



Doc Owner: Environment and Community Coordinator

Doc No:

CHAIN VALLEY COLLIERY Rehabilitation Management Plan

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Date:	12 May 2020

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1 Introduction

1.1 Purpose

This management plan addresses the requirements for Development Consent SSD-5465, Schedule 3, Condition 27 which specifies that a Rehabilitation Management Plan (RMP) be prepared.

The RMP applies to the surface operations at Chain Valley Colliery (CVC), including pit top facilities and lands where additional infrastructure may be constructed.

The purpose of this management plan is to:

- provide an overall framework for consultation related to rehabilitation;
- set out the rehabilitation objectives and proposals for CVC;
- meet the requirements of the development consent in respect of the RMP;
- detail monitoring requirements (if required);
- facilitate the effective management of closure and rehabilitation;
- compliment the role of the CVC MOP as an instrument to attain desirable rehabilitation outcomes;
- define specific responsibilities of all stakeholders and function as a management tool for all relevant operational personnel; and
- identify the requirements for review of the document and a procedure for continual improvement.

The overall aim of this management plan is to promote a high level of environmental performance through the minimisation of impacts.

1.2 Background

Chain Valley Colliery (CVC) is an underground coal mine located on the southern side of Lake Macquarie approximately 60 km south of Newcastle and 80 km north of Sydney (see **Figure 1**). The pit-top is located approximately 1 km south-east of the township of Mannering Park at the southern extent of Lake Macquarie.

In August 1960, J&A Brown and Abermain Seaham Collieries Ltd commenced clearing the present site with drift and shaft sinking starting a few months later. Production of coal from the Wallarah Seam, commenced with the first delivery to the adjacent Delta Electricity's Vales Point Power Station (VPPS) in April 1963.

LakeCoal was formed in 2001 to acquire BHP Billiton's 80% share in the Wallarah Coal Joint Venture (WCJV), the remaining 20% share was owned by Sojitz. In October 2006, Peabody Energy, a US listed company acquired LakeCoal Pty Limited.

In November 2009 LDO Coal Pty Limited purchased LakeCoal Pty Limited. LDO Coal is a consortium consisting of LD Operations, AMCI and private investors. In March 2011 the 20% share in the WCJV which Sojitz held was acquired by LDO Coal shareholders through the entity Fassi Coal Pty Ltd. The WCJV had operated the Wallarah, Moonee and Chain Valley underground coal mines and the Catherine Hill Bay Coal Preparation Plant, all located at the southern end of Lake Macquarie. At the time of LakeCoal's acquisition by LDO Coal, both the Wallarah and Moonee mines were closed.

In 2013 the owners of Mannering Colliery (MC) and CVC entered into an agreement which enabled LakeCoal to operate the MC until 2022. LakeCoal became the operator of MC effective 17 October 2013, with the underground link between CVC and MC completed in October 2017.

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LakeCoal was placed into Voluntary Administration on 3 October 2018. The receivers continued operation of the mines in the period 3 October 2018 to 1 April 2019. As of 1 April 2019, Great Southern Energy Pty Ltd (trading as Delta Coal, DC) own and operate the two underground coal mines, CVC and MC. Mining is currently undertaken at CVC, with the coal being transported underground to MC where the coal is crushed and screened and sent directly to VPPS.

1.3 Operation

With changes to the Mining Act 1992 and amendments to the Environmental Planning and Assessment Regulation 2000, LakeCoal was required to obtain approval under the *Environmental Planning and Assessment Act 1979* (EP&A Act) to permit continued operation. Approval of the mine was granted on 23 January 2012 (MP10_0161) following submission of an environmental assessment (EA) (AECOM, 2011). Development consent (SSD-5465) was subsequently approved on 23 December 2013, granting approval for underground mining over an additional area of Lake Macquarie and a consolidation of approved activities granted by virtue of MP10_0161. Mining operations are approved to occur until 31 December 2027.

Mining operations in NSW are required, as a condition of an authorisation issued under the *Mining Act 1992*, to conduct mining operations in accordance with an approved Mining Operations Plan (MOP). A MOP sets out in detail how mines will be rehabilitated over the course of the mining project.

The existing guidelines for the preparation of MOPs state that premature or unplanned closure would typically require a new MOP to be developed. This new MOP should be prepared using the current MOP guidelines at the time, with additional information as required from the "Strategic Framework for Mine Closure", (Minerals Council Australia).

1.4 Consultation

A key component for the development of the RMP is consultation. Previous versions of this RMP were prepared in consultation with a number of stakeholders, including Wyong Shire Council (now part of Central Coast Council), Lake Macquarie City Council (LMCC), Fisheries NSW (now Department of Primary Industries, DPI), Office of Environment and Heritage (OEH), NSW Office of Water (now part of the Department of Planning, Infrastructure and Environment), Delta Electricity and the Community Consultative Committee (CCC). Outcomes of prior consultation were incorporated into previous versions of the RMP.

This RMP, while based substantially on the previously approved LakeCoal RMP (V3), has been updated to reflect the recommendations and minor changes of the Independent Environmental Audit (IEA) conducted by SLR in June 2019. These updates are administrative only and there are no changes to activities, impacts, and the mine footprint or development consent requirements associated with CVC.

As required in Schedule 3, Condition 27 of SSD-5465, this RMP was provided to the Department of Planning, Industry and Environment (DPIE), DPIE-Biodiversity Conservation Division (DPIE-BCD), DPIE-Resources Regulator, LMCC, Central Coast Council and the CCC on 19 November 2019 for their review and comment. A summary of the comments received, and amendments subsequently made to the document prior to finalisation are detailed in **Table 1**. Evidence of consultation is provided in **Appendix 1**.

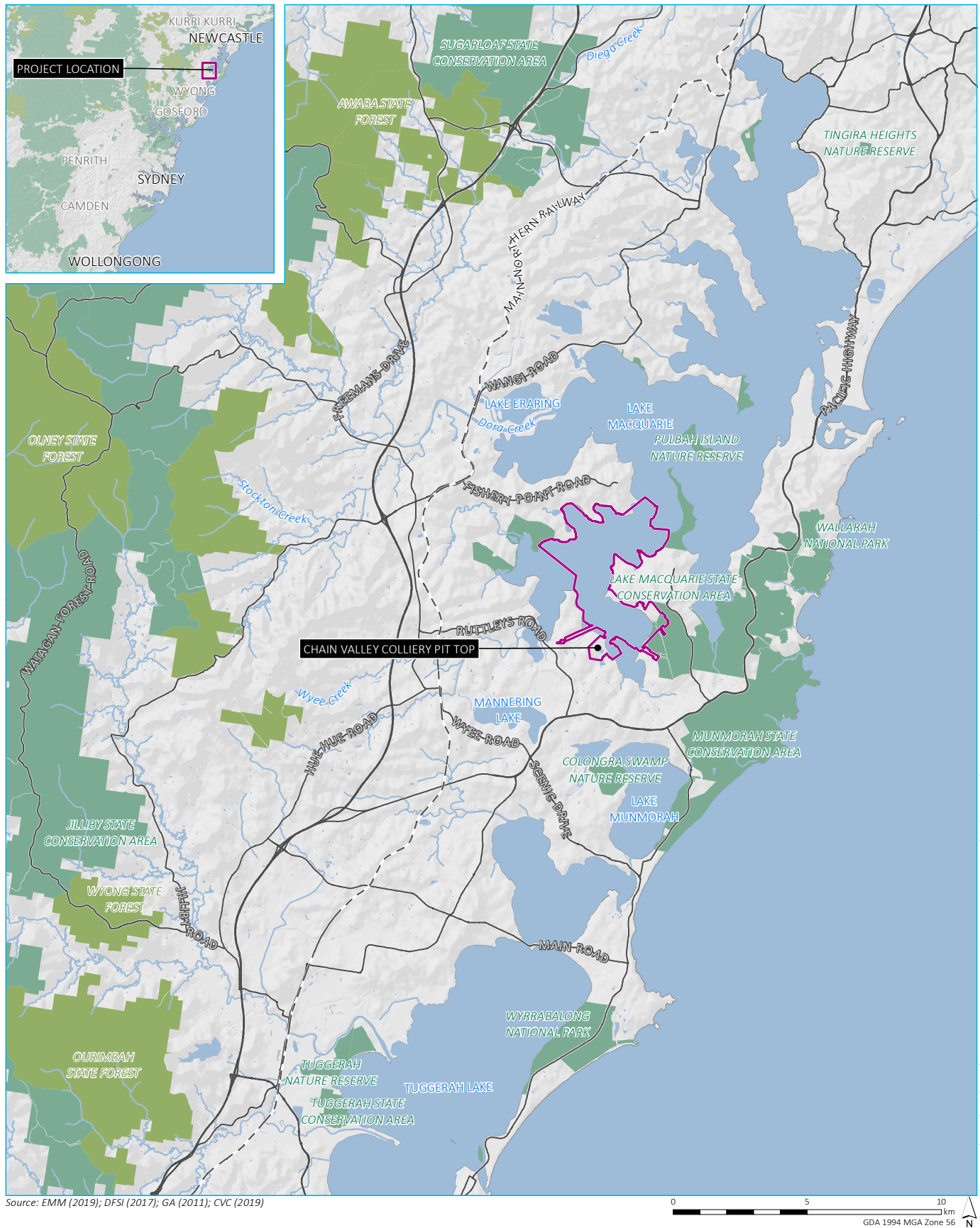
Table 1: Consultation Summary

Stakeholder	Comments	Response/Action
DPIE-Resource Assessments	- Comments received 05/05/2020 – Appendix 1 - Mine Closure Plan timing requirement clarification - Update Coal Mine subsidence legislation - Flyash reference clarification	- See Appendix 1 - See Section 4.2 - See Section 4.3 Table 3 - See Section 4.7.1

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Figure 1 Regional and local context

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KEY

- Chain Valley Colliery development consent boundary
- Rail line
- Main road
- Watercourse/drainage line
- Waterbody
- NPWS reserve
- State forest

CVC regional context

Chain Valley Colliery
Figure 1

2 Statutory Requirements

2.1 Key Legislation, Policy and Guidelines

Both State and Commonwealth environmental legislation applies to Delta's operation and activities. Compliance with State regulations requires the implementation of activities ranging from the control of priority weeds (*Biosecurity Act 2015*), monitoring for threatened species (*Biodiversity Conservation Act 2016*) and management of forest fuels to prevent fire spread (*Rural Fire Services Act 1997*).

A number of legislative requirements, government policies and guidelines relating to rehabilitation are applicable, key items relevant to this RMP are:

- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act);
- *Protection of the Environment Operations Act 1997* (POEO Act);
- *Environmental Planning and Assessment Act 1979* (EP&A Act);
- *Mining Act 1992*;
- *Biosecurity Act 2015* and Biosecurity Regulation 2017;
- *Local Land Services Act 2013*,
- *National Parks and Wildlife Act 1974*;
- *Biodiversity Conservation Act 2016*; and
- *Rural Fires Act 1997*.

Delta lands are within the LMCC and Central Coast Council local government areas (LGAs).

2.2 Development Consent (SSD-5465) Requirements

Rehabilitation related requirements of the development consent (SSD-5465) include specific conditions that are to be addressed. **Appendix 1** details where in the RMP they are addressed.

DC will also carry out works generally in accordance with the Environmental Assessment (EA), EA (Mod 1), EA (Mod 2), Project Layout Plans, and Statement of Commitments.

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3 Existing Environment

3.1 Physical Environment

The climate at CVC is oceanic/humid subtropical with warm summers, mild winters and generally heavy precipitation in late autumn and early winter. A review of Bureau of Meteorology (BOM) weather stations in the Lake Macquarie region found that the average annual rainfall in the vicinity of CVC is 1,230 mm with an average annual evaporation of approximately 820 mm.

The pit top area and Summerland Point ventilation shaft site are located on lands comprising the Doyalson and Wyong soil landscapes. Doyalson soils are strongly acidic with low fertility and slight to high erodibility. Wyong soils are strongly acidic, poorly drained, impermeable, and saline with very low fertility.

The NSW Acid Sulfate Soil Risk Maps for the Lake Macquarie area shows that acid sulfate soils are likely to occur at a depth of 1 to 2m along the foreshore of Lake Macquarie adjacent to the pit top area and the Summerland Point ventilation shaft. The acid sulfate soil risk warrants consideration during the development of the detailed mine closure plan.

3.2 Land Tenure and Use

CVC comprises two individual surface areas, the main pit top area (14 hectares) directly adjacent to the VPPS and the ventilation shaft site on Summerland Point (0.3 hectare area). The pit top area is comprised five (5) separate lots while the ventilation shaft site is a single lot, details of the lots and ownership is detailed in **Table 2**.

Table 2: Land Ownership Details

Site	Owner	Lot	Deposited Plan
Pit top area	Delta Electricity (utilised under access agreement)	A	379918
		B	379918
		C	349733
		A	187570
		1B	339441
Ventilation shaft site	Great Southern Energy Pty Ltd	1	226133

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3.3 Coal processing

Up until 2011, operations consisted of bord and pillar methods for secondary extraction. Since 2011, secondary extraction at the Colliery has employed the miniwall mining method. Historically coal has been extracted from three seams – the Wallarah, Great Northern and Fassifern seams. Current mining activities are limited to the Fassifern Seam.

Historic workings are located under the southern extent of Lake Macquarie and areas of Summerland Point, Chain Valley Bay, Mannering Park and Kingfisher Shores. Areas of these historic Colliery workings are being used for passive operational activities such as ventilation; water drainage; movement of personnel, materials and coal; conveyors; and services.

Run of Mine coal is transported to MC via underground conveyor where it is screened, crushed and sized on site and sent via surface conveyor to VPPS.

3.4 Waste management

Waste management at CVC consists of two main areas; solid and liquid waste management. A licenced waste contractor is engaged to remove and dispose of waste from CVC. Through the implementation of a total waste management system with the waste management contractor, continuous improvements are made on site to increase recycling and decrease waste to landfill.

Liquid waste primarily from washdown bays and the oil separator is removed from site via a licenced waste contractor under appropriate waste tracking. Stormwater runoff from the potentially hydrocarbon containing areas flow to the wash down sump. Solids are removed in a grit trap and oil is removed from the water by a packed bed oil water separator and stored in a waste oil tank prior to removal from site. Excess oil from the compressors (condensate) and surrounds is contained and piped to a separator tank which is inspected weekly and pumped out as required.

Coal fines, which are captured by sediment dams, sumps and other sediment control devices are recovered and re-incorporated to final product coal, further reducing potential waste streams.

3.5 Hydrocarbon Management

Oil and diesel fuel at CVC are stored within a number of bunded areas. Drainage from the bunded areas is connected to the oil separator and sedimentation sumps. In the event of a major spill, the drainage system can be blocked off to contain any spill in the outdoor storage area. Spill kits, booms and absorbent are available on site if required. The diesel fuel storage tanks are situated adjacent to the main workshop.

3.6 Hydrology

3.6.1 Surface water

CVC has a series of 13 interconnected sediment dams (as shown on **Figure 3**) which receive inflow from surface catchment runoff, septic treated bathhouse wastewater, treated water from the oil water separator and, primarily, underground mine water. These ponds treat the wastewater and runoff through settlement of fines and suspended solids prior to discharge. The discharge is licenced under Environment Protection Licence (EPL) 1770, which includes a volumetric limit of 12,161 kilolitres per day.

Potable water is supplied to CVC via a mains connection from the Central Coast Council water supply. While currently utilised for operational activities, the potable supply will be an important source of clean water when undertaking site rehabilitation works. Further details of the site surface water management are provided in the Water Management Plan.

3.6.2 Groundwater

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The hydrogeological regime of the mining area and its surrounds comprises a Quaternary terrestrial and marine / estuarine alluvial / colluvial groundwater system. There is also underlying Permian strata with low permeability and yielding sandstone, siltstone, conglomerate and tuff with low to moderately permeable coal seams which are the predominant water bearing strata.

The groundwater is naturally saline and migrates into the Colliery's underground workings in the Wallarah, Great Northern and Fassifern seams with the majority of inflows currently seen in the Great Northern and Wallarah seams. All water is transferred to a main sump within the Great Northern Seam, and then to the sediment dams on the surface via the main underground pumps. The groundwater cannot be used for operational purposes due to it being highly saline and also would not be suitable for mine rehabilitation.

As the groundwater table is lower than any of the mine entries or shafts, there will be no risk of groundwater exiting through sealed drifts or shafts post mine closure. Details of the groundwater systems in the vicinity of the Colliery are provided in the Water Management Plan.

3.7 Geology

The stratigraphy in the local area comprises the Permian coal measures overlain by the Triassic Narrabeen subgroup and Quaternary lacustrine and terrestrial alluvial / colluvial deposits. There are a number of faults and dykes which have been mapped or are inferred within the Colliery and its surrounds. The current Fassifern Seam workings have intersected some of these geological structures, which have impacted on approved mining activities; however, no significant inflows were observed when installing the main headings.

The Fassifern Seam is mined at a depth of approximately 200 m, with the seam being approximately 30 m deeper than the Great Northern Seam, which underlies the Wallarah Seam by approximately 30 m. The Fassifern Seam is overlain by a tuffaceous claystone material which varies in thickness between 20 and 30 m. The Fassifern Seam measures up to 5 m in thickness, with roadway development carrying a coal roof and floor. **Figure 2** shows the typical stratigraphy at CVC, including the Wallarah, Great Northern and Fassifern seams.

3.8 Aquatic Ecology

The current mine workings are located in the southern part of Lake Macquarie, west of Summerland Point. Lake Macquarie is a large barrier estuarine lake characterised by an open water area of 115 km². The Lake opens to the sea and strong tidal flows occur at the entrance channel, where the tidal range is 1.2 m (Watterson et al. 2011). However, in areas removed from the Lake's entrance such as Chain Valley Bay (13 km from the entrance), tidal range and influence is not as pronounced. Lake Macquarie is a wave-dominated estuary, with a high sediment trapping efficiency, naturally low turbidity and salt wedge/partially mixed circulation where there is likely to be sedimentation (Cardno Ecology Lab, 2011). The average depth of the Lake is 7 m and exhibits a relatively flat floor characterised by fine soft silt/mud sediments. The water depth in the vicinity of mining ranges from 0.5 to 8.5 m and depth of sediment is up to 10 m thick (AECOM, 2011).

Seagrass communities within the Lake have been mapped adjacent to current workings and a seagrass protection barrier has been applied to the mine plan to ensure the seagrass beds are not subsided. Annual seagrass monitoring and reporting is also undertaken in accordance with the current Seagrass Management Plan.

Studies of benthic communities (organisms that live in or on the bottom of water bodies) have also been undertaken both above the mining areas as well as at control sites. There is no correlation between mining activities and community abundance and/or diversity. However, ongoing monitoring will be undertaken in accordance with the Benthic Communities Management to ensure that potential impacts to benthic communities are monitored throughout mining. There is no rehabilitation at mine closure expected in relation to the aquatic environment above mining areas.

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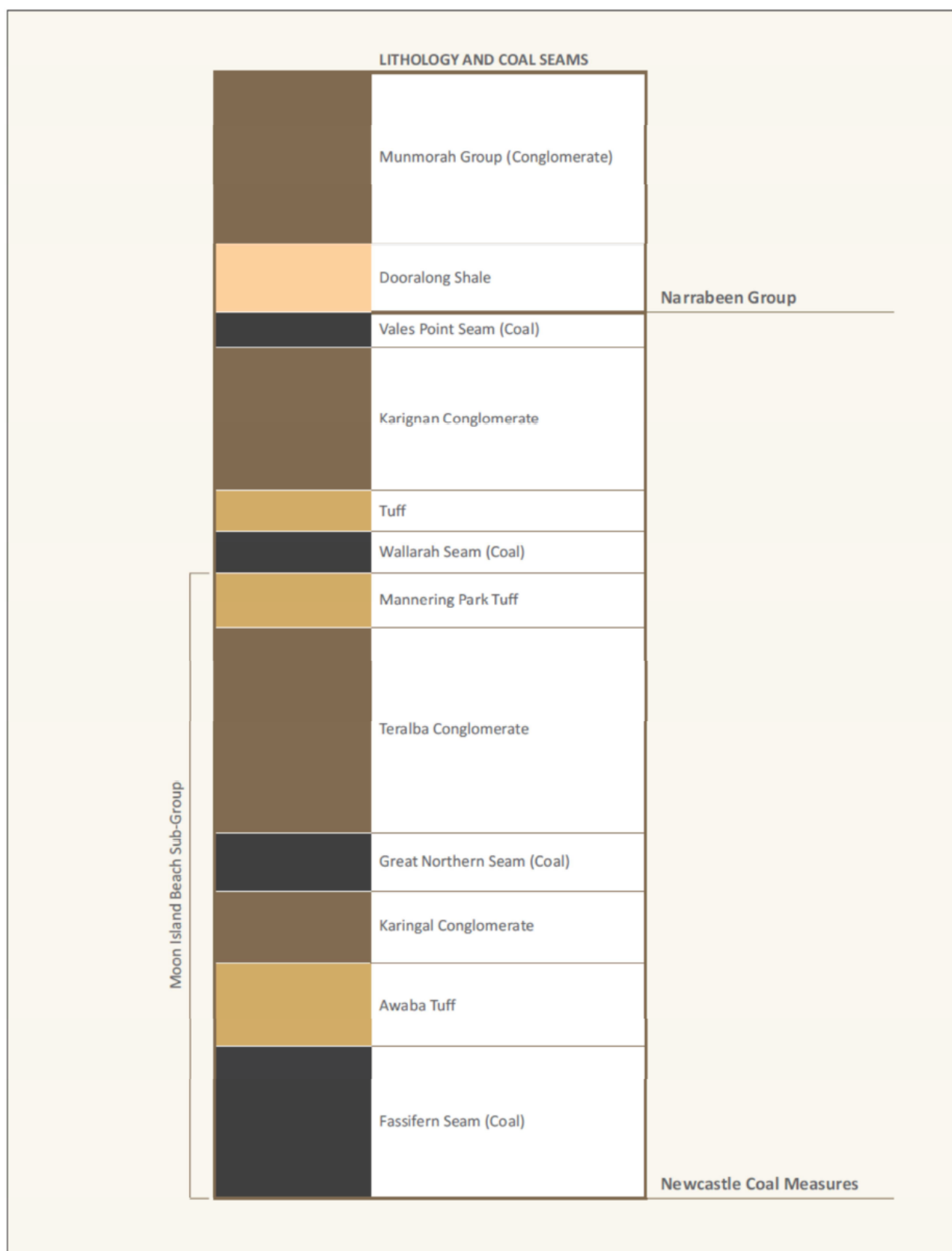


Figure 2: Typical Stratigraphy at Chain Valley Colliery

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3.9 Terrestrial Ecology

Vegetation mapping undertaken during 2012 in areas surrounding the pit top identified the surrounding vegetation communities as coastal open woodland, swamp oak forest and swamp sclerophyll forest. Mapping was also undertaken at the ventilation shaft site and identified coastal open woodland, grassy open woodland and swamp sclerophyll forest. Additional details on the terrestrial ecology are contained within the Biodiversity Management Plan.

From the above both the swamp oak forest and swamp sclerophyll forest are listed as Endangered Ecological Communities under the *Biodiversity Conservation Act 2016*.

The surrounding vegetation communities are also known to provide habitat for threatened fauna species such as the Squirrel Glider (*Petaurus norfolcensis*), Regent Honeyeater (*Anthochaera phrygia*), Swift Parrot (*Lathamus discolor*), Grey-headed Flying-fox (*Pteropus poliocephalus*) and microbats.

Accordingly, consideration of the valuable vegetation communities and habitat they provide will be an essential part of the detailed mine closure plan.

In addition to the natural habitat within the site, built structures are also known to provide potential habitat for a number of fauna species. Of relevance to the Colliery, it is known that endangered microbat populations have inhabited mine portals elsewhere in NSW (Olsen Consulting Group, 2009). The Colliery sediment dams have become used by a number of native fauna species. Potential impact to endangered microbat populations and other fauna species as a result of mine closure activities will need to be considered.

3.10 Socio-economic and Cultural Environment

While not specifically related to mine rehabilitation, DC employees and contractors are major stakeholders when considering mine closure and subsequent rehabilitation. The socio-economic aspects of mine closure planning are to be considered to reduce potential impacts.

The CVC workforce comprises DC employees and contractors with the majority living in Lake Macquarie, Central Coast or Newcastle LGAs.

Based on a 2012 workforce survey, weekly household goods purchased by the CVC workforce is generally from Lake Macquarie, predominantly at Swansea and Belmont, and Central Coast LGA, primarily at Lake Haven. Consistent with the above trend, local medical facilities close to their place of residence would be favoured.

Some households will have children who would be attending high school, primary school or childcare/preschool. As a result, voluntary donations would be made to local schools, the local surf club and local sporting clubs. It is also likely that the CVC workforce participates in local voluntary services, such as with the local surf club, schools, Rural Fire Service (RFS) and animal rescue groups.

3.11 Cultural Heritage

The DC Heritage Management Plan (HMP), should be referenced for detailed background in relation to the cultural environment and stakeholders, the below sections build on this management plan in relation to rehabilitation and mine closure only.

3.11.1 Aboriginal Cultural Heritage

Aboriginal archaeological sites including shell middens and artefact scatters occur, and are likely to occur, on the Lake Macquarie foreshore and in areas adjacent to creek lines, particularly higher order creek lines. Monitoring of cultural heritage sites is not currently considered necessary due to secondary extraction being undertaken by CVC and resultant subsidence occurring beneath Lake Macquarie.

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As part of the site rehabilitation and closure, any monitoring for mine subsidence will be undertaken as required.

3.11.2 Non-indigenous Cultural Heritage

Due to the presence of mining activities on the CVC site since the 1960s it is highly unlikely that any historic heritage remains on the site, a conclusion supported by the Heritage Council in its submission in responses to the EA dated 29 July 2011 and the EIS dated 01 July 2013. Despite this, five items of heritage significance or potential significance have been identified in the vicinity of CVC, namely:

- VPPS;
- Eaton Bulk Store Building;
- Wyee Channel;
- Wyee Coal Conveyor; and
- Morisset Hospital Precinct.

Each of these historic heritage items lies outside the area of approved mining activity and consequently there would be no direct or indirect impact from the CVC.

In consideration of the above, and that CVC has been providing coal to VPPS since 1963, final mine closure and rehabilitation planning will include consultation with Delta Electricity (or future owners) in relation to representing the historic linkage.

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4 Rehabilitation Management

4.1 Proposed Rehabilitation During Life of the Current MOP

The current CVC and MC MOP was approved 24 September 2018, with a completion date of 30 November 2020. The current development consent will expire on 31 December 2027. Due to the continuing need for surface infrastructure for operational use, there is relatively little rehabilitation anticipated over the life of the current or proceeding MOP. Surface works are expected to be limited to replacement, upgrade or maintenance work for the existing surface improvements. Some demolition of structures will be undertaken in preparation for staged closure.

Final rehabilitation will not be achieved under the current MOP. However, the anticipated rehabilitation status at mine closure is generally rehabilitation to a semi-natural vegetation cover (while maintaining the existing 330kV power line easement) with a view to lease relinquishment. Rehabilitation to be implemented under a future MOP at mine closure is described in the current MOP.

4.2 Mine Closure Planning

As outlined in the Mine Closure and Rehabilitation section of the SSD5465 modification 2 Statement of Commitments a detailed management and monitoring proposals for final rehabilitation will be included within a Mine Closure Plan to be prepared at least two years prior to cessation of mining activities. The plan will be comprehensive and not only consider such issues as the physical rehabilitation of the Colliery site and the decommissioning and removal of plant but also community engagement and socio-economic issues. It is not expected that such a plan would be required until approximately 2025, however this date would be dependant on future approvals and access to resources and reserves.

Should events occur that result in CVC being placed into temporary closure or care and maintenance, a risk assessment will be triggered, with the resulting actions being included in a care and maintenance plan. The care and maintenance plan would be implemented until such a time that CVC resumes mining activities or a detailed mine closure plan is developed and approved.

4.3 Mine Closure and Final Rehabilitation Objectives

Generally, it is proposed to revegetate the surface facilities areas to a near-native ecosystem compatible with the surrounding vegetation communities (with exception of the area that lies within the 330kV power line easement, which will remain a grassland community). As the goal is to return the areas of disturbance to a native plant community (or communities) aligned with the surrounding bushland, no introduced species (e.g., *Melaleuca armillaris*, *Pinus radiata* and non-endemic eucalypts) would be used in the revegetation program. Rather, the focus of the works would be the use of plant material grown from locally sourced species.

CVC is on land owned by Delta Electricity who will, therefore, be a key stakeholder in determining the final revegetation and landform of the area.

In addition to reinforcing the objectives of the MOP, the objectives of this RMP are prescribed in Table 7 of Condition 25, Schedule 3 of the development consent and are reproduced in **Table 3**.

Table 3: Rehabilitation Objectives

Feature	Objective
Mine site (as a whole)	- Safe, stable and non-polluting. - Final land use that is compatible with surrounding land uses.
Surface infrastructure	To be decommissioned and removed, unless the Executive Director Mineral Resources agrees otherwise.

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Feature	Objective
Portals and ventilation shafts	- To be decommissioned and made safe and stable. - Retain habitat for threatened species (eg bats), where practicable.
Other land affected by the development	- Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems comprised of; - local native plant species (unless the Executive Director Mineral Resources agrees otherwise); and - a landform consistent with the surrounding environment
Built features damaged by mining operations	- Repair to pre-mining condition or equivalent unless: - the owner agrees otherwise; or - the damage is fully restored, repaired or compensated under the <i>Coal Mine Subsidence Compensation Act 2017</i>
Community	- Ensure public safety. - Minimise the adverse socio-economic effects associated with mine closure.

Notes:

- These rehabilitation objectives apply to all subsidence impacts and environmental consequences caused by mining taking place after the granting of project approval MP 10_0161, and to all development surface infrastructure part of the development, whether constructed prior to or following the date of this consent.
- Rehabilitation of subsidence impacts and environmental consequences caused by mining which took place prior to the date of project approval (MP 10_0161) may be subject to the requirements of other approvals (eg under a mining lease or a Subsidence Management Plan approval).

4.4 Final Rehabilitation Planning Criteria & Performance Measures

The main planning considerations for rehabilitation prior to mine closure are:

- consideration of the success and practicalities of previously implemented revegetation techniques;
- issues relating to soil contamination and the burial and/or removal from site of the building debris;
- the sealing of any unsealed boreholes and mine shafts in accordance with the guidelines and standards that pertain at the time;
- the rehabilitation of existing and historically used sediment and water control dams in relation to the decanting of existing water, removal of contaminated material, mixing of sediment and non-contaminated material, filling and capping of the areas and establishment of a stable surface;
- management of existing weed populations, with particular emphasis on the reduction of Lantana (*Lantana camara*) and Bitou Bush (*Chrysanthemoides monilifera*);
- control of unauthorised access, particularly motor bikes and 4wd vehicles and rubbish dumping;
- mitigation of socio-economic impacts related to mine closure;
- ensuring public safety;
- management of the Colliery site rehabilitation while still facilitating access for bushfire fighting;
- suitable locations for the burial of “clean” material;
- removal of residual coal from stockpiles;
- availability of suitable capping material for disturbed areas such as dams and coal stockpiles;

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- availability of seed, and brush material to assist with the revegetation of the Colliery site; and
- reshaping, burial and removal of hardstand area material that includes bitumen, concrete and building rubble.

Table 4 details the specific closure objectives, completion criteria and performance measures to be applied during the mine closure process.

Table 4: Rehabilitation Completion Criteria and Performance Measures

Phase	Objective	Completion criteria	Performance measures
Decommissioning	No risk to public safety - All plant and equipment removed	All mining related plant and equipment removed from site (unless approved to remain, e.g. for heritage purposes).	Visual inspection and photos of site confirm plant and equipment has been removed. Photos included within Closure Report.
	No risk to public safety - All buildings and structures removed	Buildings and structures removed (unless approved to remain).	Visual inspection and photos of site confirm buildings have been removed. Photos included within Closure Report.
	No risk to public safety - All underground infrastructure (protruding above ground surface) removed.	Visible surface components of buried infrastructure removed (unless approved to remain).	Visual inspection and photos of site confirm infrastructure has been removed. Photos included within Closure Report.
	No risk to public safety - Access to former workings prevented	All surface entries to mine are sealed in accordance with MDG 6001 (Guidelines for the Permanent Filling and Capping of Surface Entries to Coal Seams). Note: currently MDG 6001 guidelines suggest that the void from the inbye bulkhead (at a 15 depth of cover to solid rock strata) to the drift entrance of the mine should be completely filled, and a substantial bulkhead seal erected at the portal mouth, such as would not permit retention of habitat for threatened species.	Engineer provides certification that bulkheads were constructed in accordance with the design. Copy of certification to be included within Closure Report As constructed drawings are provided to the Chief Inspector for inclusion with the abandonment file for the mine.
	No risk to public safety - All borehole connectivity to former workings sealed	All boreholes to the mine are sealed in accordance with EDG01 (Borehole Sealing Requirements on Land: Coal Exploration).	Closure report includes evidence that sealing has been completed to EDG01.
	Non-polluting - clean-up of potential/actual contamination.	Hydrocarbons less than assessment criteria. Heavy metals less than assessment criteria. No asbestos remains (unless bonded within buildings approved to remain)	Environmental Site Assessment report completed and identifies any levels of contamination is below acceptable levels. Environmental Site Assessment appended to Closure Report.

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Phase	Objective	Completion criteria	Performance measures
Landform establishment	Slopes are stable.	Re-profiled areas are stable with slopes not exceeding 10°.	No evidence of slumping of slopes. Survey pick up of rehabilitated site confirms no slopes exceed 10°. Final landform survey detail included within Closure Report.
	Growth medium replacement to permit vegetation establishment	Depth - ≥ 0.1 m.	Sampling / testing regime following placement and spreading of material to confirm depths. Revegetation becomes established
	Land use compatible with surrounds	Majority of established rehabilitation species are present in surrounding communities	Visual inspection and photos of rehabilitation confirm species established. Photos included within Closure Report.
Landform establishment (surface water)	Mine water discharges discontinued.	No discharge of underground mine water / water impacted by mining operations	Discharge water flow monitoring and reporting. Pipes that deliver water from underground to surface are disconnected Environment Protection Licence surrendered
	Appropriate management of surface water.	Diversion channels/drainage to remain are stable and non-eroding. Remaining dams are stable and non-eroding	Visual inspection and photos of dams/drainage to confirm non-eroding. Photos included within Closure Report.
	Non-polluting	Not contributing excess sediment load to downstream watercourses.	Surface water monitoring and reporting for upstream and downstream locations in unnamed creek.
Ecosystem / land use establishment.	Establishment of vegetation communities.	Clear trend of increasing species diversity.	Monitoring and comparison to adjacent control sites. Details of monitoring included within Closure Report.
		Number of weeds species and surface area cover ≤ adjacent control sites.	Monitoring and comparison to adjacent control sites Details of monitoring included within Closure Report.
		Self-propagation in revegetated areas.	Visual inspection and photos of species self-propagation. Photos included within Closure Report.
	Vegetation cover to minimise erosion.	Clear trend of increasing density with no significant erosion.	Monitoring and comparison to adjacent control sites Details of monitoring included within Closure Report.
		Clear trend of increasing foliage cover.	Monitoring and comparison to adjacent control sites Details of monitoring included within Closure Report.
Sustainable ecosystem / land use.	Landform generally blends in with surrounding	Absence of gullies >300mm wide or deep and gullies stable.	Monitoring and details of monitoring included within Closure Report.
		Landscape function analysis (or other methodology) shows	Monitoring and details of monitoring included within Closure Report.

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Phase	Objective	Completion criteria	Performance measures
	landscape and is stable	continued ecosystem function improvements	
	Weeds invasion adequately controlled by ecosystem	Stable or reducing weed presence (i.e. weed presence not increasing)	Monitoring and comparison to adjacent control sites and/or prior monitoring. Details of monitoring included within Closure Report.

4.5 Interaction with Other Environmental Management Plans

As indicated in **Section 1**, this RMP is one plan in a series of plans that sit under CVC's EMS. As the time approaches to prepare the mine closure plan, the latest version of the RMP is expected to inform the mine closure plan. Additionally, other environmental management plans, specifically the Biodiversity Management Plan, Water Management Plan, Benthic Communities Management Plan, Seagrass Management Plan and Heritage Management Plan could be used to inform the RMP. For example the Biodiversity Management Plan might indicate what endemic species may be used in the rehabilitation seed mix / tube stock to meet the needs of surrounding fauna communities and what weeds may be targeted during closure works. The Water Management Plan might give direction on how watering needs for rehabilitation might be met post closure, such as the retention of the potable water supply until vegetation establishment is complete.

4.6 Progressive Rehabilitation

Wherever possible, DC would undertake rehabilitation on a progressive basis throughout the life of the mine. Opportunities for rehabilitation are, however, considered limited due to the surface disturbance being restricted to areas required for operational activities. Notwithstanding, should opportunities arise which allow areas of the site to be rehabilitated, then the rehabilitation activities these would be planned, undertaken and reported in the Annual Review.

Preparation for rehabilitation may also be able to be undertaken once a decision for mine closure has been made, but prior to the completion of the detailed mine closure plan. This preparation would include undertaking longer lead time requirements that will come from the detailed mine closure plan, but are already known, such as native seed collection and propagation of species specifically to be used in the rehabilitation.

Seed would be collected only from native species in the vicinity of the site, in line with the closure objectives. A number of these species are detailed in the Biodiversity Management Plan, however a species list for seed collection is not provided here as it should not be limited to specific dominant species within the surrounding vegetation communities (although these likely form a significant component of the collection). Rather, the collection should be completed by suitably competent personnel experienced in native seed collection for use in rehabilitation, which will then inform the detailed mine closure plan to the extent that the species list can be commensurate with the availability of seed from endemic species in the vicinity of the site.

4.7 Final Rehabilitation Proposals

The following sub-sections provide a description of the elements of the final rehabilitation, as currently proposed.

4.7.1 Disturbed Land

DC proposes to progressively revegetate all disturbed land not required for future use to a vegetation type consistent or compatible with the surrounding vegetation communities and future land use. As with any revegetation program, the success will rely on the effectiveness of the methods utilised, which are currently expected to include a combination of revegetation methods, such as:

- growth medium development;

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- direct seeding;
- the use of sterile cover crops;
- planting of tube stock; and
- hydro seeding for steeper slopes and batters (if required).

It is noted that due to the age of the mine and the lack of topsoil preservation, there is a limited amount of topsoil stockpiled that will be available for use in the final rehabilitation activities. While this will be a consideration as part of the detailed mine closure plan, there are a substantial number of recycled organics that have been successfully utilised in mine rehabilitation (Kelly, 2006). Recycled organics used successfully in rehabilitation have sometimes included a percentage of fly ash, a source of which is available from the VPPS.

A maintenance component to address items such as erosion, weed control and plant mortalities will also be essential for effective rehabilitation.

As the goal for the revegetation program is to return disturbed land to a native plant community aligned to the surrounding bushland the use of introduced and non-endemic species will be avoided in the revegetation program. Focus will be placed on the use of plant material grown from locally sourced species or, if possible, seed collection and propagation from the surrounding vegetation for use in rehabilitation activities. A portion of the pit top area, primarily in the vicinity of the existing sediment dams, has existing high voltage (330kV) transmission lines and an associated easement for the lines. Rehabilitation of the site within the easement boundary is proposed to be a grassland community only.

Consideration of bushfire risk and potential management measures will also need to be incorporated into the detailed mine closure plan.

4.7.2 Water Management

The removal of large areas of sealed surfaces and buildings at mine closure could result in increased sediment load in the runoff during the early stages of rehabilitation. Conversely, the removal of historically compacted surfaces will result in increased infiltration rates during the first few months of the rehabilitation program and reduce the amount of runoff going to the sediment dams. In addition, as mining operations would have ceased, including the pumping of groundwater into the dams, a significant volume of the water managed within these dams would have been removed.

The current water management system and sediment dams will be retained during the rehabilitation program. Once the primary earthworks and initial revegetation are completed, including the removal of the hardstand areas, then a program of consolidation of the dams will be undertaken.

Excavated or crushed inert material would be used to fill the dams, where appropriate. Once these are filled, the walls and batter will be used to cap the dams. These surfaces will then be stabilised using a cover crop consisting of a mixture of fast growing sterile species and native longer-lived seed.

Water quality will continue to be monitored at the licenced discharge point in accordance with the EPL. However, at a point in closure, likely after the groundwater pumping ceases and the majority of water management structures are rehabilitated, the EPL would be surrendered. The timing of the EPL surrender is expected to be driven by the monitoring results, rather than a specific point in rehabilitation progress. After this point no specific monitoring as required by the EPL would be undertaken. However, specific rehabilitation monitoring would be undertaken, which may include some water monitoring.

The detailed mine closure plan will also consider the potential retention and/or construction of small dams or ponds which could either continue to provide habitat or allow fauna to relocate to these areas when the main sediment dams are rehabilitated upon closure. Currently 3 dams are proposed to remain as part of the final

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rehabilitation design, however, this will be given further consideration during development of the detailed mine closure plan.

4.7.3 Rehabilitation Trials and Research

The proposed final rehabilitation program will be based on extensive experience of rehabilitation in coastal areas undertaken previously by DC, in addition to that undertaken by Councils and mineral sand mining companies and research on mine rehabilitation in the Hunter Valley. Given this, and the limited amount of area disturbed, major rehabilitation trials or research programs are not expected to be necessary.

4.7.4 Community

The aims of the RMP with respect to communities are public safety and the minimisation of adverse socio-economic effects from mine closure. However, the mine is not expected to be closing for a number of years. As the socio-economic environment of the local area, the region and indeed Australia will change in this period, it is not feasible to address socio-economic issues in detail in this RMP. Rather, they will be addressed in detail closer to the time of mine closure in the mine closure plan. It is expected though that the following principles would be considered:

- the establishment of CVC has brought significant infrastructure to the mine site and the local community. Planning for mine closure could assist in mitigating the consequent reduction in access to useful infrastructure. With advanced and careful planning, it may be possible to develop capacity to maintain certain infrastructure facilities and services for future community or local government ownership or as part of future business development opportunities;
- an early and effective community engagement strategy should be established and the community engaged. This should occur as early as possible during the planning and design phase of the closure. The planning should consider how to minimise the adverse impacts of mine closure and to optimise the opportunities for the community; and
- planning for mine closure should ensure that the future public health and safety of the community is not compromised. The community's resilience to the adverse impacts of mine closure should be strengthened so that the community can maximise opportunities for subsequent land use and retain mining infrastructure of value to the community.

4.7.5 Remaining Features

Leading up to and during mine closure the following actions will be taken with respect to the buildings and structures associated with the mining, preparation and transport of the coal:

- preferentially any plant, structures, buildings or conveyors would be sold and/or relocated for reuse at another mining operation;
- the remaining coal bins, surface conveyor plant, buildings and build structures will be demolished or removed. All demolition is to occur in accordance with AS 2601-2001: The Demolition of Structures (or its latest version);
- concrete pads and footings will either be covered with at least 300 mm of growth medium or broken up and disposed of appropriately;
- roadways not required for access to the mine site or other purposes such as bushfire management will be rehabilitated; and
- below-grade structures such as concrete sumps will be filled and covered with growth medium.

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These proposals could be subject to change during the mine closure process depending on requests by the landowner.

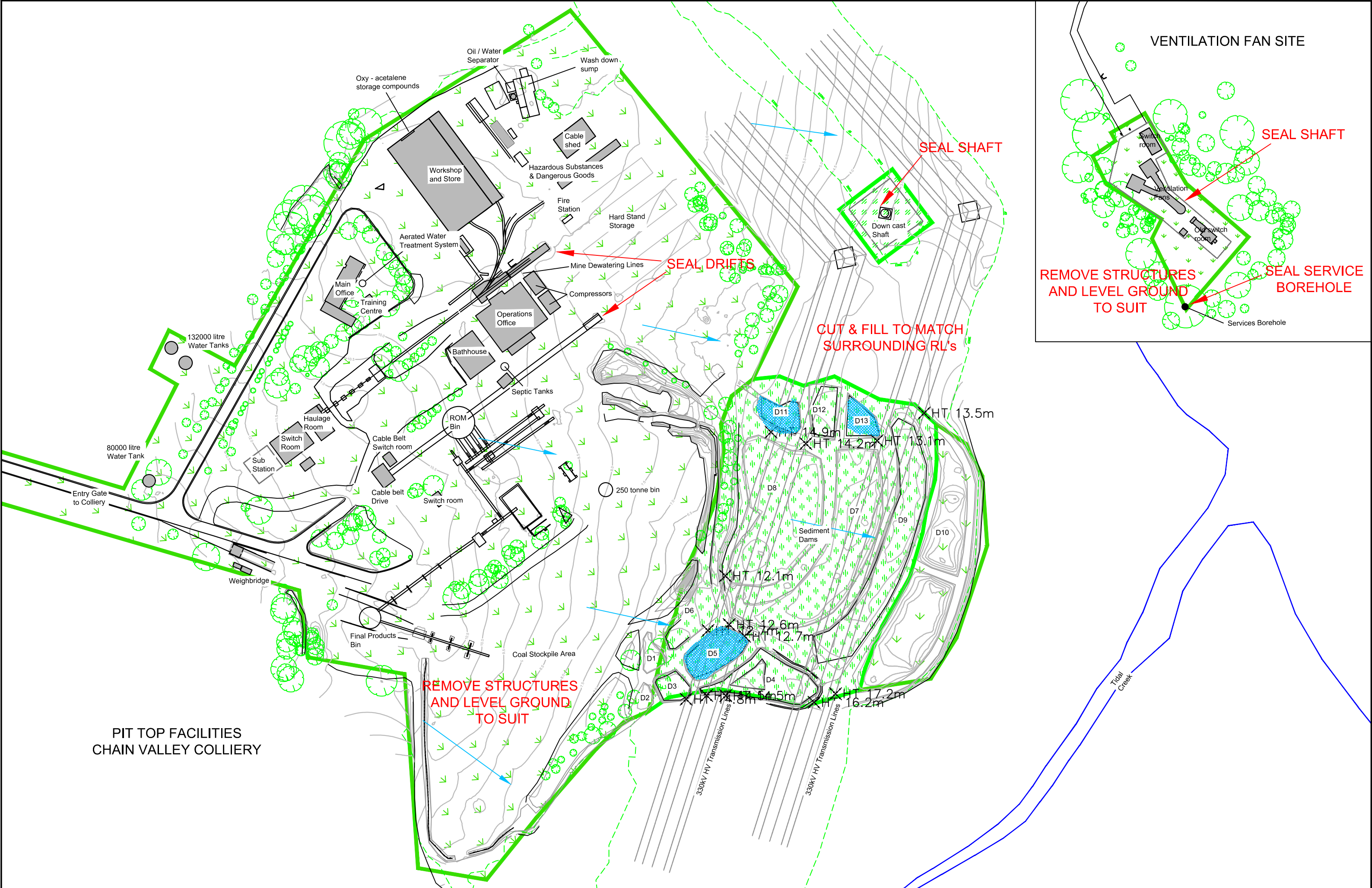
4.7.6 Other Infrastructure and Services

CVC has numerous services such as electricity, water and communications – both above and underground. All services not required will be disconnected. Above ground infrastructure will be removed. Underground structures such as cables and pipes will be terminated at each end and remain buried. All areas where structures are removed will be decommissioned and rehabilitated to ensure public safety at mine closure and relinquishment.

4.8 Conceptual Site Land Works

Figure 3 shows the conceptual land works planned for CVC. Generally the western two thirds of the Colliery and the ventilation shaft site will be cleared of all infrastructure items that are not required post mine closure and the land levelled. The eastern one third will be cut and filled generally to the original land levels, as deemed appropriate to match with the surrounding levels. Established native trees will be retained wherever possible.

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5 Rehabilitation Monitoring

Detailed management and monitoring proposals for the final rehabilitation will be formulated closer to the time that the rehabilitation works will be required, currently estimated to be around 2027 (based on current Development Consent limits). The details will be included in both the MOP in force at the time and the mine closure plan which would be prepared at least one year prior to cessation of mining activities.

Detailed monitoring is likely to include monitoring of the following:

- decommissioning of infrastructure;
- landform;
- excessive erosion or sedimentation from areas with establishing vegetation cover;
- success of initial cover crop or grass cover establishment;
- success of tree and shrub plantings;
- extent of natural regeneration of native species;
- adequacy of drainage controls;
- general stability of rehabilitation areas;
- public safety of all rehabilitated areas; and
- socio-economic effects of closure.

In July 2019 a rehabilitation monitoring program was developed by EMM Consulting and submitted to DPIE-Resources Regulator for Chain Valley Colliery and Mannering Colliery. The program includes details about vegetation monitoring program (VMP), conducted the baseline monitoring and methods proposed to assess compliance with the rehabilitation objectives. The success of the rehabilitation will be compared against analogue sites in comparatively undisturbed areas of equivalent vegetation around the surface operation areas. The baseline data from the analogue sites provide relative benchmark for rehabilitation and act as a control against environmental variability throughout the monitoring program. The program also includes the baseline results from the initial survey of analogue sites.

Rehabilitation will be monitored to identify improvements that could be implemented to maximise the level of success for subsequent rehabilitation programs.

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6 Financial Provisioning

The objective of financial provisioning is to ensure the cost of closure is adequately assessed and budgeted for by DC so that the community is not left with a liability.

The provision includes costs associated with the removal of infrastructure, sealing of all drifts, mine accesses and boreholes, rehabilitation and management of any contamination (if present) along with ongoing monitoring and statutory reporting obligations. Should any infrastructure be kept for specific purposes post mine closure provisions would be made to ensure these are safe and serviceable for the future owners.

These costs are determined on the basis of current costs and current legal requirements, over the life of the mine the costs will be reviewed and updated as required.

6.1 Planned Mine Closure

CVC has no planned mine closure date. Current operations are expected to continue under the current development consent (SSD-5465) into the future. Approval for continuation of mining within the Fassifern Seam exists until the 31st December 2027.

The main mechanism used to calculate (and recalculate) mine closure costs is ESG1: Rehabilitation Cost Estimate spreadsheet (DPE, 2017).

A rehabilitation cost estimate for CVC is required to be submitted by DC whenever a potential change in rehabilitation liabilities occurs. The rehabilitation cost estimate is used to assist in determining the amount of the security deposit. During this process DPIE will review the calculation. If rejected, the calculation needs to be recompleted until it is accepted. In line with the Rehabilitation Cost Estimate Guidelines (ESG1), security reviews may also be triggered by title renewals, audits, environmental incidents or other changes to rehabilitation liabilities.

6.2 Unplanned Closure

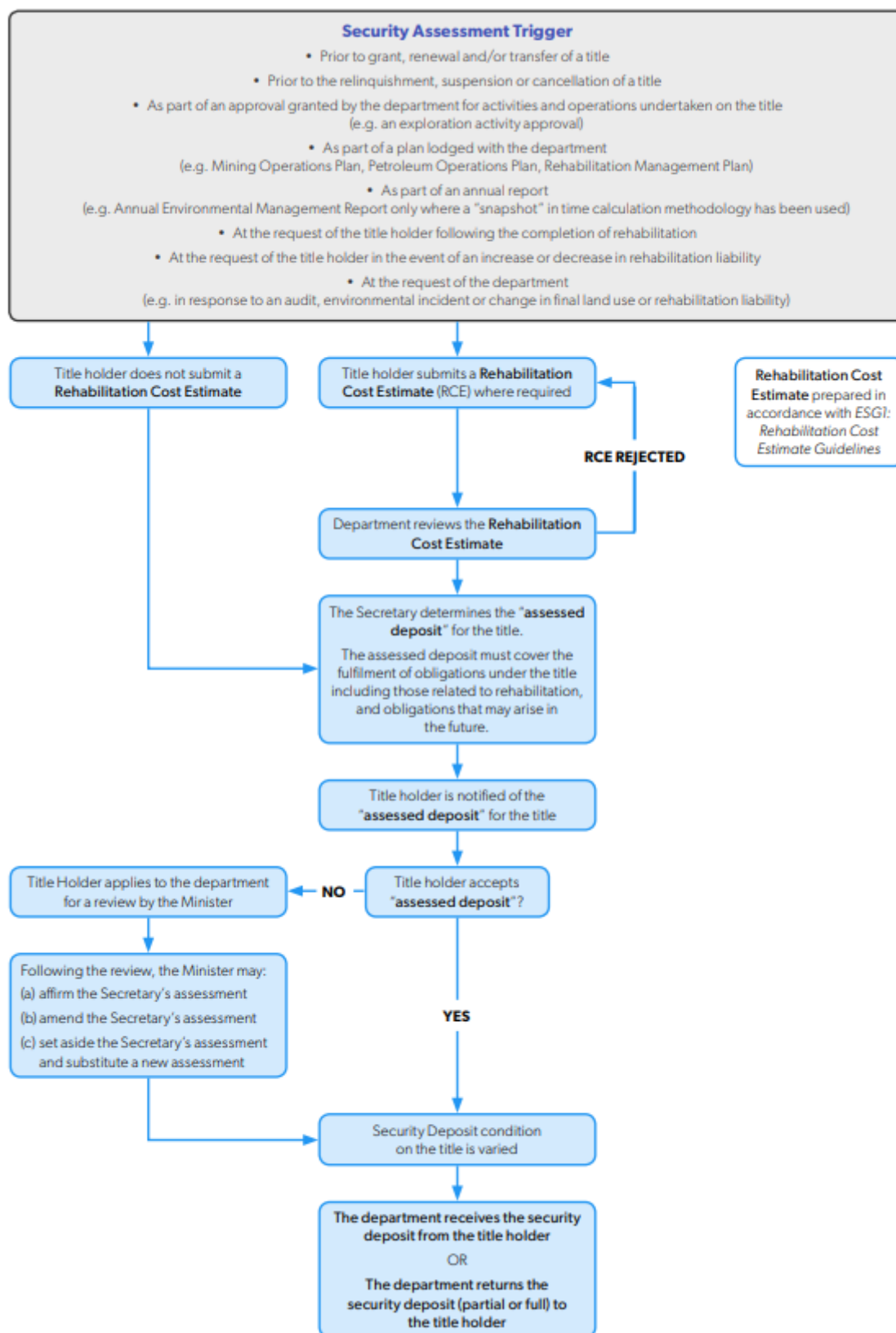
In the event of unplanned closure and default by DC to undertake rehabilitation activities on the site, a comprehensive process has been put in place by DPIE to ensure that liabilities are not passed onto the community. This process is based on Policy EDP11 – Rehabilitation Security Deposits, and is underpinned by the *Mining Act (1992)*. It ensures that, at all times, throughout the life of the mine a suitable security deposit is held by the NSW Government.

A security deposit must cover the Government's full costs in undertaking rehabilitation in the event of default by the authorisation / title holder. This requirement is intended to minimise potential liabilities to the State in the event that the authorisation/title holder defaults on their rehabilitation obligations. The security review process is shown in **Figure 4**.

6.3 Temporary Closure (care and maintenance)

The financial provisions for management during temporary closure in the event of CVC entering care and maintenance status will be provided by DC for the duration of the care and maintenance phase.

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Source: ESG1: Rehabilitation Cost Estimate Guidelines (2017)

Figure 4: Security Review Process

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7 Risk Management

Closure risk management will be undertaken prior to CVC being placed on care and maintenance or closing permanently. The purpose of closure risk management is to reduce the likelihood and/or consequence of events related to the closure to levels deemed as low as reasonably practicable by the selected risk assessment team.

The closure risk assessment to be conducted for CVC may include the following issues depending upon relevance at the time of closure (or temporary closure):

- rehabilitation provisioning;
- environmental baseline data availability;
- legal obligations;
- stakeholder involvement;
- potential risk legacies;
- surface water and groundwater;
- acid sulfate soils;
- spontaneous combustion;
- rehabilitation management (including bushfire, pests and disease/pathogens);
- employees and workforce;
- ongoing resource requirements;
- compensation cases;
- closure plan adequacy; and
- DPIE approval.

7.1 Residual Risk Register

A formal risk assessment will be undertaken approximately one year prior to planned mine closure to best determine levels of residual risks posed upon potential end land users and relevant stakeholders. This risk assessment would take into account all relevant issues listed above.

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8 Reporting

8.1 Annual Review

The results of any monitoring will be summarised in the relevant Annual Review. The Annual Review will also include a description of any actions being implemented or planned with respect to rehabilitation.

Annual Review will be forwarded to members of the Community Consultative Committee, local Councils (Central Coast and Lake Macquarie), DPIE, Resource Regulator and be placed on the company's website.

Once closure has commenced, annual rehabilitation monitoring and reporting will be undertaken to assess the overall rehabilitation success against the established rehabilitation planning criteria and other commitments made within the MOP.

8.2 Incident or Non-compliance Reporting

When rehabilitation commences, implementation and success will be reviewed at minimum on an annual basis to confirm compliance with the relevant Development Consent. Corrective action will be implemented where results or trends indicate risk of future non-compliance or environmental risk.

The current MOP identifies and ranks risks for rehabilitation activities. These risks will be managed during the closure process in accordance with the risk assessment for closure activities to be completed prior to commencement of closure works.

If monitoring reveals that rehabilitation actions by CVC have resulted in an environmental issue or that there has been non-compliance in relation to rehabilitation, then DC will conduct an investigation into the cause of the non-compliance.

The report will:

- describe the date, time and nature of the observation;
- identify the cause (or likely cause) of the damage/incident;
- describe what action has been taken to date; and
- describe the proposed measures to address the incident and prevent further such occurrences.

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9 Stakeholder Management and Response

Stakeholder management and response will not be an issue until the final rehabilitation begins, planned to be around 2027 (dependent on the approval of the proposed mining extension). Detailed stakeholder management and response will be planned closer to the mine closure date and will be incorporated in the mine closure plan.

9.1 Mine Closure and Rehabilitation

Relevant stakeholders at the time of preparing this plan are listed below, the below list should be reviewed and if necessary revised closer to mine closure, to ensure all relevant future stakeholders are identified and considered and where necessary consulted as part of the mine closure planning process. Relevant stakeholders include;

- Chain Valley Colliery
 - DC employees
 - Contractors and suppliers
 - Community Consultative Committee
- Community
 - Neighbours and local community members
 - Delta Electricity (VPPS)
 - Local indigenous groups and land councils
 - Local progress associations and precinct committees
 - Rural Fire Service
- Local Councils
 - Lake Macquarie City Council
 - Central Coast Council
- Regulators
 - Department of Planning, Industry and Environment
 - Environment Protection Authority
 - Office of Environment and Heritage
 - Resource Regulator
 - Department of Industry
 - Transport for NSW/Roads and Maritime Services

9.2 Complaints Handling

DC has a 24-hour telephone hotline (1800 687 260) through which members of the public can lodge complaints, concerns, or to raise issues associated with the operation. This service aims to promptly and effectively address community concerns and environmental matters.

All complaints are recorded and responded to and if, for some reason, no action is taken then the reason why is recorded. The information recorded in the complaint register includes:

- date and time the complaint was lodged;
- personal details provided by the complainant;
- nature of the complaint;
- action taken or, if no action was taken, the reason why; and
- follow up contact with the complainant.

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9.3 Independent Review

As detailed in Condition 2, Schedule 5 of SSD-5465, an Independent Review can be requested by a landowner who “*considers the development to be exceeding the relevant criteria in Schedule 3*”.

If the Secretary is satisfied that an independent review is warranted, then within 2 months of the Secretary's decision the Applicant shall:

- (a) *commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Secretary, to:*
 - *consult with the landowner to determine his/her concerns;*
 - *conduct monitoring to determine whether the development is complying with the relevant criteria in Schedule 3; and*
 - *if the development is not complying with these criteria then identify the measures that could be implemented to ensure compliance with the relevant criteria; and*
- (b) *give the Secretary and landowner a copy of the independent review*

9.4 Dispute Resolution

If any disputes are not adequately addressed by the complaints handling process then they will be handled by the Environment and Community Coordinator. If the response of CVC is not considered to satisfactorily address the concern of the complainant, a meeting may be convened with the complainant, Mine Manager together with the Environment and Community Coordinator to determine any further options to reduce potential impacts.

Any actions agreed from the meeting will be implemented by CVC. After implementation of the proposed actions the complainant will be contacted and advice sought as to the satisfaction or otherwise with the measures taken.

If no agreed outcome is determined or the complainant is still not satisfied by the action taken, then an Independent Review may be requested by the complainant. If determined to be warranted by the Secretary, an independent review will be undertaken in accordance with the process identified in Schedule 5 of SSD-5465.

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10 Audit and Review

The RMP will be kept up to date through DC's standard audit and review process, however it is noted that significant planning for the detailed mine closure plan is not expected until around 2026. Current site audit and review arrangements are set out below.

10.1 Review

This document will be reviewed, and if necessary revised, within three months of the following;

- The submission of an Annual Review;
- The submission of a related incident report;
- The submission of an independent environmental audit; and
- Following any modification to the project approval.

Internal and external audits of this document will be carried out as described below. If possible, internal and external audits will be objective and be conducted by a person or organisation independent of the document being audited.

Audits will be carried out by personnel who have the necessary qualifications and experience to make an objective assessment of the issues. The extent of the audit, although pre-determined, may be extended if a potentially serious deviation from this document is detected.

Any audit non-conformances and/or improvement opportunities will have corrective and preventative actions implemented to avoid recurrence, these actions will be loaded into the Colliery Incident Database to ensure the actions are assigned to the relevant people and completed.

10.2 Auditing

The objectives of an audit are to maintain compliance with the RMP. Audits shall be carried out by personnel who have the necessary qualifications and experience to make an objective assessment of the issues. The extent of the audit, although pre-determined, may be extended if a potentially serious deviation from this document is detected.

Any audit non-conformances and/or improvement opportunities will have corrective and preventative actions implemented to avoid recurrence, these actions will be loaded into the site Incident Database to ensure the actions are assigned to the relevant people and completed.

External audits will be conducted utilising external specialists and will consider this document and related documents. External auditors shall be determined based on skills and experience and upon what is to be accomplished.

An Independent Environmental Audit (IEA) was undertaken during June 2019. In accordance with SSD-5465 Schedule 6, Condition 9, IEA's will be scheduled for every three years thereafter (unless the Secretary directs otherwise) by an audit team whose appointment has been endorsed by the Secretary.

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11 Records and Document Control

11.1 Records

Generally, the Environment and Community Coordinator will maintain all Environmental Management System records which are not of a confidential nature. Records that will be maintained include:

- monitoring data;
- environmental inspections and auditing results;
- environmental incident reports;
- the complaints register; and
- licences and permits.

All records will be stored so that they are legible, readily retrievable and protected against damage, deterioration and loss. Records will be maintained for a minimum of 4 years or as otherwise required under any legislation, licence, lease, permit or approval.

11.2 Document Control

This document and all others associated with the Environmental Management System shall be maintained in a document control system which is in compliance with the site Document Control Standard which is available to all site personnel. Any proposed change to this document will be via the Environment and Community Coordinator.

A copy of this document is available on the DC website. Details on document revisions are provided in **Table 5**.

Table 5: Document Revision Details

Version	Date	Details of Revision	Company	Reviewed by/ Authorised by
1	06/03/2013	Original RMP	LakeCoal	Peter Stewart Chris Ellis Ben Johnston
2	07/01/2014	Review	LakeCoal	Chris Ellis
3	05/12/2014	Review	LakeCoal	Chris Ellis
4	01/03/2019	Review	LakeCoal	Chris Armit Wade Covey
	17/11/2019	Draft for comment - Updated to Delta Coal format	EMM Consulting Delta Coal	Katie Weekes Chris Armit
5	10/03/2019	Addition of consultation from 17/11/2019	Delta Coal	Chris Armit

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12 Roles and Responsibilities

Roles and responsibilities specific to completing the requirements of the RMP are identified in **Table 6**.

Table 6: Roles and responsibilities for rehabilitation management

Role	Responsibilities
General Manager	Ensure that adequate financial and personnel resources are made available for the implementation of the RMP. Including rehabilitation activities and security deposits.
Environment and Community Coordinator	- Coordinate socio-economic mitigation measures prior to mine closure in accordance with the MOP. - Compile the Annual Review. - Follow up complaints or disputes. - Complete environmental monitoring data summaries and place on the company's website. - Respond to any potential or actual non-compliances and report these as required to regulatory bodies and other stakeholders. - Undertake reviews of this document as per Section 11. - Undertake or coordinate the required audits of this document, in accordance with Section 11. - Complete notification process for any noncompliance or incident. - Coordinate the closure risk assessment process. - Coordinate the development of a detailed mine closure plan. - Consult Delta Electricity (or future owners) of the VPPS in relation to preserving or representing the historic linkage between CVC and the power station during the development of the mine closure plan - Ensure acid sulfate soil risks are considered during the mine closure plan development - Consider Endangered Ecological Communities and habitat they provide to protected fauna during the development of the mine closure plan - Consideration of bushfire risk in the development of the mine closure plan - Coordinate stakeholder engagement during the development of the mine closure plan - Ensure established native trees are retained wherever possible during rehabilitation activities - Ensure that ongoing rehabilitation in accordance with the MOP is being implemented - Develop a care and maintenance plan for CVC should it be placed on care and maintenance
All employees and contractors	Comply with the requirements of this RMP

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13 References

Documents used in the preparation of this management plan are detailed in Error! Reference source not found..

Table 7: References

Reference	Title
Standards	AS/NZS ISO 14001:2004 Environmental management systems – Requirements with guidance for use AS/NZS ISO 14004:2004 Environmental management systems – General guidelines on principles, systems and support techniques AS2601-2001: The demolition of structures
Legislation and Regulations	<i>Biodiversity Conservation Act 2016</i> <i>Biosecurity Act 2015</i> <i>Biosecurity Regulation 2017</i> Environment Protection Licence (EPL) 1770 <i>Environmental Planning and Assessment Act 1979 (EP&A Act)</i> <i>Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)</i> <i>Fisheries Management Act 1994</i> <i>Game and Feral Animal Control Act 2002</i> <i>Game and Feral Animal Control Regulation 2012</i> <i>Local Land Services Act 2013</i> <i>Mining Act 1992</i> <i>National Parks and Wildlife Act 1974</i> <i>Pesticides Act 1999</i> Development consent SSD-5465 (as modified) <i>Protection of the Environment Operations Act 1997 (POEO Act)</i> <i>Rural Fires Act 1997</i>
Delta Coal documents	EMS Environmental Management Strategy. Chain Valley Colliery Benthic Communities Management Plan, May 2018. Chain Valley Colliery Biodiversity Management Plan, July 2014. Chain Valley Colliery Heritage Management Plan, June 2014. Chain Valley Colliery Seagrass Management Plan, June 2019. Chain Valley Colliery Water Management Plan, July 2012. LakeCoal 2018, MC and CVC Mine Operations Plan 2018 - 2020. Delta Coal Permit to Clear or Disturb land.

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Reference	Title
External	Australian and New Zealand Minerals and Energy Council, and the Minerals Council of Australia, Strategic Framework for Mine Closure AECOM, 2011, Environmental Assessment Chain Valley Colliery Domains 1 & 2 Continuation Project, prepared for LakeCoal. Australian Government Weeds of National Significance, www.environment.gov.au/biodiversity/invasive/weeds/weeds/lists/wons.html, viewed 5 August 2019. Bureau of Meteorology (BOM) 2019, Map of Climate Zones of Australia. Cardno Ecology Lab, 2011, Mannering Colliery Extension of Mining – Aquatic Ecology Assessment, prepared for Centennial Coal. Commonwealth of Australia, September 2016, Mine Closure: Leading Practice Sustainable Development Program for the Mining Industry. EMM, June 2015, Chain Valley Colliery Modification 2 - Statement of Environmental Effects – Section 96 Modification to SSD-5465, prepared for LakeCoal Pty Limited. EMM, July 2019, Chain Valley Colliery and Mannering Colliery Rehabilitation Monitoring Program Kelly, G.L., 2006, Recycled Organics in Mine Site Rehabilitation - A review of scientific literature, prepared for the Department of Environment and Conservation NSW. Kleinfelder 2016, Weed Action Plan - Mannering Colliery and Chain Valley Colliery. NSW Minerals Council Improving Mine Rehabilitation Discussion Paper, February 2018. NSW Office of Environment & Heritage (OEH) 2014, BioBanking Assessment Methodology 2014. Office of Environment and Heritage for the NSW Government, Sydney. NSW Rural Fire Service (RFS) 2006, Planning for bush fire protection: a guide for councils, planners, fire authorities and developers. NSW Government. NSW Department of Trade and Investment, EDG 01: Borehole Sealing Requirements on Land, April 2012. NSW Department of Planning and Environment (DPE), 2017, ESG1 Rehabilitation Cost Estimate Guidelines, June 2017. NSW Department of Trade and Investment, 2013, ESG3 Mining Operations Plan (MOP) Guidelines, September 2013. Olsen Consulting Group, 2009, Review of Environmental Factors: Dendrobium Portals Sealing. Scobie Architects (2010) Wyong Shire-wide Heritage Review, prepared for Wyong Shire Council. Watterson, E.K., Burston, J.M., Stevens, H. and Messiter, D.J., 2011, The hydraulic and morphological response of a large coastal lake to rising sea levels. Worley Parsons. pp 1-14.

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14 Definitions

CCC Central Coast Council

DC Delta Coal

DP&E Department of Planning & Environment

DPIE Department of Planning, Industry and Environment

DPI Department of Primary Industries

EA Environmental Assessment

EMS Environmental Management System

EPA NSW Environment Protection Authority

EPL Environmental Protection License

EP&A Act *Environmental Planning and Assessment Act 1979*

LMCC Lake Macquarie City Council

MC Mannering Colliery

MOP Mine Operations Plan

MP 10_161 Project Approval for CVC Domains 1 & 2 Continuation Project, referred to in Schedule 3, Condition 25 of SSD-5465

MSDS Material Safety Data Sheet

NSW New South Wales

OEHS NSW Office of Environment and Heritage

POEO Act *Protection of the Environment Operations Act 1997*

RFS NSW Rural Fire Service

RMP Rehabilitation Management Plan

ROM Run of mine

Secretary Secretary of the Department, or nominee

VPPS Vales Point Power Station

WoNS Weeds of National Significance

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Appendix 1: Consultation

From: Chris Armit <CArmit@deltacoal.com.au>
Sent: Tuesday, 19 November 2019 5:35 AM
To: Ray Ramage <ray.ramage@planning.nsw.gov.au>; Karen Mason <kmason@lakemac.nsw.gov.au>; OEH ROD Hunter Central Coast Mailbox <rog.hcc@environment.nsw.gov.au>; Margaret MacDonald-Hill <mmacdonald-hill@bigpond.com>
Cc: DPE PSVC Compliance Mailbox <compliance@planning.nsw.gov.au>; Katie Weekes <KWeekes@deltacoal.com.au>; Colin Phillips <Colin.Phillips@planning.nsw.gov.au>; Chris Nicholas <CNicholas@deltacoal.com.au>
Subject: Chain Valley Colliery - Rehabilitation Management Plan for comment

Hi All,
Please find attached a review of the Chain Valley Colliery Rehabilitation Management Plan for your comment.

Margaret,
If you could email through this management plan revision to the Community Consultative Committee members for their comment it would be greatly appreciated.
You can email it together with last week's minutes when I send them through today.

regards,
Chris

Delta
coal
Chris Armit
Environmental and Community Coordinator
Phone: 02 4358 0800
Mobile: 0409 070 233
Chain Valley Colliery

From: Geoffrey Keech [<mailto:gkeech@lakemac.nsw.gov.au>]
Sent: Thursday, 12 December 2019 3:41 PM
To: Chris Armit
Cc: Melissa Sawatske
Subject: LMCC response to Delta Coal Mannering Colliery and Chain Valley Colliery management plans consultation

Hi Chris,

Thankyou for providing Council the opportunity to comment on your management plans. I provide the following feedback:

CVC Rehabilitation Management Plan	Any infrastructure (slabs, pits, pipes, etc.) that is to be abandoned and covered over should be mapped and this map made available to any future user or purchaser of the site. Spelling mistake "mircobat"
------------------------------------	---

For future iterations of these plans, could you please send the plans to Council@lakemac.nsw.gov.au addressed to "Development Assessment and Certification officer." The plans will be allocated to a DAC officer to coordinate comments from the relevant sections of Council. It would help us if you can include a note about the purpose of the consultation (as per the "Audit and Review" section of the management plans), and ideally send a copy that has been marked up with the changes that have occurred, as this allows us to focus quickly on the relevant changes.

Geoffrey Keech
Development Planner



T 02 4921 0025 M 0429 124 904
E gkeech@lakemac.nsw.gov.au
lakemac.com.au
[f](#) [in](#) [@](#)

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Our ref: DOC19/1013209-1
Your ref: SSD-5465 (MOD 2)

Chris Armit

Environmental and Community Coordinator
Chain Valley Colliery
Delta Coal
Off Construction Road (Off Ruttleys Road)
MANNERING PARK NSW 2259
CArmit@deltacoal.com.au

Dear Mr Armit

Chain Valley Colliery (SSD-5465 MOD 2) – review of the Benthic Communities Management Plan, Seagrass Management Plan and Rehabilitation Management Plan

I refer to your e-mails dated 14, 17, and 19 November 2019 in which the Delta Coal provided the Biodiversity and Conservation Division (BCD) of Department of Planning, Industry and Environment (The Department) with copies of three updated management plans for the Chain Valley Colliery. These management plans must be prepared '...in consultation with...' BCD to meet Schedule 3, Condition 27; Schedule 4, Condition 7(h & i); and Table 8 of the current consent for the mine (SSD-5465 MOD 2). The management plans are the:

- *Chain Valley Colliery Benthic Communities Management Plan: Environmental Management Plan* (dated 14 November 2019)
- *Chain Valley Colliery Seagrass Management Plan: Environmental Management Plan* (dated 17 November 2019), and
- *Chain Valley Colliery Rehabilitation Management Plan* (dated 19 November 2019)

BCD makes no comment on the *Chain Valley Colliery Benthic Communities Management Plan* or the *Chain Valley Colliery Seagrass Management Plan*. However, in relation to the *Chain Valley Colliery Rehabilitation Management Plan* BCD makes one recommendation: that the bushland rehabilitation is targeted to create recognisable Plant Community Types from the local or adjoining Interim Biogeographical Regionalisation of Australia region. This will further refine the completion criteria for species diversity, plant density and plant cover; contained in Table 4 of the plan.

If you require any further information regarding this matter, please contact Robert Gibson, Regional Biodiversity Conservation Officer, on 4927 3154 or via email at rog.hcc@environment.nsw.gov.au

Yours sincerely

N91 Davis

NICOLE DAVIS
A/Senior Team Leader Planning
Hunter Central Coast Branch
Biodiversity and Conservation Division
3 December 2019

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Date: 05/05/2020
From Colin Phillips
To: Chris Armit

The Department's review of the Extraction Plan for Chain Valley Colliery Miniwall S4 has identified several areas requiring clarification or correction. I would be grateful if you would attend to the identified matters, revise the Extraction Plan and re-submit it to the Department via the Planning Portal. The attachment contains the Department's review.

The most important matter is reproduced below:

Appendix 13 Subsidence Report. Section 6.3 states that the High Water Mark is defined by the 2.44 m AHD land contour. This is incorrect. The High Water Mark is on the Lake shore, not 9 feet higher. This misinterpretation flows through to Figure 21 where it is shown with the lakeside boundary of the HWMSB as expressed in the seam being the intersection of a line drawn at 35 degrees from the 2.44 m AHD contour to the Fassifern seam. This line needs to be drawn from the lake shore to the seam. This then brings into play the question of whether the calculation of the lake side HWMSB edge has been correctly calculated. On the methodology presented in the Appendix 13, the calculations are most likely incorrect and will have implications as to the boundary of second workings in the vicinity of the proposed starting position of Miniwall S4.

Please investigate this matter and revise these aspects of the Miniwall S4 Extraction Plan before resubmitting to the Department for consideration

DPIE Rehabilitation Management plan related comments	Response
11. Appendix 11 Rehabilitation Plan. Section 4.2 The Department requires that the detailed Mine Closure Plan be in place at least 12 months prior to mine closure.	Section 4.2 clarified to include Statement of Commitments
12. Appendix 11 Section 4.3 Table 3. Please update reference to COAL MINE SUBSIDENCE COMPENSATION ACT 2017 .	Legislation reference Section 4.3 Table 3 updated.
13. Appendix 11 Section 4.7.1. Is flyash as recycled organic material?	Flyash section clarified see Section 4.7.1

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Appendix 2: Development Consent Summary

Chain Valley Colliery Development Consent SSD-5465 Summary

Relevant sections of Development Consent SSD-5465 detail the requirements of the RMP and are reproduced in Table A1 below along with identification of where the requirements are addressed in this document.

Table A1: Requirements from Chain Valley Colliery Development Consent (SSD-5465)

Condition No.	Requirements	Relevant section of this document
	Schedule 2 Administrative Conditions	
18	Updating and Staging Strategies, Plans or Programs <i>The Applicant must regularly review the strategies, plans and programs required under this consent and ensure that these documents are updated to incorporate measures to improve the environmental performance of the development and reflect current best practice in the mining industry. To facilitate these updates, the Applicant may at any time submit revised strategies, plans or programs for the approval of the Secretary. With the agreement of the Secretary, the Applicant may also submit any strategy, plan or program required by this consent on a staged basis.</i> <i>With the agreement of the Secretary, the Applicant must prepare a revision or stage of any strategy, plan or program required under this consent without undertaking consultation with all parties nominated under the applicable condition in this approval.</i> Notes: • <i>While any strategy, plan or program may be submitted on a staged basis, the Applicant must ensure that the existing operations on site are covered by suitable strategies, plans or programs at all times.</i> • <i>If the submission of any strategy, plan or program is to be staged, then the relevant strategy, plan or program must clearly describe the specific stage to which the strategy, plan or program applies, the relationship of this stage to any future stages, and the trigger for updating the strategy, plan or program.</i>	Section 10.1

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Condition No.	Requirements	Relevant section of this document																
	Schedule 3 Specific Environmental Conditions																	
25	REHABILITATION Rehabilitation Objectives <i>The Applicant shall rehabilitate the site to the satisfaction of the DRE. This rehabilitation must be generally consistent with the proposed rehabilitation strategy described in the EIS, and comply with the objectives in Table 7.</i> <i>Table 7: Rehabilitation Objectives</i> <table><tr><th>Feature</th><th>Objective</th></tr><tr><td>Mine site (as a whole)</td><td> - Safe, stable and non-polluting. - Final land use compatible with surrounding land uses. </td></tr><tr><td>Rehabilitation materials</td><td> - Materials (including topsoils, substrates and seeds of the disturbed area) are recovered, appropriately managed and used effectively as resources in rehabilitation. </td></tr><tr><td>Surface infrastructure</td><td> - To be decommissioned and removed, unless the DRE agrees otherwise. </td></tr><tr><td>Portals and ventilation shafts</td><td> - To be decommissioned and made safe and stable. - Retain habitat for threatened species (eg bats), where practicable. </td></tr><tr><td>Other land affected by the development</td><td> - Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems comprised of: - local native plant species (unless the DRE agrees otherwise); and - a landform consistent with the surrounding environment. </td></tr><tr><td>Built features damaged by mining operations</td><td> - Repair to pre-mining condition or equivalent unless: - the owner agrees otherwise; or - the damage is fully restored, repaired or compensated under the <i>Mine Subsidence Compensation Act 1961</i>. </td></tr><tr><td>Community</td><td> - Ensure public safety. - Minimise the adverse socio-economic effects associated with mine closure. </td></tr></table> Notes: <i>These rehabilitation objectives apply to all subsidence impacts and environmental consequences caused by underground mining taking place after the granting of project approval MP 10_0161, and to all development surface infrastructure that is part of the development, whether constructed prior to or following the date of this consent.</i> <i>Rehabilitation of subsidence impacts and environmental consequences caused by mining which took place prior to the date of project approval (MP 10_0161) may be subject to the requirements of other approvals (eg under a mining lease or a Subsidence Management Plan approval).</i>	Feature	Objective	Mine site (as a whole)	- Safe, stable and non-polluting. - Final land use compatible with surrounding land uses.	Rehabilitation materials	Materials (including topsoils, substrates and seeds of the disturbed area) are recovered, appropriately managed and used effectively as resources in rehabilitation.	Surface infrastructure	To be decommissioned and removed, unless the DRE agrees otherwise.	Portals and ventilation shafts	- To be decommissioned and made safe and stable. - Retain habitat for threatened species (eg bats), where practicable.	Other land affected by the development	- Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems comprised of: - local native plant species (unless the DRE agrees otherwise); and - a landform consistent with the surrounding environment.	Built features damaged by mining operations	- Repair to pre-mining condition or equivalent unless: - the owner agrees otherwise; or - the damage is fully restored, repaired or compensated under the <i>Mine Subsidence Compensation Act 1961</i>.	Community	- Ensure public safety. - Minimise the adverse socio-economic effects associated with mine closure.	Section 4
Feature	Objective																	
Mine site (as a whole)	- Safe, stable and non-polluting. - Final land use compatible with surrounding land uses.																	
Rehabilitation materials	Materials (including topsoils, substrates and seeds of the disturbed area) are recovered, appropriately managed and used effectively as resources in rehabilitation.																	
Surface infrastructure	To be decommissioned and removed, unless the DRE agrees otherwise.																	
Portals and ventilation shafts	- To be decommissioned and made safe and stable. - Retain habitat for threatened species (eg bats), where practicable.																	
Other land affected by the development	- Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems comprised of: - local native plant species (unless the DRE agrees otherwise); and - a landform consistent with the surrounding environment.																	
Built features damaged by mining operations	- Repair to pre-mining condition or equivalent unless: - the owner agrees otherwise; or - the damage is fully restored, repaired or compensated under the <i>Mine Subsidence Compensation Act 1961</i>.																	
Community	- Ensure public safety. - Minimise the adverse socio-economic effects associated with mine closure.																	
26	Progressive Rehabilitation <i>The Applicant shall carry out the rehabilitation of the site progressively, that is, as soon as reasonably practicable following disturbance to the satisfaction of the Secretary and DRE.</i>	Section 4																
27	Rehabilitation Management Plan <i>The Applicant shall prepare a Rehabilitation Management Plan for the development, in consultation with OEH, DPI Water, WSC, LMCC, and the CCC, and to the satisfaction of the DRE.</i> <i>This plan must:</i>	This document																
	(a) <i>be submitted to the Secretary and the DRE for approval within 12 months of the date of approval of this development consent;</i>	Original version submitted for approval 6 March 2013																
	(b) <i>be prepared in accordance with any relevant DRE guideline and be consistent with the rehabilitation objectives in the EIS and in Table 7;</i>	Section 4																
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Condition No.	Requirements	Relevant section of this document
	(c) describe how the performance of the rehabilitation would be monitored and assessed against the objectives in Table 7;	Section 4, 5
	(d) describe the process whereby additional measures would be identified and implemented to ensure the rehabilitation objectives are achieved;	Section 5
	(e) provide for detailed mine closure planning, including measures to minimise socio-economic effects due to mine closure, to be conducted prior to the site being placed on care and maintenance; and	Section 4, 5
	(f) be integrated with the other management plans required under this consent.	Section 4.5
	The Applicant shall implement the approved management plan as approved from time to time by the Secretary. Note: The Rehabilitation Management Plan should address all land impacted by the development whether prior to, or following, the date of this consent.	This Document
	Statement of Commitments	
Rehabilitation and mine closure	Rehabilitation will be undertaken in accordance with the Colliery's RMP and the MOP in force at the time. Detailed management and monitoring proposals for final rehabilitation will be included within a Mine Closure Plan to be prepared at least two years prior to cessation of mining activities.	Noted

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