

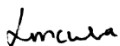


TITLE: Annual Rehabilitation Report & Forward Program 2023

SITE: Delta Coal



Great Southern Energy Pty Ltd
Annual Rehabilitation Report & Forward Program
2023

Approved By	Lachlan McWha – Delta Coal Environmental Compliance & Approvals Coordinator
	
Date:	12/09/2023

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1. PART 1 – ANNUAL REHABILITATION REPORT

This Annual Rehabilitation Report has been prepared in accordance with the requirements Clauses 9 and 13 of Schedule 8A, to the *Mining Regulation 2016* as well the Form and Way Annual Rehabilitation Report and Forward Program for Large Mines, NSW Resources Regulator 2023.

The Annual Rehabilitation Report covers the reporting period of 7 July 2022 to 6 July 2023.

1.1. Applicant Details

Applicant's name	Great Southern Energy Pty Ltd
Australian Company Number	621 409 201
Mine name	Chain Valley Colliery

1.2. Mine Details

1.2.1. Project Description

Great Southern Energy Pty Ltd (T/A Delta Coal) owns and operates Chain Valley Colliery (CVC) and Mannering Colliery (MC), two underground coal mine located on the southern end of Lake Macquarie approximately 60 km south of Newcastle, 80 km north of Sydney and adjacent to Vales Point Power Station (VPPS). Mannering Colliery reports under the Chain Valley Colliery lease holding, however operates under a separate Project Approval.

Current mining activities are within the Fassifern Seam. All mining undertaken in the reporting period was first-workings bord and pillar methods at CVC only, with the coal being transported underground to MC where the coal is sized and screened and sent directly to VPPS.

Delta Coal has approval to operate the two mines until 31 December 2027, however is seeking an extension to the approved operating period to 31 December 2029.

1.2.2. Current Development Consents, Leases and Licenses

Chain Valley Colliery was granted Development Consent SSD-5465 under Section 89E of the *Environmental Planning & Assessment Act 1979* (EP&A Act 1979), most recently modified (MOD 4) in July 2021. Mannering Colliery operates under Project Approval MP06_0311 granted under Section 75J of the EP&A Act 1979, most recently modified in June 2020. In the reporting period Delta Coal submitted an Environmental Impact Statement with an application to issue a new approval under the EP&A Act 1979 consolidating the existing approvals for CVC and MC into a single approval. The primary variations in the approval being sought when compared to the existing approvals for CVC and MC are:

- to extend the life of mine to 31 December 2029;
- to permit secondary extraction within portions of the existing Mannering Colliery project approval boundary; and
- to consolidate the permitted extraction limit for CVC (2.1 Mtpa) and MC (1.1 Mtpa) to a combined 2.8 Mtpa limit.

Approvals held by Delta Coal are presented in **Table 2**.

Table 1 - Delta Coal Approvals

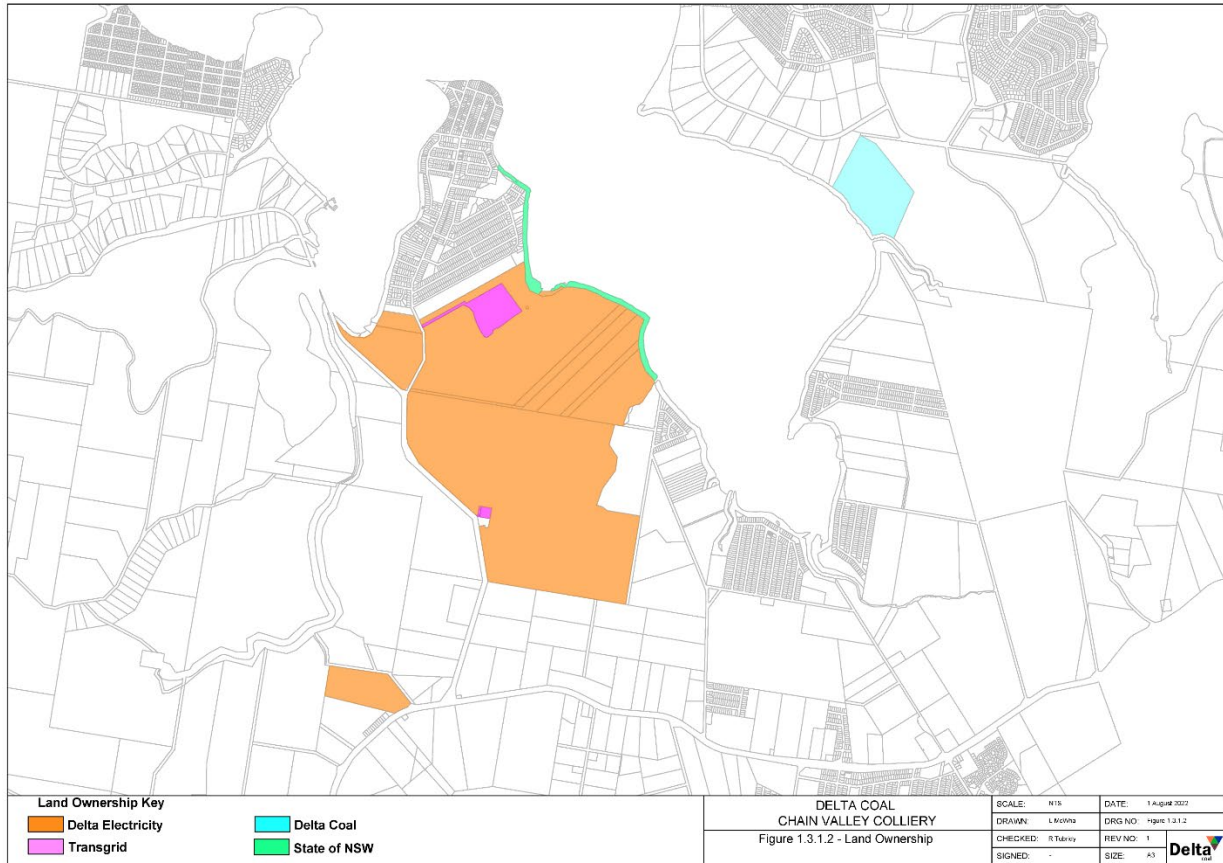
Approval Type	Mining Lease	Grant Date	Expiry Date
Consolidated Coal Lease	CCL 706 (1973);	24/01/1990	29/12/2029
Consolidated Coal Lease	CCL 707 (1973);	03/07/1989	30/12/2029
Mining Purposes Lease	MPL 337 (1973);	30/01/1995	30/01/2037
Mining Purposes Lease	MPL 1349 (1906);	05/10/1967	05/10/2028
Mining Purposes Lease	MPL 1389 (1906);	14/05/1970	14/05/2031
Mining Purposes Lease	MPL 1400 (1906);	06/11/1970	06/11/2031
Mining Lease	ML 1051 (1906);	07/07/1941	07/07/2042
Mining Lease	ML 1052 (1906);	07/07/1941	07/07/2042
Mining Lease	ML 1308 (1906);	04/05/1965	04/01/2031
Mining Lease	ML 1781 (1992)	22/04/2022	03/07/2031
Mining Lease	ML 1782 (1992)	24/01/2022	29/07/2026
Mining Lease	ML 1783 (1992);	22/04/2022	28/06/2028
Mining Lease	ML 1784 (1992)	06/07/2021	07/03/2033
Mining Lease	ML 1785 (1992);	28/04/2021	13/10/2043
Exploration License	EL 8428	07/12/2015	07/12/2025
Exploration License	EL 8853	31/10/2022	23/10/2026
Exploration License	EL 8854	12/10/2022	23/04/2026
Exploration Authorisation	A 383	21/03/1988	21/09/2025
Development Consent	SSD-5465	2013	31/12/2027
Project Approval	MP06_0311	2008	31/12/2027
Environmental Protection License	EPL 1770	24/10/2001	N/A
Environmental Protection License	EPL 191	10/07/2000	N/A
Water Access License	WAL 40461	12/10/2016	N/A
Water Access License	WAL 41508	14/12/2017	N/A

Delta Coal also operates CVC under Environmental Protection License (EPL) 1770 and MC under EPL 191 issued under the *Protection of the Environment Operations Act 1997*.

1.2.3. Land Ownership and Land Use

During the reporting period there have been no changes to land ownership or land use within the reporting period. Land ownership for the Collieries and surrounds is presented in **Figure 1**.

Figure 1 - Land Ownership - CVC, MC and Surrounds



1.3. Complaints Register

During the reporting period Delta Coal has not received any complaints in relation to rehabilitation.

1.4. Stakeholder Consultation

Stakeholder consultation undertaken in the reporting period with regard to rehabilitation undertaken during the reporting period is outlined in **Table 2**.

Table 2 - Stakeholder Consultation Regarding Rehabilitation

Stakeholder	Summary of Consultation in Reporting Period	Delta Coal Response
NSW Resources Regulator (RR)	Delta Coal submitted Rehabilitation Objectives, Forward Program and Final Landform Rehabilitation Plan.	Nil in reporting period.
NSW Department of Planning, Environment (DPE)	Rehabilitation Management Plan (RMP) submitted to DPE. DPE noted that while Delta Coal is required to have the RMP, it does not require Planning Secretary approval.	N/A

Stakeholder	Summary of Consultation in Reporting Period	Delta Coal Response
National Parks and Wildlife Services (NPWS)	Site visit and walkover of Possum Gully (Catherine Hill Bay) rehabilitation area on 18 November 2022, with NPWS issuing their requirements for the rehabilitation project.	NPWS requirements were noted, and had already been addressed in the RMP and previously approved MOP.
	Delta Coal issued a frog study for Possum Gully to NPWS on 13 February 2023.	N/A
	Routine updates provided to NPWS on Possum Gully rehabilitation project.	N/A

1.5. Surface Disturbance and Rehabilitation Activities During the Annual Reporting Period

During the reporting period, no surface disturbance activities were undertaken and in-turn, there was no additional surface disturbance area to report. Delta Coal has two ongoing rehabilitation areas being the former mine cottages at CVC and Possum Gully at Catherine Hill Bay. Throughout the reporting period rehabilitation activities were limited to ongoing monitoring and weed management at the CVC former mine cottages rehabilitation areas.

The Possum Gully rehabilitation project was tendered in the reporting period, as well as, the completion of a frog study undertaken on the proposed rehabilitation area.

During the reporting period there was no subsidence repair works undertaken, with all mine workings outside the Lake Macquarie footprint limited to first workings only (<20 mm mining induced subsidence).

No rehabilitation actions were required to be undertaken in the reporting period as a result of any letters, notices or directions issued by government agencies.

No rehabilitation areas achieved the final land use during the reporting period, nor were any rehabilitation areas forecasted to achieve the final land use during the reporting period.

Table 3 - Key Production Milestones / Material Production

Material	Unit	Year 1 Forecast FWP0001107	This Report (actual) 7 July 2022 – 6 July 2023
Stripped topsoil	m ³	0	0
Rock/overburden	m ³	0	0
Ore	Mt	0	0
Reject material	Mt	0	0
Product	Mt	1.5	0.9

1.6. Plan 1 Rehabilitation and Current Landforms

Figure 2 - Plan 1A: Current Status of Mining and Rehabilitation

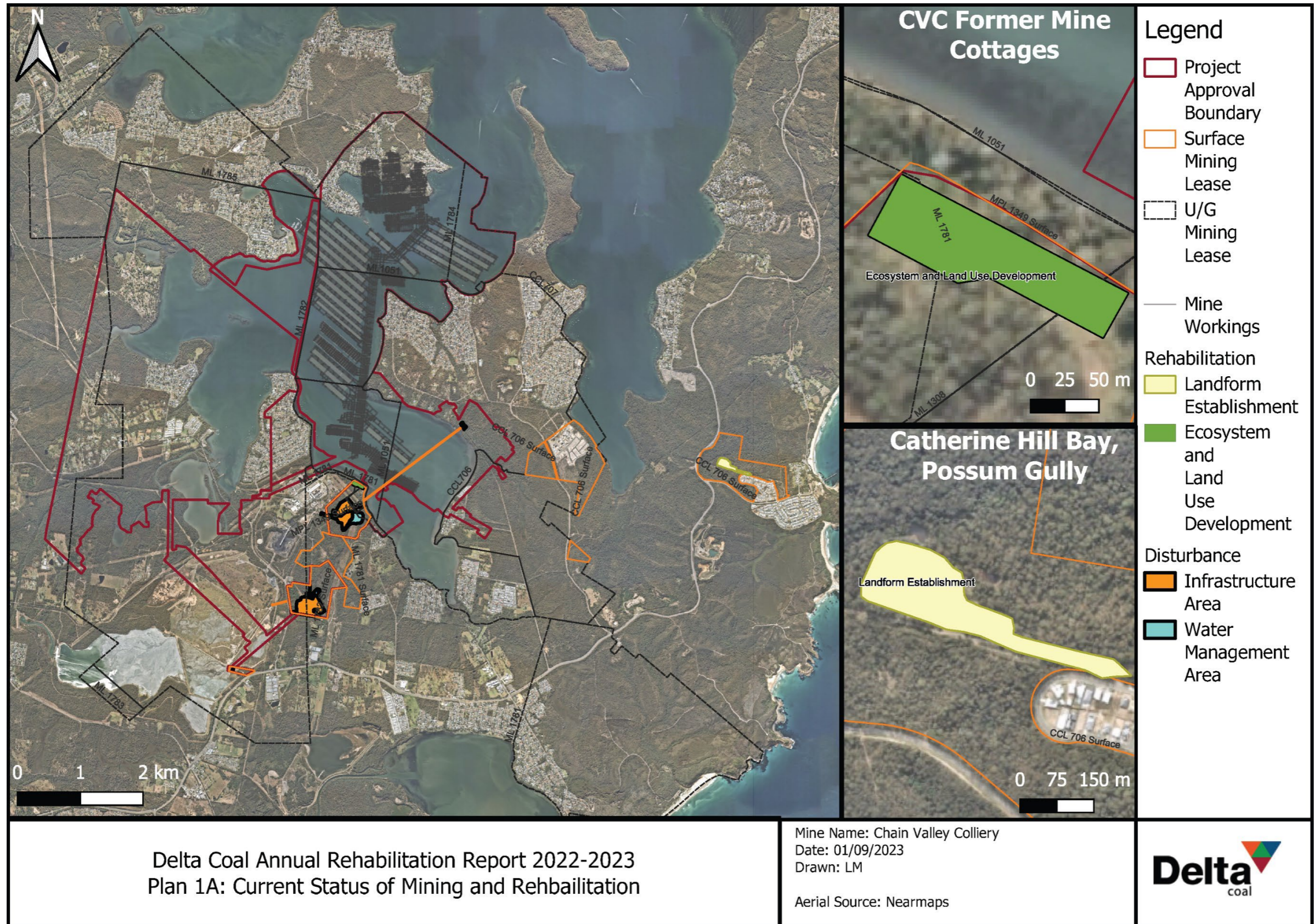
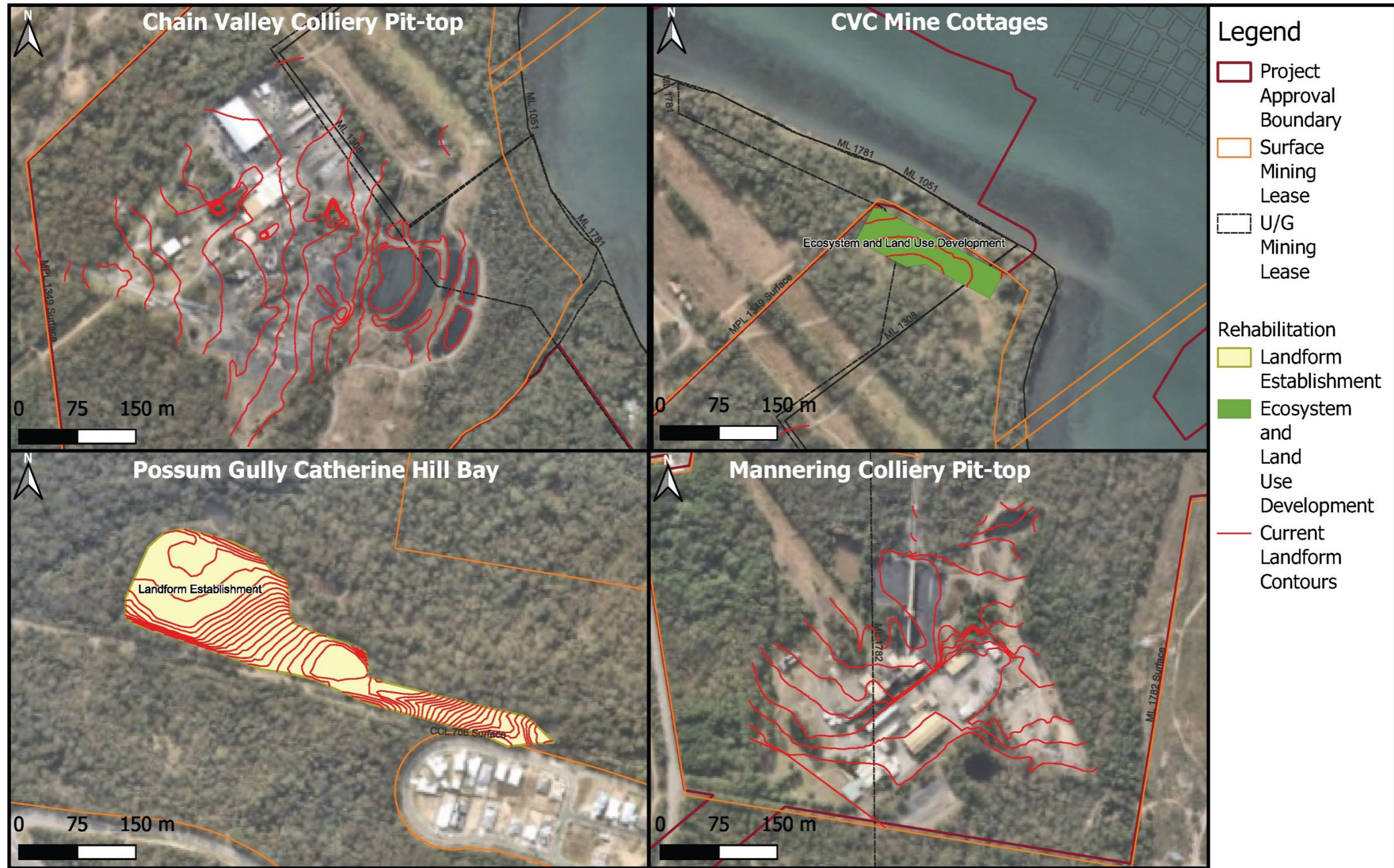


Figure 3 - Plan 1B: Current Landform Contours



1.7. Disturbance and Rehabilitation Statistics

1.7.1. Current Disturbance and Rehabilitation Progression

Table 4 - Status of Disturbance and Rehabilitation at End of Reporting Period

7 July 2022 - 6 July 2023 Reporting Period		
A1	Total Disturbance Footprint – Surface Disturbance	27.62 ha
B	Total Active Disturbance	22.73 ha
C	Rehabilitation – Land Preparation	4.1 ha
D	Ecosystem and Land Use Establishment	0 ha
E	Ecosystem and Land Use Development	0.79 ha
F	Rehabilitation Completion	0 ha

1.7.2. Rehabilitation Key Performance Indicators

Table 5 - Rehabilitation Key Performance Indicators (KPIs) at End of Annual Reporting Period

7 July 2022 - 6 July 2023 Reporting Period		
G	New Active Disturbance Area	0 ha
H	New Rehabilitation Commenced During Annual Reporting Period	0 ha
I	Established Rehabilitation	0.79 ha
J	Annual Rehabilitation to Disturbance Ratio	0
K	% Rehabilitated Land to Total Mine Footprint	2.87

1.7.3. Progressive Achievement of Established Rehabilitation

Table 6 - Proportion of Established Rehabilitation for Final Land Use Classifications at the End of the Reporting Period

7 July 2022 - 6 July 2023 Reporting Period		
L	Established Rehabilitation for Agricultural Final Land Uses (percent)	0
M	Established Rehabilitation for Native Ecosystems Final Land Uses (percent)	0
N	Established Rehabilitation for Other/Non-vegetated Final Land Uses (percent)	0

1.7.4. Variation to the Rehabilitation Schedule

The rehabilitation planning schedule within the Chain Valley Colliery Forward Program (7 July 2022 to 6 July 2025) identified that within the reporting year, the Catherine Hill Bay - Possum Gulley Area Rehabilitation would progress into a Growth Media Development phase in rehabilitation. Delays were incurred to the project due to an unavailability of Virgin Excavated Natural Material (VENM) and tendering of the earthworks contract. A contract for the project has been awarded and Landform Establishment is planned in Q4 2023 – Q1 2024.

1.8. Rehabilitation Monitoring and Research Findings

1.8.1. Rehabilitation monitoring

Annual rehabilitation monitoring of the CVC former mine cottages rehabilitation area was undertaken by Atlantech Pty Ltd and the rehabilitation monitoring report has been included as **Appendix A**.

In summary the annual rehabilitation monitoring report identified the following:

- 95% ground cover throughout the area, surface vehicle track present in rehabilitation area for long-term access.
- High species diversity observed. A high abundance of casuarina saplings and several melaleuca, acacia and eucalyptus species recorded throughout the area. Several native eucalypt species greater than 10m in height were observed to be in seeding and recruitment stage.
- Between 0-25% weed species cover recorded includinglantana (*Lantana camara*), bitou bush (subsp. *rotundata*), scotch thistle (*Onopordum acanthium*), purple top (*Verbena bonariensis*) and several exotic ornamental species.
- Several species of bird observed including rainbow lorikeets and kookaburras. Wallaby scats were also found throughout the area but no impact from predation observed.
- Comparison to analogue plot 1 (EMM Rehabilitation Monitoring Program 2019) identified 75% that the rehabilitation area contains 75% of the species identified in re-survey of plot 1 (2023).
- Comparison of the rehabilitation area against the Rehabilitation Trigger Action Response Plan was made, the findings of the monitoring indicate that no triggers have been activated for erosion and sediment control, flora and fauna and bushfire. As such, no action is required.

The monitoring program implemented to evaluate performance of the rehabilitation areas was undertaken in accordance with the proposed rehabilitation objectives and the rehabilitation monitoring program for Chain Valley Colliery (EMM, 2019). Monitoring was undertaken of the former mine cottages rehabilitation area only, as rehabilitation works at the Catherine Hill Bay – Possum Gulley rehabilitation area had not yet commenced.

The former mine cottages rehabilitation area was compared to Analogue Plot 1 – Derived Native Grassland (EMM, 2019) as this site was noted to align with the target final land use of the domain, being, native grassland. The objectives of the monitoring were also aligned with the Resources Regulator’s Guideline Rehabilitation Controls for rehabilitation monitoring during ecosystem and land use establishment phase.

1.8.2. Status of Performance Against Rehabilitation Objectives and Rehabilitation Completion Criteria

Assessment against the rehabilitation objectives and criteria was made in the annual rehabilitation monitoring, the mine cottages rehabilitation area has been in ecosystem and land use establishment phase since the start of 2021. Rehabilitation in the mine cottages area now satisfied the completion criteria for the ecosystem and land use establishment phase. As such, the rehabilitation site has progressed to the ecosystem and land use sustainability phase.

1.8.3. Outcomes of Rehabilitation Research and Trials

There are currently no rehabilitation research projects or rehabilitation trials being undertaken at CVC.

2. PART 2 – FORWARD PROGRAM

The 2023-2026 Resources Regulator Forward Program report for Delta Coal sites has been included as **Appendix B**.

2.1. Applicant Details

Applicant's name	Great Southern Energy Pty Ltd
Australian Company Number	621 409 201
Mine name	Chain Valley Colliery

2.2. Three Year Forecast – Surface Disturbance Activities

2.2.1. Project Description

Both Chain Valley Colliery (CVC) and Mannering Colliery (MC) are neighbouring underground coal mines located on the southern side of Lake Macquarie approximately 60 km south of Newcastle and 80 km north of Sydney. The CVC and MC pit tops are located approximately 1.5 km south-east and 3 km south of the township of Mannering Park respectively.

As of 1 April 2019, Great Southern Energy Pty Ltd (trading as Delta Coal) own and operate the two underground coal mines. Mining is currently undertaken at CVC with coal being transported underground via a series of underground crushers and sizers to MC where the coal is screened and sent directly to the Vales Point Power Station (VPPS) via an overland conveyor.

The operations are currently approved to the 31st December 2027. Delta Coal is currently seeking to consolidate the existing approvals for CVC and MC into a single Development Consent and extend the existing approved operations to 31st December 2029

2.2.2. Description of Surface Disturbance Activities

2.2.2.1. Exploration Activities

There are no exploration activities planned within the CVC mining and exploration leases within the next 3 years.

2.2.2.2. Construction Activities

There are no construction activities planned to be undertaken by Delta Coal at CVC or MC pit-top facilities.

2.2.2.3. Mining Schedule

General Mining Developments

Over the next three years (2023-2026), it is planned that mining operations will be bord and pillar style first workings with the potential for some secondary workings planned utilising pillar extraction by continuous miners. All workings are underground, with portal entrance to the mine to remain from CVC pit-top. First workings are planned to continue in the Northern Mining Area (beneath Morisset Peninsula) with potential secondary extraction within an area defined as the Northern Pillar Area (beneath Lake Macquarie), these workings are within ML1785. Headings are currently being developed for extension into a western mining domain beneath Lake Macquarie to allow mining within ML1782.

Emplacement Areas

No emplacement areas within the forecast period.

2.2.2.4. Infrastructure and Tailings facilities

Majority of sizing and crushing of ROM coal is undertaken via underground crushers and sizers, MC’s coal handling and preparation plant (CHPP) is utilised for the purpose of further screening of ROM coal prior to transport to Vales Point Power Station via overland conveyor. No tailings or reject are being generated by the colliery’s current operations.

2.2.2.5. Waste Disposal and Materials Handling

Delta Coal utilises a contractor to undertake total waste management and disposal for the site. Putrescible waste is placed in general waste bins of varying sizes and collected for disposal at landfill. Hydrocarbons utilised by the site include diesel fuels and machinery oils, all fuels and hydrocarbons are stored within bunded areas and fuels are transported underground utilising bunded fuel pods. Hydrocarbon waste is collected from sumps utilised to drain empty oil drums and processed off-site for the purpose of recycling. Contaminated soils are typically only encountered at the site in regard to minor hydrocarbon spills and soil is excavated and placed into dedicated bins for hydrocarbon contaminated soils and absorbents, if large volumes (>1m3) of soil is excavated material is placed in a dedicated bin and classified for off-site disposal in accordance with the NSW EPA Waste Classification Guidelines.

2.2.2.6. Key Production Milestones

Table 7 - Material Production Schedule During the Next Three Years

Material	Unit	Year 1 (2024)	Year 2 (2025)	Year 3 (2026)
Stripped Topsoil	m ³	0	0	0
Rock/overburden	m ³	0	0	0
Ore	Mt	0	0	0
Reject Material	Mt	0	0	0
Product	Mt	1.5	1.5	1.5

2.3. Three Year Rehabilitation Forecast

2.3.1. Rehabilitation Planning Schedule

Former Mining Cottages Area Rehabilitation:

- Ecosystem and Land Use Establishment phase, Q2 2021 – Q4 2023
- Ecosystem and Land Use Sustainability phase, Q1 2024 – Q1 2026

Catherine Hill Bay – Possum Gulley Area Rehabilitation:

- Landform Establishment phase, current – Q2 2023
- Growth media development, Q2 2023 – Q3 2023
- Ecosystem and land use sustainability phase – Q3 2023 – Q1 2024
- Relinquishment – date to be confirmed with NPWS and RR

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. Prior to development of a detailed mine closure plan (2-5 years from planned mine closure) Delta Coal will commence a program to investigate and maintain records relating to available soil material for use as growth media on-site, including:



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- Soil characterisation of existing soil stockpiles on-site; and
- Subsoil characterisation over domain areas to determine suitability as growth medium.

2.3.1.1. Stakeholder Consultation

Consultation with national parks and wildlife services and resources regulator regarding the relinquishment of Catherine hill bay – possum gully rehabilitated area relinquishment. Consultation with landowners (Vales Point Power Station) and Community Consultative Committee regarding future rehabilitation planning for CVC and MC pit-tops.

2.3.1.2. Rehabilitation Studies, Risk Assessments and Design Work

Nil.

2.3.2. Rehabilitation Maintenance and Corrective Actions

Ongoing monitoring of the Chain Valley Colliery former mine cottages are in regard to ecosystem establishment and sustainability with ongoing management of weeds and invasive species as required.

2.3.3. Rehabilitation Schedule

Former Mining Cottages Area Rehabilitation:

- Monitoring of land use and ecosystem development and sustainability (open grasslands), ongoing weed and invasive species management.

Catherine Hill Bay Possum Gully:

- Importation of certified-fill material for the establishment of final landforms
- Amelioration and growth medium development
- Vegetation development (native woodland / heathland)
- Monitoring of land use establishment and sustainability.

Areas of surface disturbance are limited to relatively small areas due to the inherent nature of underground mining and limited coal processing on-site. As no coal beneficiation occurs on-site and, as a result, no major sources of reject or tailings are generated, the areas of direct surface disturbance within the Chain Valley and Mannering are able to be maintained at a minimum. As a consequence, the opportunities for the rehabilitation of areas of disturbance have been limited, with the surface features remaining largely unchanged since the 1960s. Regardless of this, where achievable Delta Coal is committed to the progressive rehabilitation of its sites examples of this include the demolition and ongoing rehabilitation of the former mine cottages in 2020, with surface coal handling structures also demolished during 2020.

2.3.4. Subsidence Remediation for Underground Operations

Mine workings planned under land is limited to a negligible amount (considered less than 20mm) of subsidence. The mine regularly conducts subsidence monitoring to confirm the extent of actual subsidence.

All approved secondary extraction has occurred or is planned to occur beneath Lake Macquarie outside of the seagrass protection barrier and high-water subsidence protection barrier.

There are negligible environmental impacts expected due to mine subsidence. There will be no risk to public safety due to the planned subsidence.

2.3.5. Rehabilitation Research and Trials

There are currently no proposed rehabilitation research or trials in the next three-year reporting period.



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Appendix A – Atlantech CVC Mine Cottages Rehabilitation Monitoring Report



DELTA COAL
CHAIN VALLEY COLLIERY:
REHABILITATION WALKOVER
INSPECTION 2023

29 August 2023

Jason Desmond & Samantha Hovar
Jason.desmond@atlantech.com.au & Samantha.hovar@atlantech.com.au

Abstract

Rehabilitation Walkover Inspection Report composed by
Atlantech Pty Ltd for Delta Coal – Chain Valley Colliery.



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1. Executive summary

Atlantech was requested by Delta Coal to undertake a walkover inspection of rehabilitation at the Chain Valley Colliery (CVC). Atlantech inspected the former mine cottages rehabilitation site, as well as relevant analogue sites at CVC on 21 August 2023.

The purpose of the inspection was to complete a quantitative assessment of revegetation success in comparison to analogue sites outside the domain. The inspection also assessed weed species, feral animals and other general field observations such as significant rehabilitation issues. Photographs were taken from fixed points to enable qualitative visual analysis of change in vegetation structure, condition, and regeneration over time.

Following the inspection, Atlantech recommends the following:

- Rehabilitate disused portions of the sealed access vehicle track to improve ground cover.
- Undertake targeted weed control to prevent further spread and potential suppression of native species.
- Remove exotic ornamental species which do not align with the final land use domain.
- Continue rehabilitation monitoring in line with the Rehabilitation Management Plan (2022).
- Given natural regeneration of tree species, consider amendment of the final land use from open grassland to the surrounding native communities (Coastal Swamp Sclerophyll Forest).

Please do not hesitate to contact me if you require any further information regarding this project.

Sincerely,

Samantha Hovar
Atlantech Pty Ltd
Senior Environmental Consultant

Technical Peer Reviewer:

Date:

	29/08/2023
Jason Desmond Director / Principal Environmental Consultant	

2. Introduction

Chain Valley Colliery (CVC) is an underground coal mine operated by Great Southern Energy Pty Ltd (trading as Delta Coal) and is situated in the Newcastle coalfields of New South Wales. The mine operates in accordance with Development Consent SSD-5465.

In 2020, Delta Coal demolished its former mine cottages and commenced rehabilitation of the area (approx. 7,800 m²) to open grassland. The project has been in the ecosystem and land use establishment phase since the start of 2021.

Monitoring of rehabilitation areas at CVC is carried out in accordance with the rehabilitation monitoring program detailed in the site Rehabilitation Management Plan (dated 20 October 2022). As per the plan, for small scale projects such as the mine cottage rehabilitation, visual inspections and photo monitoring are undertaken quarterly in the first year and walkover inspections completed annually to determine if rehabilitation is progressing adequately.

Atlantech was commissioned by Delta Coal to undertake an annual walkover inspection of the mine cottage rehabilitation area (refer to [Figure 1](#)) in accordance with the site Rehabilitation Management Plan. This report details key findings on the success of the revegetation, in comparison to the relevant analogue sites, and provides recommended management actions required in relation to the presence of weed species, feral animals, or significant rehabilitation issues. Photographs captured during the inspection have also been provided to enable qualitative visual analysis of change over time.

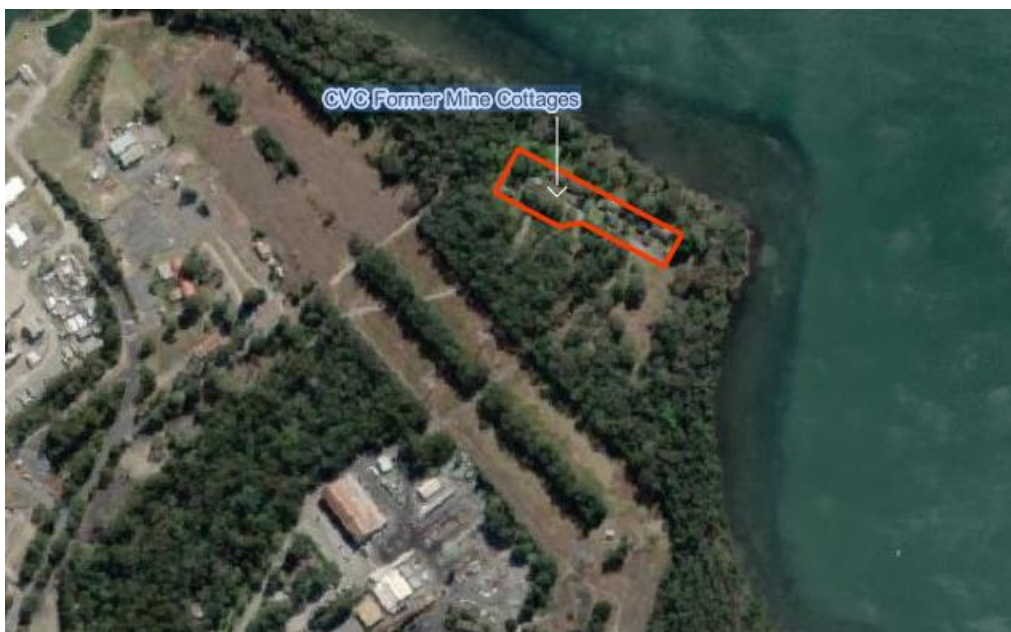


Figure 1: CVC mine cottages rehabilitation area inspected in August 2023.



3. Scope and Objectives

In accordance with the Delta Coal Rehabilitation Management Plan, the objectives of the inspection were to complete:

- A quantitative assessment of revegetation success including species abundance and diversity, vegetation health, presence of dieback and signs of predation;
- Monitoring of relevant analogue sites outside the domain;
- Assessment of weed species present and feral animal occurrence;
- Collection of photographs from a series of fixed points to enable qualitative visual analysis of changes in vegetation structure, condition and regeneration over time; and
- General field observations including the identification of significant rehabilitation issues such as erosion, rubbish, bare patches, and other disturbances.

There are four analogue plot locations for the Delta Coal operations defined within the site Rehabilitation Management Plan. The former mine cottages rehabilitation site was compared to Analogue Plot 1 – Derived Native Grassland. The other three analogue sites were considered not applicable as they represent woodland ecosystem which do not align with the target final land use domain.

The objectives of the inspection were also aligned with the Resources Regulator's Guideline Rehabilitation Controls for rehabilitation monitoring during ecosystem and land use establishment phase as per [Table 1](#).

Table 1: Resources Regulator's Guideline Rehabilitation Controls ([weblink](#)).

Phase: Ecosystem and Land Use Establishment	
Rehabilitation Monitoring Program Controls	Relevant Report Section
Implement long-term rehabilitation monitoring program and evaluate trajectory of rehabilitation against achieving rehabilitation objectives and rehabilitation completion criteria.	Appendix D.
Broadly, the scope of the ecosystem rehabilitation monitoring program will be required to include indicators that measure site condition, vegetation composition and vegetation structure and ecosystem function. The range of indices should directly relate to the rehabilitation objectives and rehabilitation completion criteria identified for the specific ecological outcome. While the program should be designed to be comparable between monitoring periods, the program will also need to be flexible to enable incorporating evolving best practice in monitoring techniques.	Section 5.
For areas rehabilitated to an agricultural land use, include surveys to assess the quality and health of soils and pasture/crop species along with stock carrying capacity (where required) and crop yields in rehabilitation monitoring programs.	Not applicable.



Include the monitoring and control of changes to surface and groundwater quality over time.	Outside the scope of this inspection.
The scope of the monitoring program should usually include photographic monitoring from fixed points.	Appendix B.

4. Methodology

The walkover inspection was conducted on the 21 August 2023 by Atlantech Principal Environmental Consultant, Jason Desmond with the assistance of Senior Environmental Consultant, Samantha Hovar.

The entirety of the rehabilitation area was surveyed on foot and data was collected using an iPad with GIS software. Georeferenced photographs were taken at the rehabilitation and analogue sites. The analogue location (Analogue Plot 1 – Derived Native Grassland) was broadly walked in vicinity of the plot to get a better representation of the species community rather than walking the plot only (refer to [Figure 2](#)).



Figure 2: CVC mine cottages rehabilitation area as well as analogue area inspected in August 2023.



5. Findings and Observations

The findings of the mine cottages rehabilitation area walkover inspection are provided in [Table 2](#) and [Figure 3](#). Associated spatial files and reference plates are provided in [Appendix A](#) and [Appendix B](#).

The following have also been assessed against the findings of the inspection:

- Vegetation species composition in comparison to the analogue site ([Section 5.1](#));
- Rehabilitation Trigger Action Response Plan ([Section 5.2](#)); and
- Rehabilitation objectives and criteria ([Section 5.3](#)).

Table 2: Mine cottages rehabilitation area inspection findings.

Walkover Inspection Summary: CVC Mine Cottages Rehabilitation Area			
Inspected By:	Position/Title:	Date:	Time:
Jason Desmond	Principal Environmental Consultant	21 August 23	10:00 – 11:54
Inspection Item	Findings	Recommendations	
Rehabilitation type	Native grassland.	Nil.	
Contour banks	None present.	Nil.	
Drainage condition	Natural – free draining.	Nil.	
Topsoil	No evidence of spontaneous combustion observed.	Nil.	
Erosion and sedimentation	No erosion observed.	Nil.	
Large bare patches	None observed.	Nil.	
Ground cover %	Over 95% ground cover throughout the area. Surfaced vehicle track present in rehabilitation area for long term access.	Disused portions of access vehicle track should be rehabilitated to improve ground cover.	
Weed species cover %	Between 0-25% weed species cover recorded. Species included lantana (<i>Lantana camara</i>), bitou bush (subsp. <i>rotundata</i>), scotch thistle (<i>Onopordum acanthium</i>), purple top (<i>Verbena bonariensis</i>), and several exotic ornamental species.	While overall weed cover is low, targeted weed control should be undertaken to prevent further spread and potential suppression of native species. Exotic ornamental species should also be removed.	
Rehabilitation success	High species diversity observed. A high abundance of casuarina saplings and several melaleuca, acacia and eucalyptus species recorded throughout the area. Several native eucalypt species greater than 10m in height were observed to be in seeding and recruitment stage.	Continue monitoring. Given natural regeneration of tree species, consider amendment of the final land use from open grassland to the surrounding native communities (Coastal Swamp Sclerophyll Forest).	
Other management items	One cultural heritage site fenced within the rehabilitation area. Some rubbish (i.e. chip packet and electrical cable) removed at the time of inspection. Remnant infrastructure was also recorded in the area including four star pickets forming a 0.5m ² square. Several species of bird observed including rainbow lorikeets and kookaburras. Wallaby scats were also found throughout the area but no impact from predation observed.	Nil.	



Figure 3: CVC mine cottages rehabilitation area findings (August 2023).



5.1 Vegetation Species Composition

A comparison is provided in **Table 3** of the species recorded at analogue Plot 1 in May 2019 and August 2023, with the species observed at the rehabilitation site in August 2023.

It is important to note that, of the 19 species recorded at analogue Plot 1 in 2019, only 16 of these species were identified in Plot 1 during the 2023 inspection. Additionally, there are several species identified in the 2023 inspection that were not identified in 2019.

Overall, the rehabilitation area contains 74 percent of the species identified in 2019 and 75 percent of the species identified in 2023.

Table 3: Analogue and rehabilitation sites vegetation species comparison.

Species Recorded	Analogue Plot 1 (2019)	Analogue Plot 1 (2023)	Mine Cottages Rehabilitation Area (2023)
<i>Andropogon virginicus</i>	Yes	Yes	Yes
<i>Capillipedium parviflorum</i>	Yes	Yes	Yes
<i>Casuarina glauca</i>	Yes	Yes	Yes
<i>Chloris gayana</i>	Yes	Yes	No
<i>Conyza bonariensis</i>	Yes	No	No
<i>Cortaderia selloana</i>	Yes	Yes	No
<i>Cymbopogon refractus</i>	Yes	Yes	Yes
<i>Cynodon dactylon</i>	Yes	Yes	Yes
<i>Glycine tabacina</i>	Yes	Yes	No
<i>Hydrocotyle bonariensis</i>	Yes	No	Yes
<i>Imperata cylindrica</i>	Yes	Yes	Yes
<i>Lilium formosanum</i>	Yes	No	Yes
<i>Medicago lupulina</i>	Yes	Yes	Yes
<i>Paspalum urvillei</i>	Yes	Yes	Yes
<i>Plantago lanceolata</i>	Yes	Yes	Yes
<i>Richardia brasiliensis</i>	Yes	Yes	Yes
<i>Setaria parviflora</i>	Yes	Yes	Yes
<i>Sporobolus creber</i>	Yes	Yes	Yes
<i>Verbena rigida</i>	Yes	Yes	No



<i>Verbena bonariensis</i>	No	Yes	Yes
<i>Gomphocarpus fruticosus</i>	No	No	Yes
<i>Onopordum acanthium</i>	No	No	Yes
<i>Pennisetum clandestinum</i>	No	Yes	Yes
<i>Nephrolepis exaltata</i>	No	No	Yes
<i>Geranium retrorsum</i>	No	No	Yes
<i>Melaleuca quinquenervia</i>	No	No	Yes
<i>Acacia longifolia</i>	No	Yes	Yes
<i>Eucalyptus spp.</i>	No	No	Yes
<i>Angophora costata</i>	No	No	Yes
<i>Pinus radiata</i>	No	Yes	No

5.2 Assessment against the Rehabilitation Trigger Action Response Plan

Trigger Action Response Plan (TARP) issues '2 – Erosion and Sediment Control', '4 – Flora and Fauna' and '8 – Bushfire' were considered relevant and assessed as part of this inspection. The findings of the inspection indicate that no triggers have been activated for these items and therefore no action is required as per the plan.

Refer to [Appendix C](#) for further detail.

5.3 Assessment against the Rehabilitation Objectives and Criteria

The mine cottages rehabilitation area has been in ecosystem and land use establishment phase since the start of 2021. Following the walkover inspection, the trajectory of the mine cottages rehabilitation was assessed against the objectives and completion criteria of the current rehabilitation phase. Rehabilitation in the mine cottages area now satisfies the completion criteria for the ecosystem and land use establishment phase. As such, the rehabilitation site has now progressed to the ecosystem and land use sustainability phase.







Refer to [Appendix D](#) for further detail.

It should be noted that the intended final land use domain for the mine cottages rehabilitation area is open grassland. However, the 'native ecosystem' completion criteria were used for the assessment. This is because the 'other grassland' completion criteria for the ecosystem and land use establishment phase listed in Table 4-4 of the site Rehabilitation Management Plan appear to incorrectly replicate the criteria for the growth media development phase.



APPENDIX A – Spatial Data

The following GIS zip files have been provided with this report to Delta Coal in GDA2020 format:

-  Analogue_area_inspected
-  Disturbance_-_track
-  Exotic_species
-  Rubbish
-  Weed_-_area
-  Weed_-_point

APPENDIX B – Reference Plates

Rehabilitation Site Reference Plates



Plate 1: View of the rehabilitation area from the eastern end.



Plate 2: View of the rehabilitation area from the western end.



Plate 3: Casuarina glauca and Acacia longifolia sapling growth.



Plate 4: Fenced cultural heritage site.



Plate 5: Sealed vehicle access track.



Plate 6: Wallaby scats found in the rehabilitation area.



Analogue Reference Plates



Plate 7: Analogue site photo point 1. Note ongoing disturbance as located within powerline easement.



Plate 8: Analogue site photo point 2.



Plate 9: Analogue site photo point 3.



Plate 10: Analogue site photo point 4.

APPENDIX C – Rehabilitation Trigger Action Response Plan (TARP)

Issue	Potential Hazard	Trigger	Action/Response	TARP Ref #
Geology/geochemistry and material prone to spontaneous combustion	Geochemistry of coal materials that may cause combustion risk (through spontaneous combustion or other ignition sources post-mine closure – e.g. bushfire)	Assessment of combustion risk (to be undertaken following cessation of mining) identifies materials on site that may pose a combustion risk.	Not within the scope of this assessment.	1
Erosion and sediment control	Water quality impacts the local environment due to less than adequate erosion and sediment control during rehabilitation	Site inspection identifies that erosion and/or controls are not in accordance with completion criteria/ESCP.	Not triggered – no erosion observed.	2
Soil type(s) and suitability (Growth Medium)	Insufficient growth medium material is available to achieve final land use objectives. Soils/growth medium pH	Final soil characterisation (to occur following cessation of mining) identifies that the growth medium on-site is not adequate to meet completion criteria.	Not within the scope of this assessment.	3
Flora and Fauna	Failure to establish suitable vegetation communities as per MOP	Vegetation monitoring identifies that vegetation communities established do not meet completion criteria (e.g. not comparable to adjacent/analogue vegetation/final land use objectives).	Not triggered – vegetation community comparable to Analogue Plot 1.	4
Surface water	Discharge from the site water management system resulting in contamination of water resources	Surface water quality monitoring identifies water parameters outside the completion range criteria and/or EPL.	Not within the scope of this assessment.	5
Contaminated land and hydrocarbon management	Contamination remains the following closure	Completion of Phase 2 ESAs (to be undertaken following the completion of mining) identifies contamination remaining on site.	Not within the scope of this assessment.	6

Hazardous materials	Explosives remain following closure and present public safety risk. Note: No explosives are to remain at the premises following closure.	Delta Coal becomes aware that: <ul style="list-style-type: none"> • explosives are remaining on site. • explosives have not been licensed and/or management not in accordance with the Explosives Act 2003. 	Not within the scope of this assessment.	7
Bushfire	Significant impact on rehabilitation as a result of bushfire occurring prior to the successful establishment of revegetation	Bushfire occurs on-site and vegetation is destroyed or significantly damaged.	Not triggered – no evidence of bushfire in the area.	8

APPENDIX D – Rehabilitation Objectives and Criteria

Ecosystem and Land Use Establishment Phase					
Final Land Use Domain	Approved Rehabilitation Objectives	Performance Indicator	Approved Completion Criteria	Validation Method	Current Status
Native Ecosystem <i>(Refer to note in Section 5.3)</i>	Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems comprising local native plant species.	Vegetation communities to be established to have key species consistent with the adjacent: <ul style="list-style-type: none"> Broad-Leaved Scribbly Gum Open Forest (Manning Colliery) Coastal Open Woodland (Chain Valley Colliery) Swamp Sclerophyll Forest (Chain Valley Colliery upcast shaft) <p>Note: Delta Coal to implement a monitoring program including establishment of analogue sites to be used as a basis for future identification.</p>	Vegetation becomes established. Majority (i.e. >50%) of established species are present in surrounding communities.	<ul style="list-style-type: none"> Visual inspection and photos of rehabilitated area by suitably qualified specialist. Monitoring and comparison to adjacent control sites. Monitoring results included within Closure report. 	Over 50% of the species present in the rehabilitation area are also present at analogue Plot 1 (refer to Table 3).
		The rehabilitated area does not constitute an erosion hazard.	Any site erosion is insignificant in that it is not resulting in pollution or unstable landforms. Surface area cover is consistent with adjacent analogue sites.		No erosion present at the site and ground cover percentage is representative of the analogue site.
		Weeds and feral animals are not competing or impacting the rehabilitated area.	Implementation of weed and feral animal control program to achieve number of weeds/ferals consistent with adjacent analogue sites.		Weed species are present but consistent with the analogue site and represent less than 25% cover of the total area.





TITLE: Annual Rehabilitation Report & Forward Program 2023

SITE: Delta Coal

Appendix B – 2023-2026 Delta Coal Forward Program (Resources Regulator)



**NSW
Resources
Regulator**

FWP0001231

CHAIN VALLEY COLLIERY FORWARD PROGRAM

Friday 7 July 2023 to Monday 6 July 2026

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Summary

DETAIL	
Mine	Chain Valley Colliery
Reference	FWP0001231
Forward program commencement date	Friday 7 July 2023
Forward program end date	Monday 6 July 2026
Forward program revision (if applicable)	FWP0001107
Contact	Lachlan Peter McWha
Mining leases	CCL 706 (1973), MPL 1389 (1906), ML 1784 (1992), MPL 1349 (1906), ML 1308 (1906), ML 1782 (1992), MPL 1400 (1906), ML 1051 (1906), ML 1052 (1906), CCL 707 (1973), ML 1785 (1992), MPL 337 (1973), ML 1783 (1992), ML 1781 (1992)
Project location	Great Southern Energy Pty Ltd
Date of submission	Tuesday 12 September 2023

Important

The department may make the information in your program and any supporting information available for inspection by members of the public, including by publication on its website or by displaying the information at any of its offices. If you consider any part of your program to be confidential, please communicate this to the department via the message function on this submission within the NSW Resources Regulator Portal.

Three-year forecast – surface disturbance activities

Project description

Both Chain Valley Colliery (CVC) and Mannering Colliery (MC) are neighbouring underground coal mines located on the southern side of Lake Macquarie approximately 60 km south of Newcastle and 80 km north of Sydney. The CVC and MC pit tops are located approximately 1.5 km south-east and 3 km south of the township of Mannering Park respectively.

As of 1 April 2019, Great Southern Energy Pty Ltd (trading as Delta Coal) own and operate the two underground coal mines. Mining is currently undertaken at CVC with coal being transported underground via a series of underground crushers and sizers to MC where the coal is screened and sent directly to the Vales Point Power Station (VPPS) via an overland conveyor.

The operations are currently approved to the 31st December 2027. Delta Coal is currently seeking to consolidate the existing approvals for CVC and MC into a single Development Consent and extend the existing approved operations to 31st December 2029

Description of surface disturbance activities

Exploration activities

There are no exploration activities planned within the CVC mining and exploration leases within the next 3 years.

Construction activities

There are no construction activities planned to be undertaken by Delta Coal at CVC or MC pit-top facilities.

Mining schedule

Mining development method and sequencing and general mine features.

Over the next three years (2023-2026), it is planned that mining operations will be bord and pillar style first workings with the potential for some secondary workings planned utilising pillar extraction by continuous miners. All workings are underground, with portal entrance to the

mine to remain from CVC pit-top. First workings are planned to continue in the Northern Mining Area (beneath Morisset Peninsula) with potential secondary extraction within an area defined as the Northern Pillar Area (beneath Lake Macquarie), these workings are within ML1785. Headings are currently being developed for extension into a western mining domain beneath Lake Macquarie to allow mining within ML1782.

Areas identified for emplacements, the sequencing of emplacements, construction, and management.

No emplacement areas within the forecast period.

Processing infrastructure activities and the location of tailings facilities and schedule for emplacement

Majority of sizing and crushing of ROM coal is undertaken via underground crushers and sizers, MC's coal handling and preparation plant (CHPP) is utilised for the purpose of further screening of ROM coal prior to transport to Vales Point Power Station via overland conveyor. No tailings or reject are being generated by the colliery's current operations.

Waste disposal and materials handling operations.

Delta Coal utilises a contractor to undertake total waste management and disposal for the site. Putrescible waste is placed in general waste bins of varying sizes and collected for disposal at landfill. Hydrocarbons utilised by the site include diesel fuels and machinery oils, all fuels and hydrocarbons are stored within bunded areas and fuels are transported underground utilising bunded fuel pods. Hydrocarbon waste is collected from sumps utilised to drain empty oil drums and processed off-site for the purpose of recycling. Contaminated soils are typically only encountered at the site in regard to minor hydrocarbon spills and soil is excavated and placed into dedicated bins for hydrocarbon contaminated soils and absorbents, if large volumes (>1m³) of soil is excavated material is placed in a dedicated bin and classified for off-site disposal in accordance with the NSW EPA Waste Classification Guidelines.

¹ This includes coarse rejects, tailings and any other wastes resulting from beneficiation.

Key production milestones

MATERIAL	UNIT	YEAR 1	YEAR 2	YEAR 3
Stripped topsoil (if applicable)	(m ³)	0	0	0
Rock/overburden	(m ³)	0	0	0
Ore	(Mt)	0	0	0
Reject material¹	(Mt)	0	0	0
Product	(Mt)	1.5	1.5	1.5

Three-year rehabilitation forecast

Rehabilitation planning schedule

Rehabilitation planning schedule

Former Mining Cottages Area Rehabilitation:

- Ecosystem and Land Use Establishment phase, Q2 2021 – Q4 2023
- Ecosystem and Land Use Sustainability phase, Q1 2024 – Q1 2026

Catherine Hill Bay – Possum Gulley Area Rehabilitation:

- Landform Establishment phase, current – Q2 2023
- Growth media development, Q2 2023 – Q3 2023
- Ecosystem and land use sustainability phase – Q3 2023 – Q1 2024
- Relinquishment – date to be confirmed with NPWS and RR

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. Prior to development of a detailed mine closure plan (2-5 years from planned mine closure) Delta Coal will commence a program to investigate and maintain records relating to available soil material for use as growth media on-site, including:

- Soil characterisation of existing soil stockpiles on-site; and
- Subsoil characterisation over domain areas to determine suitability as growth medium.

Stakeholder consultation

Consultation with national parks and wildlife services and resources regulator regarding the relinquishment of Catherine hill bay – possum gulley rehabilitated area relinquishment. Consultation with landowners (Vales Point Power Station) and Community Consultative Committee regarding future rehabilitation planning for CVC and MC pit-tops.

Rehabilitation studies, risk assessments and/or design work

Nil.

Rehabilitation research and trials

RRT NUMBER	PROJECT/TRIAL NAME	OBJECTIVE OF TRIAL/PROJECT	METHODOLOGY	EXPECTED DATE OF COMPLETION	STATUS
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FWP0001231

Rehabilitation maintenance and corrective actions

Ongoing monitoring of the Chain Valley Colliery former mine cottages are in regard to ecosystem establishment and sustainability with ongoing management of weeds and invasive species as required.

Rehabilitation schedule

Former Mining Cottages Area Rehabilitation:

- Monitoring of land use and ecosystem development and sustainability (open grasslands), ongoing weed and invasive species management.

Catherine Hill Bay Possum Gulley:

- Importation of certified-fill material for the establishment of final landforms
- Amelioration and growth medium development
- Vegetation development (native woodland / heathland)
- Monitoring of land use establishment and sustainability.

Areas of surface disturbance are limited to relatively small areas due to the inherent nature of underground mining and limited coal processing on-site. As no coal beneficiation occurs on-site and, as a result, no major sources of reject or tailings are generated, the areas of direct surface disturbance within the Chain Valley and Mannering are able to be maintained at a minimum. As a consequence, the opportunities for the rehabilitation of areas of disturbance have been limited, with the surface features remaining largely unchanged since the 1960s. Regardless of this, where achievable Delta Coal is committed to the progressive rehabilitation of its sites examples of this include the demolition and ongoing rehabilitation of the former mine cottages in 2020, with surface coal handling structures also demolished during 2020.

Subsidence remediation for underground operations

Mine workings planned under land is limited to a negligible amount (considered less than 20mm) of subsidence. The mine regularly conducts subsidence monitoring to confirm the extent of actual subsidence.

All approved secondary extraction has occurred or is planned to occur beneath Lake Macquarie outside of the seagrass protection barrier and high-water subsidence protection barrier.

There are negligible environmental impacts expected due to mine subsidence. There will be no risk to public safety due to the planned subsidence.

Progressive mining and rehabilitation statistics

Three-yearly forecast cumulative disturbance and rehabilitation progression

FORECAST	UNIT	YEAR 1	YEAR 2	YEAR 3
A Total surface disturbance footprint	(ha)	27.62	27.62	27.62
B Total active disturbance	(ha)	18.63	18.63	18.63
P Total new area of land proposed for active rehabilitation	(ha)	4.1	4.1	4.1

Rehabilitation key performance indicators (KPIs)

FORECAST	UNIT	YEAR 1	YEAR 2	YEAR 3
O Total new active disturbance area	(ha)			
P Total new area of land proposed for active rehabilitation during the reporting period	(ha)	4.1		
Q Annual rehabilitation to disturbance ratio				

Attachment 1 – Reporting Definitions

REPORTING CATEGORY	DEFINITION
<p>A Total disturbance footprint – surface disturbance</p>	<p>All areas within a mining lease that either have at some point in time or continue to pose a rehabilitation liability due to surface disturbance activities.</p> <p>The total disturbance footprint is the sum of the total active disturbance, decommissioning, landform establishment, growth medium development, ecosystem and land use establishment, ecosystem and land use development and rehabilitation completion (see definitions below).</p> <p>Underground mining operations should not include the footprint of underground mining areas/subsidence management areas in the total disturbance footprint.</p>
<p>B Total active disturbance</p>	<p>Includes on-lease exploration areas, stripped areas ahead of mining, infrastructure areas, water management infrastructure, sewage treatment facilities, topsoil stockpile areas, access tracks and haul roads, active mining areas, waste rock emplacements (active/unshaped/in or out-of-pit), tailings dams (active/unshaped/uncapped) and temporary stabilised areas (e.g. areas sown with temporary cover crops for dust mitigation and temporary rehabilitation).</p>
<p>C Rehabilitation – land preparation</p>	<p>Includes the sum of all disturbed land within a mining lease that have commenced any, or all, of the following phases of rehabilitation – decommissioning, landform establishment and growth medium development.</p> <p>Refer to the glossary of terms in this document for the definition of these phases of rehabilitation.</p>
<p>D Ecosystem and land use establishment</p>	<p>Includes the area which has been seeded/planted with the target vegetation species for the intended final land use. However, vegetation has not matured to a stage where it can be demonstrated that it will be sustainable for the long term and or require only a maintenance regime consistent with target reference/analogue sites.</p> <p>Typically, rehabilitation areas would be in this phase for at least two years (and usually more) before rehabilitation can be classified as being in the ecosystem and land use development phase. This phase does not apply to infrastructure areas that are being retained as part of final land use for the site.</p>

REPORTING CATEGORY	DEFINITION
O	The area of any new active disturbance that will be created during the next three years, as defined under definition A1 (definition A1 Table 5).
P	The sum of any new rehabilitation to be commenced in the next three years. These areas may be in the phases “Rehabilitation - Land Preparation” or the “Ecosystem & Land Use Establishment” (definitions C & D in Table 5).
Q	The rehabilitation to disturbance ratio (S / R) indicates how many hectares of new rehabilitation are undertaken for each hectare of land disturbed during the three years. A ratio of 1/1 indicates that the area of new rehabilitation and disturbance in that period are the same.

Attachment 2 – Definitions

WORD	DEFINITION
Active	In the context of rehabilitation, land associated with mining domains is considered ‘active’ for the period following disturbance until the commencement of rehabilitation.
Active mining phase of rehabilitation	In the context of rehabilitation, the active mining phase of rehabilitation constitutes the rehabilitation activities undertaken during mining operations such as salvaging and managing soil resources, salvaging habitat resources, and native seed collection. This phase also includes management actions taken during operations to manage risks to rehabilitation and enhance rehabilitation outcomes such as selective handling of waste rock and management of tailings emplacements.
Analogue site	In the context of rehabilitation, an analogue site is a ‘reference site’ that represents an example of the defining characteristics (such as vegetation composition and structure or agricultural productivity) of the final land use. Characteristics of analogue sites can be assessed to develop the rehabilitation objectives and completion criteria for final land use domains.
Annual rehabilitation report and forward program	As described in the Mining Regulation 2016.
Annual reporting period	As defined in the Mining Regulation 2016.
Closure	A whole-of-mine-life process, which typically culminates in the relinquishment of the mining lease. It includes decommissioning and rehabilitation to achieve the approved final land use(s).
Decommissioning	The process of removing mining infrastructure and removing contaminants and hazardous materials.
Decommissioning Phase of Rehabilitation	Activities associated with the removal of mining infrastructure and removal and/or remediation of contaminants and hazardous materials. In the context of the rehabilitation management plan this phase of rehabilitation may also include studies and assessments associated with decommissioning and demolition of infrastructure or works carried out to make safe or ‘fit for purpose’ built infrastructure to be retained for future use(s) following lease relinquishment.

WORD	DEFINITION
Department	The Department of Regional NSW.
Disturbance	See Surface Disturbance.
Disturbance area	<p>An area that has been disturbed and that requires rehabilitation.</p> <p>This may include areas such as on-licence exploration areas, stripped areas ahead of mining, infrastructure areas, water management infrastructure, sewage treatment facilities, topsoil stockpile areas, access tracks and haul roads, active mining areas, waste emplacements (active/unshaped/in or out-of-pit), tailings dams (active/unshaped/uncapped), and areas requiring rehabilitation that are temporarily stabilised (i.e. managed to minimise dust generation and/or erosion).</p>
Domain	<p>An area (or areas) of the land that has been disturbed by mining and has a specific operational use (mining domain) or specific final land use (final land use domain). Land within a domain typically has similar geochemical and/or geophysical characteristics and therefore requires specific rehabilitation activities to achieve the associated final land use.</p>
Ecosystem and Land Use Development	<p>This phase of rehabilitation consists of the activities to manage maturing rehabilitation areas on a trajectory to achieving the approved rehabilitation objectives and completion criteria.</p> <p>For vegetated land uses this phase may include processes to develop characteristics of functional self-sustaining ecosystems, such as nutrient recycling, vegetation flowering and reproduction, and increasing habitat complexity, and development of a productive, self-sustaining soil profile.</p> <p>This phase of rehabilitation may include specific vegetation management strategies and maintenance such as tree thinning, supplementary plantings and weed management.</p>
Ecosystem and Land Use Establishment	<p>This phase of rehabilitation consists of the processes to establish the approved final land use following construction of the final landform.</p> <p>For vegetated land uses this rehabilitation phase includes establishing the desired vegetation community and implementing land management activities such as weed control. This phase of rehabilitation may also include habitat augmentation such as installation of nest boxes.</p>
Exploration	Has the same meaning as that term under the State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007.

WORD	DEFINITION
Final landform and rehabilitation plan	As defined in the Mining Regulation 2016.
Final land use	As defined in the Mining Regulation 2016.
Form and way	Means the form and way approved by the Secretary. Approved form and way documents are available on the Department’s website.
Growth Medium Development	<p>This phase of rehabilitation consists of activities required to establish the physical, chemical and biological components of the substrate required to establish the desired vegetation community (including short lived pioneer species).</p> <p>This phase may include spreading the prepared landform with topsoil and/or subsoil and/or soil substitutes, applying soil ameliorants to enhance the physical, chemical and biological characteristics of the growth media, and actions to minimise loss of growth media due to erosion.</p>
Habitat	Has the same meaning as that term under the <i>Biodiversity Conservation Act 2016</i> and the <i>Fisheries Management Act 1994</i> (as relevant).
Indicator	An attribute of the biophysical environment (e.g. pH, topsoil depth, biomass) that can be used to approximate the progression of a biophysical process. It can be measured and audited to demonstrate (and track) the progress of an aspect of rehabilitation towards a desired completion criterion (i.e. defined end point). It may be aligned to an established protocol and used to evaluate changes in a system.
Land	As defined in the <i>Mining Act 1992</i> .
Landform Establishment	<p>This phase of rehabilitation consists of the processes and activities required to construct the final landform.</p> <p>In addition to profiling the surface of rehabilitation areas to the approved final landform profile this phase may include works to construct surface water drainage features, encapsulate problematic materials such as tailings, and prepare a substrate with the desired physical and chemical characteristics (e.g. rock raking or ameliorating sodic materials).</p>
Large mine	As defined in the Mining Regulation 2016.
Lease holder	The holder of a mining lease.

WORD	DEFINITION
Life of mine	The timeframe of how long a mine is approved to mine, from commencement to closure.
Mine rehabilitation portal	<p>Means the NSW Resources Regulator’s online portal that lease holders must use (via a registered account) to:</p> <ul style="list-style-type: none"> ■ upload rehabilitation geographical information system (GIS) spatial data ■ develop rehabilitation GIS spatial data (using online tracing functions) ■ generate rehabilitation plans and rehabilitation statistics using the map viewer and Rehabilitation Key Performance Indicator functionalities. <p>Data submitted to the mine rehabilitation portal is collated in a centralised geodatabase for use by the NSW Resources Regulator to regulate rehabilitation performance of lease holders.</p>
Mining area	As defined in the <i>Mining Act 1992</i> .
Mining domain	A land management unit with a discrete operational function (e.g. overburden emplacement), and therefore similar geophysical characteristics, that will require specific rehabilitation treatments to achieve the final land use(s).
Mining land	As defined in the <i>Mining Act 1992</i> .
Native vegetation	Has the same meaning as that term under section 60B of the <i>Local Land Services Act 2013</i> .
Overburden	Material overlying coal or a mineral deposit.
Performance indicator	An attribute of the biophysical environment (for example pH, slope, topsoil depth, biomass) that can be used to demonstrate achievement of a rehabilitation objective. It can be measured and audited to demonstrate (and track) the progress of an aspect of rehabilitation towards a desired completion criterion, that is, a defined end point. It may be aligned to an established protocol and used to evaluate changes in a system.

WORD	DEFINITION
Phases of rehabilitation	<p>The stages and sequences of actions required to rehabilitate disturbed land to achieve the final land use. The phases of rehabilitation are:</p> <ul style="list-style-type: none"> ■ active mining ■ decommissioning ■ landform Establishment ■ growth medium development ■ ecosystem and land use establishment ■ ecosystem and land use development.
Progressive rehabilitation	<p>The progress of rehabilitation towards achieving the approved rehabilitation completion criteria. This may be described in terms of domains, phases, performance indicators and rehabilitation completion criteria.</p>
Rehabilitation Completion	<p>The final phase of rehabilitation when a rehabilitation area has achieved the approved rehabilitation objectives and rehabilitation completion criteria for the final land use. Rehabilitation areas may be classified as complete when the NSW Resources Regulator has determined in writing that the relevant rehabilitation obligations have been fulfilled following submission of <i>Form ESF2 Rehabilitation completion and/or review of rehabilitation cost estimate</i> application by the lease holder.</p>
Rehabilitation Completion criteria	<p>As defined in the Mining Regulation 2016.</p>
Rehabilitation cost estimate	<p>As defined in the Mining Regulation 2016.</p>
Rehabilitation management plan	<p>As defined in the Mining Regulation 2016.</p>
Rehabilitation objectives	<p>As defined in the Mining Regulation 2016.</p>
Rehabilitation risk assessment	<p>As defined in the Mining Regulation 2016.</p>
Rehabilitation schedule	<p>The defined timeframes for progressive rehabilitation set out in the forward program.</p>

WORD	DEFINITION
Relevant stakeholders	Means any persons or bodies who may be affected by the mining operations, including rehabilitation, carried out on the lease land, and includes: <ul style="list-style-type: none"> ■ the relevant development consent authority ■ the local council ■ the relevant landholder(s) ■ community consultative committee (if required under the development consent) or equivalent consultative group ■ affected land holder(s) ■ government agencies relevant to the final land use ■ affected infrastructure authorities (electricity, telecommunications, water, pipeline, road, rail authorities) ■ local Aboriginal communities, and ■ any other person or body determined by the Minister to be a relevant stakeholder in relation to a mining lease.
Risk	The effect of uncertainty on objectives. It is measured in terms of consequences and likelihood (AS/NZS ISO 31000:2009).
Secretary	The Secretary of the Department.
Security deposit	An amount that a mining lease holder is required to provide and maintain under a mining lease condition, to secure funding for the fulfilment of obligations under the lease (including obligations that may arise in the future).
Surface disturbance	Includes activities that disturb the surface of the mining area, including mining operations, ancillary mining activities and exploration.
Tailings	A combination of the fine-grained solid material remaining after the recoverable metals and minerals have been extracted from the mined ore, and any process water ² .
Waste	Has the same meaning as that term under the <i>Protection of the Environment Operations Act 1997</i> .

² Commonwealth of Australia (DITR), 2007. *Tailings Management*.

Attachment 3 – Plans

Plan 2A.pdf

Plan 2A.pdf

Plan 2A.pdf

Forward Program (LARGE MINE) v2.1