Planning, Industry & Environment

Planning Services
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Contact: Nagindar Singh
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Mr Wayne Grout
MACH Energy Australia Pty Ltd
Mount Pleasant Mine
1100 Wybong Road
Muswellbrook NSW 2333

Dear Mr Grout

Mount Pleasant Operation – Construction Environmental Management Plan

I refer to your email of 03 March 2020 enclosing the *Mount Pleasant Operation Construction Environmental Management Plan* (Ref. MP001-3000-ENV-PLN-001, Revision Number 01) in accordance with condition 44l of Schedule 3 of DA 92/97 for the Mount Pleasant Operation (DA 92/97).

The Department has carefully reviewed the plan and is satisfied that it addresses the requirements of condition 44l of Schedule 3 of DA 92/97.

Accordingly, the Secretary has approved the *Mount Pleasant Operation Construction Environmental Management Plan* (Ref. MP001-3000-ENV-PLN-001, Revision Number 01).

Please ensure that a copy of the plan is placed on your website as soon as possible.

If you require further information, please contact Nagindar Singh on 8289 6873.

Yours sincerely

10/03/2020

Matthew Sprott
Director
Resource Assessments
as nominee of the Secretary

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MOUNT PLEASANT OPERATION

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

Document ID:	MP001-3000-ENV-PLN-0001		
Company:	MACH Energy Australia Pty Ltd		
Effective Date:	10 March 2020	**Status:**	Issued for Use
Approved By:	Wayne Grout	**Revision Number:**	01

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1 INTRODUCTION

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

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

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

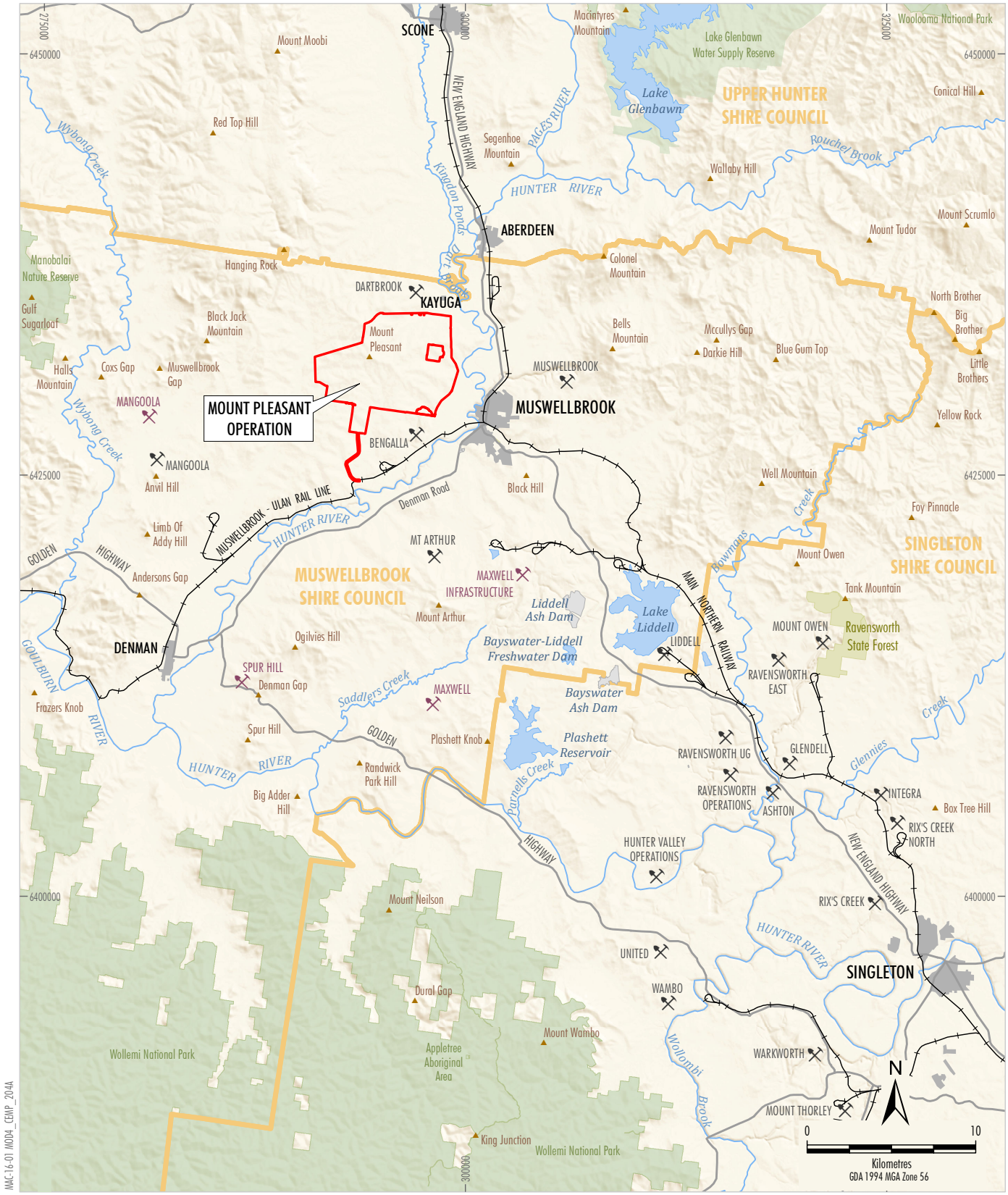
The MPO South Pit Haul Road Modification (MOD 2) was submitted on 30 January 2017 with a supporting EA prepared by MACH Energy (MACH Energy, 2017a). MOD 2 proposed to realign an internal haul road to enable more efficient access to the South Pit open cut, with no other material changes to the approved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

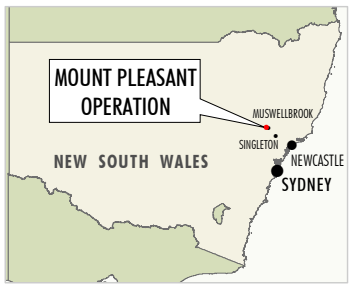
The MPO Mine Optimisation Modification (MOD 3) was submitted on 31 May 2017 with a supporting EA prepared by MACH Energy (MACH Energy, 2017b). MOD 3 comprised an extension to the time limit on mining operations (to 22 December 2026) and extensions to the South Pit Eastern Out of Pit Emplacement to facilitate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

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

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

MOD 4 was approved on 16 November 2018 by the Secretary of the Department of Planning and Environment (under Delegation). Appendix 2 of the modified Development Consent DA 92/97 illustrates the Conceptual Project Layout Plan of the approved MPO at 2021 and 2025, Approved Surface Disturbance Plan and Conceptual Final Landform (Attachment 1) incorporating the MOD 4 infrastructure relocations.





LEGEND

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

Source: © NSW Department of Finance, Services and Innovation (2018); Office of Environment and Heritage NSW (2018)

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MOUNT PLEASANT OPERATION

Project Location

Figure 1

MAC-16-01 MOD4_CEMP_2044

A detailed engineering design of the MOD 4 key infrastructure, which sought to develop a technically compliant design with relevant Australian Rail Track Corporation standards and Austroads Guide to Road Design requirements, resulted in the minor realignment of the infrastructure from the conceptual design shown in the MOD 4 EA (MACH Energy, 2017c). The design refinement also resulted in a TLO facility at 50 metres (m) height above the track level. The realigned final alignment design is shown on the various figures in this Construction Environmental Management Plan (CEMP) and did not result in any additional impacts beyond that described in the MOD 4 EA.

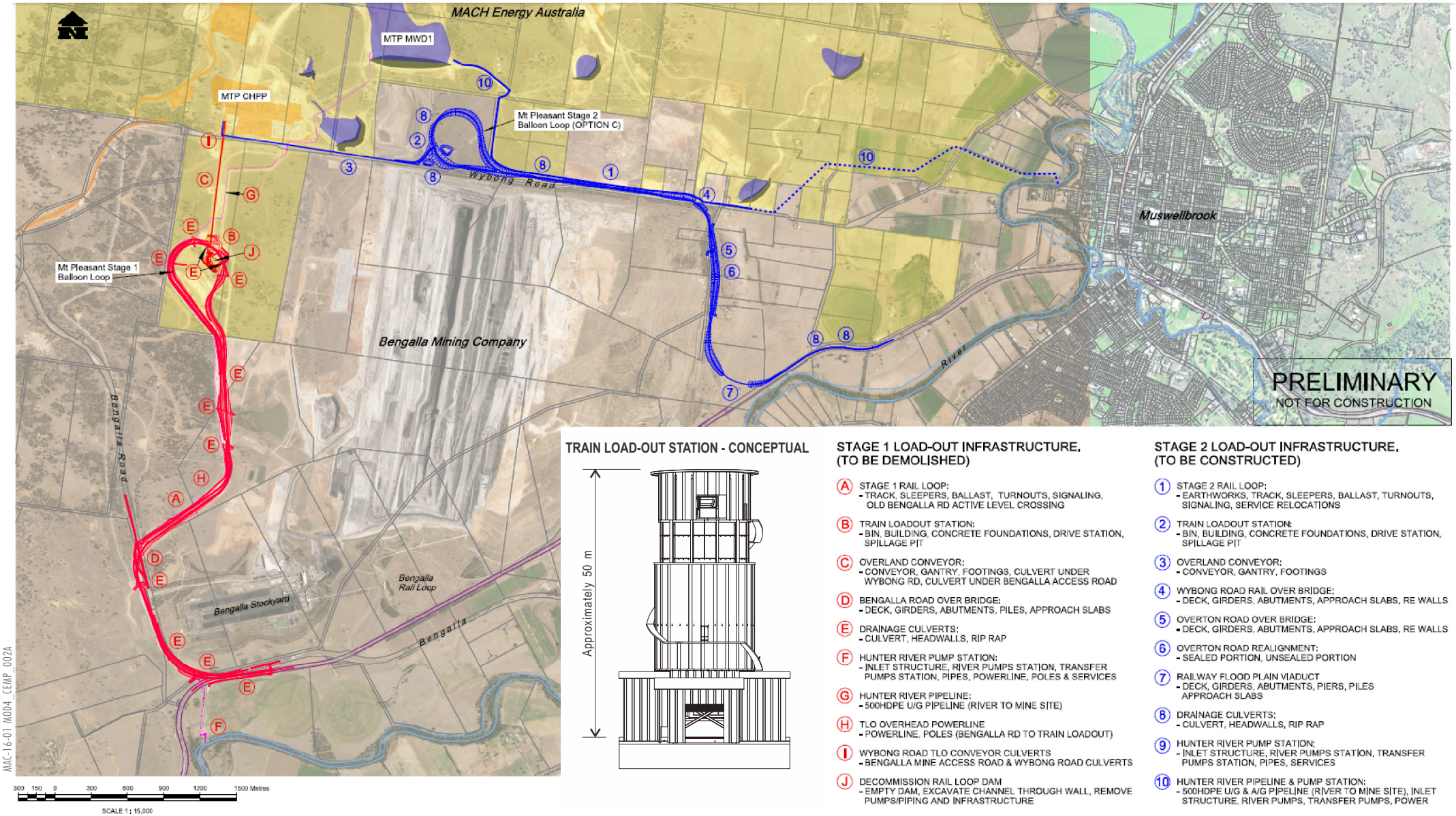
1.1 MOD 4 CONSTRUCTION ACTIVITIES OVERVIEW

Key MOD 4 construction activities associated with the MOD 4 infrastructure[1] include (Figures 2 and 3):

- Duplication of the approved rail spur, rail loop, overland conveyor (OLC) and TLO facility and associated services:
  - Approximately 5 km of private rail spur.
  - Construction of a rail loop to the east of the Coal Handling Preparation Plant (CHPP).
  - A new TLO 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 to the TLO facility.
  - 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.
  - Access tracks; hardstands and minor supplementary works that may be required to facilitate the proposed construction activities.
- Duplication of the Hunter River water supply pump station, consisting of a new water pipeline (buried where located in the floodplain of the Hunter River), associated electricity supply and pump station facilities located on the Hunter River and the MPO site:
  - The Hunter River pump station would comprise three pumps. These pumps will be configured so that only two operate at the same time. The pumps at the Hunter River will be placed in a below ground concrete wet well to minimise noise and vibration. A booster pump station will be located adjacent to the toe of the emplacement area just north of Wybong Road. These two booster pumps will be set up as a duty/standby arrangement above ground on a concrete pad. The locations of the Hunter River and the booster pump stations are subject to final design.

MOD 4 construction activities are anticipated to be carried out between May 2020 and September 2021. The construction activities have been broken down into geographical areas for the purpose of minimising the construction duration and reducing the movement of plant and equipment between the different areas that are separated by council roads. This has been achieved by creating multiple work fronts that reduce the overall construction duration, and by operating plant and equipment that are geographically contained in each area.

[1] Figures 2 and 3 show the demolition of the existing rail infrastructure and water supply infrastructure (Stage 1) for completeness. Demolition of this infrastructure is outside the scope of this CEMP, which is focused on the construction of the new rail infrastructure, water supply pipeline, pump station and associated power supply (i.e. Stage 2 as labelled on Figure 2).



TRAIN LOAD-OUT STATION - CONCEPTUAL

STAGE 1 LOAD-OUT INFRASTRUCTURE. (TO BE DEMOLISHED)

- (A) STAGE 1 RAIL LOOP:
  - TRACK, SLEEPERS, BALLAST, TURNOUTS, SIGNALING, OLD BENGALLA RD ACTIVE LEVEL CROSSING
- (B) TRAIN LOADOUT STATION:
  - BIN, BUILDING, CONCRETE FOUNDATIONS, DRIVE STATION, SPILLAGE PIT
- (C) OVERLAND CONVEYOR:
  - CONVEYOR, GANTRY, FOOTINGS, CULVERT UNDER WYBONG RD, CULVERT UNDER BENGALLA ACCESS ROAD
- (D) BENGALLA ROAD OVER BRIDGE:
  - DECK, GIRDERS, ABUTMENTS, PILES, APPROACH SLABS
- (E) DRAINAGE CULVERTS:
  - CULVERT, HEADWALLS, RIP RAP
- (F) HUNTER RIVER PUMP STATION:
  - INLET STRUCTURE, RIVER PUMPS STATION, TRANSFER PUMPS STATION, PIPES, POWERLINE, POLES & SERVICES
- (G) HUNTER RIVER PIPELINE:
  - 500HDPE U/G PIPELINE (RIVER TO MINE SITE)
- (H) TLO OVERHEAD POWERLINE
  - POWERLINE, POLES (BENGALLA RD TO TRAIN LOADOUT)
- (I) WYBONG ROAD TLO CONVEYOR CULVERTS
  - BENGALLA MINE ACCESS ROAD & WYBONG ROAD CULVERTS
- (J) DECOMMISSION RAIL LOOP DAM
  - EMPTY DAM, EXCAVATE CHANNEL THROUGH WALL, REMOVE PUMPS/PIPING AND INFRASTRUCTURE

STAGE 2 LOAD-OUT INFRASTRUCTURE. (TO BE CONSTRUCTED)

- (1) STAGE 2 RAIL LOOP:
  - EARTHWORKS, TRACK, SLEEPERS, BALLAST, TURNOUTS, SIGNALING, SERVICE RELOCATIONS
- (2) TRAIN LOADOUT STATION:
  - BIN, BUILDING, CONCRETE FOUNDATIONS, DRIVE STATION, SPILLAGE PIT
- (3) OVERLAND CONVEYOR:
  - CONVEYOR, GANTRY, FOOTINGS
- (4) WYBONG ROAD RAIL OVER BRIDGE:
  - DECK, GIRDERS, ABUTMENTS, APPROACH SLABS, RE WALLS
- (5) OVERTON ROAD OVER BRIDGE:
  - DECK, GIRDERS, ABUTMENTS, APPROACH SLABS, RE WALLS
- (6) OVERTON ROAD REALIGNMENT:
  - SEALED PORTION, UNSEALED PORTION
- (7) RAILWAY FLOOD PLAIN VIADUCT
  - DECK, GIRDERS, ABUTMENTS, PIERS, PILES APPROACH SLABS
- (8) DRAINAGE CULVERTS:
  - CULVERT, HEADWALLS, RIP RAP
- (9) HUNTER RIVER PUMP STATION:
  - INLET STRUCTURE, RIVER PUMPS STATION, TRANSFER PUMPS STATION, PIPES, SERVICES
- (10) HUNTER RIVER PIPELINE & PUMP STATION:
  - 500HDPE U/G & A/G PIPELINE (RIVER TO MINE SITE), INLET STRUCTURE, RIVER PUMPS, TRANSFER PUMPS, POWER

Source: CPB (2019)

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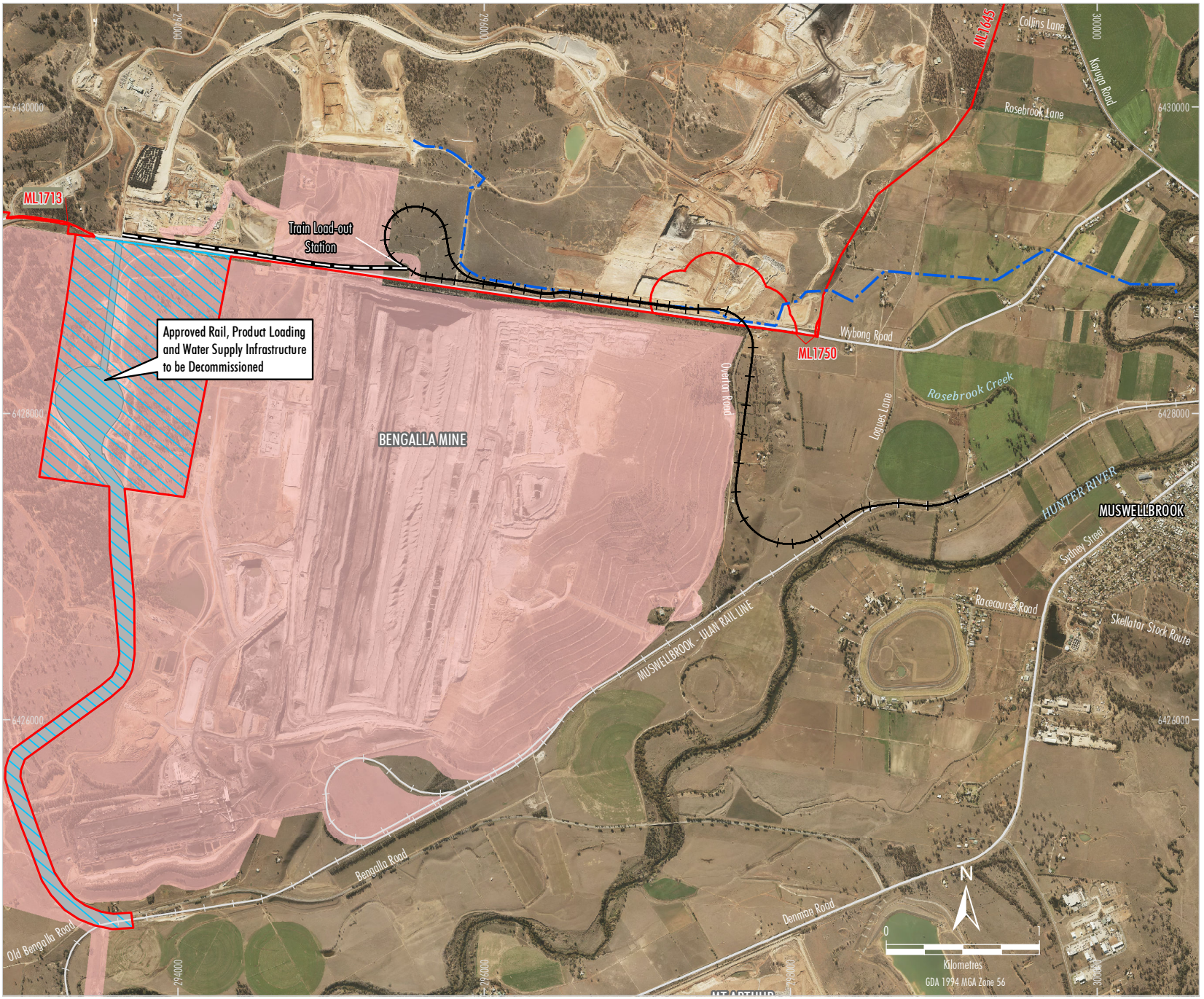
MOUNT PLEASANT OPERATION

MOD4 Construction Elements

Figure 2



LEGEND

- Mount Pleasant Operation Mining Lease Boundary
- Infrastructure to be removed under the Terms of Condition 37, Schedule 3
- Bengalla Mine Approved Disturbance Boundary (SSD-5170)

Key Elements of Modfication 4

- Indicative Rail Alignment
- Indicative Product Conveyor
- Indicative Water Pipeline and associated Electricity Transmission Line

Source: NSW Land & Property Information (2018); NSW Division of Resources & Geoscience (2019); NSW Department of Primary Industries (2017); Department of Planning and Environment (2016); Extent (2017); MACH Energy (2019)
Orthophoto: MACH Energy (July 2018)

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MOUNT PLEASANT OPERATION

Indicative Modification 4
Rail and Water Supply Alignments

Figure 3

MAC-16-01 MOD4_CEMP_201D

A summary of the construction areas, infrastructure in each area, preliminary construction durations and estimated start/finish dates are provided in Table 1 below. Further information regarding the areas of construction is contained in the Construction Traffic Management Plan (CTMP) (Appendix A) and a summary of the MOD 4 rail infrastructure construction activities and their sequence is provided in Section 1.1.1 below.

Table 1
Forecast Construction Durations by Construction Area

Construction Area/Infrastructure	Forecast Start Date	Forecast Finish Date	Approximate Duration (months)
Area 1 – North of Wybong Road / OLC, TLO & Rail Loop	May 2020	Sept 2021	17
Area 2 – Rail Bridge over Wybong and Overton Roads	Oct 2020	May 2021	8
Area 3 – South of Wybong Road / Rail Spur, Rail Viaduct & Connection to Ulan mainline	May 2020	Sept 2021	17

1.1.1 Rail Infrastructure Construction Sequence

Construction activities associated with MOD 4 rail infrastructure are anticipated to take place in the following sequence:

- Site establishment – installing boundary fencing, construction facilities, environmental controls and carrying out pre-clearing surveys.
- Relocation or protection of services – relocating and protecting electricity, water and telecommunications infrastructure affected by the project.
- Site preparation – removal of harvestable timber, clearing and grubbing, topsoil stripping and storage.
- Earthworks – undertaking cut and fill works along the alignment to achieve desired levels, removal of unsuitable material, batter and embankment shaping.
- Structures – building bridges, and drainage facilities (in parallel with earthworks).
- Pavements – forming sub- and base layers and construction final pavement finishes.
- Rail – installing rail ballast, track signalling equipment and rail furniture.
- Road furniture – installing signage, line marking, and safety barriers.
- Landscaping and restoration – re-use of topsoil, planting of vegetation or installation of permanent visual mitigation measures and seeding disturbed areas with native and cover crop species (note this will take place throughout construction as elements of the Project are complete where ongoing disturbance is not anticipated).
- Commissioning of new road, rail, materials handling, water supply and related infrastructure.

1.1.2 Compound and Ancillary Facilities

Temporary compound and ancillary facilities will be required to support MOD 4 construction works. Primary site compounds will be established for each stage of the project. These sites will accommodate the majority of management, engineering, specialist and administrative personnel. Typically, these facilities include:

- Office accommodation.
- Staff amenities.
- Light vehicle parking.
- A plant and equipment maintenance workshop.
- Material and chemical storage.

The main project compound shall be utilised for the duration of the MOD 4 construction works.

Due to the geographical scale of the proposed construction works, several ancillary facilities will also be required. These are generally located closer to active work zones and support site-based construction personnel.

Typically, these facilities will include:

- Crib sheds and minimal office accommodation.
- Equipment storage.
- Materials storage.
- Concrete casting areas.

1.2 PURPOSE AND SCOPE

This CEMP has been prepared by MACH Energy, with various expert technical input, to satisfy the requirements under Development Consent DA 92/97 and, specifically, Schedule 3, Condition 44I.

In compliance with Condition 44I, Schedule 3 of Development Consent DA 92/97, the CEMP only applies to MOD 4-related construction activities and, therefore, only addresses construction-related impact mitigation measures. Operational mitigation measures related to MOD 4 infrastructure are addressed in MOD 4 EA (MACH Energy, 2017c) and the approved site-wide MPO Environmental Management Plans (EMPs).

This CEMP has been prepared to manage construction-related impacts associated with the construction of the MOD 4 infrastructure. Works associated with the construction of MOD 4 infrastructure will be undertaken in accordance with the measures outlined in this CEMP and those contained in the approved MPO site-wide EMPs and other relevant plans that form the MPO Environmental Management System (Figure 4), which should be read in conjunction to this document prior to undertaking any construction activities.

To avoid duplication, information regarding the management of the relevant Aboriginal heritage sites has been excluded from this CEMP. Aboriginal heritage sites will be managed in accordance with the approved Aboriginal Heritage Impact Permits (refer to Figure 4) and the MPO Aboriginal Heritage Management Plan (MACH Energy, 2019a).

1.3 CONSULTATION

This CEMP has been provided to the Muswellbrook Shire Council (MSC) and Environmental Protection Authority (EPA) on 30 October 2019, and to Telstra and Ausgrid on 12 November 2019 and 13 November 2019, respectively, for the purposes of consultation in accordance with Condition 44I (a), Schedule 3 of Development Consent DA 92/97.

A consultation meeting regarding this CEMP was held with the EPA on 30 October 2019. MACH Energy provided an overview of the construction works relevant to the CEMP and an overview of the CEMP itself. The EPA did not provide any specific comments on the CEMP. The EPA later indicated that it does not review management plans and therefore would not provide comments on the CEMP. A full copy of the EPA's letter is provided in Appendix D. Telstra indicated that it has evaluated the CEMP and has no objections with the project MACH Energy wishes to undertake (refer to Appendix D).

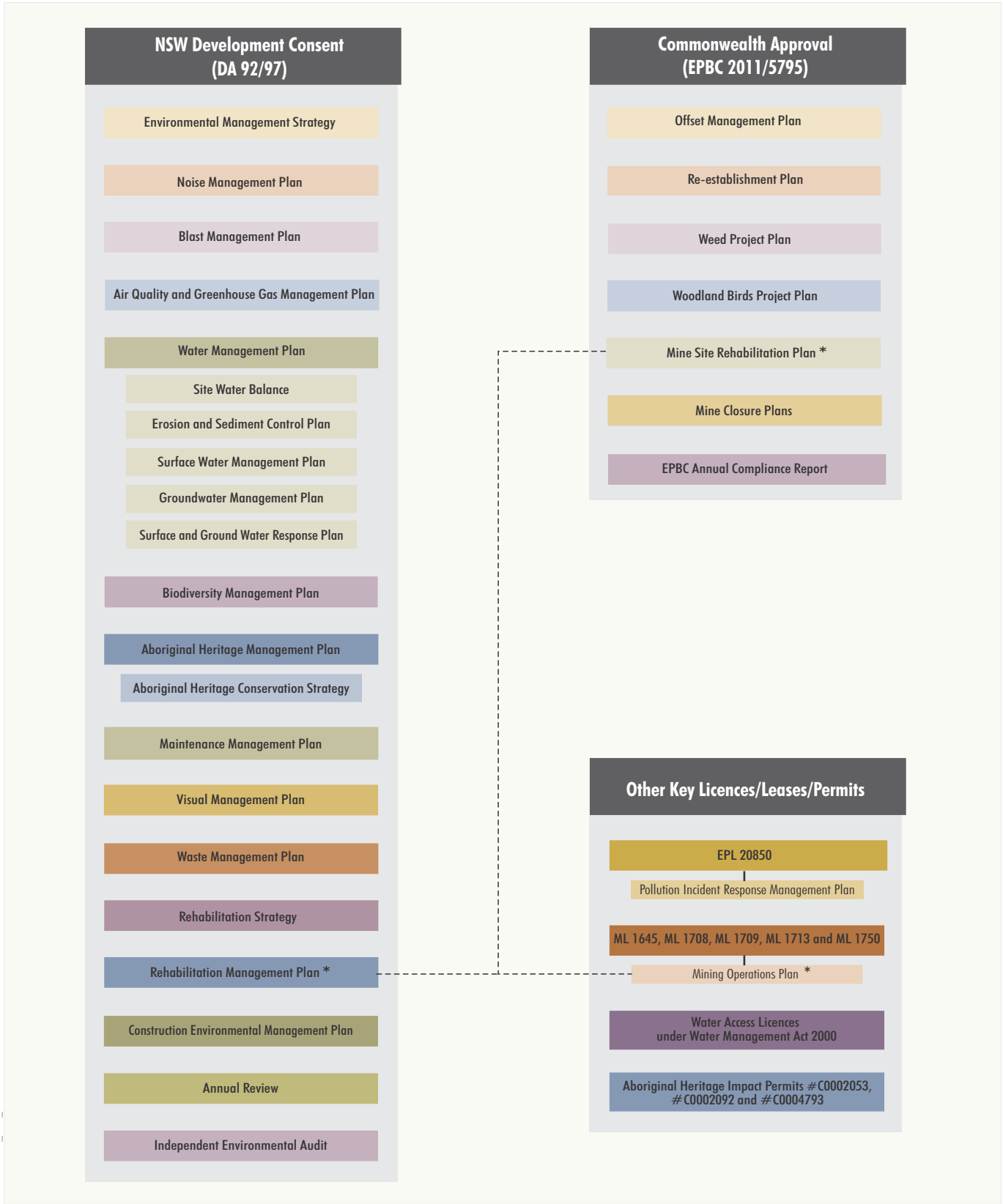
A consultation meeting regarding this CEMP was held with MSC on 8 November 2019. MACH Energy provided an overview of the construction works relevant to the CEMP and an overview of the CEMP itself. MSC inquired about flood scenarios considered in the construction planning. MACH Energy explained that construction would be compliant with the *Blue Book* (Landcom, 2014) and that a Controlled Activity Permit would be required. In addition, MACH Energy is required to comply with Conditions 44C and 44D, Schedule 3 of Development Consent DA 92/97 regarding flood impact mitigation and commission an independent review of the detailed construction design against the flood criteria.

MSC also noted that they would provide further advice on the details for providing and submitting the photographic record of Overton Orchard and Race Track.

MSC and MACH Energy also discussed the need for various secondary approvals under the NSW *Roads Act 1993* for works within MSC road reserves and agreed that these approvals were out of the scope of the CEMP.

MSC provided comments on the photographic record of the Former Orchard and Race Track on 4 February 2020. MSC requested additional high quality hard and electronic copies of the Archival Photographic Recording and the image files for all photos included in the Archival Photographic Recording be provided to MSC. These will be provided to MSC as requested. MSC indicated that the Archival Photographic Recording was prepared in accordance with the relevant guidelines (NSW Heritage Office, 1998) and that the proposed management actions presented in the Historic Heritage Management Plan (HHMP) (Appendix B) are satisfactory. MSC provided no further comments on the CEMP. Correspondence with MSC is provided in Appendix D.

MACH Energy contacted Ausgrid on 13 November 2019 to organise a consultation meeting for the CEMP however Ausgrid declined to meet at the time. As at 20 November 2019, MSC and Ausgrid have not provided any additional comments on the CEMP.



MAC-16-01 MOD4_CEMP_001A

Notes:

* The 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]). Following approval of the Mine Site Rehabilitation Plan (Conditions 19 and 20 of EPBC 2011/5795), the Mining Operations Plan and Rehabilitation Management Plan would be reviewed and revised if necessary.

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MOUNT PLEASANT OPERATION

Environmental Management System
Structure Summary

Figure 4

1.4 STRUCTURE OF THE CEMP

The remainder of the CEMP is structured as follows:

- Section 2: Outlines the statutory obligations to this CEMP.
- Section 3: Summarises existing baseline data of the MPO relevant to this CEMP.
- Section 4: Outlines the objectives, construction criteria and performance indicators relevant to this CEMP.
- Section 5: Describes the management measures proposed for the MOD 4 construction works.
- Section 6: Outlines the proposed monitoring procedures for the MOD 4 construction works.
- Section 7: Outlines the contingency plan for the key risks to the MOD 4 construction works.
- Section 8: Outlines the reviewing procedure for the MPO documentation including, in particular, this CEMP.
- Section 9: Describes the reporting procedures proposed for the MPO.
- Section 10: Lists the references cited in this report.
- Appendix A: Presents the CTMP prepared for the MOD 4 construction works.
- Appendix B: Presents the HHMP prepared for the MOD 4 construction works.
- Appendix C: Presents the Unexpected Contamination Protocol (UCP) prepared for the MOD 4 construction works.
- Appendix D: Lists comments received from the relevant consultees during the consultation period.

2 STATUTORY OBLIGATIONS

MACH Energy's statutory obligations relevant to MOD 4 construction works are contained in the conditions of Development Consent DA 92/97 (as modified), as outlined in Section 2.1.1 and 2.1.2 below.

2.1 DEVELOPMENT CONSENT DA 92/97

2.1.1 Construction Environmental Management Plan Requirements

Condition 44I, Schedule 3 of Development Consent DA 92/97 outlines the requirements of this CEMP (refer Table 2). Other conditions stipulated in Development Consent DA 92/97 relevant to the MOD 4 construction works are also outlined in Table 2.

Table 2
CEMP Development Consent DA 92/97 Conditions

MPO Development Consent DA 92/97	Section where addressed in this CEMP document
Schedule 3	
44I. The Applicant must prepare a Construction Environmental Management Plan for MOD 4 construction works, to the satisfaction of the Secretary. This Plan must:	This CEMP
(a) be prepared in consultation with the EPA, Council and any relevant road or utilities authorities;	Section 1.3
(b) describe measures to be implemented to minimise construction-related noise, vibration, dust, biodiversity and visual impacts, including specific measures to minimise: • *surface disturbance; and* • *the cumulative impacts of construction and operational noise;*	Section 5
(c) describe detailed procedures to be implemented to: • *notify affected landowners of upcoming construction activities;* • *receive, record, handle and respond to construction-related complaints; and* • *resolve any disputes that may arise during MOD 4 construction works;*	Section 9
(d) include a Construction Traffic Management Plan which: • *describes the measures to be implemented to minimise traffic safety issues and disruption to local road users, including managing light, heavy and over-dimensional vehicles during construction works; and* • *includes procedures for notifying other road users (including local bus operators) of any construction works that may disrupt their usual use of the road; and*	Section 5.5 and Appendix A
(e) include a Historic Heritage Management Plan which describes measures to implement the relevant historic heritage management commitments outlined in Appendix 3; and	Section 5.6 and Appendix B
(f) include an Unexpected Contamination Protocol which describes the procedures to be implemented in the event that potentially contaminated material is identified during construction, including: • *procedures for testing, removal and disposal of potentially contaminated material; and*	Section 5.7 and Appendix C

Table 2 (Continued)
CEMP Development Consent DA 92/97 Conditions

MPO Development Consent DA 92/97	Section where addressed in this CEMP document
Schedule 3 (Continued)	
• *measures to ensure compliance with the requirements of SafeWork NSW and relevant guidelines.* *The Applicant must not commence MOD 4 construction works until the Construction Environment Management Plan is approved by the Secretary. The Applicant must implement the Construction Environment Management Plan as approved by the Secretary.*	Section 5.7 and Appendix C (Continued)
44E. The Applicant must ensure that any asbestos encountered during MOD 4 construction works is monitored, handled, transported and disposed of by appropriately qualified and licensed contractors in accordance with the requirements of SafeWork NSW and relevant guidelines, including: *(a) Work Health and Safety Regulation 2017;* *(b) SafeWork NSW Code of Practice – How to Manage and Control Asbestos in the Workplace September 2016;* *(c) SafeWork NSW Code of Practice – How to Safely Remove Asbestos September 2016;* *(d) Protection of the Environment Operations (Waste) Regulation 2014; and* *(e) The EPA's Waste Classification Guidelines.*	Section 5.7
44F. All MOD 4 construction works outside of the Mining Lease Boundary must be carried out during Standard Construction Hours (7 am to 6 pm, Monday to Friday; and 8 am to 1 pm on Saturdays), unless the works are: *(a) Required by:* • *NSW Police; or* • *a public authority for delivery of vehicles, plant or materials; or* *(b) required in an emergency to avoid the loss of life, damage to property or to prevent material harm to the environment; or* *(c) approved under an Out of Hours Work Protocol.* *Note: The Mining Lease Boundary is shown in Figure 2 of Appendix 2.*	Section 5.1.3
44G. If the Applicant proposes to undertake MOD 4 construction works (outside of the Mining Lease Boundary) outside the hours specified in condition 44F above, then the Applicant must prepare an Out of Hours Work Protocol for these works, to the satisfaction of the Secretary. This protocol must: *(a) be prepared in consultation with the EPA and any residents who may be affected by the noise generated by these works;* *(b) address the relevant requirements of the Interim Construction Noise Guidelines (DECC, 2009);* *(c) be approved by the Secretary before any out of hours construction works are carried out.* *Note: For areas where construction noise is predicted to be at or below operational noise criteria at sensitive receptors, this is likely to provide sufficient justification for the need to operate outside of recommended standard hours as specified in the Interim Construction Noise Guideline (DECC, 2009).*	Section 5.1.4

Table 2 (Continued)
CEMP Development Consent DA 92/97 Conditions

<table>
<tr><th>MPO Development Consent DA 92/97</th><th>Section where addressed in this CEMP document</th></tr>
<tr><td colspan="2">Schedule 3 (Continued)</td></tr>
<tr><td>44H. The Applicant must ensure that the combined operational noise of the development and noise generated by the MOD 4 construction works outside of the Mining Lease Boundary does not exceed the criteria in Table 10A at any residence on privately-owned land.
Table 10A: Construction Noise Criteria
<table>
<tr><th>Receiver or other location</th><th>Standard Construction Hours dB(A) $L_{Aeq(15min)}$</th></tr>
<tr><td>67, 215, 216, 218, 219</td><td>47</td></tr>
<tr><td>206, 217, 220, 221, 225, 532, 533</td><td>48</td></tr>
<tr><td>222, 223, 531</td><td>49</td></tr>
<tr><td>224, 530</td><td>50</td></tr>
<tr><td>19, 20, 21, 207, 289</td><td>51</td></tr>
<tr><td>527, 528</td><td>56</td></tr>
<tr><td>529</td><td>54</td></tr>
<tr><td>68</td><td>57</td></tr>
<tr><td>23</td><td>69</td></tr>
<tr><td>All other privately-owned land</td><td>5 dB(A) above the daytime operational $L_{Aeq(15min)}$ noise criteria in Table 3</td></tr>
</table>
Notes:
• to identify the locations referred to in Table 10A, see the figures in Appendix 5.
• The Mining Lease Boundary is shown in Figure 2 of Appendix 2.
• Noise generated by the development is to be measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NSW Industrial Noise Policy, with the exception of the application of modifying factors under Fact Sheet C of the Noise Policy for Industry.
However, these criteria do not apply if the Applicant has a written agreement with the relevant landowner to exceed the criteria, and the Applicant has advised the Department in writing of the terms of this agreement.</td><td>Section 4.1</td></tr>
<tr><td colspan="2">Statement of Commitments</td></tr>
<tr><td>Construction Traffic
• MACH Energy will develop a Construction Traffic Management Plan for the MOD 4 construction works in consultation with Council and to the satisfaction of the Secretary.</td><td>Section 5.5</td></tr>
<tr><td>Management of Historic Heritage Items
• MACH Energy will implement historic heritage management associated with MOD 4 in consultation with Council and a copy of any resulting reports/documentation will be provided to Council for its records.
• MACH Energy will consult with Council on the content of the photographic record of Overton Orchard and Race Track.
• MACH Energy will limit movement of vehicles/machinery in the area of the Overton Orchard and Race Track to avoid potential damage outside of the MOD 4 disturbance footprint, in consultation with Council. This includes avoiding disturbance of the areas shown in blue on Figure 6 of the Statement of Heritage Impact (Extent, 2007) included as Appendix F of EA (MOD 4).</td><td>Section 5.6</td></tr>
</table>

Table 2 (Continued)
CEMP Development Consent DA 92/97 Conditions

MPO Development Consent DA 92/97	Section where addressed in this CEMP document
Statement of Commitments (Continued)	
• *MACH Energy will consult with Council on potential points of access and routes for heavy vehicles and machinery at the Blunt's Butter Factory. Points of access and routes will be demarcated and MACH Energy will ensure heavy vehicles remain within the demarcated areas.* • *MACH Energy will consult with Council regarding appropriate demarcation to restrict movement of heavy vehicles near the two cuttings located east of Overton Orchard. If artefacts are exposed at the base of the well at MP13, works will cease until an archaeologist advises whether or not they constitute 'relics' under the NSW Heritage Act 1977 and whether works should proceed pursuant to an application for an 'exception', or an excavation permit.*	Section 5.6 (Continued)

2.1.2 Management Plan (General) Requirements

Condition 2, Schedule 5 of Development Consent DA 92/97 outlines general management plan requirements. Table 3 presents these requirements and indicates where each is addressed within this CEMP.

Table 3
General Development Consent DA 92/97 Conditions

MPO Development Consent DA 92/97 Schedule 5	Section where addressed in this CEMP document
2. *The Applicant must ensure that the management plans required under this consent are prepared in accordance with any relevant guidelines, and include:*	
(a) detailed baseline data;	Section 3
(b) a description of:	Section 2
• *the relevant statutory requirements (including any relevant consent, licence or lease conditions);*	
• *any relevant limits or performance measures/criteria;*	Section 4
• *the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures;*	Sections 4.1 and 4.2
(c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;	Section 5 and 7
(d) a program to monitor and report on the:	Sections 6 and 9.2
• *impacts and environmental performance of the development;*	
• *effectiveness of any management measures (see c above);*	
(e) a contingency plan to manage any unpredicted impacts and their consequences;	Section 7
(f) a program to investigate and implement ways to improve the environmental performance of the development over time;	Section 8

3 BASELINE DATA

Baseline data for those environmental aspects relevant to the MOD 4 construction works has previously been collected as part of the preparation of the MPO EMPs. Table 4 lists relevant MPO EMPs that contain baseline data relevant to this CEMP and indicates where each is addressed within the EMPs.

Table 4
Relevant Existing Baseline Data

Construction-related Environmental Impact	Relevant Site-wide Environmental Management Plan	Section Where Addressed in the Plan
Noise	Noise Management Plan	Section 5
Vibration	Blast Management Plan	Section 7
Air Quality	Air Quality and Greenhouse Gas Management Plan	Section 5
Biodiversity	Biodiversity Management Plan	Section 3
Visual Impact	Visual Impact Management Plan	Section 3
Water and Soil	Water Management Plan	Appendices 1-5
	Mining Operation Plan and Rehabilitation Management Plan	Section 3.2

Relevant baseline data relating to construction traffic, historical heritage and land contamination is presented in MOD 4 EA (MACH Energy, 2017c).

4 OBJECTIVES AND PERFORMANCE CRITERIA

The objectives of this CEMP are to:

- comply with the conditions of Development Consent DA 92/97, which relate to MOD 4 construction works (Table 2); and
- manage MOD 4 construction-related environmental impacts to comply with performance criteria (Sections 4.1 and 4.2).

Relevant criteria for management of the MOD 4 construction-related works are presented in Sections 4.1 and 4.2 below.

4.1 CONSTRUCTION NOISE CRITERIA

Condition 44H, Schedule 3 of Development Consent DA 92/97 requires MACH Energy to ensure the combined operational noise of the MPO and noise generated by the MOD 4 construction works does not exceed the criteria in Table 5 at any residence on privately owned land.

These criteria do not apply if MACH Energy has a written agreement with the relevant landowner to exceed the criteria, and MACH Energy has advised the Department of Planning, Industry and Environment (DPIE) in writing of the terms of this agreement.

Table 5
Construction Noise Criteria

Receiver or other location	Standard Construction Hours dB(A) $L_{Aeq(15min)}$
67, 215, 216, 218, 219	47
206, 217, 220, 221, 225, 532, 533	48
222, 223, 531	49
224, 530	50
19, 20, 21, 207, 289	51
527, 528	56
529	54
68	57
23	69
All other privately-owned land	55 dB(A) above the daytime operational LAeq(15min) noise criteria (refer to MPO Noise Management Plan [NMP])

Notes: Noise generated by the development is to be measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NSW Industrial Noise Policy, with the exception of the application of modifying factors under Fact Sheet C of the Noise Policy for Industry.

dB(A) = A weighted decibels.

LAeq = A-weighted equivalent continuous noise level

4.2 PERFORMANCE CRITERIA

The performance criteria associated with the management of the MOD 4 construction works are presented in Table 6 below.

Table 6
Performance Criteria

Parameter	Target	Key Performance Indicator
Noise and Vibration		
Cumulative Noise Impact	Minimise cumulative noise impact from the construction works and the MPO.	Effective implementation of the management and control measures described in Section 5.1.
		Results of attended noise monitoring conducted are compliant with the combined operational and construction noise criteria presented in Table 5.
Air Quality		
Dust Emission	Minimise dust emissions generated by the construction works.	Effective implementation of the management and control measures described in Section 5.2.
		No excessive dust emissions are observed.
		Results of particulate matter concentration and dust deposition monitoring are compliant with the relevant criteria described in the approved MPO Air Quality and Greenhouse Gas Management Plan (AQGGMP).
Biodiversity		
Flora and Fauna Impacts	Minimise impacts to flora and fauna.	Effective implementation of the management and control measures described in Section 5.3.
Visual		
Visual Impact	Minimise visual impacts from the construction works.	Effective implementation of the management and control measures described in Section 5.4.
Lighting	Minimise lighting emissions from the construction works as far as practicable.	Designing and locating lighting to minimise off-site impacts and in compliance with *Australian Standard (AS) 4282 (INT) 1997 – Control of Obtrusive Effects of Outdoor Lighting*.
Construction Screening	Minimise construction lighting impacts.	Installation of temporary lighting screens.
Vegetation Clearing	Minimising vegetation clearing for construction.	Trees to be retained are protected in accordance with *Australian Standard AS4970 the Australian Standard for Protection of Trees on Development Sites*
Construction Traffic		
Impact on Public Roads and Crossings	Minimise impacts on all public roads and crossings used for the construction works.	Effective implementation of the traffic control measures described in Appendix A of this CEMP.

Table 6 (Continued)
Performance Criteria

Parameter	Target	Key Performance Indicator
Historic Heritage		
Heavy Vehicle and Machinery Movement	Minimising impacts on historic heritage sites associated with the movement of heavy vehicles and machinery.	Effective implementation of management control measures described in Section 2.6 of Appendix B of this CEMP.
Accidental Impact	Minimising accidental impacts on historic heritage sites.	Effective implementation of management control measures described in Section 2.5 of Appendix B of this CEMP.
Blasting	Minimise blasting impacts from any blasting activities carried out as part of the construction works.	Results of blast monitoring conducted are compliant with the blasting criteria presented in Appendix B of this CEMP.
Contamination		
Unexpected Contamination	Minimise impacts from unexpected contamination.	UCP (Appendix C) is followed upon the discovery of unexpected contamination.
Asbestos	Minimise contamination from any discovered asbestos.	Asbestos Management Plan detailed in Appendix C of this CEMP is followed effectively.
Erosion and Sediment Control		
Erosion impacts	Minimise soil erosion, generation of sediment and transport of sediment to downstream waters.	Effective implementation of erosion and sediment control measures described in Section 5.8 of this CEMP.
General		
Complaints	Minimise MOD 4 construction works-related impacts on the surrounding residents.	MOD 4 construction works-related complaints are minimised, and appropriate management actions are implemented following receipt of a complaint.

5 CONSTRUCTION-RELATED ENVIRONMENTAL MANAGEMENT AND CONTROL MEASURES

5.1 NOISE AND VIBRATION

Potential noise impacts associated with the construction of MOD 4 key infrastructure were assessed as part of the MOD 4 EA and were concluded to be largely indistinguishable from operational mining activities at the closest privately-owned receivers (MACH Energy, 2017c). Management of noise impacts will continue to be carried out in accordance with the approved MPO NMP (MACH Energy, 2019e).

In addition to the management measures approved as part of the MPO NMP, MACH Energy will implement the following additional control measures to minimise cumulative noise impacts of MOD 4 construction works and the MPO (Sections 5.1.1 and 5.1.2).

5.1.1 Noise Control Measures

The following controls will be implemented at the MPO:

- Periodic public notification by MACH Energy on construction works via monthly letterbox drop or equivalent, website, Community hotline phone number, Construction Response Line and email distribution list.
- All construction works outside of the MPO mining leases will be conducted in accordance with the constraints on operating hours described in Condition 44F, Schedule 3 of Development Consent DA 92/97.
- Equipment (either rented or procured) would be selected with consideration to potential noise and vibration impacts.
- All employees, contractors and subcontractors are to receive an environmental induction. The induction will include:
  - All relevant project-specific and standard noise mitigation measures.
  - Relevant licence and approval conditions.
  - Permissible hours of work.
  - Location of nearest sensitive receivers.
  - Employee parking areas.
  - Designated loading/unloading areas and procedures.
  - Behavioural practices to minimise noise, including: no swearing or unnecessary shouting, no loud stereos/radios on-site, no dropping of materials from height, no throwing of metal items or slamming of doors.
  - Site opening/closing times (including deliveries).
  - Environmental incident procedures.

5.1.2 Noise Construction Controls

The following construction noise management measures and controls will be implemented at the MPO where it is reasonable and feasible[2] to do so:

- Quieter and less vibration-emitting construction methods will be undertaken.
- Noise suppression will be provided on major construction mobile plant.
- Equipment will be regularly inspected and maintained to ensure it is in good working order.
- Simultaneous operation of noisy plant within discernible range of a sensitive receiver will be avoided.
- Noisy and vibration-emitting plant would be placed so that the offset distance to sensitive receivers and attenuation via intervening structures or topography will be maximised.
- Noise emitted from noisy plant will be directed away from sensitive receivers.
- Plant or vehicles used intermittently will be throttled down or shut down when not in use.
- Noise with special audible characteristics and vibration-generating activities (including pile driving and rock breaking) will only be carried out in continuous blocks, not exceeding three hours each, with a minimum respite period of one hour between each block where the works occur within close proximity of a sensitive receiver. 'Continuous' includes any period during which there is less than a one-hour respite between ceasing and recommencing any of the work.
- Non-tonal reversing beepers (or an equivalent mechanism) will be fitted and used on all construction vehicles and mobile plant regularly used on-site.
- Construction deliveries will utilise straps, rather than chains, to minimise noise during unloading.
- The speed of construction vehicles will be limited on-site (40 kilometres per hour [km/hr]) and the use of engine compression brakes will be avoided.
- Stationary sources (e.g. compressors) will be enclosed or shielded, subject to occupational health and safety requirements.
- In the event of a complaint from a local resident, MACH Energy will implement the complaints response process.

5.1.3 Construction Hours

The MOD 4 construction works outside of the approved Mining Lease Boundary will generally be undertaken during Standard Construction Hours shown in Table 7.

Table 7
Hours of Construction

Operation	Days	Time
All MOD 4 Construction Works	Monday to Friday	7 am to 6 pm
	Saturday	8 am to 1 pm
	Sunday	No works to be undertaken
	Public Holidays	No works to be undertaken

[2] As per Condition 8, Schedule 3 of Development Consent DA 92/97.

5.1.4 Out of Hours Work Protocol

As per Condition 44F, Schedule 3 of Development Consent DA 92/97, construction works outside of the hours presented in Table 7 will be allowed in the event that the works are:

- required by the NSW Police or a public authority for the delivery of vehicles, plant or materials;
- required in an emergency to avoid the loss of life, damage to property or to prevent material harm to the environment; or
- approved under an Out of Hours Work Protocol.

MACH Energy proposes to prepare an Out of Hours Work Protocol (MACH Energy, 2020), in accordance with Condition 44G, Schedule 3 of Development Consent DA 92/97, to undertake MOD 4 construction works outside of the approved construction hours shown in Table 7.

Until this protocol is approved by the DPIE, the Standard Construction Hours in Table 7 will apply to the MOD 4 construction activities.

5.2 AIR QUALITY

The MOD 4 construction-related impacts on dust and particulate matter have been assessed by Todoroski Air Sciences (2017) as part of the MOD 4 EA (MACH Energy, 2017c). The assessment predicted no significant or prolonged impacts at any privately-owned receivers and concluded that the total amount of dust generated from the MOD 4 construction works is unlikely to be significant in comparison to other activities at the MPO.

Management of dust will continue to be carried out in accordance with the approved MPO AQGGMP (MACH Energy, 2019h), including predictive meteorological and air quality forecasting, and real-time air quality management.

The following measures presented in Table 8 will also be implemented to ensure the MOD 4 construction works-related dust impacts are minimised.

Table 8
Relevant Management Procedures

Target	Management and Control Measure
Adverse Conditions and Contingency Actions	• Under the MPO AQGGMP – the *MACH Control Room Operator or delegate* is responsible for the implementation of response management measures, dependent on the level of urgency (Green, Amber, Red), and will communicate status to the Contractor. This may include shutdown of Operations in accordance with Conditions O3.4 to O3.9 of EPL 20850 if required. • During unfavourable meteorological conditions, outside those defined as 'adverse conditions' in Conditions O3.4 to O3.9 of EPL 20850, construction activities will be assessed and modified, as required. Mitigating measures that will be implemented during adverse conditions include: – scheduling of additional water carts in advance; – scheduling of amended working hours in locations during unfavourable dispersion conditions; – review of the elevation and wind exposure of activities and, where possible, relocating the activity to a sheltered area or undertaking an alternative non-dusty activity until more suitable conditions return; and/or; – temporary cessation of work within an area or a particular activity when it is identified to be a likely contributor to elevated dust measurements, until more favourable conditions return.

Table 8 (Continued)
Relevant Management Procedures

Target	Management and Control Measure
General	• Vehicles and plant will be switched off when not in operation for periods of more than 30 minutes and will not be left idling. • Vehicles and plant will be fitted with pollution reduction devices where practical. • Plant will be regularly checked and maintained in a proper and efficient working condition. • Visual observations would be undertaken and additional mitigation measures will be implemented as required (e.g. due to observations of excessive dust or exhaust emissions). • Weather forecasts data would be reviewed daily and construction activities planned accordingly.
Exposed Areas and Stockpiles	• The area of exposed surfaces will be minimised. • Water suppression will be used on exposed areas and stockpiles, as appropriate. • The amount of stockpiled material will be minimised. • Stockpiles will be located away from sensitive receivers. • Stockpiles will be covered or temporarily rehabilitated if they are not to be used for significant periods. • Construction activities will be progressively staged and rehabilitation will occur on completed sections as soon as practicable.
Material Handling	• Drop heights from loading and handling equipment will be minimised.
Roads	• Unsealed roads will be watered, as required, to maintain a suitable moisture level to minimise wheel-generated dust. • The speed of construction vehicles will be limited on-site (40 km/h). • Light, medium and heavy vehicle wash bays will be utilised and grids or coarse aggregate near exit points will be used to minimise dirt track-out. • Street cleaning will be used, where appropriate, to remove dirt tracked onto sealed roads. • Trucks transporting materials to and from the construction site will have the loads covered appropriately. Spilt material will be removed at the end of each shift.
Training	• Methods for management of dust emissions will be incorporated into site inductions, training and prestart/toolbox talks.

5.3 BIODIVERSITY

As described in the MOD 4 EA (MACH Energy, 2017c), mitigation measures to be implemented as part of MOD 4 infrastructure construction works include minimising the area of native vegetation to be cleared for construction of the rail spur where practical. Management of biodiversity will continue to be undertaken in accordance with the approved MPO Biodiversity Management Plan (BioMP) (MACH Energy, 2019c) and will include key measures such as:

- delineation of areas to be cleared;
- conducting clearing activities in accordance with the pre-clearing procedure (e.g. completing a Ground Disturbance Permit (Attachment 2) prior to any clearing activities); and
- implementing clearing procedure and management strategies to minimise impacts of ground disturbance on fauna during clearing activities (e.g. identifying habitat trees, promoting self-relocation or the capture and release of fauna and relocating habitat features).

The following mitigation measures, in accordance with those outlined in the MOD 4 EA (MACH Energy, 2017c) and BioMP (MACH Energy, 2019c), and additional measures specific to MOD 4 infrastructure construction works, will be implemented to minimise potential impacts:

- Trenches (e.g. associated with construction of the water supply pipeline, underground cabling, etc.) will be inspected for fauna no later than four hours after sunrise, where they are left open overnight, and prior to backfilling.
- Use of designated parking areas and access tracks to minimise surface disturbance areas.
- Retained vegetation areas will be identified using appropriate pegging, barriers or signage to prohibit plant, equipment and personnel access.
- Prohibiting the catching or feeding of native fauna or feral animals.
- Establishment of No Go Zones for unnecessary disturbance for threatened flora and fauna (identified by fencing/flags and signage) prior to commencement of clearing. Permits will be required to allow access to the No Go Zones. Any damage to fencing or signage is to be reported to the supervisor or Environmental Superintendent.
- Ensure machinery hygiene protocols are implemented for all machinery working in/around the MPO area to control the spread of weeds.
- Use of erosion and sediment control measures to control nutrient/weed migration.
- Delineation of approved native vegetation clearing areas (including the digital capture of the approved disturbance boundaries and where native vegetation is to be carried out on a campaign basis [i.e. sequentially]; the use of markers to identify each area to be cleared prior to each clearing campaign).
- A pre-clearance survey will be conducted by an appropriately trained and suitably qualified and/or experienced person(s) to identify:
  - potential habitat features located within proposed disturbance areas (such as hollows) that may require special management during clearing and that can be salvaged (where practicable) for re-use in rehabilitation areas, adjoining non-disturbed native vegetation areas or in the relinquishment area;
  - actively nesting threatened birds or arboreal mammals and/or suspected active microbat roosts that may require active management prior to, or during, disturbance to minimise impacts on threatened fauna species (e.g. birds, arboreal mammals and hollow-dwelling bats);
  - presence of the threatened Tiger Orchid (*Cymbidium canaliculatum*) to be avoided/salvaged during disturbance activities;
  - flora in fruit which can be utilised for seed collection;
  - weed infestations adjacent to, or within, the proposed surface disturbance area that may need treatment prior to or during disturbance; and
  - pest species that may require control prior to disturbance.
- If a threat to an animal is evident on-site, the supervisor and/or Environmental Superintendent must be contacted immediately. Works may need to cease if the animal is in danger or harmed until it has been relocated.
- Consistent with MACH Energy policy, speed limits will be imposed on all vehicles using the mine roads and tracks.

As described in the BioMP (MACH Energy, 2019c), where practicable and feasible, habitat features such as large hollows and rock identified during the pre-clearance surveys will be salvaged and stockpiled for re-use in rehabilitation areas or relocated to adjoining areas of remnant vegetation or to the relinquishment area. Trees containing features with the potential to provide significant habitat (i.e. numerous hollows) for nesting threatened birds or hollow-dwelling bats and/or arboreal mammals (e.g. the Squirrel Glider) will be clearly marked as habitat trees and retained for re-use wherever practicable. Remaining tree limbs, stumps, shrubs and other wood vegetation may be mulched or used in whole or in part in rehabilitation areas.

5.4 VISUAL IMPACT

The potential visual impacts from the MOD 4 construction and operation activities are detailed in the MOD 4 EA (MACH Energy, 2017c) and would primarily be due to the Wybong Road overpass, the headlight screens erected to mitigate headlight pathway spill into Muswellbrook and the unscreened areas of headlight spill south of the screens. Visual impact management of the MOD 4 related infrastructure will continue to be undertaken in accordance with the approved Visual Impact Management Plan (VIMP) (MACH Energy, 2019d), which includes the following key measures:

- establishment of train light screens to minimise the off-site lighting impacts;
- plantation of vegetation screening in accordance with the approved planting protocol; and
- installation of visual bunds to assist screening of mine components from sensitive viewpoints.

The following additional mitigation measures will be implemented to mitigate potential visual impacts of MOD 4 construction activities:

- Where practical, the elements within construction locations (such as light vehicles and plant equipment) will be stored behind bunds or temporary construction screening.
- Construction screening is used when necessary.
- The construction screening used is to be of a colour sympathetic to the immediate surrounding landscape such as khaki green, eucalyptus tones or beige with long continuous lengths of screening avoided to minimise visual contrast.
- Existing trees to be retained will be protected prior to the commencement of construction in accordance with Australian Standard AS4970 the Australian Standard for Protection of Trees on Development Sites.
- Provision of on-site parking and storage locations for construction vehicles and assets.
- When work must be undertaken under lighting, this lighting will be oriented to minimise glare and light spill impact on adjacent receivers.
- Permanent vegetation screening planting will be implemented as soon as is feasible and reasonable after the commencement of construction, as per the approved MPO VIMP (MACH Energy, 2019d).

5.5 CONSTRUCTION TRAFFIC

As described in the MOD 4 EA (MACH Energy, 2017c), the MOD 4 construction works are not predicted to contribute to increased daily vehicle movements. The cumulative MOD 4 construction traffic and coincident operational traffic generation during the MOD 4 construction period would remain below the peak of approved operational traffic generation that would occur later in the mine life (MACH Energy, 2017c).

All MOD 4 related construction traffic will be managed in accordance with the CTMP (Appendix A) to minimise the construction traffic impacts associated with the MOD 4 construction works.

5.6 HISTORIC HERITAGE

The MOD 4 construction works would disturb some historic heritage items, including Overton Orchard and Race Track and Blunt's Butter Factory (MACH Energy, 2017c).

All MOD 4 construction works will be undertaken and appropriate management measures will be implemented in accordance with the Construction HHMP (Appendix B) to minimise impacts on the relevant historic heritage sites located within, and in the vicinity of, the MOD 4 disturbance area.

5.7 ASBESTOS MANAGEMENT AND UNEXPECTED CONTAMINATION

As identified in the MOD 4 EA (MACH Energy, 2017c), the MOD 4 disturbance area includes four areas with some minor level of contamination, with some areas containing fragments of fibrous cement building material.

In the event that potentially contaminated material is identified (including asbestos) during the MOD 4 construction works, relevant procedures for testing, removal and disposal of the material will be implemented as outlined in the UCP (Appendix C).

5.8 WATER AND EROSION AND SEDIMENT CONTROL

No material changes to the groundwater and surface water impacts related to the approved MOD 4 were predicted (MACH Energy, 2017c). The approved MPO water management system and measures, detailed in the approved MPO Water Management Plan (MACH Energy, 2019b), will continue to be implemented. Potential erosion impacts associated with the MOD 4 construction works will be managed in accordance with the Erosion and Sediment Control Plan included in the MPO Water Management Plan (MACH Energy, 2019b).

The following additional mitigation measures developed in accordance with the *Blue Book* (Landcom, 2004) will be implemented to mitigate potential erosion impacts of MOD 4 construction activities:

- sediment fences and filters to intercept and filter small volumes of non-concentrated construction runoff;
- rock check dams across swales and diversion channels to reduce the velocity of flow, thereby reducing erosion of the channel bed and trapping sediment;
- level spreaders to convert erosive, concentrated flow into sheet flow;
- diversion drains to collect construction runoff and direct the runoff away from unstable and/or exposed soil to treatment facilities;

- diversion drains to collect clean runoff from upstream of the construction area and divert the runoff around or through the site without it mixing with construction runoff;
- appropriate lining of channels and other concentrated flow paths;
- sedimentation basins to capture sediment and associated pollutants in construction runoff (see further details below);
- the length between sediment fences and other physical controls will be decreased in steep areas, to reduce soil erosion;
- stabilisation of drainage works against erosion by ensuring appropriate selection of channel dimensions, slope and lining, and inclusion of drop structures and energy dissipaters if required; and
- scour protection at the base of permanent and temporary drainage outlets will be integrated where feasible to minimise scour.

5.9 FLOODING

The MOD 4 approved rail spur is to be built across part of the floodplain of the Hunter River. The rail spur will be designed and constructed to meet specific flood mitigation criteria stipulated in Development Consent DA 92/97 conditions.

Potential impacts attributable to the MOD 4 construction works may include the following:

- Loss and/or damage of ancillary facilities, construction equipment / plant.
- Sediment discharge into the receiving environment.
- Increased area and depth of inundation.
- Increased watercourse flow rates during rain events.
- Increased duration of inundation.

The approved flooding mitigation measures for the MPO are presented in the MPO Erosion and Sediment Control Plan included in the MPO Water Management Plan (MACH Energy, 2019b) and all MOD 4-related construction works will be carried out in accordance with these measures.

In addition to the approved flooding mitigation measures, the following control measures will be undertaken during the MOD 4 construction works to minimise flooding impacts:

- Environmental awareness training provided to all field personnel and subcontractors, delivered through inductions, toolbox talks and pre-start briefs.
- Daily monitoring of rain events during construction and establishment of appropriate trigger points to best manage site preparedness during flooding events.
- Undertaking flood response planning prior to commencement of the MOD 4 construction works, which includes methods for monitoring rising water, key trigger points, actions and communication protocols.
- Undertake progressively revegetation and stabilisation at any new waterway diversions prior to commissioning of the MOD 4 construction works.
- Locate site facilities (including the Principal's shared project accommodation), working and storage areas and any proposed stockpile sites above the 20 year Average Recurrence Interval (ARI) flood level, unless a contingency plan to manage flooding is prepared and implemented.

- Design and construct temporary works such as hardstand areas and access tracks to withstand flooding and not worsen flooding for surrounding properties.
- Maintain a register of all materials, plant and equipment stored in flood prone areas and remove plant, equipment and material to high ground prior to flooding impacts, where safe to do so.
- Where practicable, locate stockpiles away from areas subject to concentrated overland flow. Finish and contour stockpiles located on a floodplain to minimise loss of material in flood or rainfall events.
- Store any stockpiles of acid sulphate soils above the 1 in 20 ARI flood level.
- Design temporary fencing at culvert and bridge crossings considering the potential for blockage. The fencing is to be designed and operated in a manner that does not result in impacts on flooding. This could include temporary fencing that is easily removed during flood events (where ample warning time is provided), or specifically designed fencing so the blockage of structures would not occur.

6 MONITORING

6.1 GENERAL MONITORING

Monitoring will be undertaken to validate the impacts predicted for the MOD 4-related construction works, to measure the effectiveness of management plans, environmental controls and implementation of this CEMP, and to address approval requirements. The relevant monitoring procedures for the construction-related environmental impacts are included in the approved MPO management plans, as presented in Table 9 These monitoring procedures will continued to be implemented during the MOD 4 construction works.

Table 9
Relevant Monitoring Procedures

Construction-related Environmental Impact	Relevant Site-wide Environmental Management Plan	Section Where Addressed in the Plan
Noise	Noise Management Plan	Section 9
Vibration	Blast Management Plan	Section 10
Air Quality	Air Quality and Greenhouse Gas Management Plan	Section 10
Biodiversity	Biodiversity Management Plan	Section 8
Visual Impact	Visual Impact Management Plan	Section 6
Water and Soil	Water Management Plan	Appendices 1-5
	Mining Operation Plan and Rehabilitation Management Plan	Section 8

6.2 CONSTRUCTION-RELATED MONITORING

6.2.1 Noise and Vibration

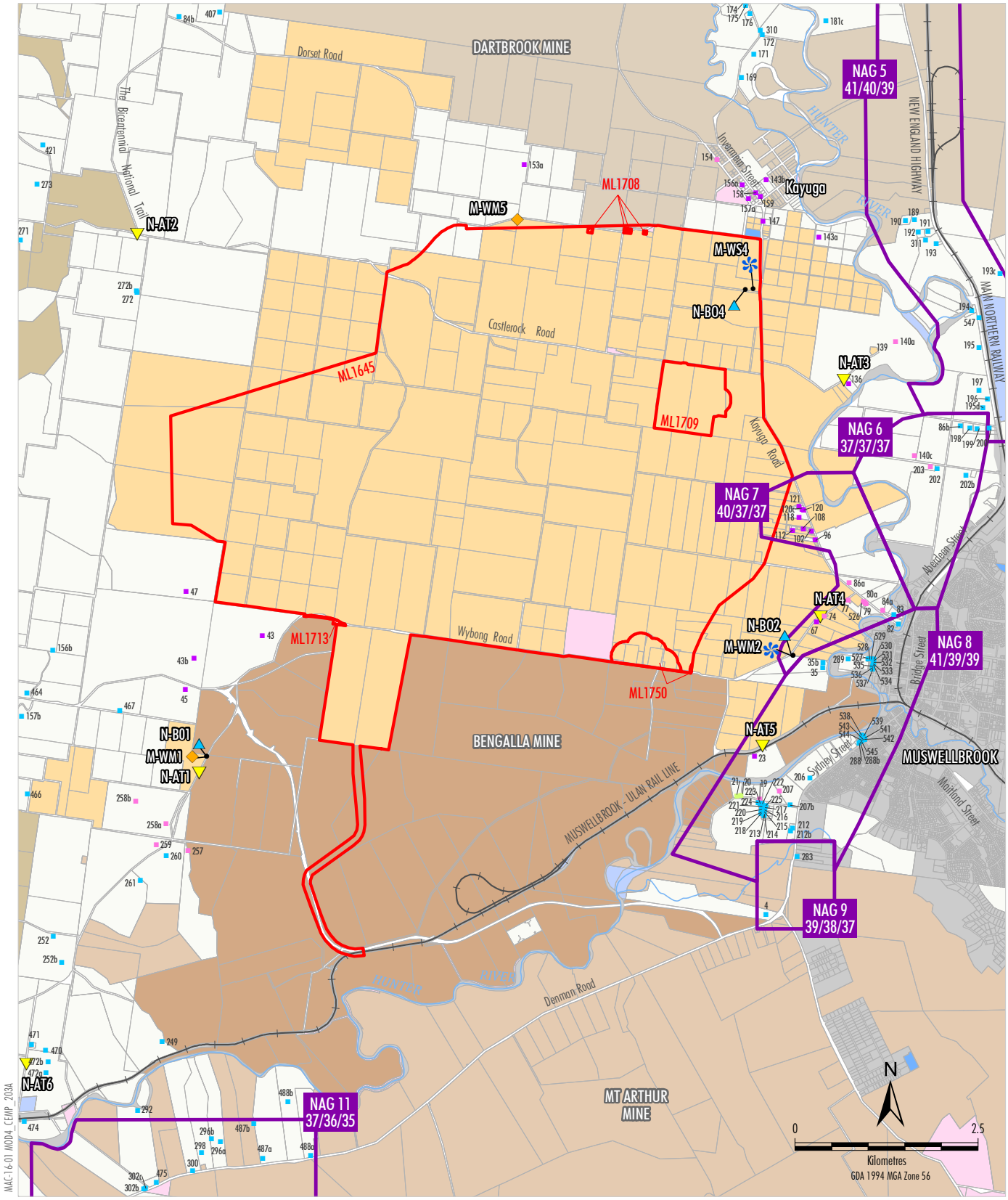
Noise

The operator-attended noise monitoring will be conducted on a monthly basis at the existing noise monitoring sites N-AT4 and N-AT5 (Figure 5), which are located in close proximity to the proposed MOD 4 rail and water pipeline alignment.

The attended monitoring will be conducted in accordance with the relevant procedures and exemptions of the NSW Industrial Noise Policy (INP), as detailed in the approved MPO NMP (MACH Energy, 2019e). The application of modifying factors to the recorded noise levels would be determined in accordance with Fact Sheet C of the Noise Policy for Industry, as required by Condition 44H of Development Consent DA 92/97.

In accordance with Condition 44H, Schedule 3 of Development Consent DA 92/97, the results of the attended monitoring, including any modifying factors, will be compared with the construction noise criteria presented in Table 5 (Section 4.1).

Monitoring reports will be made publicly available on the MACH Energy website in accordance with Condition 11, Schedule 5 of Development Consent DA 92/97.



LEGEND

- Mining Lease Boundary
- Muswellbrook and Upper Hunter LEPs Zones B2, B5, IN1, SP2, R2, R5, RE1, RE2 and W1
- Crown
- The State of NSW
- Muswellbrook Shire Council
- Mount Pleasant Controlled
- Bengalla Controlled
- Dartbrook Controlled
- Mt Arthur Controlled
- Other Mining/Resource Company Controlled
- Privately Owned Land
- Privately-owned Residence - MPO Acquisition on Request
- Privately-owned Residence - MPO Mitigation/Acquisition on Request *
- Privately-owned Residence - MPO Mitigation on Request
- Other Privately-owned Residence
- Noise Assessment Group (NAG) (DA 92/97)
- 37/36/35 Default NAG Noise Criteria for Day/Evening/Night

Monitoring Sites

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

* MPO Mitigation on Request - rail noise. MPO is only required to acquire and/or install air quality mitigation measures at this property if acquisition and/or mitigation is not reasonably achievable under a seperate approval for the Bengalla Mine.

Source: NSW Land & Property Information (2017); NSW Division of Resources & Energy (2017); MACH Energy (2019)

MACHEnergy

MOUNT PLEASANT OPERATION

Nominal Noise and Meteorological Monitoring Sites

Figure 5

Vibration

In the event that material required to be excavated for the MOD 4 construction works cannot be removed with conventional construction-sized dozers and excavators, small blasts may be required to break up the material. If such blasting was to occur, mobile blast monitors would be installed at locations representative of the nearest sensitive receivers, heritage items and public infrastructure, as relevant.

Monitoring of any blasts would be conducted consistent with the methodology outlined in the approved MPO Blast Management Plan, as described in Section 6.1.

6.2.2 Air Quality

As discussed in Section 6.1, air quality monitoring will continue to be conducted during the MOD 4 construction works using the existing MPO air quality monitoring system, consistent with the methodology outlined in the approved MPO AQGGMP.

Additional visual monitoring will be undertaken during the MOD 4 construction work to identify any excessive dust generation. Should excessive dust be observed, additional control measures may be utilised (e.g. application of water), as described in Section 5.2.

6.2.3 Biodiversity

The currently approved MPO Biodiversity Monitoring Program, which is detailed in the approved MPO BioMP (MACH Energy, 2019c), will continue to be applied for the MOD 4 construction works (Section 6.1).

The following additional monitoring procedures will be undertaken to minimise MOD 4 construction works-related impacts:

- Monthly visual inspections of the installed pegging, barriers, fencing, flags and signage installed for retained vegetation areas and No Go Zones.
- Regular inspections of No Go Zones for any signs of entry.

6.2.4 Visual

In addition to the approved monitoring measures in the MPO VIMP (MACH Energy, 2019d), the following monitoring procedures will be carried out during the MOD 4 construction works:

- Routine visual inspections of the construction light screens to ensure all screens are kept in an orderly condition (i.e. paint maintained, etc.).
- Monthly inspections of the retained trees to ensure that these are retained in place and no damage from the construction activities has been applied.

6.2.5 Construction Traffic

Quarterly inspections of all public roads and crossings used for the MOD 4 construction traffic will be undertaken to ensure all public roads and crossings, including those required for construction of the rail, water supply pipeline and pump station, are managed in accordance with Muswellbrook Shire Council requirements, including any required S138 permits.

6.2.6 Historic Heritage

The following monitoring procedures will be carried out during the MOD 4 construction works to ensure all management measures presented in the HHMP (Appendix B) are implemented effectively:

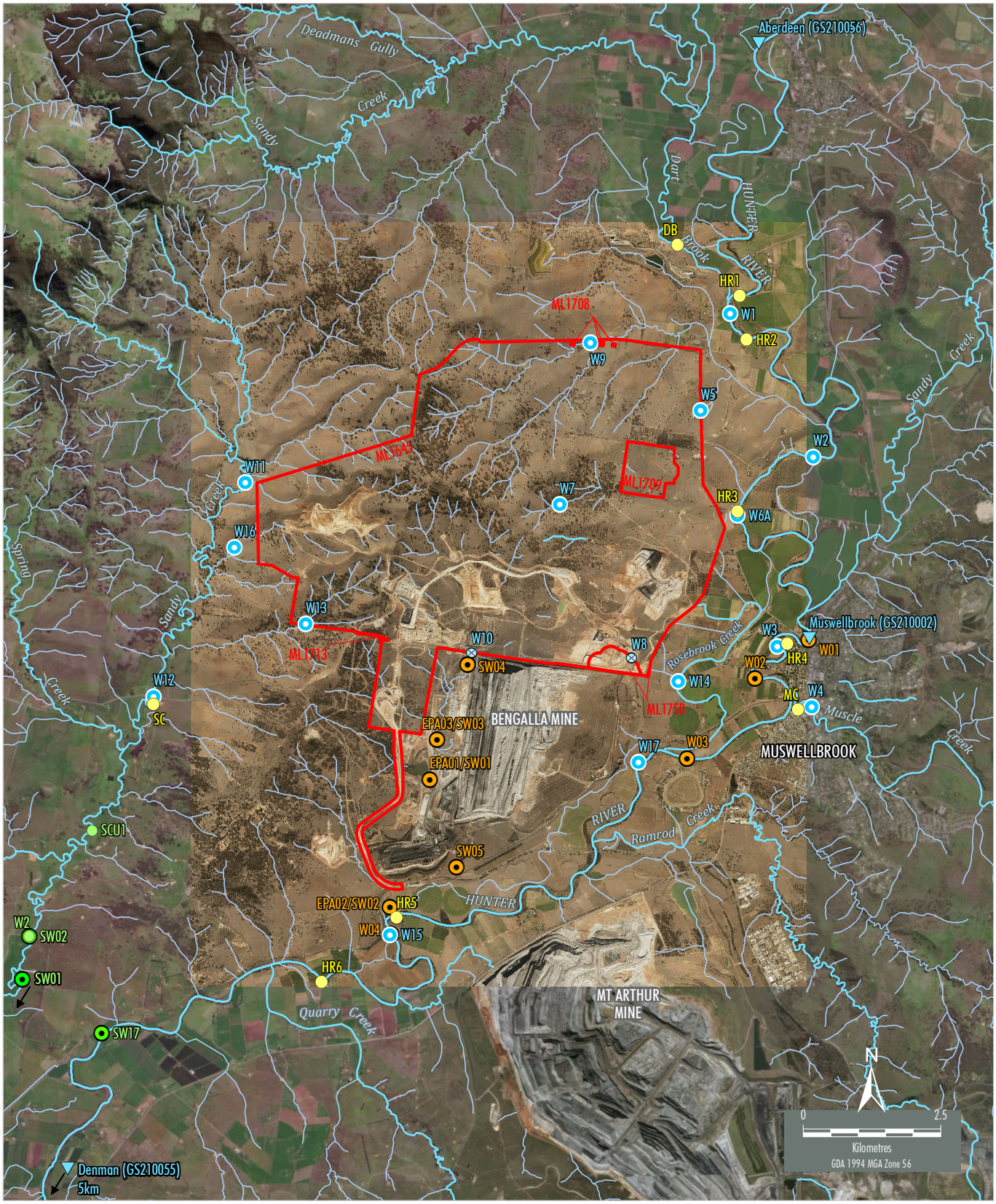
- Routine inspection of the installed fencing/flagging and signage around the relevant historic heritage sites.
- Regular inspection of the established No Go Zones around Overton Orchard and Race Track and Blunt's Butter Factory for any signs of unauthorised entries.

6.2.7 Water Quality and Erosion and Sediment Control

Although the MOD 4 construction works are not predicted to pose any impacts on water quality, monthly water sampling will be undertaken at the existing surface water monitoring sites W14 and W15 (Figure 6), which are located downstream of the proposed MOD 4 rail and water pipeline alignment.

Water quality sampling will be undertaken in accordance with the approved MPO Surface Water Management Plan included in the MPO Water Management Plan (MACH Energy, 2019b).

The established erosion and sediment controls will be inspected at regular intervals and following significant rainfall events. Appropriate maintenance works will be carried out as required.



MAC-16-01 MOD4_CEMP_202A

LEGEND

- Mining Lease Boundary
- DPI Water Gauging Station

Mt Pleasant Monitoring

- Surface Water Monitoring Site
- Historical Surface Water Monitoring Site
- Stream Health Monitoring Site

Mangoola Monitoring

- Surface Water Monitoring Site
- Stream Health Monitoring Site

Bengalla Monitoring

- Surface Water Monitoring Site

Source: NSW Land & Property Information (2019); NSW Division of Resources & Energy (2019); NSW Department of Primary Industries - Water (2016); Bengalla Mining Company (2015); Mangool Coal Operations Pty Ltd (2014)
Orthophoto: MACH (Jul 2018); Esri, DigitalGlobe (2018)

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Surface Water and Stream Health Monitoring Sites

Figure 6

7 CONTINGENCY PLAN

In the event that a non-compliance related to the MOD 4 construction works is considered to have occurred, MACH Energy will implement the following Contingency Plan:

- The Environmental Superintendent will report the incident in accordance with Section 9.
- MACH Energy will identify the appropriate course of action with respect to the identified impact(s), in consultation with technical specialists, the DPIE and any other relevant agencies, as necessary. For example, contingency measures, such as, but not limited to, those described in Section 7.1.
- MACH Energy will, in the event there is a dispute over the proposed remedial course of action or if the actions conflict with current approvals, submit the appropriate course of action to the DPIE for approval.
- MACH Energy will implement the appropriate course of action to the satisfaction of the DPIE.

7.1 POTENTIAL CONTINGENCY MEASURES

Key potential contingency measures to be implemented may include the following:

- MACH Energy will notify (in writing) the affected landowners and tenants of the exceedance as soon as practicable and provide them with regular noise monitoring results, until the results show that noise at the MPO is complying with the noise criteria.
- MACH Energy will, on request, implement reasonable and feasible at-receiver noise, dust or blasting controls in accordance with Condition 2, Schedule 3 of the Development Consent DA 92/97, where a breach of the relevant criteria has occurred.
- MACH Energy will investigate further noise control measures, if noise, air or blasting monitoring results indicate this is required.
- Additional relevant mitigation measures to be investigated, if repeated complaints regarding the MOD 4 construction works are received.

Other specific contingency measures are described in the relevant approved MPO Environmental Management Plans.

8 REVIEW AND IMPROVEMENT OF ENVIRONMENTAL PERFORMANCE

8.1 ANNUAL REVIEW

In accordance with Condition 3, Schedule 5 of Development Consent DA 92/97, MACH Energy will review and evaluate the environmental performance of the MPO by the end of March each year (for the preceding calendar year) or other such timing as agreed by the Secretary of the DPIE.

In relation to MOD 4 construction works, the Annual Review will:

- include a comprehensive review of the relevant monitoring results (i.e. construction noise, air quality, blasting and water quality) over the past year, which includes a comparison of these results to evaluate compliance against the:
  - relevant statutory requirements, limits or performance measures/criteria (refer Sections 2 and 4);
  - monitoring results of the previous years; and
  - relevant predictions in the EIS and MOD 1, MOD 2, MOD 3 and MOD 4 EAs;
- identify any noise, air and water quality or blasting-related non-compliance over the past year, and describe what actions were (or are being) taken to ensure compliance;
- identify any discrepancies between the predicted and actual noise impacts of the MPO, and analyse the potential cause of any significant discrepancies; and
- identify any trends in the noise, air and water quality and blasting monitoring data;
- include a summary of the MOD 4 construction work-related complaints received in the past year.

The Annual Review will be made publicly available on the MACH Energy website (http://www.machenergyaustralia.com.au) in accordance with Condition 11, Schedule 5 of Development Consent DA 92/97.

8.2 CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN REVISION

In accordance with Condition 4, Schedule 5 of Development Consent DA 92/97, this CEMP will be reviewed and, if necessary revised (to the satisfaction of the Secretary of the DPIE), within three months of the submission of:

- an Annual Review (Condition 3, Schedule 5);
- an incident report (Condition 7, Schedule 5);
- an Independent Environmental Audit (Condition 9, Schedule 5); and
- any modification to the conditions of Development Consent DA 92/97.

Within four weeks of conducting any such review, MACH Energy will advise the Secretary of the DPIE of the outcomes of the review, and submit any revised documents to the Secretary of the DPIE for approval.

In accordance with Condition 4A, Schedule 5 of Development Consent 92/97, MACH Energy may submit a revised CEMP for the approval of the Secretary at any time, and may also submit any revision to this CEMP required under Development Consent DA 92/97 on a staged basis.

If agreed with the Secretary of the DPIE, a revision to this CEMP required under Development Consent DA 92/97 may be prepared without undertaking consultation with all parties nominated under the relevant Condition of Development Consent DA 92/97.

9 NOTIFICATION AND REPORTING SYSTEMS

9.1 NOTIFICATION OF UPCOMING CONSTRUCTION ACTIVITIES

Up-to-date information on the blasting schedule for residents will be made publicly available on MACH Energy's website (http://machenergyaustralia.com.au/).

MACH Energy will operate a Community Response Line (Phone Number: 1800 886 889). The Community Response Line is publicly advertised and operates 24 hours per day, seven days a week, to receive any queries (including those construction-related) from neighbouring residents or other stakeholders.

Should blasting be required during the construction works, MACH Energy will inform the MSC of blast notices for placement on the MSC website: http://www.muswellbrook.nsw.gov.au/index.php/blasting/blasting-announcements.

Private landholders and residents on the pre-blast notification register (refer to Section 9.5.4 of the MPO Blast Management Plan [MACH Energy, 2019f]) will be notified prior to blasting and will be re-notified if a blast event is delayed by more than two hours.

9.2 REPORTING AND COMPLAINTS HANDLING PROCEDURES

In accordance with Condition 2, Schedule 5 of Development Consent DA 92/97, MACH Energy has developed protocols for managing and reporting the following:

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

These protocols are described in detail in the MPO Environmental Management Strategy (MACH Energy, 2019g).

In accordance with Condition 8, Schedule 5 of Development Consent DA 92/97, MACH Energy will provide regular reporting on the environmental performance of the MPO on the MACH Energy website (https://machenergyaustralia.com.au/).

10 REFERENCES

EMGA Mitchell Lennan (2010) *Mount Pleasant Project Modification – Environmental Assessment Report*

Environmental Resource Management Mitchell McCotter (1997) *Mount Pleasant Operation Environmental Impact Statement*

Landcom (2004) *Managing Urban Stormwater Volume 1 - Soils and Construction*. Fourth Edition. March 2004, NSW Government.

MACH Energy (2017a) *Mount Pleasant Operation – South Pit Haul Road Modification*.

MACH Energy (2017b) *Mount Pleasant Operation – Mine Optimisation Modification Environmental Assessment.*

MACH Energy (2017c) *Mount Pleasant Operation – Rail Modification Environmental Assessment.*

MACH Energy (2019a) Mount Pleasant *Operation – Aboriginal Heritage Management Plan.*

MACH Energy (2019b) *Mount Pleasant Operation – Water Management Plan.*

MACH Energy (2019c) *Mount Pleasant Operation – Biodiversity Management Plan*

MACH Energy (2019d*) Mount Pleasant Operation – Visual Impact Management Plan*

MACH Energy (2019e) *Mount Pleasant Operation – Noise Management Plan*

MACH Energy (2019f) *Mount Pleasant Operation – Blast Management Plan.*

MACH Energy (2019g) *Mount Pleasant Operation – Environmental Management Strategy.*

MACH Energy (2019h) *Mount Pleasant Operation – Air Quality and Greenhouse Gas Management Plan*

MACH Energy (2020) *Mount Pleasant Operation – Out of Hours Protocol*[3]*.*

NSW Heritage Office (1998) *How to Prepare Archival Records of Heritage Items.*

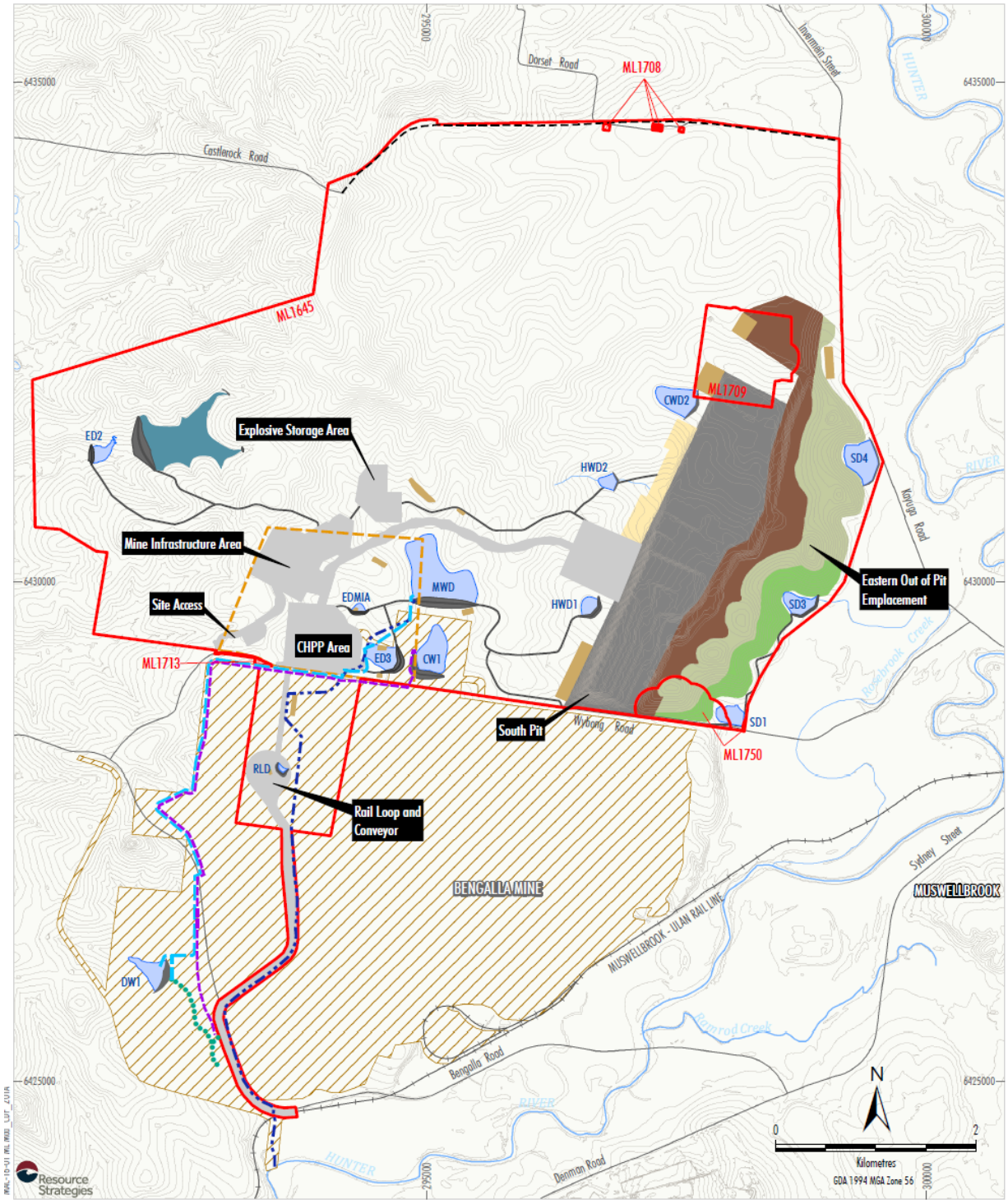
Todoroski Air Sciences (2017) *Air Quality Assessment – Mount Pleasant Operation Rail Modification*

[3] Out of Hours Protocol was not yet approved by the DPIE at time of CEMP submission. It is referenced here for completeness of the documents list that is planned to be in place at the time of construction.

Attachment 1

Appendix 2 of Development Consent DA 92/97

APPENDIX 2
FIGURE 1 - CONCEPTUAL PROJECT LAYOUT PLAN AT 2021



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

Indicative Water Pipeline Alignment

- MPO Hunter River Supply Pipeline
- MPO DW1 Pipeline (Bi-directional)
- Bengalla Mine CW1 Pipeline
- Approximate Extent of Scour Protection
- Water Dam
- Fines Emplacement Area

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

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FIGURE 2 - CONCEPTUAL PROJECT LAYOUT PLAN AT 2025

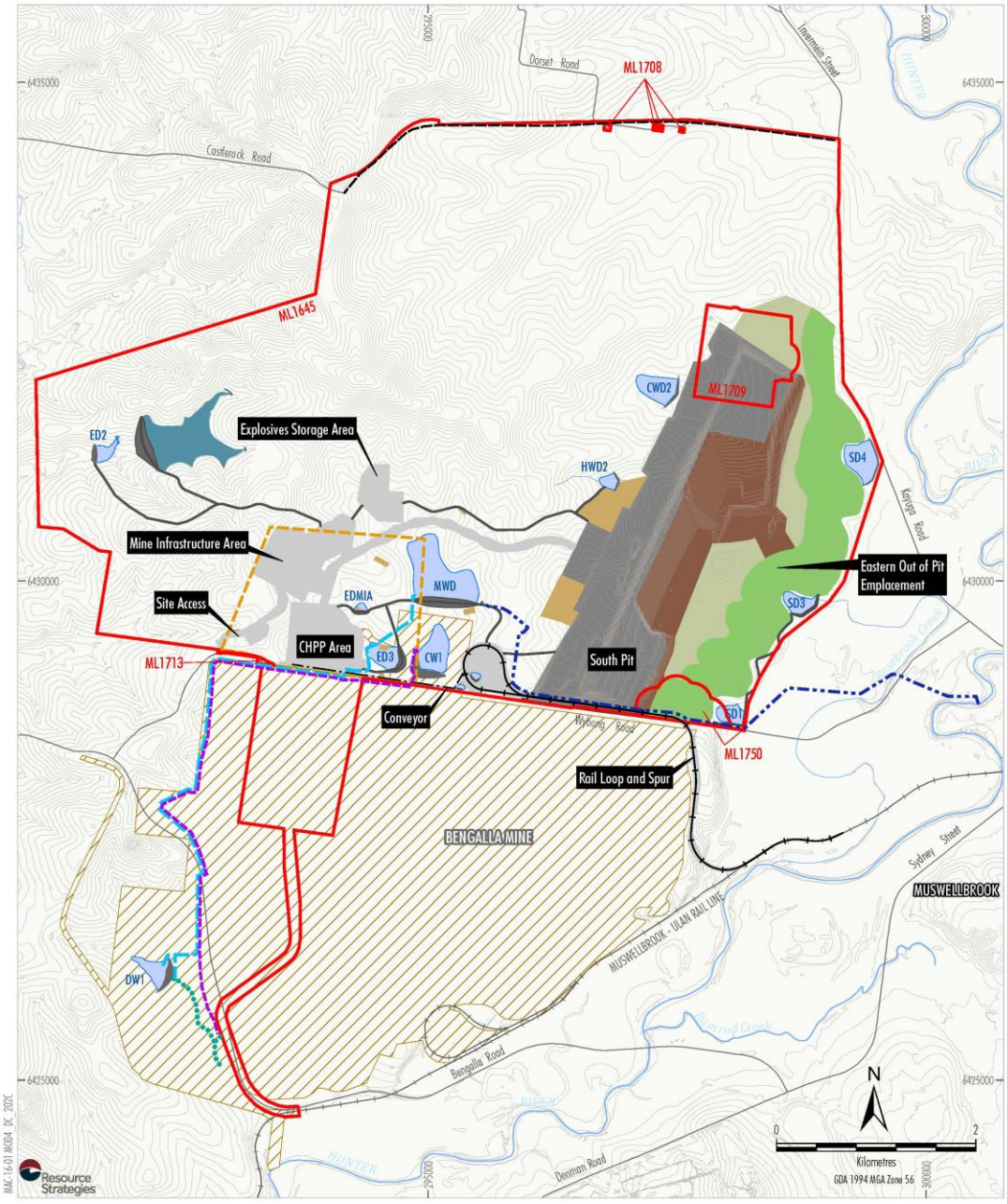
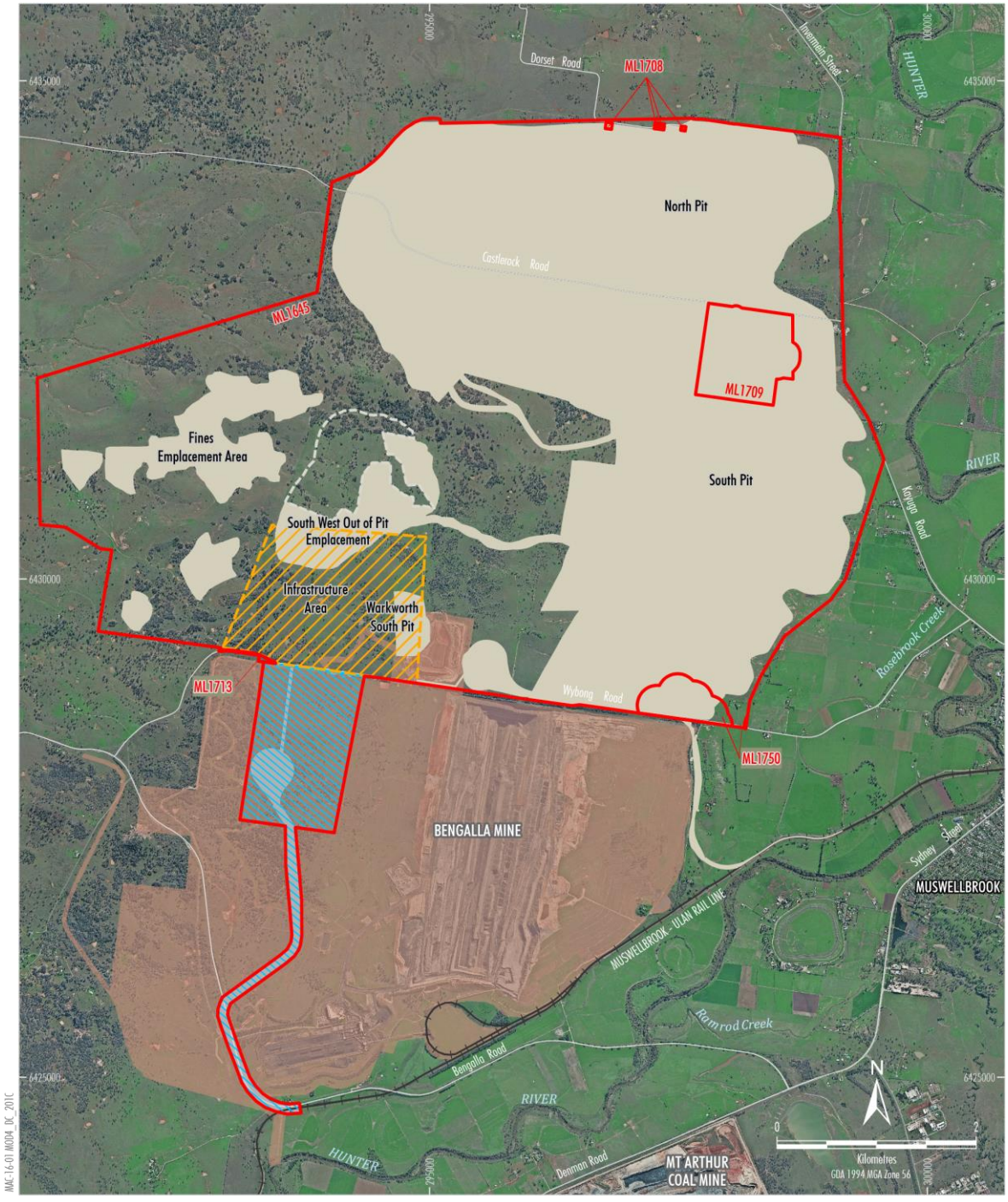


FIGURE 3 - APPROVED SURFACE DISTURBANCE PLAN



LEGEND

- Mining Lease Boundary
- Approximate Extent of Approved Surface Development [1]
- Area Relinquished for Overburden Emplacement and Major Infrastructure
- Infrastructure Area Envelope
- Infrastructure to be removed under the Terms of Condition 37, Schedule 3
- Indicative Existing Coal Transport Infrastructure
- Bengalla Mine Approved Disturbance Boundary (SSD-5170)

NOTE

1. 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, signalling, other ancillary works and construction disturbance.

Source: NSW Land & Property Information (2017); NSW Division of Resources & Energy (2018); Department of Planning and Environment (2016); MACH Energy (2017)
Orthophoto: MACH Energy (Aug 2016)

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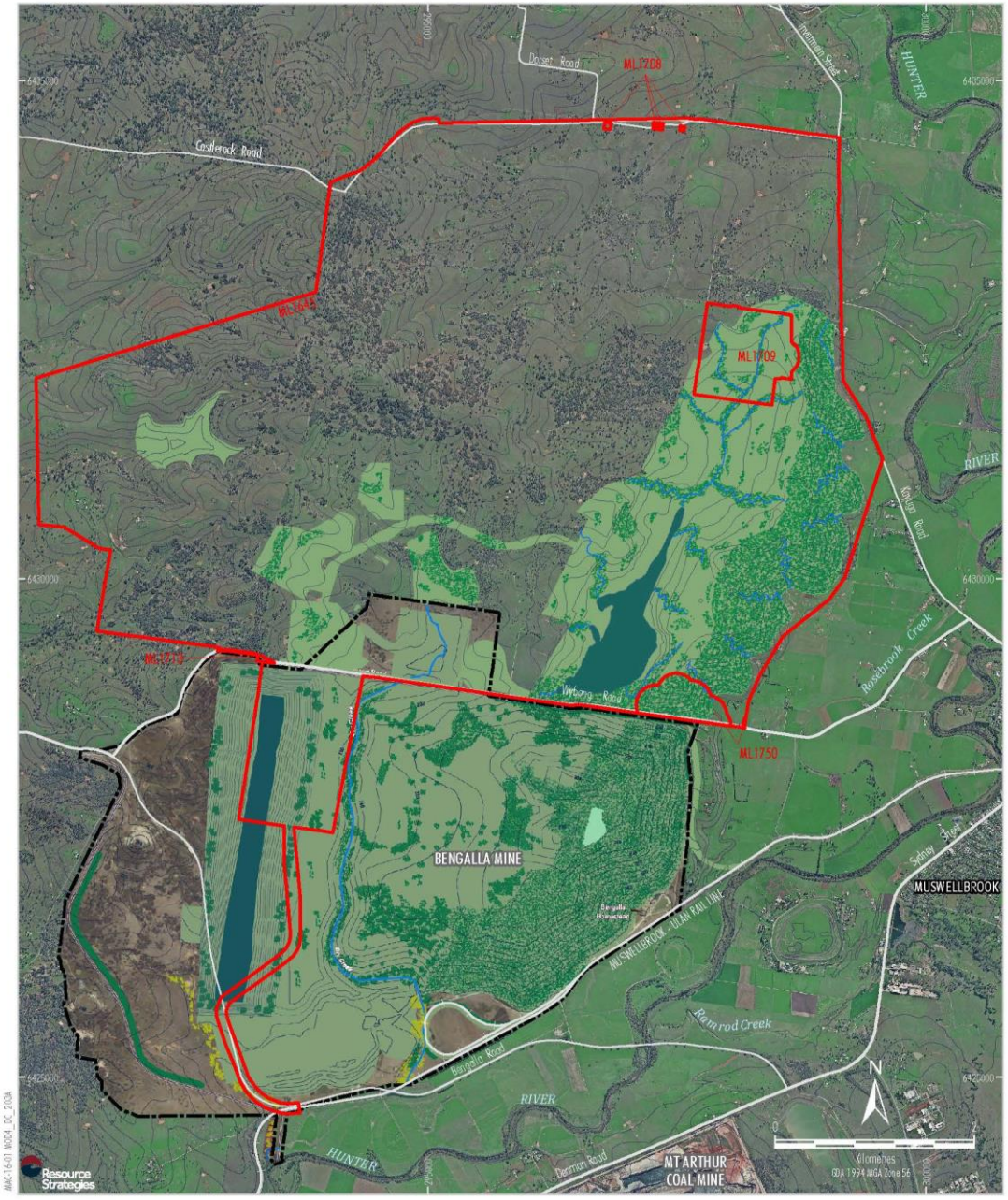
MOUNT PLEASANT OPERATION
Approved Surface Disturbance Plan

FIGURE 4 - CONCEPTUAL FINAL LANDFORM



Attachment 2

Ground Disturbance Permit

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GROUND DISTURBANCE PERMIT

Permit to be completed with reference to Ground Disturbance Permit Procedure ME-EMS-PRO-02

Permit Criteria

This permit must be completed for all surface disturbance work including slashing, fencing, tree clearing, removal of topsoil, demolition and access to rehabilitation areas

Part 1 – Task Details *(to be completed by the person requesting the permit)*

Site	Mount Pleasant Operation	Permit ID Number:	**MPO-GDP-**
Company Name:		Date:	
Permit Holder:		Plan provided?	☐Yes ☐No

Note

A plan must be provided, unless otherwise agreed to with the Environmental Superintendent (or Delegate), which includes the entire area to be disturbed, access areas and park-up areas, for approval of this permit. Where applicable erosion and sediment control, and stockpile and rehabilitation information must also be included. A change in the conditions of this Permit may require a reassessment of this Permit.

Proposed start date		Expected duration:	(weeks)
Job location:			

Job description:

☐ Slashing ☐ Vegetation clearing ☐ Topsoil removal ☐ Demolition ☐ Other

Details of activities:
Include summary of task, reason, purpose, size of disturbance (ha), boundaries and the expected duration, including rehabilitation

Is demarcation or pegging of the work area required? *(Demarcation is mandatory except for routine slashing)*	☐No	☐Yes -	Entire area is to be clearly demarcated Demarcation to be confirmed by pre-clearing survey *- Part 9 to be completed*
Is the task area within approval boundaries? *(Where demarcation of an external approval boundary is required it must be performed by a qualified surveyor – Part 10 to be completed)*	☐No	☐Yes -	Describe below how boundaries are identified?
Is the specific task permitted under any existing approvals?	☐No	☐Yes -	If no, additional approval required, discuss with the Environmental Superintendent.
Will infrastructure be removed or decommissioned as part of this Permit? *Includes fences, powerlines, pipelines, cables and similar, houses, yards etc.*	☐No	☐Yes -	List affected infrastructure in consultation with Land and Property Superintendent.
Will topsoil and/or vegetation be removed, relocated or stockpiled as part of this Permit?	☐No	☐Yes -	Pre-disturbance survey required – *Part 5 and 6 to be completed.* Clearing & Stockpiles required – *Part 7 to be completed*
Are water courses located within or near work area? *Includes designated water courses, creeks, tributaries or drainage lines*	☐No	☐Yes -	Erosion and sediment control required Details must be included on plan For designated water courses, additional approval is required – consult with Environmental Superintendent
Is erosion and sediment control required for this task?	☐No	☐Yes -	Erosion and sediment control required – *Part 3 to be completed*
Will the works impact on any statutory environmental points? *Includes potential impacts on air quality monitoring equipment and discharge points etc.*	☐No	☐Yes -	Include details in comments below

Is drilling or excavation required as part of this task?	☐No	☐Yes -	Additional permits maybe required – discuss requirements with Environmental Superintendent, including liaison with Survey Team and Dial Before You Dig.
Is the disturbance to be conducted on land owned by the operation?	☐No	☐Yes -	If No, seek guidance from the Environmental Superintendent to confirm if further approvals are required.
Are access tracks required to the area and included in this disturbance permit?	☐No	☐Yes -	Include details in comments below

Part 2a – Land and Property Superintendent (or Delegate) Infrastructure Disturbance *(mandatory for all permits)*

Will any infrastructure be removed as part of this permit? Including fences, powerlines, pipelines, cables and similar, houses, yards etc. If yes, undertaken relevant management and mitigation measures to ensure no impact to land and property.

Date	*Time*	*Contact number (mobile)*	*Name (printed)*	*Signature*

Part 2b – Environmental Superintendent (or Delegate) Work Area Visit *(mandatory for all permits)*

Environmental Superintendent (or Delegate) – Initial inspection
I have physically visited the proposed disturbance work area and I am aware of the scope and requirements of the proposed work.

Date	*Time*	*Contact number (mobile)*	*Name (printed)*	*Signature*

Part 3 – Erosion and Sediment Control *(to be completed by the person requesting the permit)* ☐ Required ☐ Not Required

Only applicable if Erosion and Sediment control is required from Part 1, to be completed by the Permit Holder

Note

All erosion and sediment plan requirements must be completed prior to any disturbance activity commencing

Erosion and sediment plan	☐ Not Required ☐ Required – *all elements below must be completed* Sediment and erosion control plans attached Scale map of affected areas and details included on site plan
Sediment dam(s)	☐ Not Required ☐ Required – *all elements below must be completed*

Sediment dam calculations				
Area (ha) *(Total catchment area)*	*Setting zone vol (m^3)*	*Sediment storage vol (m^3)*	*Total basin vol (m^3)*	*Flocculant (if required)*

Controls *List all required controls to manage erosion and sediment for permit approval. Specific Permit Conditions must be listed in Part 8*	

Part 4 – Community Interaction *(to be completed by the Environmental Superintendent or Delegate in consultation with External Relations Manager)*			
Is the proposed area within 2 km of sensitive receivers?	☐No – go to Part 5	☐Yes -	List details and include on final plan
Does any member of the public need to be contacted?	☐No	☐Yes -	List contact details
Are there any additional requirements from public contact?	☐No	☐Yes -	List Specific Permit Conditions in Part 8
Controls *Details of any procedures, operating hour limits or contact information. Specific Permit Conditions must be listed in Part 8.*			

Part 5 – Cultural/European Heritage *(to be completed by the Environmental Superintendent or Delegate)*		
If any response is unknown, complete required level of due diligence to enable a response.		
Has a Cultural Heritage/European clearance been obtained within the proposed disturbance area?	☐Yes	Verify location on plan and provide details, list any controls below
	☐No	Conduct due diligence of proposed disturbance area
Are Cultural/European Heritage sites located within the disturbance area, including access tracks?	☐Yes	Identify all known European or Cultural Heritage sites on plan, list any controls below
	☐No	Verify against existing site data
Controls *List all required controls to manage Cultural/European heritage for Permit approval. Specific Permit Conditions must be listed in Part 8.*		

Part 6 – Ecology *(to be completed by the Environmental Superintendent or Delegate)*		
If any response is unknown, complete required level of due diligence to enable a response.		
Is any significant flora or fauna located in the area to be disturbed?	☐Yes	List controls below
	☐No	No further action required?
Are any sensitive wildlife habitats located in the area to be disturbed?	☐Yes	List controls below
	☐No	No further action required?
Are there any site specific ecology requirements for the area to be disturbed? *Includes tree or habitat clearing restrictions etc. Wildlife spotter / catcher required*	☐Yes	List controls below
	☐No	No further action required?
Controls *List all required controls to manage ecology for permit approval. Specific Permit Conditions must be listed in Part 8.*		

Part 7 – Clearing and Stockpiles *(to be completed by the person requesting the permit)*	☐ Required	☐ Not Required
Is vegetation to be cleared and/or topsoil to be stripped?	☐Yes	Complete relevant section(s) below
	☐No	This part not applicable, go to Part 8
Topsoil management *(only applicable if stripping topsoil)*		
Is topsoil strip depth known?	☐Yes	Enter strip depth: 100-300 millimetres
	☐No	Confirm strip depth with Environmental Superintendent
Can topsoil be directly placed on rehabilitation areas?	☐Yes	Include location details on plan and Specific Permit Requirements in Part 8
	☐No	

Part 7 – Clearing and Stockpiles *(continued)*		
Topsoil stockpiles *(only applicable if stockpiling topsoil)*		
Maximum topsoil stockpile height permitted:	Maximum Height:	Metres(<3metres)
Is the topsoil stockpile(s) location included on the plan?	☐Yes	Confirm correct location details on plan
	☐No	Update plan to include details
Is stockpile drainage adequate?	☐Yes	Environmental Superintendent to confirm erosion and sediment plan
	☐No	Update erosion and sediment plan to include topsoil stockpile
Are there site specific conditions / requirements for topsoil stockpiles?	☐Yes	Update Specific Permit Conditions in Part 8
	☐No	No further action
Vegetation management *(only applicable if clearing vegetation)*		
Can vegetation be directly placed on rehabilitation areas?	☐Yes	Include location details on plan and Specific Permit Requirements in Part 8
	☐No	Complete vegetation stockpile sub-section below
Vegetation stockpiles *(only applicable if stockpiling vegetation)*		
Maximum vegetation stockpile height permitted:	Maximum Height:	Metres(<3metres)
Is the vegetation stockpile(s) location included on the plan?	☐Yes	Confirm correct location details on plan
	☐No	Update plan to include details
Is stockpile drainage adequate?	☐Yes	Environmental Superintendent to confirm erosion and sediment plan
	☐No	Update erosion and sediment plan to include vegetation stockpile
Are there site specific conditions / requirements for vegetation stockpiles?	☐Yes	Update Specific Permit Conditions in Part 8
	☐No	No further action
Controls *List all required stockpile controls for permit approval. Specific Permit Conditions must be listed in Part 8.*		

Part 8 – Specific Permit Conditions *(to be completed by the Environmental Superintendent)*	
1.	All disturbance must remain within the GDP application area, no disturbance or machinery is to be outside the peg/survey line. If GDP markers have been removed/knocked over, supervisor must be notified and area must be re-surveyed and markers re-instated before disturbance proceeds.
2.	Dust shall be kept to a minimum in accordance with the Air Quality Management Plan.
3.	Should archaeological sites be discovered, works are to stop immediately and MACH Energy notified.
4.	Works to be undertaken in progressive manner and disturbance minimised where practical.
5.	Erosion and sediment controls to be installed prior to stripping of topsoil/disturbance. All controls to be installed and maintained in accordance with Blue Book principles and in accordance with ESCP outlined in GDP.
6.	
7.	
8.	
9.	
10.	

Part 9 – Survey (Boundary Check) Signoff *(to be completed by the person requesting the permit)*

Approval Boundaries Check: ☐

Survey Inspection
The proposed disturbance area is within approved disturbance limits and has been clearly demarcated, relevant to the tasks, and clearly identifies required boundaries to meet the requirements of this permit.
A survey has been completed, for the requirements detailed above and confirmed that demarcation and construction of controls identified in Part 3 have been constructed to design.

Date	*Time*	*Contact number (mobile)*	*Name (must be qualified surveyor)*	*Signature*

Part 10 – Permit Approval

Environmental Superintendent (or Delegate) Approval

I have reviewed the contents of this Permit and confirm that all information, where applicable, is correct and has been completed to site requirements.
I have inspected the work area and pre-disturbance controls and all pre-disturbance activities, where applicable, have been completed to the Permit requirements.
The Permit Issuer is aware of the approved scope, all Part 8 – Specific Permit Conditions and any other aspects for completion of work related to this Permit
I Authorise approval of this Permit to the defined scope, and additional conditions listed in Part 8 – Specific Permit

Pre-Clearance inspection completed including the following:	☐ Erosion and sediment controls (not confirmed by survey) are installed ☐ Habitat trees have been identified and any controls specified are in place ☐ Area is adequately demarcated ☐ Access to the site is adequate and where applicable covered by the permit ☐ Any site specific controls (where identified) have been installed
Comments:	Refer to Part 8 for comments.

Date	*Time*	*Contact number (mobile)*	*Name (printed)*	*Signature*

Caution

No further on the ground works can proceed until Part 10 is completed. All pre-disturbance controls must be in place.

Permit Holder

I am authorised to perform the role of Permit Holder for this Permit.
I have read and understood the contents and conditions of this permit and any related procedures, and I agree to abide by these requirements. I have communicated the requirements of this permit to those working under the approval of this permit.
Any proposed change to the scope or conditions of this permit will be discussed with the Environmental Superintendent (or Delegate) first. I will comply with all requirements, including reporting requirements.

Date	*Time*	*Contact number (mobile)*	*Name (printed)*	*Signature*

Part 11 – Attachments *(to be completed by the person requesting the permit)*

All attached documents, directly related to this Permit, are to be listed below. These will include a risk assessment and an Erosion and Sediment Control Plan at a minimum.

Date	*Reference number*	*Title*

Part 12 – Task Monitoring and Inspections *(includes Permit Holder, Environmental Superintendent etc.)*

Record of planned and unplanned task monitoring and inspections

Date	*Time*	*Name (printed)*	*Signature*	*Comments*

Part 13 – Worker Sign-on – Review and Re-sign Weekly

Date	*Time*	*Name (printed)*	*Signature*	*Comments*

Part 14 – Amendments *(completed by the Permit Holder and Environmental Superintendent (or Delegate), if required)*	☐ Required	☐ Not Required

Amendment:	☐ Updated job description and site plan, including expected duration ☐ Update survey of work area, if required ☐ Confirm area within approval boundaries ☐ Update DBYD, if required ☐ Update erosion and sediment control works, if required ☐ Confirm no impact to community ☐ Confirm no impact to cultural or European heritage ☐ Confirm no impact to ecology ☐ Complete site visit, if required ☐ Confirm updated topsoil and/or vegetation clearing and stockpiles, if required
Comments *Including additional specific permit conditions.*	

Environmental Superintendent (or Delegate) Amendment Assessment				
An assessment of the amendment/s has been completed, as per the above checklist. Additional works outlined in the amendment/s can now be completed.				
Date	*Time*	*Contact number (mobile)*	*Name (printed)*	*Signature*

Permit Holder Amendment Assessment				
An assessment of the amendment/s has been completed, as per the above checklist. Additional works outlined in the amendment/s can now be completed.				
Date	*Time*	*Contact number (mobile)*	*Name (printed)*	*Signature*

Part 15 – Post-Disturbance Assessment *(completed by the Permit Holder and Environmental Superintendent (or Delegate) on permit completion/cancellation, if required)*	☐ Required	☐ Not Required

Post-Disturbance Assessment completed including:	☐ All rubbish removed from work area(s) ☐ All pegs and flagging tape removed ☐ All plant and equipment removed from the work area(s) ☐ Erosion and sediment controls completed to plan ☐ All rehabilitation work completed to requirements *(including access tracks)* ☐ Landholder satisfied with rehab works *(where applicable)* ☐ Stockpiles constructed to requirements *(where applicable)* ☐ Site plan updated to reflect any changes *(stockpiles, dams etc. where applicable)* ☐ Has clearing been completed in accordance with the permit? ☐ Has survey completed an "as constructed pick up"?
Comments *Instructions or requirements relevant to post-disturbance inspections.*	

Environmental Superintendent (or Delegate) Post Disturbance Assessment

A post-disturbance assessment has been completed for the area of disturbance authorised by this Permit. All works have been inspected, as noted above, and have been completed to site requirements. This Permit can now be completed/cancelled.

Date	*Time*	*Contact number (mobile)*	*Name (printed)*	*Signature*

Permit Holder Post Disturbance Assessment

A post-disturbance assessment has been completed for the area of disturbance authorised by this permit. All works have been inspected, as noted above, and have been completed to site requirements. This permit can now be completed/cancelled.

Date	*Time*	*Contact number (mobile)*	*Name (printed)*	*Signature*

Part 16 – Permit Completion / Cancellation *(all signatures required)*	
☐ Permit Complete	☐ Permit Cancelled *(comments required)*
The task activities authorised by this permit are complete, or no longer required. All required inspections have been completed *No further work is permitted under the authority of this permit*	
Comments *Cancellation must include reasons.*	

Environmental Superintendent (or Delegate)

All Environmental aspects of this permit have been completed (including cancelled) to site requirements.

Date	*Time*	*Contact number (mobile)*	*Name (printed)*	*Signature*

Permit Holder

All work has been completed (or cancelled) to satisfy the requirements of this permit.

Date	*Time*	*Contact number (mobile)*	*Name (printed)*	*Signature*

APPENDIX A

CONSTRUCTION TRAFFIC MANAGEMENT PLAN

BACKGROUND

This Construction Traffic Management Plan (CTMP) covers all MOD 4 construction activities that interface with the public road network, including deliveries of materials and construction works inside the road corridor.

The CTMP describes the measures to be implemented to minimise traffic safety issues and disruption to local road users, including managing light, heavy and over-dimensional vehicles during construction works. The CTMP also includes procedures for notifying other road users (including local bus operators) of any construction works that may disrupt their usual use of the road.

Public Road Network

The current public road network in the vicinity of the Mount Pleasant Operation (MPO) is presented below in Figure 1.

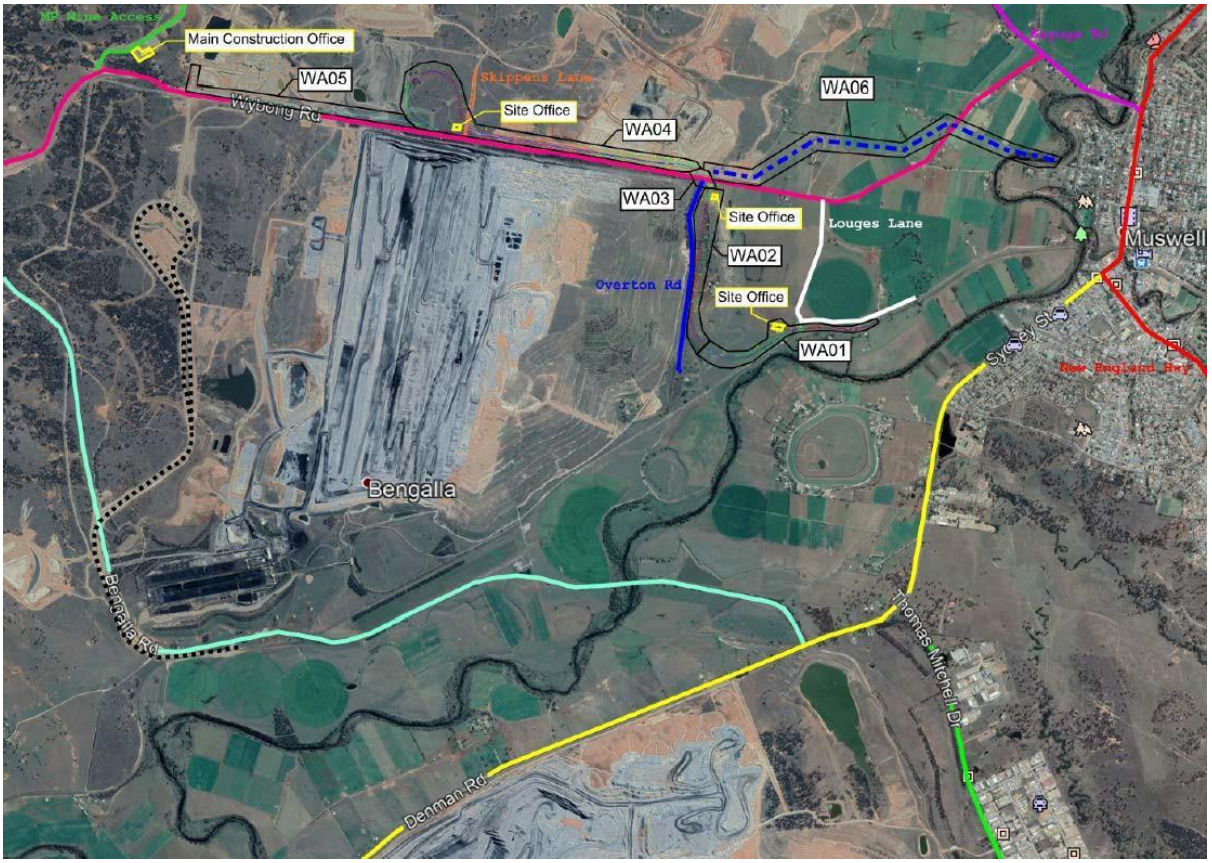

Figure 1 Public Road Network

The main roads connecting the New England Highway to the MPO are; Thomas Mitchel Drive, Denman Road, Bengalla Link Road and Wybong Road (between Bengalla Road and the MPO entrance). These roads are designed and utilised for delivery of oversize mining equipment to the MPO and other nearby mining operations. These are the roads that will be utilised to access the MOD 4 construction site.

Current Intersection Conditions

The following sections describe the current condition of the intersections relevant to MOD 4 construction works.

Intersection – Wybong Road and Overton Road

The intersection of Wybong Road and Overton Road (Figures 2 and 3) is currently controlled by a stop sign on Overton Road. Both roads have unsealed shoulders and open grass swale longitudinal drainage. There is a current property entry off Overton Road south of the intersection. This property is owned by the Bengalla Mining Company and will be vacated as part of the MOD 4 construction works. The sight lines east and west from Overton Road along Wybong Road are generally conforming to the relevant standards, however, they can be restricted by the tall grass growing on the shoulders at present.

Figure 2 Wybong Road and Overton Road Intersection (Aerial)

Figure 3 Wybong Road and Overton Road Intersection (Photograph)

Intersection – Wybong Road and Logues Lane

The intersection of Wybong Road and Logues Lane (Figures 4 and 5) is controlled by a Give Way sign on Logues Lane. Both roads have unsealed shoulders and open grass swale longitudinal drainage. The sight lines east and west from Logues Lane along Wybong Road are generally conforming to the relevant standards, however, they can be restricted by the tall grass growing on the shoulders at present.

Figure 4 Wybong Road and Logues Lane Intersection (Aerial)

Figure 5 Wybong Road and Logues Lane Intersection (Photograph)

Intersection – Logues Lane and Australian Rail Track Corporation Corridor

The sweeping bend on Logues Lane (Figures 6 and 7) provides limited access to Australian Rail Track Corporation (ARTC) and Ausgrid services at present. There is a large camber on this section of the road and open grass-lined swale drainage on either side. Due to the proximity to the corner, this section of the road is not considered suitable for a heavy two-way construction traffic. Nonetheless, this intersection provides acceptable sight distances when entering onto Logues Lane.

Figure 6 **Logues Lane Intersection and ARTC Intersection (Aerial)**

Figure 7 **Logues Lane Intersection and ARTC Intersection (Photograph)**

CONSTRUCTION VEHICLE MOVEMENTS

Two main criteria were applied when analysing access options for traffic flows for the construction vehicles utilising public roads:

- minimise local road use by loaded heavy vehicles; and
- maintain one-directional traffic flow, where possible, to minimise passing of larger vehicles on narrow rural roads.

Utilising the above criteria, vehicle movements have been geographically broken up into three main areas of construction, with ten gates providing access from the public roads.

1. North of Wybong Road (WA04/WA05)– This area will be accessed via Bengalla Link Road, Wybong Road (heading east) and into the main operations access from Wybong Road (Gate 1). From the main operations, the work areas of the overland conveyor (OLC), train load-out (TLO) bin and rail loop infrastructure north of Wybong Road will be accessed via internal access roads within the Mount Pleasant Operation. Exit will be via the same Gate 1. Gate 2, at Skippens Road, would only be utilised for larger loads under traffic control and escort, such as the TLO bin segments.

2. Overton and Wybong Roads Intersection (WA03) – This area will be accessed via Bengalla Link Road, Wybong Road (heading east) to the intersection of Wybong and Overton Roads. For construction of the Rail Bridge over Wybong and Overton Roads, vehicle movements will be directed into Gate 3 for the north-eastern side of Wybong Road, Gate 4 for the western side of Overton Road and Gate 5 for the eastern side of Overton Road. Exit would be via the same gates for Gate 3 and Gate 4. Traffic entering via Gate 5 will exit using Gate 6 to minimise two-way construction traffic on Overton Road.

3. South of Wybong Road (WA01/WA02) - This area will be accessed via Bengalla Link Road, Wybong Road (heading east) to Overton Road Gate 5 entry. This area covers construction of rail infrastructure to the North of Viaduct (Abutment B) through to Abutment A of rail bridge (WA02) and from the tie-in of the rail on the Ulan Main Line off Logues Lane through to the Viaduct Abutment B. It is planned that all deliveries will enter via Gate 5 off Overton Road and travel via internal access roads and exit via Gate 8 at Logues Lane. This is so two-way traffic of heavy loads will be minimised on the narrow Overton Road and Logues Lane and will minimise the number of loaded vehicles travelling the full length of these minor rural roads.

   Some light vehicles will access the floodplain area via Gate 8 at Logues Lane. Logues Lane may also be required to be utilised for limited deliveries associated with the ARTC Corridor works; however, the main deliveries would be made as noted above. The existing ARTC access at Gate 9 is to be utilised to enter the ARTC corridor at the western end of Logues lane and via the new entry Gate 10, at the eastern end of Logues Lane. Gate 10 will also be the location of the relocated private level crossing.

Breaking up the site into three main areas and placing dedicated plant and equipment within each area would minimise traffic flows between the three construction areas. All of the construction traffic required to complete works to the North of Wybong Road can then be routed through the main MPO access point. This minimises construction traffic being placed on the other, narrower rural roads to the east of the MPO main entry point.

The location of each gate is shown below for the rail infrastructure in Figure 8.

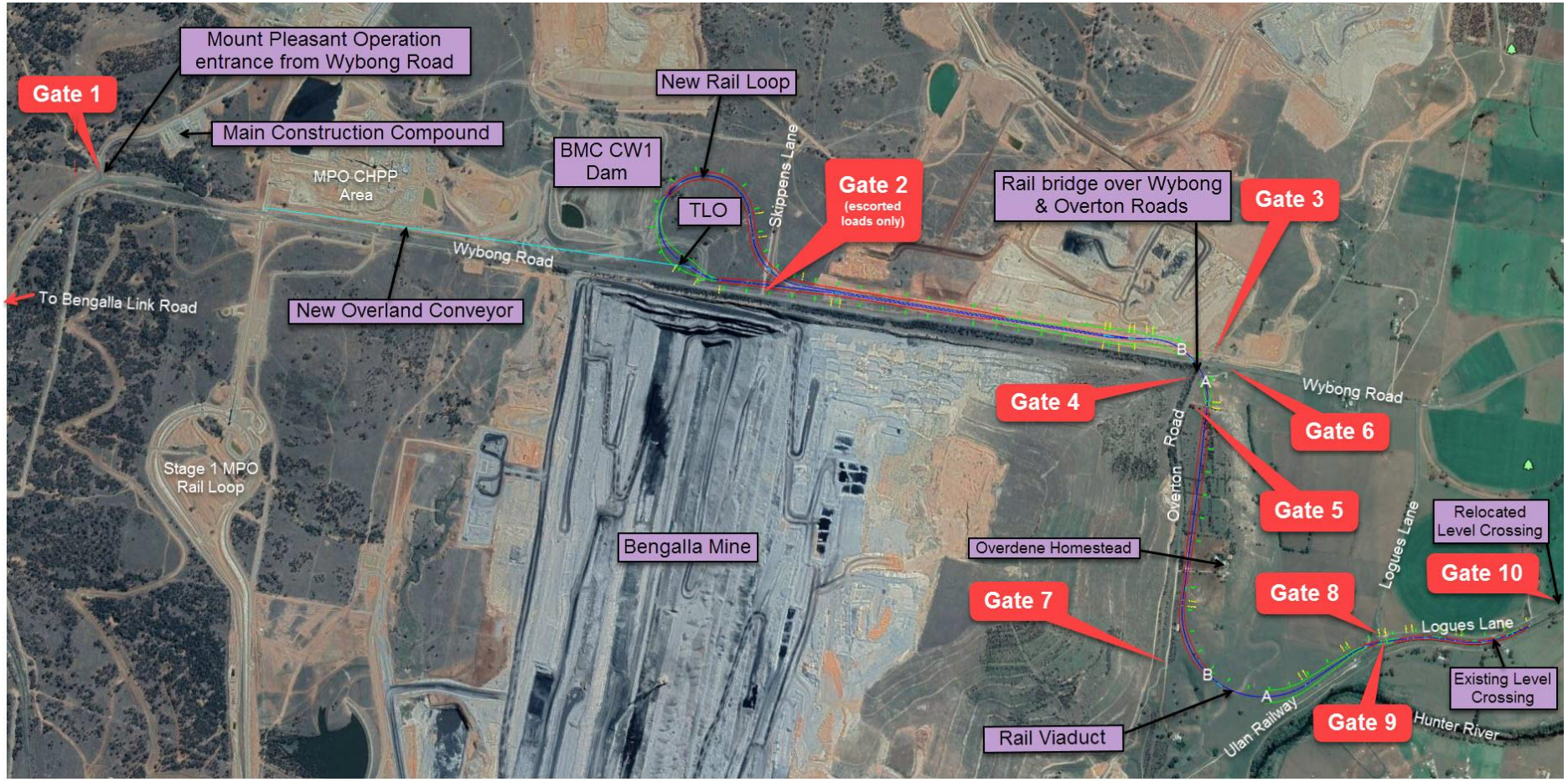

Figure 8 **Rail Infrastructure Plan – Public Road Gate Locations**

Other Movements

Whilst each area of construction requires its exclusive use of construction equipment and materials, there is one case where movements are required between two construction areas across Wybong Road. Excess cut material from the south side of Wybong Road is required to be utilised on the north side of Wybong Road as fill material. It is proposed that this material be moved over a period of three months by utilising 40-tonne articulated dump trucks, travelling under traffic control between the south side of Wybong Road from abutment A of the rail bridge through to Gate 3 on the north side of Wybong Road. Wybong Road is proposed to be closed both ways for one minute at a time while a movement takes place in both directions.

Traffic Control Plans and Staging of Work in the Road Corridors

The works on Wybong Road will be staged to minimise road closures for the construction of the Rail Bridge over Overton and Wybong Roads. Individual Traffic Control Plans for each stage will be submitted to Council for review/approval prior to construction. The Traffic Control Plans will cover temporary operating speeds, temporary lane width adjustments, barrier installations, additional signage, Variable Message Boards, traffic controller locations (stop/go or automated traffic lights) and special management requirements of wide loads and oversize loads. These plans are to be adjusted as required in consultation with Muswellbrook Shire Council as the construction progresses. These plans are outside the scope of this CTMP and are a specific requirement of Council's S138 permit process when working near a public road to manage traffic flow, safety of traffic and safety of personnel working near the road.

Full road closures for short periods of time will be required while super T girders are lifted into place across Wybong and Overton roads. Most of the other works such as piling, construction of columns/head stocks and installation of barriers are expected to be completed via reduced-width lanes and closures of the road shoulders, with workers protected by temporary barriers.

Entry and exits via public road gates in the construction areas are expected to have speed restrictions in place on the public roads either side of the entry/exit gates. Traffic controllers will be utilised to manage the interface between construction and public road users where required by the Traffic Control Plan.

A summary of preliminary construction durations and start/finish dates are provided below (Table 1) for the various areas. Any revision to the forecast dates will be communicated to Council as the Project progresses.

Table 1
Forecast Construction Durations by Construction Area

Construction Area/Infrastructure	Forecast Start Date	Forecast Finish Date	Approximate Duration (months)
Area 1 – North of Wybong Road / OLC, TLO & Rail Loop	May 2020	Sept 2021	17
Area 2 – Rail Bridge over Wybong and Overton Roads	Oct 2020	May 2021	8
Area 3 – South of Wybong Road / Rail Spur, Rail Viaduct & Connection to Ulan mainline	May 2020	Sept 2021	17

NOTIFICATION PROCEDURES

Emergency Services

As there will be some short-term changes to the traffic conditions, as well as an increased traffic volume and workers in the area, MACH Energy intends to establish communication conduits with the local emergency service providers to inform them of the overall works, as well as any specific changes that may affect the route or timing to a location. A site map with gate locations and communication protocols (UHF channel, key personnel, etc.) will be provided to emergency services and updated as required.

Local Bus Operators

As with the Emergency Service Providers noted above, MACH Energy intends to include the local bus operators on a distribution list for notifications of any upcoming works within the road corridor that may affect the movement of vehicles through the local road network.

Other Road Users

All changes to the local road network will be communicated with the required signage in accordance with the staged Traffic Control Plans for the works. Special works that will have an increased impact on road users, such as the installation of bridge girders or changes to overhead powerline crossings, will also be communicated prior to the works through means such as Variable Message Boards, and discussion with adjacent land holders/ leasees prior to works commencing.

Muswellbrook Shire Council

As the asset owner of the local road network, open and frequent consultation and communication with Muswellbrook Shire Council is required to inform any changes to road conditions (temporary operating speeds, lane width, barrier installations, additional signage, etc.) and any upcoming works that may have an effect on the road network (short-term traffic control, oversize and wide loads, etc.). These changes will be captured on Traffic Control Plans and submitted to council for review/approval prior to changing the traffic controls of the road network in accordance with the S138 permits.

In addition to the normal S138 and transport permitting requirements, it is intended that the Project will establish and maintain regular communications with key personnel at Muswellbrook Shire Council to minimise the impact through the construction phase.

OVERALL TRAFFIC MANAGEMENT

The interaction of MOD 4 construction-related traffic with any public roads and crossings, including those required for construction of the rail, water supply pipeline and pump station, as well as the management of the public roads, will be undertaken in accordance with Muswellbrook Shire Council requirements, including any required S138 permits.

APPENDIX B

HISTORIC HERITAGE MANAGEMENT PLAN

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LIST OF FIGURES

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1 INTRODUCTION

1.1 CONTEXT

This Historic Heritage Management Plan (HHMP) details management measures proposed to be implemented to relevant historic heritage sites for the planned construction of rail and water supply infrastructure at the Mount Pleasant Operation (MPO) under the modified approval (MOD 4).

This HHMP forms part of the contractor's Construction Environmental Management Plan (CEMP). The construction shall include:

- Duplication of the approved rail spur, rail loop, conveyor and rail load-out facility and associated services.
- Duplication of the Hunter River water supply pump station, water pipeline and associated electricity supply that followed the original rail spur alignment.
- 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.

A detailed engineering design of the MOD 4 key infrastructure, which sought to develop a technically compliant design with relevant Australian Rail Track Corporation standards and *Austroads Guide to Road Design* requirements, resulted in the minor realignment of the infrastructure from the conceptual design shown in the MOD 4 EA (MACH Energy, 2017a). The realigned final alignment design is shown on the various figures in this HHMP and did not result in any additional impacts to historic heritage beyond that described in the MOD 4 EA.

Darran Jordan, specialist archaeologist, has prepared the management measures described in this HHMP.

1.2 SCOPE

This HHMP has been prepared to address the requirements of Condition 44I(d), Schedule 3 of Development Consent DA 92/97, which requires the CEMP to include a HHMP that describes the measures to implement the relevant historic heritage management commitments listed in Statement of Commitments, Appendix 3 of Development Consent DA 92/97 (Section 1.5).

The purpose of this HHMP is to document the proposed management and protection measures to be implemented for mitigating impacts on and preserving heritage significance of specific heritage items located in the vicinity of the MOD 4 disturbance area.

This HHMP only addresses historical heritage items subject to the proposed MOD 4 construction works-related impacts.

A separate MPO Aboriginal Cultural Heritage Management Plan has been prepared that details the protection and mitigation measures associated with Aboriginal cultural heritage values and sites within, and immediately adjacent to, the MPO. As such, Aboriginal cultural heritage is not addressed in this HHMP. Management of all Aboriginal cultural heritage sites will be carried out in accordance with the approved MPO Aboriginal Heritage Management Plan (AHMP) (MACH Energy, 2019a) and consistent with the requirement of AHIP #C0004783.

1.3 PREVIOUS INVESTIGATIONS

A Statement of Heritage Impact (SoHI) was undertaken as part of the MOD 4 EA by Extent Heritage Pty Ltd (Extent) in 2017 (Extent, 2017) and reported in the MOD 4 EA (MACH Energy, 2017).

The SoHI identified several historic heritage items of local significance within the MOD 4 disturbance area and immediate surrounds that are outside the extent of the approved MPO. Several of the items are listed on the Muswellbrook Local Environmental Plan (LEP); however, none of the identified items are listed on NSW or Commonwealth heritage registers (MACH Energy, 2017).

1.4 CONSULTATION

This HHMP has been provided to Muswellbrook Shire Council as part of the CEMP for the purposes of consultation in accordance with Statement of Commitment, Appendix 3 of Development Consent DA 92/97. Further details regarding the consultation undertaken with Muswellbrook Shire Council are provided in Section 1.3 of the CEMP.

A copy of the resulting reports/documentation will be provided to Council for its records.

1.5 REGULATORY REQUIREMENTS

All Development Consent DA 92/97 conditions relevant to the management of historic heritage within the proposed MOD 4 construction disturbance area are summarised in the table below (Table 1). Table 1 also states how each condition will be met and, where appropriate, shows the relevant section/s of this HHMP where the conditions are addressed.

Table 1
Construction and Operation Consent Conditions for MOD 4

Development Consent Condition	Relevant Sections and Documents
Schedule 3. Condition 10. The Applicant must ensure that the blasting on the site does not cause exceedances of 10 mm/s ground vibration at historic heritage sites.	Section 2.4 of this HHMP.
Schedule 3. Condition 15. The Applicant must minimise blasting impacts on heritage items in the vicinity of the site.	Section 2.4 of this HHMP.
Schedule 3. Condition 32. The Applicant must prepare a Biodiversity Management Plan for the development to the satisfaction of the Secretary. This plan must maximise salvage and beneficial use of resources in areas that are to be impacted, including vegetative, soil and cultural heritage resources.	A separate Biodiversity Management Plan has been prepared for the MPO to manage biodiversity impacts to the local community and the built environment from construction operations and ensure they are minimised.
Schedule 3. Condition 44I. The Applicant must prepare a Construction Environmental Management Plan for MOD 4 construction works, to the satisfaction of the Secretary. This plan must include a Historic Heritage Management Plan which describes measures to implement the relevant historic heritage management commitments outlined in Appendix 3 of the consent approval.	This HHMP.
Appendix 3. MACH Energy will implement historic heritage management associated with MOD 4 in consultation with Council and a copy of any resulting reports/documentation will be provided to Council for its records.	This HHMP.
Appendix 3. MACH Energy will consult with Council on the content of the photographic record of Overton Orchard and Race Track.	Appendix 2 of this HHMP.

Table 1 (Continued)
Construction and Operation Consent Conditions for MOD 4

Development Consent Condition	Relevant Sections and Documents
Appendix 3. MACH Energy will limit movement of vehicles/machinery in the area of the Overton Orchard and Race Track to avoid potential damage outside of the MOD 4 disturbance footprint, in consultation with Council. This includes avoiding disturbance of the areas shown in blue on Figure 6 of the Statement of Heritage Impact (Extent, 2007) included as Appendix F of EA (MOD 4).	Section 2.6 of this HHMP.
Appendix 3 MACH Energy will consult with Council on potential points of access and routes for heavy vehicles and machinery at the Blunt's Butter Factory. Points of access and routes will be demarcated and MACH Energy will ensure heavy vehicles remain within the demarcated areas.	Section 2.6 of this HHMP.
Appendix 3 MACH Energy will consult with Council regarding appropriate demarcation to restrict movement of heavy vehicles near the two cuttings located east of Overton Orchard.	Sections 2.5 and 2.6 of this HHMP.
Appendix 3 If artefacts are exposed at the base of the well at MP13, works will cease until an archaeologist advises whether or not they constitute 'relics' under the NSW Heritage Act 1977 and whether works should proceed pursuant to an application for an 'exception', or an excavation permit.	Sections 2 and 3 of this HHMP.

1.6 RELEVANT LEGISLATION

1.6.1 Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) defines 'environment' as both natural and cultural environments and, therefore, includes Aboriginal and non-Aboriginal historical cultural heritage items. Under the Act, protected heritage items are listed on the National Heritage List (items of significance to the nation) or the Commonwealth Heritage List (items belonging to the Commonwealth or its agencies). These two lists replaced the Register of the National Estate (RNE). The RNE has been suspended and is no longer a statutory list; however, it remains as an archive.

Under Part 9 of the EPBC Act, any action that is likely to have a significant impact on a matter of National Environmental Significance (known as a controlled action under the Act), may only progress with approval of the Commonwealth Minister for the Department of the Environment. An action is defined as a project, development, undertaking, activity (or series of activities), or alteration. An action will also require approval if:

- it is undertaken on Commonwealth land and will have or is likely to have a significant impact on the environment on Commonwealth land; and
- it is undertaken by the Commonwealth and will have or is likely to have a significant impact.

1.6.2 Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* (EP&A Act), administered by the NSW Department of Planning and Environment (DP&E), requires that consideration be given to environmental impacts as part of the land use planning process in NSW. In NSW, environmental impacts include impacts to Aboriginal and non-Aboriginal (i.e. European) cultural heritage.

Depending on the scale and nature of impact of the proposal, the proposal may be subject to assessment under the following parts of the EP&A Act:

- Division 4.7 relates to State Significant Development;
- Division 5.1 generally applies to public authorities that assess and self-determine activities that do not require approval under Division 5.2 or development consent under Division 4; and
- Division 5.2 applies to State Significant Infrastructure that is approved by the Minister for Planning and Infrastructure.

1.6.3 Heritage Act 1977

The *Heritage Act 1977* (as amended) was enacted to conserve the environmental heritage of New South Wales. Under Section 32, places, buildings, works, relics, moveable objects or precincts of heritage significance are protected by means of either Interim Heritage Orders (IHO) or by listing on the NSW State Heritage Register (SHR). Items that are assessed as having State heritage significance can be listed on the SHR by the Minister on the recommendation of the NSW Heritage Council.

Archaeological relics (any relics that are buried) are protected by the provisions of Section 139. Under this section it is illegal to disturb or excavate any land knowing or suspecting that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed. In such cases an excavation permit under Section 140 is required. Note that no formal listing is required for archaeological relics; they are automatically protected if they are of local significance or higher.

Proposals to alter, damage, move or destroy places, buildings, works, relics, moveable objects or precincts protected by an IHO or listed on the SHR require an approval under Section 60. Demolition of whole buildings will not normally be approved except under certain conditions (Section 63). Some of the sites listed on the SHR or on LEPs may either be 'relics' or have relics associated with them. In such cases, a Section 60 approval is also required for any disturbance to relics associated with a listed item.

Under Section 170 of the Heritage Act 1977, NSW Government agencies are required to maintain a register of heritage assets. The Register places obligations on the agencies, but not on non-government proponents, beyond their responsibility to assess the impact on surrounding heritage items.

1.6.4 Muswellbrook Local Environmental Plan (LEP) 2009

The Muswellbrook LEP 2009 controls development in relation to heritage items within the Muswellbrook Shire boundary. Clause 5.10.1 outlines the Council's aims in relation to heritage, which are to:

- conserve the environmental heritage of Muswellbrook;
- conserve the heritage significance of heritage items and heritage conservation areas including associated fabric, settings and views;
- conserve archaeological sites; and
- conserve places of Aboriginal heritage significance.

Muswellbrook Shire Council require an SoHI to accompany a Development Application to alter the exterior fabric, make structural changes to the interior, subdivide or erect another building.

1.6.5 Hunter Regional Environmental Plan (Heritage) (1989)

The Hunter Regional Environmental Plan 1989 (Hunter REP) is regulated under the EP&A Act. The Hunter REP lists heritage items that represent some values of high or exceptional significance on a regional level and aims to regulate any major alterations or the demolition of these sites. Heritage items listed under the Hunter REP are protected by listings in Schedules 1 to 4 of that instrument and their associated clauses. Clause 7 of the Hunter REP provides the process for regulating the development of heritage listed items.

Overdene is listed on Schedule 3 of the REP and alterations to the house therefore require Muswellbrook Shire Council approval.

1.7 PURPOSE AND STRUCTURE OF THIS REPORT

The purpose of this HHMP is to provide measures to prevent or minimise material harm to heritage items within the bounds of the Project area for the MOD 4 construction works. Section 1.0 provides background on the MOD 4 and scope of this HHMP, Section 2.0 contains information on the relevant procedures and management measures, Section 3.0 presents an unexpected finds protocol, Section 4.0 gives details on reporting, auditing and reviews, and Section 5.0 containing relevant references.

It should be noted that this HHMP is a dynamic document with the capacity to be updated accordingly throughout the duration of MOD 4 construction works.

The following documents were used to inform this HHMP:

- *The Burra Charter: The Australia International Council on Monuments and Sites (ICOMOS) Charter for Places of Cultural Significance* (Australia ICOMOS, 1999)*;*
- *Conservation Management Documents: Guidelines on Conservation Management Plans and Other Management Documents* (NSW Heritage Office, 2002); and
- *Conservation Plan a Guide to the Preparation of Conservation Plans for Places of European Cultural Significance* (Kerr, 2013)*.*

Appendix 1 of this document contains a summary of the existing CMP for Overdene. The maintenance of Overdene remains the responsibility of the Bengalla Mining Company Pty Ltd as per the CMP. The summary has been included here to provide context for MOD 4 works that will be undertaken in proximity to this item.

1.8 RELATED PLANS

The following documents complement this HHMP and should be referenced in conjunction with the plan:

- *Mount Pleasant Operation Rail Modification Statement of Heritage Impact* prepared for MACH Energy Australia Pty Ltd (Extent, 2017).
- *Mount Pleasant Historic Heritage Study* prepared for Rio Tinto Coal Australia (Veritas Archaeology and History Service, 2014).
- *Overdene Homestead CMP* prepared for Bengalla Mining Company (AECOM Australia Pty Ltd and Hansen Bailey, 2014b).
- *Bengalla Mine Historic Heritage Impact Assessment* prepared for Bengalla Mining Company (AECOM and Hansen Bailey, 2013).

- *Mount Pleasant Mine Environmental Impact Statement* (EIS) (ERM Mitchell McCotter, 1997).
- *Mount Pleasant Operation Aboriginal Heritage Management Plan* (MACH Energy, 2019a).
- *Mount Pleasant Operation Rail Modification Environmental Assessment* (MACH Energy, 2017a).
- *Mount Pleasant Operation Blast Management Plan* (MACH Energy, 2019b).
- *Mount Pleasant Operation – Environmental Management Strategy* (MACH Energy, 2019c).

1.9 RELEVANT HISTORIC HERITAGE SITES

All identified heritage places within, or in the vicinity of, the MOD 4 disturbance area are summarised in Table 2 below. The listed items or places correspond with those identified in the MOD 4 EA SoHI (Extent, 2017) and the Muswellbrook LEP 2009. The items included here are those that have been mapped within, or in the vicinity of, the MOD 4 disturbance area (see Figure 1).

It should be noted that the aforementioned SoHI report excluded assessment of six items located north of the MPO area (MP02, MP14, MP15, MP16, MP18 and MP19), as they were assessed in the Mount Pleasant Historic Heritage Study (Veritas Archaeology and History Service, 2014), endorsed by the former NSW Department of Planning and Infrastructure, which concluded that it would be appropriate to demolish those items when required.

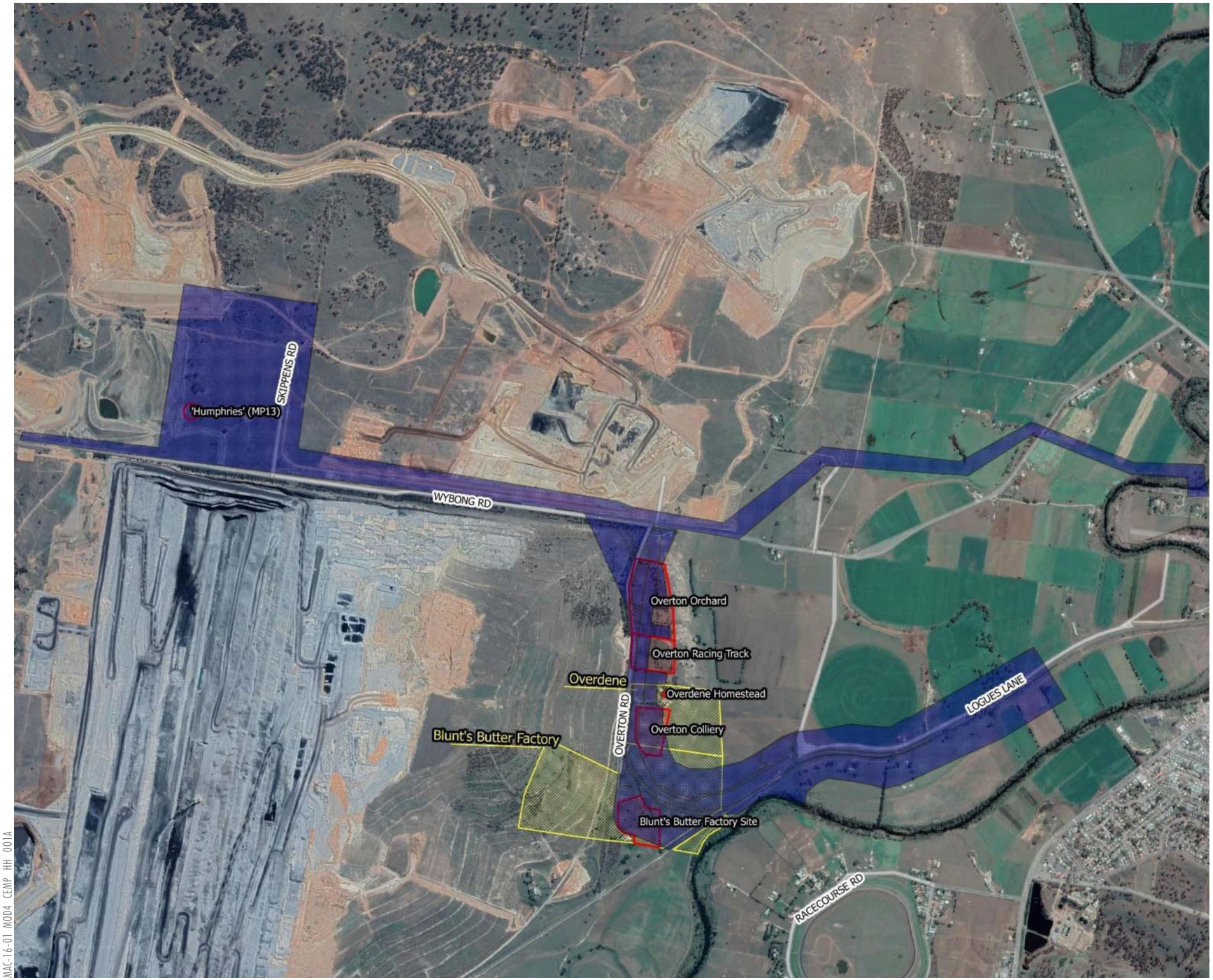
Significant heritage homesteads (Edinglassie and Balmoral), which are located approximately 1 kilometre (km) to the south and south-east of the MPO area, respectively, would not be impacted by the proposed works and, therefore, are not addressed in this HHMP. Similarly, Bengalla Homestead and the associated Keys Family Private Cemetery have also been excluded from this HHMP, as these are outside the bounds of the proposed disturbance area and have previously been assessed as not subject to any MOD 4 construction-related impacts.

The potential heritage place M404 (a work building) was assessed as part of the SoHI (Extent, 2017). Although located within the MOD 4 disturbance area, this site was assessed as not being a heritage place (Extent, 2017). Similarly, Extent (2017) concluded that Overton Colliery would not be impacted by the MOD 4 construction works, and that two sheds located to the south-east of Overton and Overdene are not heritage places (Extent, 2017). These sites have, therefore, been excluded from this HHMP.

Two areas of cuttings in the side of the slope east of Overton Orchard and Race Track, and a possible pump-house on the western bank of the Hunter River, were also identified in the SoHI (Extent, 2017); however, these sites are outside of the proposed MOD 4 disturbance area. Similarly, site MP13 ('Humphries') was assessed in the SoHI as not being a heritage place (Extent, 2017). These sites are excluded from Table 2. Nonetheless, appropriate management measures described in Section 2 will be implemented during the MOD 4 construction works to avoid any incidental impacts to these sites.

Table 2
Identified Heritage Items Within or in the Vicinity of the Proposed Disturbance Area

Site Name	Heritage Listing	Significance	Site Description
Overdene Homestead	Muswellbrook LEP 2009 (I10) Register of the National Estate (RNE) (ID 1394) Hunter Regional Environmental Plan (REP) 1989	Local	1860s sandstone cottage.
Overton Orchard and Race Track (M403)	Not listed	Local	Planted trees and remains of a race track.
Blunt's Butter Factory	Muswellbrook LEP 2009 (I10)	Local	Concrete foundations and other building remains.



Source : AECOM (2019)

KEY

Road

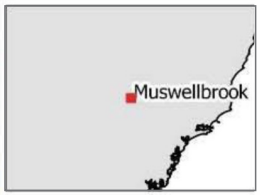
Project area

MOD 4 Rail Infrastructure curtilage

Historic heritage

Muswellbrook LEP 2009 areas

SoHI 2017 refined curtilages



0 200 400 m

PROJECT ID:	60601930
CREATED BY:	J. Atkinson
PROJECTION:	GDA 94 Zone 56
LAST MODIFIED:	16-8-2019
VERSION:	A

MACHEnergy

MOUNT PLEASANT OPERATION

Project Area and Historic Heritage Items Within its Bounds

Figure 1

MAC-16-01 MOD4 CEMP HH 001A

2 PROCEDURES AND MANAGEMENT MEASURES

Management of the relevant historic heritage items listed in Section 1.9 will be undertaken in accordance with the approved MOD 4 EA and any additional procedures stated in this HHMP. The historic heritage-related management procedures to be implemented during MOD 4 construction works are summarised in Table 3, along with reference to the relevant section/s of this HHMP.

Table 3
MOD 4 Construction Works-related Management Measures

Areas	Significance	Management Measures	Relevant Section of this HHMP
Overdene Homestead	Local	Direct impacts will be avoided as the buildings are already fenced and secured. Continued maintenance will occur under the management of the Bengalla Mining Company Pty Ltd with the Overdene CMP.	Section 2.1
Overton Orchard and Race Track (M403)	Local	Archival recording (referred to as a 'photographic recording') is to be undertaken prior to disturbance. The movement of vehicles and heavy machinery in the areas outside the MOD 4 disturbance areas to be minimised where practical. Areas outside those approved for impacts are to be demarcated and protected during works to avoid accidental impacts from the movement of heavy vehicles and machinery during construction. Extant cultural plantings in the areas outside the MOD 4 disturbance area are to be retained in situ. No further maintenance is required.	Sections 2.2 and 2.6
Blunt's Butter Factory	Local	The movement of heavy vehicles and machinery to be limited to the established points of access and routes. The extent of disturbance and the established points of access and routes for heavy vehicle movements to be demarcated within the curtilage of Blunt's Butter Factory.	Section 2.6
'Humphries' MP13	Not a heritage place	Disturbance to be carried out without the need for an excavation permit pursuant to section 140 of the *NSW Heritage Act 1977* or the presence of an archaeologist. 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	Section 3

2.1 CONSERVATION MANAGEMENT PLANS

The existing CMP for Overdene (AECOM Australia Pty Ltd and Hansen Bailey, 2014b) lists the Conservation Policies to be used to assist in the ongoing use, maintenance and conservation of the site. Any works undertaken within the curtilage of the Overdene listing should follow the management measures summarised in Appendix 1 to ensure that the works are undertaken with respect to the item's heritage significance.

2.2 ARCHIVAL RECORDING

As required by Statement of Commitment, Appendix 3 of Development Consent DA 92/97, archival photographic record of the Overton Orchard and Race Track was carried out in June 2019. The recording is presented in Appendix 2 of this document.

The procedures of the archival recording of the Overton Orchard and Race Track were guided by the Heritage, DPC Guidelines, as outlined in the documents:

- *How to Prepare Archival Records of Heritage Items* (NSW Heritage Office, 1998); and
- *Photographic Recording of Heritage Items using Film or Digital Capture* (NSW Heritage Office, 2006).

Consultation regarding the content of the archival photographic record was undertaken with Muswellbrook Shire Council.

Once finalised, this record will also be deposited with the Muswellbrook Shire Council Library.

2.3 HUMAN REMAINS

No burial exhumations are proposed or approved as part of the MOD 4 works. The only known cemetery in proximity to the Project area is the Keys Family Private Cemetery, associated with Bengalla Homestead, which is outside the bounds of the Project area and will be avoided by all impacts. Should human remains be unexpectedly discovered during works the appropriate stop work procedures should be followed, as outlined in Section 3.

2.4 BLASTING AND VIBRATION

Condition 10, Schedule 3 of Development Consent DA 92/97 requires that any blasting undertaken in the MPO area should not cause exceedances of 10 mm/s ground vibration at historic heritage sites[1].

The Blast Management Plan (BMP) has been developed for the Mount Pleasant Operation (MACH Energy, 2019b) and provides heritage mitigation measures related to blasting. All MOD 4-related construction works will be undertaken in accordance with the approved BMP to ensure no ground vibration criteria exceedance occurs.

The CMP for Overdene states that monitoring and management of blasting impacts and temporary reinforcement should be undertaken as required within the Overdene curtilage, noting that such works should be undertaken with reference to the documented effects of blasting contained in the blasting report.

2.5 ACCIDENTAL IMPACTS

MOD 4 construction-related accidental impacts to areas and sites of historic heritage significance are to be avoided through protection and demarcation measures. These include:

- Undertaking toolbox presentations and providing other relevant training for workers to ensure the workers' awareness of the heritage significance of the disturbance area prior to undertaking work within its bounds.

[1] However, this does not apply if MACH Energy has a written agreement with the relevant infrastructure provider/owner, and MACH Energy has advised the DPIE in writing of the terms of the agreement.

- Demarcation of areas of heritage significance or archaeological sensitivity on a map.
- Demarcation of areas of heritage significance with physical fencing and signage if necessary.
- Demarcation of the extent of disturbance (including heavy vehicle movements) associated with MOD 4 construction works within the curtilage of Blunt's Butter Factory.
- Restricting the movement of heavy vehicles and machinery to existing tracks and roads, as much as practical.
- Preventing movement of heavy vehicles and machinery over the two areas of cuttings in the side of the slope east of Overton Orchard and a possible pump-house located on the western bank of the Hunter River.

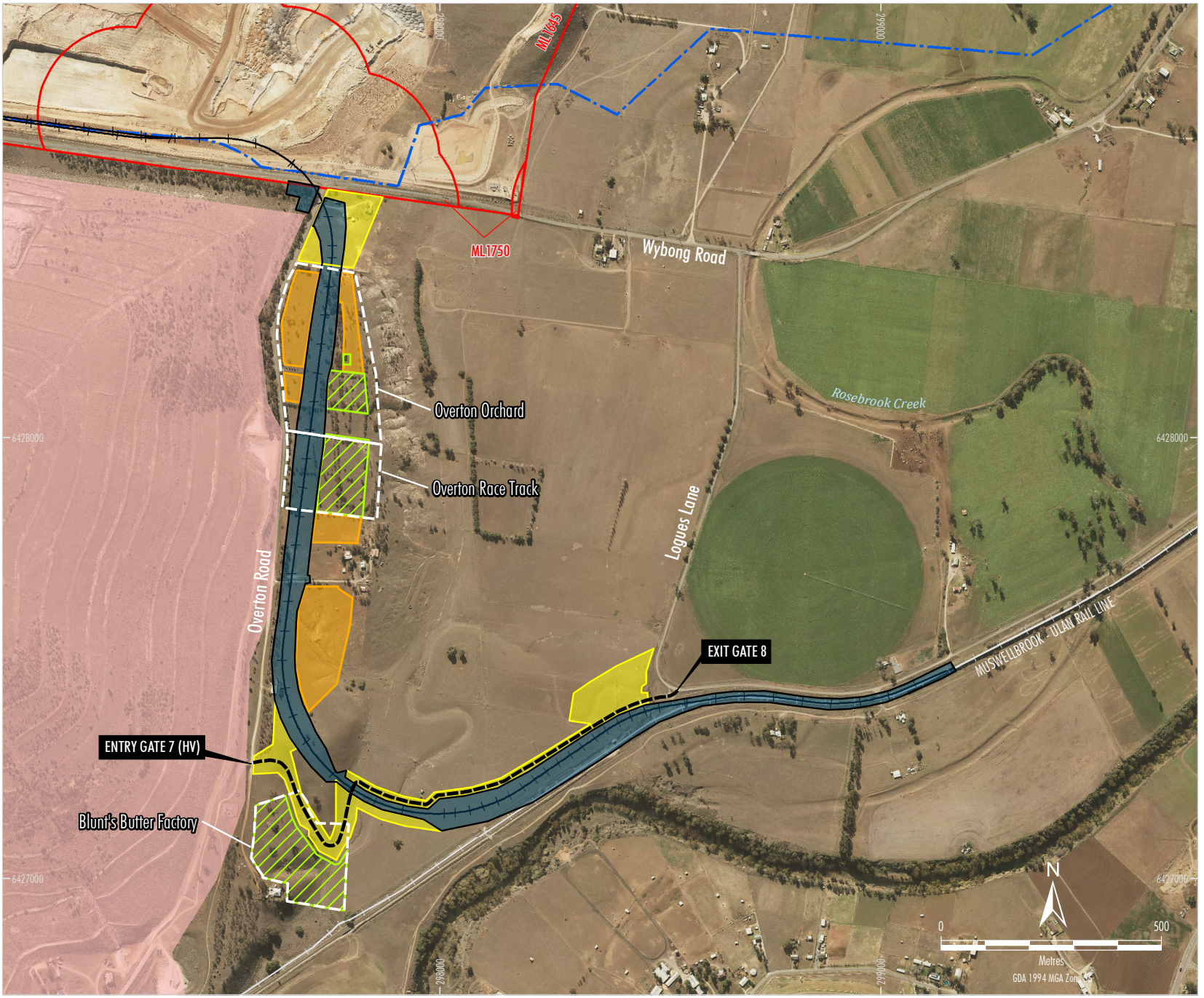
2.6 VEHICLE AND MACHINERY MOVEMENT

The movement of heavy vehicles and machinery over the parts of the Overton Orchard and Race Track that are outside of the MOD 4 disturbance footprint will be minimised where practicable. No Go Zones will be established within the Overton Orchard and Race Track to avoid accidental damage during the construction works (Figure 2). Temporary flagging and appropriate signage will be installed to demarcate the Overton Orchard and Race Track. Disturbance boundaries in the vicinity of the sties will also be identified utilising the existing MPO Ground Disturbance Permit process (refer to Section 5.3 of the CEMP).

Temporary flagging and appropriate signage will also be established for the two cutting areas in the side of the slope east of Overton Orchard and a possible pump-house located on the western bank of the Hunter River to prevent movement of heavy vehicles and machinery over the sites during the MOD 4 construction works.

Vehicle and machinery movement within Blunt's Butter Factory will be limited to the proposed access points and a route shown on Figure 2. The proposed track will maintain one-directional traffic flow, entering from Gate 7 and exiting through Gate 8 (Figure 2). The access points and the route will be demarcated by either fencing or flagging and appropriate signage will be installed to prevent access to the other areas of the site. A No Go Zone is to be established within Blunt's Butter Factory boundaries outside of the proposed access route (Figure 2).

An internal Vehicle Movement Plan will be produced for the MOD 4 construction works, which will include maps of the MOD 4 area with clearly defined disturbance areas, vehicle movement routes and entry/exit points. The Vehicle Movement Plan will be applied to limit the movement of vehicles/machinery to avoid potential accidental damage, with heavy vehicles to remain within the demarcated areas.



LEGEND

- Mount Pleasant Operation Mining Lease Boundary
- Bengalla Mine Approved Disturbance Boundary (SSD-5170)
- Historic Heritage Site Boundary

Key Elements of Modification 4 [1]

- Indicative Rail Alignment
- Indicative Water Pipeline and associated Electricity Transmission Line
- Indicative Permanent Disturbance Area
- Bridge Laydown and Working Platform
- Potential Areas for Visual Bunds and Topsoil Storage
- No Go Zone (Heritage Location)
- Proposed Construction Access Route

[1] Excludes components of the Modification traversing existing approved disturbance areas, including areas nominally depicted in Appendix 1 of Development Consent DA 92/97 and/or the approved Mining Operations Plan.

Source: NSW Land & Property Information (2018); NSW Division of Resources & Geoscience (2019); NSW Department of Primary Industries (2017); Department of Planning and Environment (2016); Extent (2017); MACH Energy (2019)
Orthophoto: MACH Energy (July 2018)

MACHEnergy

MOUNT PLEASANT OPERATION

Relevant Historic Heritage Sites and Proposed Construction Access Route

Figure 2

MAC-16-01 MOD4_CEMP_HH_201B

3 UNEXPECTED FINDS PROTOCOL

3.1 NEW SITES

The following procedure guides the management of unexpected and previously unidentified finds during the course of operations. Finds may include artefact scatters (glass, animal bone, ceramic, brick, metal, etc.), building foundations and earthworks of unknown origin. The procedures are:

- All work in the area is to cease immediately.
- Alert the Environmental Superintendent (or delegate) to the find.
- If necessary, protect the area with temporary fencing.
- If the impact to the unexpected finds can be avoided, works may resume as long as no finds are impacted.
- If the impact to the unexpected finds cannot be avoided, the following procedures are to be undertaken:
  - engage a suitably qualified archaeologist to undertake an assessment of the find/s;
  - the assessment should be undertaken using the guidelines Assessing Significance for Historical Archaeological Sites and 'Relics' (NSW Heritage Branch, 2009);
  - on the advice of the archaeologist, if necessary, prepare an Impact Assessment and Research Design and Methodology to submit to the Heritage, DPC for a Section 140 excavation permit or exception (if required);
  - undertake the archaeological mitigation in accordance with the prepared documents and the permit/exception issued by the Heritage, DPC; and
  - once the site has been mitigated to the satisfaction of the archaeologist and the Heritage, DPC, works may resume in the area.

3.2 SKELETAL REMAINS

In the event that operations reveal previously unknown human skeletal material (remains), the following procedure is to be followed:

- when suspected human remains are exposed, all construction work is to cease immediately in the near vicinity of the find location and the Environmental Manager (or delegate) on-site is to be immediately notified. The Environment Manager (or delegate) will contact the Police at the earliest reasonable time;
- a 5-m radius is to be cordoned off by temporary fencing around the exposed human remains site - work can continue outside of this area as long as there is no risk of interference to the human remains or the assessment of the human remains. Assessment of risk may utilise the risk matrix provided within the NSW Health Policy directive on the exhumation of human burials;
- contact the OEH Environment line on 131 555 and the Heritage, DPC on 02 9873 8500; and
- a physical or forensic anthropologist should be commissioned to inspect the remains in situ (unless otherwise directed by the Police), and make a determination of ancestry (Aboriginal or non-Aboriginal) and antiquity (pre-contact, historic or modern), then:
  - if the remains are identified as modern, the area is deemed a crime scene; or

  - if the remains are identified as pre-contact or historic Aboriginal, the Environment Manager will notify OEH and Registered Aboriginal Party (RAP) representatives and appropriate management measures will be determined through consultation with the RAPs. Representatives of the Aboriginal community should be present during all investigations of Aboriginal remains; or
  - if the remains are identified as non-Aboriginal (historical) remains, the site is to remain secure and the Heritage, DPC is to be contacted.

- The above process functions only to appropriately identify the remains and secure the site. From this time, the management of the area and remains is to be determined through one of the following means:
  - if the remains are identified as a modern matter, liaise with the Police and/or the Coroner's Office and/or NSW Health with respect to the exhumation of the remains;
  - if the remains are identified as pre-contact or historic Aboriginal, liaise with OEH and Aboriginal stakeholders;
  - if the remains are identified as non-Aboriginal (historical), liaise with the Heritage, DPC; and
  - if the remains are identified as not being human then work can recommence without delay.

The procedures take into account the following documents:

- *Burials - Exhumation of Human Remains NSW Health Policy Directive PD2008_022* (NSW Health, 2013);
- *Manual for the Identification of Aboriginal Remains* (NSW Department of Environment & Conservation, 2006);
- *Skeletal Remains – Guidelines for the management of human skeletal remains under the Heritage Act 1977* (NSW Heritage Office, 1998b);
- *The Aboriginal Cultural Heritage Standards and Guidelines Kit* (NSW National Parks and Wildlife Service, 1997); and
- *Public Health Act 1991* – NSW Legislation.

4 REPORTING, AUDITING AND REVIEW

In accordance with Condition 2, Schedule 5 of Development Consent DA 92/97, MACH Energy has developed protocols for managing and reporting the following:

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

These protocols are described in detail in the MPO Environmental Management Strategy (MACH Energy, 2019c).

5 REFERENCES

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APPENDIX 1

OVERDENE CMP SUMMARY

Overdene CMP Listings

Overdene is listed on the non-statutory RNE, Schedule 3 of the Hunter REP 1989 and on the Muswellbrook LEP 2009. As the item is listed on the LEP, no major works, demolition or development should take place on this site without prior consultation with Muswellbrook Shire Council.

Mining Operations

According to the CMP, no constraints are proposed to be directly imposed on the site relating to mining operations, but it was noted that the active use of Overdene would necessarily be precluded until the cessation of all mining operations; the final use of Overdene would be resolved following the cessation of mining. While mining activities were undertaken in the surrounding area, ongoing management measures were to continue to be implemented as outlined in the CMP. The definition of short, medium and long terms relating to management measures were defined in relation to expected mining timeframes, with urgent works required to stabilise the structure defined as follows:

- Short term: one to five years;
- Medium term: six to 25 years; and
- Long term: 26 years plus.

Adaptive Re-Use

Policies of adaptive re-use are long-term strategies for Overdene and are not specifically relevant to the activities proposed for the MOD 4 works. They are included here for context and reference to how Overdene is to be situated within the longer-term mining works of the broader area.

In the long-term it was suggested in the CMP that Overdene could be used as a local museum or for boutique accommodation or as a private residence. Use as a museum would be limited due to its relatively remote location and lack of passing traffic. Also, Muswellbrook has an existing historical museum which is located on the New England Highway and attracts passing trade.

It was considered that the location and form of the building could make it more suitable as a private residence or self-contained bed and breakfast style accommodation upon the cessation of mining operations in the area. Both of these uses would require a sympathetic addition to make allowances for current expectations regarding living space and amenities.

Statement of Conservation Policy

Preservation is to be guided by the following policies, which are based on the conservation of the significance of Overdene, as represented through its physical fabric.

Policy 1. Compatible and Achievable Uses

Overdene is suitable as a private residence or for bed-and-breakfast-style accommodation to be enacted upon the cessation of mining.

Policy 2. Setting

The views from Overdene across the Hunter River floodplains should be maintained where practical.

Remaining mature trees and vegetation should be retained where they do not impact on the integrity of the structure (to a lesser extent the citrus and peach trees, with the exception of the grapefruit tree, which is impacting the integrity of the verandah foundations and should be removed).

The most appropriate location for sympathetic additions is to the west of the structure, once due consideration has been given to the archaeological potential of that area.

Policy 3. Fabric

The current form (plan and elevation symmetry), internally and externally, should be maintained. The sandstone and brick fabric elements are to be preserved.

Retain original layers of paint for future investigation or undertake investigation prior to removal, where possible.

Floors – maintain timber floors.

Doors and windows – maintain to prevent further deterioration.

Policy 4. Archaeological Investigations

Archaeological assessment must precede ground disturbance in areas defined as having high archaeological sensitivity. Areas of sensitivity were defined as being the areas immediately surrounding the house where former structures such as the kitchen and various outbuildings/fences were previously present. An archaeological assessment must be undertaken by a suitably qualified and experienced archaeologist prior to any subsurface or ground-disturbing works occurring (e.g. trenches for stormwater) in the area surrounding the house.

Depending on the location, nature and extent of the works a Section 140 permit or exception under the *Heritage Act 1977* may be required, as no archaeological excavations have been approved under the existing approvals.

Policy 5. Public Access and Interpretation

It was not considered necessary to have public access or interpretation to retain the heritage significance of Overdene. Should the house become an accommodation facility in the future, the public access thereby provided would enhance public knowledge and appreciation, but this would be a secondary benefit to the preservation of the house as a whole.

Policy 6. Management

The Statement of Significance should be accepted as a guiding principle in the management of Overdene.

Conservation, preservation and maintenance of Overdene should be undertaken in accordance with the principles of the Burra Charter.

Concerted effort should be made to undertake the scheduled program of conservation works (outlined further below).

The security of the property should be maintained at all times.

Responsibility for the implementation of the policies of the Overdene CMP should be clearly stated prior to works being undertaken within the item’s curtilage.

Schedule of Conservation Works

The Overdene Homestead CMP contains a proposed schedule of conservation works for this item. The following summarises the proposed schedule of works required to fulfil the Conservation Policy into annual maintenance, short-term goals, medium-term goals and long-term goals.

Annual Maintenance

Undertake an annual structural inspection and report the results in the Annual Review.

Complete works identified in the annual structural inspection as being necessary for the structural integrity of the Complex's buildings within the calendar year in which they are identified.

Maintain, preserve, reconstruct or restore house features where required to prevent deterioration.

Check and repair, if necessary, the roofs, all downpipes, guttering and drainage gullies for leaks and to ensure free-flowing drainage. Inspection of the above to occur quarterly, inspections in between annual structural inspections. Additional inspections to be undertaken on an as-needs basis after heavy rainfall events and high winds.

Continuation of security to prevent vandalism and/or damage.

Regular, ongoing inspections and maintenance of the site and grounds.

Pest management, including annual inspections for termites and repair of damage, if found. The monitoring and management of blasting impacts and temporary reinforcement as required.

Managing maintenance activities so as to not affect the general form and layout of the house, retain setting without new development in its immediate setting and retain views to and from the house across the floodplain towards Muswellbrook.

Short-term Goals

Remove the grapefruit tree, which is impacting on the integrity of the verandah foundations.

Undertake a detailed termite inspection. Treat termites and/or other pests appropriately. Repair damage caused by termites, where integral to structural integrity.

Check and repair/replace, if necessary, the roofs, all downpipes, guttering and drainage gullies for leaks and to ensure free-flowing drainage.

Undertake a detailed inspection for rising damp. If identified, treat rising damp appropriately. Tighten existing tie rods.

Undertake a detailed inspection of the foundations and rectify/repair, including hall archway and fireplace in Room 3.

Repair cracked sandstone blocks at threshold. Repair other sandstone blocks and re-point where necessary.

Ensure water run-off is directed away from the foundations to prevent further damage, preferably into a water tank.

Rebuild bulging western and southern walls.

Reinstate veranda. Reinstate veranda flooring, including repair of sandstone dwarf wall supporting veranda joists and eastern veranda slab.

Repair and replace missing brickwork on eastern chimney.

Restore or replace woodwork around external openings and apply paint as appropriate, matching for the original colour scheme.

Replace steel vent grate or block from under Door 7. Stabilise brickwork arch above Door 10.

Repair mortar where necessary, internally and externally. Repair water damage to eastern wall of Room 4.

Medium-term Goals

Repair internal render in all rooms.

Repair any remaining damage caused by termites (i.e. that which was determined not to be integral to structural integrity).

Replace floor boards with like for like. Replace ceiling boards with like for like.

Repair remaining cracks in brick and stonework.

Long-term Goals

The restoration of Overdene is to be considered following the cessation of mining operations. Restoration should be planned and undertaken in consultation with a heritage architect, the Heritage, Department of Premier and Cabinet (Heritage, DPC), Muswellbrook Shire Council and the Department of Planning and Infrastructure (or the relevant alternative department/s, should Government changes to its divisions alter the responsible body between the CMP recommendation and the time of restoration). The conservation policy together with the Statement of Significance for Overdene should be used to guide the restoration process.

CMP in relation to MOD 4 works

The CMP for Overdene provides an overview of works across a time scale designed to span the length of overall mining operations; therefore, not all of these management measures will be required for the MOD 4 works. Prior to works being undertaken within the curtilage of Overdene, the CMP should be consulted to determine the relevant management measures. Once the relevant measures have been determined they should be implemented to ensure the MOD 4 works in proximity to Overdene do not impact on the item's heritage significance.

Further management measures relating to all heritage items located within the Project area are included in the following sections.

APPENDIX 2

MOUNT PLEASANT OPERATION RAIL MODIFICATION
FORMER ORCHARD AND RACE TRACK ARCHIVAL PHOTOGRAPHIC RECORDING

AECOM

Mount Pleasant Operation Rail Modification

Former Orchard and Race Track Archival Photographic Recording

Mount Pleasant Operation Rail Modification

Former Orchard and RaceTrack Archival Photographic Recording

Client: MACH Energy Australia Pty Ltd

ABN: 34 608 495 441

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AECOM in Australia and New Zealand is certified to ISO9001, ISO14001 AS/NZS4801 and OHSAS18001.

Quality Information

Document	Mount Pleasant
Ref	60601930
Date	16-August-2019
Prepared by	Chris Lewczak
Reviewed by	Darran Jordan

Revision History

Rev	Revision Date	Details	Authorised	
			Name/Position	Signature
A	07-Aug-2019	Preparation of Archival Photographic Recording	Chris Lewczak Senior European Heritage Specialist	
B	16-Aug-2019	DRAFT Report for Issue	Dr Darran Jordan Principal Heritage Specialist	

1.0 Introduction

1.1 Background and Justification

AECOM Australia Pty Ltd (AECOM) was commissioned by MACH Energy Australia Pty Ltd (MACH Energy) to undertake an Archival Photographic Recording for the MOD 4 Rail Modification project.

The Mount Pleasant Operation (MPO) was originally granted development consent under Development Application (DA) 92/97 in 1999. The MPO was also approved under the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* in 2012 (EPBC 2011/5795).

MACH Energy acquired the MPO from Coal & Allied Operations Pty Ltd on 4 August 2016. MACH Energy commenced construction activities at the MPO in November 2016, in accordance with Development Consent DA 92/97 and EPBC 2011/5795.

The approved MPO includes the construction and operation of an open cut coal mine and associated rail spur and product coal loading infrastructure. The mine is approved to produce up to 10.5 million tonnes per annum of run-of-mine coal. Up to approximately nine trains per day of thermal coal product from the MPO will be transported by rail to the port of Newcastle for export or to domestic customers for use in electricity generation.

The ultimate extent of the approved Bengalla Mine open cut intersects the approved MPO rail spur. While the intersection of the Bengalla Mine open cut with the approved MPO rail infrastructure is still some years away, MACH Energy is proposing the Modification to obtain approval for future rail and/or conveyor product transport facilities to manage this future interaction.

The Modification would primarily comprise:

- 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.

Several heritage assessments have previously been prepared for the MPO, as well as, the heritage sites within the Development Application area (AECOM Australia Pty Ltd and Hansen Bailey, 2014; Veritas Service Archaeology and History Service, 2014). A separate statement of heritage impact report was prepared by Extent Heritage Pty Ltd (Extent, 2017) for the proposed Operation Rail Modification project. The report assessed the impact of the proposed modification to known heritage places within or in the vicinity of the Modification Area. Potential impacts were identified associated with the former Overton Orchard and Overton Race Track. The Extent report concluded that:

> *Prior to the works proceeding, a photographic record should be made of the Overton Orchard and Race Track. This need not be to the level achieved by photographic archival recording prepared in accordance with the guideline document entitled How to Prepare Archival Records of Heritage Items (NSW Heritage Office, 1998), but it should comprise a bound report containing colour images with supporting text. A copy of this report should be deposited with the Muswellbrook Shire Council Library.*

This report conforms to the requirements for archival photographic recording of any significant historical heritage items identified in the Extent Statement of Heritage Impact (SoHI) report.

1.2 Site Location

Mount Pleasant is located approximately 4 km west of Muswellbrook in the Upper Hunter Valley region of New South Wales (NSW). The former Orchard and Race Track are located off Overton Road (see Figure 1).

1.3 Methodology for Recording

The archival recording was undertaken by Dr Darran Jordan and Geordie Oakes (AECOM) on 30 June 2019. The recording was undertaken with the use of a Canon 1000D Digital SLR. Photographs were shot in RAW format and a copy of these photographs are also presented in JPEG format.

This archival photographic recording consists of 38 photographs. The recording includes two photographic proof sheets showing each photograph, catalogue sheets describing each photo, maps showing the location and direction each photograph was taken and a selection of photographs printed.

Figure 1: Location of Mount Pleasant Operation Railway Modification Works

2.0 The Site

2.1 History

A history was prepared by Extent for the SoHI assessment for the proposed modification works (Extent, 2017). Sections of the Extent authored history relevant to the former Overton Orchard and Race Track are provided below to give context to this report.

Overdene/Overton Estate, Overton Orchard and Race Track

The land for Overton/Overdene forms part of 2560 acres of rich riverfront land originally granted to Captain Francis Allman (1780-1860). Allman founded Overton, then known as Kelso Place, in 1825. Allman was not successful in the Hunter Valley, and in 1833 the majority of his grant at Overton was sold to John Kerr McDougall. Allman retained 640 acres of the original land, leading to two properties named Overton existing side by side until Allman's Overton was subsumed into the neighbouring Bengalla estate.

The McDougall family were early free immigrants to NSW, and owned land in a variety of locations in the Hunter Valley. From his residence at Parramatta, J. K. McDougall managed Overton from 1833, but his son, John McDougall took up residence at the property sometime in the 1830's. The 1841 census shows McDougall as the owner of a sheep station of 2560 acres with 13 residents, including seven convicts on assignment. Richard C. Dangar, (brother of Henry Dangar, the government surveyor that set aside the original land for Muswellbrook) and John Tuckey also lived at Overton during this time. As this period predates the construction of the sandstone cottage known as Overdene, the McDougall, Dangar and Tuckey families all lived in timber houses at unknown locations on the property, none of which remain. The McDougall tenure ended in 1858, when Overton was sold to Henry Nowland.

Henry Nowland is a significant figure in the history of the Hunter Valley. Nowland owned a great deal of land around Singleton and New England, and he was, according to a family member, 'at one time the largest landholder and employer of labour' in the Upper Hunter. Nowland was a leading citizen, owner of many properties around Muswellbrook, including Overton, Collatoota and properties in town, and supported various charities and causes in Muswellbrook until his death in 1863.

Following his death, the Nowland family retained Overton for another decade, and it was during this time that the sandstone cottage that remains on the property was erected by Mrs Nowland. A fire was reported at the property in 1869, apparently only leaving the stone walls standing. The date at which the residence was repaired is unclear, though it is very likely that repair occurred almost immediately as the cottage was used as a manager's residence once the property was sold to Thomas Blunt in 1873.

Blunt initially focussed on breeding draught horses at Overton, and by 1885 between those at Overton and the stock on a much smaller property known as Brogheda, he owned 75 horses, 112 cattle and 2711 sheep. To obtain feed for his stock, Blunt began what would become one of the prominent features of Overton – the irrigation of Lucerne crops.

Blunt began irrigating the property using a windmill, and later installed a steam engine, at least by 1895. The engine was powerful enough to pump 1700 gallons of water from the Hunter River and helped to produce an irrigated crop of Lucerne averaging 2.5 to 3 tons per acre, a very high output at that time. By this time, the estate also carried 8,500 sheep and had a shearing shed that was demolished in 1991. At some time during the Blunt tenure, a coal mine was opened on the property to provide fuel for the estate.

Eight years later, in 1903, either Thomas Blunt, or his son, opened a small creamery and butter factory on the property. A piggery and dairy was established on the property around the same time, and by 1905 Blunt was milking 600-700 cows daily on the property. In order to find the best cattle for his herd, Blunt employed a buyer to 'travel the country to pick up small lots of heifers where he could'. By 1910 Overton had six dairies, each milking about 80 cows, and was averaging the sale of 80 pigs per month after fattening on the estate.

Subdivision of Overton as part of the Australian Government's early 20th century policy of Closer Settlement led to the dismantling of Overton after subdivision in 1912. The riverfront sections of the *estate were divided into 10 to 200 acre lots, with only the section containing the butter factory, cottage and steam engine remaining with the Blunt family. The house now called Overton was likely built following subdivision. The remainder of the 20th century saw Overton (now known as Overdene) sold to the Scholes family, the Moore family, and then to the Tibbeys. Occupation of the sandstone cottage continued until 1972, when the Tibbey family constructed and moved into the brick residence adjacent to Overdene. Owen and Lee Carter purchased Overdene in 1985, but did not re-occupy Overdene.*

The most prominent period for the estate was during Blunt's tenure. Overton estate was seen as an example of the rich agricultural potential of the Upper Hunter in the late 19th and early 20th century. By 1910, the estate featured the sandstone homestead that still remains extant at this location. It also had associated with it several dairies, a piggery, a coal mine, an orchard, grape vines, a creamery and a butter factory. Overton also had several outbuildings including managers cottages, a woolshed, hay shed, stables, loose-boxes for stock, and yards. The orchard contained 300 fruit trees and 500 grape vines in 1905. Sometime before 1910, Thomas Blunt erected a public school on the property attended by 30 children of the 120 or more employees and settlers on the estate. A private training ground and race course for Blunt to engage in recreational 'hobby-racing' of horses, which is still extant at the site, was also erected sometime before 1910. A map of the Overton Estate can be seen in Figure 2.

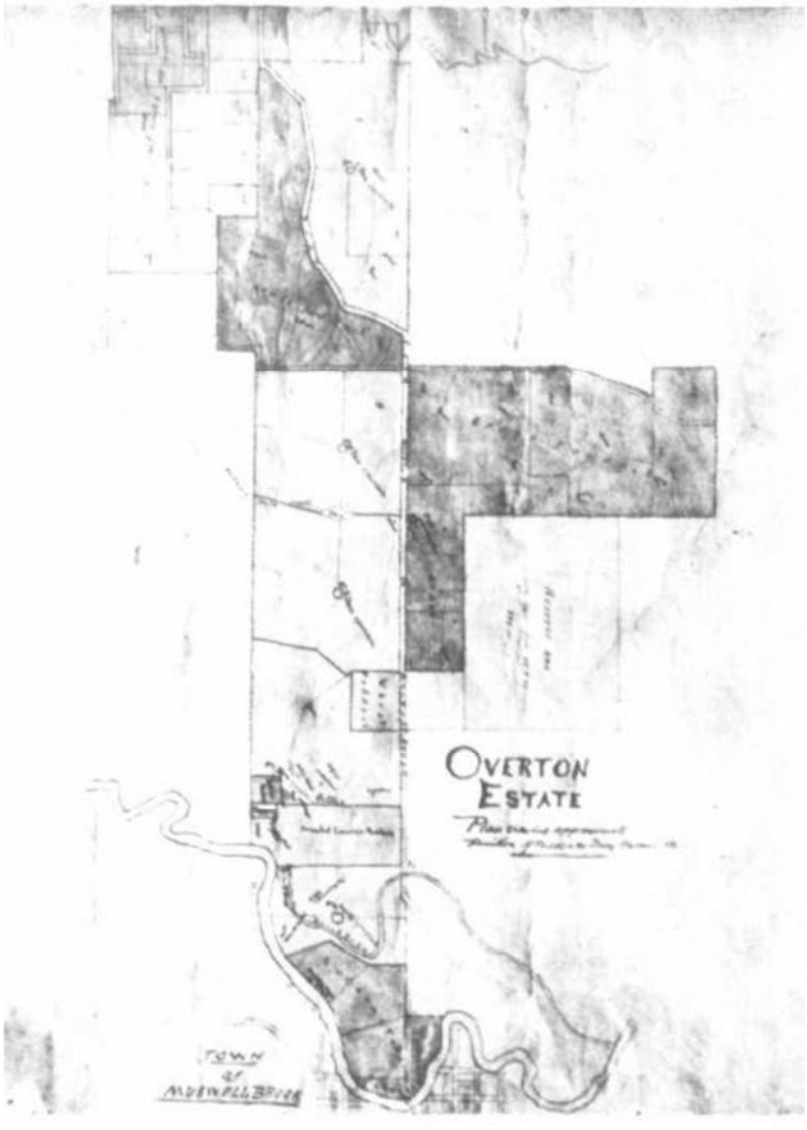

Figure 2: Map of Overton Estate in 1910 produced as part of an article in the Australasian (9 July 1910 [p30]). North is to the right. (Source: (Extent, 2017)

Overton was also notable at the time for the success of the irrigation systems that Blunt had constructed. Blunt had several pumping stations and irrigated 250 acres, producing remarkable quantities of Lucerne for the time (Figure 3). This system of irrigation and use of the elevated position of the property was also exploited in the working of the butter factory.

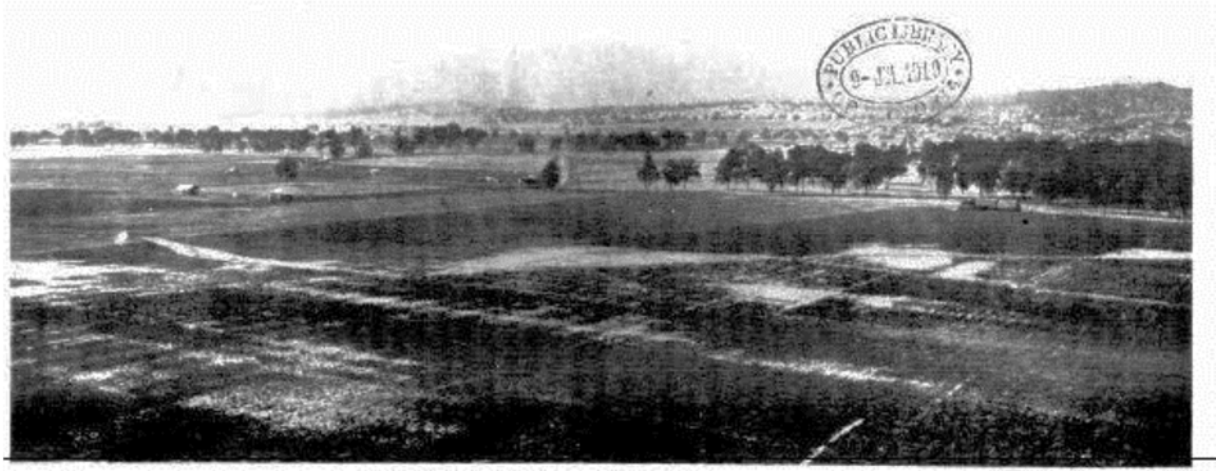

Figure 3: Image from an article on Overton in the Australasian (9 July 1910 [p30]). The caption reads: "Irrigated Lucerne Paddocks with the Town of Muswellbrook in the Background". Photo appears to have been taken from the ridge where Overdene homestead stands today. (Source: Extent, 2017)

For all of these achievements and improvements to Overton, little remains at the property today. To the north of Overdene homestead, sections of the orchard are still extant, as is the hobby-racing track. Overdene Homestead remains, and is currently boarded up and fenced off to inhibit further dilapidation. The butter factory, piggery and associated pipes, troughs and dams survive as ruins. None of the original outbuildings remain, and it is difficult to discern the original layout of the estate from the evidence that remains at the site. Systematic subdivision and neglect have made it difficult to interpret the original layout or relationship between the homestead, its outbuildings (none of which survive), the colliery and the butter factory. The modern buildings that surround Overdene Homestead today were all erected after the subdivision sale in 1959 (VAHS, 2014:652). However, some foundations of buildings in the orchard and evidence of irrigation were located to the north of the homestead.

2.2 Site Description

The orchard covers an area of roughly 76 square metres, and contains nine areas of various sizes delineated by cultural plantings and windbreaks. An avenue of cultural plantings oriented east-west was presumably the main entrance from Overton Road, and leads into the area where the majority of building remains were located. Most features are located within three sections to the north-east. All other sections contained no structural remains or potential archaeological features, but did contain evidence of what are possibly former irrigation channels. These areas likely represent what remains of the orchard that was originally on the property, though there is little documentary evidence to confirm this.

To the south of the orchard described above is Thomas Blunt's 'hobby-racing' track. The Overton Race Track is a 600 m circuit that skirts the edge of the ridge to the west. The Overton Race Track is cut into the surrounding landscape, and is between 8 m and 13 m wide. There is also a 1972 NSW trigonometry survey marker inside the Overton Race Track on the eastern side.

2.3 Statement of Significance

The remains of the Overton Orchard and Race Track, were historically part of the Overdene Estate. The orchard played a role in the agricultural history of the Muswellbrook area (criterion

[a]). The Overton Orchard and Race Track form part of the broader estate, once a suite of functionally related structures and work areas, with strong associations with the pioneering agricultural work of Thomas Blunt (criterion [b]). Although in declining condition, the avenues of ornamental trees and the curve of the Overton Race Track, are attractive features of a rural farming complex, which capture a pleasant rural aesthetic (criterion [c]).

(Extent, 2017)

REFERENCES

AECOM Australia Pty Ltd and Hansen Bailey. (2014). *Overdene draft CMP*.

Extent. (2017). *Mount Pleasant Operation Rail Modification - Statement of Heritage Impact*.

Veritas Service Archaeology and History Service. (2014). *Mount Pleasant Historic Heritage Study*. Unpublished report for Rio Tinto Coal Australia.

Photograph Location Map: Digital Photographs 01 - 19

Key

001 **Photograph Number and Direction**

Mount Pleasant Mine: Orchard and Racecourse

ARCHIVAL PHOTOGRAPHY DIGITAL IMAGE CATALOGUE SHEET No.1

PROJECT NAME	Mount Pleasant Operation Rail Modification: Archival Photographic Recording		
SITE NAME	Former Orchard and Racecourse		
CAMERA	Cannon EOS 1000D	**LENSES**	28-105mm
SENSOR SIZE	1.6	**35 MM LENS EQUIVALENT**	42-157.5mm
PROOF #	D-1	**PHOTOGRAPHER**	Geordie Oakes & Darran Jordan

IMAGE FILE NO.	DATE	DESCRIPTION	ORIENTATION
001	26/06/19	View to the northern section of the former orchard.	Facing SE
002	26/06/19	View to the northern section of the former orchard.	Facing ESE
003	26/06/19	View to the northern section of the former orchard.	Facing S
004	26/06/19	View to the northern section of the former orchard.	Facing S
005	26/06/19	View across to the former orchard and remnant trees.	Facing SW
006	26/06/19	View across to the former orchard and remnant trees.	Facing W
007	26/06/19	View of remnant plantings associated with the former orchard.	Facing S
008	26/06/19	View of remnant plantings associated with the former orchard.	Facing S
009	26/06/19	View of remnant plantings associated with the former orchard.	Facing SE
010	26/06/19	View across remnant plantings associated with the former orchard showing planting orientation along the former block.	Facing E
011	26/06/19	View across remnant plantings associated with the former orchard showing planting orientation along the former block.	Facing W
012	26/06/19	View across remnant plantings associated with the former orchard showing planting orientation along the former block.	Facing N
013	26/06/19	General view across one of the former orchard blocks showing the planting layout and orientation.	Facing SW
014	26/06/19	View across remnant plantings associated with the former orchard showing planting orientation along the former block.	Facing W
015	26/06/19	General view across one of the former orchard blocks showing the planting layout and orientation.	Facing SW
016	26/06/19	View across remnant plantings associated with the former orchard showing planting orientation along the former block.	Facing S
017	26/06/19	View across remnant plantings associated with the former orchard showing planting orientation along the former block.	Facing S
018	26/06/19	View along one of the access roads through the former orchard.	Facing W
019	26/06/19	General view along the outside of the former orchard towards the former racecourse	Facing SW

Photograph Location Map: Digital Photographs 20 - 39

Key

001 **Photograph Number and Direction**

Mount Pleasant Mine: Orchard and Racecourse

ARCHIVAL PHOTOGRAPHY DIGITAL IMAGE CATALOGUE SHEET No.2

PROJECT NAME	Mount Pleasant Operation Rail Modification: Archival Photographic Recording		
SITE NAME	Former Orchard and Racecourse		
CAMERA	Cannon EOS 1000D	**LENSES**	28-105mm
SENSOR SIZE	1.6	**35 MM LENS EQUIVALENT**	42-157.5mm
PROOF #	D-1	**PHOTOGRAPHER**	Geordie Oakes & Darran Jordan

IMAGE FILE NO.	DATE	DESCRIPTION	ORIENTATION
020	26/06/19	View along the eastern section of the former race track.	Facing WSW
021	26/06/19	View along the northern straight associated with the former race track.	Facing W
022	26/06/19	View within the southern section of the former orchard	Facing N
023	26/06/19	View within the southern section of the former orchard	Facing N
024	26/06/19	View along the northern straight associated with the former race track.	Facing E
025	26/06/19	View along the former alignment of plantings within the southern section of the former orchard.	Facing S
026	26/06/19	View along the former alignment of plantings within the southern section of the former orchard.	Facing N
027	26/06/19	General view of the orientation of the plantings within the southern section of the former orchard.	Facing N
028	26/06/19	View along former access road within the southern section of the former orchard.	Facing W
029	26/06/19	View along the north-eastern bend of the former race track.	Facing SE
030	26/06/19	View along the south-eastern bend of the former racetrack.	Facing NE
031	26/06/19	View along the southern straight associated with the former race track.	Facing W
032	26/06/19	View between the plantings associated with the former orchard, forming an internal access path.	Facing N
033	26/06/19	General view of the orientation of the plantings within the southern section of the former orchard.	Facing N
034	26/06/19	View along the southern straight associated with the former race track.	Facing E
035	26/06/19	View along the south-western bend of the former race track.	Facing S
036	26/06/19	General view toward the southern portion of the former orchard	Facing NE
037	26/06/19	General view toward the southern portion of the former orchard	Facing NE
038	26/06/19	General view toward the southern portion of the former orchard	Facing N

Mt Pleasant Orchard and Race Track APR: View to the northern section of the former orchard. (View to SE)

Image 001

Mt Pleasant Orchard and Race Track APR: View to the northern section of the former orchard. (View to ESE)

Image 002

Mt Pleasant Orchard and Race Track APR: View to the northern section of the former orchard. (View to S)

Image 003

Mt Pleasant Orchard and Race Track APR: View to the northern section of the former orchard. (View to S)

Image 004

Mt Pleasant Orchard and Race Track APR: View across to the former orchard and remnant trees. (View to SW)

Image 005

Mt Pleasant Orchard and Race Track APR: View across to the former orchard and remnant trees. (View to W)

Image 006

Mt Pleasant Orchard and Race Track APR: View of remnant plantings associated with the former orchard (View to S)
Image 007

Mt Pleasant Orchard and Race Track APR: View of remnant plantings associated with the former orchard (View to S)
Image 008

Mt Pleasant Orchard and Race Track APR: View of remnant plantings associated with the former orchard (View to SE)

Image 009

Mt Pleasant Orchard and Race Track APR: View across remnant plantings associated with the former orchard showing planting orientation along the former block (View to E)

Image 010

Mt Pleasant Orchard and Race Track APR: View across remnant plantings associated with the former orchard showing planting orientation along the former block. (View to W) Image 011

Mt Pleasant Orchard and Race Track APR: View across remnant plantings associated with the former orchard showing planting orientation along the former block. (View to N) Image 012

Mt Pleasant Orchard and Race Track APR: General view across one of the former orchard blocks showing the planting layout and orientation. (View to SW) Image 013

Mt Pleasant Orchard and Race Track APR: View across remnant plantings associated with the former orchard showing planting orientation along the former block. (View to W) Image 014

Mt Pleasant Orchard and Race Track APR: General view across one of the former orchard blocks showing the planting layout and orientation. (View to SW) Image 015

Mt Pleasant Orchard and Race Track APR: View across remnant plantings associated with the former orchard showing planting orientation along the former block (View to S) Image 016

Mt Pleasant Orchard and Race Track APR: View across remnant plantings associated with the former orchard showing planting orientation along the former block. (View to S) Image 017

Mt Pleasant Orchard and Race Track APR: View along one of the access roads through the former orchard. (View to W) Image 018

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Mt Pleasant Orchard and Race Track APR: View along the northern straight associated with the former race track. (View to W) Image 021

Mt Pleasant Orchard and Race Track APR: View within the southern section of the former orchard (View to N) Image 022

Mt Pleasant Orchard and Race Track APR: View within the southern section of the former orchard. (View to N) Image 023

Mt Pleasant Orchard and Race Track APR: View along the northern straight associated with the former racec track. (View to E) Image 024

Mt Pleasant Orchard and Race Track APR: View along the former alignment of plantings within the southern section of the former orchard. (View to S)

Image 025

Mt Pleasant Orchard and Race Track APR: View along the former alignment of plantings within the southern section of the former orchard. (View to N)

Image 026

Mt Pleasant Orchard and Race Track APR: General view of the orientation of the plantings within the southern section of the former orchard. (View to N)

Image 027

Mt Pleasant Orchard and Race Track APR: View along former access road within the southern section of the former orchard. (View to W)

Image 028

Mt Pleasant Orchard and Race Track APR: View along the north-eastern bend of the former race track. (View to SE) Image 029

Mt Pleasant Orchard and Race Track APR: View along the north-eastern bend of the former race track. (View to NE) Image 030

Mt Pleasant Orchard and Race Track APR: View along the southern straight associated with the former race track. (View to W) Image 031

Mt Pleasant Orchard and Race Track APR: View between the plantings associated with the former orchard, forming an internal access path (View to N) Image 032

Mt Pleasant Orchard and Race Track APR: General view of the orientation of the plantings within the southern section of the former orchard. (View to N)

Image 033

Mt Pleasant Orchard and Race Track APR: View along the southern straight associated with the former race track. (View to E)

Image 034

Mt Pleasant Orchard and Race Track APR: View along the south-western bend of the former race track. (View to S) Image 035

Mt Pleasant Orchard and Race Track APR: General view toward the southern portion of the former orchard. (View to NE) Image 036

Mt Pleasant Orchard and Race Track APR: General view toward the southern portion of the former orchard. (View to NE) Image 037

Mt Pleasant Orchard and Race Track APR: General view toward the southern portion of the former orchard. (View to NE) Image 038

APPENDIX C

UNEXPECTED CONTAMINATION PROTOCOL

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LIST OF FIGURES

1 INTRODUCTION

1.1 Context

This procedure details the actions to be taken in the event that potentially contaminated soil or material is unexpectedly encountered during the planned construction of rail and water supply infrastructure at the Mount Pleasant Operation (MPO) under the modified approval (MOD 4).

This Unexpected Contamination Protocol (UCP) forms part of the contractor's Construction Environmental Management Plan (CEMP). The construction shall include:

- Duplication of the approved rail spur, rail loop, conveyor and rail load-out facility and associated services.
- Duplication of the Hunter River water supply pump station, water pipeline and associated electricity supply that followed the original rail spur alignment.
- 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.

1.2 Scope

This procedure has been prepared to address the requirements of Conditions 44I(f) and 44E, Schedule 3 of Development Consent DA 92/97, which requires the CEMP to include a UCP which describes the procedures to be implemented in the event that potentially contaminated material is identified during construction, including:

- procedures for testing, removal and disposal of potentially contaminated material; and
- measures to ensure compliance with the requirements of SafeWork NSW and relevant guidelines.

There is potential for previously unidentified contaminants to be uncovered during the MOD 4 construction works. Unexpected finds may include unexpected discovery of hazardous building materials, such as asbestos containing materials, or unexpected discovery of contaminants in addition to the type already identified on-site. Management of unexpected finds will be undertaken in accordance with the protocols outlined below.

1.3 Previous Investigations

A Detailed Site Investigation was undertaken by SESL Australia and reported in the MOD 4 Environmental Assessment (EA) (MACH Energy, 2017). 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 MOD 4 infrastructure.

The assessment identified a total of 22 features of interest, of which only 13 are located within the MOD 4 potential disturbance area (Appendix I of MOD 4 EA [MACH Energy, 2017]). These features include areas associated with previous land uses (i.e. fill material, agricultural disturbance, dams) and areas of confirmed asbestos contamination (MACH Energy, 2017).

The Detailed Site Investigation identified four areas 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 (MACH Energy, 2017). In addition, elevated levels of lead and/or nickel were also identified at several locations across the site (MACH Energy, 2017).

2 CONTROLS USED TO MANAGE CONTAMINATION

Land contamination is managed through the MPO site contamination prevention and control procedure and non-mineral waste management procedures.

Controls that are adequate to manage contamination and to reduce risk to the lowest acceptable rating achievable are implemented before any relevant works commence. Elimination of the hazard is the first preference of control, followed by engineering, then administrative controls.

The following control measures will be implemented at the MPO to manage MOD 4 construction-related contamination:

- Whenever contaminated materials are discovered or suspected, works must cease and the supervisor and project environmental representative notified immediately. Testing by a trained and competent person must be conducted and a management strategy developed.
- All contaminated soil will be managed and disposed in accordance with the NSW *Protection of the Environment Operations Act 1997* to minimise contamination to the soil environment within the disturbance area.
- All soil types will be stockpiled separately for inspection and verification of contamination.
- Ensure all spills are reported and cleaned up immediately.
- The movement of materials will be tracked via the Materials Tracking Form.
- Water runoff from contaminated land and stockpiles must be contained, treated or disposed to ensure there is no pollution of land or waterways.
- Any hazardous materials identified during construction will be stored within properly sealed containers when quantities are small, in controlled areas to minimise the potential for land and water contamination. Bunded areas will be used for medium- to long-term storage requirements and for larger quantities of contaminated materials. The storage receival areas will be isolated from clean water catchments to minimise the risk of land or water pollution.
- All vehicles, plant and other machinery operating in contact with contaminated soil must be decontaminated prior to leaving the site.
- Temporary water management works will be put in place to capture contaminated runoff from stockpiles and contaminated areas. Water and sediment will be monitored for quality and managed in accordance with regulatory requirements.
- Soil, and soil leachate, containing contaminant concentrations below the relevant environmental investigation level will be assessed for unrestricted re-use, subject to other site restrictions and excluding any geotechnical requirements. This assessment must be undertaken by a competent person.
- Soil, and soil leachate, containing contaminant concentrations above the relevant environmental investigation level will be assessed for controlled re-use in non-environmental sensitive areas of the site.
- Where the above outcomes are not acceptable, other options such as (re)treatment, off-site disposal or a site-specific risk assessment be considered, as determined by Regulators and Competent Assessors.

2.1 Asbestos Management Plan

In accordance with Condition 44E, Schedule 3 of Development Consent DA 92/97, any asbestos encountered during MOD 4 construction works (i.e. in addition to the areas containing fragments of fibrous cement building material identified as part of the MOD 4 EA [MACH Energy, 2017]) will be monitored, handled, transported and disposed of by appropriately qualified and licensed contractors in accordance with the requirements of SafeWork NSW and relevant guidelines, including:

- *Work Health and Safety Regulation 2017*;
- *SafeWork NSW Code of Practice – How to Manage and Control Asbestos in the Workplace September 2016*;
- *SafeWork NSW Code of Practice – How to Safely Remove Asbestos September 2016*;
- *Protection of the Environment Operations (Waste) Regulation 2014*; and
- the EPA's *Waste Classification Guidelines*.

In accordance with the approved site-wide Waste Management Plan (MACH Energy, 2019), transport and disposal of asbestos waste will also be carried out in accordance with the *WasteLocate* system (https://wastelocate.epa.nsw.gov.au/).

Procedures for managing potential additional contaminants (e.g. further asbestos-containing material) that may be uncovered during earthworks are outlined in Section 2.2.

2.2 Unexpected Contamination Protocol

In the event that unexpected contamination is encountered during site works, the Contractor would be required to follow the protocol below (Figure 1). Unexpected contamination includes all potential unexpected finds, including whether or not they are excavated.

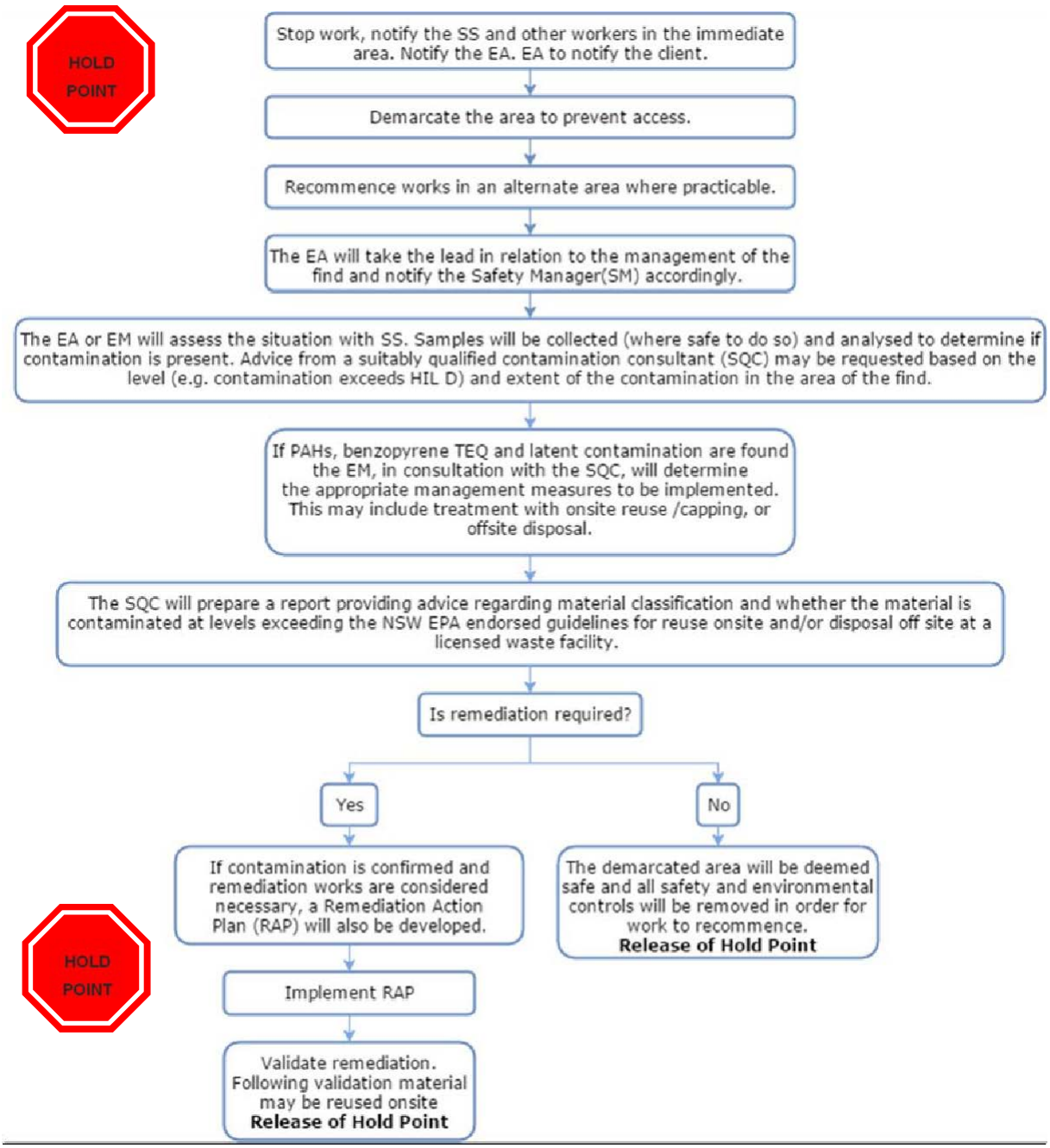

Figure 1 Unexpected Contamination Protocol

3 REFERENCES

MACH Energy (2017) *Mount Pleasant Operation – Rail Modification Environmental Assessment*.

MACH Energy (2019) *Mount Pleasant Operation Waste Management Plan*.

Appendix D

Consultation Feedback – Key Correspondence

(Available on Request)