Environmental Management System

Chain Valley Colliery

Seagrass Management Plan

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1 Introduction

Chain Valley Colliery (CVC) and Mannering Colliery (MC) are underground coal mines on the southern side of Lake Macquarie, approximately 60 kilometres (km) south of Newcastle and 80 km north of Sydney (**Figure 1**). An underground linkage within the Fassifern Seam is approved between CVC and MC, which enables coal extracted at CVC to be transferred to, and handled at, MC.

Delta Power and Energy Pty Ltd, trading as Delta Coal (DC) became the owner and operator of CVC and the operator of MC on 1 April 2019. Prior to the purchase by Great Southern Energy Pty Ltd, CVC was owned and operated by LakeCoal Pty Ltd (LakeCoal). LakeCoal also operated MC under an agreement with the owners of the mine; Centennial Mannering Pty Limited, a wholly owned subsidiary of Centennial Coal Company Limited.

CVC operates under Development Consent SSD-5465, as modified (most recently on the 5th August 2021, Modification 4), which was originally granted on 23 December 2013 by the then Minister for Planning and Infrastructure under Part 4, Division 4.1 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act), which relates to State Significant Development (SSD). The consent permits the extraction of coal by bord and pillar (First Workings) and Miniwall (Second Workings) mining methods within the Fassifern Seam at a maximum rate of 2.1 million tonnes per annum (Mtpa) of run-of-mine (ROM) coal, with all Second Workings confined to areas under the Lake Macquarie water body.

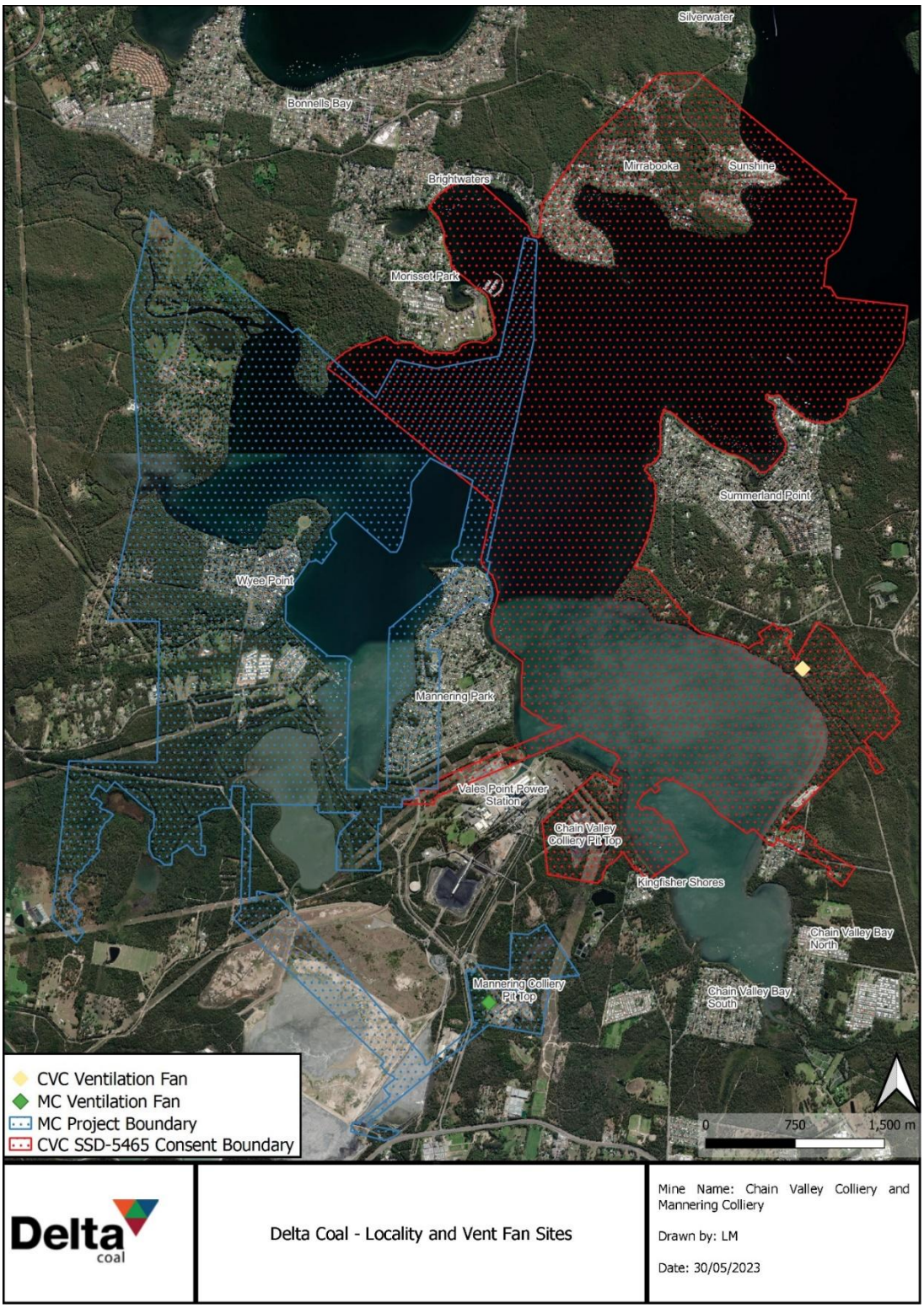
1.1 Project description

CVC is located near Mannering Park and is accessed via the public Ruttleys Road and Construction Road, a private road which services CVC and VPPS. The current development consent boundary includes an area of approximately 1,425 hectares (ha) which straddles the boundary of Lake Macquarie and Central Coast local government areas (LGAs). CVC's pit top area is located within the Central Coast LGA, adjacent to VPPS, in an existing industrial area on the southern end of Lake Macquarie and west of Chain Valley Bay.

Underground mining at CVC commenced in 1962, and since that time has extracted coal from three seams; namely, the Wallarah Seam, the Great Northern Seam and the Fassifern Seam, using a combination of bord and pillar and miniwall mining methods. Current mining activities are generally within the Fassifern Seam. An underground linkage within the Fassifern Seam between CVC and MC enables coal extracted at CVC to be transferred and handled at MC.

Miniwall mining methods were previously utilised at CVC, however extraction has since ceased via miniwall mining as of September 2021 with bord and pillar mining methods utilised thereafter.

Figure 1: Local Context



1.2 Purpose

The purpose of this Seagrass Management Plan is to:

- Provide a system to manage the potential impacts and/or environmental consequences of proposed secondary extraction methods on seagrass beds;
- outline details of the seagrass monitoring data collected;
- outline subsidence prediction methodology;
- identify seagrass monitoring locations;
- identify reporting requirements;
- detail seagrass management measures;
- identify the requirements for incident or exceedances reporting and reviews of the document; and
- identify persons responsible for implementation of requirements.

This Seagrass Management Plan is an element of the Delta Coal (DC) Environmental Management System (EMS).

1.3 Consultation

The original version of this Seagrass Management Plan was provided to OEH, LMCC and DPI Fisheries for comment. Both LMCC and DPI Fisheries reviewed the Seagrass Management Plan, with comments from DPI Fisheries provided on the 28th June 2013. At that time DPI Fisheries had no objection to the plan being implemented as written. Comments from Lake Macquarie City Council were received on the 19th July 2013, which were addressed and incorporated into the document, this final version was then sent back to Council who confirmed on the 19th August 2013 that the changes had addressed their comments. The changes made previously to address Council's comments remain in the current version.

Revision 2 of the draft Seagrass Management Plan was provided to OEH, DPI Fisheries and LMCC on the 12th March 2014, with comments on the draft plan requested back by the 1st April 2014. The only response received was from OEH, dated the 21st March 2014. The OEH noted that while they encourage the development of such plans, they do not approve or endorse these documents and accordingly no comments were provided.

Revision 3 of the Seagrass Management Plan was sent to OEH, DPI Fisheries and LMCC on 4 November 2016 for review and comment. All three agencies provided comments on the revised Plan. LMCC and DPI Fisheries confirmed that the document was acceptable in its revised form while OEH noted that while they encourage the development of such plans, they do not approve or endorse these documents and accordingly no comments were provided on the content of the Plan.

Revision 4 of the Seagrass Management Plan was provided to OEH, DPI Fisheries and LMCC on 26 February 2018 with the Extraction Plan application for Chain Valley Colliery's Northern Mining Area (NMA).

Revision 5 of the Seagrass Management Plan was sent to OEH, DPI Fisheries and LMCC in May 2019. On the 5 June 2019 DPI Fisheries responded that the Seagrass Management Plan was adequate. On 5 June 2019 OEH noted that they do not approve or endorse these documents and accordingly no comments were provided on the content of the Plan.

Revision 8 of the Seagrass Management Plan was sent to DPI-Fisheries, OEH, DPIE and LMCC on 27 November 2020.

Following the 2025 IEA, this NMP was again reviewed and minor administrative updates made. As such, the plan was only submitted to NSW Department of Planning, Housing and Infrastructure (DPHI).

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**. This plan was approved by DPIE on the 6 April 2021 as part of the Miniwall S5 and Northern Pillar Area extraction plan.

Table 1: Consultation Summary

Stakeholder	Comments	Response/Action
DPHI	• No comments (Revision 10)	• Nil required
DPI- Fisheries	• DPI Fisheries has no objections or comment as there appears to be no proposed impacts on fish or fish habitat.	• Nil required.
NSW DPIE-BCD	1. Methods for measuring seagrass functioning need to be described in detail. 2. Additional detail is required to explain the changes in seagrass cover above the chain valley colliery. The BMP [Biodiversity Management Plan] states that there has been an increase in seagrass cover but additional data and evidence is required to validate these statements. 3. BCD recommends that additional details are added or retained to clarify aspects of the BMP. 4. BCD recommends clarification of Management Practices in Section 4.1.	1. Section 5 revised, however, beyond seagrass meadow size and species distribution, the methods for recording density of growth, bio-fouling, the presence of algae and the number of large bi-valve (*Pinna menkei*) is also recorded, these aspects, along-side size and distribution of seagrass beds provides the method for measuring seagrass functions. 2. Section 5.4 added to the Management Plan to validate statements regarding increases in seagrass cover percentages. 3. Section 3.2 revised, Section 3.3 revised. 4. Section 4.1 removed as it was not required under Section 4.
Department of Regional NSW - Mining Exploration & Geoscience (MEG)	• No issues / comments	• Nil required.
DPIE-Resource Assessments	• TBD	• TBD
LMCC	• No comments	• Nil required.
Combined CVC and MC Community Consultative Committee	• No comments	• Nil required

2 Statutory Requirements

2.1 Key Legislation, Policy and Guidelines

Both State and Commonwealth environmental legislation applies to DC's operation and activities. A number of legislative requirements, government policies and guidelines are applicable. Key items relevant to this management plan 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*;
- *National Parks and Wildlife Act 1974*;
- *Biodiversity Conservation Act 2016*; and
- Department of Primary Industries (2013), *Policy and guidelines for fish habitat conservation and management*.

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

2.2 Development Consent SSD-5465 (as modified)

This management plan has also been completed to satisfy the requirements of Development Consent SSD–5465 (Modification 4), Schedule 4, Condition 7(i) and Schedule 4, Table 8, which states:

"7. The Applicant must prepare an Extraction Plan for all second workings on site, to the satisfaction of the Planning Secretary. Each Extraction Plan must:

(i) include a Seagrass Management Plan, which has been prepared in consultation with BCD, LMCC, and DPI Fisheries, which provides for the management of the potential impacts and/or environmental consequences of the proposed second workings on seagrass beds, and which includes:

- a program of ongoing monitoring of seagrasses in both control and impact sites; and
- a program to predict and manage subsidence impacts and environmental consequences to seagrass beds to ensure the performance measures in Table 8 are met."

In addition to the above, Condition 2 within Schedule 4 of SSD-5465 (Modification 4) also requires that:

"The Applicant must ensure that the development does not cause any exceedance of the performance measures in **Table 7** to the satisfaction of the Planning Secretary."

The relevant seagrass requirements from Table 8 within Schedule 4 of the Development Consent, including the relevant notes, are recreated in **Table 2**.

Table 2: Subsidence Impact Performance Measures - Natural and Heritage Features

Biodiversity	
Seagrass beds	Negligible environmental consequences including: • *negligible* change in the size and distribution of seagrass beds; • *negligible* change in the functioning of seagrass beds; and • *negligible* change to the composition or distribution of seagrass species within seagrass beds.

Notes:

- *The Applicant will be required to define more detailed performance indicators (including impact assessment criteria) for each of these performance measures in the various management plans that are required under this consent (see Condition 7 below).*
- *Measurement and/or monitoring of compliance with performance measures and performance indicators is to be undertaken using generally accepted methods that are appropriate to the environment and circumstances in which the feature or characteristic is located. These methods are to be fully described in the relevant management plans. In the event of a dispute over the appropriateness of proposed methods, the Secretary will be the final arbiter.*
- *The requirements of this condition only apply to the impacts and consequences of mining operations, construction or demolition undertaken following the date of approval of this consent.*

Seagrass related requirements of SSD-5465, including specific requirements that are to be addressed in this plan, and where they are addressed, are detailed in **Appendix 2**.

3 Background

3.1 Lake Macquarie

Lake Macquarie is the largest saline lake in New South Wales. It lies on the central coast between Sydney and Newcastle within the local government areas of Wyong and Lake Macquarie. Lake Macquarie has a catchment of 700 km^2 and a water surface area of 125 km^2 (Bell & Edwards, 1980). The lake has a permanent entrance to coastal waters at Swansea and has an average depth of around 6 m (Laxton, 2005).

The catchment of Lake Macquarie is largely rural with large areas of bush land and grazing land. The shoreline of Lake Macquarie is heavily urbanised, especially the eastern, western and northern shorelines. The region has a relatively long history of coal mining and power generation, with mining occurring since the late 1800s and the first power station at Lake Macquarie commencing operations in 1958.

3.2 Seagrass Communities

Lake Macquarie contains approximately 10% of the total area of seagrass beds in NSW (DPI 2007). The following four species of seagrass are reported to occur in Lake Macquarie:

- eelgrass (*Zostera capricorni*);
- paddle weed (*Halophila ovalis*);
- *Ruppia sp*.; and
- strapweed (*Posidonia Australia*), which is listed as an endangered species under the *Fisheries Management Act, 1994*.

Seagrass distribution within estuaries is naturally influenced by light penetration, depth, salinity, nutrient status, bed stability, wave energy, estuary type, and the evolutionary stage of the estuary. Light is a major limiting factor for the growth of seagrasses and the effects of shading either by artificial structures or increased turbidity associated with sediment re-suspension are common light reducing factors in estuaries (BioAnalysis, 2008).

In 2007, LakeCoal engaged Laxton Environmental Consultants to identify environmental factors including seagrasses, benthic fauna and bathymetry. The study area was the area east of Mannering Park where it was found that the seagrass beds were composed of *Zostera capricorni* (eelgrass) only. The study also identified that seagrass beds within the area extended from the foreshore to a maximum depth of approximately 2m below water level, it was concluded that any mining beneath the beds could lead to subsidence which would cause a decline of seagrasses along the outer edge of the seagrass beds. It was also noted that the distribution and density of seagrass beds in Chain Valley Bay could change due to events unrelated to underground coal mining.

Since 2008, the following seagrass species have been identified along transects within the annual CVC seagrass monitoring program:

- ‘eelgrass’ (*Zostera capricorni*) short leaved and long leaved forms;
- ‘paddle weed’ (*Halophila ovalis*);

Annual surveys of seagrass communities at Summerland Point, Chain Valley and Crangan Bay have been undertaken by J.H. & E.S. Laxton - Environmental Consultants Pty Ltd (Laxton Environmental Consultants) on behalf of Delta Coal (and previously LakeCoal) since 2008. Since 2011 seagrass cover has increased progressively as further discussed in Section 5.4 (Seagrass Monitoring Results). Subsequent annual seagrass surveys discovered large and unexplained changes in seagrass cover which were unrelated to underground coal mining, as no mining had subsided seagrass beds since commencement of monitoring. The precise reasons for these longer-term changes in seagrass distribution are not always obvious but may be related to changes in water transparency, salinity, nutrient concentrations and the proliferation of epiphytic algae. Migration of sediment may also change the distribution of seagrasses over time. It is also thought that the cessation of commercial fishing in Lake Macquarie has positively contributed to the regrowth of seagrass beds.

Seagrass is a vital component of Lake Macquarie's marine ecosystem. It captures the sun's energy and converts it into organic matter that may be utilised by the whole food chain. Destruction of seagrass beds could lead to a reduction in available organic matter for marine flora and faunal species. Seagrass also improves water quality as it decreases sediment within the water column and takes in many nutrients and heavy metals entering the waterway. Hence, a reduction in seagrass population may also result in decreased water quality.

Figure 2: General Layout of the Chain Valley Colliery Mining Domain

3.3 Seagrass Mapping

Surveys have shown that the short leaved and long leaved forms of *Zostera capricorni* present adjacent to the proposed mining operations commence along the lake edge and terminate when water depths approached 2 m.

Further mapping undertaken as part of the Chain Valley Mining Extension 1 Project in 2011/2012, enabled the maximum depths and locations of seagrass to be considered in the mine design. This resulted in the generation of a broader seagrass protection barrier, extending to the proposed mining areas, which was then used to refine the mine design and ensure subsidence impacts to seagrass communities could be avoided. This study found that the communities were dominated by *Zostera capricorni* and that in general, the areas were characterised by patchy meadows of *Zostera*. The seagrass beds were found to exist to a maximum depth of 1.9 m.

Further visual assessments and remapping of seagrass beds within the areas of Sugar Bay, Frying Pan Bay and Point Wolstoncroft was undertaken by LakeCoal, Laxton Environmental Consultants, and Daly Smith Surveyors in February 2018.

Details from these studies have been combined to produce the mapping of seagrass over the entirety of the historic, current and future mining areas, and enabled the seagrass protection barrier to be further defined. The current seagrass mapping is shown on **Figure 3**. Subsidence modelling and predictions are undertaken by specialist geotechnical engineers for each extraction plan. The subsidence predictions and modelling assist the site technical services personnel in the mine design and planning process. The mine design and planning process is fundamental to controlling mine subsidence to consented limits.

The seagrass communities within the entirety of the proposed mining areas have been mapped and the majority of the seagrass beds appear to extend to depths around 2 – 2.5 m. As a result, if mining takes place beneath the seagrass beds, and subsidence takes place, it could be expected that the lower areas of the seagrass beds will potentially retreat with increased depth as a result of reduced light available for photosynthesis.

In light of Condition 7 (i) Schedule 4 of Development Consent SSD-5465 and to ensure the performance measures are met, an essential component of this Seagrass Management Plan is the seagrass protection barrier to ensure that any impacts associated with mining operations are negligible. This barrier is further described in **Section 4.2**.

4 Seagrass Management

4.1 Seagrass Protection Limits

Only first workings are to be undertaken within the seagrass protection barrier and beneath seagrass beds. In these areas, subsidence will be limited to less than 20 mm which is considered to be within normal ground movement and measurement tolerances.

As part of the protection of the lake foreshore, the Colliery holding mining leases require a protection barrier around the foreshore. This is known as the High-Water Mark (HWM) subsidence barrier and is shown on **Figure** 4. The barrier is approximately 130 m wide, but varies based on the depth of cover, and no secondary extraction occurs within this zone.

In addition, to achieve negligible impact on seagrass beds due to subsidence effects, a seagrass protection barrier has been established. This barrier is based on the seagrass mapping and the application of an "angle of draw" of 26.5° from the seagrass area to the coal seam being mined, as depicted in **Figure** 3.**Error! Reference source not found.**Although similar in some locations, the HWM subsidence barrier and the seagrass protection barrier are separate barriers, with the mine layout limited (among other factors) by either barrier at any specific location. The application of the HWM subsidence barrier and seagrass protection barrier is depicted on **Figure** 3.

4.2 Seagrass Management TARP

Delta Coal has developed a Trigger Action Response Plan (TARP) for the management of seagrass above mine workings in Lake Macquarie. The TARP is maintained in the Delta Coal document control system as TARP 00157 and is reproduced below.

	NORMAL	LEVEL 1 TRIGGER	LEVEL 2 TRIGGER
LAKE MACQUARIE SEAGRASS MONITORING	No observed change to seagrass above mine workings including: • Negligible change in the size and distribution of seagrasses • Negligible change in the functioning of seagrass beds • Negligible change to the composition or distribution of seagrass species within seagrass beds	Observed change to seagrass above mine workings including: • Change in the size and distribution of seagrasses • Change in the functioning of seagrass beds • change to the composition or distribution of seagrass species within seagrass beds	Observed change to seagrass above mine workings as a result of mining induced subsidence.
Action / Response	• No response required. • Continue monitoring as detailed in the Seagrass Management Plan.	• Complete investigation to determine the cause of the impact to seagrass. • Continue monitoring as detailed in the Seagrass Management Plan.	• Notify relevant stakeholders of recorded impact to seagrass as a result of mining induced subsidence. • Undertake remedial measures as outlined in the Seagrass Management Plan. • Review of future mine workings to prevent subsidence of seagrass beds, including extents of the seagrass protection barriers. • Review of Seagrass Management Plan and determine if revisions are required to the plan.

Figure 3: Mapped Seagrass and Protection Barrier

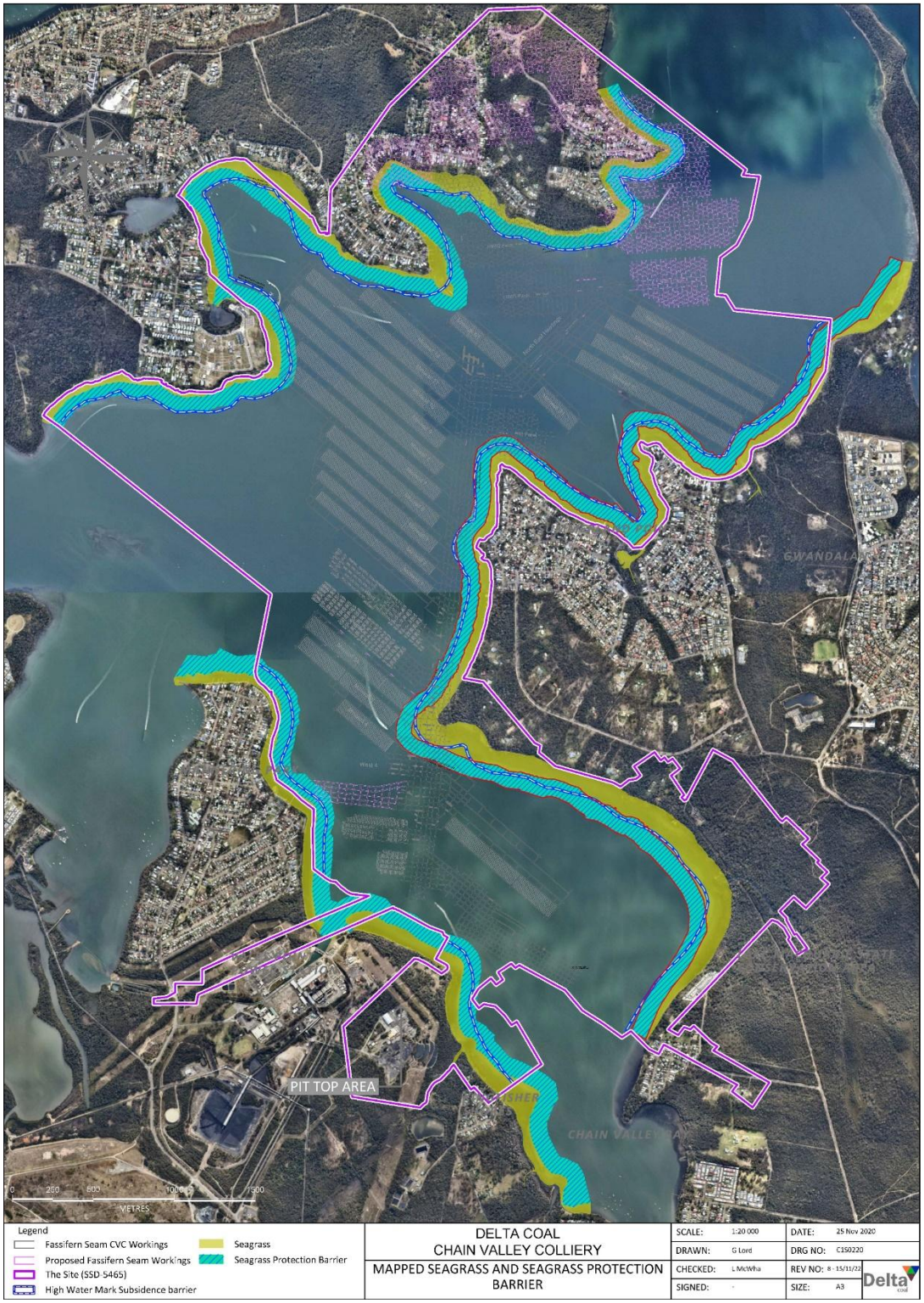
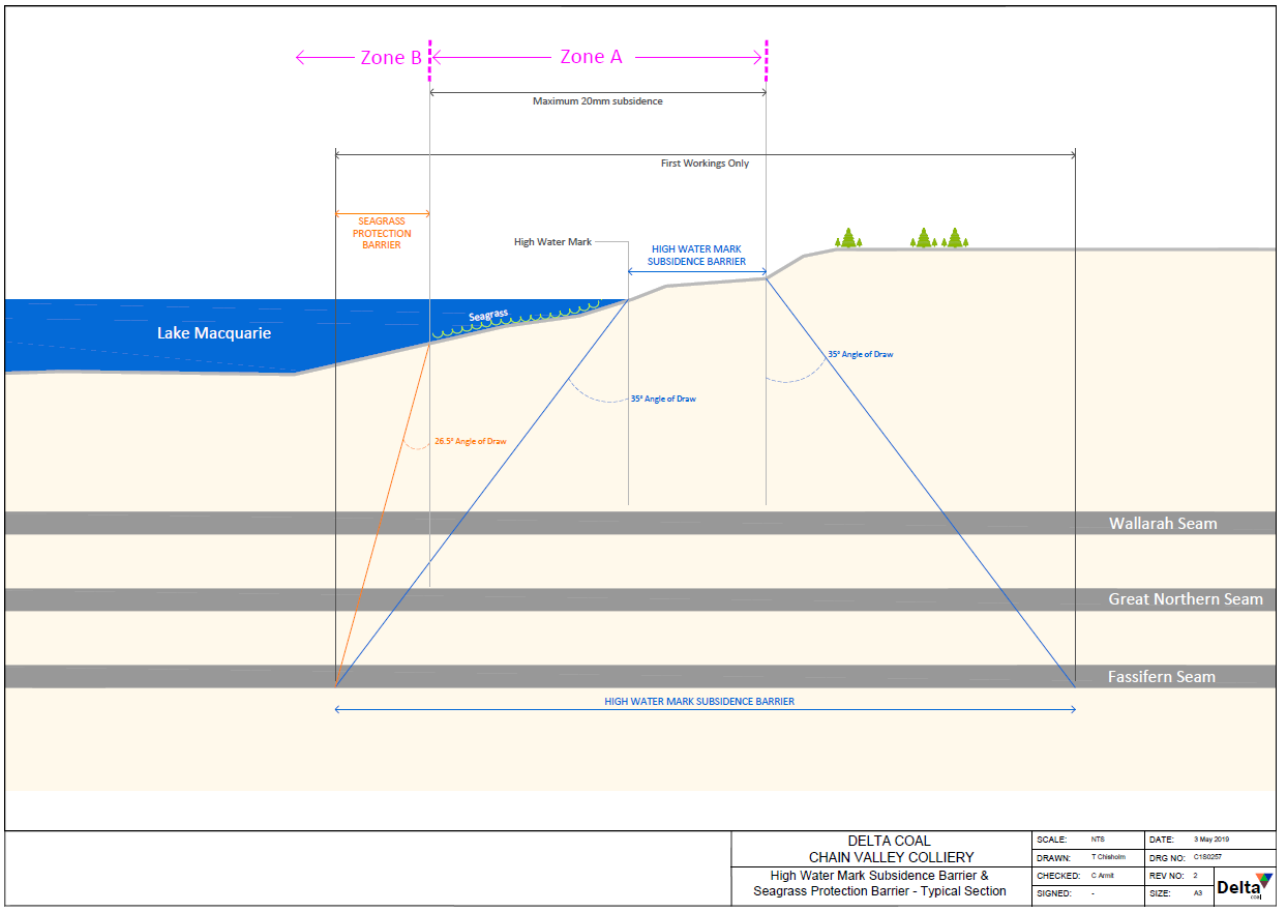


Figure 4: Protection Barrier Schematic cross section



Despite the above barriers, which are in place to protect the seagrass and foreshore areas, monitoring thresholds have been established based on observable change to seagrass beds. The following triggers has been set:

1. 20% decline in condition from the base year survey (i.e. earliest survey prior to mining occurring nearby).

The DC Environment & Community Coordinator will notify DPI Fisheries, Lake Macquarie City Council and DPHI if the above impact thresholds is exceeded. If deemed necessary by any of the parties, a meeting will be convened to discuss the results and determine any required future action.

4.3 Seagrass Impact Mitigation

If through the monitoring program, impacts are found to have occurred to seagrass beds (as identified in **Table 4**) and loss of seagrass habitat has been determined to have occurred as a direct result of mining-induced subsidence, DC would commit to undertaking remediation strategies to replace an equal area of any loss of seagrass habitat that has occurred.

DC's approach to managing seagrass is aimed at protection. However, if an investigation were to identify that an exceedance or incident has occurred that was a direct result of the mining activities and associated subsidence, then DC would develop a remediation plan which would be submitted to DPI Fisheries, identifying the proposed remediation strategy. The strategy would identify proposed remediation measures which could include:

- Transplanting existing communities with additional fast growing locally occurring seagrass plants;
- Transplanting aquaria grown seedlings,
- Seeding, stapling, plugging and anchoring
- Regrading, topographical restoration; and/or
- Fertilising, to stimulate lateral ingrowth of seagrass communities.

The exact method of remediation would be determined based on the existing integrity of the seagrass beds, existing species and specific impacts that have occurred. The remediation strategy would be developed in consultation with DPI Fisheries and be "site specific" to ensure the most appropriate remediation methodology is implemented.

Should remediation on-site not be viable, mitigation could be undertaken at other sites within Lake Macquarie in consultation with DPI Fisheries and LMCC. Work would be completed to offset the impact arising as a result of mining activities.

5 Seagrass Monitoring

Monitoring of seagrass is undertaken to assess the health and composition of seagrass communities within areas in the vicinity of Chain Valley Colliery underground coal operations within Lake Macquarie.

The seagrass monitoring program reports on any changes in seagrass communities over time. To achieve this, the following will be undertaken:

- an annual survey of the study area with 50 seagrass transects using differential GPS survey methods. These differential GPS survey methods will establish the precise location of seagrass transects for repeatability of the surveys;
- A measurement of water quality and recording of environmental conditions experienced/observed during the study;
- photographic survey of seagrass distribution, density and condition along each transect to be recorded using a video camera enclosed within a waterproof housing and mounted on a floating platform;
- review of photographic surveys by a suitably qualified marine biologist reviewing the seagrass distribution, density and condition along each transect, as well as in comparison to previous survey results; and
- Preparation of an annual seagrass reporting providing detail on the seagrass monitoring program for the annum.

Provided no impact is observed to seagrass as a result of mining induced subsidence for 3 years following under-mining, seagrass monitoring above areas of mine workings will cease. Reports of annual surveys will be sent to the Department of Primary Industries – Fisheries, Lake Macquarie City Council and the Department of Planning and Environment;

The detailed methods to conduct the photographic surveys of seagrass distribution, density and conditions are described below. The same or similar methods should be used in future seagrass surveys to ensure consistency of results.

5.1 Seagrass Surveying

The annual seagrass survey is completed in the winter season, usually in June and is completed by a suitably qualified marine biologist. Physicochemical properties of the water within Lake Macquarie are measured using a calibrated water quality meter which measures:

- Water Temperature;
- Conductivity;
- Salinity;
- Turbidity;
- pH; and
- Dissolved Oxygen.

The survey includes observations on growth characteristics of seagrass beds, fouling of seagrass leaves by algal species with a level of fouling determined for each transect (none, low or heavy fouling). Annual surveys are to compare results

to previous years surveys to determine any change in the coverage or composition of seagrass beds, and plausible causes of potential changes.

Seagrass transects are located via GPS equipment to ensure repeatability and comparable results for annual surveys. Two GPS measurements are collected for each transect, an inner portion and an outer portion, seagrass transects follow a straight line between the inner and outer portions of each transect.

Historically, depth surveying of seagrass beds was undertaken, however, results did not prove repeatable to acceptable tolerances (i.e. less than ±20mm) due to shifting sediments. Seabed height is now considered within foreshore monitoring, where by any exceedance of the 20 mm subsidence limit for foreshore monitoring would also be considered as an exceedance of the 20 mm subsidence limit within seagrass beds. Consideration is also made within bathymetric surveying, while this survey method isn't completed in shallow waters where seagrass beds exist, it is undertaken over secondary extraction areas and will provide indication of potential subsidence extending beyond predicted impact areas.

5.2 Seagrass Photography

A video camera fitted with a wide conversion lens and enclosed in an underwater housing is used to capture the video footage.

The camera in the underwater housing is mounted vertically in the centre of a 1 m long surfboard. This rig is towed alongside a workboat. Experimentation revealed that the best photographic results are obtained when the boat and photographic rig were pulled very slowly along the transect line on windless days.

The water depth along most of the transect lines ranges from around 0.5 to 2 m (depending on the lake level). At the end of the transect line the water depth could be around 2 m. Transect lines are photographed from the outer end to the inner end. The beginning of each transect is marked by photographing a plate with the transect number printed in large type.

At the end of each day's photography, the hard drive of the video camera is downloaded, the film is paused at around 1m intervals along the transect line. Each still frame is examined and the following information is recorded on a data sheet:

1. The file name and number of the video segment being examined;
2. The transect number and date the video was taken;
3. The percentage areas occupied by the following organisms in each still or quadrat was determined:
   - (a) % area occupied by long leaved seagrass (*Zostera capricorni*);
   - (b) % area occupied by short leaved seagrass (*Zostera capricorni*);
   - (c) % area occupied by the small seagrass (*Halophila ovalis*);
   - (d) degree of fouling of the seagrass leaves by algae 1=no fouling, 2=light fouling, 3=heavy fouling;
   - (e) % area occupied by the large brown alga (*Sargassum* sp., *Hormosira banksii* or *Cystoseira trinodis*);
   - (f) % area occupied by filamentous and thallous algae (green or brown algae);
   - (g) Number of the large bivalve *Pinna bicolor;*
   - (h) % area of uncolonised (by macroscopic epibenthos) ground (bare ground).

At the end of the analysis of the photographs, the results are entered into a work sheet and mean values for each category of organism are calculated.

5.3 Monitoring Locations

Monitoring locations have been chosen based on the proposed mining activities that will be covered by the Seagrass Management Plan, over time, as this management plan is updated to reflect future mining locations, it is anticipated that additional monitoring transects will be incorporated and others removed from the monitoring regime as time progresses. More specifically, the monitoring locations proposed to be monitored are those that are adjacent to past, current and proposed mining activities that are within the review period of this management plan, as well as monitoring of several control stations.

The monitoring locations are substantially derived from the original experimental and control transects were selected by Laxton Environmental Consultants and JSA Environmental Pty Ltd who completed the Marine Ecology assessment that supported the Environmental Impact Assessment for the SSD-5465 Development Consent. An additional 15 transects were added to the seagrass monitoring program as part of the latest revision to this plan to obtain baseline information within the areas of Frying Pan Bay, Sugar Bay and the Northern side of Point Wolstoncroft. Two additional Control Points (C5 and C6) were also added to the monitoring program in 2018. The current monitoring locations are described in **Table 3**.

Table 3 - Seagrass Monitoring Transect Areas

ID	Location Description
Transects E1 to E16	Chain Valley Bay and adjacent Summerland Point
Transects T1 to T8	Adjacent Summerland Point
Transects A1 to A6	In Bardens Bay
Transect L1	Above first workings connecting CVC and MC underground
Transects S1 to S6	Adjacent Sugar Bay
Transects F1 to F7	Adjacent Frying Pan Bay and along Point Wolstoncroft
Transects C1 to C6	Control stations in Crangan Bay and Frying Pan Bay

Table 4 shows the GPS locations of the inner ends of the seagrass monitoring transects. Where available, reduced levels of the lakebed measured historically are presented. Transects in Crangan Bay are for control purposes only, i.e. no mining or subsidence impact potential, and accordingly no differential GPS depths/locations are required. Relocation of the control stations is done with hand-held GPS.

Table 4: Seagrass Monitoring Transect Coordinates

Site	Easting	Northing	Reduced Level (m) – inner transect	Reduced Level (m) – outer transect
E1	363986	6331797	-0.68	-1.00
E2	364035	6331701	-0.64	-1.78
E3	363953	6331405	-0.32	-2.34
E4	364220	6331078	-0.46	-1.69
E5	365006	6330164	-0.46	-1.68
E6	365118	6329788	-0.48	-1.21

Site	Easting	Northing	Reduced Level (m) – inner transect	Reduced Level (m) – outer transect
E7	365351	6332350	-0.24	-1.68
E8	365128	6331796	-0.27	-0.99
E9	365040	6331608	-0.19	-1.07
E10	365423	6331427	-0.41	-1.74
E11	365554	6331410	-0.40	-1.09
E12	365750	6331329	-0.59	-1.50
E13	365991	6331278	-0.59	-1.44
E14	366447	6331047	-0.52	-1.34
E15	366657	6330098	-0.39	-1.22
E16	366310	6329644	-0.55	-1.08
T1	365440	6333217	-0.40	-1.15
T2	365403	6333101	-0.70	-1.31
T3	365400	6332952	-0.29	-1.01
T4	365377	6332817	-0.46	-1.12
T5	365350	6332590	-0.42	-1.38
T6	365348	6332380	-0.47	-1.61
T7	365321	6332207	-0.17	-1.64
T8	365337	6332262	-0.20	-1.14
C1	368596	6332235	N/A	N/A
C2	368619	6332147	N/A	N/A
C3	368524	6331811	N/A	N/A
C4	368467	6331435	N/A	N/A
C5	365676	6333038	N/A	N/A
C6	366045	6332831	N/A	N/A
A1	363991	6333894	-0.51	-1.19
A2	363974	6334009	-0.39	-0.81
A3	363912	6334156	-0.33	-1.44
A4	363621	6334445	-0.16	-0.72
A5	363678	6335072	-0.30	-0.96
A6	364423	6334560	-0.14	-0.68
L1	364306	6330322	-1.12	-1.63
S1	365009	6334470	-0.64	-1.78
S2	364642	6334943	-0.28	-1.59
S3	365017	6335008	-0.11	-1.87
S4	365235	6334992	-0.11	-1.73
S5	365575	6334709	-0.69	-1.39
S6	366144	6334765	-0.1	-0.92
F1	366321	6333281	-0.25	-1.31
F2	366342	6333330	-0.24	-1.98
F3	366611	6333163	-0.11	-1.88
F4	366968	6333242	-0.11	-2.45
F5	367106	6333361	-0.33	-2.46
F6	367271	6333493	-0.3	-2.81
F7	367402	6333682	-0.48	-1.4

Figure 5 - Locations of Seagrass Monitoring Transects

5.4 Seagrass Monitoring Results

In July 2008, the first seagrass survey for CVC was conducted to the west of Summerland Point (see **Figure 2**), from Frying Pan Point to Sandy Beach Reserve, Summerland Point, Lake Macquarie. The 2008 seagrass survey provided the baseline data for seagrass distribution, density and condition to which annual surveys are compared. It was determined that seagrass densities in Chain Valley Bay and Crangan Bay ranged from 17.74 to 99.32% of the substratum in the -0.19 to -2.34 A.H.D zone around the shore. Additional transects were added over-time as underground workings progressed.

The 2022 survey report *Seagrass Survey of Chain Valley Bay, Summerland Point, Bardens Bay and Crangan Bay, Lake Macquarie, NSW (Results for 2008 to 2022)* (Laxton Environmental Consultants, June 2022) reported seagrass cover along the transects ranged from 79% to 100% of the substratum in 2020.

In general, an improvement in seagrass coverage has been observed throughout the period in which monitoring has been undertaken, specifically from 2011 seagrass cover has increased progressively. Annual seagrass monitoring reports are made available via the Delta Coal website (www.deltacoal.com.au).

Initially the annual increases were treated with some suspicion until it was realised that almost all of the beaches in the study area were used by commercial fishermen as net landing grounds. Nets up to 3km in length were drawn across the lake and hauled up on beaches to extract the various fish species. This fishing effort caused damage to seagrass beds over the 150 years of commercial fishing in Lake Macquarie. Lake Macquarie was established as a recreational fishing zone in 2002 which led to the banning of commercial fishing, subsequently the seagrass beds began recovery, with part of the recovery process considered to have taken place over the period of CVC's seagrass monitoring program.

Results for monitoring of Seagrass over the monitoring period conducted by CVC are presented as **Figure 6** to **Figure 11**.

It is noted that in 2019 a decrease in seagrass coverage was observed during the survey in numerous locations, specifically around Summerland Point and also within the control monitoring transects in Crangan Bay. This decrease was associated with being in a time of very low rainfall, long lived high atmospheric pressure over Lake Macquarie causing a depressed water level of approximately 0.3m for long periods of time. The lowered lake level resulted in increased water temperature over the seagrass beds and increased damaging wave attack during period of strong westerly winds. Less water over the seagrass beds also increased the likelihood of damage by boats, waders and swimmers.

Figure 6 - Changes in percent cover of seagrass in Chain Valley Bay (2008-2022)

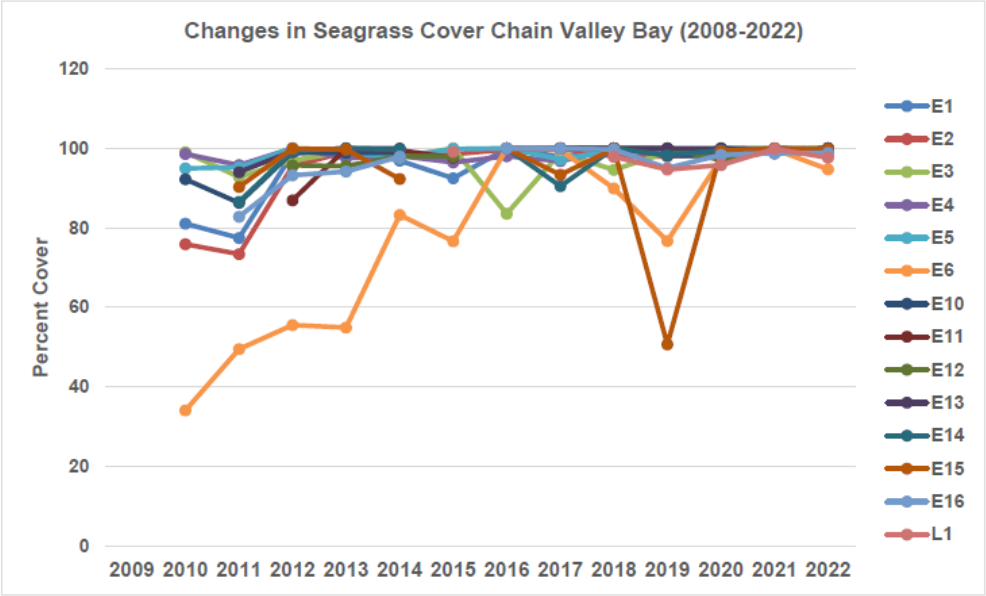


Figure 7 - Changes in percent cover of seagrass along Summerland Point (2009-2022)

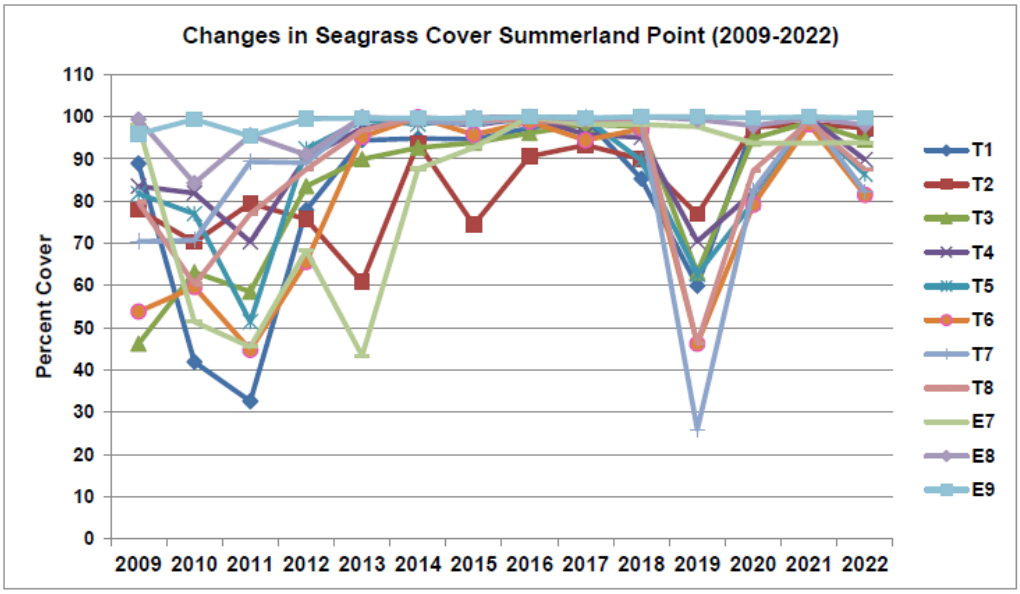


Figure 8 - Changes in percent cover of seagrass along Frying Pan Bay, Summerland Point (2018-2022)

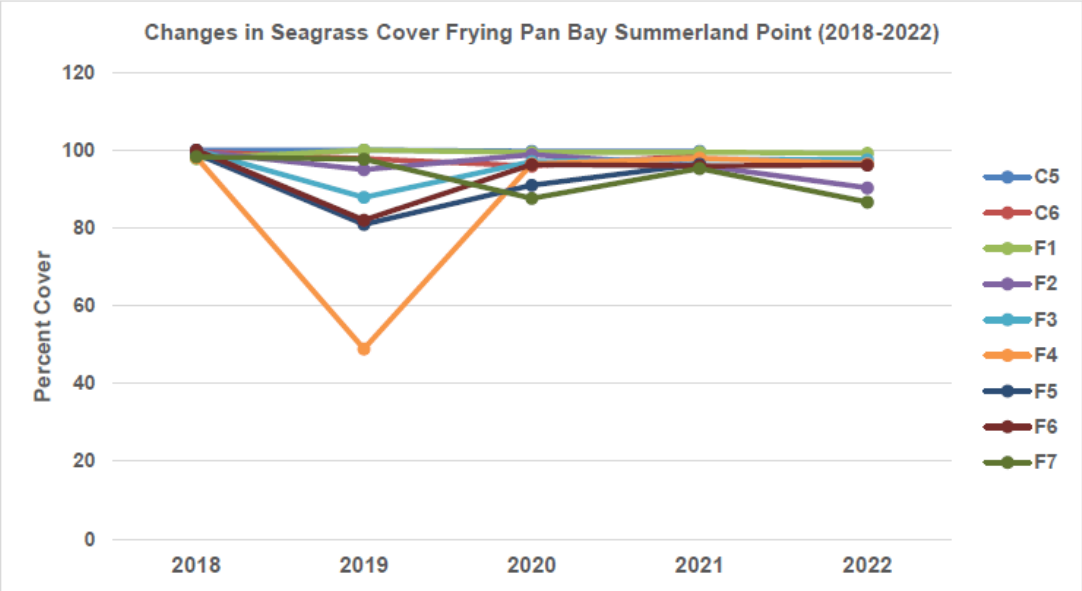


Figure 9 - Changes in percent cover of seagrass in Bardens Bay (2014-2022)

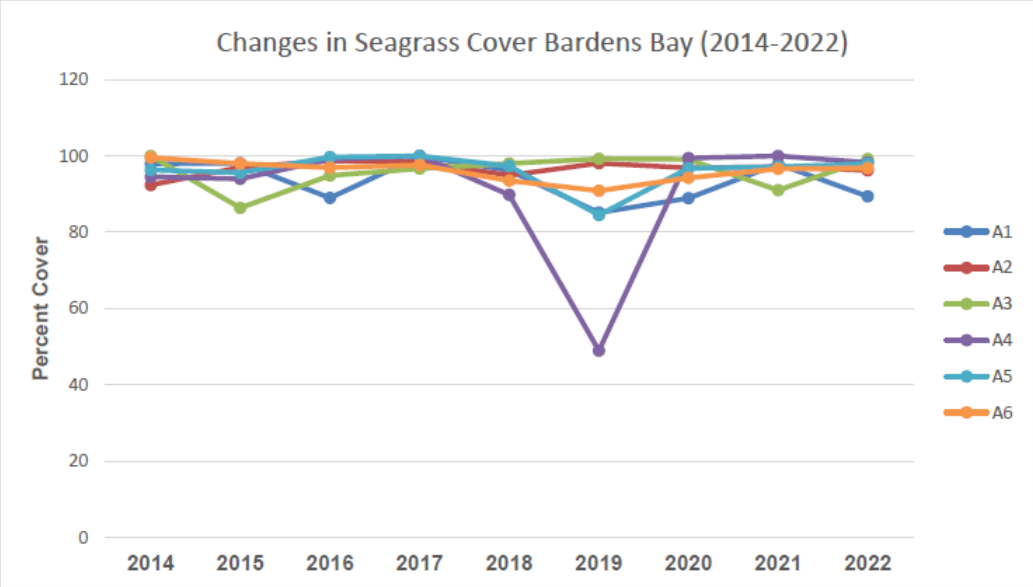


Figure 10 - Changes in percent cover of seagrass in Crangan Bay (2015-2022) (Control Monitoring Location)

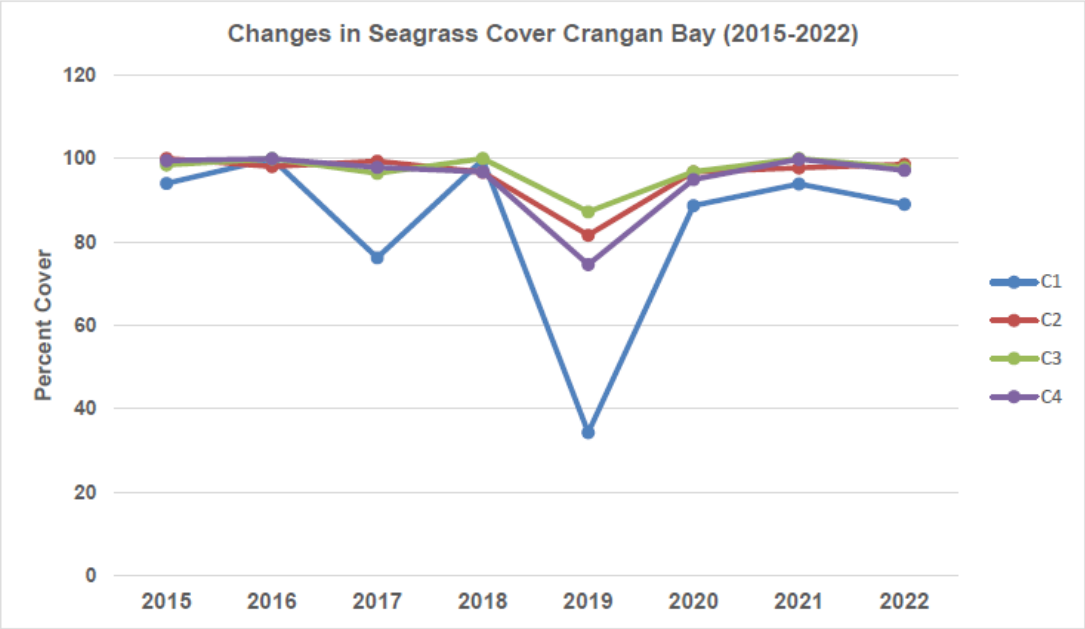
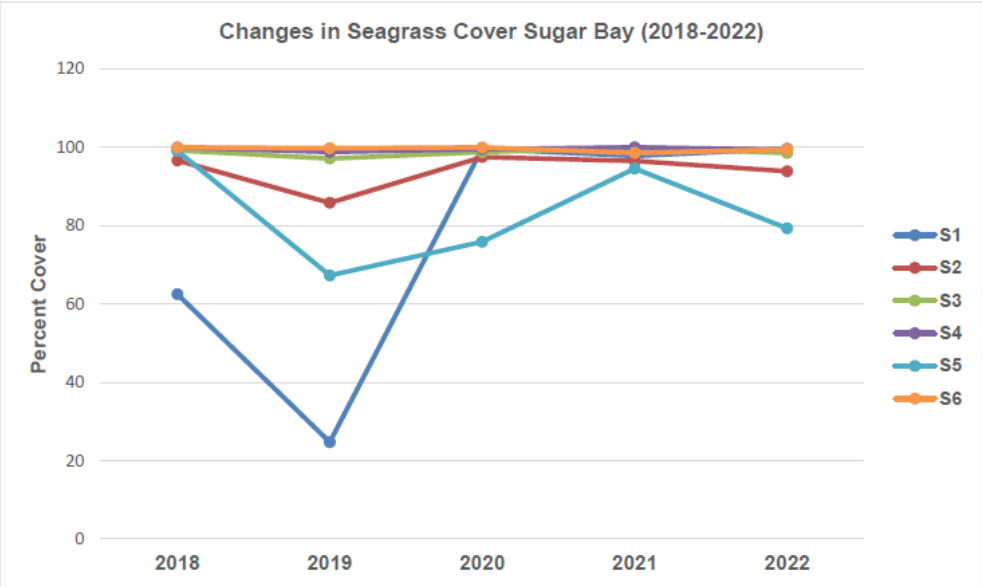


Figure 11 - Changes in percent cover of seagrass in Sugar Bay (2018-2022)



6 Reporting

6.1 Regular reporting

In accordance with Schedule 6, Condition 13(a), DC shall provide regular reporting on the environmental performance of the development on its website, in accordance with the reporting arrangements in any plans or programs approved under the conditions of the development consent.

The seagrass monitoring results will be reviewed on an annual basis as survey reports are received to confirm compliance with the conditions specified in the *Subsidence Impact Performance Measures - Natural and Heritage Features* found in **Table 2** and the criteria outlined in **Section 4.1**.

6.2 Annual review

In accordance with Schedule 6, Condition 8, the proponent must review the environmental performance of the development to the satisfaction of the Planning Secretary, by the end of March each year, or other timing as may be agreed by the Secretary. A summary of seagrass monitoring is provided within the Annual Review.

The Annual Review will be forwarded to the relevant authorities including DPHI, EPA, members of the Community Consultative Committee and local Councils (Central Coast Council and Lake Macquarie) and will also be placed on the Delta Coal website along with a summary of environmental monitoring results.

6.3 Incident or Non-Compliance Reporting

If seagrass monitoring reveals that, as a result of mining activities, the criterion outlined in **Section 4.1** have been exceeded, then DC will investigate the cause of the non-compliance. As detailed in Schedule 6, Condition 7 of SSD-5465, DPHI and other relevant agencies will be immediately notified by the Major Projects Portal of an incident. Within seven days of becoming aware of a non-compliance, DC must notify the Department of the non-compliance.

A written report will be provided to the DPHI within 7 days of the date of the incident or being made aware of the incident (such as receiving monitoring data).

The report will:

- describe the date, time, location and nature of the observation;
- identify the development (development application number and name), applicable non-compliance schedule and condition;
- describe non-compliance and reasons for non-compliance;
- identify the cause (or likely cause) of the damage;
- describe what action has been taken to date; and
- describe the proposed measures to address the impacts and prevent further such occurrences.

DC will implement the recommendations of the investigation in order to address any potential future incidents. Additional details of the incident reporting process are provided in the Environmental Management Strategy (EMS).

Any incidents or complaints will be recorded and fully investigated to find root causes and corrective actions implemented where necessary.

7 Stakeholder Management, Response and Training

7.1 Complaint Protocol

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. 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.

7.2 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

7.3 Dispute Resolution

If any disputes are not adequately addressed by the complaints handling process then they will be handled by the Environmental Compliance 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 Environmental Compliance 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.

7.4 Training, Awareness and Competence

Training is an essential component of the implementation phase of this Seagrass Management Plan. Any person or position that has a role or responsibility under this document will be provided with a copy of the document.

8 Audit and Review

8.1 Review and improvement

In accordance with Schedule 6, Condition 5 of SSD-5465, this management plan shall be reviewed, and if necessary revised, within 3 months of the following:

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

8.2 Audits

Internal and external audits of this document will be carried out as described below. Internal and external audits will be objective and if possible 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 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.

Delta Coal will review any improvement opportunities and determine if it will implement any actions to address the improvement opportunity, these actions will be loaded into the site Incident Database to ensure the actions are assigned to the relevant people and completed.

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. The most recent IEA was completed in 2025.

9 Records and Document Control

9.1 Records

The Environment & Community Coordinator (or delegate) 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.

9.2 Document Control

This document and all others associated with the Environmental Management System (EMS) 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 CommunityCoordinator. 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	16/08/2013	Final	LakeCoal	Chris Ellis
2	09/04/2014	Final	LakeCoal	Chris Ellis
3	4/11/2016	Final	LakeCoal	Wade Covey
5	17/06/2019	Update to Delta Coal format and include proposed S2/S3 secondary workings	Delta Coal	Wade Covey Chris Armit Dave McLean
6	10/03/2020	Update to include proposed S4 secondary workings / 2020 Seagrass report	EMM Consulting	Katie Weekes Chris Armit
7	12/5/2020	Update to include DPIE comments	DeltaCoal	Chris Armit
8	27/11/2020 18/01/2021 19/03/2021 6/04/2021	Mine workings update and Modification 3 and MWS5 and Northern Pillar Area Extraction Plan Update for consultation	Delta Coal	Chris Armit

Version	Date	Details of Revision	Company	Reviewed by/ Authorised by
		Plan approval from DPIE		
9	12/10/2022	Reviewed following IEA submission and administrative updates.	Delta Coal	Lachlan McWha
10	20/01/2026	Reviewed following IEA submission and administrative updates.	Delta Coal	Nicholas van Bezouwen

10 Roles and Responsibilities

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

Table 6: Seagrass Management Roles and Responsibilities

Role	Responsibilities
Mine Manager	• Ensure that adequate financial and personnel resources are made available for the implementation of the Seagrass Management Plan. • Ensure mine layout and workings are as approved, taking into consideration the seagrass barriers
Environment & Community Coordinator	• Co-ordinate seagrass monitoring, through the use of differential GPS surveying and photographic monitoring of seagrass beds. • Develop management actions in consultation with regulatory agencies as/if required from the monitoring results. • Review seagrass monitoring results on an annual basis. • Send Annual Seagrass Monitoring reports to DPI Fisheries, DPIE-BCD and DPIE-Compliance • Compile the Annual Review (including a summary of the annual seagrass survey). • Respond to any potential or actual non-compliance and report these as required to regulatory bodies and other stakeholders. • Undertake reviews of this document as per **Section 9** • Undertake or coordinate the required audits of this document, in accordance with **Section 9**. • Notify the DPI Fisheries, Department of Industry – Resources and Energy and Department of Planning and Environment if there are any exceedances in impact thresholds outlined in **Section 4.1** • Ensure complaint handling and response is undertaken, including determination of sources and potential remedial action to avoid recurrence.
Mine Surveyor	• Ensure mine layout and workings are as approved, taking into consideration the seagrass barriers

11 References & Associated Documents

Documents referenced in the preparation of the Seagrass Management Plan are detailed in **Table 7.**

Table 7: References and Associated Documents

Reference type	Document
Australian 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*
Legislation and regulations	NSW DPI (2007) *PrimeFacts 629 - Seagrasses*. NSW EPA, EPL 1770 *Environment Protection License 1770* SSD–5465 Development Consent SSD-5465 (Modification 3) dated June 2020 for the Mining Extension 1 Project POEO Act 1997 Protection of the Environment Operations Act, 1997
Delta Coal documents	EMS Environmental Management Strategy.
External documents	Bell, F.C. and Edwards, A.R. (1980) *An Environmental Inventory of Estuaries and Coastal Lagoons in New South Wales*. Total Environment Centre. BioAnalysis (2008) *Assessment of seagrasses associated with proposal to expand the Lake Macquarie yacht club in Belmont Bay*. EMM (June 2015) *Chain Valley Colliery Modification 2 Statement of Environmental Effects*, prepared by EMGA Mitchell McLennan (EMM) dated 29 June 2015. Laxton, J.H. (2005) *Water Quality of Lake Macquarie*. J.H. & E.S. Laxton – Environmental Consultants P/L. Unpublished Report. Laxton, E. and Laxton, J.H. (August 2007) *Aquatic Biology of Chain Valley Bay Lake Macquarie, NSW*. J.H. & E.S. Laxton – Environmental Consultants P/L. Unpublished report prepared for Chain Valley Colliery Laxton, J.H. and Laxton, E. (July 2008) *Seagrass Survey of Chain Valley Bay Lake Macquarie, NSW*. J.H. & E.S. Laxton – Environmental Consultants P/L. Unpublished report prepared for Chain Valley Colliery. Laxton, J.H. and Laxton, E. (2009). *Peabody Energy – Chain Valley Colliery. Aquatic Biology of Domain No. 2 off Summerland Point, Lake Macquarie, NSW.* Emma and John H. Laxton. July 2009 Laxton, J.H. and Laxton, E. (2011). *Seagrass Survey of Chain Valley Bay, Summerland Point and Crangan Bay, Lake Macquarie, NSW* (Results from 2008, 2010 and 2011) J.H. & E.S. Laxton – Environmental Consultants P/L. Unpublished report prepared for Chain Valley Colliery. Laxton, J.H. and Laxton, E. (2012). *Seagrass Survey of Chain Valley Bay, Summerland Point and Crangan Bay, Lake Macquarie, NSW* (Results from 2008,

	2010, 2011 and 2012) J.H. & E.S. Laxton – Environmental Consultants P/L. Unpublished report prepared for Chain Valley Colliery. Laxton, J.H. and Laxton, E. (2013). *Seagrass Survey of Chain Valley Bay, Summerland Point and Crangan Bay, Lake Macquarie, NSW*. (Results for 2008, 2010, 2011, 2012 and 2013). J.H. & E.S. Laxton – Environmental Consultants P/L. Unpublished report prepared for Chain Valley Colliery. Laxton, J.H. and Laxton, E.S. (2014) *Seagrass Survey of Chain Valley Bay, Summerland Point and Crangan Bay, Lake Macquarie, NSW* (Results for 2008 to 2014). J.H. & E.S. Laxton – Environmental Consultants P/L. Unpublished report prepared for Chain Valley Colliery. Laxton, J.H. and Laxton, E.S. (2015) *Seagrass Survey of Chain Valley Bay, Summerland Point and Crangan Bay, Lake Macquarie, NSW* (Results for 2008 to 2015). J.H. & E.S. Laxton – Environmental Consultants P/L. Unpublished report prepared for Chain Valley Colliery. Laxton, J.H. and Laxton, E.S. (2016) *Seagrass Survey of Chain Valley Bay, Summerland Point, Bardens Bay and Crangan Bay, Lake Macquarie, NSW* (Results for 2008 to 2016). J.H. & E.S. Laxton – Environmental Consultants P/L. Unpublished report prepared for Chain Valley Colliery. Laxton, J.H. and Laxton, E.S. (2017) *Seagrass Survey of Chain Valley Bay, Summerland Point, Bardens Bay and Crangan Bay, Lake Macquarie, NSW* (Results for 2008 to 2017). J.H. & E.S. Laxton – Environmental Consultants P/L. Unpublished report prepared for Chain Valley Colliery. Laxton, J.H. and Laxton, E.S. (2018) *Seagrass Survey of Chain Valley Bay, Summerland Point, Bardens Bay and Crangan Bay, Lake Macquarie, NSW* (Results for 2008 to 2018). J.H. & E.S. Laxton – Environmental Consultants P/L. Unpublished report prepared for Chain Valley Colliery. Laxton, J.H. and Laxton, E.S. (2019) *Seagrass Survey of Chain Valley Bay, Summerland Point, Bardens Bay and Crangan Bay, Lake Macquarie, NSW* (Results for 2008 to 2019). J.H. & E.S. Laxton – Environmental Consultants P/L. Unpublished report prepared for Chain Valley Colliery. Laxton, E.S. (2020) *Seagrass Survey of Chain Valley Bay, Summerland Point, Bardens Bay and Crangan Bay, Lake Macquarie, NSW* (Results for 2008 to 2020). J.H. & E.S. Laxton – Environmental Consultants P/L. Unpublished report prepared for Chain Valley Colliery. Laxton, E.S. (2021) *Seagrass Survey of Chain Valley Bay, Summerland Point, Bardens Bay and Crangan Bay, Lake Macquarie, NSW* (Results for 2008 to 2020). J.H. & E.S. Laxton – Environmental Consultants P/L. Unpublished report prepared for Chain Valley Colliery.

12 Definitions

BCD Biodiversity and Conservation Division within the Department (formerly OEH – Office of Environment and Heritage)

CVC Delta Coal - Chain Valley Colliery

DC Delta Coal

DPHI Department of Planning, Housing and Infrastructure

DPI Fisheries Department of Primary Industries NSW Department of Primary Industries – Fisheries

EMS Environmental Management System

EPA NSW Environment Protection Authority

EPL Environment Protection License

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

HWM High Water Mark

LMCC Lake Macquarie City Council

POEO Act *Protection of the Environment Operations Act 1997*

Planning Secretary Planning Secretary under the EP&A Act, or nominee

SSD-5465 Development Consent SSD-5465 (for the Chain Valley Colliery Mining Extension 1 Project)

Appendix 1: Consultation

BCD Consultation

NSW GOVERNMENT

Department of Planning and Environment

Your ref: SSD-5465 MOD3
Our ref: DOC22/1042188-4

Mr Lachlan McWha
Environmental Compliance & Approvals Coordinator
Great Southern Energy Pty Limited (t/as Delta Coal)
By email: lmcwha@deltacoal.com.au

Dear Mr McWha

Chain Valley Colliery Extension project (SSD-5465) – Chain Valley Colliery Seagrass Management Plan

On 25 November 2022 Planning and Assessment Group of the Department of Planning and Environment invited Biodiversity and Conservation Division (BCD) for advice in relation to the Draft *Environmental Management System: Chain Valley Colliery: Seagrass Management Plan* (SMP) (dated 12 October 2022). The SMP was prepared by Delta Coal as a requirement as part of the Extraction Plan as per Schedule 4, Condition 7(i) and Schedule 4, Table 8 of Development Consent SSD-5465. The SMP has been revised following an Independent Environmental Audit conducted in 2022, which now triggers the review by BCD.

BCD has reviewed the SMP and recommends the changes to the document of which the key issues are:

- methods for measuring seagrass functioning is required
- additional details are required to explain changes in seagrass cover mentioned in the SMP
- parts of the SMP require clarification and some typographic errors require correcting.

If you have any further questions about this issue, please contact Robert Gibson, Senior Regional Biodiversity Conservation Officer, on 4927 3154 or at huntercentralcoast@environment.nsw.gov.au

Yours sincerely

Sarah Warner
Acting Senior Team Leader Planning
Hunter Central Coast Branch
Biodiversity and Conservation Division

9 December 2022

Enclosure: Attachments A and B

Level 3, 6 Stewart Avenue, Newcastle West| Locked Bag 1002 Dangar NSW 2309 | dpie.nsw.gov.au | 1

Lake Macquarie City Council Consultation

22 December 2022

Chain Valley Colliery
C/- Delta Coal Environmental compliance and Approvals Coordinator

Dear Lachlan,

Subject: Seagrass management plan post consent review – SSD-5465-PA-102

Thankyou for the opportunity to review the seagrass monitoring plan for Chain Valley Colliery. Council have considered the document and have no comments.

Should you require further information, please contact me on +61 2 4921 0025.

Yours faithfully,

Geoffrey Keech
Senior Development Planner
DA&C - Development

Mining Exploration & Geoscience

MINING, EXPLORATION & GEOSCIENCE
Department of Regional NSW

NSW GOVERNMENT

RDOC22/ 253085
30 November 2022

Lachlan McWha
Coordinator Compliance and Approvals
Delta Coal
lmcwha@deltacoal.com.au

ADVICE RESPONSE: Chain Valley Extension Project - Seagrass Management Plan

Dear Lachlan

I refer to your correspondence dated 25 November 2022 inviting the Department of Regional NSW – Mining, Exploration & Geoscience (MEG) to provide comments on the Chain Valley Extension Project - Seagrass Management Plan.

MEG has reviewed the information supplied and raises no issues/has no further comment.

For further advice on this matter, please contact the Industry Advisory & Mining Concierge unit - Industry Development branch on 02 4063 6860 or mining.concierge@regional.nsw.gov.au.

Sincerely

Adam W. Banister
Senior Advisor Industry Advisory & Mining Concierge
Industry Development
Department of Regional NSW – Mining, Exploration & Geoscience

for

Tony Linnane
Executive Director Strategy, Performance & Industry Development
Department of Regional NSW – Mining, Exploration & Geoscience

DPHI Consultation

Department of Planning, Housing and Infrastructure

NSW GOVERNMENT

Our ref: SSD-5465-PA-191

Sean Pigott
Environment and Approvals Manager
Chain Valley Colliery
Construction Road
Mannering Park, NSW, 2259

01/05/2026

Subject: Seagrass Management Plan

Dear Mr Pigott

I refer to the Seagrass Management Plan submitted in accordance with Condition 7(i), Schedule 4 of the consent for the Chain Valley Extension Project (SSD-5465). The Department notes that the Plan has been updated to reflect minor administrative changes and has been submitted independently of any Extraction Plan required under Condition 7 of Schedule 4. Notwithstanding this, the Department has carefully reviewed the document and is satisfied that it meets the requirements of the relevant conditions of consent. Accordingly, as nominee of the Planning Secretary, I approve the Seagrass Management Plan (dated January 2026).

You are reminded that if there are any inconsistencies between the Plan and the conditions of consent, the conditions prevail. Please ensure you make the document publicly available on the project website at the earliest convenience.

If you wish to discuss the matter further, please contact James McDonough on 02 9585 6313.

Yours sincerely

JEvans

Jessie Evans
Director, Resource Assessments
Resource Assessments

As nominee of the Planning Secretary

4 Parramatta Square, 12 Darcy Street, Parramatta NSW 2150 www.dphi.nsw.gov.au 1
Locked Bag 5022, Parramatta NSW 2124

Appendix 2: Development consent summary

Chain Valley Colliery SSD-5465 Summary

Relevant sections of SSD-5465 detail the requirements of the SMP and are reproduced in **Table A2** below along with identification of where the requirements are addressed in this document.

Table A2: Requirements from Chain Valley Colliery Development Consent (SSD-5465)

<table>
<tr><th>Condition No.</th><th>Requirements</th><th>Relevant section of this document</th></tr>
<tr><td colspan="3">Schedule 4 Environmental Conditions – Underground Mining</td></tr>
<tr><td>2</td><td>Performance Measures- Natural Environment
The Applicant must ensure that the development does not cause any exceedance of the performance measures in Table 6 to the satisfaction of the Planning Secretary.
Table 6: Subsidence Impact Performance Measures
<table>
<tr><th colspan="2">Biodiversity</th></tr>
<tr><td>Seagrass beds</td><td>Negligible environmental consequences including:
• Negligible change in the size and distribution of seagrass beds;
• Negligible change in the functioning of seagrass beds; and
• Negligible change to the composition or distribution of seagrass species within seagrass beds.</td></tr>
</table>
Notes:
• The Applicant will be required to define more detailed performance indicators (including impact assessment criteria) for each of these performance measures in the various management plans that are required under this consent (see Condition 7 below).
• Measurement and/or monitoring of compliance with performance measures and performance indicators is to be undertaken using generally accepted methods that are appropriate to the environment and circumstances in which the feature or characteristic is located. These methods are to be fully described in the relevant management plans. In the event of a dispute over the appropriateness of proposed methods, the Planning Secretary will be the final arbiter.
The requirements of this condition only apply to the impacts and consequences of mining operations, construction or demolition undertaken following the date of approval of this consent</td><td>Section 1</td></tr>
<tr><td>3</td><td>Offsets
If the Applicant exceeds the performance measures in Table 6 and the Planning Secretary determines that: (a) it is not reasonable or feasible to remediate the impact or environmental consequence; or (b) the remediation measures implemented by the Applicant have failed to satisfactorily remediate the impact or environmental consequence; then the Applicant must provide a suitable offset to compensate for the impact or environmental</td><td>Section 4</td></tr>
</table>

	consequence to the satisfaction of the Planning Secretary. Note: Any offset required under this condition must be proportionate with the significance of the impact or environmental consequence.	
7	***Extraction Plan*** *(i) include a Seagrass Management Plan, which has been prepared in consultation with BCD, LMCC, and DPI Fisheries, which provides for the management of the potential impacts and/or environmental consequences of the proposed second workings on seagrass beds, and which includes:* *• a program of ongoing monitoring of seagrasses in both control and impact sites; and* *• a program to predict and manage subsidence impacts and environmental consequences to seagrass beds to ensure the performance measures in Table 6 are met;* *Notes:* *• To identify the underground mining areas approved under this consent referred to in this condition, see Appendix 3.* *• This condition does not limit secondary extraction under a Subsidence Management Plan approved as at the date of this consent.*	**This document**
8	*The Applicant shall ensure that the management plans required under conditions 7(g)-(j) above include: (a) an assessment of the potential environmental consequences of the Extraction Plan, incorporating any relevant information that has been obtained since this consent; and (b) a detailed description of the measures that would be implemented to remediate predicted impacts*	**Section 4 and 6**