaration in force under Division 2 of Part 3 of the *Contaminated Land Management Act, 1997*; or
- land on which development for a purpose referred to in Table A5-1 of the contaminated land planning guidelines (being *Managing Land Contamination – Planning Guidelines SEPP 55 – Remediation of Land* [NSW Department of Urban Affairs and Planning and EPA, 1998]) is being, or is known to have been, carried out.

SESL Australia (Appendix I) completed a Detailed Site Investigation of the Modification elements located outside of the MACH Energy mining tenements, including a detailed investigation in accordance with the *Managing Land Contamination – Planning Guidelines SEPP 55 - Remediation of Land* (NSW Department of Urban Affairs and Planning and EPA, 1998).

The investigation included a desktop review, site inspection identification of potentially contaminated areas where further investigation was warranted. A detailed investigation was then undertaken of selected areas of interest, including soil samples and analysis. The findings of the detailed investigation are provided in Appendix I and summarised in Section 3.2.14.

On the basis of the detailed investigation, SESL (Appendix I) concluded that the Development Application area, incorporating the Modification elements, is suitable for the use subject to development of an Asbestos Management Plan, an unexpected finds protocol and removal of asbestos contaminated materials by an appropriately licensed contractor.

Land contamination management measures are described in Section 3.2.14.

In any event, as noted above, this Modification application takes the form of a section 75W modification application and the Minister (or delegate) would not need to consider and/or satisfy himself or herself of the matters referred to in clause 7 of SEPP 55 prior to approving this Modification.

State Environmental Planning Policy (Infrastructure) 2007

The *State Environmental Planning Policy (Infrastructure) 2007* (Infrastructure SEPP) applies to the whole of NSW and includes provisions for consultation with relevant public authorities about certain development during the assessment process or prior to development commencing.

Subdivision 2 of Division 15, Part 3 of the Infrastructure SEPP sets out provisions for development in rail corridors.
Clause 86 of the Infrastructure SEPP relevantly provides:

> *(1) This clause applies to development (other than development to which clause 88 applies) that involves the penetration of ground to a depth of at least 2m below ground level (existing) on land:*
>
> *(a) within or above a rail corridor, or*
>
> *(b) within 25m (measured horizontally) of a rail corridor, or*
>
> *(c) within 25m (measured horizontally) of the ground directly above an underground rail corridor.*
>
> *(2) Before determining a development application for development to which this clause applies, the consent authority must:*
>
> *(a) within 7 days after the application is made, give written notice of the application to the chief executive officer of the rail authority for the rail corridor, and*
>
> *(b) take into consideration:*
>
> *(i) any response to the notice that is received within 21 days after the notice is given, and*
>
> *(ii) any guidelines issued by the Director-General for the purposes of this clause and published in the Gazette.*
>
> *(3) Subject to subclause (4), the consent authority must not grant consent to development to which this clause applies without the concurrence of the chief executive officer of the rail authority for the rail corridor to which the development application relates, unless that rail authority is ARTC.*
>
> *…*

The Muswellbrook – Ulan Rail Line is located within the modified Development Application area. The Modification would also involve construction activities within and adjacent to the rail easement of the Muswellbrook – Ulan Rail Line (Section 3.2.8).

Consultation has been conducted with ARTC (the relevant rail authority) regarding the Modification (Section 1.3), and would be ongoing.

Muswellbrook Local Environmental Plan 2009

The Mount Pleasant Operation is located wholly within the Muswellbrook LGA and is covered by the Muswellbrook LEP.

Clause 2.3(2) of the Muswellbrook LEP relevantly provides:

> *The consent authority must have regard to the objectives for development in a zone when determining a development application in respect of land within the zone.*

As outlined above, the consent authority for the Modification is the Minister for Planning.

Under the Muswellbrook LEP, the Development Consent DA 92/97 area of the approved Mount Pleasant Operation includes land zoned as RU1 – Primary Production (across the majority of the Development Application Area) and E3 – Environmental Management (central areas south of Castle Rock Road).

The modified Development Application area would also include land zoned SP2 – Infrastructure (Rail Infrastructure) within sections of the Muswellbrook – Ulan Rail Line and a section of the Hunter River corridor which is zoned W1 – Natural Waterways.

It is noted that the Modification development within the SP2 zoning would comprise rail infrastructure, which is development that is permitted with consent under zone SP2 in the Muswellbrook LEP.

Further, the Muswellbrook LEP defines mining as follows:

> *mining means mining carried out under the Mining Act 1992 or the recovery of minerals under the Offshore Minerals Act 1999, and includes:*
>
> - *the construction, operation and decommissioning of associated works, and*
> - *the rehabilitation of land affected by mining.*

Within zones E3, W1 and SP2, mining is taken to be prohibited under the Muswellbrook LEP.

However Clause 4 of the Mining SEPP relevantly provides that the policy applies to the State of NSW, and Clause 5(3) of the Mining SEPP gives it primacy where there is any inconsistency between the provisions in the SEPP and the provisions in any other environmental planning instrument (subject to limited exceptions).

Clause 5(3) relevantly provides:

> *(3) …if this Policy is inconsistent with any other environmental planning instrument, whether made before or after this Policy, this Policy prevails to the extent of the inconsistency.*

The practical effect of Clause 5(3) for the Modification is that if there is any inconsistency between the provisions of the Mining SEPP and those contained in the Muswellbrook LEP, the provisions of the Mining SEPP will prevail.

Clauses 6 and 7 of the Mining SEPP provide what types of mining development are permissible without development consent and what types are permissible only with development consent.

The word 'mining' in the Mining SEPP is given an extended definition in Clause 3(2) as follows (emphasis added):

> ***mining*** *means the winning or removal of materials by methods such as excavating, dredging, or tunnelling for the purpose of obtaining minerals, and includes:*
>
> *(a) the construction, operation and decommissioning of associated works; and*
>
> *(b) the stockpiling, processing, treatment and transportation of materials extracted, and*
>
> *(c) the rehabilitation of land affected by mining.*

Clause 7(1)(b)(i) of the Mining SEPP provides that development for the purposes of 'mining' may be carried out with development consent on land where development for the purposes of agriculture is permissible.

'Extensive agriculture' is permissible under the Muswellbrook LEP without consent in the E3-Environmental Management zone, therefore the Mining SEPP provides that mining can be carried out with consent in this zone.

In addition, clause 7(1)(c) of the Mining SEPP provides that mining (including associated works) in in any part of a waterway may be carried out with development consent providing it is not an environmental conservation zone (as defined by the Mining SEPP[7]). The objectives of the W1 – Natural Waterways zone are:

- to protect the ecological and scenic values of natural waterways;
- to prevent development that would have an adverse effect on the natural values of waterways in this zone;
- to provide for sustainable fishing industries and recreational fishing;
- to ensure that opportunities for public access and use of aquatic resources for commercial and recreational fishing and aquaculture activities are maintained and enhanced; and
- to ensure that development maintains and enhances the integrity of the water quality, ecosystem, health and biodiversity in or adjacent to key fish habitats.

Based on this definition, the W1 – Natural Waterways zone under the Muswellbrook LEP is an environmental conservation zone as it has protection or conservation of the environment as a 'principal objective'. However, the Minister would not be precluded from granting consent to those parts of this Modification which are proposed to be carried out in the W1 – Natural Waterways zone (namely, the pump station and pipeline) due to the operation of the Part 3A transitionary provisions contained in both Schedule 6A of the EP&A Act and Part 1A of the EP&A Regulation.

5.1.3 Commonwealth Legislation

Environment Protection and Biodiversity Conservation Act, 1999

The objective of the EPBC Act is to provide for the protection of those aspects of the environment that are of *national environmental significance.* A proposal that is likely to have a significant impact on a matter of national environmental significance is defined as a controlled action under the EPBC Act.

The nine matters of national environmental significance are:

- world heritage properties;
- national heritage places;
- wetlands of international importance (also called 'Ramsar' wetlands);
- nationally threatened species and ecological communities;
- migratory species;
- Commonwealth marine areas;
- the Great Barrier Reef Marine Park;
- nuclear actions; and
- a water resource, in relation to coal seam gas development and large coal mining development.

[7] The Mining SEPP definition provides: ***environmental conservation zone*** *means a zone identified in another environmental planning instrument as having protection or conservation of the environment, or of an aspect of the environment, as its only objective or as a principal objective.*

Specialist biodiversity assessments conducted for the Modification have not identified any significant potential impacts on nationally threatened species and ecological communities, or migratory species.

Based on the findings of the biodiversity assessments and review of the other matters of national environmental significance, there would be no significant impact on matters of national environmental significance as a result of the Modification.

It is, therefore, considered that there is no need to refer the Modification to the Commonwealth Minister for the Environment.

National Greenhouse and Energy Reporting Act, 2007

The *National Greenhouse and Energy Reporting Act, 2007* (NGER Act) introduced a single national reporting framework for the reporting and dissemination of corporations' greenhouse gas emissions and energy use. The NGER Act makes registration and reporting mandatory for corporations whose energy production, energy use or greenhouse gas emissions meet specified thresholds.

As it develops a portfolio of projects in Australia MACH Energy may trigger the threshold for reporting under the NGER Act at some time during the life of the Mount Pleasant Operation. If this does occur, MACH Energy would accordingly report its energy use and greenhouse gas emissions from its enterprises.

5.2 NSW GOVERNMENT POLICY

Strategic Regional Land Use Policy

As part of the *Strategic Regional Land Use Policy*, the NSW Government introduced a Gateway Process for the upfront assessment of the impacts of State significant mining and coal seam gas proposals on Strategic Agricultural Land (NSW Government, 2012a).

The *Strategic Regional Land Use Policy* and the Gateway Process only applied to new State Significant Development applications or modifications for mining projects that require a new ML (NSW Government, 2012a).

The Gateway Process does not apply to the assessment of the Modification as no new ML is required in support of the Modification.

Notwithstanding, consideration of potential impacts on land use is provided in Section 4.11.

Aquifer Interference Policy

The Aquifer Interference Policy (AIP) (NSW Government, 2012c) has been developed by the NSW Government as a component of the NSW Government's *Strategic Regional Land Use Policy*. The AIP applies State-wide and details water licence and impact assessment requirements.

The AIP has been developed to ensure equitable water sharing between various water users and proper licensing of water taken by aquifer interference activities such that the take is accounted for in the water budget and water sharing arrangements. The AIP will also enhance existing regulation, contributing to a comprehensive framework to protect the rights of all water users and the environment in NSW.

The NSW *Water Management Act, 2000* defines an aquifer interference activity as that which involves any of the following:

- *the penetration of an aquifer;*
- *the interference with water in an aquifer;*
- *the obstruction of the flow of water in an aquifer;*
- *the taking of water from an aquifer in the course of carrying out mining or any other activity prescribed by the regulations; and*
- *the disposal of water taken from an aquifer in the course of carrying out mining or any other activity prescribed by the regulations.*

The AIP requires all water taken by aquifer interference activities to be accounted for within the extraction limits set by the relevant Water Sharing Plan.

The Water Sharing Plans relevant to groundwater resources for the Mount Pleasant Operation are the *Water Sharing Plan for the Hunter Unregulated and Alluvial Water Sources, 2009* and the *Water Sharing Plan for the North Coast Fractured and Porous Rock Groundwater Sources, 2016*.

The Modification would not alter the impacts on groundwater resources arising from the approved Mount Pleasant Operation as it comprises construction of surface linear infrastructure (Section 4.12.2).

5.3 PLANS, LICENCES AND AGREEMENTS THAT REQUIRE REVISION

Development Consent Conditions

Schedule 3 of Development Consent DA 92/97 (Attachment 1) provides land acquisition, noise impact assessment criteria, air quality criteria and a list of residences that may request air quality or noise mitigation measures.

These tables may require revision to reflect recent changes in land ownership and associated changes to the classification of a small number of residences based on the rail noise modelling conducted for the Noise Assessment (Appendix A).

Appendices of Development Consent DA 92/97 would also require revision to reflect the Modification, including:

- Update of Appendix 2 (Project Layout Plan) to reflect the new rail infrastructure.
- Update of Appendix 7 (Conceptual Final Landform) to reflect MACH Energy's proposed rehabilitation of the proposed off-site rail and water supply infrastructure.

Management/Monitoring Plans

Some management plans (e.g. the Noise Management Plan, Air Quality Management Plan and Landscape Management Plan) may require revision to reflect updated environmental management measures or changes to Development Consent 92/97 conditions resulting from the Modification.

Mining Operations Plan (Rehabilitation Management Plan)

The current Mining Operations Plan may require revision to reflect the revised product transport facilities as a result of the Modification.

6 CONCLUSION

On-site construction of the Mount Pleasant Operation re-commenced under MACH Energy's ownership in November 2016 and operations commenced in October 2017.

The Mount Pleasant Operation is being developed as an open cut mine with on-site coal processing and transport of product coal by rail, consistent with the project as approved.

The ultimate extent of the approved Bengalla Mine open cut under Development Consent SSD-5170 intersects the approved Mount Pleasant Operation rail spur.

While the intersection of the Bengalla Mine open cut with the approved rail infrastructure is still some years away, MACH Energy is proposing this Modification to obtain approval for alternative product transport facilities for the Mount Pleasant Operation.

The Modification does not propose any increase to the approved rates of coal and waste rock production or alteration to the extent of the approved open cuts.

In order to assess the potential environmental impacts of the proposed Modification a number of environmental reviews were completed.

A summary of the key findings of these environmental reviews and key commitments with respect to managing potential impacts is provided in Table 12.

These reviews indicate that the Mount Pleasant Operation environmental management and monitoring measures being applied by MACH Energy could continue to be applied to minimise the potential impacts on existing environmental values and the nearest private dwellings and infrastructure.

The Modification therefore would not significantly increase potential environmental impacts in comparison to the approved Mount Pleasant Operation.

Table 12
Key Outcomes of the Environmental Review

Environmental Aspect	Summary of Environmental Assessment Conclusions	Key Management, Mitigation or Monitoring Measures for the Modification
Operational Noise	The predicted Modification noise levels are consistent with those described for Modification 3 and would not materially change the approved noise envelope of the Mount Pleasant Operation (Appendix A).	MACH Energy would continue to implement the real-time noise management system and associated response protocols in the Noise Management Plan. The Noise Management Plan would be reviewed, and if necessary, revised to incorporate the Modification.
Rail Noise	Rail noise modelling of the relocated rail spur in isolation indicates up to 10 privately-owned receivers are predicted to exceed the night-time non-network rail noise criteria (Appendix A). However, the modified Mount Pleasant Operation rail movements would be relocated to the north of, and further away from, the closest private receivers than is the case for approved rail movements on the Muswellbrook – Ulan Rail Line to the existing rail spur (Appendix A).	In accordance with the NSW Government's *Voluntary Land Acquisition and Mitigation Policy*, one privately-owned dwelling located in close proximity to the Muswellbrook – Ulan Rail Line would be afforded acquisition upon request rights (receiver 23) and up to four privately-owned receivers would be afforded mitigation upon request rights on the basis of the rail noise predictions (i.e. receivers 19, 20, 21 and 207).
Construction Noise	Construction activities in the immediate vicinity of open cut mining and associated infrastructure would largely be indistinguishable from operational mining activities (Appendix A). For construction activities more remote from the mine, a number of proximal privately-owned receivers are predicted to exceed 'Noise affected' construction noise management levels under more adverse weather conditions. No privately-owned receivers are predicted to experience construction noise levels above the 'Highly noise affected' noise management level.	MACH Energy would continue to implement the noise mitigation and management measures relevant to construction activities detailed in the Noise Management Plan for the Mount Pleasant Operation. The Noise Management Plan would be reviewed and revised to include specific mitigation measures associated with construction activities occurring outside ML 1645 and ML 1750, as required, and to reflect any changes to Development Consent DA 92/97 that arise from the Modification.

Table 12 (continued)
Key Outcomes of the Environmental Review

Environmental Aspect	Summary of Environmental Assessment Conclusions	Key Management, Mitigation or Monitoring Measures for the Modification
Dust and Particulate Matter	Results of the air quality dispersion modelling indicate the Modification would have a negligible effect at proximal receivers. No additional privately-owned receivers are predicted to exceed any of the relevant air quality criteria as a result of the Modification (Appendix B).	The real-time air quality monitoring system and response protocols would continue to be implemented, including proactive and reactive management measures. The Air Quality and Greenhouse Gas Management Plan would be reviewed, and if necessary, revised to incorporate the Modification.
Visual/Final Landform	The Modification rail spur and associated night-lighting mitigation screens would be visible from a number of vantage points, particularly from the central and eastern sectors (Appendix C). During construction the rail batter earthworks and associated roadworks would contrast with surrounding vegetation, however these disturbed areas would rapidly integrate as vegetation is established. In the context of the two major mining operations that would dominate the background behind the Modification infrastructure elements from most private and public vantage points, the Modification represents a relatively minor change to the visual impacts of the Mount Pleasant Operation (Appendix C).	MACH Energy proposes to incorporate night-lighting screens in the rail spur design to minimise the direct rail lighting impacts on Muswellbrook. The colour of the lighting screens would be selected to maximise integration with surrounding vegetation. MACH Energy would also prioritise the seeding of the rail batters and other disturbance areas to progressively establish vegetation to minimise visual impacts. The Mount Pleasant Operation Landscape Management Plan would be reviewed and where necessary updated to reflect the additional visual impact mitigation measures associated with the Modification.
Flooding	Potential changes to flood depths and velocity resulting from the development of the proposed rail spur were estimated. Design flood levels for the 5% and 1% AEP flood events were developed. WRM Water and Environment (2017) predicted that the Modification may result in minor increased flood depths in areas immediately upstream and downstream of the proposed rail spur (Appendix D).	The final detailed design of the proposed rail spur (and associated hydraulic structures) would be designed to meet the following criteria for potential flooding impacts for a 1% AEP flood event: • no more than 0.1 m increase in flood levels on any privately-owned land; • no more than 0.01 m increase in flood levels at any privately-owned dwellings or commercial spaces; • no more than 0.01 m increase in flood levels at any public roads servicing privately-owned properties; and • no more than 0.1 m/s increase in flood velocities at privately-owned dwellings or commercial spaces.
Biodiversity	The Modification requires disturbance of some vegetation associated with the infrastructure to be constructed outside of the approved disturbance areas of the Mount Pleasant Operation. There are no threatened ecological communities or threated flora species present within the Modification additional disturbance areas (Appendix G). A portion of the vegetation in the Modification disturbance area does, however, provide some habitat opportunities for threatened fauna. As part of the Modification, MACH Energy would relinquish an approved disturbance area within the approved South West Out of Pit Emplacement footprint.	The South West Out of Pit Emplacement footprint area being relinquished contains native woodland with mature trees providing foraging, nesting and roosting habitat for threatened fauna. The Modification is considered to result in a small net biodiversity gain and therefore consideration of biodiversity offset requirements is not warranted (Appendix G). Notwithstanding, key biodiversity management measures at the Mount Pleasant Operation would continue to be implemented for the Modification, including vegetation clearance procedures and the implementation of progressive rehabilitation.

Table 12 (continued)
Key Outcomes of the Environmental Review

Environmental Aspect	Summary of Environmental Assessment Conclusions	Key Management, Mitigation or Monitoring Measures for the Modification
Heritage	Part of the proposed Modification is located within the extent of the Mount Pleasant Operation AHIP #C0002053. Further Aboriginal heritage surveys and archaeological investigations were undertaken by Niche (2017) in consultation with the RAPs which identified some isolated Aboriginal artefacts and one artefact scatter outside of the AHIP area (Appendix E). Three historic heritage sites of some local heritage significance have also been identified in the vicinity of the Modification. Two of these would be partially disturbed by the proposed earthworks associated with the Modification rail spur (Appendix F).	The management of all Aboriginal heritage sites located within the Modification disturbance area would be undertaken consistent with the requirements of an AHIP and the relevant approved Aboriginal Heritage Management Plan for the Mount Pleasant Operation. Historic heritage management measures for the Modification would include avoidance of direct impacts on the Overdene Homestead, demarcation of disturbance and access tracks prior to activities commencing, and completion of a photographic record of the Overton Orchard and Race Track.

7 REFERENCES

AECOM (2015) *Bengalla Mine Historic Heritage Management Plan, Prepared for Bengalla Mining Company Pty Ltd.*

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

Bio-Analysis Pty Ltd (2017) *Mount Pleasant Operation Aquatic Ecology Assessment.*

Coal & Allied Operations Pty Ltd (2015) *Offset Management Plan Mount Pleasant Project.*

Commonwealth Department of the Environment and Energy (2016) *National Greenhouse Accounts Factors.*

Cumberland Ecology (2013) *Bengalla Continuation Project Environmental Impact Statement Appendix O – Ecological Assessment.*

Cumberland Ecology (2015) *Mount Pleasant Upper Hunter Strategic Assessment BCAM Project Biodiversity Assessment Report.*

Division of Resources of Energy (2013) *ESG3: Mining Operations Plan (MOP) Guidelines, September 2013.* NSW Department of Planning and the Environment.

Eco Logical Australia (2017) *Targeted surveys for Diuris tricolor and Prasophyllum petilum – Mount Pleasant Operation.*

EJE Group (1996) *Muswellbrook Shire Wide Heritage Study: Final Report, Prepared for Muswellbrook Shire Council.*

EMGA Mitchell McLennan (2010a) *Mount Pleasant Project Modification Environmental Assessment Report*.

EMGA Mitchell McLennan (2010b) *Mount Pleasant Project Referral of Proposed Action - EPBC No 2011/5795.*

EMGA Mitchell McLennan (2011) *Mount Pleasant Project - Public Environment Report.* Prepared for Coal & Allied Operations Pty Ltd.

Environment Protection Authority (2000) *Industrial Noise Policy.*

Environment Protection Authority (2013) *Rail Infrastructure Noise Guideline.*

Environment Protection Authority (2017a) *Noise Policy for Industry.*

Environment Protection Authority (2017b) *Implementation and transitional arrangement for the Noise Policy for Industry.*

Environment Protection Authority (2017c) *Comments on Response to Submission report – Mt Pleasant Operation.*

ERM Mitchell McCotter (1997) *Mount Pleasant Mine Environmental Impact Statement.*

Extent Heritage Pty Ltd (2017) *Mount Pleasant Operation Rail Modification Statement of Heritage Impact.*

Geoffrey Britton and Associates (1997) *Mount Pleasant Environmental Impact Statement Visual Assessment.*

Geoscience Australia (2016) *Australian Rainfall and Runoff 2016.*

GHD (2017) *Mount Pleasant Operation Mine Optimisation Modification Road Transport Assessment.*

Hunter Eco (2017a) *Mount Pleasant Operation – Rail Modification Environmental Assessment – Biodiversity Assessment.*

Hunter Eco (2017b) *Mount Pleasant Operation – Mine Optimisation Modification Environmental Assessment – Biodiversity Assessment.*

Hydro Engineering and Consulting (2017) *Mount Pleasant Operation Mine Optimisation Modification Site Water Balance Review*. Prepared for MACH Energy Australia Pty Ltd.

MACH Energy Australia Pty Ltd (2017a) *Mount Pleasant Operation Mine Optimisation Modification Environmental Assessment.*

MACH Energy Australia Pty Ltd (2017b) *Aboriginal Heritage Management Plan.*

MACH Energy Australia Pty Ltd (2017c) *Mount Pleasant Operation (DA 92/97) – South Pit Haul Road Modification.*

MACH Energy Australia Pty Ltd (2017d) *Mount Pleasant Operation Mining Operations Plan and Rehabilitation Management Plan*.

Mangoola Coal Operations Pty. Limited (2017) *Mangoola Coal Continued Operations Project Preliminary Environmental Assessment.*

Muswellbrook Shire Council (2015) *Muswellbrook Mine Affected Roads Stage 1 – Road Network Plan.*

Niche Environment and Heritage Pty Ltd (2017) *Mount Pleasant Operation Rail Modification Aboriginal Cultural Heritage Assessment.*

NSW Department of Environment and Climate Change (2009) *Interim Construction Noise Guideline.*

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

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

NSW Department of Environment and Conservation (2006) *Assessing Vibration: a technical guideline.*

NSW Department of Urban Affairs and Planning and NSW Environment Protection Authority (1998) *Managing Land Contamination – Planning Guidelines SEPP 55 – Remediation of Land.*

NSW Heritage Office and NSW Department of Urban Affairs and Planning (1996) *NSW Heritage Manual*.

NSW Government (2012a) *Strategic Regional Land Use Policy.*

NSW Government (2012b) *Aquifer Interference Policy.*

NSW Government (2012c) *Strategic Regional Land Use Plan – Upper Hunter.*

NSW Government (2013) *Interim Protocol for Site Verification and Mapping of Biophysical Strategic Agricultural Land.*

NSW Government (2014) *Voluntary Land Acquisition and Mitigation Policy For State Significant Mining, Petroleum and Extractive Industry Developments.*

NSW Heritage Office (2002) *Statements of Heritage Impact.*

Office of Environment and Heritage (2009) *Assessing Significance for Historical Archaeological Sites and Relics.*

Office of Environment and Heritage (2013) *Hunter Estates: A Comparative Heritage Study of pre-1850s Homestead Complexes in the Hunter Region.*

Peake, T.C. (2006) *The Vegetation of the Central Hunter Valley, New South Wales*. A report on the findings of the Hunter Remnant Vegetation Project. Hunter–Central Rivers Catchment Management Authority, Paterson.

Rio Tinto Coal Australia (2010) *Mount Pleasant Project Referral of Proposed Action.*

SESL Australia (2017) *Mount Pleasant Operation Rail Modification Detailed Site Investigation.*

Sivertsen, D., Roff, A., Somerville, M., Thonell, J., and Denholm, B. (2011) *Hunter Native Vegetation Mapping.* Geodatabase Guide (Version 4.0), Internal Report for the Office of Environment and Heritage, Department of Premier and Cabinet, Sydney, Australia.

Todoroski Air Sciences (2017a) *Air Quality Assessment – Mount Pleasant Operation Rail Modification.*

Todoroski Air Sciences (2017b) *Mount Pleasant Operation Mine Optimisation Modification Air Quality and Greenhouse Gas Assessment.*

Veritas Archaeology & History Service (2014) *Mount Pleasant Historic Heritage Study*. Prepared for Rio Tinto Coal Australia. October 2014.

VPA Visual Planning and Assessment (2017) *Mount Pleasant Operation Rail Modification Visual Impact Assessment.*

Wilkinson Murray (2017a) *Mount Pleasant Operation Rail Modification Noise Assessment.*

Wilkinson Murray (2017b) *Mount Pleasant Operation Mine Optimisation Modification Noise & Blasting Assessment.*

WRM Water and Environment (2017) *Mount Pleasant Operation Rail Modification Flood Impact Assessment.*