



# **DARTBROOK UNDERGROUND**

# **MINING OPERATIONS PLAN**

**Continuation of Care and Maintenance  
January 2021 – December 2022**

*Prepared by:*

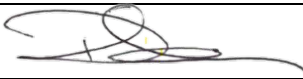
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November 2020

*For:*

**AUSTRALIAN PACIFIC COAL LIMITED**  
PO Box 16330  
City East QLD 4002

**Table 1**  
**MOP Title Block**

<b>Dartbrook Mine Mining Operations Plan</b>		
Name of Mine	Dartbrook Mine	
MOP Commencement Date	1 January 2020	
MOP Completion Date	31 December 2022	
Mining Authorisations (Lease/Licence No.)	CL 386, ML 1381, ML 1456 & ML 1497	
Name of Authorisation/Authorisation holder(s)	AQC Dartbrook Pty Limited	
Name of Mine Operator (if different)	AQC Dartbrook Pty Limited	
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Title of Representative(s) of the Authorisation Holder(s)	Chief Executive Officer and Director	
Signature of Representative(s) of the Authorisation Holder(s)		
Date	30/11/2020	
Version	1	

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## 1 INTRODUCTION

*This section provides a brief history of previous mining operations and previous Mining Operations Plans (MOPs) submitted to provide context to this MOP.*

### 1.1 HISTORY OF OPERATIONS

AQC Dartbrook Pty Limited (AQC) is the proprietor of the Dartbrook Mine, which is an underground coal mine located in the Upper Hunter region of New South Wales (see **Figure 1**). AQC is a subsidiary of Australian Pacific Coal Limited.

Dartbrook Mine is authorised by Development Consent DA 231-7-2000 granted under the *Environmental Planning and Assessment Act 1979* (EP&A Act). DA 231-7-2000 was granted on 28 August 2001 and has been modified on seven occasions. DA 231-7-2000 allows for underground mining and associated surface activities to be carried out until 5 December 2022.

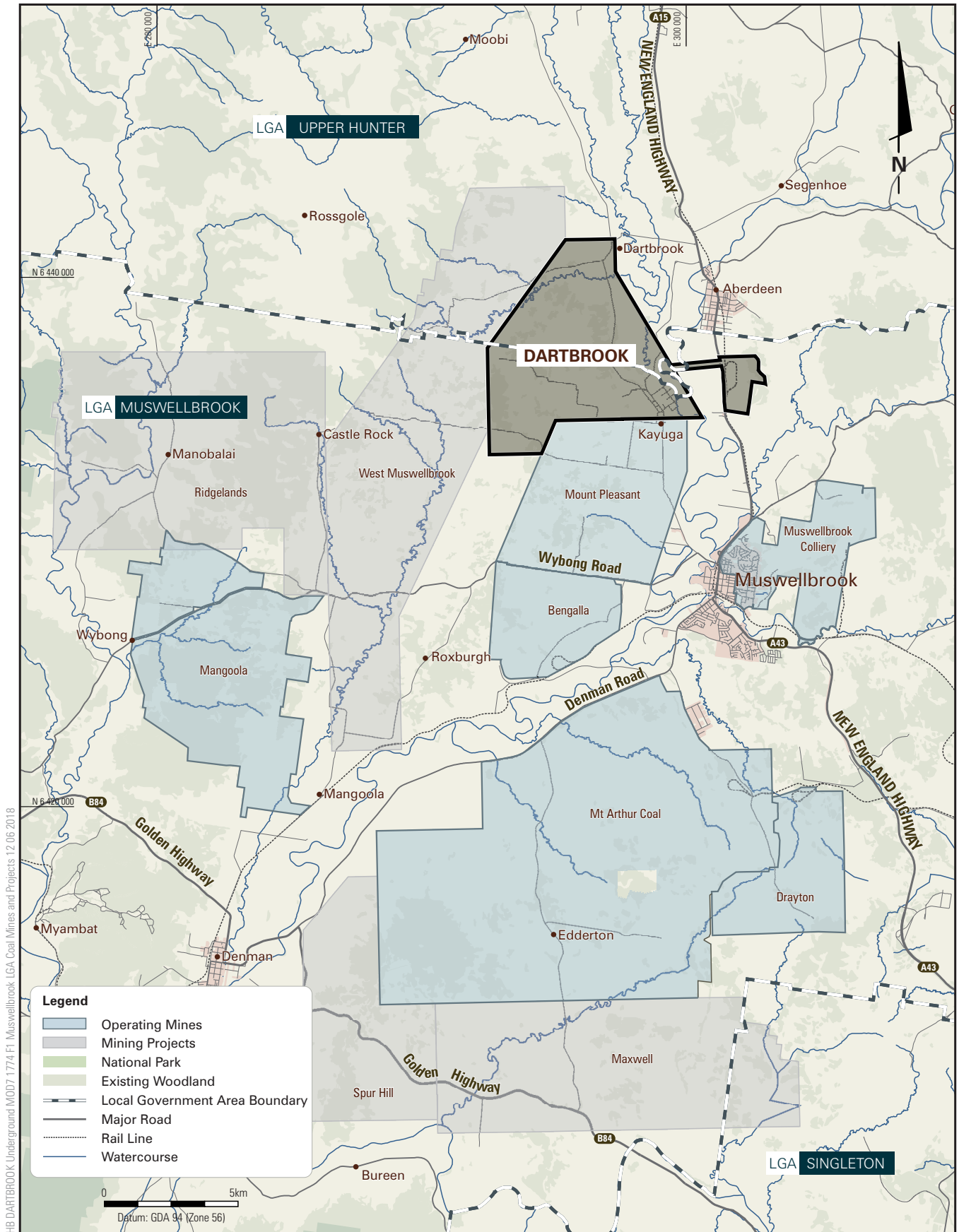
Longwall mining operations were undertaken in the Wynn Seam from 1996 to May 2004. Development of roadways in the Kayuga Seam commenced in 2001 and was undertaken simultaneously with secondary extraction the Wynn Seam. Longwall mining of the Kayuga Seam was undertaken after cessation of mining in the Wynn Seam until October 2006. No mining activities have been undertaken at Dartbrook Mine since it was placed under care and maintenance by the previous owner in December 2006.

Care and maintenance activities are generally limited to the following areas at Dartbrook Mine (shown on **Figure 2**):

- The West Site surface facilities, which include the administration office, workshop, mine portals and water management infrastructure; and
- The East Site surface facilities, which include the Coal Handling and Preparation Plant (CHPP), coal stockpiles, train loadout facility, rail loop, rehabilitated Reject Emplacement Area (REA) and water management infrastructure.

AQC proposes to continue to conduct care and maintenance activities in accordance with its Development Consent, mining authorities and other regulatory licences and permits.

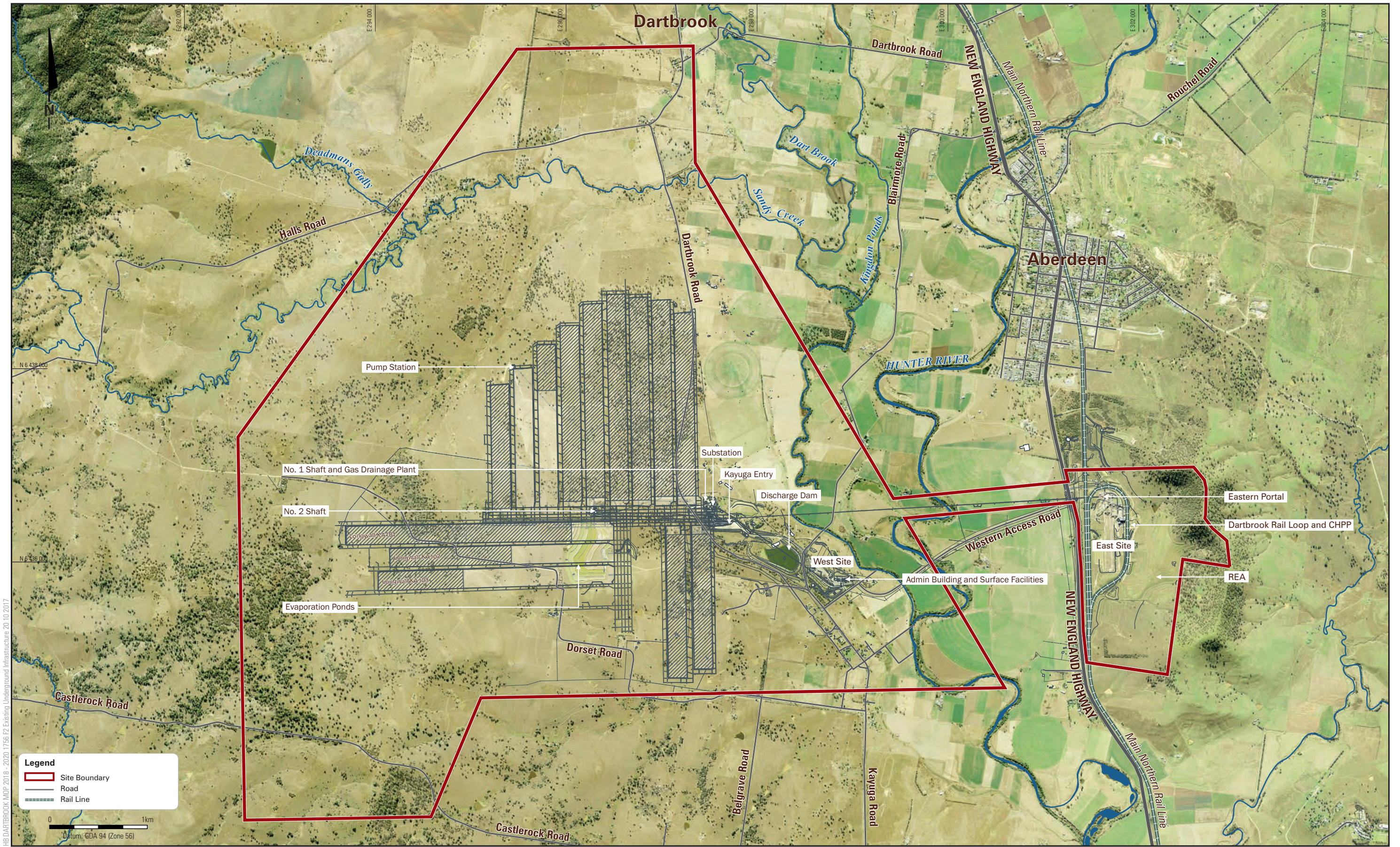
**Table 2** lists the MOPs that have been prepared since Dartbrook Mine was placed under care and maintenance. The most recent MOP applied to the period from 1 January 2018 to 31 December 2020.



DARTBROOK MINE

Regional Locality

**FIGURE 1**



HB DARTBROOK MOP 2018 - 2020 1756 F2 Existing Underground Infrastructure 20 10 2017

DARTBROOK MINE

Existing Underground Infrastructure

**FIGURE 2**



**Table 2**  
**Previous Dartbrook Care and Maintenance MOPs**

<b>MOP Commencement Date</b>	<b>MOP Completion Date</b>	<b>Name of Mine Operator</b>
January 2007	December 2008	Anglo Coal (Dartbrook Management) Pty Ltd
January 2008	December 2010	Anglo Coal (Dartbrook Management) Pty Ltd
January 2011	December 2013	Anglo Coal (Dartbrook Management) Pty Ltd
January 2013	December 2017	Anglo Coal (Dartbrook Management) Pty Ltd
January 2018	December 2020	AQC Dartbrook Pty Limited

The MOP has been prepared in accordance with Condition 2.1 of DA 231-7-2000 and the relevant conditions of AQC's mining authorities. **Table 3** lists the regulatory conditions relevant to this MOP.

**Table 3**  
**Dartbrook MOP Conditions**

<b>Condition</b>	<b>Requirement</b>	<b>Addressed</b>
<b>DA 231-07-2000</b>		
2.1(a)	No mining undertaken in accordance with this consent must occur until the Applicant has submitted and had accepted by the DRG, a Mining Operations Plan (MOP) in accordance with current guidelines issued by DRG. The Plan covers mining operations for a period of up to seven years.	N/A This MOP relates to care and maintenance.
2.1(b)(ii)	The MOP must: demonstrate consistency with the conditions of this consent and any other statutory approvals;	<b>Section 1.2</b>
2.1(b)(iii)	demonstrate consistency with the Environmental Management Plans for the project site;	<b>Section 3.2</b>
2.1(b)(iv)	provide the basis for implementing mining operations, environmental management, and ongoing monitoring;	<b>Sections 2.3, 3.2 and 8</b>
2.1(b)(v)	include a mine rehabilitation and land use management plan that: <ul style="list-style-type: none"> <li>describes how the rehabilitation of the site would achieve the objectives identified in Table 3 (see Condition 3.7 (a));</li> <li>include detailed performance and completion criteria for evaluating the performance of the rehabilitation of the site (including progressive rehabilitation), and triggering remedial action (if necessary); and</li> <li>include a program to monitor and report on the effectiveness of the rehabilitation measures and progress against the detailed performance and completion criteria; and</li> </ul>	<b>Sections 4.1, 6, 8, 9 and 10</b>
2.1(b)(vi)	identify a schedule of proposed mine development for the period covered by the plan and include: <ul style="list-style-type: none"> <li>the area proposed to be impacted by mining activity and resource recovery mining methods and remediation measures,</li> </ul>	<b>Sections 2.3 and 3.2</b>

Condition	Requirement	Addressed
	<ul style="list-style-type: none"> <li>• areas of environmental, heritage or archaeological sensitivity and mechanisms for appropriately minimising impact,</li> <li>• water management, and</li> <li>• proposals to appropriately minimise surface impacts.</li> </ul>	
2.1(c)	In preparing the MOP, the Applicant must consult with affected service authorities and make arrangements satisfactory to those authorities for the protection or relocation of those services.	No service authorities will be affected by care and maintenance.
2.1(d)	A copy of the MOP, excluding commercial in confidence information, must be forwarded to MSC, UHSC and the Secretary within 14 days of acceptance by DRG.	<b>Section 1.4</b>
<b>ML1456 &amp; ML1497</b>		
2(1)	Mining operations, including mining purposes, must be conducted in accordance with a MOP (Plan) satisfactory to the Director-General. The Plan together with environmental conditions of development consent and other approvals will form the basis for:- a) ongoing mining operations and environmental management; and b) ongoing monitoring of the project.	This MOP
2(2)	The Plan must be prepared in accordance with the Director-General's guidelines current at the time of lodgement.	ESG3 Guidelines
2(3)	A Plan must be lodged with the Director-General:- a) prior to the commencement of operations; b) subsequently as appropriate prior to the expiry of any current Plan; and c) in accordance with any direction issued by the Director-General.	Lodged prior to expiry of the current MOP
2(4)	The Plan must present a schedule of proposed mine development for a period of up to seven (7) years and contain diagrams and documentation which identify:- a) area(s) proposed to be disturbed under the Plan; b) mining and rehabilitation method(s) to be used and their sequence; c) areas to be used for disposal of tailings/waste; d) existing and proposed surface infrastructure; e) progressive rehabilitation schedules; f) areas of particular environmental sensitivity; g) water management systems (including erosion and sediment controls); h) proposed resource recovery; and i) where the mine will cease extraction during the term of the Plan, a closure plan including final rehabilitation objectives/methods and post mining land use/vegetation.	<b>Section 2.3 Plans 3A and 3B</b>
2(5)	The Plan when lodged will be reviewed by the Department of Mineral Resources.	Noted
2(6)	The Director-General may within two (2) months of the lodgement of a Plan, require modification and relodgement.	Noted

Condition	Requirement	Addressed
2(7)	If a requirement in accordance with clause (6) is not issued within two (2) months of the lodgement of a Plan, lease holder may proceed with implementation of the Plan submitted subject to the lodgement of the required security deposit within the specified time.	Noted
2(8)	During the life of the MOP, proposed modifications to the Plan must be lodged with the Director-General and will be subject to the review process outlined in clauses (5) – (7) above.	Noted

## 1.2 CURRENT CONSENTS, AUTHORISATIONS AND LICENCES

Table 4 lists the Development Consent, mining authorities and other regulatory approvals and licences held by AQC.

**Table 4**  
**Dartbrook Approvals**

Name	Grant Date	Expiry Date
<b>Development Consent</b>		
DA 231-7-2000	28 August 2001	5 December 2027
<b>Mining Authorities</b>		
Coal Lease 386	19 December 1991	19 December 2033
Mining Lease 1381	23 October 1995	23 October 2016*
Mining Lease 1456	27 September 1999	26 September 2020
Mining Lease 1497	6 December 2001	5 December 2022
Authorisation 256	16 December 1980	2 May 2015*
Exploration Licence 4574	13 August 1993	7 April 2015*
Exploration Licence 4575	13 August 1993	23 May 2016*
Exploration Licence 5525	22 September 1998	21 September 2016*
<b>Emplacement Area Approvals</b>		
Emplacement Area Approval C95/2265 (s126 approval)	13 March 1996	N/A
Stage 4 Reject Emplacement Approval C95/2265 (s126 approval)	2 January 2000	N/A
Approval for 14° slopes in the REA Stage 4 (s126 approval)	18 December 2003	N/A
Application for Discontinuance of Use of Emplacement Areas (s101 approval)	13 August 2007	N/A
<b>Licences</b>		
Environmental Protection Licence (EPL) 4885	30 November 2000	N/A
Notification to Work Cover for storage and handling of Dangerous Goods	10 November 2005	N/A
Notification and Declaration to WorkCover that no dangerous goods stored or handled at Dartbrook Mine	Submitted 13 December 2006	N/A
Radiation Licence 5061080	1 July 2013	14 August 2020*

\* Renewal sought

In October 2015, the Minister granted approval under Section 70(1)(a) of the Mining Act for the suspension of mining operations. The Minister also granted approval under Section 168(1) of the *Mining Act 1992* (Mining Act) for the suspension of Condition No 9 (Working Requirement) under ML 1381, ML 1456 and ML 1497, effective from 31 December 2014 to 31 December 2017. On 22 June 2017, the Minister approved the continued suspension of Condition No. 9 (Working Requirement) under CL 386, ML 1381, ML 1456 and ML 1497, effective from 22 June 2017 to 31 December 2018. AQC applied for a further suspension of the working requirement under its mining authorities on 31 August 2018.

Prior to Dartbrook Mine being placed under care and maintenance, the previous owner held discussions with the then Department of Planning regarding the applicability of the Development Consent conditions during suspension of mining operations. It was agreed that Dartbrook Mine should continue to operate within the “spirit and intent” of the Development Consent with some minor adjustments to specific conditions commensurate with the level and nature of activities during care and maintenance.

AQC will continue to comply with the applicable conditions of its mining authorities, Development Consent and other approvals for the duration of this MOP.

### **1.3 LAND OWNERSHIP AND LAND USE**

**Plan 1C** shows the ownership of land within the mining authorities for Dartbrook Mine. All surface infrastructure associated with Dartbrook Mine is located on AQC owned land. AQC also owns the majority of the land overlying the underground mining area. The western portion of the underground mining area underlies land owned by third parties, including MACH Energy Australia Pty Limited (owner of the neighbouring Mount Pleasant Mine).

#### **1.3.1 Historical Land Use**

The majority of the land at Dartbrook Mine was historically used for dryland cattle grazing. The Garoka Dairy (now owned by AQC) occupies the land between the East Site and West Site. Land within the Hunter River floodplain, including Garoka Dairy, are suitable for intensive agriculture, dairy farming and irrigated crop cultivation.

The land at the East Site is located outside of the Hunter River floodplain. Prior to mining development, this land was either undeveloped or used for dryland cattle grazing.

#### **1.3.2 Current Land Use**

The land at the East Site and West Site is used exclusively for mining purposes. AQC’s other land holdings are used by its leaseholders and agistees for agricultural purposes.

The Garoka Dairy has been operating since 1992 and can support approximately 700 head of dairy cattle. The Garoka Dairy is an amalgamation of four farms located to the east of the Hunter River and one farm at the confluence of the Hunter River and Dart Brook. Garoka Dairy has remained operational throughout the care and maintenance period to date.

Beef cattle grazing is conducted within the mining authorities and a cattle grazing trial was conducted within the rehabilitated REA rehabilitation area in 2015/2016 (see **Section 8.5.1** for details of this trial).

It is noted that AQC is considering the potential sale of some of its surplus landholdings. Land that is required for care and maintenance activities is not being considered for sale.

### 1.3.3 Proposed Final Land Use

The objective of mine closure and rehabilitation will be to return any land affected by mining to their pre-mining land use. Land will generally be restored to Land Capability Classes III, IV, V or VI. These classes of land are suitable for dryland grazing and occasional cropping, which is consistent with the historical use of this land.

The REA is located on the western slopes of Browns Mountain. Due to its steep gradients, Browns Mountain is comprised of Class VI and VII land, which is less suitable for agriculture than the other lands within the mining authorities. The proposed final land use for the rehabilitated REA landform is open grassland and bushland habitat.

## 1.4 STAKEHOLDER CONSULTATION

The following regulatory authorities were consulted with during preparation of the first MOP for care and maintenance:

- Department of Primary Industries – Mineral Resources (now DRG);
- Department of Planning (now DPIE);
- Muswellbrook Shire Council;
- Upper Hunter Shire Council; and
- Department of Environment and Conservation (now BCD).

Further consultation has been undertaken for each subsequent MOP to address changes in the care and maintenance phase. The care and maintenance activities during this MOP period will generally be consistent with the previous MOP (2018-2020), with the exception of a minor change to the water management strategy (as discussed in **Section 3.2.3**).

In accordance with Condition 2.1(d) of DA 231-7-2000, the approved MOP will be distributed to Department of Planning, Industry and Environment (DPIE) and the local councils.

Although there is not expected to be any rehabilitation undertaken during the MOP period, the MOP outlines the proposed rehabilitation during the mine closure phase. Rehabilitation of the site was discussed with regulatory and community stakeholders during the preparation of the *'Dartbrook Extended Environmental Impact Statement'* (EIS) (HLA Envirosiences, 2000) and the Commission of Inquiry conducted prior to the grant of DA 231-7-2000.

Consultation regarding the rehabilitation of the REA was also conducted during the preparation of the following Statements of Environmental Effects (SEEs) that accompanied applications to modify DA 231-7-2000:

- *'Dartbrook Coal Mine SEE for Modification to Rejects Disposal System'* (Hansen Consulting, 2004); and
- *'Dartbrook Mine Statement of Environmental Effects for New ROM Coal Stockpiles, Underground Tailings Disposal & Nitrogen Injection Plant'* (Hansen Consulting, 2005).

Property Subsidence Management Plans (PSMPs) were developed in consultation with landowners whose property may be affected by mine subsidence. These plans identified the effects of subsidence on infrastructure, natural and man-made features of private properties and specified management measures developed in consultation with the property owners.

## 2 PROPOSED MINING ACTIVITIES

### 2.1 PROJECT DESCRIPTION

The approved Dartbrook Mine consists of the following components:

- Underground mining of the Kayuga, Mt Arthur and Wynn coal seams;
- The East Site, which includes the coal handling and preparation plant (CHPP), coal stockpiles, train loader, rail loop, reject emplacement area (REA) and water management infrastructure;
- The West Site, which includes the mine entries, workshop, administration building, bathhouse and water management infrastructure,
- The Western Access Road, which provides site access from the New England Highway;
- Transportation of ROM coal from the mine workings to the East Site using the existing Hunter Tunnel (an underground passageway);
- Extraction and processing of up to 6 million tonnes per annum (Mtpa) of run of mine (ROM) coal;
- Transportation of product coal to Newcastle by rail; and
- Employment of up to 292 full-time equivalent personnel (employees and contractors) during mining operations.

DA 231-7-2000 (as modified) allows for the approved mining activities to be undertaken until 5 December 2027.

### 2.2 ASSET REGISTER

**Table 5** identifies the MOP Domains at Dartbrook Mine and the major assets located within each domain. This asset register reflects the current extent of development at Dartbrook Mine and will not materially change during care and maintenance.

**Table 5**  
**Dartbrook Asset Register**

Major Assets	Use	Footprint Area	Required Activities for Removal/Demolition
<b>DOMAIN 1: INFRASTRUCTURE</b>			
<b>Fan Housing</b>			
Fan House 2	Previously used to provide ventilation to the underground mine.	0.4 ha	Surface infrastructure decommissioned/removed. Complete final capping and sealing as per DRG requirements. Rehabilitation to improved and/or native pastures. Scattered trees to incorporate into surrounding land use.
Fan House 1	Currently used to provide ventilation to the underground mine.		Decommission, remove, cap and seal as per DRG requirements
<b>Mine Entries and Portals</b>			
Eastern Portal	Access to the Hunter Tunnel from the East Side	1.8 ha	Mine entries sealed to the satisfaction of DRG. Surface infrastructure removed.
Kayuga Seam Access Slot	Previous access to Kayuga seam – now decommissioned and secured.		
Wynn Seam Portal	Access to the underground from the West Side.		
Western Drift Portal Sheds	Sheds above portal entries.		
<b>Administration Office and Car Park</b>			
Main Store & Workshop – West Side	Servicing of mine vehicles and equipment. Use is only for care and maintenance.	1.2 ha	Removed except that with a demonstratable market or community value.
Main Admin Office and Car park – West Side	Office. Currently used by a small number of care and maintenance staff.		
<b>Hardstand Areas</b>			
Hardstand areas on the West Side and East Side.	Various uses but mainly for parking/laydown areas/storage	2.6 ha	Minor earthworks, final trim and deep rip, ameliorate and seed (native tree/shrub/grass)
<b>Coal Preparation Plant</b>			



Major Assets	Use	Footprint Area	Required Activities for Removal/Demolition
CHPP (including washplant, admin and other related buildings)	Previously used for coal handling and processing. Now under care and maintenance.	31.7 ha	Disconnect and terminate services. Demolish and remove CHPP.
Coal Stockpile areas	Previously stored product coal. Coal has been removed and remaining carbonaceous material has been removed.		Decommission/deconstruct remaining infrastructure (e.g. conveyors, sprays, stackers) and rehabilitate.
Conveyors, transfer stations and gantries	This includes conveyor to rail load out areas of conveyor from hoppers feeding back to the CHPP.		Demolish and remove.
Concrete pads and footings	Concrete pads and footings from surface area of CHPP.		Remove carbonaceous material (spillage or otherwise) from footprint of the CHPP (and ROM & Product stockpiles, conveyors and workshops). Demolish & Remove. Final trim, rock rake & deep rip. Source, cart and spread topsoil. Spoil amelioration and supply and spread seed and fertiliser.
Thickener (35m diameter)			Deconstruct Large Tanks
Stackers/reclaimers	Stacking coal on stockpiles/reject stacker and reclaim.		Deconstruct, rehabilitate footprint (as part of CHPP footprint).
Rail Loop & Spur	Former use: Coal Transport. No coal is currently being transported under care and maintenance.		Remove Rail Loop and spur. This item includes the pulling up and removal from site of railway line and sleepers.
Rail Loadout Industrial Buildings	Train loading (and associated) infrastructure.		Demolish and remove. Reshape. Final trim, rock rake & deep rip. Spoil amelioration and supply and spread pasture seed and fertiliser.
Main Store & Workshop – East Side			
<b>Mine Access Roads</b>			
Main Access Road	Currently used as an access from the CHPP and rail facilities east of the New England Highway to the Western Facilities Area	13 ha	Road with 2 bridge overpasses. To remain for community benefit (provides a direct route from the New England Highway to the village of Kayuga/Dartbrook area.
<b>Topsoil Stockpiles</b>			

Major Assets	Use	Footprint Area	Required Activities for Removal/Demolition
N/A – no infrastructure. Topsoil stockpiles.	To be used as growth medium in final rehab.	0.5 ha	Generally <3m height. Will be utilised in rehabilitation of other areas. Final surface level will be rehabilitated to improved and/or native pastures. Scattered trees to incorporate into surrounding cattle grazing land use.
<b>Goaf Dewatering</b>			
Goaf Dewatering Pumping System	Operational Infrastructure to pump out water from the goaf (underground) and transfer to mine water storages on site (e.g. Staged Discharge Dam).	0.7 ha	Infrastructure decommissioned, removed, site rehabilitated to improved and/or native pastures. Scattered trees to incorporate into surrounding cattle grazing land use.
Area Serviced by Goaf Drainage Facilities	Standing non-operational infrastructure. Area is currently grazed by cattle.	(Subsurface)	Infrastructure decommissioned to DRG Guidelines, top of pipe removed, site rehabilitated to improved and/or native pastures. Scattered trees to incorporate into surrounding cattle grazing land use.
<b>DOMAIN 2: OVERBURDEN EMPLACEMENTS / BUNDS</b>			
No infrastructure. O/B stockpiles/bunds.	Overburden removed as part of site infrastructure preparation	6.6 ha	Most of the material will be used in reshaping activities. Kayuga bund and bund at East Side (along New England Highway) will remain. Site will be rehabilitated to improved and/or native pastures. Scattered trees to incorporate into surrounding cattle grazing land use.
<b>DOMAIN 3: PRIMARY WATER MANAGEMENT</b>			
<b>Evaporation Ponds</b>			
Evaporation Ponds	Removal of excess mine water through evaporation.	29.2 ha	Decommission ponds. Cap with suitable material, reshape (minor earthworks), final trim/rock rake/deep rip, apply growth medium, ameliorate, pasture seed and fertiliser. Includes sourcing suitable material as required.
Industrial Sedimentation Dams	Semi industrial and sediment control. Example: Eastern Holding Dam, Western Holding Dam, Staged Discharge Dam (and associated water management infrastructure)	8.8 ha total	Dams to remain for the semi-industrial purpose for sediment control. Will be desilted if required plus any minor earthworks/controls to make safe.
<b>DOMAIN 4: SECONDARY WATER MANAGEMENT</b>			

Major Assets	Use	Footprint Area	Required Activities for Removal/Demolition
Rural stock water/sedimentation dams	These dams either collect clean surface water runoff or sediment laden runoff.	8.0 ha total	Dams to continue being used for rural purposes and stock water. Clean water dams to be retained and made safe (minor earthworks if required). Dirty water dams will be desilted also.
<b>DOMAIN 5: REHABILITATED GRASSLAND</b>			
REA	Rehabilitated Reject Emplacement Area	31.0 ha	Max RL: 248. No demolition required. The area has been rehabilitated to grassland and is a stable landform being sustainably grazed.
<b>DOMAIN 6: FORESTRY AREAS</b>			
Forestry	Forestry plot established in 2003, a joint project with State Forests NSW, to create a sustainable timber resource in the future.	75 ha	Preserve for biodiversity/ community benefit.
Forestry: Red Gum Restoration Project Area	Enhance and protect a population of <i>Eucalyptus camaldulensis</i> (River Red Gum) listed as endangered in the Hunter Valley.	42.2 ha	Preserve for biodiversity/ community benefit.
<b>DOMAIN 7: CEMETERY</b>			
Kayuga Cemetery	Currently maintained to preserve history/public access.	0.9 ha	Preserve for community benefit.
Riverview Homestead	Currently maintained. Currently not in use as a residence or office.		Single story homestead. Preserve for community benefit.

## 2.3 ACTIVITIES DURING THE MOP TERM

No mining activities will take place during care and maintenance. Care and maintenance activities are generally limited to minor tasks such as inspections and maintenance of the CHPP, conveyors and other infrastructure. Environmental monitoring and water management activities will also continue to be undertaken throughout care and maintenance. Care and maintenance activities are currently managed by Terrequip Mining Pty Limited, which is the statutory manager of the site.

This MOP applies to the period from 1 January 2021 to 5 December 2022. In the event that AQC seeks to recommence mining within this period, a new MOP will be prepared and approved prior to any mining activities taking place.

### 2.3.1 Exploration

Further exploration activities may be undertaken during the MOP period to inform future mine planning. Exploration activities will be limited to within AQC's mining authorities to ensure compliance with the Mining Act. AQC will obtain any necessary approvals under Part 5 of the EP&A Act prior to commencing any exploration activities.

Exploration activities (if undertaken) will be reported in the Annual Review prepared in accordance with DA 231-7-2000.

### 2.3.2 Construction

**Section 2.2** describes the existing infrastructure at Dartbrook Mine. No construction or demolition activities will be undertaken during care and maintenance.

Minor infrastructure upgrades may be required if mining is to be recommenced. Such works will be discussed in a MOP prepared with respect to future mining.

### 2.3.3 Underground Mining Operations

No coal extraction will be undertaken during care and maintenance. A new MOP will be prepared if further mining is to be conducted. As shown in **Table 6**, there will be no material production during care and maintenance.

**Table 6**  
**Material Production Schedule During the MOP term**

Material	Unit	Year 1	Year 2
Stripped topsoil	m <sup>3</sup>	0	0
Rock/Overburden	m <sup>3</sup>	0	0
Ore or ROM Coal	Mt	0	0
Reject Material	Mt	0	0
Product	Mt	0	0

### **2.3.4 Overburden Emplacement**

No new rock or overburden emplacement areas will be established during the MOP period. The existing emplacement areas were revegetated over 10 years ago and will continue to be maintained. Maintenance activities include inspections, weed control and strategic grazing (if required).

### **2.3.5 Processing Residues and Tailings**

There will be no beneficiation of coal and therefore no reject materials generated during the care and maintenance period.

### **2.3.6 Waste Management**

#### **2.3.6.1 Process Waste**

The REA was established in accordance with Section 126 Approvals granted under the former *Coal Mines Regulation Act 1982* (see **Table 4**). The portion of the REA established prior to care and maintenance has been rehabilitated. The emplaced reject material was capped with approximately 1.2 m of compacted clay, followed by topsoiling and revegetation using improved grasses. Rehabilitation of the disturbed portion of the REA was completed in mid-2007.

The completed portion of the REA is shown in Plans 2 to 4 in **Appendix A**. It is located at the East Site and comprises an area of approximately 29 ha with a maximum elevation of RL 248 m.

No reject emplacement will be undertaken during care and maintenance. No further drainage works are required within the REA, as the surface has been stabilised by ground cover.

#### **2.3.6.2 Non-Process Waste**

Care and maintenance activities will generate only minimal volumes of non-process waste. All non-process waste will continue to be managed in accordance with the Waste Management Plan prepared in consultation with MSC and was approved by the former Planning NSW (now DPIE).

#### **2.3.6.3 Material Stockpiles**

The approved raw and product coal stockpiles at the East Site are currently not in use. All stockpile pads have been cleared of coal and revegetated with grass cover to reduce dust emissions. Surface water runoff from the rehabilitated stockpiles is collected in drains and directed to the Eastern Holding Dam. There will be no stockpiling of coal during care and maintenance.

There are clay and topsoil stockpiles located in the vicinity of the CHPP. To minimise soil loss, these stockpiles have been revegetated with grass cover, and erosion and sediment controls have been implemented. No further stockpiling of soil will be undertaken during care and maintenance; however, the existing stockpiles will continue to be maintained.

### 2.3.6.4 Water Management

On-site water management during care and maintenance is conducted in accordance with the approved Site Water Management Plan (SWMP) prepared pursuant to Condition 4.1 of DA 231-7-2000. The approved water management strategies will continue to be implemented to reduce demand on external water sources and minimise the risk of offsite discharges.

Drainage and soil erosion controls have been established as described in the approved Erosion and Sediment Control Plan (ESCP), which was prepared in accordance with Condition 3.6 of DA 231-7-2000. The existing erosion and sediment controls will continue to be maintained during care and maintenance.

### 2.3.6.5 Hazardous Materials

**Table 7** lists the existing hazardous material storages at Dartbrook Mine. The bulk fuel storage tanks at the East Site will continue to be used to store the minimal quantities of diesel fuel required for care and maintenance activities. The underground fuel tanks used during previous mining operations have since been decommissioned.

The explosives storage facilities listed in **Table 7** are not used during care and maintenance.

**Table 7**  
**Hazardous Materials Storage Areas**

Hazardous Material	Storage	Location	Status / Proposed
Bulk Fuel Storage	44 kL above ground tank	CHPP	Maintain for ongoing use
Explosives – Blasting Type E	200 kg External Magazine	West Site Hardstand Area	Inactive magazines
Explosives – Electric Detonators	20,000 units External Magazine	West Site Hardstand Area	Inactive magazines

AQC holds a radiation licence (No. 5061080) issued under the *Radiation Control Act 1990* (Radiation Act). This licence enables AQC to sell/possess/store or give away regulated material (including radiation apparatus and substances). There are five radioactive material sources located at the CHPP for density control. These five sources are registered with the Environmental Protection Authority as Radiation Regulated Materials IDs 8669, 8670, 8671, 9144, and 9145. These radiation sources will continue to be maintained during care and maintenance. AQC applied for a renewal of its radiation licence on 31 July 2020.

There are minor quantities of chemicals (such as cleaning and water treatment products) stored on-site during care and maintenance. AQC maintains a site chemical register and Safety Data Sheets for all hazardous materials used during care and maintenance of Dartbrook Mine.

No explosives will be stored on-site during care and maintenance.

### **2.3.7 Decommissioning Activities**

There will be no decommissioning activities during the MOP period.

Decommissioning of the Dartbrook Mine will be discussed in a Mine Closure Plan to be prepared in accordance with Condition 2.1(e) of DA 231-7-2000.

### **2.3.8 Progressive Rehabilitation and Completion**

All disturbed areas at the commencement of the MOP period are in a care and maintenance phase. These areas will be rehabilitated in the mine closure phase.

All previously rehabilitated areas will continue to be monitored and maintained as required. Routine maintenance measures may include erosion and sediment control, selective grazing, weed management and feral animal management.

### **2.3.9 Temporary Stabilisation**

Temporary stabilisation of previously disturbed areas was completed prior to the MOP period. No further temporary stabilisation is scheduled; however, if routine care and maintenance tasks (including monitoring and inspections) identify any areas where temporary stabilisation is required, the necessary works will be undertaken and reported in the Annual Review.

### 3 ENVIRONMENTAL ISSUES MANAGEMENT

#### 3.1 ENVIRONMENTAL RISK ASSESSMENT

An environmental risk assessment was undertaken for the care and maintenance phase at Dartbrook Mine in accordance with 'AS/NZS ISO 31000:2009 Risk Management - Principles & Guidelines'. The risk assessment matrix used for the environmental risk assessment is presented in **Appendix B**.

The risk assessment identified that controls are required to manage risks associated with erosion, bushfires, weeds and feral animals, water management and use of chemicals. With the implementation of control strategies, there are no 'high' risks during the care and maintenance phase. The environmental risk assessment is summarised in **Table 8**.

#### 3.2 ENVIRONMENTAL RISK MANAGEMENT

##### 3.2.1 Management Systems

A Safety, Health and Environment Management System (SHEMS) has been developed and implemented at Dartbrook Mine generally in accordance with 'AS/NZS ISO14001: Environmental Management Systems' and 'AS 4801: Occupational Health and Safety Management System'. This provides a risk based systematic approach to the management of safety, health and environmental issues associated with the operation.

In relation to the environment, the SHEMS:

- Identifies significant environmental risks arising from processes or sub-processes at Dartbrook Mine;
- Provides the framework for meeting environmental objectives and targets;
- Facilitates effective planning, communication, documentation, review and feedback;
- Defines accountabilities and provides decision making tools;
- Provides a system to ensure ongoing compliance with legislative and regulatory requirements; and
- Facilitates continual improvement.

The SHEMS has been revised to reflect the current status of Dartbrook Mine (i.e. care and maintenance).



**Table 8**  
**Environmental Risk Assessment**

Potential Impacts	Likelihood	Consequence	Unmitigated Risk	Mitigation Measures	Likelihood	Consequence	Residual Risk
Erosion from disturbed areas resulting in sedimentation of watercourses.	Almost Certain	Minor	High	Maintain existing erosion controls such as diversion drains, sediment dams and previously stabilised areas.	Unlikely	Minor	Low
Soil contamination due to spills of chemicals used during care and maintenance.	Possible	Minor	Medium	Storage of chemicals within bunds. Personnel equipped with spill kits.	Unlikely	Minor	Low
Dust exceedances due to care and maintenance activities.	Unlikely	Minor	Low	Water application to exposed areas. Speed limits for unsealed roads.	Rare	Minor	Low
Noise exceedances due to care and maintenance activities.	Unlikely	Minor	Low	Higher noise activities will be limited to day time. Use of low noise equipment, where possible.	Rare	Minor	Low
Weed or pest infestation of rehabilitated areas.	Possible	Moderate	High	Weed and pest management programs.	Possible	Insignificant	Low
Ignition of bushfires due to care and maintenance activities.	Possible	Major	High	Management of fuel loads. Site equipped with basic firefighting equipment.	Unlikely	Moderate	Medium
Discharges from mine water storages.	Possible	Moderate	High	Maintain adequate freeboard in surface dams.	Unlikely	Minor	Low
Impacts to heritage items.	Unlikely	Minor	Low	Maintain existing fenced enclosures. Unanticipated finds will be reviewed by an archaeologist.	Rare	Minor	Low

### 3.2.2 Management Plans and Procedures

Control strategies for environmental risks are documented within the suite of environmental management plans developed in accordance with DA 231-7-2000. These plans describe the relevant environmental risks, control strategies, monitoring programs and reporting requirements. **Table 9** lists the environmental management plans for Dartbrook Mine and their relevance to the care and maintenance phase. Further details on the management plans prepared for Dartbrook Mine are provided in **Appendix C**.

**Table 9**  
**Risk Control Strategies**

Environmental Aspect	Existing Risk Control Strategies	Applicability to Care and Maintenance
Air quality	Dust Management Plan	Ongoing management
Erosion	Erosion and Sediment Control Plan	Ongoing management
Impacts to surface water	Site Water Management Plan	Ongoing management
Impacts to groundwater	Site Water Management Plan	Ongoing management
Contaminated land	Not an identified risk. Dealt with through incident management	Not applicable. All underground storages removed and cleared of contamination.
Acid mine drainage	Not an identified risk	Not applicable
Flora and fauna	Flora and Fauna Management Plan	Ongoing management. Land disturbance will be minimal during care and maintenance.
Weeds and feral animals	Land Management Plan	Ongoing management
Blasting	Blast Management Plan	Not applicable during care and maintenance.
Operational noise	Noise Management Plan	Ongoing management. Noise will be minimal during care and maintenance.
Visual and lighting	Landscape and Lighting Management Plan	Ongoing management.
Aboriginal and non-Aboriginal Heritage	Archaeology and Cultural Heritage Management Plan	Ongoing management. Land management will be minimal during care and maintenance.
Spontaneous Combustion	Surface Spontaneous Combustion Management Plan	Not applicable during care and maintenance.
Bushfire	Bushfire Management Plan	Ongoing management
Subsidence	PSMPs and Longwall Subsidence Management Plan	Not applicable during care and maintenance.
Methane Drainage/ Ventilation	Section 138 Application	Not applicable during care and maintenance.

### 3.2.3 Specific Environmental Issues

#### **Air Quality**

The risk of air quality impacts during care and maintenance is low due to the minor nature of on-site activities during this phase. Notwithstanding, the Dust Management Plan (DMP) will continue to be implemented during the MOP period.

#### **Surface Water and Groundwater**

Dartbrook operates in accordance with its SWMP, which has been updated to reflect the current state of care and maintenance. The SWMP outlines strategies to reduce the risk of impacts to water sources, such as off-site discharges. AQC will continue to implement the surface water and groundwater monitoring program described in the SWMP.

The Hunter Tunnel is not a working area during the care and maintenance phase. In contrast to the operational phase, the Hunter Tunnel is allowed to accumulate groundwater during the care and maintenance phase. The accumulated groundwater passively drains to the Wynn Seam goaf. The water level in the Wynn Seam goaf can be managed (if required) by pumping water to the Evaporation Ponds for passive dissipation.

#### **Erosion and Sediment Control**

Dartbrook Mine is managed in accordance with an approved ESCP. The controls outlined by the ESCP include:

- Diversion of clean water around disturbed areas;
- Collection of dirty water runoff in catch drains, which convey runoff to sediment traps and/or settling dams;
- Progressive mine rehabilitation;
- Inspection of controls following significant runoff events;
- Maintenance of erosion and sediment control structures; and
- Maintaining freeboard within erosion and sediment control structures to contain the relevant design storm event.

Due to Dartbrook Mine being under care and maintenance, no significant disturbance or rehabilitation will occur during the MOP period.

Existing erosion and sediment control will be maintained (as required). Water runoff from any disturbed areas will continue to be directed into existing sediment dams until these areas are adequately revegetated with grass cover. Given that the rehabilitation areas are now well established, the potential for erosion has been reduced.

The ESCP also outlines examples of remedial works that are implemented as necessary to manage the effects of subsidence on erosion potential, such as:

- Rehabilitation of surface cracks by ripping and seeding;

- Remedial drainage works to direct drainage paths, where necessary;
- Cut and/or fill drainage earthworks to re-establish free drainage in ponding areas; and
- Drainage works or stabilisation works to remediate any areas prone to erosion.

### **Flora and Fauna**

The Flora and Fauna Management Plan (FFMP) outlines strategies to minimise the impact of mining operations on biodiversity values. The FFMP was updated in 2016 to reflect the current state of care and maintenance. Vegetation clearance is generally not required as part of care and maintenance activities. In the unlikely event that it is required, the proposed disturbance will be assessed through the “Permit to Disturb” process and conducted in accordance with the Vegetation Clearing Procedure under the FFMP.

The FFMP includes a Biodiversity Action Plan which provides a framework for ongoing monitoring, review and the establishment of partnerships with external organisations to address biodiversity issues at Dartbrook Mine.

During care and maintenance, the primary risk to flora and fauna is weed and pest infestation. Weed and feral animal management measures are outlined in the FFMP and Land Management Plan.

Livestock grazing is generally permitted on rehabilitated land and undisturbed areas (as required) for management of fuel loads and to promote emergence of other groundcover species. Other areas, such as the River Restoration Project, generally have stock exclusions.

### **Slope Stability**

The completed portion of the REA was rehabilitated by mid 2007. The area is well vegetated and as such, no erosion or slope instability has been observed. The REA grazing trials conducted in 2015 did not induce any slope stability issues (see **Section 8.5.1**).

The Kayuga Entry remains under care and maintenance, as this infrastructure would be required if mining recommences. Unauthorised access to the Kayuga Entry is managed through security fencing. During the mine closure phase, the batters surrounding the Kayuga Entry will be re-shaped to provide a stable and safe landform.

### **Bushfire**

The Bushfire Management Plan documents strategies to minimise the risk of fires igniting and spreading to assets. Bushfire fuel loads are managed through grazing and are monitoring through an annual audit.

### **3.2.4 Site Security and Public Safety**

All employees and contractors are required to complete an Induction Program prior to commencing work at Dartbrook Mine. Authorised visitors must be escorted by Dartbrook Mine personnel at all times whilst on site.

Unauthorised access to the site is prohibited, as indicated by clearly visible signage.

Additional security measures are implemented during care and maintenance, including the following:

- The perimeter of the CHPP and West Site surface facilities are enclosed within a stockproof fence and signposted;
- The immediate CHPP infrastructure is enclosed within a security fence;
- The Kayuga Entry is fully enclosed within a security fence;
- The main entrances to the West Site entrance remain closed and secured when not in use;
- Barriers across the portals to prevent unauthorised access into the underground mine;
- A security firm is employed to patrol the site outside of work hours; and
- Presence of a full-time caretaker.

Infrastructure that is remote from the main surface facilities (including ventilation shafts, electricity substations and pleuger pumps) is secured through fencing, locked gates and regular inspections.

## 4 POST MINING LAND USE

### 4.1 REGULATORY REQUIREMENTS

Rehabilitation of the site is required under the conditions of DA 231-7-2000 and AQC's mining authorities. **Table 10** identifies the relevant conditions and where these are addressed in this plan.

**Table 10**  
**Regulatory Conditions Addressing Rehabilitation**

Condition	Requirement	Where Addressed
<b>Development Consent DA 231-7-2000</b>		
2.1(e)	At least two years prior to the cessation of mining operations the Applicant must investigate, determine and report, taking account of the potential community benefits, on a final strategy for the future use of the mine site, weirs, dams and any other infrastructure in consultation with the Department, DPIE Water, MSC and UHSC for approval of DRG and the Secretary.	<b>Section 4</b>
3.7(a)	The Applicant must rehabilitate the site to the satisfaction of Resources Regulator. This rehabilitation must be generally consistent with the proposed rehabilitation activities described in the documents referred to in Condition 1.1 (a) and comply with the objectives in Table 3.	<b>Section 4.2</b>
3.7(b)	The Applicant must rehabilitate the site progressively, that is, as soon as reasonably practicable following disturbance. All reasonable steps must be taken to minimise the total area exposed at any time. Interim stabilisation and temporary vegetation strategies must be employed when areas prone to dust generation, soil erosion and weed incursion cannot be permanently rehabilitated.	<b>Section 2.3.9</b>
5.1(a)(i)	The Applicant must: Ensure the construction, operation and decommissioning of the rejects replacement area meets relevant geotechnical factors of safety and long-term stability criteria, suitable for a permanent feature of the landscape;	<b>Section 3.2.3 and Table 17</b>
6.2(a)	The Applicant must ensure the prompt and effective rehabilitation of all disturbed areas of the mine site to minimise the generation of wind erosion dust.	<b>Section 2.3.9</b>
<b>CL386</b>		
11	The registered holder shall comply with the provisions of the Coal Mines Regulation Act 1982 and the Regulations thereunder concerning the closing of any shafts and outlets within the subject area and the surface lands the subject of or affected by any such shafts and outlets upon the closure shall be rehabilitated to the satisfaction of the Minister.	<b>Section 5.2</b>
30	Subject to any specific condition of this lease providing for rehabilitation of any particular part of the subject area affected by mining or activities associated therewith, the registered holder shall: a) reinstate, level, regrass, reforest and contour to the satisfaction of the Minister, any part of the subject	<b>Sections 3.2.3 and 5.2</b>

Condition	Requirement	Where Addressed
	<p>area that may, in the opinion of the Minister have been damaged or deleteriously affect by mining operations, and</p> <p>b) fill in, seal or fence, to the satisfaction of the Minister, any excavation within the subject area.</p>	
33	If so directed by the Minister the registered holder shall rehabilitate to the satisfaction of the Minister and within such time as may be allowed by the Minister any lands within the subject area which may have been disturbed by the operations hereby authorised.	Noted
34	Upon completion of operations on the surface of the subject area or upon the expiry or sooner determination of this concession or authorisation, as the case may be, or any renewal thereof, the registered holder shall remove from such surface such buildings, machinery, plant, equipment, constructions and works as may be directed by the Minister and such surface shall be	<b>Section 5.2</b>
35	If so directed by the Minister the registered holder shall rehabilitate to the satisfaction of the Minister and within such time as may be allowed by the Minister any lands within the subject area which may have been disturbed by prospecting operations carried out by the registered holder.	Noted
36	If so directed by the Minister the registered holder shall rehabilitate to the satisfaction of the Minister and within such time as may be allowed by the Minister any lands within the subject area which may have been disturbed by mining or prospecting operations whether such operations were or were not carried out by the registered holder.	Noted
64(xi)	Upon abandonment of operations on any site, the registered holder shall batter the side of each excavation opened up or used by the registered holder to a safe low angle and all such excavations shall be effectively drained to the satisfaction of the Minister.	<b>Sections 3.2.3 and 5.2</b>
<b>ML1381</b>		
4	<p>Subject to any specific condition of this authority providing for rehabilitation of any particular part of the subject area affected by mining or activities associated therewith, the lease holder shall;</p> <p>a) shape and revegetate to the satisfaction of the Minister, any part of the subject area that may, in the opinion of the Minister have been damaged or deleteriously affected by mining operations and ensure such areas are permanently stabilised, and,</p> <p>b) reinstate and make safe, including sealing and/or fencing, any excavation within the subject area.</p>	<b>Section 5.2</b>
<b>ML1456 and ML1497</b>		
21	If so directed by the Minister the lease holder shall rehabilitate to the satisfaction of the Minister any lands within the subject area which may have been disturbed by the lease holder.	Noted
22	Upon completion of operations on the surface of the subject area or upon the expiry or sooner determination of this authority or any renewal thereof, the lease holder shall remove	<b>Section 5.2</b>

Condition	Requirement	Where Addressed
	from such surface such buildings, machinery, plant, equipment, constructions and works as may be directed by the Minister and such surface shall be rehabilitated and left in a clean, tidy and safe condition to the satisfaction of the Minister.	
23	If so directed by the Minister the lease holder shall rehabilitate to the satisfaction of the Minister and within such time as may be allowed by the Minister any lands within the subject area which may have been disturbed by mining or prospecting operations whether such operations were or were not carried out by the lease holder.	Noted

## 4.2 POST MINING LAND USE GOAL

Prior to the development of Dartbrook Mine, the land at the site was used predominantly for dryland grazing with limited dryland cropping. As stated in Section 6.6 of the EIS, the objective of mine closure is that “*all lands disturbed by the Dartbrook Extended proposal will be returned to a similar productive capacity to that which existed prior to mining*”.

The land overlying the underground mining area generally conforms to Land Capability Classes III, IV, V and VI. These classes of land are suitable for dryland grazing and occasional cropping, which is consistent with the current land use.

Impacts to the land at Dartbrook Mine have occurred through mine subsidence and surface disturbance for infrastructure development. There are proven rehabilitation techniques to restore the land capability of subsided and disturbed areas.

Subsidence impacts due to completed longwall mining are unlikely to have altered the land capability of the overlying land. Nevertheless, subsidence inspections will be undertaken to identify residual impacts such as surface cracking and deformations. Subsidence impacts are readily able to be remediated.

During mine closure, infrastructure and hardstand areas will be decommissioned and rehabilitated using a pasture mix. The rehabilitated grassland will be consistent with the pre-mining land capability (i.e. Classes III, IV, V and VI).

The approved REA is located on the western slopes of Browns Mountain. Due to its steep gradients, Browns Mountain is comprised of Class VI and VII land, which is suitable for limited managed grazing. Although a cattle grazing trial has successfully been conducted on the rehabilitated REA, these steep slopes will not be suitable for prolonged grazing. As such, the post-mining land use goal for the REA is to establish open grassland habitat.

Class II land is present within the Hunter River floodplain. AQC's landholdings within the floodplain have been used for dairy farming (Garoka Dairy) during both previous mining operations and the care and maintenance phase. Dartbrook Mine has avoided impacts to Class II land. Accordingly, this land will continue to be suitable for dairying purposes following mine closure.



The final land use of those “Forest” areas sown to Red River Gums (see **Plan 4**) or planted to Forest species as part of Dartbrook’s past discretionary biodiversity projects is still to be resolved. This will be investigated further in the Mine Closure Plan.

There have been no objections to the proposed final land use during previous stakeholder consultation programs. The following suggestions have been raised by stakeholders:

- Land that is suitable for cropping could be used for production of hemp (low / no THC content hemp);
- The Western Access Road should be retained for the benefit of local farmers, residents and emergency services (indicated as “Proposed Public Road” on **Plan 4**);
- The administration building and workshop at the West Site could be retained for a community or commercial purpose; and
- The rail loop may be of value to ARTC as a temporary park-up location for trains.

The suitability of land for cultivation of hemp (or other crops) will be considered; however, land within the floodplain will be used preferentially for dairy farming (i.e. continuation of Garoka Dairy).

### 4.3 REHABILITATION OBJECTIVES

Table 3 of DA 231-7-2000 prescribes rehabilitation objectives for Dartbrook Mine, which include:

- Safe, stable and non-polluting;
- Fit for the intended post-mining land use/s;
- Nominated land capability classification is achieved and is self-sustaining;
- Consistent with surrounding topography to minimise visual impacts; and
- Incorporate relief patterns and design principles consistent with natural drainage.

The conceptual final landform (see **Plan 4**) has been designed to be consistent with these objectives. Specific performance criteria for mine rehabilitation are outlined in **Section 6**.

As an underground mine, Dartbrook Mine has a relatively small surface disturbance footprint. Some aspects of Dartbrook Mine, such as the completed portion of the REA, have been rehabilitated during the care and maintenance period. The remaining infrastructure areas will be rehabilitated during mine closure. Final site rehabilitation will be conducted to the satisfaction of DRG.

Monitoring will be conducted for a sufficient period following rehabilitation to demonstrate that the rehabilitation objectives prescribed by DA 231-7-2000 have been achieved.

#### **Infrastructure Areas**

The general rule is that mining infrastructure will be demolished and removed from the site. However, infrastructure may be retained for the benefit of future land users (subject to agreement). Non-mining infrastructure (such historic heritage items) will be retained post-mining.

The rehabilitation undertaken to date has primarily consisted of exotic grasses and pastures on broad acre areas. These rehabilitated areas are suitable for the target land use of cattle grazing.

Although the target final land use for Dartbrook Mine is grazing land, the mine infrastructure areas will be rehabilitated to establish native woodland. Upon removal of mining infrastructure, these disturbed areas will be rehabilitated using native tree, shrub and grass species. Treed rehabilitation is proposed for infrastructure areas to facilitate landform stability and preservation of downstream water quality. The infrastructure areas that will be rehabilitated to native woodland are shown on **Plan 4** and include the East Site, West Site, evaporation ponds and ventilation shafts. Areas of native woodland rehabilitation will be fenced off to exclude livestock. These rehabilitation practices have been implemented successfully at other mine sites in the Hunter Valley.

This strategy is consistent with the previously approved MOP.

### ***Subsidence Areas***

In total, approximately 818 ha of land has been subsided as a result of previous mining activities at Dartbrook Mine. Subsidence effects have generally been minimal since the suspension of longwall mining in 2006.

Previously remediated areas have remained stable during care and maintenance. Areas that were disturbed by mine subsidence were remediated by sowing a pasture seed mixture. These areas now exhibit good ground cover. Subsidence due to previous mining has not affected the agricultural land capability.

## 5 REHABILITATION PLANNING AND MANAGEMENT

### 5.1 DOMAIN SELECTION

As an underground mine, Dartbrook Mine has a substantially smaller surface footprint than the open cut mines in the Hunter region.

Dartbrook Mine was designed to minimise impacts on agricultural activities. The siting of surface infrastructure avoided the higher quality agricultural land (i.e. land within the floodplain). The land that is not required for mining operations has continued to be used for agricultural enterprises, such as grazing and dairying.

The primary domains at Dartbrook Mine represent land use categories during operations. The primary domains are listed in **Table 11** and shown in **Plan 2**.

**Table 11**  
**Primary Domains (Operational Domains)**

Label	Primary Domain
1	Infrastructure Areas
2	Overburden Emplacement/Bunds
3	Primary Water Management
4	Secondary Water Management
5	Rehabilitated Grassland
6	Forestry Area
7	Cemetery

Secondary domains are land management units with a similar post-mining land use objective. The five secondary domains defined for Dartbrook Mine are listed in **Table 12** and shown in **Plan 4**. The rehabilitation status of the various domains at the beginning and end of the current MOP period is indicated in **Table 13**.

**Table 12**  
**Secondary Domains (Post Mining Land Use)**

Label	Secondary Domain	Final Land use
A	Rehabilitated Grassland	Native Vegetation (suitable for livestock grazing)
B	Woodland Area	Native Vegetation (suitable for livestock grazing)
C	Forestry Area	Environmental / Biodiversity values
D	Cemetery	Community benefit
E	Secondary Water Management	Livestock use

**Table 13**  
**Primary Domains**

Label	Primary Domain	Status November 2020	Status December 2022
1	Infrastructure Area	All infrastructure areas are considered active/operating, with the exception of: <ul style="list-style-type: none"> <li>• Fan House 2 (currently sealed);</li> <li>• The CHPP (currently under care and maintenance); and</li> <li>• The area serviced by the goaf drainage facilities (currently used for grazing).</li> </ul>	All infrastructure areas are considered active/operating, with the exception of: <ul style="list-style-type: none"> <li>• Fan House 2 (currently sealed);</li> <li>• The CHPP (currently under care and maintenance); and</li> <li>• The area serviced by the goaf drainage facilities (currently used for grazing).</li> </ul>
2	Overburden Emplacement/Bunds	Operating infrastructure	Operating infrastructure
3	Primary Water Management	Operating infrastructure	Operating infrastructure
4	Secondary Water Management	Operating infrastructure	Operating infrastructure
5	Rehabilitated Grassland	Rehabilitation Complete	Rehabilitation Complete
6	Forestry	Existing & protected	Existing & protected
7	Cemetery	Existing & protected	Existing & protected

## 5.2 DOMAIN REHABILITATION OBJECTIVES

**Table 14** lists the rehabilitation objectives for each domain in order to make the land suitable for the final land use.

**Table 14**  
**Rehabilitation Objectives**

Label	Primary/Secondary Domain	Asset	Rehabilitation Objective / post mining land use
1B	Infrastructure/Woodland Area	Fan Housing – Fan House 1 is operational	Infrastructure decommissioned and removed. Disturbed land rehabilitated to improved and/or native pastures with scattered trees. Land suitable for cattle grazing.
1B	Infrastructure/Woodland Area	Mine Entries and Portals	To be decommissioned, shaped and rehabilitated to improved and/or native pastures with scattered trees. Land suitable for cattle grazing.
1B	Infrastructure/Woodland Area	Administration office and car park	To be decommissioned, shaped and rehabilitated to improved and/or native pastures with scattered trees. Land suitable for cattle grazing. Infrastructure will be retained if it is required by stakeholders for any other future use.
1B	Infrastructure/Woodland Area	Hardstand Areas	To be decommissioned and rehabilitated to improved and/or native pastures with scattered trees. Land suitable for cattle grazing.
1B	Infrastructure/Woodland Area	Coal Preparation Plant	To be decommissioned and rehabilitated to improved and/or native pastures with scattered trees. Land suitable for cattle grazing.
1B	Infrastructure/Woodland Area	Topsoil stockpiles	To be decommissioned and rehabilitated to improved and/or native pastures with scattered trees. Land suitable for cattle grazing.
1	Infrastructure (Proposed Public Road)	Western Access Road	To be retained for the benefit of local residents.
1B	Infrastructure/Woodland Area	Goaf dewatering pumping system	To be decommissioned and rehabilitated to improved and/or native pastures with scattered trees. Land suitable for cattle grazing.
1B	Infrastructure/Woodland Area	Area serviced by goaf drainage facilities.	Area is currently grazed by cattle.

Label	Primary/Secondary Domain	Asset	Rehabilitation Objective / post mining land use
			Infrastructure decommissioned and top of pipe removed. Land to be decommissioned and rehabilitated to improved and/or native pastures with scattered trees.
2B	Overburden Emplacement & Bunds/Woodland Area	Overburden stockpiles / bunds	To be decommissioned and rehabilitated to improved and/or native pastures with scattered trees. Land suitable for cattle grazing.
3B	Primary Water Management/ Woodland Area	Evaporation Ponds	Ponds decommissioned, filled in and rehabilitated to improved and/or native pastures with scattered trees. Land suitable for cattle grazing.
3E	Primary Water Management/Secondary Water Management	Industrial sediment dams	Dams retained for sediment control, water containment and livestock
4E	Secondary Water Management/ Secondary Water Management	Rural stock water / sedimentation dams	Dams will continue to be used for rural purposes (e.g. stock watering).
5A	Rehabilitated Grassland/Rehabilitated Grassland	Reject Emplacement Area	Already rehabilitated to improved and/or native pastures. Rehabilitation strategically grazed by cattle.
6C	Forestry/Forestry	Forestry and Red Gum areas	To remain as a biodiversity or community asset.
7D	Cemetery/Cemetery	Cemetery (and Riverview Homestead)	Pre-existing building/cemetery. To remain as a community asset.

### 5.3 REHABILITATION PHASES

**Table 15** indicates the rehabilitation phase applicable to each domain at the commencement of this MOP. Given that Dartbrook Mine is in a care and maintenance phase, the rehabilitation status is not expected to change during the MOP period.

#### 5.3.1 Active Mining Area

There is no active mining proposed for the MOP period. However, any domains that are being maintained for potential mining purposes in the future (subject to relevant approvals) are deemed to be “Active Mining Areas”, as indicated in **Table 15**. The administration building and other domains that are used for care and maintenance purposes are also considered to be in the “Active Mining Area” rehabilitation phase.

#### 5.3.2 Decommissioning

Any decommissioning that can be undertaken without affecting options for future mining has already been completed to the appropriate rehabilitation phase. There are no further decommissioning activities scheduled for this MOP term.

#### 5.3.3 Landform Establishment

All landform establishment to date was undertaken prior to the commencement of care and maintenance. Further landform establishment will only occur following the decommissioning of infrastructure during the mine closure phase.

#### 5.3.4 Growth Medium Development

No growth medium development is proposed during the term of this MOP. However, maintenance and/or repair of previously rehabilitated areas may be undertaken if required.

#### 5.3.5 Ecosystem and Land Use Establishment

The existing rehabilitated areas have progressed beyond the establishment phase. The intended post-mining land use is livestock grazing on native / improved grassland.

#### 5.3.6 Ecosystem and Land Use Sustainability

The rehabilitated areas at Dartbrook Mine are now more than 13 years old. Cattle grazing has successfully been trialled on the rehabilitated REA (see **Section 8.5.1**). Over 90% groundcover was maintained during the grazing trial. This activity will likely continue during the MOP term subject to livestock market conditions and landholder interest.

#### 5.3.7 Relinquished Lands

No land has been relinquished to date. There is unlikely to be any land relinquishment during the MOP period.

**Table 15**  
**Summary of Rehabilitation Phases for Each Domain**

Domain \ Rehabilitation Phase	Fan Housing (1B)	Mine Entries and Portals (1B)	Administration office and car park (1B)	Hardstand areas (1B)	Coal Preparation Plant (1B)	Topsoil stockpiles (1B)	Main access road (1)	Goaf dewatering pumping system (1B)	Area serviced by goaf drainage facilities. Area is currently grazed (1B)	Overburden stockpiles / bunds (1B)	Evaporation Ponds (3B)	Industrial Sedimentation dams (3E)	Rural stock water / sedimentation dams (4E)	Rehabilitated areas (5A)	Forestry and Red Gum areas. (6C)	Cemetery and Heritage buildings (7C)
Active Mining Area (C&M)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	x	✓	✓
Decommissioning	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Landform Establishment	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Growth Medium Development	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Ecosystem and Land Use Establishment	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Ecosystem and Land Use Sustainability	x	x	x	x	x	x	x	x	x	x	x	x	x	✓	x	x
Relinquished Lands	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

✓ = Some areas of this domain are in this phase at the commencement of the MOP term (see Note below).

x = Domain not expected to enter this rehabilitation phase during the MOP term (see Note below).

Note: There are no scheduled changes to rehabilitation phases from the commencement to the completion of the MOP term.



## 6 PERFORMANCE INDICATORS, COMPLETION / RELINQUISHMENT CRITERIA

No decommissioning or rehabilitation activities are proposed for the term of this MOP. Existing rehabilitation has been deemed satisfactory by the annual inspections undertaken by DRG (and its predecessors). **Table 16** presents the rehabilitation indicators relevant to each rehabilitation phase. These indicators support the post-mining land use goal of livestock grazing of native / improved pastures. **Table 17** presents objectives, indicators and criteria for the various Rehabilitation Phases.

**Table 16**  
**Rehabilitation Indicators**

Rehabilitation Phase	Indicators
Decommissioning	<ul style="list-style-type: none"> <li>• Mine entries and portals to be appropriately sealed</li> <li>• Infrastructure (including the CHPP): <ul style="list-style-type: none"> <li>○ reused / recycled (where possible) or removed and appropriately disposed of;</li> <li>○ concrete recycled or disposed of in the base of the Kayuga Entry;</li> <li>○ ground contamination is remediated or removed appropriately; and</li> <li>○ services decommissioned.</li> </ul> </li> <li>• The retention of workshop and/or administration building for approved post-mining land use such as rural or light industry may be a future option.</li> <li>• Evaporation Ponds and dams without a post-mining use to be decommissioned</li> </ul>
Landform establishment	<ul style="list-style-type: none"> <li>• Mine entries and portals to be shaped to suit Class IV Land Capability (slope grade and compatibility with the surrounding area)</li> <li>• Areas of removed infrastructure to be shaped to generally match the local contours and integrate with the existing and constructed drainage lines</li> <li>• Evaporation Ponds and dams without a post-mining use to be infilled and shaped to conform to the existing topography. Saline material to be salvaged, removed and disposed appropriately.</li> </ul>
Growth Medium Development	<ul style="list-style-type: none"> <li>• Shaped mine entries and areas of removed infrastructure to be ripped to &gt;600mm and topsoil or topdressing medium to be spread to &gt;100mm (subject to soil tests) with addition of gypsum and fertiliser where required</li> <li>• Shaped Evaporation Ponds as above</li> </ul>
Ecosystem Establishment	<ul style="list-style-type: none"> <li>• Top-soiled and top-dressed areas to be sown to a mixture of improved and native grass species that have been proven to both stabilise rehabilitated areas and provide livestock grazing opportunities (species presence and germination rate)</li> <li>• Strategic areas will be sown to a native tree species seed mixture such as ironbark, yellow box, spotted gum and acacia spp. Tree areas to be fenced out.</li> </ul>
Ecosystem development	<ul style="list-style-type: none"> <li>• The grass seed mixture has proven to successfully germinate and grow to maturity while stabilising the area in approx. 2 years and available for rotational grazing in about 4-5 years</li> <li>• The strategic tree planting has also been successful in the Hunter with nutrient cycling and seed development within 3-5 years. (species growth rates and density, nutrient re-cycling, grazing resilience)</li> </ul>

**Table 17**  
**Rehabilitation Table**

Domain	Regulatory Requirement	Domain Objective	Indicator	Completion Criteria	Justification/ Source	Complete (Yes/No)	Link to TARP	Progress at Start of MOP
Rehabilitation Phase - Decommissioning								
1B	Safety is a top priority. <i>Work Health &amp; Safety Act 2011</i>	Majority of infrastructure is removed except components that have a demonstrable market value.	Disconnection of all services to infrastructure being decommissioned	Yes	Section 6.6 of EIS (2000) Condition 3.7 of DA 231-7-2000	No	N/A	Not Commenced
			Office retained	Yes		No	N/A	Not Commenced
			Workshop retained	Yes		No	N/A	Not Commenced
			Miscellaneous infrastructure removed	Yes		No	N/A	Not Commenced
			CPP & load in/out facilities removed	Yes		No	N/A	Not Commenced
			Rail loop removed	Yes		No	N/A	Not Commenced
			Rail loop removed Mine entries sealed	Yes		No	N/A	Not Commenced
		Entries sealed to the satisfaction of DRG	Yes	Condition 11 of CL386	No	N/A	Not Commenced	
Rehabilitation Phase – Landform Establishment								
1B	Site to be stable and	Landform compatible with	Class IV land capability	<10 % slope	Mine Closure Plan	No	Table 22: Landform	Not Commenced

Domain	Regulatory Requirement	Domain Objective	Indicator	Completion Criteria	Justification/ Source	Complete (Yes/No)	Link to TARP	Progress at Start of MOP
	capable of supporting the post-mining land use	surrounding topography and land use (grazing).	Stable and comparable drainage systems	2% slope Grass or rip rap	Section 7.3 of the EIS (2000)	No	Table 22: Landform	Not Commenced
	Site to conform to Synoptic Plan for Integrated Landscapes with appropriate bunding.		Landform compatible with existing adjacent landforms.	Endorsed by a landscape / visual consultant	Section 5.26 of the EIS (2000) working area Condition 3.8 of DA 231-7-2000	No	Table 22: Landform	Not Commenced
	At cessation of mining, return the land to a similar productive capacity as that which existed pre-mining		Establishment of Class IV lands	<10% slope	Section 6.6 of the EIS (2000)	No	Table 22: Landform	Not Commenced
	Erosion and Sediment Control		Long-term erosion control	70 % vegetation cover. No evidence of erosion	Condition 3.6 of DA 231-7-2000	No	Table 22: Vegetation	Not Commenced
Rehabilitation Phase - Growth Medium Development								

Domain	Regulatory Requirement	Domain Objective	Indicator	Completion Criteria	Justification/ Source	Complete (Yes/No)	Link to TARP	Progress at Start of MOP
1B	Site to be stable and capable of supporting the post-mining land use	Landform compatible with surrounding topography and land use (grazing).	Topsoil depth Gypsum depth (0-200 mm) Biosolids Fulfil soil test recommendations	100mm check Rip in 200 mm Soil sample and test	Sections 3.6 and 4.3.4 of the EIS (2000)	No	Table 22: Landform	Not Commenced
		Class IV lands require pasture improvement, stock control and fertiliser application		Comparable to adjacent grazing land		No	Table 22: Landform/ Vegetation	Not Commenced
		100 mm to 200 mm of topsoil applied		Measure and test		No	Table 22: Vegetation	Not Commenced
		Application of fertilizer, gypsum and other ameliorants		Soil Sample and test		No	Table 22: Vegetation/ Landform	Not Commenced
Rehabilitation Phase - Ecosystem establishment								
1B	Land to be returned to a similar productive capacity as that which existed pre-mining	Successful cover with target spp.	Timing Varieties % germination	Inspection by an expert Varieties germinated with appropriate %	Section 4.3.4 of the EIS (2000)	No	Table 22: Landform	Not Commenced

Domain	Regulatory Requirement	Domain Objective	Indicator	Completion Criteria	Justification/ Source	Complete (Yes/No)	Link to TARP	Progress at Start of MOP
	Undulating foothills used for dryland grazing of cattle	Landform compatible with surrounding topography and land use (grazing).	Cattle carrying capacity	Carry > 1 head/5 ha		No	Table 22: Vegetation	Not Commenced
Rehabilitation Phase - Ecosystem development								
1B	Land to be returned to a similar productive capacity as that which existed pre-mining	Landform compatible with surrounding topography and land use (grazing).	Cattle carrying capacity	Carry > 1 head/5 ha	Section 4.3.4 of the EIS (2000)	No	Table 22: Landform/ Vegetation	Not Commenced
Rehabilitation Phase – Decommissioning								
3B, 4E, 3E, 2B, 1B	Undulating foothills used for dryland cattle grazing	REA constructed to stable slopes with sufficient coverage to contain rejects.	REA constructed in 4m benches, covered by >500mm of inert material, producing slopes of 10-14°	Measure indicators during construction	Sections 4.3.4 and 5.17 of the EIS (2000) Condition 5.1 of DA 231-7-2000	Yes	Table 22: Spoil/ Waste/ Landform	Complete
		Landform compatible with surrounding topography and land use (grazing).	Evaporation ponds: remove salinity, salvage topsoil where possible and fill voids	Soil and salinity testing	Section 4.3.4 of the EIS (2000)	No	Table 22: Spoil/ Waste	Not Commenced
Rehabilitation Phase – Landform Establishment								

Domain	Regulatory Requirement	Domain Objective	Indicator	Completion Criteria	Justification/ Source	Complete (Yes/No)	Link to TARP	Progress at Start of MOP
3B, 4E, 3E, 2B, 1B	Land to be returned a similar productive capacity to that which existed pre-mining	Landform compatible with surrounding topography and land use (grazing).	Class IV land capability	<10% slope	Section 6.6 of the EIS (2000)	No	Table 22: Landform	Not Commenced
	Site to be stable and capable of supporting the post-mining land use		Stable and comparable drainage systems	2% slope Grass or rip rap	Section 7.3 of the EIS (2000)	No*	Table 22: Landform	Not Commenced
	Site to conform with Synoptic Integrated Landscape Plan with appropriate bunding		Landform compatible with existing adjacent landforms.	Endorsed by a landscape / visual consultant	Section 5.26 of the EIS (2000) Condition 3.8 of DA 231-7-2000	No*	Table 22: Landform/ Vegetation	Not Commenced
<b>Rehabilitation Phase – Growth Medium Development</b>								
3B, 4E, 3E, 2B, 1B	Site to be stable and capable of supporting the	Landform compatible with surrounding	Topsoil depth Gypsum depth Biosolids Fulfil soil test recommendations	100mm check Rip in 200mm	Sections 3.6 and 4.3.4 of the EIS (2000)	No*	Table 22: Landform/ Vegetation	Not Commenced

Domain	Regulatory Requirement	Domain Objective	Indicator	Completion Criteria	Justification/ Source	Complete (Yes/No)	Link to TARP	Progress at Start of MOP
	post-mining land use	topography and land use (grazing).		Soil sample and test				
		Class IV lands require pasture improvement, stock control and fertiliser application		Comparable to adjacent grazing lands		No*	Table 22: Landform/ Vegetation	Not Commenced
		100mm to 200mm topsoil applied		Measure and test		No*	Table 22: Landform/ Vegetation	Not Commenced
		Application of fertilizer, gypsum and other ameliorants		Soil sample and test		No*	Table 22: Landform/ Vegetation	Not Commenced
Rehabilitation Phase - Growth Medium Development								
3B, 4E, 3E, 2B, 1B	Land to be returned to a similar productive capacity as that which existed pre-mining	Successful cover with target spp.	Timing Varieties % germination	Inspection by expert Varieties germinated and % as appropriate	Section 4.3.4 of the EIS (2000)	No*	Table 22: Landform/ Vegetation	Not Commenced
	Undulating foothills used for dryland	Landform compatible with surrounding	Cattle carrying capacity	Carry > 1 head/5ha	Section 4.3.4 of the EIS (2000)	No*	Table 22: Landform/ Vegetation	Not Commenced

Domain	Regulatory Requirement	Domain Objective	Indicator	Completion Criteria	Justification/ Source	Complete (Yes/No)	Link to TARP	Progress at Start of MOP
	grazing of cattle	topography and land use (grazing).						
<p>*5A The REA has been tested under grazing conditions with the first trial in 2015/2016. The Wattus Ponds area has been grazed as part of a normal cattle grazing operation as carried out on adjoining land not affected by mining.</p> <p>1B The Goaf dewatering system is subsurface with normal grazing carried out on the surface of these lands.</p>								



## 7 REHABILITATION IMPLEMENTATION

### 7.1 STATUS AT MOP COMMENCEMENT

**Table 18** shows the status of each domain at the commencement of the MOP term. These statuses are reflected in **Plan 2**.

**Table 18**  
**Domain Status at MOP Commencement**

Domain ID	Primary Domain Asset	Current Status
1B	Fan Housing – Fan house 1 is operational	Fan house 2 is partly decommissioned and has been capped and sealed to prevent greenhouse gases escaping. Fan house 1 is active.
3B	Evaporation Ponds	Ponds are active and assist with managing water volumes on site.
4E	Rural stock water / sedimentation dams	Currently active.
3E	Industrial sediment dams	Currently active.
1B	Mine Entries and Portals	Currently active.
1B	Administration Office and car park	Currently active.
5A	Rehabilitated areas	Already rehabilitated to improved and/or native pastures with scattered trees to integrate with the surrounding cattle grazing land use. REA was constructed in 3-4 m lifts, shaped, covered with >1.2 m of inert clay to 95% standard compaction, ripped to 200 mm with organic matter and gypsum, and covered with 100 mm of topsoil prior to sowing with pasture seed.
1B	Hard Stand Areas	Currently active.
1B	Coal Preparation Plant	Currently active but under care and maintenance.
2B	Overburden stockpiles / bunds	Currently active.
1B	Topsoil stockpiles	Currently active.
1	Main access road	Currently active.
1B	Goaf dewatering pumping system	Currently active.
1B	Area serviced by goaf drainage facilities.	Currently active. Area is currently grazed by cattle
7C	Cemetery, Riverview homestead.	Existing. Maintained for benefit of the community.
6C	Discretionary Biodiversity – Forestry and Red Gum areas	Existing. Maintained for environmental/biodiversity values

## 7.2 PROPOSED REHABILITATION ACTIVITIES DURING THE MOP TERM

No rehabilitation activities will be undertaken whilst Dartbrook Mine is under care and maintenance. Consequently, the rehabilitation status of the domains during the MOP period will be same as at the commencement of the MOP (as shown in **Table 18**). The rehabilitation status during the MOP period is reflected in **Plans 3A** and **3B**.

Given that there will be no demolition, disturbance or rehabilitation activities during the MOP period, the cumulative disturbance and rehabilitation areas shown in **Table 19** will remain unchanged.

**Table 19**  
**Disturbance and Rehabilitation Progression during the term of the MOP**

Year	Total Disturbance Area (ha)*	Total Rehabilitation Area (ha) (per MOP Year)**	Cumulative Rehabilitation Area	Comments/ Explanation
Start of MOP (1 Jan 2021)	118	0	31.0	Care and Maintenance
End of Year 1 (31 Dec 2021)	118	0	31.0	Care and Maintenance
End of MOP (5 Dec 2022)	118	0	31.0	Care and Maintenance

\* Total Disturbance Area includes areas of land which are in the following phases: Active and Decommissioning. Temporary rehabilitation is to be considered as an active mining area for the purposes of this table.

\*\* Total Rehabilitation Area includes areas of land which are within the following phases: Landform Establishment and Growth Medium Development, Ecosystem and Land Use Establishment and ecosystem and Land Use Sustainability.

## 7.3 SUMMARY OF REHABILITATION AREAS DURING THE MOP TERM

During the term of this MOP, the area and status of each domain is unlikely to change. **Table 20** shows primary and secondary domains, rehabilitation phases and areas at commencement and completion of the MOP.

**Table 20**  
**Rehabilitation Summary**

Primary Domain	Secondary Domain	Code	Rehabilitation Phase	Area at Start of MOP (ha)	Area at End of MOP (ha)
Infrastructure Areas: Fan Housing – Fan house 1 is operational	Woodland Area: Improved &/or Native pastures with scattered trees	1B	Active	0.4	0.4
Infrastructure Areas: Mine Entries and Portals	Woodland Area: Improved &/or Native pastures with scattered trees	1B	Active	1.8	1.8
Infrastructure Areas: Administration office and car park	Woodland Area: Infrastructure/ Industrial/ Residential/ Rural	1B	Active	1.2	1.2
Infrastructure Areas: Hardstand Areas	Woodland Area: Improved &/or Native pastures with scattered trees	1B	Active	2.6	2.6
Infrastructure Areas: Coal Preparation Plant	Woodland Area: Improved &/or Native pastures with scattered trees	1B	Active	31.7	31.7
Infrastructure Areas: Topsoil stockpiles	Woodland Area: Improved &/or Native pastures with scattered trees	1B	Active	0.5	0.5
Infrastructure Areas: Goaf dewatering pumping system	Woodland Area: Improved &/or Native pastures with scattered trees	1B	Active	0.7	0.7
Infrastructure Areas: Area serviced by goaf drainage facilities	Woodland Area: Improved &/or Native pastures with scattered trees	1B	Active	Drainage holes are subsurface	Drainage holes are subsurface
Infrastructure Areas: Main access road	Proposed Public Road	1	Active	13	13
Overburden Emplacement/Bunds	Woodland Area: Improved &/or Native pastures with scattered trees	2B	Active	6.6	6.6
Primary Water Management: Evaporation Ponds	Woodland Area: Improved &/or Native pastures with scattered trees	3B	Active	29.2	29.2

Primary Domain	Secondary Domain	Code	Rehabilitation Phase	Area at Start of MOP (ha)	Area at End of MOP (ha)
Primary Water Management: Industrial Sedimentation dams	Infrastructure/ Industrial/ Residential/ Rural	3E	Active	8.8	8.8
Secondary Water Management: Rural stock water / sedimentation dams	Stock Water Dams	4E	Active	8.0	8.0
Rehabilitated Grassland: REA	Improved &/or Native pastures with scattered trees	5A	Ecosystem and Land Use Sustainability	31.0	31.0
Forestry: Forestry and Red Gum areas	Forestry Area: Environmental /Biodiversity Values	6C	Active	117.2	117.2
Cemetery: Cemetery, Riverview homestead	Community benefit: Community Issues, Buildings, Roads	7C	Active	0.9	0.9

#### 7.4 RELINQUISHMENT PHASE ACHIEVED DURING MOP PERIOD

There are no areas of rehabilitation that are anticipated to be relinquished during the MOP period.

## 8 REHABILITATION MONITORING AND RESEARCH

### 8.1 OVERVIEW

Rehabilitation is currently monitored in accordance with the 'Landscape Management Plan', FFMP and 'Biodiversity Action Plan'. Generally, all relevant issues are monitored and reported on a monthly basis and summarised in the Annual Review.

As Dartbrook Mine is under care and maintenance, its rehabilitation is not expected to change in quantity but its quality will improve with the passing of time.

The following sections provide further detail on the current monitoring and research projects at Dartbrook Mine, which include:

- Red Gum Restoration;
- Forestry Planting; and
- Shelter Belts/Visual Screen.

### 8.2 RED GUM RESTORATION

This project is to enhance and protect a population of *Eucalyptus camaldulensis* (River Red Gums) listed as being endangered in the Hunter Valley. The area is remote from any mine related infrastructure, has been fenced to exclude stock and has over 4,000 River Red Gums planted amongst the mature population.

Currently the River Red Gums that had naturally regenerated as a result of artificial flooding in 2007 continue to thrive within the constructed bunds. As outlined in **Section 8.2**, two-yearly monitoring by qualified ecologists found this area progressing well.

The Scientific Licence issued under Section 132C of the *National Parks and Wildlife Act 1974* has been renewed regularly, to allow rehabilitation and restoration activities to continue in the River Red Gum area.

### 8.3 FORESTRY PLANTING

In 2003, a joint project with State Forests NSW was commenced which established a forestry plantation on undulating grazing land north of the CHPP, and south of the town of Aberdeen. This project involved the establishment of a 75 ha forestry plantation consisting of a total of 75,000 native eucalypt trees planted within the area. The plantation was part of a regional plan to create a sustainable resource in the Upper Hunter Valley for the future on land that is owned by mining companies.

Monitoring of the plantation is also undertaken by ecologists every two years. The last monitoring found that the most successful species were Spotted Gum and Grey Box. To date, the project has also been successful at achieving the additional objectives of establishing a biodiversity corridor, visual screening and stabilising the soil.

## **8.4 SHELTER BELTS / VISUAL SCREEN**

An additional shelter belt / visual screen was planted in 2011 to the west of the New England Highway and included approximately 20% River Red Gums in the heavier alluvial soils. These trees are progressing satisfactorily and will continue to be monitored during the MOP period. This planting is blending with the earlier tree plantings on the bunds to the east of the New England Highway.

## **8.5 RESEARCH AND REHABILITATION TRIALS**

### **8.5.1 Grazing Trial – REA**

In 2015, a cattle grazing trial was undertaken on the rehabilitation REA to demonstrate that rehabilitated land at Dartbrook Mine can sustain grazing by livestock, be productive and blend with the adjacent land use (Hansen Bailey, 2016).

In April 2015, 27 Angus and Angus/ Herefords Cross steers were introduced as weaner steers, with average mass of 274 kg. These cattle were weighted 7 times throughout the year and reached an average of 462 kg in December 2015. The rate of weight gain was reduced in the winter when it was cold and dry (Hansen Bailey, 2016).

Pasture growth was also monitored on five occasions at five sites to coincide with weighing of the steers. Sites 1 and 4 were Rhodes Grass dominant pasture, exceeding 80% coverage throughout the year. Site 2 hayed off more than other sites with some lodging of the tall Rhodes Grass. Site 3 and Site 5 had other species dominating including kikuyu, couch and medics (Hansen Bailey, 2016). The latter were significant in providing palatable high protein feed in July to September period when summer growing species were dormant. Phalaris, Green Panic and Lucerne are widespread throughout the REA and many native grasses were observed sporadically including Queensland Blue Grass, Plains Grass, Chloris spp., Wallaby Grass, Wiregrass, Barbwire Grass and Sporobolus spp. (Hansen Bailey, 2016).

Due to the success of the trial, the area continues to be grazed periodically. Updates will be included in the Annual Review report.

The Hunter Valley coal mines have several grazing trials comparing the outcomes of grazing on rehabilitated land and undisturbed native pasture. To date, the grazing on rehabilitated land has compared favourably to that of undisturbed land. This trend is also reflected in the Dartbrook Mine grazing trial.

## 9 INTERVENTION AND ADAPTIVE MANAGEMENT

### 9.1 THREATS TO REHABILITATION

**Table 21** presents a summary of potential threats which could impact on achieving the rehabilitation objectives for Dartbrook Mine.

**Table 21**  
**Threats to Rehabilitation Success**

Threat to Rehabilitation	Consequence	Key Controls
Unfavourable climate	Poor germination, high mortality rates, erosion issues	Consider seasonal climate trends in timing rehabilitation phases. Species selection suitable for time of planting. Use of cover crop if required.
Failure to identify and correctly place/cap carbonaceous material and acid forming material	Spontaneous combustion, acid mine drainage, poor rehabilitation performance	Correct practices for placement of material is outlined in various site management plans (including Spontaneous Combustion Management Plan, Rehabilitation Management Plan and MOP)
Inadequate landform design	Steep sections, erosion points, slumping/ unstable ground, impacts on land use capability etc.	Mine Planning Rehabilitation Management Plan MOP
Weeds/non-desirable flora species	Invasion of weeds or non-desirable species threatening rehabilitation objectives (species composition/ vegetation community)	Topsoil management (e.g. direct placement, correct stockpile management) Rehabilitation planning Weed management
Inadequate erosion and sediment control	Deep rills on rehabilitation, poor quality water runoff, exposing capped material, loss of topsoil and seed	Landform design Use of cover crops (if required) Use of temporary erosion and sediment control measures (such as sediment dams) in accordance with the ESCP
Mine subsidence	Erosion and damage to vegetation	Monitoring and remedial work (as required)
Unsuitable growth medium/nutrient availability	Failure to achieve germination or desired growth rates	Soil sampling Suitable material placement Application of ameliorants where required Species selection
Vegetation/Growth Medium Suitability	Failure to achieve desired germination/growth rates. Failure to meet rehabilitation objectives	Rehabilitation Management Plan MOP (site domains/rehabilitation criteria)
Bushfire	Damage to mine rehabilitation (e.g. from high intensity fire), erosion/ sediment loss	Implement Bushfire Management Plan Maintain fire trails Manage fuel loads
Unauthorised Access	Damage to rehabilitation by trespassers (e.g. driving over new rehabilitation, fire)	Fenced perimeter, signage, security patrols, and locked main gates after hours.

## 9.2 TRIGGER ACTION RESPONSE PLAN

Dartbrook Mine has developed a Trigger Action Response Plan (TARP) to manage the key threats to rehabilitation (see **Table 22**). The aim of this TARP is to identify proposed contingency strategies in the event of unexpected variations in rehabilitation outcomes (e.g. failure to meet completion criteria) and to mitigate potential impacts before they escalate.

The TARP:

- Summarises the key threats to rehabilitation success;
- Defines trigger levels if early trends indicate a potential risk to the rehabilitation success;
- Defines the response action(s) required in the event of a trigger level exceedance;
- Initiates suitable planned action responses for managing a situation before it escalates;
- Identifies mitigation and remediation measures;
- Outlines monitoring requirements; and
- Includes a protocol for notifying the relevant stakeholders in the event of a major impact to rehabilitation.



**Table 22**  
**TARP for Managing Threats to Rehabilitation Success**

Aspect	Threat	Action	Normal	Level 1 Trigger	Level 2 Trigger
Landform	Slope Gradient	Trigger	Slope: REA Stage 4/bunds: 0-14% <sup>1</sup> Other Areas: 0-10%, Class IV land capability	Slope: REA Stage 4: 14-18% Other Areas: 10-18%	Slope: Over 18%
		Response Action	No Action. Continue Monitoring.	Minor reshaping to achieve rehabilitation objectives if it does not meet criteria. Monitor signs for potential stability issues (poor ground cover, inadequate drainage, cracking or slumping and erosion and sediment controls). Repair any issues to provide a stable landform.	Reshape (via blasting or earthworks) or secure with security fencing/signage. E.g. high wall.
	Erosion Control	Trigger	No evidence of rill, sheet, gully or tunnel erosion. Controls are effective.	Minor evidence of rill, sheet, gully or tunnel erosion (less than 300mm deep or localised impact).	Significant (e.g. >300mm deep or widespread) gully or tunnel erosion present. Widespread rill or sheet erosion present.
		Response Action	No action. Continue to monitor as required.	Monitor erosion. May require remediation. Examples may include: minor earthworks (minor reshaping and drainage control, re-seeding repaired area),	Inspection by appropriately qualified person. Remediation actions may involve more complex earthworks and drainage design, re-establishment of suitable groundcover (potentially incorporating a temporary groundcover such as mulch or cover crop). Ongoing monitoring until stability and/or groundcover established.

<sup>1</sup> Approval for 14° slopes in the REA Stage 4 (s126 approval) dated 08/04/2004 from DP&E.

Aspect	Threat	Action	Normal	Level 1 Trigger	Level 2 Trigger
	Drainage Design	Trigger	2% slope, stable and comparable drainage systems.	Minor issues with drainage that do not impact on rehabilitation success.	Significant drainage system failure impacting on rehabilitation success.
		Response Action	No action. Continue to monitor as required.	Site inspection by a suitably trained person. Investigate the root cause of the issue/s and implement recommended remedial actions as appropriate. Monitor.	Review drainage design with input from qualified person/s. Implement recommended remedial actions as soon as practicable. Monitor.
	Mine Subsidence	Trigger	No evidence of subsidence impacts (i.e. no evidence of scarring from loss of ground cover, no large cracks, no pot holes/slumping activity).	Minor surface cracks or undulations. Landform remains stable/safe.	Cracks opening and/or inadequate drainage resulting in potential for long term issues (e.g. stock injury, inadequate drainage, and inconsistent ground cover).
		Response Action	No action. Continue to monitor and respond to any issues as required.	Inspect area to determine appropriate controls. May require remediation. Examples may include: minor earthworks (shallow ripping, re-seeding repaired area).	Inspection by appropriately qualified person. Recommended actions may involve more complex earthworks/plugs and drainage design, re-establishment of suitable groundcover. Ongoing monitoring until stability and/or groundcover established.
Quality of spoil/waste	Spoil/Waste Quality	Trigger	No evidence of plant toxicity, heating, leaching or contaminated material outside design parameters/controls.	Localised evidence of poor vegetation health/poor germination, early indication of potential heating (via thermocouple readings), elevated analyte levels but contained within management system.	More widespread evidence of poor vegetation health/poor germination, evidence of heating (observation or via thermocouple readings), contaminants leaching through capping or outside of controls.

Aspect	Threat	Action	Normal	Level 1 Trigger	Level 2 Trigger
		Response Action	No action. Continue to monitor (e.g. thermocouples in REA, rehabilitation inspections, water sampling) and respond to any issues as required.	Inspection and review of results by appropriately qualified person. May require further controls such as review of capping material, ensuring runoff/leachate water from pipes is contained and monitored for any trends. Additional testing/amelioration as required.	Inspection and review of results by appropriately qualified person. Development and implementation of action plan. May include earthworks to manage heating. Construction of additional drainage collection or pumps. Possibly adding more capping material, growth media and ameliorative application/re-seeding. Ongoing monitoring, report regulators and Annual Review.
Vegetation/ Growing Conditions (weather, soil)	Poor vegetation Growth	Trigger	70% groundcover established	Less than 70% groundcover established	Less than 50% groundcover established
		Response Action	No response. Monitor as required. Continue cattle grazing (in areas) to show stocking rates can be achieved.	Investigate cause. Implement recommended remedial actions (e.g. minor preparation and re-seeding).	Investigate cause. May need to further investigate growth medium parameters and species selection/timing of seeding. Implement recommended remedial actions.
	Species Suitability	Trigger	Species composition of 5 year old rehabilitation is within 20% of analogue sites	Species composition of 5 year old rehabilitation is within 20%-30% of analogue sites	Species composition of 5 year old rehabilitation is >30% of analogue sites
		Response Action	No response. Monitor as required.	Confirm extent via field inspection & survey if required. Investigate cause. Re-seed areas or plant tube stock as required. Monitor remedial work.	Complete field survey & investigate cause. May require further advice from a consultant or soil testing. Re-seed areas, plant tube stock and/or other treatment as required. Monitor remedial work.
	Presence of Weeds	Trigger	No significant weed infestations within 2 years	10% to 25% cover of undesirable species within 2 years.	> 25% cover of undesirable species within 2 years.
		Response Action	No response required other than routine rehabilitation	Certified weed management contractor to apply correct weed control measures. Record	Certified weed management contractor to apply correct weed control measures. Record location/s and continue to monitor and re-treat as required.

Aspect	Threat	Action	Normal	Level 1 Trigger	Level 2 Trigger
			inspections and maintenance.	location/continue to monitor and re-treat as required. May involve re-seeding with desirable species.	May involve livestock exclusion for defined period. Potential re-seeding with cover crop and desirable species.

## 10 REPORTING

Dartbrook Mine will report performance against rehabilitation objectives, the commitments in this MOP and other regulatory conditions on an annual basis.

The Annual Review is prepared in accordance with Condition 9.2 of DA 231-7-2000 and submitted to the relevant regulatory authorities. The Annual Review reports on the environmental performance of Dartbrook Mine, including monitoring results, effectiveness of management systems and rehabilitation progress. The Annual Review is submitted to the relevant regulatory authorities and made publicly available on the AQC website.

In addition to the Annual Review, annual Compliance Reports are also prepared in accordance with the conditions of AQC's mining authorities. A summary of the reporting requirements under these mining authorities is provided in **Table 23**. Some of the mining authorities require the preparation of an Annual Environmental Management Report (AEMR). The Annual Review fulfils the requirement for an AEMR.

**Table 23**  
**Annual Reporting Obligations under Mining Authorities**

Report Name	Authority	Reporting Period	Due Date	Comments
Annual Activity Report (Exploration Licences)	EL 5525	Annually for the period commencing 23 September	Within one calendar month of grant anniversary date (21 October each year)	<p>An Annual Activity Report is required under Section 163C of the Mining Act, Clause 59 of the Mining Regulation and Condition 8 of each of EL 4574, EL 4575, EL 5525 and A 256.</p> <p>This report consists of an annual:</p> <ul style="list-style-type: none"> <li>• Activity summary and expenditure table;</li> <li>• Exploration report;</li> <li>• Environment management and rehabilitation compliance report; and</li> <li>• Community consultation report.</li> </ul> <p>The approved work program is also required to be re-submitted annually with the Activity Report.</p> <p>This report is prepared in accordance with the Department's Exploration Guideline: Annual activity reporting for prospecting titles (1 March 2016) and Exploration reporting: A guide for reporting on exploration and prospecting in New South Wales (1 March 2016) and contains the information required by Clause 59 of the Mining Regulation.</p> <p>An individual report will be submitted for each exploration licence within one calendar month after the grant anniversary date of the licence.</p>
	A 256	Annually for the period commencing 17 December	Within one calendar month of grant anniversary date (15 January each year)	
	EL 4574	Annually for the period commencing 14 August	Within one calendar month of grant anniversary date (12 September each year)	
	EL 4575	Annually for the period commencing 14 August	Within one calendar month of grant anniversary date (12 September each year)	
Annual Compliance Report (Mining Leases)	ML 1456	Annually for the period commencing 28 September	Within one calendar month of grant anniversary date (27 September each year)	<p>An annual Compliance Report is required under Condition 4 of each of ML 1456, ML 1381, ML 1497 and CL 386.</p> <p>The report must be prepared in accordance with the Department's draft Compliance Report Guidelines (May 2016).</p>

Report Name	Authority	Reporting Period	Due Date	Comments
	ML 1381	Annually for the period commencing 24 October	Within one calendar month of grant anniversary date (23 October each year)	Condition 4 of the mining leases provides that the Compliance Report must be lodged with the Department annually on the grant anniversary date of the mining lease. A consolidated Compliance Report may be submitted with the prior written agreement of the Department. Until that approval is obtained, individual compliance reports will be submitted for each mining lease on the grant anniversary date (due dates are noted at left). <sup>2</sup>
	ML 1497	Annually for the period commencing 7 December	Within one calendar month of grant anniversary date (6 December each year)	
	CL 386	Annually for the period commencing 20 December	Within one calendar month of grant anniversary date (19 December each year)	
Annual Report (Exploration/ Geoscientific Activities – Mining Leases) <sup>3</sup>	CL 386, ML 1381, ML 1456 and ML 1497	Date as per Group Reporting Arrangement – Annually Commencing 20 December (TBC under new owners AQC)	Within one calendar month of grant anniversary date (18 January each year - TBC under new owners AQC)	Dartbrook will submit an annual report (for exploration/geoscientific activities) under Section 163C of the Mining Act and Clause 59 of the Mining Regulation. The report will be lodged “within one calendar month of the grant anniversary date or such other date notified by the Secretary in writing” (clause 59(2) Mining Regulation). The Department has previously approved a group reporting arrangement for the CL 386, ML 1381, ML 1456 and ML 1497 annual exploration reports (with the reporting period and due date noted at left). AQC proposes to continue this group reporting schedule and will confirm this with the Department.

<sup>2</sup> We note that Condition 4(c) of the mining leases provides that “the Compliance Report must be lodged with the Department annually on the grant anniversary date for the life of this mining lease” (i.e. it does not allow for submission at such other times as agreed by the Minister). We suggest this is checked with the Department when discussing the possibility of lodgement of a consolidated Compliance Report.

<sup>3</sup> This report is additional to the Annual Activity Report required for the exploration licences.

Report Name	Authority	Reporting Period	Due Date	Comments
				The group annual exploration report for the mining leases must be prepared in accordance with the Department's 'Exploration reporting: A guide for reporting on exploration and prospecting in New South Wales' (1 March 2016) and contain the information required by Clause 59 of the Mining Regulation.

**NOTES:**

1. The above tables are current as at 24 November 2020. The conditions of the authorities, applicable provisions of the Mining Act and relevant guidelines should be checked on a regular basis.

2. Table 2 describes only those annual reports required under the conditions of the exploration licences and mining leases held by AQC and/or the Mining Act. It does not deal with any:

- a. notifications to regulatory authorities required under conditions of the exploration licences or mining leases (such as in respect of prescribed dams or environmental incidents);
- b. notifications or other reports which may be required under the Mining Act/Regulation from time to time; or
- c. other reports or notices which may be due under other legislation or the conditions of other approvals held by AQC (including development consent conditions).



## 11 PLANS

### 11.1 LEVEL 1 MINES (STATE SIGNIFICANT DEVELOPMENT)

**Appendix A** includes the following plans required by the ESG3 Guidelines for Level 1 mines:

- Plans 1A, 1B and 1C – Project Locality
  - Plan 1A - Pre-Mining Environment – Project Locality;
  - Plan 1B – Pre-mining environment – Natural environment;
  - Plan 1C – Pre-mining environment – Built environment;
- Plan 2 – Mine Domains at commencement of MOP;
- Plan 3A and 3B: – Mining and Rehabilitation;
  - Plan 3A – Mining and Rehabilitation Year 1 of MOP (2021);
  - Plan 3B – Mining and Rehabilitation Year 2 of MOP (2022);
- Plan 4 – Final Rehabilitation and Post Mining Land Use; and
- Plan 5 – Rehabilitation and Post Mining Land Use Cross Sections.

### 11.2 SUPPLEMENTARY PLANS

Provided with the MOP are also the following supplementary plans:

- Plan 1D – Details of Exploration Licence Areas; and
- Plan 1E – Details of Mining Lease Areas.

## 12 REVIEW AND IMPLEMENTATION OF THE MOP

*The following review and implementation processes allows AQC to ensure that the MOP document is being effectively implemented, highlights opportunities for improvement and reflects the current schedule of activities proposed over the MOP term.*

### 12.1 REVIEW OF THE MOP

The MOP is valid from 1 January 2021 to 5 December 2022. AQC will conduct care and maintenance activities in accordance with the MOP as approved by DRG.

In the event that AQC proposes to undertake an activity that is not in accordance with the approved MOP, either a MOP Amendment or a new MOP will be prepared in accordance with Section (J) of the ESG3 Guidelines. Any amendments to an existing MOP will be tracked and details of the amendment, justification and timing clearly identified as per section (K) of the ESG3 Guidelines (or equivalent latest) before submission for approval.

Performance against the MOP is also reviewed annually and reported in the Annual Review (as documented in **Section 10**) and during each Independent Environmental Audit (or other MOP audit as may be initiated by the DRG).

Notwithstanding the above, this MOP will expire on 5 December 2022. The end of the MOP period represents the end of the approved mining period under DA 231-7-2000. At this time, mine closure activities will commence in accordance with a Mine Closure Plan approved by the relevant authorities.

### 12.2 IMPLEMENTATION

The MOP will be implemented by the Dartbrook Safety, Health, Environment and Community Coordinator (or their delegate). The Care and Maintenance Mine Manager will be responsible for ensuring adequate resources are available to effectively implement the MOP. Implementation of the MOP will be reported in the Annual Review as per **Section 10**.

### 13 ABBREVIATIONS

Abbreviation	Description
AEMR	Annual Environmental Management Report
AQC	AQC Dartbrook Pty Limited
CHPP	Coal Handling and Preparation Plant
DPIE	Department of Planning, Industry and Environment
DRG	Division of Resources and Geoscience
EIS	Environmental Impact Statement
EL	Exploration Lease
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
ESCP	Erosion and sediment control plan
FFMP	Flora and Fauna Management Plan
ha	hectares
kL	Kilolitres
km	kilometres
Mining Act	<i>Mining Act 1992</i>
ML	Mining Lease
MOP	Mining Operations Plan
MSC	Muswellbrook Shire Council
Mtpa	Million tonnes per annum
PSMP	Property Subsidence Management Plan
Radiation Act	<i>Radiation Control Act 1990</i>
REA	Reject Emplacement Area
ROM	Run of Mine
SEE	Statement of Environmental Effects
SHEMS	Safety, Health and Environment Management System
spp.	Species
SWMP	Site Water Management Plan
TARP	Trigger Action Response Plan
UHSC	Upper Hunter Shire Council
WM Act	<i>Water Management Act 2000</i>

## 14 REFERENCES

Department of Resources and Energy (2013). *ESG3: Mining Operations Plan (MOP) Guidelines, September 2013* (ESG3 Guidelines).

Hansen Bailey (2016), *Dartbrook Mine Annual Review 2015*.

Hansen Consulting (2004), *Dartbrook Coal Mine SEE for Modification to Rejects Disposal System*.

Hansen Consulting (2005), *Dartbrook Mine Statement of Environmental Effects for New ROM Coal Stockpiles, Underground Tailings Disposal & Nitrogen Injection Plant*.

HLA Envirosiences Pty Limited (2000), *Dartbrook Extended Environmental Impact Statement*.

## **APPENDIX A**

### ***Plans***

COUNTY of BRISBANE  
 PARISH of STRATHEARN  
 UPPER HUNTER SHIRE

PARISH of ELLIS  
 MUSWELLBROOK SHIRE

- Legend**
- LGA / Shire Boundary
  - Mining Lease Boundary
  - Exploration Licence Boundary
  - Mining Lease Extends to Surface

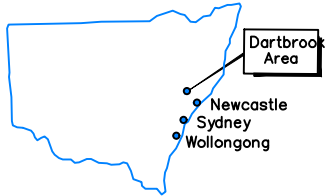
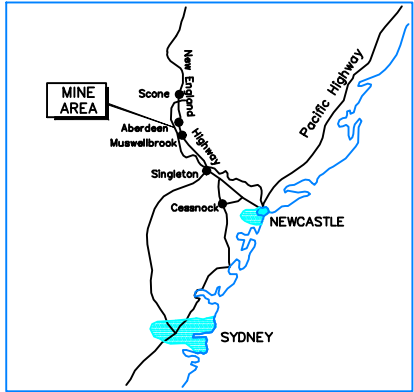
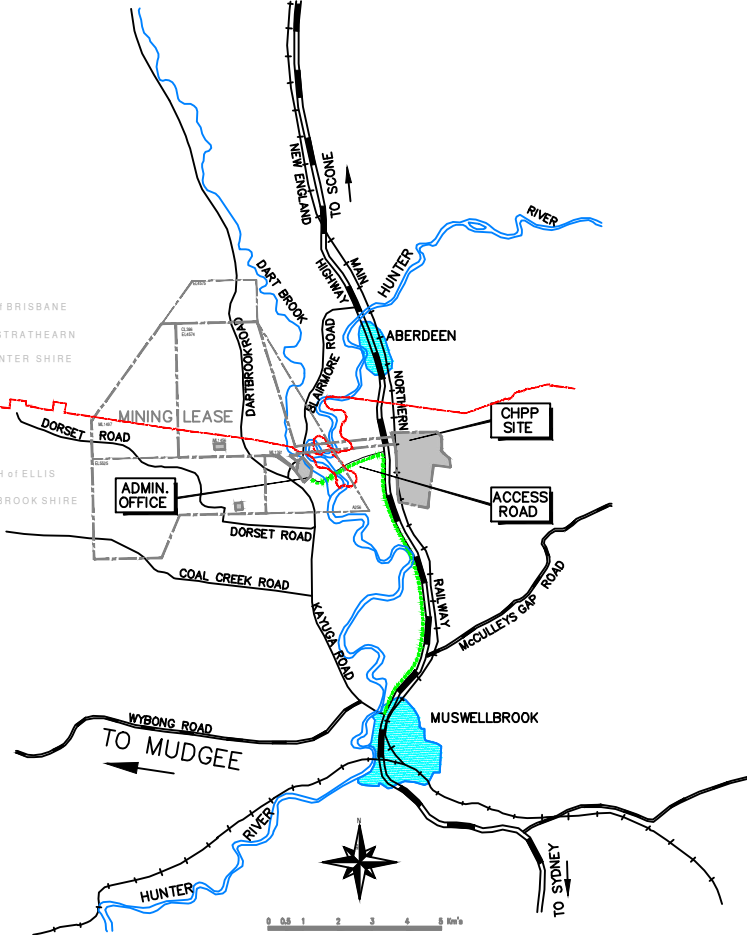
Leases areas are identified and boundaries in all areas considered those shown on the cadastral maps. These areas being the CHPP, Reserve, EOI, permits, P & F, and the MGP From 10.0 to 10 for Lease Details.

I, David Gray Chief Geomatics Officer (author) Publically certify that to the best of my knowledge and belief this plan represents a true indication of the proposed development for the period of this MGP

Chief Geomatics Officer Date

I, Peter Coffey, holder of Mine Surveyor's Certificate of Competency No. 5256, certify that to the best of my knowledge and belief this plan conforms to the necessary standards required by industry and legislation, 1995.

Mine Surveyor Date



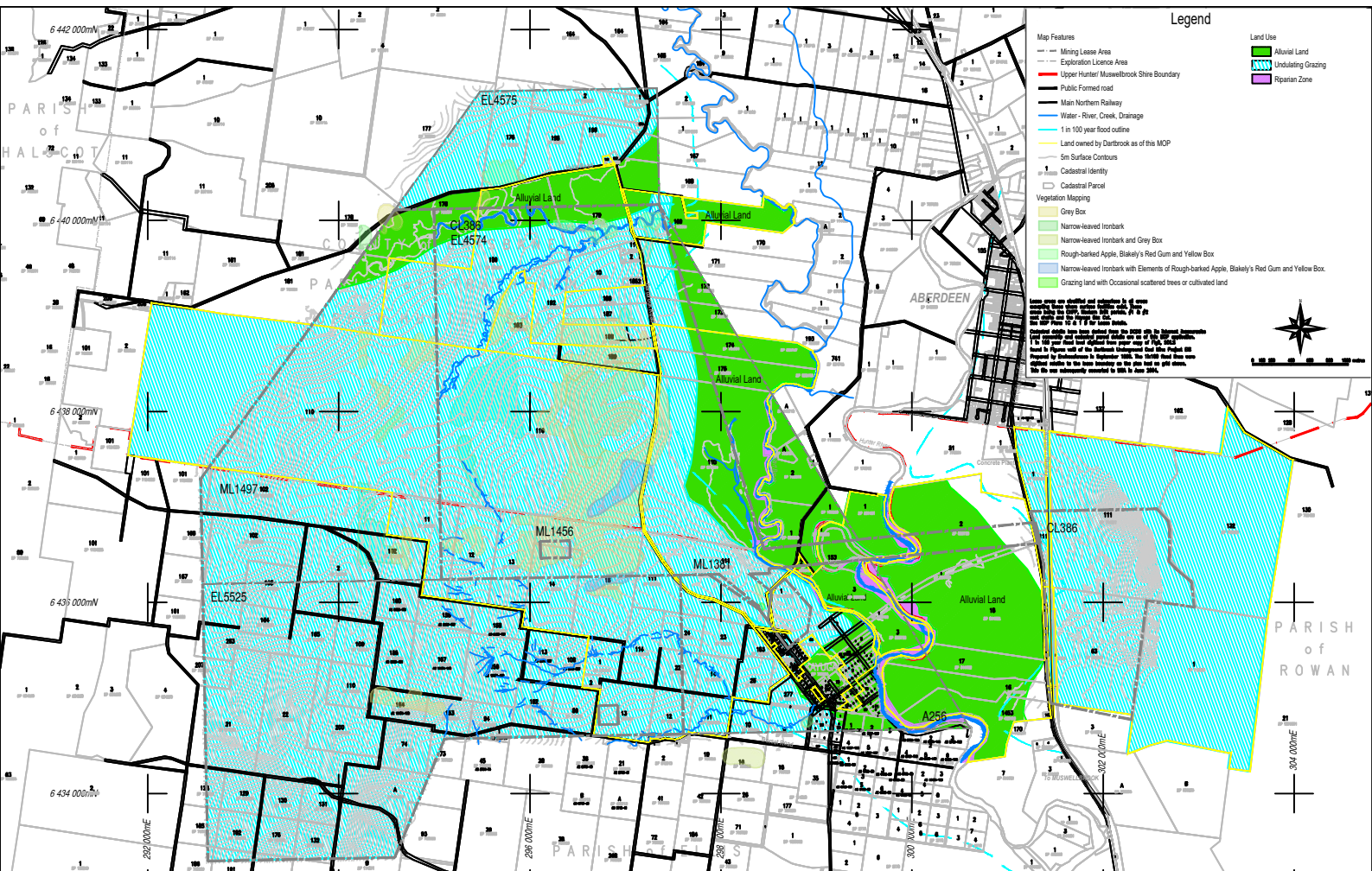
REV. NO.	DATE	BY	DESCRIPTION	CHK.	DRAWN	DATE	AW	DATUM	PROJECTION	MGA	Z56
A	10/09/2017	PC	Initial Issue		Peter Coffey						
B	27/11/2020	PC	Updated for 2020 MGP		Andrew Wu			AHD			

Dartbrook Mine Care & Maintenance  
 MOP Plan 1A  
 Pre Mining Environment  
 Project Locality

**SCALE**  
As Shown

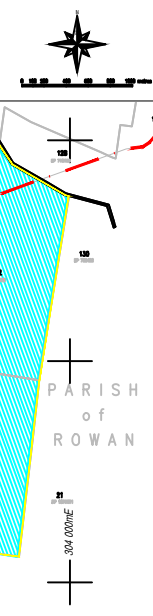
**DRG.**  
100002

**REV.**  
B



- ### Legend
- Map Features**
- Mining Lease Area
  - Exploration Licence Area
  - Upper Hunter/Muswellbrook Shire Boundary
  - Public Formed road
  - Main Northern Railway
  - Water - River, Creek, Drainage
  - 1 in 100 year flood outline
  - Land owned by Darbrock as of this MOP
  - 5m Surface Contours
  - Cadastral Identity
  - Cadastral Parcel
- Vegetation Mapping**
- Grey Box
  - Narrow-leaved Ironbark
  - Narrow-leaved Ironbark and Grey Box
  - Rough-barked Apple, Blakely's Red Gum and Yellow Box
  - Narrow-leaved Ironbark with Elements of Rough-barked Apple, Blakely's Red Gum and Yellow Box
  - Grazing land with Occasional scattered trees or cultivated land
- Land Use**
- Alluvial Land
  - Undulating Grazing
  - Riparian Zone

These areas are shaded and outlined to show the location of the proposed mining lease area and exploration licence area. The shaded areas are not intended to be used for any other purpose. The shaded areas are not intended to be used for any other purpose. The shaded areas are not intended to be used for any other purpose.



A 1:5000 Scale 2020 Edition Other Australian Pacific Coal  
 that is the best of our knowledge and belief that this represents the true  
 nature of the proposed development for the period of this MOP

641 Boundary Rider  
 2021/12/2020  
 2021/12/2020

REV.	DATE	BY	DESCRIPTION
A	10/09/2017	PC	Initial Issue
B	27/11/2020	PC	Updated for 2020 MOP

CHK.	DRAWN	Peter Coffey
	CHECKED	Andrew Wu
	DATUM	AHD
	PROJECTION	MGA z56

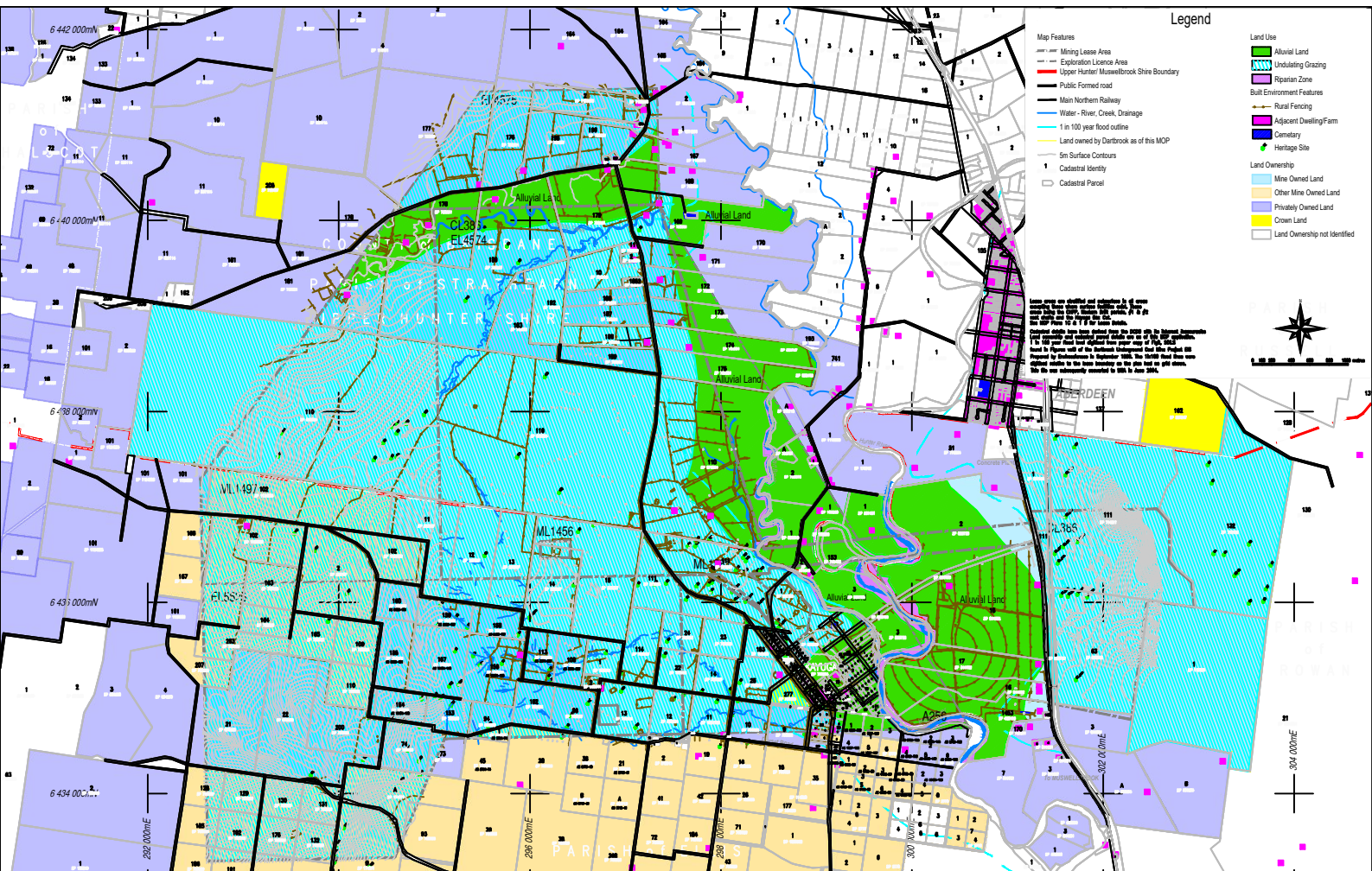
Darbrock Mine Care & Maintenance  
 MOP Plan 1B  
 Pre Mining Environment  
 Natural Environment

SCALE 1:50,000 at A0

DRG. A0

REV. 100003

Australian Pacific Coal



- Legend**
- Map Features**
- Mining Lease Area
  - Exploration Licence Area
  - Upper Hunter/ Muswellbrook Shire Boundary
  - Public Formed road
  - Main Northern Railway
  - Water - River, Creek, Drainage
  - 1 in 100 year flood outline
  - Land owned by Darbrook as of this MOP
  - 5m Surface Contours
  - Cadastral Identity
  - Cadastral Parcel
- Land Use**
- Alluvial Land
  - Undulating Grazing
  - Riparian Zone
  - Built Environment Features
  - Rural Fencing
  - Adjacent Dwelling/Farm
  - Cemetery
  - Heritage Site
- Land Ownership**
- Mine Owned Land
  - Other Mine Owned Land
  - Privately Owned Land
  - Crown Land
  - Land Ownership not Identified
- Scale**
- 1:100,000
- North Arrow**

This map was prepared and submitted to the NSW Planning and Infrastructure Department for approval on 10/09/2017. It is a draft map and should not be used for any purpose other than the purposes for which it was prepared. The map is not a legal document and should not be used as evidence in any court of law. The map is not a guarantee of accuracy and should not be used for any purpose other than the purposes for which it was prepared. The map is not a guarantee of accuracy and should not be used for any purpose other than the purposes for which it was prepared.

**REVISIONS**

A 10/09/2017 PC Initial Issue

B 27/11/2020 PC Revised for 2020 MOP

**DATE** **BY** **DESCRIPTION**

REV.	DATE	BY	DESCRIPTION
A	10/09/2017	PC	Initial Issue
B	27/11/2020	PC	Revised for 2020 MOP

CHK.	DATE	BY	DESCRIPTION
DS	10/09/2017	PC	Initial Issue
AW	27/11/2020	PC	Revised for 2020 MOP

<b>DRAWN</b>	Peter Coffey
<b>CHECKED</b>	Andrew Wu
<b>DATUM</b>	AHD
<b>PROJECTION</b>	MGA z56

**Darbrook Mine Care & Maintenance**

**MOP Plan 1C**

**Pre Mining Environment**

**Built Environment**

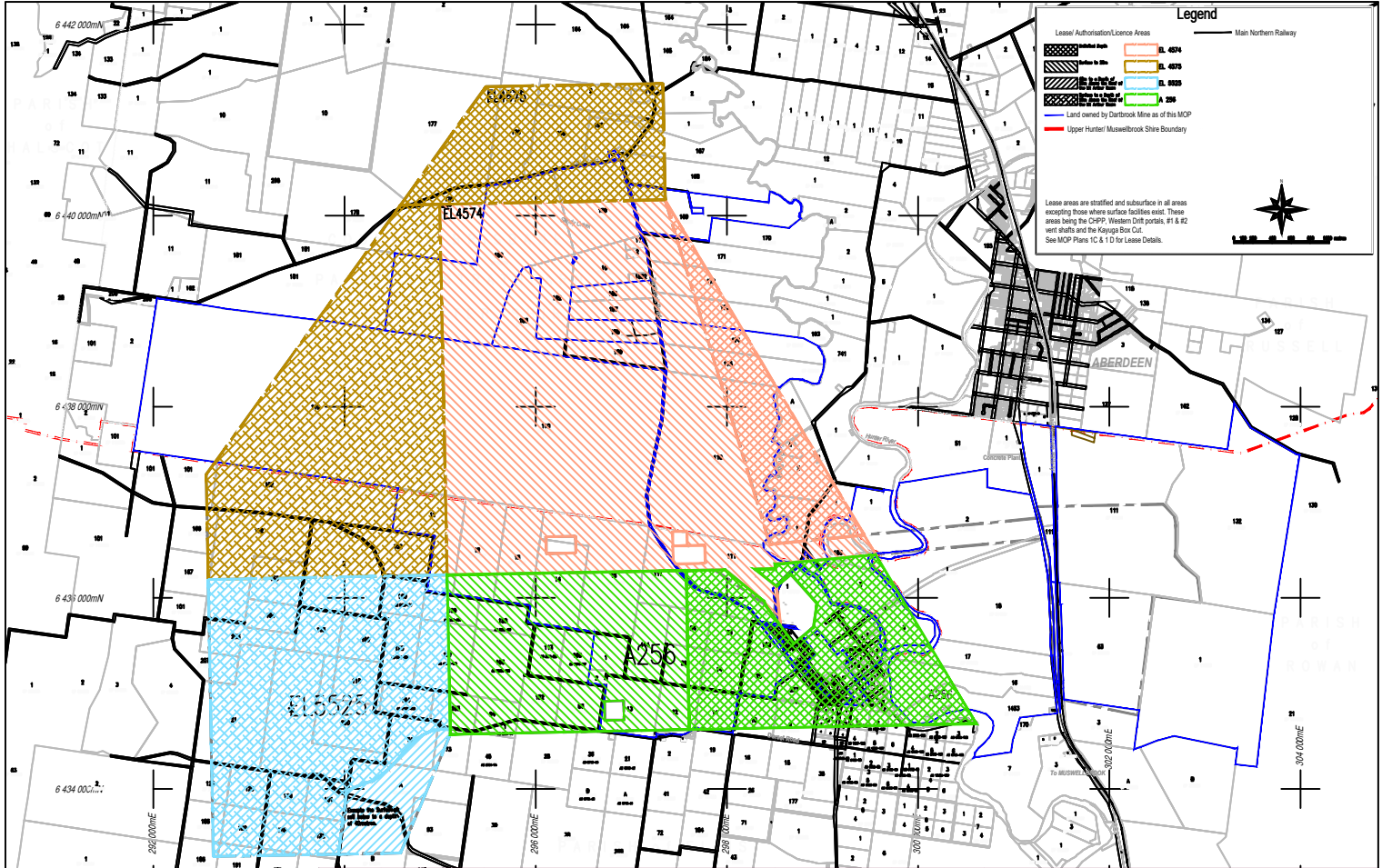
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**DRG.** 100004

**REV.** B

**Australian Pacific Coal**





- Legend**
- Lease/ Authorisation/Licence Areas
  - Main Northern Railway
  - EL 474
  - EL 475
  - EL 480
  - A 256
  - Land owned by Dartbrook Mine as of this MOP
  - Upper Hunter Muswellbrook Shire Boundary

Lease areas are stratified and subsurface in all areas excepting those where surface facilities exist. These areas being the CHPP, Western Drift portals, #1 & #2 west shafts and the Kaysa Box Cut. See MOP Plans 1C & 1D for Lease Details.



I, David Wang, Chief Executive Officer, Australia Pacific Coal Pty Ltd, certify that the content of this map is true and correct to the best of my knowledge and belief and that the same represents a true and accurate copy of the original as submitted to the Department of Industry, Energy and Resources.


I, Peter Coffey, Chief Executive Officer, Australia Pacific Coal Pty Ltd, certify that the content of this map is true and correct to the best of my knowledge and belief and that the same represents a true and accurate copy of the original as submitted to the Department of Industry, Energy and Resources.

30/11/2020

REV.	DATE	BY	DESCRIPTION	CHK.
A	15/09/2017	PC	Initial Issue	DS
B	28/11/2020	PC	Updated for 2020 MOP	AW

DS	<b>DRAWN</b>	Peter Coffey
AW	<b>CHECKED</b>	Andrew Wu
	<b>DATUM</b>	AHD
	<b>PROJECTION</b>	MGA 256

Dartbrook Mine Care & Maintenance  
MOP Plan 1D  
Details of Exploration Licence Areas

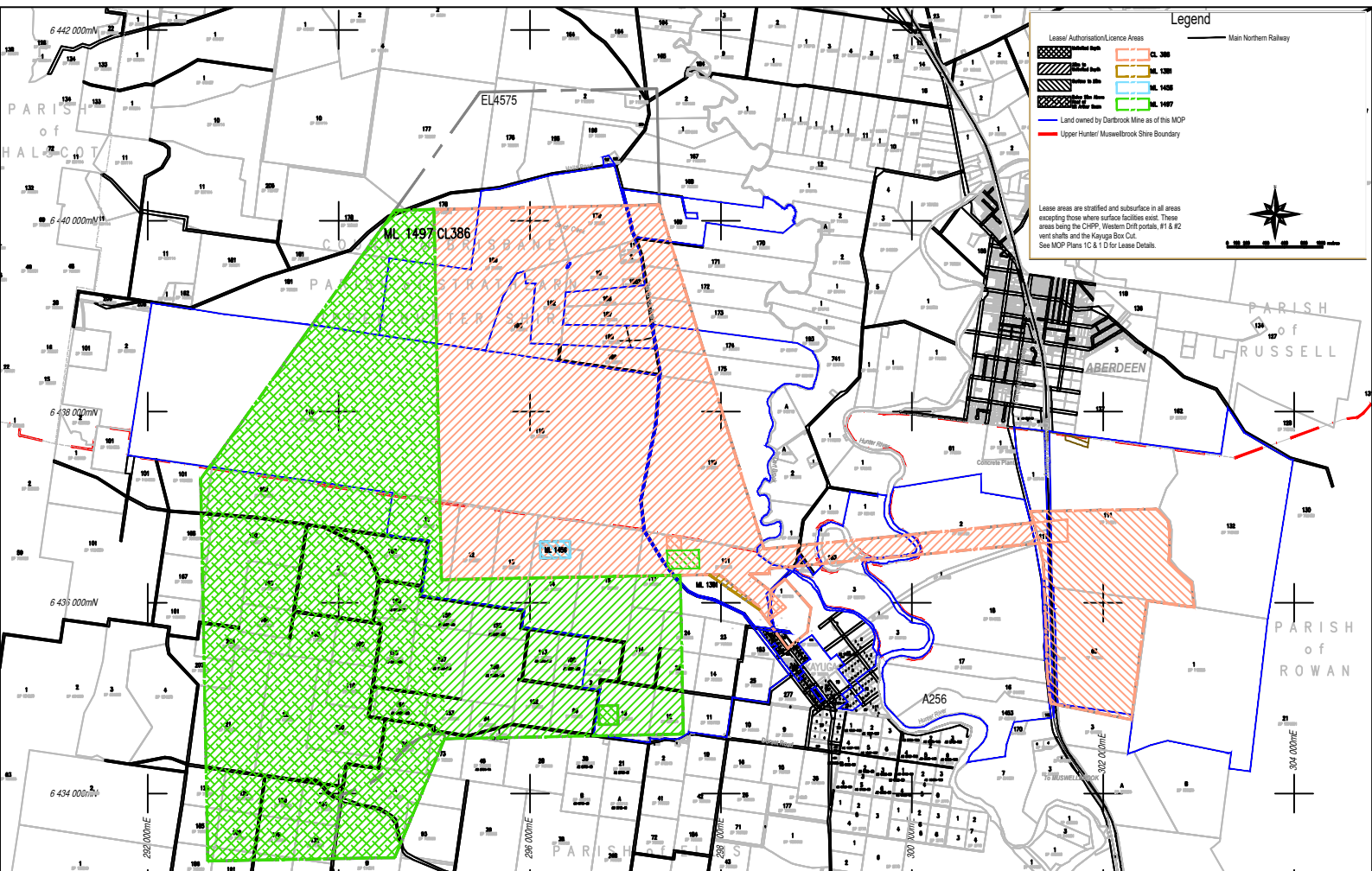


SCALE: 1:50,000

REV. B

DRG. 100008

AO



**Legend**

- Lease/Licence Areas
  - CL 100
  - ML 1200
  - ML 1400
  - ML 1497
- Land owned by Darbrook Mine as of this MOP
- Upper Hunter/Muswellbrook Shire Boundary

Main Northern Railway

Lease areas are stratified and subsurface in all areas excepting those where surface facilities exist. These areas being the CHPP, Western Drift portals, #1 & #2 vent shafts and the Kaysaga Box Cut. See MOP Plans 1C & 1D for Lease Details.

I, Neil King 1987 (Quantity Surveyor) certify that the map and any drawings and tables are true copies of the original documents to the best of my knowledge and belief.

NSW State Surveyor  
 1 Year Validity: Date of this Surveyor's Certificate of Registration on 28/11/2020.  
 Not to be used for any building or other purpose unless the surveyor's certificate is signed by the surveyor, or his/her representative.

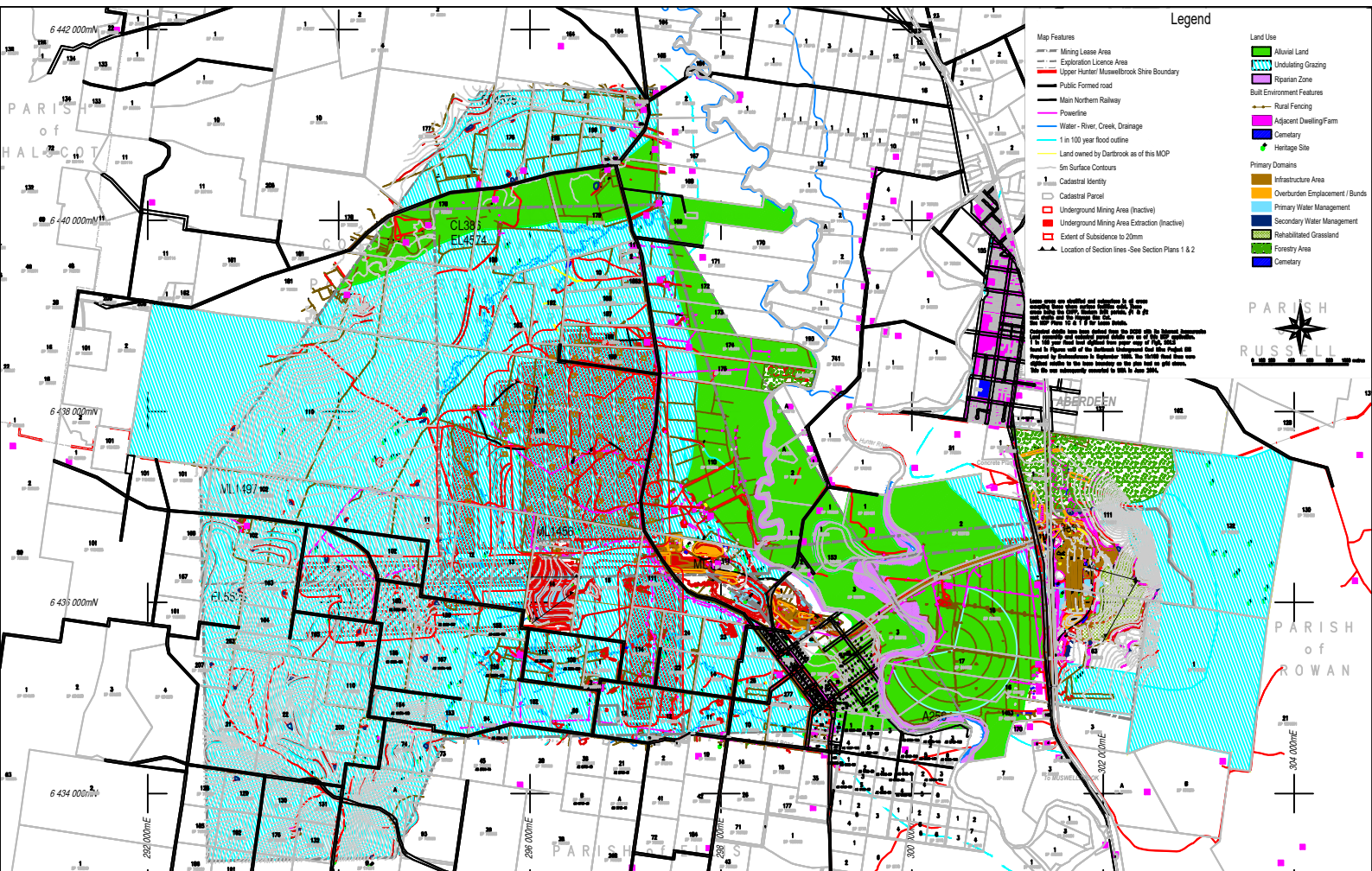
2021/0000  
 2021/0000

REV.	DATE	BY	DESCRIPTION
A	15/09/2017	PC	Initial Issue
A	28/11/2020	PC	Updated for 2020 MOP

DS	DRAWN	Peter Coffey
AW	CHECKED	Andrew Wu
	DATUM	AHD
	PROJECTION	MGA z56
CHK.		

Darbrook Mine Care & Maintenance  
 MOP Plan 1E  
 Details of Mining Lease Areas

SCALE	1:10,000 at A0	DRG.	100007	REV.	
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- Map Features**
- Mining Lease Area
  - Exploration Licence Area
  - Upper Hunter/Muswellbrook Shire Boundary
  - Public Formed road
  - Main Northern Railway
  - Powertine
  - Water - River, Creek, Drainage
  - Water in 100 year flood outline
  - Land owned by Dartbrook, as of this MOP
  - 5m Surface Contours
  - Cadastral Vicinity
  - Cadastral Parcel
  - Underground Mining Area (inactive)
  - Underground Mining Area Extraction (inactive)
  - Extent of Subsidence to 20mm
  - Location of Section lines - See Section Plans 1 & 2
- Primary Domains**
- Infrastructure Area
  - Overburden Employment / Burds
  - Primary Water Management
  - Secondary Water Management
  - Rehabilitated Grassland
  - Forestry Area
  - Cemetery
- Land Use**
- Alluvial Land
  - Undulating Grazing
  - Riparian Zone
  - Built Environment Features
  - Rural Fencing
  - Adjacent Dwelling/Farm
  - Cemetery
  - Heritage Site

These areas are classified and categorised in accordance with the requirements of the Environmental Management Plan (EMP) for the Dartbrook Mine. The EMP is a key component of the mine's environmental management system and is subject to regular review and update. The EMP is available on the mine's website at [www.dartbrook.com.au](http://www.dartbrook.com.au). The EMP is a confidential document and its contents should not be disclosed to the public without the prior written consent of the mine.

**Legend**

PARISH of ROWAN

A 1:50,000 Scale Map of the Dartbrook Mine Area. This map is a technical drawing and is not to be used for any other purpose. The map is the property of the mine and is not to be reproduced or distributed without the prior written consent of the mine. The map is subject to change without notice. The mine is not responsible for any errors or omissions in the map. The map is provided for information only and is not to be used for any other purpose.

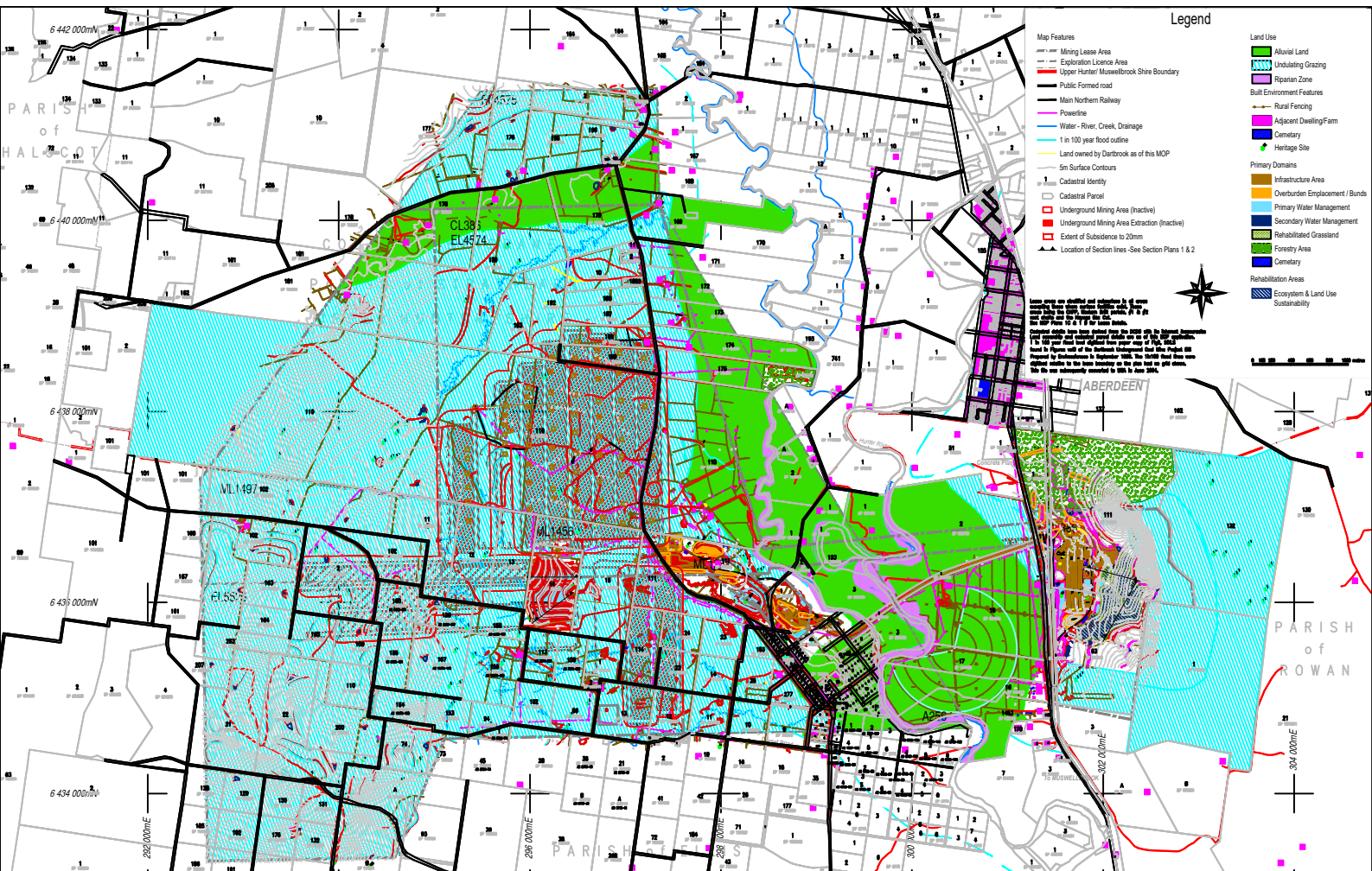
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A	10/09/2017	PC	Initial Issue		DS	DRAWN	Peter Coffey
B	28/11/2020	PC	Updated for 2020 MOP		AW	CHECKED	Andrew Wu
						DATUM	AHD
						PROJECTION	MGA z56

Dartbrook Mine Care & Maintenance  
MOP Plan 2  
Mining Domains  
Commencement of MOP

SCALE 1:50,000 at A0

DRG. 100005

REV. B



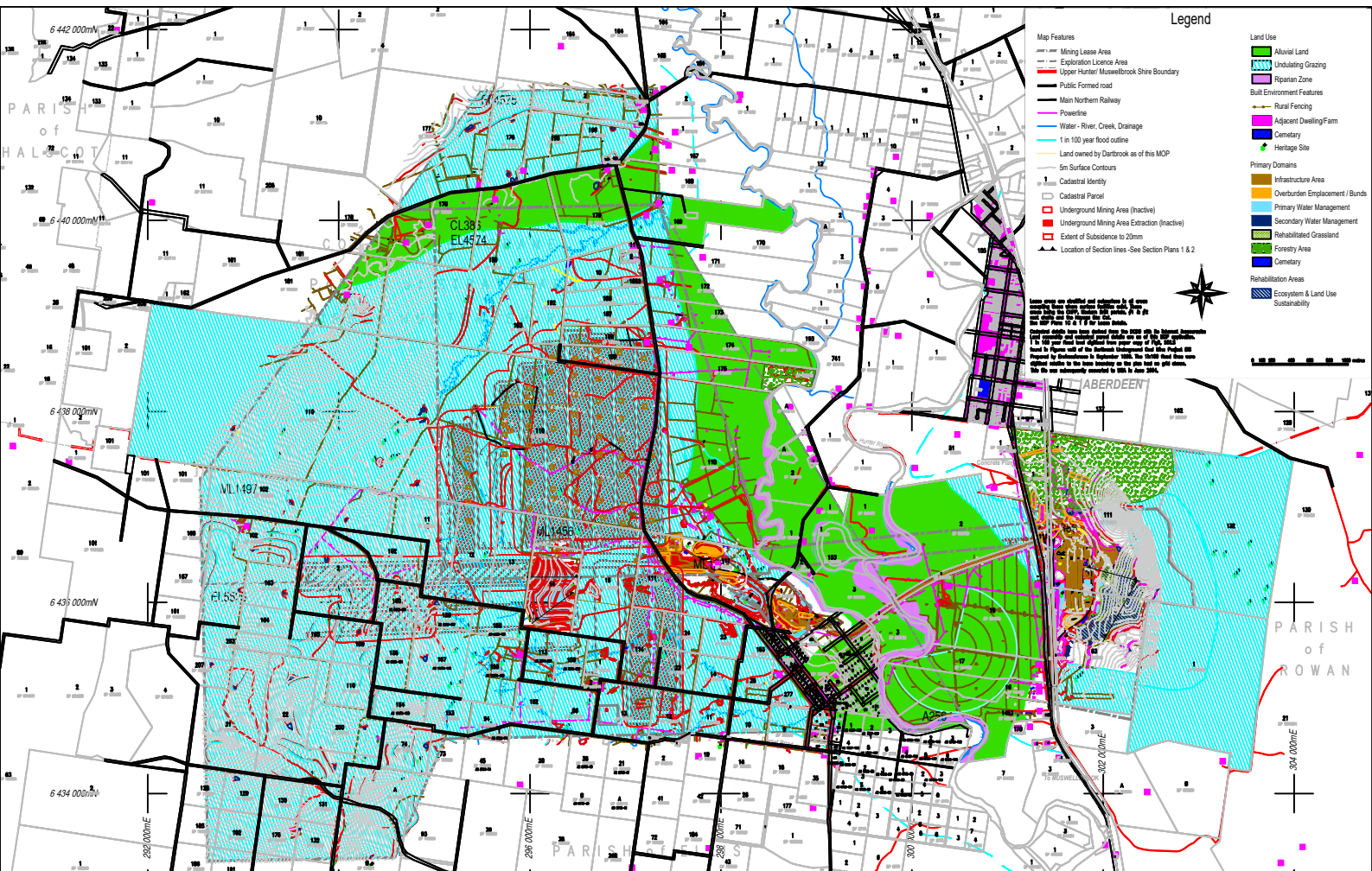
- Map Features**
- Mining Lease Area
  - Exploration Licence Area
  - Upper Hunter/Muswellbrook Shire Boundary
  - Public Formed road
  - Main Northern Railway
  - Powerline
  - Water - River, Creek, Drainage
  - 1 in 100 year flood outline
  - Land owned by Dartbrook as of this MOP
  - 5m Surface Contours
  - Cadastral Vicinity
  - Cadastral Parcel
  - Underground Mining Area (inactive)
  - Underground Mining Area Extraction (inactive)
  - Extent of Subsidence to 20mm
  - Location of Section lines - See Section Plans 1 & 2
- Land Use**
- Alluvial Land
  - Undulating Grazing
  - Riparian Zone
  - Built Environment Features
  - Rural Fencing
  - Rural Environment Features
  - Adjacent Dwelling/Farm
  - Cemetery
  - Heritage Site
- Primary Domains**
- Infrastructure Area
  - Overburden Encroachment / Burds
  - Primary Water Management
  - Secondary Water Management
  - Rehabilitated Grassland
  - Forestry Area
  - Cemetery
- Rehabilitation Areas**
- Ecosystem & Land Use Sustainability

These areas are identified and delineated as of the date of this map. The boundaries and extent of these areas are subject to change. The MOP Plan 3A is a planning document and does not constitute a guarantee of any kind. The MOP Plan 3A is a planning document and does not constitute a guarantee of any kind. The MOP Plan 3A is a planning document and does not constitute a guarantee of any kind.



<b>REVISIONS</b>	A	10/09/2017	PC	Initial Issue	DS	DRAWN	Peter Coffey	Dartbrook Mine Care and Maintenance MOP Plan 3A Mining & Rehabilitation Year 1 of MOP (2021)		SCALE 1:10,000 at A0	DRG. 100011	REV. B
	B	28/11/2020	PC	Updated for 2020 MOP	AW	CHECKED	Andrew Wu					
						DATUM	AHD					
						PROJECTION	MGA z56					
	REV.	DATE	BY	DESCRIPTION	CHK.							

A 1:100 Scale MOP Plan 3A is available for public inspection at the office of the Planning and Development Services Unit, 100 Macquarie Street, Sydney, NSW 2000. The MOP Plan 3A is a planning document and does not constitute a guarantee of any kind. The MOP Plan 3A is a planning document and does not constitute a guarantee of any kind. The MOP Plan 3A is a planning document and does not constitute a guarantee of any kind.



**Legend**

- Map Features**
- Mining Lease Area
- Exploration Licence Area
- Upper Hunter/Muswellbrook Shire Boundary
- Public Formed road
- Main Northern Railway
- Powerline
- Water - River, Creek, Drainage
- Water in 100 year flood outline
- Land owned by Dartbrook, as of this MOP
- 5m Surface Contours
- Cadastral Vicinity
- Cadastral Parcel
- Underground Mining Area (inactive)
- Underground Mining Area Extraction (inactive)
- Extent of Subsidence to 20mm
- Location of Section lines - See Section Plans 1 & 2

- Land Use**
- Alluvial Land
- Undulating Grazing
- Riparian Zone
- Built Environment Features
- Rural Fencing
- Rural Environment Features
- Adjacent Dwelling/Farm
- Cemetery
- Heritage Site
- Primary Domains**
- Infrastructure Area
- Overburden/Emplacement Burds
- Primary Water Management
- Secondary Water Management
- Rehabilitated Grassland
- Forestry Area
- Cemetery
- Rehabilitation Areas**
- Ecosystem & Land Use Sustainability

These areas are classified and categorised as of some status. The land is not suitable for any other use than that of the Mine. The Mine is a Class 1 Mining Activity and is regulated under the Environmental Protection Act 1986 and the Environmental Planning and Assessment Act 1979.



**REVISIONS**

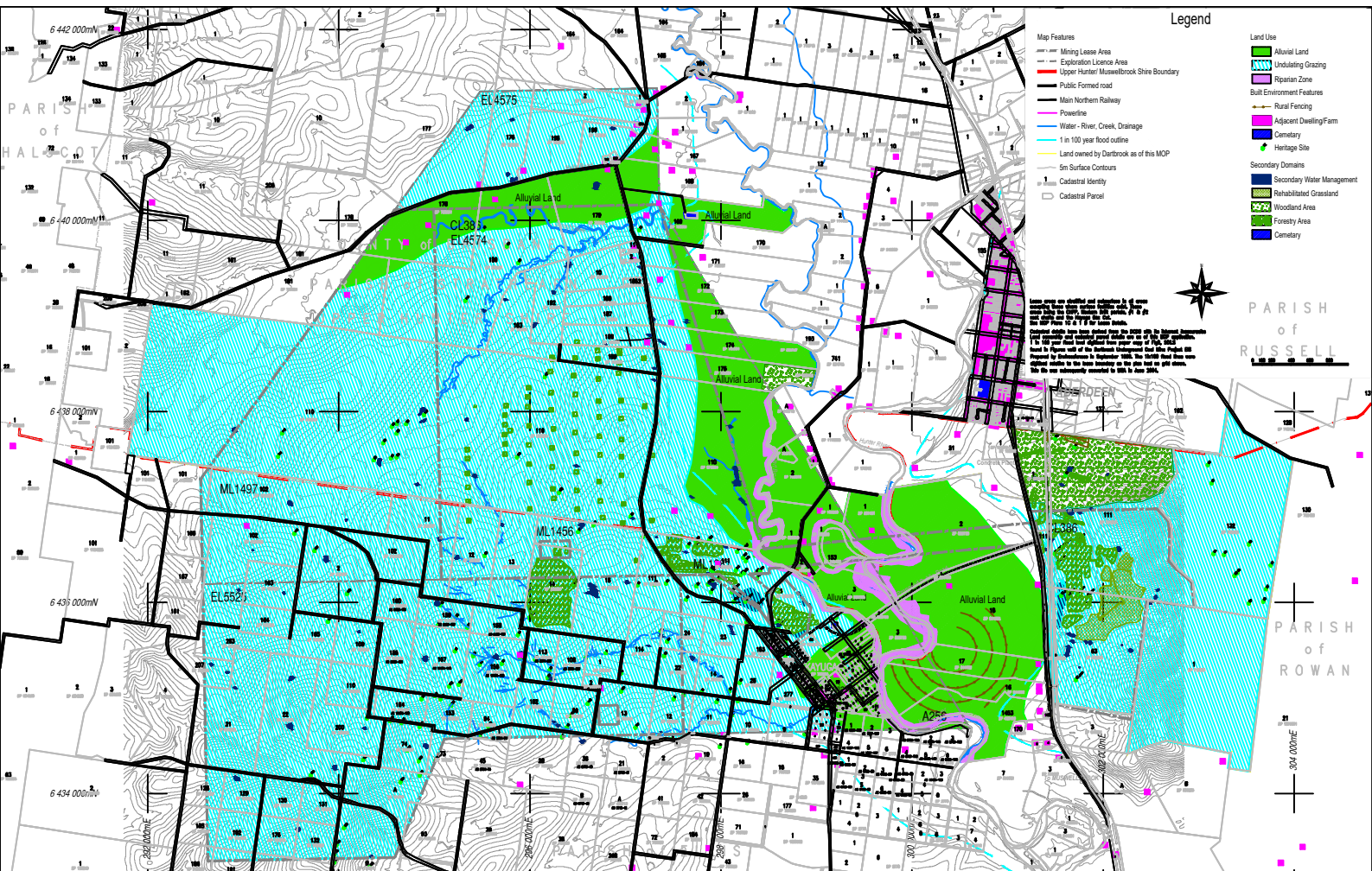
REV.	DATE	BY	DESCRIPTION
A	10/09/2017	PC	Initial Issue
B	28/11/2020	PC	Initial Issue

CHK.	DS	DRAWN	PETER COFFEY
	AW	CHECKED	Andrew Wu
		DATUM	AHD
		PROJECTION	MGA z56



Dartbrook Mine Care & Maintenance		
MOP Plan 3B		
Mining & Rehabilitation		
Year 2 of MOP (2022)		
SCALE	1:10000 at A4	
DRG.	AO	100013
REV.	B	

A 1:10000 Scale Orthometric Height Datum (OHD) is used for this map. All heights are given relative to the OHD. The datum is based on the Australian Height Datum (AHD).  
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 2022/10/20



**Legend**

- Map Features**
- Mining Lease Area
  - Exploration Licence Area
  - Upper Hunter/Muswellbrook Shire Boundary
  - Public Formed road
  - Main Northern Railway
  - Powerline
  - Water - River, Creek, Drainage
  - 1 in 100 year flood outline
  - Land owned by Dartbrook as of this MOP
  - 5m Surface Contours
  - Cadastral Identity
  - Cadastral Parcellity
- Land Use**
- Alluvial Land
  - Undulating Grazing
  - Riparian Zone
  - Built Environment Features
  - Rural Fencing
  - Adjacent Dwelling/Farm
  - Cemetery
  - Heritage Site
- Secondary Domains**
- Secondary Water Management
  - Rehabilitated Grassland
  - Woodland Area
  - Forestry Area
  - Cemetery



PARISH of RUSSELL

PARISH of ROWAN

These areas are detailed and delineated in the MOP Plan 4 Final Rehabilitation Post Mining Landuse. The MOP Plan 4 Final Rehabilitation Post Mining Landuse is a public document and is available for inspection at the MOP Plan 4 Final Rehabilitation Post Mining Landuse. The MOP Plan 4 Final Rehabilitation Post Mining Landuse is a public document and is available for inspection at the MOP Plan 4 Final Rehabilitation Post Mining Landuse. The MOP Plan 4 Final Rehabilitation Post Mining Landuse is a public document and is available for inspection at the MOP Plan 4 Final Rehabilitation Post Mining Landuse.

A 1:5000 Scale 2017 Satellite Aerial Photo has been used to the best of our knowledge and belief for the purposes of this map. The accuracy of the information is not guaranteed.

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REV.	DATE	BY	DESCRIPTION	CHK.	DS	DRAWN	Peter Coffey
A	10/09/2017	PC	Initial Issue		DS	DRAWN	Peter Coffey
B	28/11/2020	PC	Updated for 2020 MOP		AW	CHECKED	Andrew Wu
						DATUM	AHD
						PROJECTION	MGA z56

Dartbrook Mine Care & Maintenance  
MOP Plan 4  
Final Rehabilitation  
Post Mining Landuse

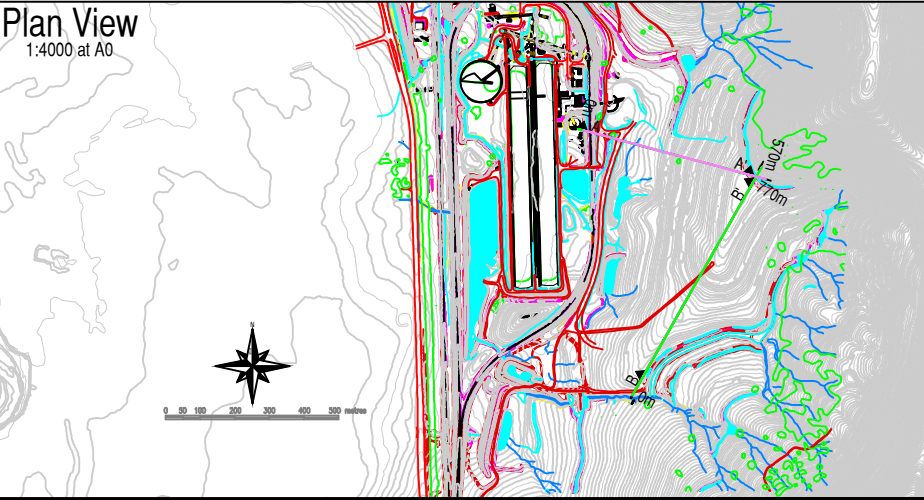
SCALE 1:50,000 at A0

DRG. 100006

REV. B

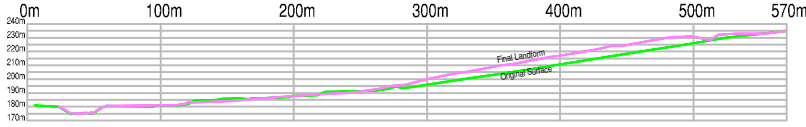
# Plan View

1:4000 at A0



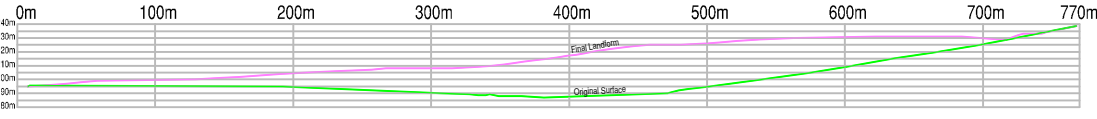
## Section A-A'

1:1000 at A0



## Section B-B'

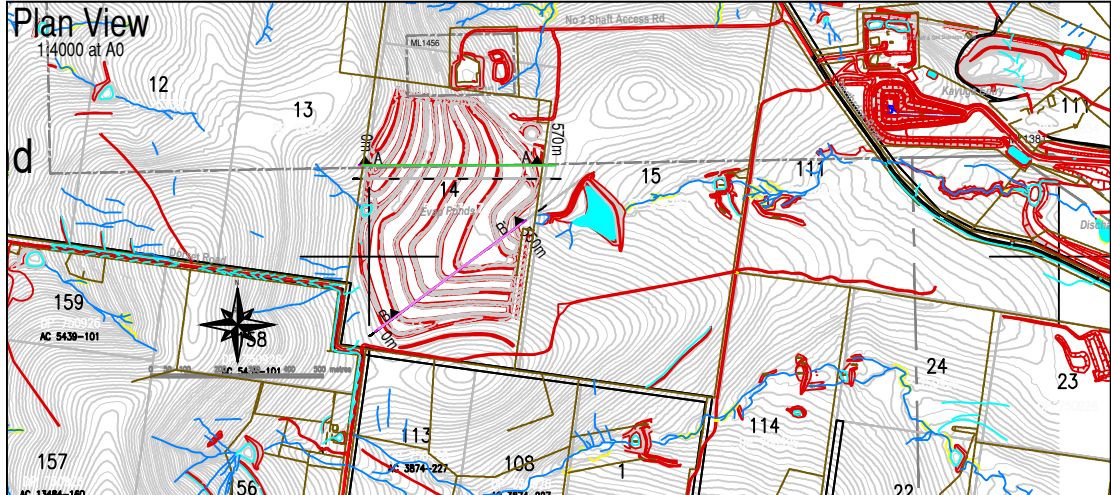
1:1000 at A0



I, David George O'Neil, Director of Geomatics, certify that the back of my knowledge and belief the plan represents the true intention of the proposed development for the parcel of 655 589

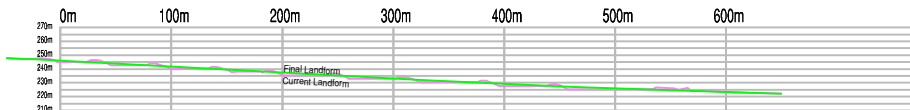
I, Peter Gilling, holder of the Surveyor's Certificate of Registration No. 5888, certify that the back of my knowledge and belief this plan conforms to the necessary standards required by safety and technical, laws.

REV.	DATE	BY	DESCRIPTION	CHK.	DS	DRAWN	Peter Coffey	Darbrook Mine Care & Maintenance Plan 5 Sections Through Reject Employment Area Original and Final Landform	SCALE	A0	DRG.	100009	REV.	B	
A	10/09/2017	PC	Initial Issue		AW	CHECKED	Andrew Wu		As Shown						
B	28/11/2020	PC	Updated for 2020 MQP			DATUM	AHD								
						PROJECTION	MGA z56								



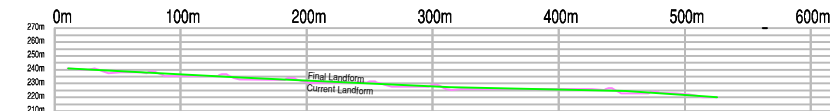
## Section A-A'

1:1000 at A0



## Section B-B'

1:1000 at A0



I hold my O&M Services Under Authority Pacific Coal  
 with the full consent of the landowner and under the terms of a lease  
 between the landowner and the landowner for the purpose of the O&M

O&M Services Under Authority  
 I have drawn, under the terms of the lease, a plan of the land, under  
 the full consent of the landowner and under the terms of a lease  
 between the landowner and the landowner for the purpose of the O&M

REV.	DATE	BY	DESCRIPTION	CHK.	DS	DRAWN	Peter Coffey	Dartbrook Mine Care & Maintenance Plan 5 Sections Through Evaporation Ponds Area Current and Final Landform	SCALE	DRG.	REV.	
A	10/09/2017	PC	Initial Issue		AW	CHECKED	Andrew Wu		As Shown	A0	100010	B
B	28/11/2020	PC	Modified for 2020 MOP			DATUM	AHD					
						PROJECTION	MGA z56					



## **APPENDIX B**

### ***Risk Matrix***

Anglo American Plc Risk Matrix		Hazard Effect / Consequence				
		(Where an event has more than one 'Loss Type', choose the 'Consequence' with the highest rating)				
Loss Type (Additional 'Loss Types' may exist for an event; identify & rate accordingly)		1 Insignificant	2 Minor	3 Moderate	4 Major	5 Catastrophic
(S/H) Harm to People (Safety / Health)		First aid case / Exposure to minor health risk	Medical treatment case / Exposure to major health risk	Lost time injury / Reversible impact on health	Single fatality or loss of quality of life / Irreversible impact on health	Multiple fatalities / Impact on health ultimately fatal
(EI) Environmental Impact		Minimal environmental harm – L1 incident	Material environmental harm – L2 incident remediable short term	Serious environmental harm – L2 incident remediable within LOM	Major environmental harm – L2 incident remediable post LOM	Extreme environmental harm – L3 incident irreversible
(BI/MD) Business Interruption / Material Damage & Other Consequential Losses		No disruption to operation / US\$20k to US\$100k	Brief disruption to operation / US\$100k to US\$1.0M	Partial shutdown / US\$1.0M to US\$10.0M	Partial loss of operation /US\$10M to US\$75.0M	Substantial or total loss of operation / >US\$75.0M
(L&R) Legal & Regulatory		Low level legal issue	Minor legal issue; non compliance and breaches of the law	Serious breach of law; investigation/report to authority, prosecution and/or moderate penalty possible	Major breach of the law; considerable prosecution and penalties	Very considerable penalties & prosecutions. Multiple law suits & jail terms
(R/S/C) Impact on Reputation / Social / Community		Slight impact - public awareness may exist but no public concern	Limited impact - local public concern	Considerable impact - regional public concern	National impact - national public concern	International impact - international public attention
Likelihood	Examples (Consider rear-hits as well as actual events)	Risk Rating				
5 (Almost Certain)	The unwanted event has occurred frequently; occurs in order of one or more times per year & is likely to reoccur within 1 year	11 (M)	16 (H)	20 (H)	23 (Ex)	25 (Ex)
4 (Likely)	The unwanted event has occurred infrequently; occurs in order of less than once per year & is likely to reoccur within 5 years	7 (M)	12 (M)	17 (H)	21 (Ex)	24 (Ex)
3 (Possible)	The unwanted event has happened in the business at some time; or could happen within 10 years	4 (L)	8 (M)	13 (H)	18 (H)	22 (Ex)
2 (Unlikely)	The unwanted event has happened in the business at some time; or could happen within 20 years	2 (L)	5 (L)	9 (M)	14 (H)	19 (H)
1 (Rare)	The unwanted event has never been known to occur in the business; or it is highly unlikely that it will occur within 20 years	1 (L)	3 (L)	6 (M)	10 (M)	15 (H)
Risk Rating	Risk Level	Guidelines for Risk Matrix				
21 to 25	(Ex) – Extreme	Eliminate, avoid, implement specific action plans/procedures to manage & monitor				
13 to 20	(H) – High	Proactively manage				
6 to 12	(M) – Medium	Actively manage				
1 to 5	(L) – Low	Monitor & manage as appropriate				

## **APPENDIX C**

### ***List of Management Plans***

### Appendix C List of Management Plans

Name	Version	Date	Main Objective
Environmental Management Strategy	7	01/11/2016	Provides the framework for environmental management of the Care and Maintenance operations of Dartbrook mine, and builds upon the information provided in the Environmental Impact Statement (EIS) for the project (HLA EnviroScience Pty Limited, 2000).
Spontaneous Combustion Management Plan	4	01/11/2016	To address the management of spontaneous combustion (sponcom) issues associated with product and run of mine (ROM) coal stockpiles and the Dartbrook Rejects Emplacement Area (REA).
Landowner Communication and Consultation Plan	3	10/12/2002	To specify the communication and consultation process that will be conducted by Dartbrook with the owners of private land that will be undermined, or affected by longwall mining subsidence, due to the Dartbrook Extended Project.
Property Subsidence Management Plans *	Various	22/12/2003	PSMPs have been developed for several properties and describe the property and property features that could potentially be affected by mine subsidence, property subsidence predictions, assessment of the effects of subsidence on property features and proposed management measures for subsidence effects for each property feature.
Longwall Subsidence Management Plans *	2	22/12/2003	Prepared for the management of subsidence effects on all private properties that will be undermined by longwall panels. PSMPs include management strategies for man-made property improvements, as well as natural features, including surface water, groundwater, flora and fauna, and cultural heritage.
Archaeology and Cultural Management Plan	5	10/08/2011	The primary objectives of the plan are to protect known Aboriginal sites and heritage items and specify procedures to be implemented in the event that new sites or heritage items are discovered during the operations.
Flora & Fauna Management Plan	6	17/10/2016	Documents flora and fauna management strategies for areas that may be affected by the Dartbrook C&M operations. The primary objective of the plan is to manage and minimise the impact of Dartbrook C&M operations on the ecological values of the site.
Erosion & Sediment Control Plan	10	21/10/2014	Documents prevention and control measures to manage erosion and sedimentation for the Dartbrook C&M operations. The primary objective of the plan is to minimise erosion on the mine site and subsequent sedimentation of downstream waterways.
Soil Stripping Management Plan	5	07/11/2016	Documents the management strategies designed to ensure the appropriate management of topsoil for use in all areas of rehabilitation including the REA. The primary objectives of the plan are to ensure

Name	Version	Date	Main Objective
			the maximum retrieval of topsoil, use of appropriate stripping techniques and appropriate management of topdressing stockpiles.
Landscape and Lighting Management Plan	7	13/07/2011	Documents visual mitigation measures for the Dartbrook Care and Maintenance operations. The primary objective of the plan is to limit the visual and night lighting impacts of the Dartbrook C&M operations on sensitive receptors in the surrounding area.
Bushfire Management Plan	6	30/06/2016	This management plan incorporates the bushfire management measures developed as part of the risk assessment process. The plan addresses all aspects of Dartbrook Care and Maintenance operations and includes bushfire management strategies for all Dartbrook Coal landholdings within Dartbrook mining leases.
Land Management Plan	6	22/04/2016	The objectives of the Land Management Plan are ensuring ongoing productive use of the company land including land within the development consent area, where possible; supporting productive use of privately owned land within the development consent area; preventing land degradation; and controlling vermin, noxious weeds, and feral animals.
Site Water Management Plan	5	20/04/2015	Documents water management measures for the care and maintenance period for Dartbrook Mine. The primary objective of the plan is to manage and minimise the impact of the mine on surface and groundwater resources.
Waste Management Plan	5	28/10/2016	Documents the waste management strategies for the Dartbrook's C&M operations. The primary objective of the plan is to ensure that the waste generated is managed responsibly and in compliance with relevant legislation.
Dust Management Plan	9	16/06/2015	Documents the dust management strategies for the Dartbrook C&M operations. The primary objective of the plan is to manage and minimise the impact of dust from Dartbrook C&M operations on the environment and nearby residences.
Blast Management Plan *	5	10/12/2002	The primary objective of the Blast Management Plan is to manage and minimise the impact of blasting on the environment and nearby privately-owned residences.
Noise Management Plan *	8	15/09/2011	The primary objective of the Noise Management Plan is to manage and minimise the impact of noise from operations on the environment and nearby residences.
Construction Noise Management Plan *	2	7/11/2001	The primary objective of the Noise Management Plan is to manage and minimise the impact of noise from mine construction and operational activities on the environment and nearby residences.

Name	Version	Date	Main Objective
Vibration Management Plan *	3	10/12/2002	Documents the management strategies designed to address ground vibration impacts from the operation of the Dartbrook CHPP and Rail Loop. The primary objective of the plan is to ensure that vibration from the CHPP and Rail Loop does not impact on neighbouring private residences.

*\* Generally not applicable during Care and Maintenance operations*