

MACHEnergy

Mount Pleasant Operation

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Section 2

Description of the Approved
Mount Pleasant Operation

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2 DESCRIPTION OF THE APPROVED MOUNT PLEASANT OPERATION

This section presents a description of the approved Mount Pleasant Operation. Section 2.1 provides an overview of the history of statutory approvals at the Mount Pleasant Operation. The approved Mount Pleasant Operation is described in Section 2.2.

2.1 MOUNT PLEASANT OPERATION HISTORY

NSW Approvals History

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

Under Development Consent DA 92/97, Coal & Allied Operations Pty Ltd (Coal & Allied) was permitted to extract up to 10.5 Mtpa of ROM coal for a period of 21 years (from the date of the granting of the development consent, i.e. until December 2020), extracting a total of approximately 197 Mt of ROM coal. The approved mine includes a rail loop, load-out facility (Plate 2-1) and conveyor, connecting the mine to the Muswellbrook–Ulan Rail Line for transportation of coal to the Port of Newcastle for export, or to domestic customers for use in electricity generation.

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

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

MACH acquired the Mount Pleasant Operation from Coal & Allied on 4 August 2016.

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

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

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

The Mine Optimisation Modification (Mod 3) was approved on 24 August 2018.



Plate 2-1 Mount Pleasant Operation Stage 1 Train Load-out Facility

In December 2017, MACH submitted an application to modify Development Consent DA 92/97 to duplicate the approved rail spur, rail loop, conveyor, rail load-out facility (i.e. develop the Stage 2 rail infrastructure) and duplicate the Hunter River water supply pump station, water pipeline and associated services, and demolition and removal of the redundant approved infrastructure (including the Stage 1 rail infrastructure).

The Rail Modification (Mod 4) was approved on 16 November 2018.

Federal Approvals History

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

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

Relevant controlling provisions were:

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

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

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

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

2.2 EXISTING APPROVED MOUNT PLEASANT OPERATION

The Mount Pleasant Operation is currently approved to produce 10.5 Mtpa of ROM coal and transport product coal by rail to the Port of Newcastle for export or to domestic customers for electricity generation.

The approximate extents of the approved surface development and infrastructure area envelope at the Mount Pleasant Operation are shown on Figure 1-3. Major components include open cuts, the Eastern Out-of-Pit Emplacement (Plate 2-2), South West Out-of-Pit Emplacement and North West Out-of-Pit Emplacement, Mine Infrastructure Area (MIA), water management infrastructure, CHPP, product coal stockpiles, Fines Emplacement Area, rail and other associated infrastructure areas.

Open cut mining targeting the Warkworth, Mt Arthur, Piercefield, Vaux, Broonie, Bayswater, Wynn and Edderton Seams within the Wittingham Coal Measures and the handling and processing of ROM coal at the CHPP is undertaken 24 hours per day, seven days per week.

A summary of the existing and approved mining operations is provided below.

2.2.1 Mining Operations

Open Cut Mining Areas

The open cuts at the Mount Pleasant Operation comprise four named open cuts (South Pit, North Pit, Warkworth South Pit and Piercefield Pit¹) (Figure 1-3).



Plate 2-2 Eastern Out-of-Pit Emplacement Initial Rehabilitation Area

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

The approved open cut mine plan involves recovering the upper coal seams from North Pit and the upper and middle coal seams from South Pit. The lower coal seams were only considered suitable for underground mining and therefore, were not considered in the open cut mine plan.

The mine geometry, moderately strong Edderton Seam floor and the absence of severe faulting effects combine to form a geotechnically benign mining environment (Attachment 13).

Open cut coal mining at the Mount Pleasant Operation is currently being undertaken in South Pit.

Open Cut Mining Sequence

The general sequence of open cut mining is as follows:

1. Vegetation clearance and removal.
2. Topsoil/subsoil stripping by scrapers or dozers. Stripped topsoil is either used directly in progressive rehabilitation or placed in stockpiles for later re-use.
3. Drilling and blasting of overburden in accordance with the blast limits described in Development Consent DA 92/97, which include limitations on the days, times and frequency of blasts that can be undertaken.
4. Removal of blasted overburden with excavator and haul truck, or dragline.
5. Ripping and pushing of coal and parting material.
6. Mining of exposed coal seams by excavator or front-end loader and loading to haul trucks for transport directly to the ROM dump hopper or ROM pad.
7. Coarse rejects and fine rejects from the CHPP are selectively placed within mined out voids, out-of-pit emplacements and the Fines Emplacement Area.
8. Hauled overburden/interburden material is strategically placed within mined-out voids and out-of-pit emplacements to develop the final landform.
9. Progressive landform profiling and rehabilitation of mined-out voids and out-of-pit emplacements.

Waste rock is initially placed in out-of-pit waste emplacements; however, backfilling of the mined void behind mining operations occurs once sufficient void space is available for backfill operations.

Mobile Equipment and Supporting Equipment/Plant

The mobile equipment used for approved operations at the Mount Pleasant Operation includes a number of excavators and dozers, a fleet of haul trucks (Plate 2-3) and a wide range of supporting equipment such as front-end loaders, drills, graders and water carts.

Other general plant used to support the mobile equipment include, but are not limited to, service vehicles, pumps and lighting plant.

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



Plate 2-3 Open Cut Mobile Equipment

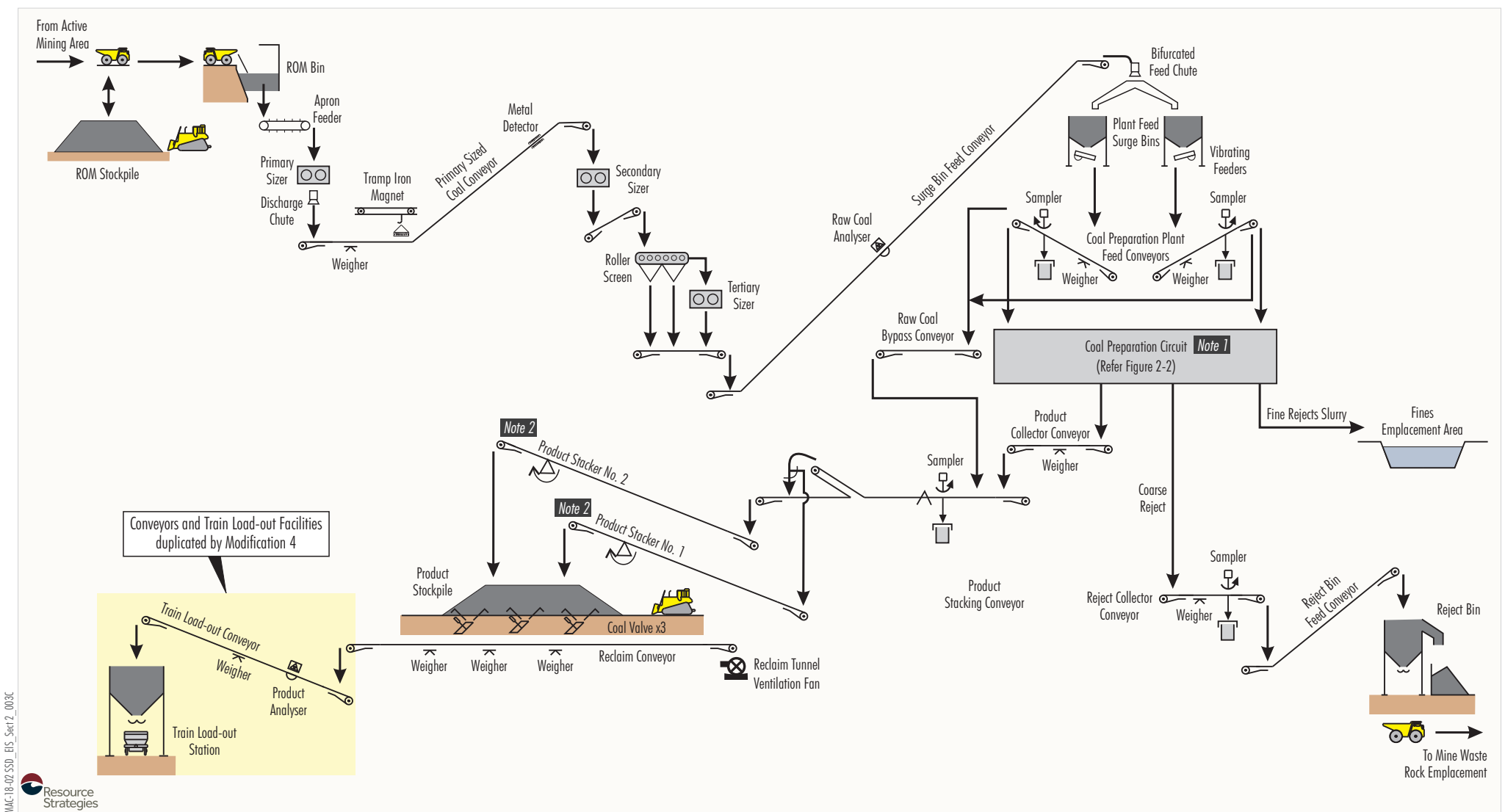
2.2.2 Coal Handling and Preparation Plant

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

The CHPP comprises two coal processing modules that include:

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

Diagrams illustrating the key materials handling components and the coal preparation circuits at the Mount Pleasant Operation are provided on Figures 2-1 and 2-2.



NOTES

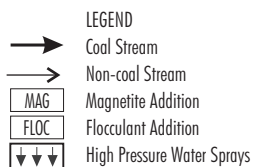
1. The Coal Processing Plant includes two modules.
2. Product Stacker No. 1 and No. 2 are luffing, slewing, telescoping radial stackers.

Source: MACH (2020); CalibreDRAJV (2016)

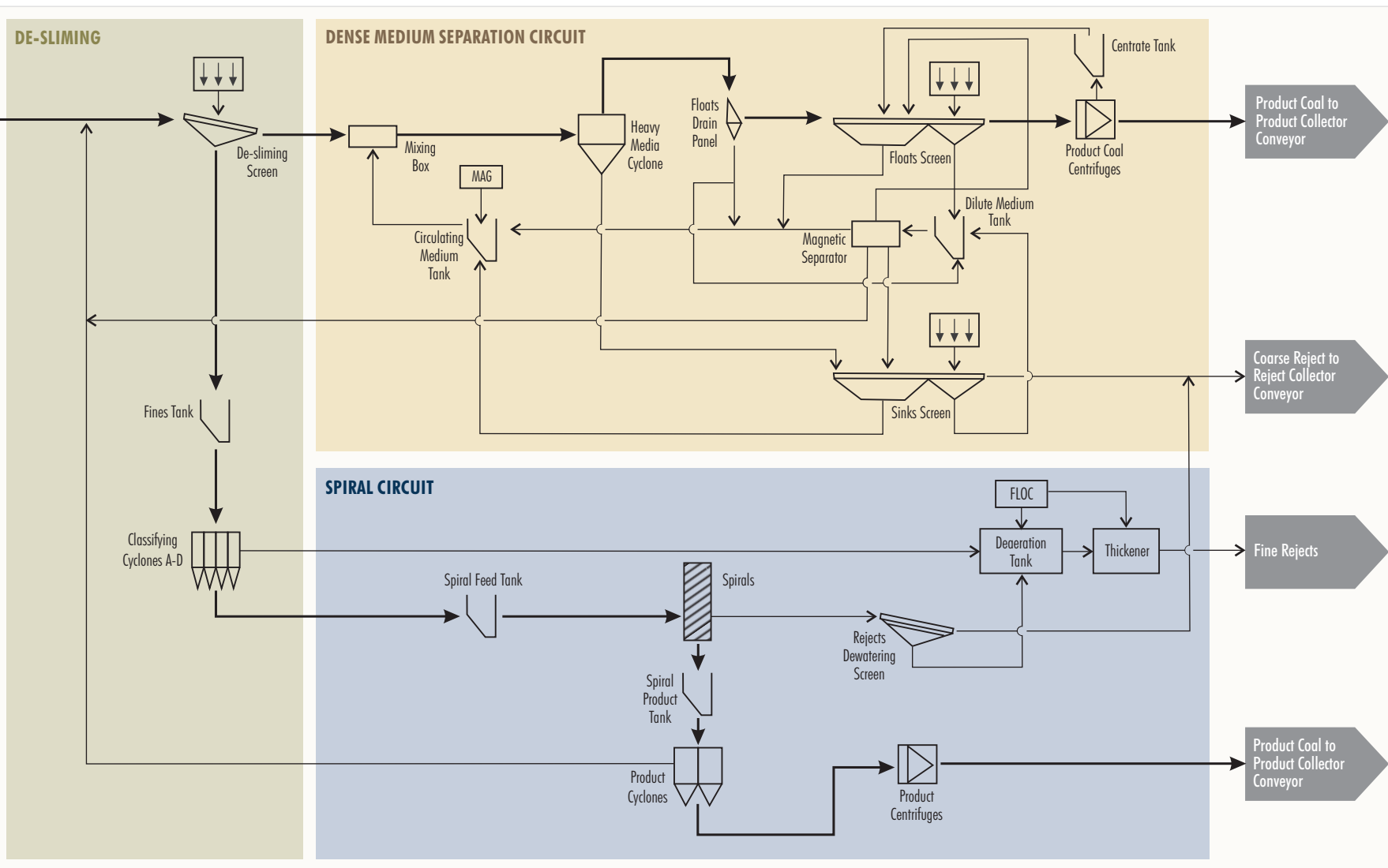
MACHEnergy
MOUNT PLEASANT OPTIMISATION PROJECT
Current Materials Handling Schematic

Figure 2-1

MAC-18-02 SSD_BIS_Sect 2_004A



Source: MACH (2020); Calibre DRAJV (2016)



MACHEnergy
MOUNT PLEASANT OPTIMISATION PROJECT
Current Coal Preparation Circuit Flowsheet

Figure 2-2

2.2.3 Product Coal and Rail Transport

Product coal from the CHPP is conveyed to a product stockpile (Plate 2-4) for subsequent reclaim and loading onto trains.

The Mount Pleasant Operation has a combined stockpiling capacity of approximately 350 kilotonnes (kt) for both washed and bypass coal products.

Product coal is reclaimed from the product stockpile using coal valves, which feed onto a reclaim conveyor in a tunnel located beneath the product coal stockpile. The reclaim conveyor feeds a train load-out conveyor, which loads product coal onto trains via a rail load-out bin. The Stage 1 rail load-out facility is located at the head of the existing rail loop, to the south of Wybong Road.

The rail spur, loop, load-out facility and product conveyor will be duplicated north of Wybong Road (i.e. Stage 2 rail), approved as part of Mod 4. Once the Stage 2 rail infrastructure and product conveyor are operational, the redundant Stage 1 rail infrastructure and product conveyor south of Wybong Road will be demolished and removed.

Product coal is loaded onto trains 24 hours per day, seven days per week. An average of six and a maximum of 18 train movements on any day is approved at the Mount Pleasant Operation. Laden trains join the Muswellbrook–Ulan Rail Line from the Mount Pleasant Operation rail loop. From the Muswellbrook–Ulan Rail Line, product coal is transported via the Main Northern Railway to domestic customers or to the Port of Newcastle for export.



Plate 2-4 Product Coal Stockpile

2.2.4 Waste Rock Management

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

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

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

2.2.5 Coal Reject Management

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

Coarse Rejects

Coarse reject material is conveyed from the CHPP to a bin located north-west of the CHPP (Figure 2-1). It is then hauled by truck to the out-of-pit emplacements or mined-out voids for disposal as a component of general ROM waste emplacement operations.

Fine Rejects

Fine rejects are pumped to the Fines Emplacement Area, which is located north-west of the CHPP (Figure 1-3).

The Fines Emplacement Area described in the 1997 EIS consisted of a number of small storages in two separate valleys. In total, the disturbance area associated with the two storage catchments was approximately 168 ha (including downstream environmental dams). The 1997 EIS design allowed for storage of approximately 17.7 million cubic metres (Mm³) of fine reject material generated over 21 years.

Prior to development of the Fines Emplacement Area, the design was contemporised by MACH and currently comprises a single storage facility located in the northern area (Figure 1-3). The approved contemporary design of the Fines Emplacement Area is described in the Fines Emplacement Plan (ATC Williams, 2018) (part of the Waste Management Plan [MACH, 2019a]).

The Fines Emplacement Area is being constructed progressively in a series of stages (lifts) throughout the life of the operation, using the downstream embankment method. The downstream method involves construction of embankment lifts over the compacted downstream side of the embankment, as opposed to construction of lifts over deposited fine rejects (i.e. the upstream method). The Fines Emplacement Plan will be progressively updated with details of each stage.

Fine rejects are pumped as a slurry and deposited via spigot discharge along the embankment and valley abutments of the Fines Emplacement Area. Spigot discharge points are located approximately every 50 m and deposit fine rejects sub-aerially to facilitate segregation and deposition of fine rejects solids.

Decant water is recovered from a decant pond located on the edge of the Fines Emplacement Area and returned to the mine water management system for re-use on-site. In order to increase water recovery from fine rejects and improve fine rejects density, secondary flocculation of fine rejects is utilised.

2.2.6 Water Management

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

Figure 2-3 provides a schematic diagram of the Mount Pleasant Operation water management system.

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

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

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

Other key site water storages include:

- Environmental Dam MIA (EDMIA);
- Environmental Dam 2 (ED2);
- Environmental Dam 3 (ED3);
- Sediment Dam 1 (SD1);
- Sediment Dam 3 (SD3);
- Sediment Dam 4 (SD4);
- High Wall Dam 1 (HWD1);

- High Wall Dam 2 (HWD2);
- Rail Loop Dams (RLD1 and RLD2); and
- Controlled Release Dam (DW1).

The MWD can receive water from the Hunter River via water access licences, and discharge to the Hunter River via the Controlled Release Dam (or an alternative arrangement agreed between Bengalla Mine, MACH and the EPA) (Figure 1-3) in accordance with the HRSTS (subject to obtaining relevant secondary approvals under EPL 20850). As shown on Figure 2-4, the approved Controlled Release Dam will be located in Bengalla Mine's ML 1728, immediately north of Bengalla Mine's corresponding controlled release dam.

In addition, in order to reduce make-up water demand from the Hunter River over the life of the Mount Pleasant Operation, MACH may also source excess mine water from the adjoining mines (i.e. Dartbrook and Bengalla Mines) for use on-site, subject to obtaining all necessary secondary approvals (e.g. EPL variations). Any such water transfers would be via a temporary overland pipeline positioned to avoid any additional native vegetation clearance within the Development Consent DA 92/97 boundary (e.g. by use of an existing road).

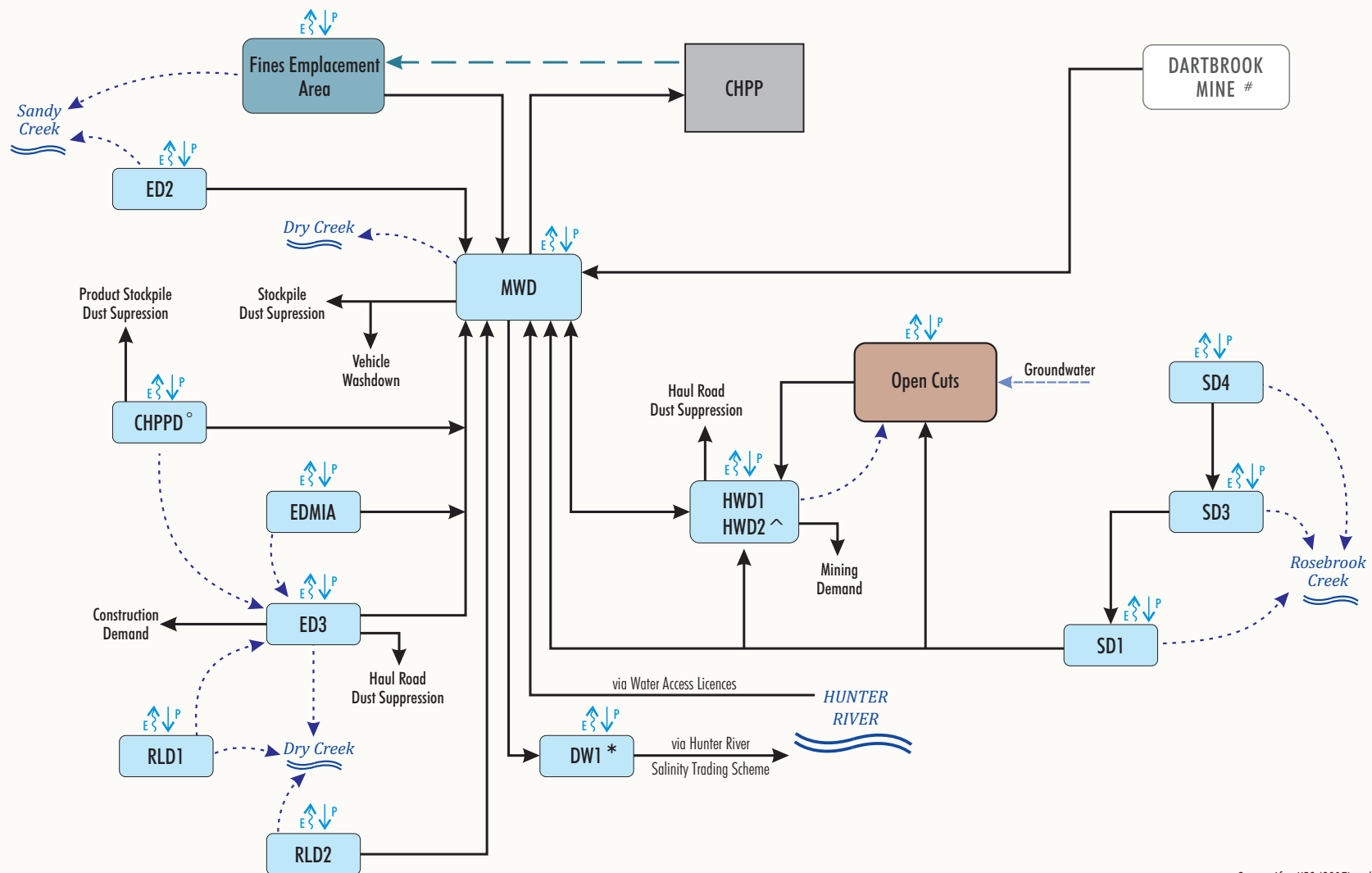
A water balance model has been developed, and is periodically reviewed to inform water management at the Mount Pleasant Operation. The water balance model simulates future changes to stored volumes of water on-site in response to inflows (e.g. rainfall-runoff, groundwater inflows, return from the Fines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

2.2.7 Electricity Supply and Distribution

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

Site power from the relocated transmission line is transferred via an intake switching station and distributed by overhead or underground cables to various facilities (e.g. CHPP and water storages).

A range of 11 kV overhead electricity transmission lines and underground cabling present at the Mount Pleasant Operation are also being progressively decommissioned and removed in advance of mining operations.



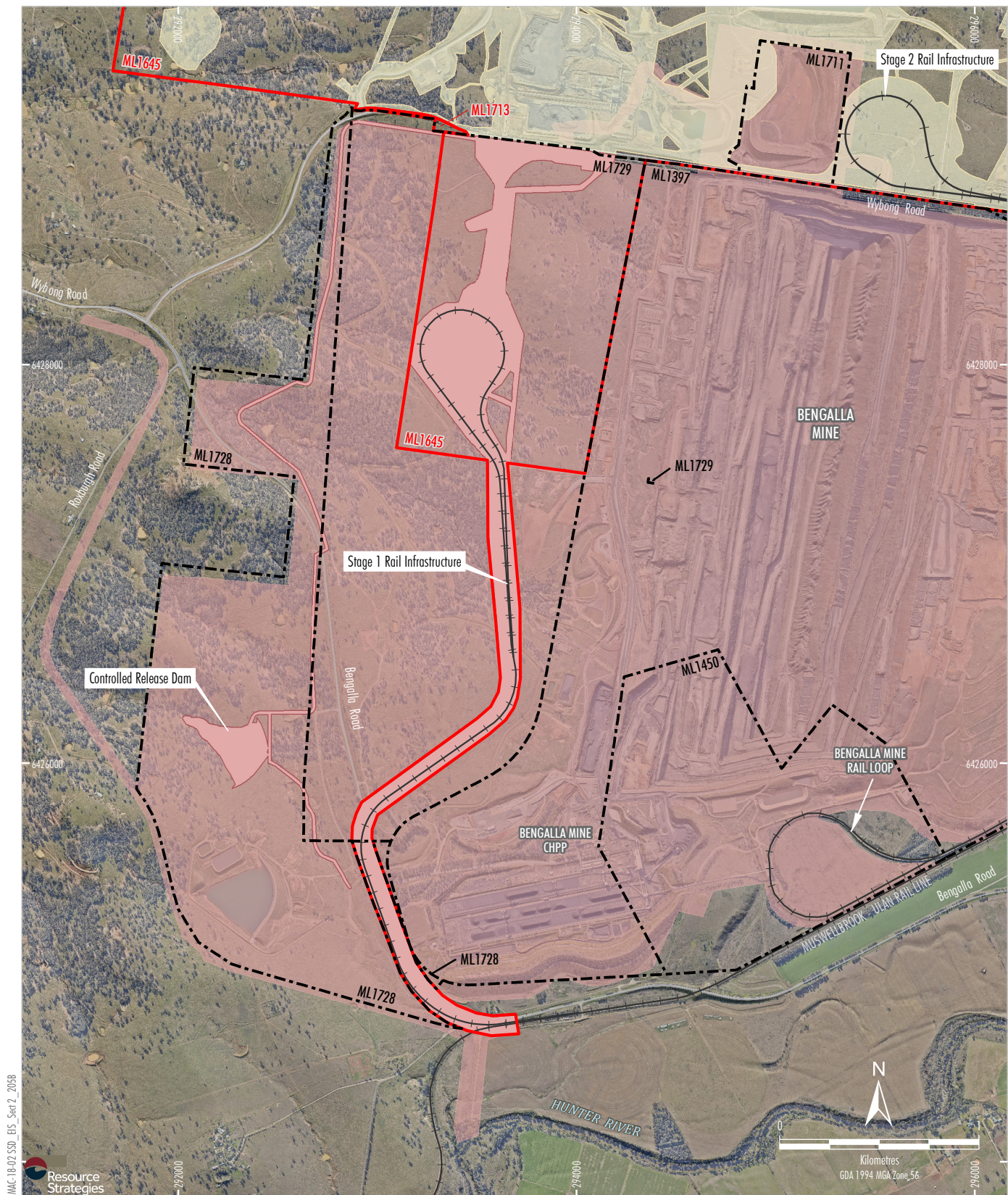
Source: After HEC (2017) and Bengalla Mine SSD-5170

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

- NOTE**
- * MACH Discharge Dam authorised under Bengalla Mine SSD-5170.
 - # Indicative alignment of water supply pipeline from Dartbrook Mine to Mount Pleasant Operation.
 - ^ Not yet constructed.
 - ^o Coal Handling and Preparation Plant Dam

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MOUNT PLEASANT OPTIMISATION PROJECT
Water Management System
Schematic

Figure 2-3



LEGEND

- Mining Lease Boundary (Mount Pleasant Operation)
- Mining Lease Boundary (Bengalla Mine)
- Approximate Extent of Existing/Approved Surface Development (DA92/97) ¹
- Bengalla Mine Approved Disturbance Boundary (SSD-5170)
- Existing/Approved Mount Pleasant Operation Infrastructure within Bengalla Mine Approved Disturbance Boundary (SSD-5170) ¹

NOTES

1. Excludes some incidental Project components such as water management infrastructure, access tracks, topsoil stockpiles, power supply, temporary offices, other ancillary works and construction disturbance.

Source: MACH (2020); NSW Spatial Services (2020); Department of Planning and Environment (2016) Orthophoto: MACH (July 2020)

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MOUNT PLEASANT OPTIMISATION PROJECT
Controlled Release Dam Location

Figure 2-4

2.2.8 Other Infrastructure and Service Facilities

Site Access

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

A second mine access road is currently provided for access to the Stage 1 rail corridor and associated infrastructure south of Wybong Road. This access will no longer be used after the Stage 2 rail infrastructure is commissioned and Stage 1 rail infrastructure is decommissioned.

In consultation with the Muswellbrook Shire Council (MSC), ancillary site accesses from local roads are also used for environmental monitoring, general land management, exploration activities and local deliveries.

MACH has previously upgraded Wybong Road from the Bengalla Road intersection to the Mount Pleasant Operation access road. MACH is also resurfacing Wybong Road between the Mount Pleasant Operation access road and Overton Road in conjunction with Stage 2 rail construction.

Mine Service and Construction Roads

Mine service and construction roads are constructed, as required, to provide access to facilities. These roads are typically service roads for light vehicles and construction plant only. As part of Stage 2 rail construction, various local access gates and construction areas are being developed.

Haul Roads

Major haul roads (Figure 1-3) connect active mining areas with the MIA and CHPP (Plate 2-5).

Mine Infrastructure Area

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

Coal Handling and Preparation Plant

The CHPP area includes:

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

Construction Area

A construction area was developed adjacent to the main site access for initial site construction activities. The construction area may continue to be used as a satellite infrastructure area over the life of the Mount Pleasant Operation.



Plate 2-5 Major Haul Road

Explosives Storage Facilities

Explosives storage facilities have been established to service the Mount Pleasant Operation in accordance with the Mining Operations Plan and Rehabilitation Management Plan (MOP) (MACH, 2020a).

Hazardous Materials

Hazardous substances are managed through the Mount Pleasant Operation procedures for site contamination prevention and control. The Mount Pleasant Operation registers all chemicals used on-site in a central database.

Hazardous and explosive materials are transported and stored on-site in accordance with the Australian Standard (AS) 2187.1-1998 *Explosives – Storage, Transport and Use – Part 1 Storage* (AS 2187.1), the NSW *Work Health and Safety (Mines and Petroleum Sites) Act, 2013*, as well as the NSW *Explosives Act, 2003* and supporting *Explosives Regulation, 2013*.

Procedures and controls implemented at the Mount Pleasant Operation minimise the potential for land and water contamination from the handling, storage and disposal of hazardous substances. Controls include storage within properly sealed containers and controlled, bunded areas for medium- to long-term storage requirements.

Communication Systems

Fibre cable networks have been established to service the communication needs of the Mount Pleasant Operation.

Potable Water

A contractor currently delivers potable water to the site via trucks.

Potable water may also be pumped from the Hunter River and stored in local potable water tanks. As required, water will be treated to appropriate potable water standards prior to use.

Public Road Relocations

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

- The Mount Pleasant Northern Link Road to Dorset Road, prior to the closure of Castlerock Road.

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

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

Condition 39A, Schedule 3 of Development Consent DA 92/97 requires MACH to construct:

- a road bridge to carry Overton Road over the Stage 2 rail infrastructure; and
- a partial realignment of Overton Road.

These requirements regarding modifications to Overton Road were amended by the final design of the Stage 2 rail infrastructure such that the rail passed over Overton Road at an overbridge.

2.2.9 Workforce

The Mount Pleasant Operation has an operational workforce of up to approximately 380 personnel².

Construction and development activities have required up to approximately 350 additional people.

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

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

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

2.2.10 Rehabilitation and Final Landform

Rehabilitation at the Mount Pleasant Operation is undertaken in accordance with the approved MOP and the Rehabilitation Strategy (MACH, 2019b) (as updated from time to time).

² As at mid-2020, the full-time equivalent operational workforce of the Mount Pleasant Operation was approximately 440 people.

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

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

The approved conceptual final landform of the Mount Pleasant Operation has a post-mining land capability that supports grassland and woodland.

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

In particular, MACH has developed the following principles for the Mount Pleasant Operation final landform:

- surface water drainage from the emplacement landform will incorporate micro-relief (Plate 2-6) to increase drainage stability and avoid major engineered drop structures where practical;
- the emplacement landform will be designed to look less “engineered” when viewed from Muswellbrook (i.e. incorporation of macro-relief to avoid simple, blocky forms); and
- the final void (and associated drainage network) will be shaped to reflect a less-engineered profile that is more consistent with the surrounding natural environment.

The originally approved Mount Pleasant Operation final landform includes two final voids associated with the North Pit and South Pit open cuts and a smaller third final void located in a low-lying area between the two larger final voids (Figure 2-5a). The currently approved final landform (based on mining to December 2026 only) includes one final void in South Pit (Figure 2-5b).

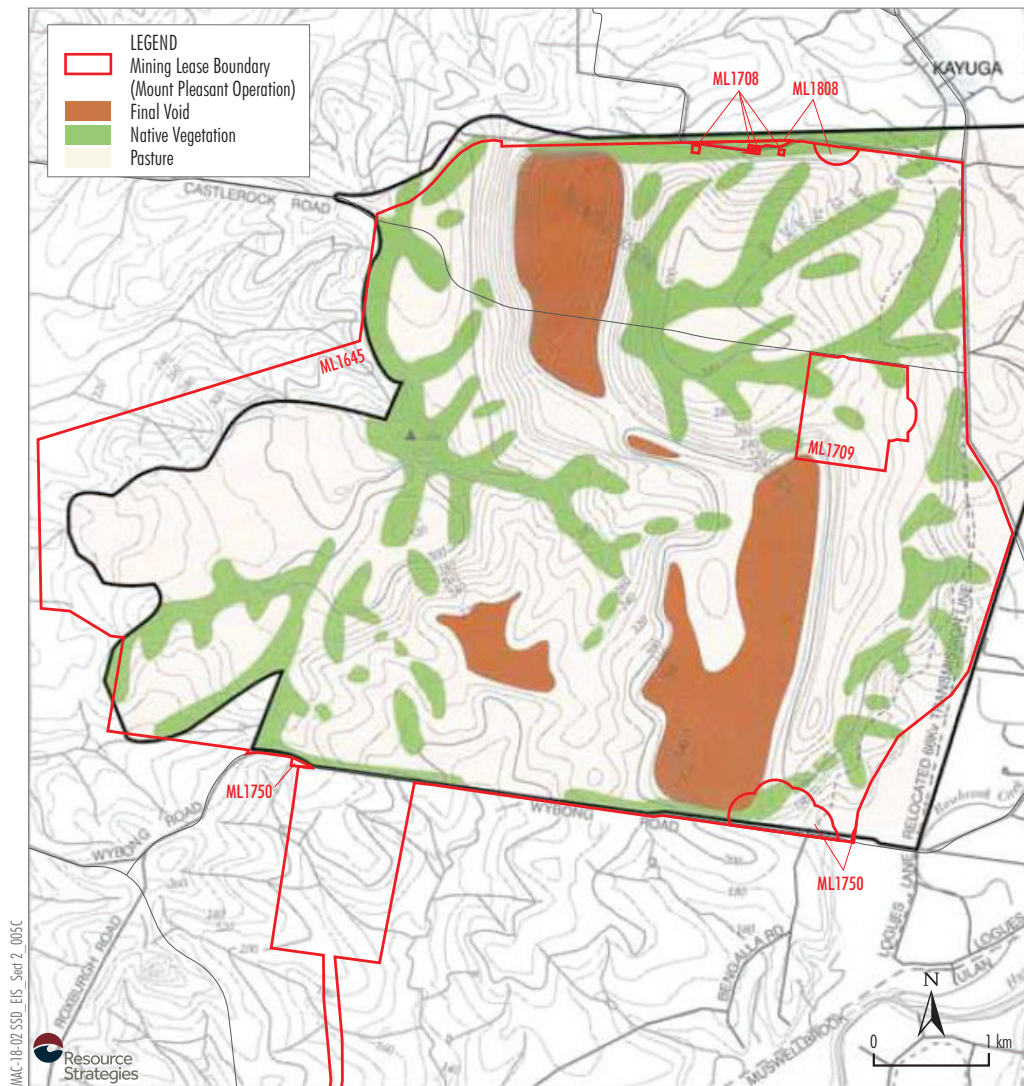
2.2.11 Biodiversity Offset

The Mount Pleasant Operation has already offset the approved biodiversity impacts of the approved mine, with the establishment of major biodiversity offsets of some 12,875 ha on a number of properties with a combined area of 15,590 ha (Figure 2-6) (Table 2-1). These properties are managed by MACH in accordance with an Offset Management Plan and Re-Establishment Management Plan (MACH, 2020b).

The Mount Pleasant Operation Development Consent DA 92/97 was granted in December 1999, prior to the implementation of offsetting policies in NSW. While no biodiversity offsets were required for the original development under Development Consent DA 92/97, biodiversity offsets were established for the existing/approved Mount Pleasant Operation under the Commonwealth approval (EPBC 2011/5795). MACH has also provided some \$1.8 million to date towards priority recovery actions for the Regent Honeyeater (*Anthochaera phrygia*) and Swift Parrot (*Lathamus discolor*) under EPBC 2011/5795.



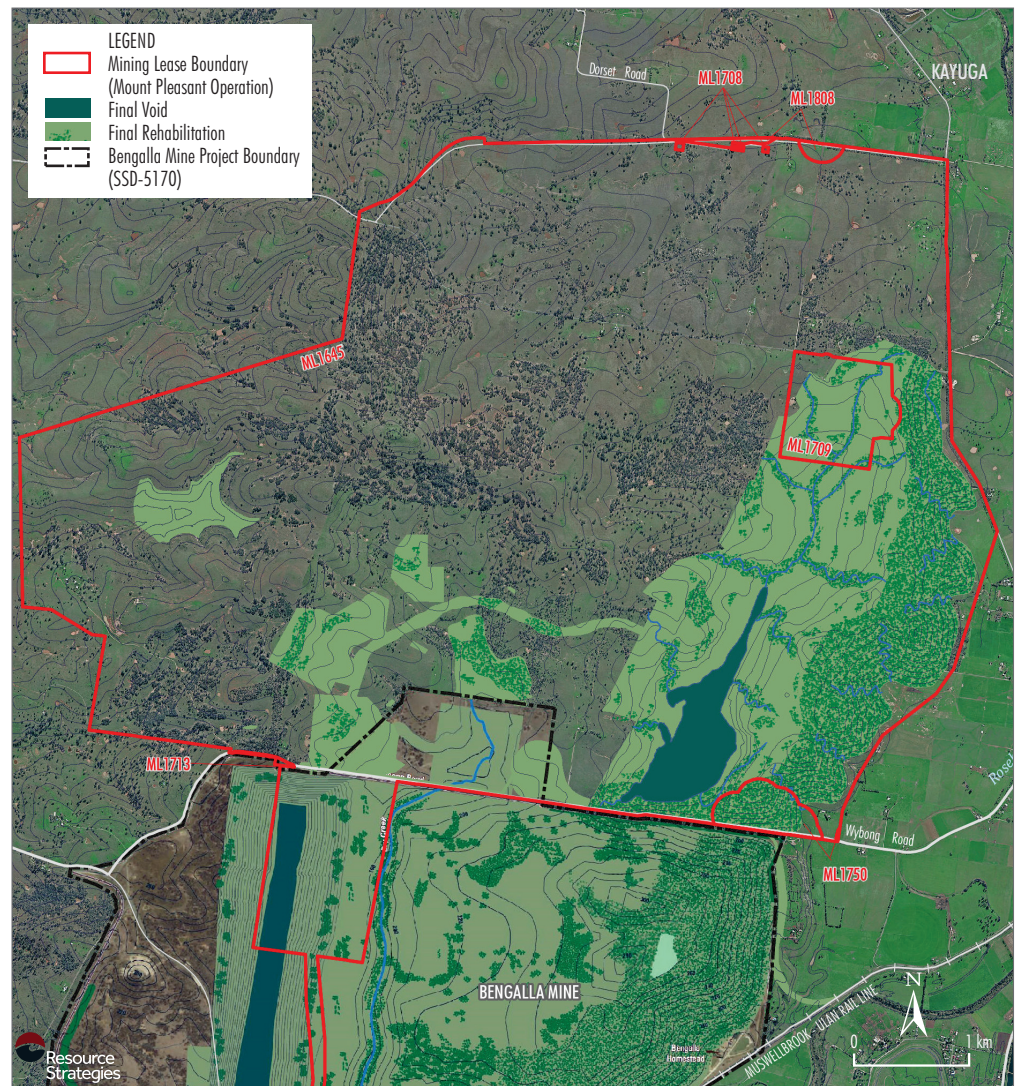
Plate 2-6 Geomorphic Landform and Initial Rehabilitation



Source: Coal & Allied (1997)

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MOUNT PLEASANT OPTIMISATION PROJECT
Approved 21 Year
Indicative Final Landform (1997 EIS)

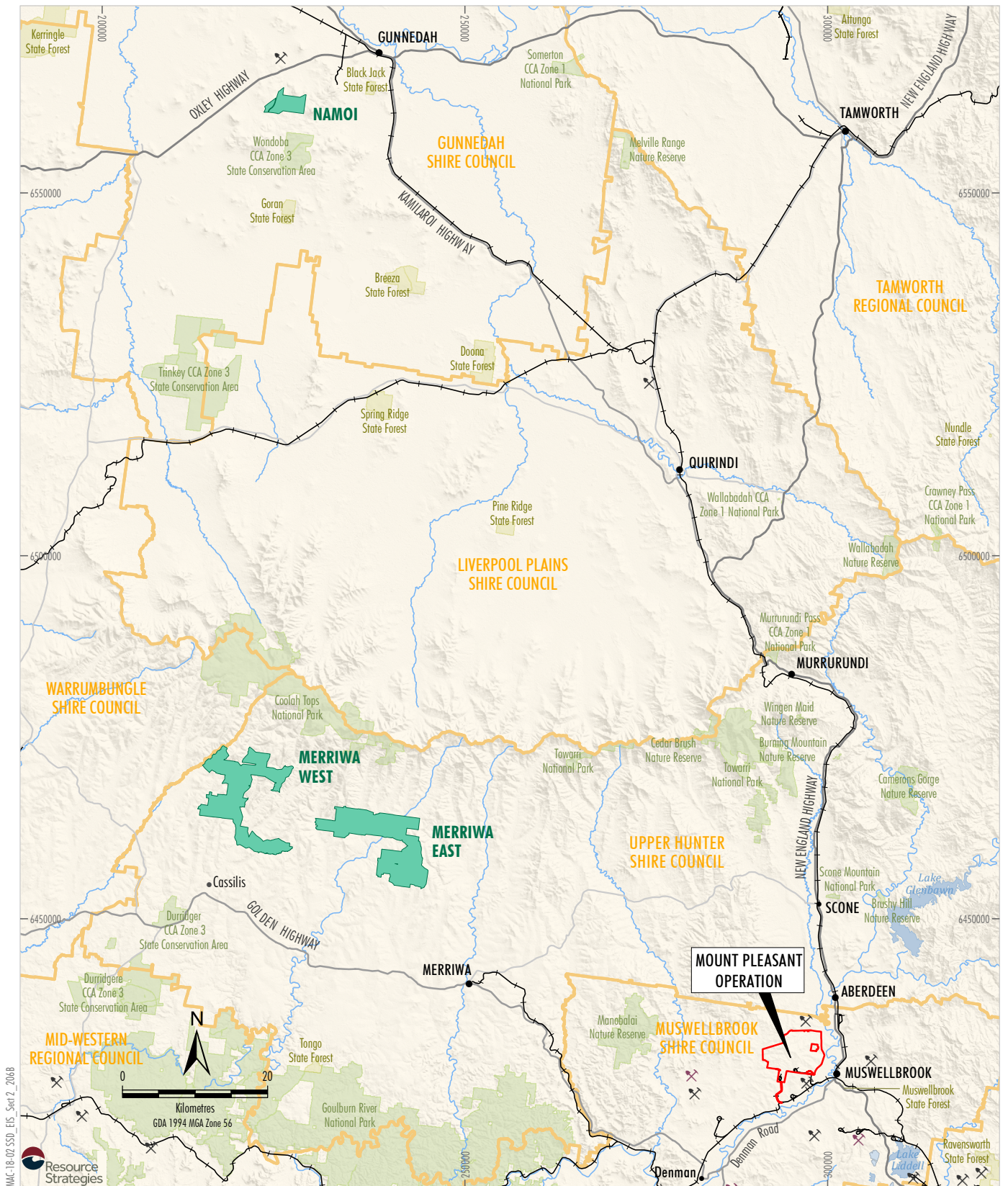
Figure 2-5a



Source: MACH (2018); Bengalla Mine (2016)

MACHEnergy
MOUNT PLEASANT OPTIMISATION PROJECT
Approved 10 Year (December 2026)
Indicative Final Landform (Mod 3)

Figure 2-5b



Source: MACH (2020); NSW Spatial Services (2020)

- LEGEND**
- Mining Operation
 - Proposed Mining Operation (Application Lodged)
 - Local Government Area
 - State Forest
 - National Parks and Wildlife Estate
 - Mining Lease Boundary (Mount Pleasant Operation)
 - Existing Biodiversity Management Area (including Offset Areas)

MACHEnergy
MOUNT PLEASANT OPTIMISATION PROJECT
Existing Biodiversity Management Areas

Figure 2-6

Table 2-1
Biodiversity Offsets for the Existing/Approved Mount Pleasant Operation

Biodiversity Management Area	Description
Merriwa East	<ul style="list-style-type: none"> Located approximately 85 km north-west of the Mount Pleasant Operation and approximately 20 km north-west of Merriwa township. Sightings of the Spotted-tailed Quoll (<i>Dasyurus maculatus</i>) (listed as Endangered under the EPBC Act and Vulnerable under the NSW <i>Biodiversity Conservation Act, 2016</i> [BC Act]) have been reported on the Merriwa East Biodiversity Management Area. Threatened birds recorded at the Merriwa East Biodiversity Management Area include the Speckled Warbler (<i>Chthonicola sagittata</i>), Dusky Woodswallow (<i>Artamus cyanopterus cyanopterus</i>) and Brown Treecreeper (eastern subspecies) (<i>Climacteris picumnus victoriae</i>). Hunter Valley populations of Tiger Orchid (<i>Cymbidium canaliculatum</i>) listed under the BC Act have been recorded on the Merriwa East Biodiversity Offset Area.
Merriwa West	<ul style="list-style-type: none"> Located approximately 100 km north-west of the Mount Pleasant Operation and approximately 5 km north of the Cassilis township. Sightings of the Spotted-tailed Quoll (listed as Endangered under the EPBC Act and Vulnerable under the BC Act) have been reported on the Merriwa West Biodiversity Management Area. Threatened birds recorded at the Merriwa West Biodiversity Management Area include the Dusky Woodswallow, Diamond Firetail (<i>Stagonopleura guttata</i>), Varied Sittella (<i>Daphoenositta chrysoptera</i>) and the Little Lorikeet (<i>Glossopsitta pusilla</i>).
Namoi	<ul style="list-style-type: none"> Located approximately 180 km north-northwest of the Mount Pleasant Operation and approximately 20 km south-west of the Gunnedah township. The Koala (<i>Phascolarctos cinereus</i>) (listed as Vulnerable under the EPBC Act and BC Act) has been recorded consistently within the Namoi Biodiversity Management Area. Threatened birds recorded at the Namoi Biodiversity Management Area include the Spotted Harrier (<i>Circus assimilis</i>), Speckled Warbler, Dusky Woodswallow, Brown Treecreeper (eastern subspecies), and the Grey-crowned Babbler (eastern subspecies) (<i>Pomatostomus temporalis temporalis</i>).

Under the Commonwealth approval (EPBC 2011/5795), MACH is required to register a legally binding conservation covenant over the existing biodiversity offset areas by late 2021. MACH is working with the Commonwealth Department of Agriculture, Water and the Environment (DAWE) to secure the offset areas via a Conservation Agreement under the EPBC Act.

2.2.12 Environmental Monitoring and Management

The Mount Pleasant Operation has an Environmental Management Strategy that provides a framework to facilitate conduct of the operation in an environmentally responsible manner and in accordance with relevant statutory requirements.

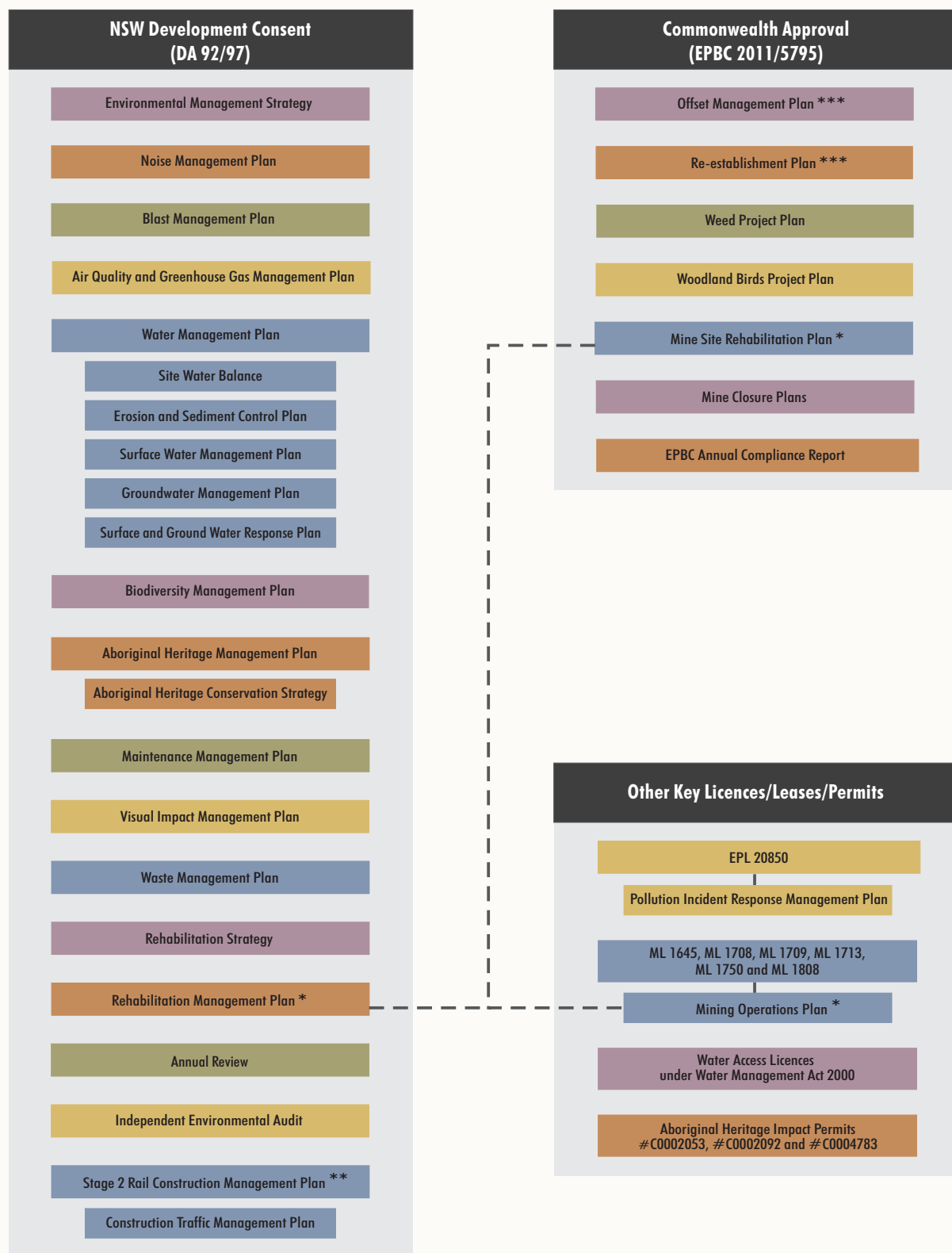
A list of key strategies, plans and programmes in place at the Mount Pleasant Operation is provided on Figure 2-7, including plans required by EPBC 2011/5795 (Offset Management Plan and Re-establishment Plan, Weed Project Plan, Woodland Birds Project Plan, Mine Site Rehabilitation Plan and Mine Closure Plans). The Mount Pleasant Operation also maintains a complaints register, which is made available on MACH's website (Section 6.4.2) in accordance with Condition 11, Schedule 5 of Development Consent DA 92/97.

Further discussion of these plans, strategies and programmes and how they would continue to be relevant to the Project is provided under the relevant sub-sections in Section 7.

A summary of the existing environmental monitoring regime at the Mount Pleasant Operation is provided in Table 2-2, and the locations of relevant environmental monitoring sites (Plate 2-7) are shown on Figures 2-8 and 2-9.



Plate 2-7 **Muswellbrook North-West Air Quality Monitor**



NOTES

* The Mining Operations Plan and Rehabilitation Management 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.

** This management plan relates to construction of the Stage 2 Rail Infrastructure in accordance with Condition 44I of Development Consent DA 92/97.

*** The Offset Management Plan and Re-establishment Plan has been developed to meet the requirements of both the Offset Management Plan and the Re-establishment Management Plan.

Source: MACH (2020)

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MOUNT PLEASANT OPTIMISATION PROJECT
Environmental Management System
Structure Summary

Figure 2-7

Table 2-2
Summary of the Current Environmental Monitoring Regime at the Mount Pleasant Operation

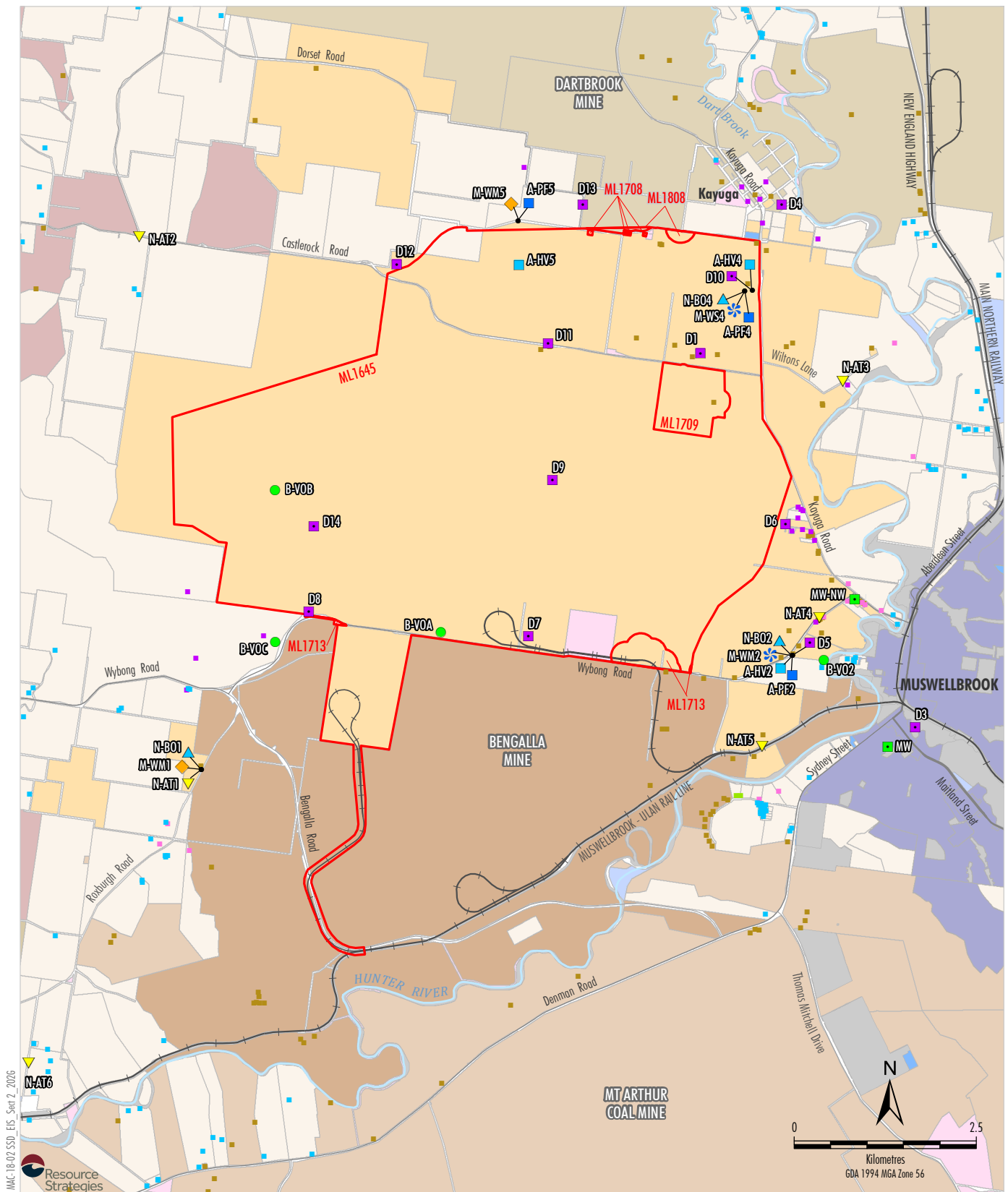
Environmental Aspect	Environmental Management Documentation	Environmental Monitoring ^{1, 2}
Noise and Blasting	<ul style="list-style-type: none"> Noise Management Plan (MACH, 2019c) Blast Management Plan (MACH, 2020c) 	<ul style="list-style-type: none"> <i>Attended noise</i> – N-AT1, N-AT2, N-AT3, N-AT4, N-AT5, N-AT6. <i>Real-time noise</i> – N-B01, N-B02, N-B04. <i>Blasting</i> – B-VO2, B-VOA, B-VOB, B-VOC.
Air Quality	<ul style="list-style-type: none"> Air Quality and Greenhouse Gas Management Plan (MACH, 2019d) 	<ul style="list-style-type: none"> <i>Dust deposition gauges</i> – D1, D3, D4, D5, D6, D7, D8, D9, D10, D11, D12, D13, D14. <i>High Volume Air Samplers (HVAS)</i> – A-HV2, A-HV4, A-HV5. <i>Real-time PM₁₀³ and PM_{2.5}⁴ monitors</i> – A-PF2, A-PF4, A-PF5. <i>Meteorology</i> – M-WM1, M-WM2, M-WS4, M-WM5, MW-NW, MW.
Greenhouse Gas	<ul style="list-style-type: none"> Air Quality and Greenhouse Gas Management Plan 	<ul style="list-style-type: none"> <i>Regular tracking of greenhouse gas emissions and annual reporting in the Annual Review.</i>
Groundwater	<ul style="list-style-type: none"> Water Management Plan (Erosion and Sediment Control Plan, Surface Water Management Plan, Groundwater Management Plan, Surface and Ground Water Response Plan) (MACH, 2019e) 	<ul style="list-style-type: none"> <i>Groundwater standpipe</i> – WRA1L, WRA1U, WRA3L, WRA3U, WRA6L, WRA6U, 6500F500L, M&U, 7500F000, 4500F000, 5000D000, 3500C500L&S, 6500F625, Melody. <i>Standpipe alluvium</i> – MPBH1, MPBH2, MPBH3b, MPBH4, MPBH5, MPBH6, MPBH7. <i>Standpipe interburden</i> – MPBH1-HR, MPBH2-HR, MPBH4-HR, MPBH5-HR, MPBH6-HR. <i>Standpipe coal seam</i> – MPBH1-C, MPBH2-C, MPBH4-C, MPBH5-C, MPBH6-C, MPBH7-C. <i>Groundwater inflows</i> – monitoring and recording of groundwater extraction/pit dewatering from all pumping bores. <i>Monthly reviews of operational water balance.</i>
Surface Water	<ul style="list-style-type: none"> Water Management Plan (Erosion and Sediment Control Plan, Surface Water Management Plan, Groundwater Management Plan, Surface and Ground Water Response Plan) 	<ul style="list-style-type: none"> <i>Surface water</i> – W1, W2, W3, W4, W5, W6A, W9, W11, W12, W13, W14, W15, W16, W17. <i>Stream health</i> – HR1, HR2, HR3, HR4, HR5, HR6, SC, MC, DB. <i>Regular and event-based on-site water management monitoring of storage dams, clean water diversion and runoff collection structures, bridge openings and culvert crossings.</i>
Biodiversity	<ul style="list-style-type: none"> Biodiversity Management Plan (MACH, 2019f) Rehabilitation Strategy MOP Bushfire Management Plan (Narla Environmental, 2020) 	<ul style="list-style-type: none"> <i>Weed monitoring</i> – routine visual inspections. <i>Pest monitoring</i> – routine monitoring of pest activities. <i>Monitoring of access</i> – inspections of fencing and signage. <i>Monitoring of rehabilitation areas</i> – rehabilitation monitoring. <i>Monitoring of fire trails to aid fire prevention strategies.</i>
Rehabilitation	<ul style="list-style-type: none"> Rehabilitation Strategy MOP 	<ul style="list-style-type: none"> <i>Ecosystem Function Analysis (EFA).</i> <i>Rapid Visual Assessment.</i> <i>Low-intensity agriculture monitoring programme.</i>
Visual and Lighting	<ul style="list-style-type: none"> Visual Impact Management Plan (MACH, 2019g) 	<ul style="list-style-type: none"> <i>Lighting</i> – compliance with AS 4282 (INT) 1997 – <i>Control of Obtrusive Effects of Outdoor Lighting.</i> <i>Routine visual inspections of screen planting, visual bunds, light screens, MIA and site infrastructure.</i>
Aboriginal Heritage	<ul style="list-style-type: none"> Aboriginal Heritage Management Plan (AHMP) (MACH, 2019h) 	<ul style="list-style-type: none"> <i>Condition assessment of all fenced Aboriginal heritage sites.</i>
Waste	<ul style="list-style-type: none"> Waste Management Plan Fines Emplacement Plan 	<ul style="list-style-type: none"> <i>Regular monitoring of general, wood and recyclable waste and monitoring of fine rejects deposition; waste management system inspections; waste operators and facilities audits; sewage treatment facilities inspections; maintenance of a tyre waste disposal register.</i>

¹ As required by management plans required under Development Consent DA 92/97 and EPL 20850.

² Additional monitoring may be undertaken as required.

³ Particulate matter with an aerodynamic diameter less than or equal to 10 micrometres (µm).

⁴ Particulate matter with an aerodynamic diameter less than or equal to 2.5 µm.



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- LEGEND**
- Mining Lease Boundary (Mount Pleasant Operation)
 - Mount Pleasant-controlled
 - Bengalla-controlled
 - Dartbrook-controlled
 - Mangoola-controlled
 - Muswellbrook Coal-controlled
 - Mt Arthur-controlled
 - Crown
 - The State of NSW
 - Muswellbrook Shire Council
 - Privately-owned Land
 - Muswellbrook and Upper Hunter LEP Zones B2, B5, R1, R5
 - Muswellbrook and Upper Hunter LEP Zones IN1, SP2, RE1, RE2, W1

Category of Rural Residence under DA92/97

- Mine-owned
- Privately-owned - Acquisition on Request
- Privately-owned - Mitigation on Request
- Privately-owned - Mitigation/Acquisition on Request*
- Other Privately-owned

Monitoring Sites

- Air Quality - High Volume Sampler
- Air Quality - Palas Fidas
- Dust Deposition Gauge
- Upper Hunter Air Quality Monitoring Network
- Blast Monitoring, Blasting (Vibration/Overpressure)
- Noise Monitoring, Attended Noise
- Noise Monitoring, Real-time Noise Monitoring Site
- Weather Station
- Weather Mast

Source: MACH (2020); NSW Spatial Services (2020)

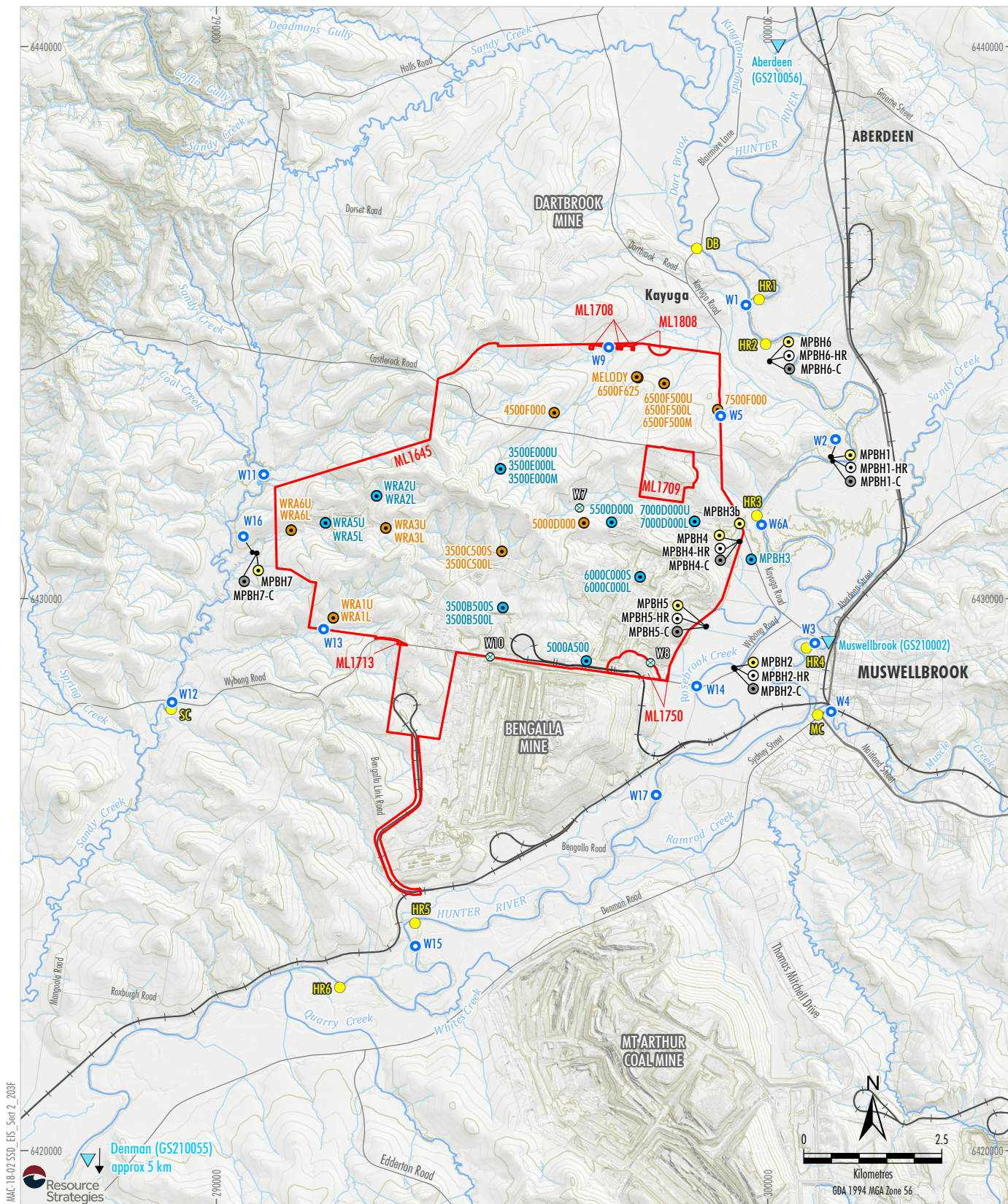
* Mitigation on Request - rail noise/Acquisition on Request - air quality. MACH is only required to acquire and/or install air quality mitigation measures at this property if not reasonably achievable under a separate approval for the Bengalla Mine.

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MOUNT PLEASANT OPTIMISATION PROJECT

Current Air Quality, Blast, Noise and Meteorological Monitoring Sites

Figure 2-8



LEGEND

- Mining Lease Boundary (Mount Pleasant Operation)
- ▼ DPI Water Gauging Station
- Surface Water Monitoring
- Stream Health Monitoring Site
- Surface Water Monitoring Site
- Historical Surface Water Monitoring Site
- Groundwater Monitoring
- Standpipe
- Standpipe - Alluvium
- Standpipe - Interburden
- Standpipe - Coal Seam
- Standpipe - Historical

Source: MACH (2020); NSW Spatial Services (2019); NSW Department of Primary Industries - Water (2016)

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MOUNT PLEASANT OPTIMISATION PROJECT
Current Surface Water and Groundwater
Monitoring Locations

Figure 2-9