



Chain Valley Colliery Mod 3 and Mannering Colliery Mod 5

Increase in coal throughput and mine design changes
State Significant Development Modification Assessment Report
(SSD 5465 MOD 3 and MP 06_0311 MOD 5)

May 2020



Published by the NSW Department of Planning, Industry and Environment

dpie.nsw.gov.au

Title: Chain Valley Colliery Mod 3 and Mannering Colliery Mod 5

Subtitle: Increase in coal throughput and mine design changes

Cover Image: Aerial View of Mannering Colliery surface facilities and conveyor to Vales Point Power Station on the shores of Lake Macquarie, (Delta Coal 2019)

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Glossary

Abbreviation	Definition
Approval	Project Approval
BCD	Biodiversity and Conservation Division of the Department
CC Council	Central Coast Council
CCC	Community Consultative Committee
Consent	Development Consent
Department	Department of Planning, Industry and Environment
EIS	Environmental Impact Statement
EPA	Environment Protection Authority
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EP&A Regulation	<i>Environmental Planning and Assessment Regulation 2000</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
EPI	Environmental Planning Instrument
EPL	Environment Protection Licence
ESD	Ecologically Sustainable Development
LEP	Local Environmental Plan
LMCC	Lake Macquarie City Council
Minister	Minister for Planning and Public Spaces
MEG	Mining, Exploration and Geoscience within Regional NSW
RMS	Roads and Maritime Services within Transport for NSW
RR	Resources Regulator within Regional NSW
RTS	Response to Submissions
Secretary	Planning Secretary of the Department
SEE	Statement of Environmental Effects
SEPP	State Environmental Planning Policy
SSD	State Significant Development

Executive Summary

Great Southern Energy Pty Limited (trading as Delta Coal), owns and operates two underground coal mines, Chain Valley Colliery (CVC) and Mannering Colliery (MC), which are located at the southern end of Lake Macquarie, approximately 60 kilometres south of Newcastle.

Delta Coal also owns and operates the nearby Vales Point Power Station (VPPS) which is operated as part of a vertically integrated business, with the two collieries supplying VPPS with high quality thermal coal for electricity generation. All coal extracted and processed at MC is used for this purpose, while coal extracted at CVC is also permitted to be transported to the Port of Newcastle for export or by road to domestic customers.

CVC's consent allows Delta Coal to extract and transport up to 2.1 Million tonnes per annum (Mtpa) of run-of-mine (ROM) coal from CVC until 31 December 2027. Up to 1.3 Mtpa of this ROM coal is permitted to be transported via an underground mine linkage to MC, for onward supply to VPPS. CVC is permitted to operate 24 hours per day, 7 days per week.

MC's consent allows the extraction of up to 1.1 Mtpa of ROM coal until 30 June 2022. In addition, the current consent allows MC to receive and process coal from CVC and transport all coal produced and/or received on the site to VPPS by way of a dedicated overland conveyor. MC is permitted to operate 24 hours per day, 7 days per week.

Delta Coal is seeking to modify the consents for CVC and MC to increase its operational efficiency and enable it to supply VPPS with an increased rate of coal for power generation. These modifications involve:

- increasing the amount of ROM coal that can be transferred from CVC to MC from 1.3 Mtpa to 2.1 Mtpa;
- changes to the mine design at CVC, including modernising the CVC consent to update the definition of "first workings" to include herringbone pattern workings and allow for more efficient resource recovery through the broader use of bord and pillar mining methods within the approved consent boundary;
- an extension to the duration of MC's consent to align with the duration of approved operations at CVC, and enable ongoing handling and processing of coal and a more flexible extraction regime across the sites;
- greater flexibility in the approved layout of bord and pillar workings at MC; and
- minor changes to infrastructure at MC, including the addition of a new underground coal crusher.

The modifications do not seek to change any other aspect of the approved operations.

Delta Coal considers that the proposed modifications are necessary to improve the operational efficiency of the collieries, improve resource recovery rates and provide certainty of supply for future power generation at VPPS, which generates over 10 percent of the State's electricity.

The Department publicly exhibited the modifications from 21 June to 4 July 2019. Advice was received from nine government agencies, including the Lake Macquarie and Central Coast Councils, none of which raised objections to the modifications. In total, 32 community and special interest group submissions were received, with seven objecting to the modification.

The Department considers the key issues for the proposed modification relate to operational noise, air quality and subsidence. Community submissions on the proposal raised the issues of noise (including sleep disturbance), air quality and the socio-economic costs and benefits of continued mining.

Sensitive natural features in the mining areas include the foreshore of Lake Macquarie and seagrass beds in the Lake. To protect these natural features, Delta Coal proposes to maintain the use of subsidence control zones to avoid or limit subsidence impacts. This approach is currently used at CVC and the nearby Myuna Colliery.

The Department is satisfied that the proposed modifications do not result in any increased risk to Lake Macquarie, and the use of subsidence control zones and the recommended conditions of consent provide a robust and tested framework for avoiding any subsidence impacts on the lake foreshore or seagrass beds and provide an appropriate level of protection for other natural features.

The Department's assessment has concluded that the modifications, combined with the Applicant's proposed noise mitigation measures, would reduce noise impacts on the surrounding community and would be unlikely to cause environmental impacts beyond those already assessed as part of the granting of the existing development consents for the mines.

To address the community's concerns about potential increases in noise, the Department has recommended updating the noise operating conditions and has included conditions of consent which reflect the Applicant's commitment to decommission MC's rotary coal breaker. The Department has also recommended changes to reflect a revised the definition of mining methods and contemporise standard conditions.

Together, the proposed modifications would generate a range of social and economic benefits including:

- the continued employment of the CVC and MC workforce;
- improved energy security in NSW by contributing 50% of coal supply to VPPS until 2027;
- additional capital expenditure of approximately \$65 million; and
- the provision of \$74 million in royalties to the NSW Government.

Overall, the Department is satisfied that the proposed modifications would not result in any significant additional environmental impacts when compared with the mine's current operations, and that any residual impacts can continue to be managed under the respective conditions of consent, as proposed to be modified.

The Department therefore considers that the proposed modifications are in the public interest and should be approved subject to the recommended revised conditions of consent.

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1 Introduction

1.1 Background

- 1.1.1 Great Southern Energy Pty Limited trading as Delta Coal, owns and operates two underground coal mines, Chain Valley Colliery (CVC) and Mannering Colliery (MC) which are located at the southern end of Lake Macquarie, approximately 60 kilometres (km) south of Newcastle (see **Figure 1**).

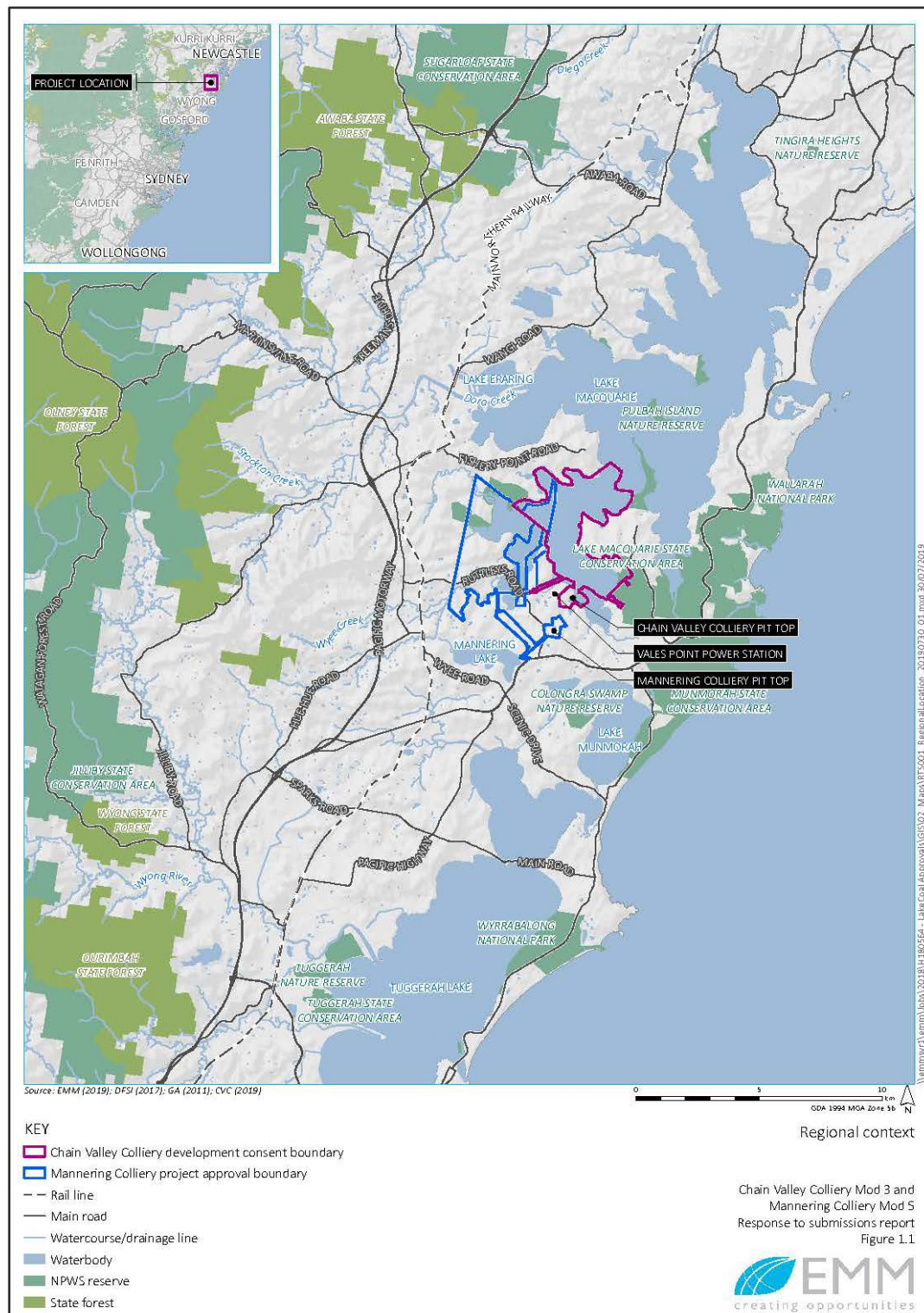


Figure 1 | Regional Location

1.2 Approval History

- 1.2.1 Underground mining operations in this area have a long history, with coal extraction having occurred at MC since 1960 using both bord and pillar and longwall mining methods. Similarly, CVC has operated since 1962, using bord and pillar and “miniwall” coal extraction methods.
- 1.2.2 The bord and pillar method involves the cutting of a regular grid of tunnels (headings and cut-throughs) within the coal seam. This creates pillars of coal, bounded by the headings and cut-throughs to support the overlying strata. These pillars are usually designed to be “long-term stable”.
- 1.2.3 The term ‘miniwall’ is used to distinguish the narrower width and shorter length of the extraction panels used at CVC when compared to conventional longwall mining. Miniwall panel widths at CVC are up to 97 m wide, compared to widths of between 250 - 400 m which are typical of traditional longwall panels.
- 1.2.4 In 2012, MC temporarily ceased coal extraction and was placed on care and maintenance due to a combination of high production costs, low coal prices, difficult mining conditions and coal quality.
- 1.2.5 Since 2013, the MC and CVC collieries have been managed as an integrated operation under various ownership and operating agreements. MC resumed underground coal extraction in 2016, in order to complete the underground linkage connecting the mine to CVC.
- 1.2.6 This underground linkage between the two operations allows up to 1.3 million tonnes per annum (Mtpa) of run-of-mine (ROM) coal extracted from CVC to be transported to MC. This ROM coal, together with coal from MC, is then processed and sent to the adjacent Vales Point Power Station (VPPS) via a dedicated overland conveyor.
- 1.2.7 In April 2019, Delta Coal purchased CVC and MC and continues to manage the two mines as an integrated operation. Delta Coal is a wholly-owned subsidiary of Delta Electricity, which owns and operates VPPS.

Chain Valley

- 1.2.8 CVC currently operates under development consent SSD 5465, granted on 23 December 2013 by the then Minister for Planning and Infrastructure under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). This consent allows Delta Coal to:
- extract up to 2.1 Mtpa of ROM coal per calendar year until 31 December 2027;
 - extract coal from the Fassifern Seam using miniwall methods and first workings methods for mains headings and gateroad construction;
 - extract coal using secondary extraction methods from under Lake Macquarie and outside of the High-Water Mark Subsidence Barrier and Seagrass Protection Barrier;
 - size and crush coal at the Chain Valley Preparation Plant;
 - transport coal from CVC to:
 - the VPPS by truck, using private roads (with emergency use of public roads as approved by the Secretary);
 - MC via an underground linkage within the Fassifern Seam at a rate of up to 1.3 Mtpa;
 - the Port of Newcastle for export at a rate of up to 660,000 tonnes of product coal per annum; and
 - domestic customers other than VPPS at a rate of up to 180,000 tonnes of product coal per annum;

- dispatch a total of up to 32 laden coal trucks per hour and 270 laden coal trucks per day by public roads, with further restrictions on the maximum hourly trucks using public roads during peak periods until the intersection of M1 Motorway and Sparks Road Interchange is upgraded to a signalised intersection; and
- operate 24 hours per day, 7 days per week.

1.2.9 In addition, Delta Coal is required to ensure that it only uses private roads for the transport of coal by truck to VPPS, except in an emergency, when public roads may be used with the Secretary's approval.

Mannering

1.2.10 MC operates under development consent MP 06_0311, granted on 12 March 2008 by the then Minister for Planning, under Part 3A of the EP&A Act. This consent allows Delta Coal to:

- extract up to 1.1 Mtpa of ROM coal per year until 30 June 2022;
- extract coal from the Great Northern and Fassifern Seams using bord and pillar mining methods (although longwall mining methods have been used at the site in the past);
- process coal from CVC and MC at its onsite coal handling and processing plant (CHPP); and
- transport all coal produced and/or received on the site to VPPS by way of a dedicated overland conveyor.

1.2.11 These separate consents have been modified on several occasions, often concurrently, as summarised in **Table 1**.

Table 1 | Summary of previous modifications (in date order)

Mod No.	Summary of Modifications	Approval Authority	Approval Date
MC MOD 1	Extension of mining operations.	Planning Assessment Commission	25 Oct 2012
MC MOD 2	Construction of an underground linkage between CVC and MC for coal transportation.	Executive Director	26 Nov 2014
CVC MOD 1	Construction of an underground linkage between CVC and MC for coal transportation.	Executive Director	26 Nov 2014
MC MOD 3	Increased coal handling and dispatch; extension of consent to 30 June 2022; revision of noise limits.	Executive Director	16 Dec 2015
CVC MOD 2	Increase rate of coal extraction from 1.5 to 2.1 Mtpa with additional coal to be transported via MC to VPPS. Mine design changes.	Executive Director	16 Dec 2015
MC MOD 4	Minor administrative modification.	Director	18 Aug 2016

1.3 Local Context

- 1.3.1 Underground coal mining has been undertaken in the local region for over 100 years, with established mine design and extraction methods to ensure extraction of coal resources from under residential areas and Lake Macquarie is safe and stable in the long term.
- 1.3.2 Both developments subject to this report are existing underground coal mines with established infrastructure and workforces. The pit tops are located approximately 1.1 km apart on the southern shore of Lake Macquarie, near Chain Valley Bay. The majority of land surrounding the sites consist of industrial facilities, such as Delta Electricity's VPPS, and the Lake Macquarie State Conservation Area (SCA) to the east.
- 1.3.3 The consent boundaries for both CVC and MC straddle the boundary of the Lake Macquarie and Central Coast Local Government Area's (LGAs). CVC's pit top area is located within the Central Coast LGA in an industrial area adjacent to VPPS (see **Figure 2**). Access is via the public Ruttleys Road, with coal trucks permitted to use private roads to deliver coal to VPPS. MC's pit top area is also located within the Central Coast LGA, approximately 3 km south of Mannering Park and west of Chain Valley Bay, with access via Ruttleys Road.
- 1.3.4 The closest residential areas are the Macquarie Shores home village 650 - 800 metres to the east of the MC pit top and Kingfisher Shores approximately 350 metres to the south-east of the CVC pit top. Coal is not currently being processed at CVC, with the coal from both collieries being brought to the surface at MC.
- 1.3.5 CVC and MC both supply high quality thermal coal to VPPS for domestic energy generation. ROM coal is transported underground from both mines to MC, where it is processed then transported to the VPPS via a dedicated overland conveyor.
- 1.3.6 Currently approved mining layouts and methods of coal extraction at both collieries include subsidence management measures which are designed to protect the Lake Macquarie lake bed, foreshore and seagrass beds that occur in the shallow waters of the lake, along with land-based infrastructure and residences.

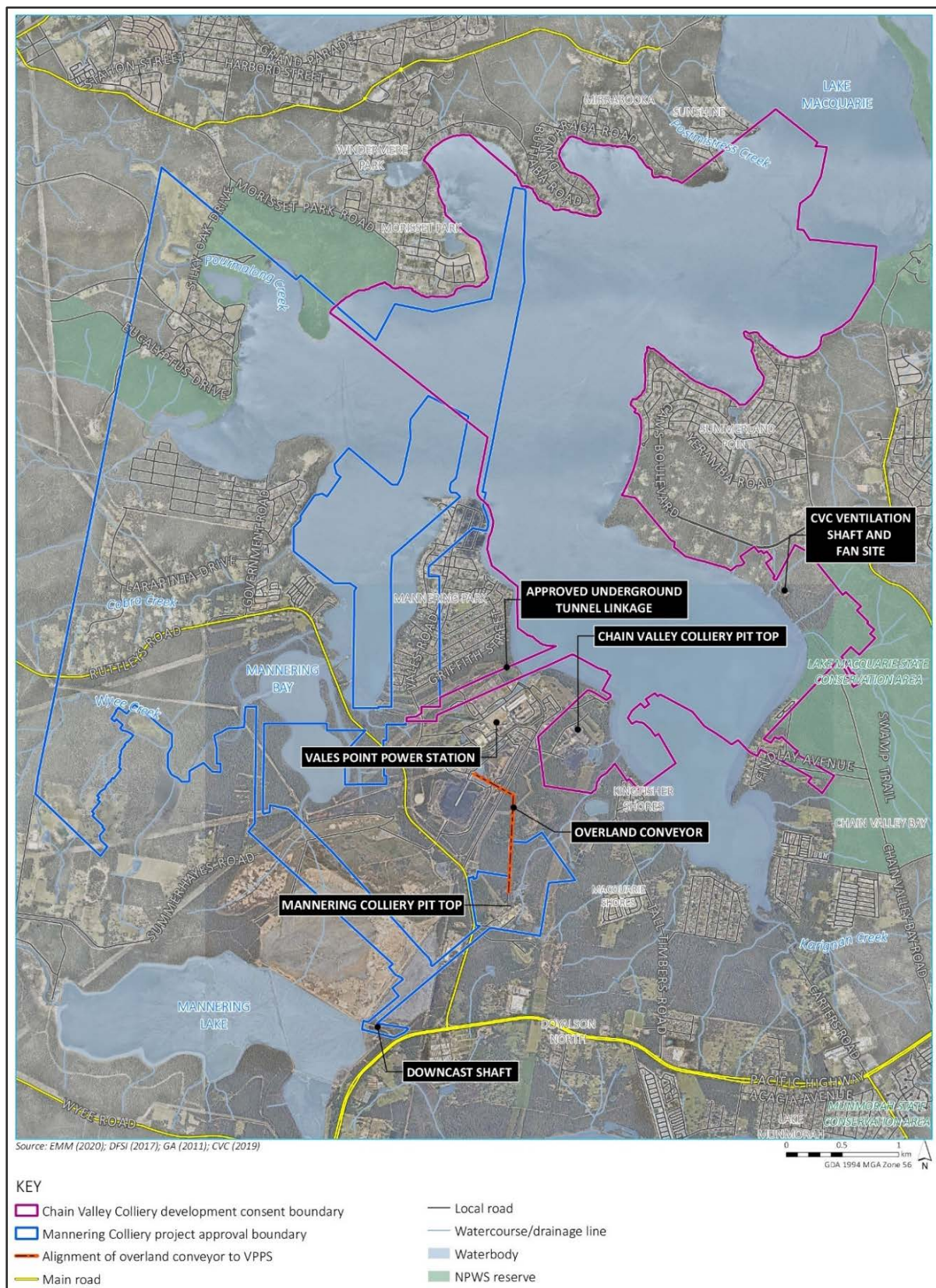


Figure 2 | CVC and MC consent boundaries and surrounding features including the underground linkage and the overland conveyor (in orange)

2 Proposed Modifications

2.1 Proposed Modifications

- 2.1.1 On 14 November 2017, the collieries' former operators, LakeCoal, submitted modification applications for CVC (SSD 5465 Mod 3) and MC (MP 06_0311 Mod 5) pursuant to sections 4.55(1A) and 4.55(2) of the EP&A Act, respectively. In April 2019, Delta Coal became the operator of both collieries and submitted its final Statements of Environmental Effects for the modifications in May 2019.
- 2.1.2 Delta Coal is seeking the modifications in order to increase operational efficiency and reduce operating costs associated with the integrated operation. The modifications would improve resource recovery through greater flexibility in mining methods at both collieries and would allow Delta Coal to supply VPPS with thermal coal at a higher rate and a lower cost, providing a reliable source of coal for domestic electricity generation.

Chain Valley Colliery

- 2.1.3 The CVC modification application is seeking:
- to increase the amount of ROM coal transported from CVC to MC via the existing underground linkage from 1.3 to 2.1 Mtpa, to align with the approved production level of CVC; and
 - changes to the mine design at CVC, including amending the CVC consent to update the definition of "first workings" to include herringbone pattern workings and allow for more efficient resource recovery through expanded use of bord and pillar mining methods within the approved consent boundary.
- 2.1.4 No changes to the approved amenity impacts, annual coal extraction limit, options for road transportation of coal, operating hours, employee numbers or rehabilitation are proposed.
- 2.1.5 The modification seeks to replace the specified bord and pillar and miniwall layout shown in the currently approved mine plan (see Appendix 3 of SSD 5465 as reproduced at **Figure 3**) with the use of subsidence management zones as shown in the mine plan at **Figure 4**.
- 2.1.6 This move toward subsidence management zones closely aligns with other development consents in the Lake Macquarie area, with MC approved to extract coal using first workings methods within a specified mining area and the nearby Myuna Colliery managing first and second workings subsidence impacts in accordance with subsidence control zones. This proven approach would provide CVC with greater operational flexibility to adapt to underground structural constraints and optimised coal recovery, while still controlling impacts on sensitive environmental features by requiring compliance with prescriptive outcomes based objectives in the consent.
- 2.1.7 Subsidence management Zone A is the most environmentally sensitive zone and would manage impacts on the lake foreshore or seagrass beds by limiting vertical subsidence in this zone to a maximum of 20 mm. This zone is shown in **Figure 4** and includes the existing Seagrass Protection Barriers and all areas between the High-Water Mark Subsidence Barrier and the development consent boundary.
- 2.1.8 Subsidence management Zone B represents the primary area where coal extraction will occur and is entirely located under Lake Macquarie, as shown in **Figure 4**. Subsidence impacts within this zone would be limited to a maximum of 780 mm, which is consistent with the maximum predicted impacts associated with the currently approved miniwall layout.

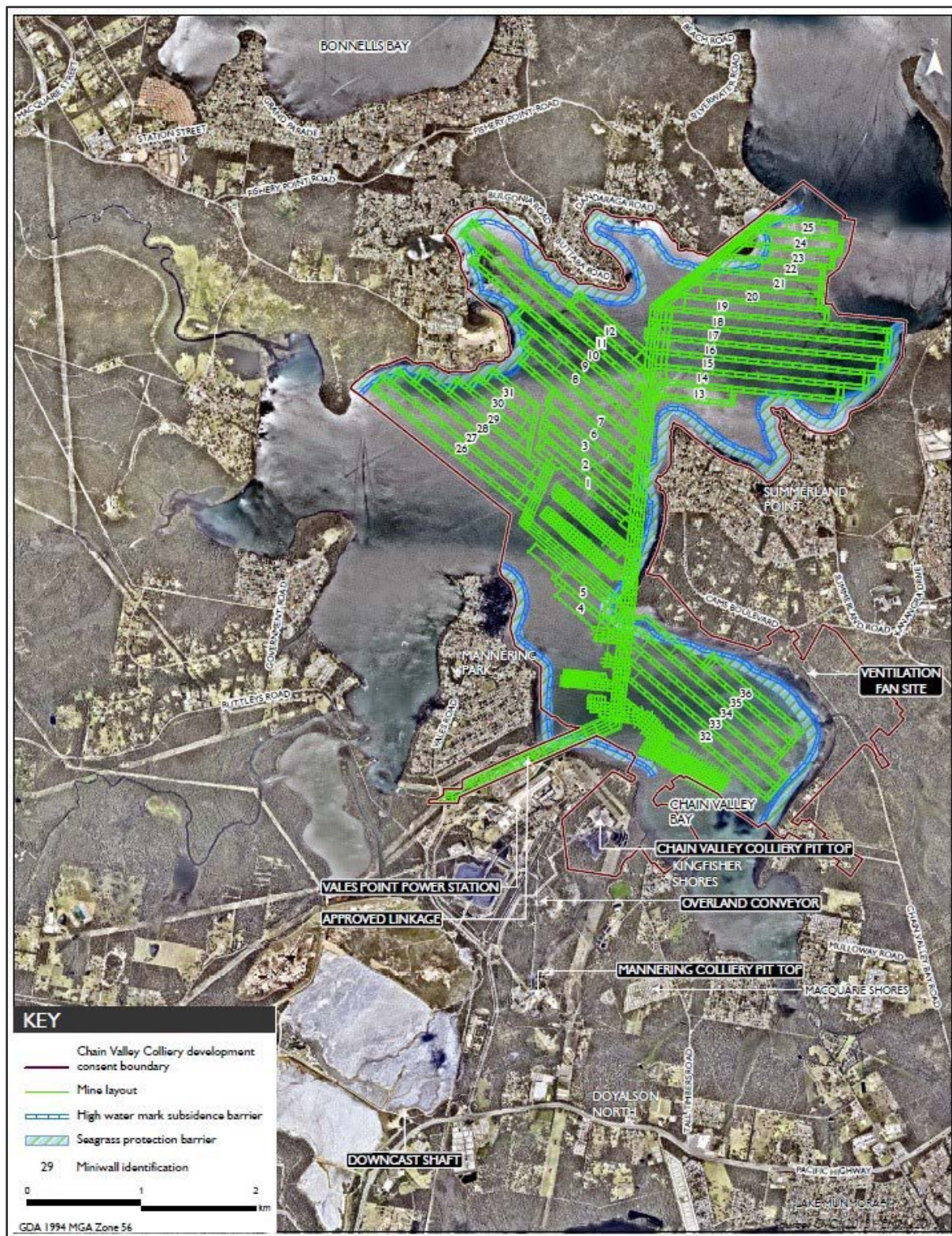


Figure 3 | Chain Valley Colliery approved mine layout

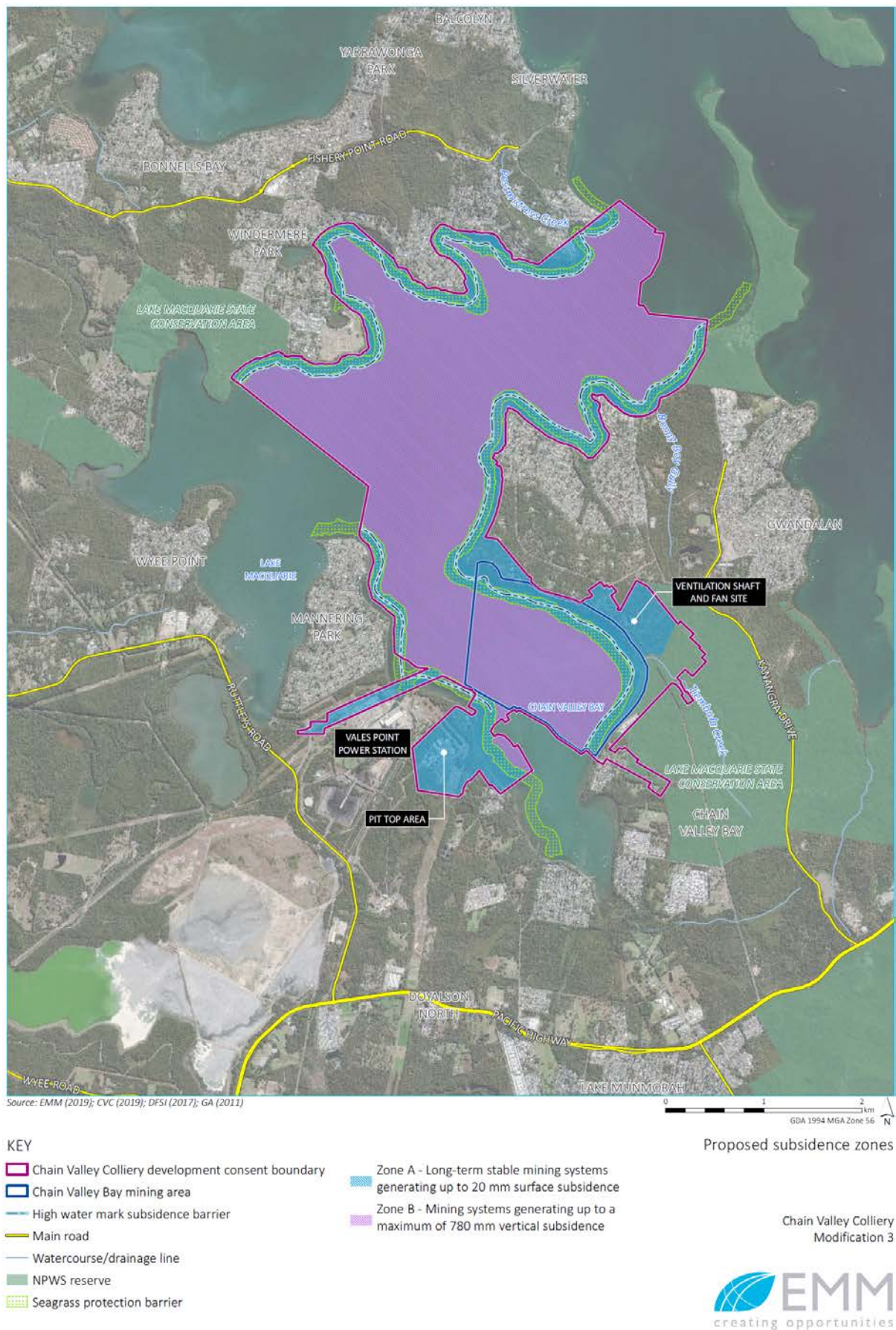


Figure 4 | Chain Valley Colliery's proposed revised subsidence management zones

- 2.1.9 Delta Coal initially proposed a third subsidence management zone (Zone C) that would require a geotechnical study to be undertaken to inform mine planning prior to extraction in areas of historic multi-seam mine workings, mainly around Chain Valley Bay. However, the Department questioned the utility of this zone, as it overlapped with areas of Zone A and could create ambiguity as to the subsidence control limits that applied in the area of overlap. Furthermore, CVC's existing conditions already require Delta Coal to undertake geotechnical studies and prepare an Extraction Plan for all secondary extraction, and this requirement would continue to apply to the Chain Valley Bay area where multi-seam subsidence interactions are possible.
- 2.1.10 In April 2020, Delta Coal responded to the Department's questions by removing the proposed Zone C from further consideration, clarifying the applicability of Zone A to the High-Water Mark Subsidence Barrier and Seagrass Protection Barrier and acknowledging the utility of existing conditions of consent to control and regulate mining proposals that have the potential to result in multi-seam interactions, particularly in the Chain Valley Bay mining area (see **sections 5.2.21 to 5.2.25** below for are more detailed consideration of this issue).
- 2.1.11 In addition to the above mine plan changes, Delta Coal is seeking to align the maximum limit of coal extracted at CVC with the maximum allowable throughout of coal at MC pit top (ie 2.1 Mtpa). This coal would continue to be transported via the underground linkage to MC pit top, where it would be crushed, screened and transported via the dedicated overland conveyor to VPPS.
- 2.1.12 Delta Coal predicts that this additional underground throughput of coal would result in a reduction in the number of trucks travelling above ground on private roads, with no increase in truck movements on public roads.

Mannering Colliery

- 2.1.13 The MC modification application seeks approval to:
- increase the rate of ROM coal received, handled and dispatched at MC from 1.3 to 2.1 Mtpa;
 - extend the approved period of mining operations from 30 June 2022 to 31 December 2027, to align with the approved period of mining under CVC's consent (SSD 5465);
 - allow for the use of alternate bord and pillar mine designs; and
 - minor changes to infrastructure at site, including the addition of a new underground coal crusher.
- 2.1.14 Delta Coal has identified that the proposed extension of mining operations to 31 December 2027 would assist in its strategic mine planning for the integrated operations and the coordinated management of the collieries to ensure suitable quality coal is able to be recovered at appropriate rates to supply the VPPS.
- 2.1.15 No changes to the approved annual coal extraction limit, operating hours or employee numbers are proposed. All coal produced and/or received on the site would continue to be transported by overland conveyor to VPPS. Originally, no changes to surface infrastructure were proposed, with existing infrastructure deemed adequate to manage the increase in coal throughput. However, due to concerns raised by the community about operational noise impacts, Delta Coal has committed to decommission its existing rotary coal breaker.

2.1.16 In recent years, the mine has encountered significant geological faulting which has slowed or halted mining operations on a number of occasions. Miniwall mining is either difficult or impossible to undertake within or close to these faulted areas, from an engineering and safety perspective. This has the effect of sterilizing significant coal resources that are unable to be mined using this technique. Therefore, Delta Coal is seeking an adaptive management approach to provide flexibility in its mining methods and adjust its mine design to respond to the geotechnical environment, provide for a safe environment for underground workers and maximise coal recovery.

Mannerling

2.1.17 The MC consent currently restricts Delta Coal to undertaking ‘first workings’ in a checkerboard bord and pillar mining pattern, conducted within specific parameters that are geotechnically designed to be long-term stable.

2.1.18 The MC modification is likewise seeking to allow the use of more flexible bord and pillar configurations (such as the herringbone pattern shown in **Figure 5** and proposed for the concurrently operated CVC), to maximise resource recovery while still ensuring minimum subsidence impacts and the long-term stability of the workings.

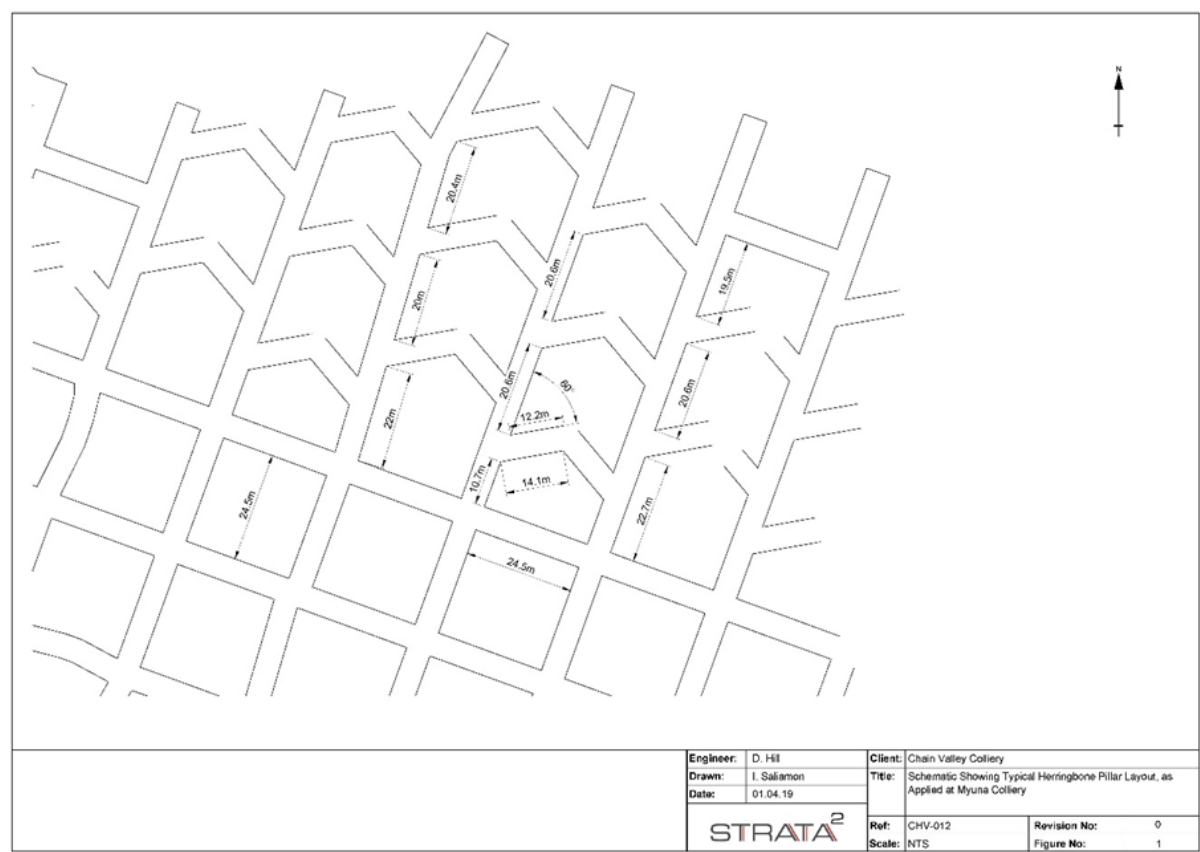


Figure 5 | Herringbone pattern of mine layout (example)

- 2.1.19 A detailed description of the proposed modifications is provided in the SEEs at **Appendix A**, with the key changes summarised in **Tables 2 and 3** below.

Table 2 | Comparison of Chain Valley Colliery approved and proposed operations

Aspect	Approved Operations	Proposed Modification
Area	Approximately 1,425 hectares (ha), as shown in Appendix 2 to SSD 5465.	No change.
Underground mining area and plans	Approximately 1,413 ha, as shown in Appendix 3 to SSD 5465.	No change in area. Configuration of workings proposed to be modified (see Figure 4 and Section 5 for further details).
Approved period of mining operations	31 December 2027.	No change.
Annual Extraction Rate (ROM coal)	Up to 2.1 Mtpa of ROM coal from the Fassifern Seam.	No change.
Mining methods	Underground mining using continuous miner and miniwall mining methods.	Underground mining using continuous miner (bord and pillar and pillar extraction) and miniwall mining methods.
Coal processing	Screening and crushing of ROM coal at CVC, or alternatively up to 1.3 Mtpa of ROM coal processing at MC	The option to use CVC pit top for product coal handling would remain as approved, however most coal processing is intended to be undertaken at MC.
Product coal transport	<ul style="list-style-type: none"> a maximum of 660,000 tonnes of product coal per annum on public roads for export; a maximum of 180,000 tonnes of product coal per annum on public roads to domestic customers (other than VPPS); product coal to VPPS via truck on private roads only; and 1.3 Mtpa to MC via the underground linkage for subsequent delivery to VPPS. 	<p>No change to the transport of coal by roads.</p> <p>No change to the restrictions on both the hours and frequency of dispatch of coal laden trucks.</p> <p>Transport of product coal to MC via the existing underground linkage increased to up to 2.1 Mtpa, for subsequent delivery to VPPS.</p>
Existing surface infrastructure	<p>Utilisation of existing surface infrastructure, including, but not limited to:</p> <ul style="list-style-type: none"> personnel-and-material drifts, ROM coal conveyor drift; upcast and downcast ventilation shaft and fans; coal handling facilities for breaking, crushing, sizing and storing product coal; and administration and workshop facilities; water management infrastructure. 	No change.
Water management	160 megalitres (ML) per annum in water use, drawn from CC Council's potable water supply mains.	No change.
Hours of operation	Mining operations are approved 24 hours a day, 7 days a week.	No change.
Employment	Employment of approximately 220 full-time equivalent personnel in total (including approximately 40 full-time equivalent contractors).	No change.
Mine access	Existing road access from Construction Road, off Ruttleys Road.	No change.
Environmental Performance Measures	Less than 20 mm subsidence within the High-Water Mark Subsidence Barrier and within the Seagrass Protection Barrier. Less than 780 mm of subsidence under the lake bed.	No change to maximum subsidence limits, but now expressed as subsidence zones.
Rehabilitation	Decommissioning of surface facilities and final rehabilitation following mine closure.	No change.

Table 3 | Comparison of Mannering Colliery current and proposed operations

Aspect	Approved Operations	Proposed Modification
Area	Approximately 1,420 ha See Appendices 1 & 2 of MP 06_0311.	No change.
Underground mining area and plans	As shown in Appendix 2 of MP 06_0311.	No change.
Approved period of mining operations	Approved until 30 June 2022.	Extension to 31 December 2027.
Annual Extraction Rate (ROM coal)	Up to 1.1 Mtpa of ROM coal from the Fassifern Seam.	No change.
Mining methods	Bord and pillar mining methods where coal recovery is limited to first workings only.	First workings mining methods, including use of a herringbone bord and pillar configuration. Further detail on proposed mine design is given in Section 5 .
Coal processing	Coal is crushed on-site using a rotary breaker and coal crushing facility (CCF).	Delta Coal has committed to decommissioning the existing rotary breaker, with the CCF to remain.
Product coal transport	Up to 1.3 Mtpa of ROM coal is transported to VPPS, via overland conveyor which is operated, maintained and located on land owned by Delta Electricity.	Continued transport of coal to VPPS via the existing overland conveyor at an increased rate of up to 2.1 Mtpa.
Existing surface infrastructure	Use of existing surface infrastructure, including but not limited to: <ul style="list-style-type: none"> • CCF and a rotary breaker; • coal stockpile and reclaim facilities, • overland conveyor between MC's pit top area and VPPS; • worker's amenities, workshops, offices, carparks, ventilation fans. 	The addition of a new underground coal crusher to process ROM coal at MC. The existing rotary coal breaker to be decommissioned.
Water management	Licensed daily discharge of up to 4 ML. Potable water for use in surface facilities and underground operations supplied by CC Council via a direct-metered pipeline.	No change.
Hours of operation	24 hours, 7 days a week.	No change.
Employment	Employment of 170 full-time personnel.	No change.
Mine access	Vehicle access to surface facilities from Ruttleys Road.	No change.
Rehabilitation	Decommissioning of surface facilities and final rehabilitation at completion of operations.	No change.

3 Statutory Context

3.1 Scope of Modifications

- 3.1.1 The CVC modification application seeks to modify SSD 5465 in accordance with section 4.55(1A) of the EP&A Act, which allows for a consent to be modified if the consent authority is satisfied that the proposed modification is of minimal environmental impact and is substantially the same as the development for which the consent was originally granted.
- 3.1.2 The modification involves increasing the amount of coal permitted to be transported from CVC to MC via the underground linkage from 1.3 to 2.1 Mtpa. This would not change the approved extraction limits or operations at CVC, and would result in a reduction of trucks used to transport coal by private roads to VPPS.
- 3.1.3 The proposed modification would permit the use of bord and pillar first workings (including herringbone patterns) in all areas of the mine, rather than restricting the use of bord and pillar extraction to the main headings or gate roads and restricting secondary extraction to the miniwalls throughout the remaining mining area. These established patterns of first workings would result in lower subsidence impacts than those associated with secondary extraction. As such, these first workings could be undertaken in combination with the approved use of miniwalls to extract equivalent annual tonnages of coal while remaining within existing subsidence impact limits.
- 3.1.4 Mining operations would remain within the approved project boundary, however the mine layout would now be managed through the use of subsidence zones. These zones have been established to ensure that subsidence effects and impacts are maintained at no greater than the maximum levels under the existing consent.
- 3.1.5 The Department has reviewed the scope of the proposed modification and considers that the modification is of minimal environmental impact and is substantially the same as the original development as modified (see **Section 5**). Consequently, the Department considers that the modification is within the scope of section 4.55(1A) and may be determined accordingly.
- 3.1.6 At the time the MC modification application was made, MP 06_0311 was a transitional Part 3A project under the *Environmental Planning and Assessment (Savings, Transitional and Other Provisions) Regulation 2017* (EP&A (ST&OP) Regulation).
- 3.1.7 The project approval was transitioned to SSD by an order made under clause 6 of Schedule 2 of the EP&A (ST&OP) Regulation which was published in the NSW Government Gazette on 7 December 2018 and took effect from that date. The effect of this order is that the project approval is taken to be an SSD consent under Part 4 of the EP&A Act for the carrying out of the development and the modification request is taken to be an application to modify under section 4.55 of the EP&A Act.
- 3.1.8 The modification application seeks to modify MP 06_0311 in accordance with section 4.55(2). Under section 4.55(2)(a), MP 06_0311 can be modified if the consent authority is satisfied that the development as proposed to be modified would remain substantially the same development as last modified under section 75W.
- 3.1.9 In this regard, the proposed modification involves a moderate increase in the rate of coal handling at the MC pit top utilising existing infrastructure and the addition of a new underground coal crusher, predicted to result in an overall 2 dB(A) noise reduction. It also seeks a 5 year and 6 month extension to the duration of the consent to align with the CVC consent. The modification also seeks approval for

the herringbone pillar mining method in its mine design, for use within approved mining areas. No changes to extraction rates or operating hours are sought.

- 3.1.10 The Department is satisfied that the proposed change to the MC processing rates, ancillary infrastructure, mining methods would result in minimal environmental impacts and that the proposed extension to the duration of the consent to align with the CVC consent falls within the scope of 4.55(2), such that the development as proposed to be modified would remain substantially the same development as last modified under section 75W.
- 3.1.11 Therefore, the Department is satisfied the proposed CVC and MC modifications fall within the scope of section 4.55(1A) and 4.55(2) of the EP&A Act, respectively, and that the modification applications can be assessed and determined under the EP&A Act.

3.2 Consent Authority

- 3.2.1 The Minister for Planning and Public Spaces would be the consent authority under section 4.5(a) of the EP&A Act, except for the operation of clause 8A of the *State and Regional Development Planning Policy (State and Regional Development) 2011*. Under this provision, the Independent Planning Commission (the Commission) is the declared consent authority for this modification, as Delta Coal has declared reportable political donations under section 10.4 of the EP&A Act.

3.3 Mandatory Matters for Consideration

Environmental Planning Instruments

- 3.3.1 Under section 4.15 of the EP&A Act, in determining a development application, the consent authority is required to take into consideration any environmental planning instruments (EPIs) that apply to the land to which the application relates. Therefore, the Department has assessed the modifications against the relevant provisions of the following EPIs:
- State Environmental Planning Policy (SEPP) (State and Regional Development) 2011;
 - SEPP (Mining, Petroleum Production and Extractive Industries) 2007;
 - SEPP (Infrastructure) 2007;
 - SEPP (Coastal Management) 2018;
 - SEPP No.33 – Hazardous and Offensive Development;
 - SEPP No. 44 – Koala Habitat Protection;
 - SEPP No. 55 – Remediation of Land;
 - Lake Macquarie Local Environmental Plan 2004 and 2014; and
 - Wyong Local Environmental Plan 2013.
- 3.3.2 The Department has reviewed Delta Coal's consideration of the above EPI's as provided in its SEEs and has also undertaken its own assessment of the above EPI's (see **Section 5**). The Department considers that the proposed modifications can be carried out in a manner that is generally consistent with the aims, objectives and provisions of these instruments.

Objects of the EP&A Act

- 3.3.3 The consent authority must consider the objects of the EP&A Act when making decisions under the Act. The Department has assessed the proposed modifications against the current objects of the EP&A Act. The objects of most relevance to the decision on whether to approve the proposed modifications are found in section 1.3 of the Act. **Table 4** summarises how these objects have been considered:

Table 4 | Consideration of the proposals against the relevant objects of the EP&A Act

Objects of the EP&A Act (section 1.3)	Consideration
(a) to promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources;	The modifications would provide ongoing social benefits through continuing employment, and economic benefits to the people of NSW through the payment of mining royalties, with minimal changes in environmental impacts.
(b) to facilitate ecologically sustainable development (ESD) by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment;	The Department has considered the principles of ESD in its assessment of the modifications and considers that the modification can be carried out in a manner that is consistent with these principles. Further evaluation of these issues is provided in Section 5 .
(c) to promote the orderly and economic use and development of land;	The modifications would promote the economic use of land by optimising resource recovery while utilising the existing infrastructure and workforce at the mines.
(e) to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats;	The modifications are unlikely to impact upon biodiversity values beyond what has previously been assessed and approved, however the Department has considered the likelihood of this in its assessment of biodiversity values in Section 5 .
(f) to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage);	The Department considers that the modifications are unlikely to impact upon heritage values beyond what has previously been assessed and approved. However, the Department has recommended contemporary management conditions to ensure the sustainable management of these values. See Appendix D .
(i) to promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State;	The Department consulted widely with relevant government agencies and relevant Councils on the modifications (see Section 4) and has considered the advice received in Section 5 .
(j) to provide increased opportunity for community participation in environmental planning and assessment.	The Department publicly exhibited the modification applications and consulted with the relevant Councils. The consultation outcomes are outlined in Section 4 .

- 3.3.4 The Department has considered these objects in its assessment of the proposed modifications and considers that the modifications can be approved in a manner that is consistent with these objects.

Commonwealth Matters

- 3.3.5 Delta Coal considers that the proposed modifications are not likely to have a significant impact on any Matters of National Environmental Significance listed under the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Therefore, Delta Coal has not referred these applications to the Commonwealth Department of Agriculture, Water and the Environment (formerly the Department of Environment and Energy).

Other Statutory Requirements

Mining Leases

- 3.3.6 Several mining leases apply to CVC. The proposed changes to the mining layout would occur within CVC's currently approved holdings, which comprise of Consolidated Coal Lease (CCL) 707 and Mining Leases 1051, 1052, 1370 and 1632, administered under the *Mining Act 1992*. The proposed modification would continue to confine secondary extraction to areas underlying Lake Macquarie and maintain the High-Water Mark Subsidence Barrier and the Seagrass Protection Barrier (as shown on **Figure 4**).
- 3.3.7 The approved mining area at MC is entirely contained within CCL 721. Delta Coal purchased MC in April 2019 and is set to acquire the majority of CCL 721 as part of this transaction. To ensure that mining can continue in the interim, Delta Coal is continuing to sublease part of CCL 721 from Centennial Coal.
- 3.3.8 Once the lease transfer arrangements have been executed, Delta Coal will hold a relevant lease over the areas it is currently subleasing, which comprise the majority of the approved extraction area for MC. Centennial Coal would retain the residual western extent of CCL 721, which includes a smaller area that overlaps with the approved mining footprint. In effect, this would allow Delta Coal to recover coal from the vast majority of the Mannering site in the short to medium term, and would require a new sublease arrangement with Centennial Coal before Delta Coal could recover coal from within the far western extent of the mining footprint.
- 3.3.9 The Department notes that this type of sublease arrangement is commonplace in the mining industry and that Mining, Exploration and Geoscience within Regional NSW (formerly the Division of Resources and Geosciences) has sufficient regulatory powers to ensure that all coal extraction from MC is undertaken in accordance with appropriate lease or sublease arrangements administered under the *Mining Act 1992*.

Environment Protection Licences

- 3.3.10 Delta Coal holds Environment Protection Licences (EPLs) for both collieries that have been issued by the Environment Protection Authority (EPA) in accordance with the *Protection of the Environment Operations Act 1997*. CVC currently operates under EPL 1770 which contains prescribed noise limits. MC operates under EPL 191, which does not specify noise limits, instead referring to the noise limits prescribed under the conditions of MP 06_0311. No significant variations to these EPLs would be required as a result of the modifications.

4 Engagement

4.1 Applicant's Engagement

- 4.1.1 Following submission of its final SEEs, Delta Coal published notice of application advertisements in local newspapers the *Wyong Chronicle* on 5 June 2019 and the *Lakes Mail* on 6 June 2019. A letterbox newsletter drop was also conducted to surrounding residences on 1 July 2019.

4.2 Public Exhibition

- 4.2.1 The Department publicly exhibited the modification applications and SEEs (see **Appendix A**) concurrently due to the inter-dependence of the modifications. In accordance with clause 10 of Schedule 1 of the EP&A Act and clause 118 of the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation), the Department:
- placed a public exhibition notice in regional and state newspapers, being the *Sydney Morning Herald*, *The Daily Telegraph*, *Newcastle Herald*, *Central Coast Express Advocate* and *Lakes Mail* on Thursday 20 June 2019;
 - publicly exhibited the applications and accompanying SEEs, from Friday 21 June to Thursday 4 July 2019 on the Department's website, at Service NSW Centres, at the Nature Conservation Council's office in Sydney, at Lake Macquarie City Council's (LMCC) office, and at CC Council's Wyong office; and
 - directly notified all previous submitters of the modification application and invited them to make a submission.
- 4.2.2 The Department also requested advice from government agencies, including LMCC and CC Council.
- 4.2.3 In undertaking these processes, the Department considers that the notification requirements of clause 9 of Schedule 1 of the EP&A Act and clause 84 the EP&A Regulation and related public participation statutory obligations have been satisfied.

4.3 Summary of Submissions

- 4.3.1 The Department received a total of 41 submissions during the exhibition period, comprising:
- advice from nine government agencies;
 - 31 individual community submissions with 25 in support and six objecting; and
 - one special interest group (SIG) submission objecting to the MC modification.

Copies of all advice and submissions are included in **Appendix B**.

4.4 Government Agency Advice

- 4.4.1 None of the government agencies objected to the proposed modifications.
- 4.4.2 The **Environment Protection Authority** (EPA) did not object to the proposed modification and considered that the environmental impacts of either mine would not be changed due to the proposed modifications. It did not foresee that any changes to CVC's existing EPL would be required.
- 4.4.3 The EPA advised that the noise modelling carried out in the SEE's Noise Mitigation Study (NMS) had been appropriately carried out and noted that the NMS had predicted that the operational noise levels would meet the current noise criteria. However, the EPA raised the issue of recent noise complaints

from local residents of Macquarie Shores Home Village and noted that Delta Coal was preparing a Noise Compliance Report (NCR) required under its conditions of consent for MC. The EPA considered that this report would establish whether MC was meeting its existing noise conditions and requested it be advised of the outcomes of the NCR.

- 4.4.4 The NCR was received by the Department in October 2019 and the EPA has been made aware of its findings. In summary, the NCR found that MC had achieved its noise criteria, except on two occasions where it did not meet its sleep disturbance criteria due to a one-off machinery failure and human error. The Department notes that the modifications would reduce the existing operational noise levels at MC and has considered the SEE, Delta Coal's Response to Submissions (RTS) and NCR as part of its consideration of noise impacts in Section 5.3.
- 4.4.5 The EPA had no further comment following its consideration of Delta Coal's RTS.
- 4.4.6 The **Mining, Exploration and Geoscience** group within Regional NSW (MEG) considers that the proposed modifications would improve resource recovery and be an efficient use of resources. MEG estimated that the proposal would provide a benefit to the NSW Government of approximately \$74 million in royalties and generate approximately \$1,048 million in total revenue. MEG also advised that the proposal would provide for 249 jobs and support energy security by contributing 50% of the coal supply to VPPS until 2027.
- 4.4.7 MEG was satisfied with the proposed mine design and mining method proposals and considered that it would adequately recover coal resources and provide an appropriate return to the State. MEG confirmed that, in accordance with Section 380AA of the *Mining Act 1992*, Delta Coal holds the appropriate mining titles as required to undertake mining operations under the Act.
- 4.4.8 The **Resources Regulator** within Regional NSW (RR – formerly the RR within the Department) clarified that the appropriate mechanism to approve mining methods for specific areas is through an Extraction Plan, not a Mining Operations Plan (MOP), as stated in the CVC SEE. The RR advised that sustainable rehabilitation outcomes could be achieved and any risks or opportunities could be effectively regulated under the *Mining Act 1992*.
- 4.4.9 **LMCC** supported the proposed increase in ROM coal handling at MC and the proposed changes to coal transport. It had no objection to MC's alternative approach to mine design or to CVC's request to change first workings definitions, subject to negligible (<20 mm) subsidence limit in any subsidence protection zone.
- 4.4.10 LMCC raised concerns over air quality impacts predicted in the MC SEE, in particular, predicted increases in 24-hour average PM₁₀ concentrations. Delta Coal clarified that the measured 24-hour average in PM₁₀ of the approved and proposed development are to remain below 30 µg/m³ compared to a criterion of 50 µg/m³. LMCC noted that the predicted increases in annual TSP, PM₁₀ and PM_{2.5} and dust deposition levels were predicted to remain below the relevant air quality criteria.
- 4.4.11 LMCC referred to its *Environmental Sustainability Action Plan 2014-2023* and its commitment to a city-wide target of 3% per annum reduction in Greenhouse Gas (GHG) emissions. LMCC requested that the Department consider how the proposed modifications contribute to this reduction target. Delta Coal advised that it would continue to manage GHG emissions in accordance with its existing Energy Savings Action Plan and continue to report GHG emissions in accordance with the requirements of the Commonwealth's *National Greenhouse and Energy Reporting Act 2017*.
- 4.4.12 LMCC also raised the issue of climate change and requested that Delta Coal consider biodiversity impacts caused by the broader coal and coal power industries. LMCC supported the use of local coal

to supply VPPS and did not object to extending the period of MC's consent subject to the mitigations of impacts. The Department has considered these matters further in **Table 6 of Section 5**.

- 4.4.13 **CC Council** requested that the Department consider the impacts that would be caused by extending the life of the mine on key issues including biodiversity, GHG with respect to climate change, air quality, land use, water resources and potential increases in noise and vibration.
- 4.4.14 CC Council recommended conditions of consent, including a requirement for ongoing monitoring of subsidence impacts in relation to Lake Macquarie, implementation/continuation of environmental management initiatives, appropriate rehabilitation of the site, updates to the collieries' MOPs and the implementation of ESD principles.
- 4.4.15 The Department's **Crown Lands, Water and Department of Primary Industries (L,W&DPI)** advised that all Crown land and Crown roads within a Mining Lease must be subject to a Compensation Agreement issued under Section 265 of the *Mining Act 1992*, to be agreed and executed prior to any mining activity taking place and within 12 months of any modification approvals. Delta Coal noted this requirement but confirmed that no changes to its development consent boundaries are proposed.
- 4.4.16 The Department's **Biodiversity and Conservation Division (BCD)** considered that there would be no additional biodiversity issues in relation to the proposed modifications and no further biodiversity assessment is required. With respect to MC, the BCD considered that the existing Aboriginal Cultural Heritage Management Plan (ACHMP) was no longer applicable to MC, given the change of ownership of the colliery, and recommended that Delta Coal undertake renewed consultation with the relevant Registered Aboriginal Parties and provide an updated ACHMP for MC. The Department has recommended conditions to achieve this outcome.
- 4.4.17 The BCD requested that Delta Coal consider the *Coastal Management Act 2016* and the *SEPP (Coastal Management) 2016* as both collieries occur within the mapped coastal zone. Delta Coal provided further discussion on these matters in its RTS.
- 4.4.18 **Roads and Maritime Services (RMS)**, which in December 2019 became a part of Transport for NSW, raised no objection to the proposed modifications as it considered that there would be no significant impact on the nearby classified (State) road network.
- 4.4.19 **Subsidence Advisory NSW (SA NSW)** had no objection to the proposed modifications.

4.5 Community and Special Interest Group Submissions

- 4.5.1 32 community and SIG submissions were received, all from NSW. A summary of the issues raised in community submissions is shown in **Figure 6** below.

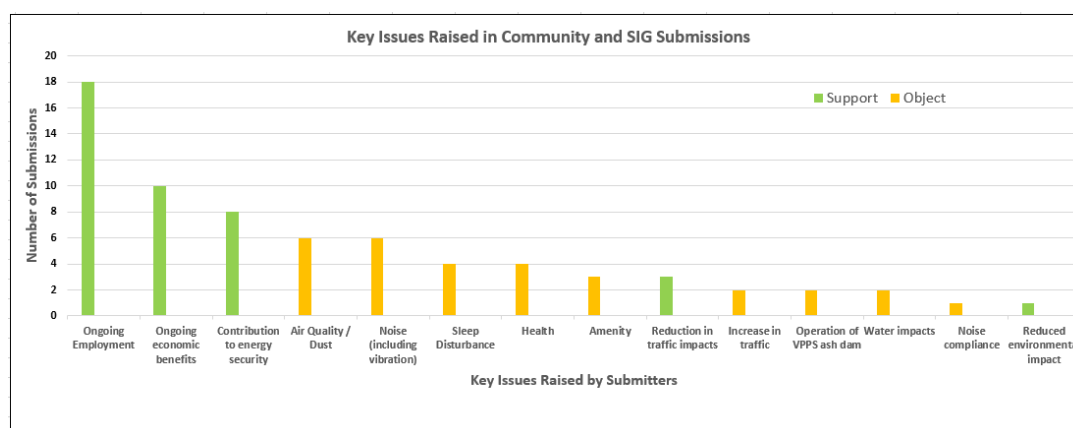


Figure 6 | Key issues raised by members of the community

- 4.5.2 Of these submissions, 25 were in support of the modifications. The key themes of support were the:
- ongoing employment of local residents;
 - ongoing associated local and regional economic benefits;
 - contribution to energy security in NSW through the supply of reliable, affordable coal to VPPS for domestic electricity generation; and
 - net positive environmental benefit from reducing trucking numbers .
- 4.5.3 Seven submissions were in the form of an objection, including one from a SIG, on behalf of the residents of the Macquarie Shores Home Village. The individual objections raised concerns over the:
- ability of existing CHPP equipment at MC to handle the increased volume of coal without exceeding existing noise limits;
 - potential for increased noise and vibration impacts on residents of Macquarie Shores Home Village due to the operation of CHPP and machinery at the MC's pit top;
 - potential for sleep disturbance due to noisy night-time operations and the associated health impacts, particularly mental health impacts;
 - potential for increased air pollution due to stockpiling and additional coal throughput; and
 - potential for increased traffic movements.
- 4.5.4 The SIG objected to the proposed modifications solely on the issue of noise, objecting to the proposed increase in coal handling and transportation via the overland conveyor, stating that the residents of the Village would be adversely impacted by any increases in noise generated by the proposed increase in coal throughput. The submission stated that a number of residents had already complained about the existing noise environment, particularly during the night period.
- 4.5.5 Many of these submissions identified the MC pit top and associated infrastructure as the primary noise source and considered that Delta Coal could undertake further noise mitigation activities to reduce current and predicted noise levels. A number of reasonable and feasible noise mitigation measures have been implemented at MC pit top over the past 10 years and are discussed further in **Section 5**. In addition to these existing measures and in response to the issues raised in submissions, Delta Coal has committed to decommission the rotary coal breaker at the MC pit top to further reduce noise impacts.
- 4.5.6 Some submitters also expressed concerns with the operation of VPPS, including the potential for contamination of Lake Macquarie and groundwater from the VPPS ash dam, however these matters relate to the separate development consent for the VPPS and are not specifically relate to the proposed modifications to the collieries.

4.6 Response to Submissions

- 4.6.1 On 9 August 2019, Delta Coal provided its RTS (see **Appendix C**), which included additional information in response to the EPA, BCD, LMCC and RMS's advice. It also acknowledged the recommendations made by BCD, L,W&DPI and MEG, and provided responses to the issues raised in community submissions. The Department made the RTS available on its website and forwarded it to relevant agencies and Councils for comment.
- 4.6.2 Delta Coal provided additional information on 17 September 2019 and 11 October 2019 in response to further information requests from the Department (see **Appendix C**). A *Noise Compliance Report* (NCR), dated September 2019, required by condition 4 of Appendix 4b of MC's consent, was submitted to the Department and considered as part of the assessment of these modifications.
- 4.6.3 The Department has considered all issues raised in community and SIG submissions, including Delta Coal's responses to these issues in its assessment of the proposed modifications (see **Section 5**).

5 Assessment

5.1 Assessment

- 5.1.1 In assessing the merits of the proposed modifications, the Department has considered the:
- Environmental Impact Statement and Environmental Assessment for the original development applications;
 - modification applications, SEEs, RTS reports and additional information provided by Delta Coal;
 - existing conditions of consent for both developments, as modified;
 - advice from government agencies and community submissions; and
 - relevant EPIs, policies and guidelines.
- 5.1.2 The Department considers the key assessment issues relate to the proposed changes to mining methods and related subsidence (particularly in regard to Lake Macquarie), potential noise and air quality impacts of increased coal throughput at MC and groundwater management. Consideration of these issues is provided below, with other issues discussed further in **Table 6**:

5.2 Changes to Mine Design and Mining Methods

Chain Valley Colliery

- 5.2.1 Existing approved mining methods consist of miniwall extraction in accordance with the approved mine plan, with first workings permitted only for the development of mains headings and gateroads. Secondary workings are also defined in the consent as “*extraction of coal by miniwall or pillar extraction methods*” and are permitted to only be carried out under Lake Macquarie in accordance with an approved Extraction Plan.
- 5.2.2 The proposed modification seeks to move away from a miniwall development layout mine plan (see **Figure 3**), to a subsidence zone management approach to mine design (see **Figure 4**). This approach proposes to alter the definition of first workings to include the use of more flexible bord and pillar mining patterns.
- 5.2.3 This change would enable increased coal recovery in areas that are unsuitable for miniwall extraction due to geological constraints and where secondary extraction is not a preferred or suitable method of coal extraction, such as areas in close proximity to sensitive environmental features of the Lake Macquarie foreshore and seagrass beds as defined by the High-Water Mark Subsidence Barrier and Seagrass Protection Barrier.
- 5.2.4 The proposed modification to the mining layout at CVC would occur within the currently approved extraction areas, with miniwall extraction methods to be supplemented by the re-introduction of bord and pillar first and second workings.
- 5.2.5 Vertical subsidence, measured at the surface overlaying these areas is predicted to be less than 20 mm. This is referred to as the “limit of measurable subsidence”. In circumstances where mining occurs under land, rather than a waterbody as is the case with CVC, subsidence monitoring is conducted by land surveying techniques.
- 5.2.6 Soils in the Lake Macquarie area are known to shrink and swell by up to 70 mm in response to drying and wetting cycles. Despite being laser accurate, the surveying techniques used at the collieries cannot practically distinguish subsidence ground movements of less than 20 mm against the naturally

occurring “background noise” of soil movements. It is therefore the practice of mining regulators to consider subsidence movements of less than 20 mm as an indication of the long-term stability of geological strata and the overlying ground surface.

- 5.2.7 Delta Coal uses bathymetric surveys of the lakebed to measure subsidence impacts of its mining operations under the lake. These surveys use a form of echo location from a boat to establish the depth to the lakebed. As the lakebed is composed of sediments in a marine environment, the bathymetric surveys are not as accurate as land-based survey techniques, but an accuracy of 50 mm can be achieved. Delta Coal conducts bathymetric surveys every six months across its mining area.
- 5.2.8 In considering likely subsidence impacts, it is important to note that for coal pillars to remain intact they must be sufficiently large to support the forces from the overlying geological strata. These forces are a consequence of the ratio of the amount of coal extracted compared to the amount of coal remaining in the pillars and adjacent unmined areas. Other geological factors such as the strength and mechanical structure of the strata in the roof and floor of the mined area also affect the stability of the coal pillars.
- 5.2.9 The CVC SEE contained a report prepared by Strata2, dated April 2019, which considered the design criteria required for negligible surface effects using a bord and pillar herringbone layout. This report identified the primary constraint for bord and pillar mining at CVC to be the depth of cover which ranges from 120 to 250 m, which in turn, requires differing pillar geometry and design, specific to the conditions of the area.
- 5.2.10 It is the Department’s experience that in almost all cases, first workings mining methods that are conducted in accordance with mining regulatory oversight are, and remain, long-term stable.
- 5.2.11 The nominal amount of a coal resource able to be extracted by a rectilinear “checkerboard pattern” of first workings is 35%, with 65% of coal remaining. This is the type of bord and pillar extraction pattern currently used in the main headings and gateroads for CVC.
- 5.2.12 Delta Coal is proposing to introduce a herringbone layout form of first workings (see **Figure 5**) to provide more adaptability and augment its approved use of miniwall mining methods. This layout has been successfully used for over 10 years at the adjacent Myuna Colliery operated by Centennial Coal. Centennial has found the herringbone system provides greater flexibility and efficiency in the mine layout. To operate effectively, longwall and miniwall mining methods require a relatively large block of coal free of dykes and faults. These miniwalls may recover 90% of the available coal, but only if a block of coal without major geological constraints is available. If this is unavailable, then miniwall mining cannot be used.
- 5.2.13 By comparison the herringbone first workings system can mine in close proximity to these geological constraints and then relocate. In this way the herringbone system, which is capable of recovering around 39% of available coal, can in certain geological settings be more productive than miniwall extraction. This has been successfully demonstrated at Myuna Colliery. Where geological constraints such as dykes or faults are encountered, Centennial has been able to relocate its underground mining equipment (ie a continuous miner) to another part of the mine and extract coal using a herringbone pattern first workings system.
- 5.2.14 Another feature of the herringbone system is that the cut-throughs are formed at a 60-degree angle rather than 90 degrees as typically seen with bord and pillar layouts. This is an important efficiency measure as a continuous mining machine weighs over 50 tonnes and is difficult to manoeuvre in the underground tunnels. It is much easier, and therefore more productive, to form cut-throughs on a 60-degree angle, rather than a 90-degrees.

- 5.2.15 The Department considers that re-defining the term “first-workings” in the consent to allow both mining methods would be a reasonable amendment to the consent, provided that vertical subsidence is limited to 20 mm.
- 5.2.16 Any removal of pillars that is likely to generate greater than 20 mm of subsidence would be subject to an Extraction Plan and would need to be approved by the Secretary. Preparation of Extraction Plans is already a requirement for secondary extraction of miniwalls and could continue to be managed under existing processes.
- 5.2.17 Previously approved miniwall mining layouts at CVC have been limited to a maximum of 780 mm of vertical subsidence. Delta Coal is proposing that in Zone B (see **Figure 4**), beneath Lake Macquarie, the removal of a proportion of coal pillars left in place by the herringbone pattern be permitted, provided that vertical subsidence is limited to less than 780 mm. This approach would further improve the coal recovery of the herringbone pattern, while still providing a greater degree of flexibility in mine design and allowing for the management of subsidence impacts at the surface.
- 5.2.18 The Department has considered this proposal carefully, as the extraction of a particular series of miniwalls at CVC has previously resulted in over one metre of subsidence. As a result, miniwall mining layouts were revised, and subsequent subsidence impacts have been shown to be limited to less than 780 mm.
- 5.2.19 The Department considers that the careful assessment given to each Extraction Plan application, the improving knowledge of geological and mining behaviour of the mine and the adaptability of pillar extraction techniques should deliver subsidence impacts of less than 780 mm in Subsidence Management Zone B for the life of the mine.
- 5.2.20 On balance, the Department supports the introduction of the herringbone mine layout of first workings to CVC, and subsequent removal of a portion of coal pillars in accordance with approved Extraction Plans.

Consideration of Mining Beneath Chain Valley Bay

- 5.2.21 Chain Valley Bay forms the southern portion of the mining area for CVC (see **Figure 3**). Major unplanned subsidence events occurred in the early 1990s under the bay and its adjacent foreshore, resulting in significant subsidence of the foreshore and damage to residences. Partially as a result of these events, the High-Water Mark Subsidence Barrier was introduced by mining regulators to protect the foreshore from subsidence effects.
- 5.2.22 At the time of the assessment of the 2013 development application for SSD 5465, it was recognised that mining within the Fassifern Seam (the lowest coal seam to be mined at CVC) has the potential to reactivate subsidence in the historical mine workings, where they occur in the overlying Great Northern and Wallarah Seams. This is important as the reactivation of subsidence in these overlying seams has the potential to cause significant impacts, including flooding of the Lake Macquarie foreshore.
- 5.2.23 The current conditions of consent require the production of a Multi Seam Mining Feasibility Investigation (MSMFI) to the satisfaction of the Secretary, prior to consideration of an Extraction Plan for any secondary workings in the Chain Valley Bay area. The purpose of the MSMFI is to fully explore the subsidence impacts of secondary extraction of coal from the Fassifern seam on the mine workings in the overlying seams.
- 5.2.24 This condition of consent has been successfully applied to previous mining proposals located beneath Chain Valley Bay. In summary, the process involved the use of subsidence experts of international

standing to review CVC's mining proposals. Although one miniwall was permitted to be extracted, three other proposed miniwalls were not approved due to potential significant subsidence impacts.

- 5.2.25 The Department considers that the condition of consent requiring the production of a MSMFI report should be retained for the assessment of CVC's proposed mining beneath Chain Valley Bay. Delta Coal has indicated that it has no plans for secondary extraction beneath Chain Valley Bay. However, the Department considers it prudent to change the trigger for production of a MSMFI report from the former trigger of extraction of miniwall panels to any coal extraction in the bay area which is predicted to result in more than 20 mm of vertical subsidence. The RR did not request any changes to this approach as part of the Department's consultation on the proposed conditions.

Mannering Colliery

- 5.2.26 Approved underground extraction at MC is limited to first workings mining methods, with all coal recovery being limited to traditional bord and pillar layouts. First workings are defined in the consent as "*extraction of coal by bord and pillar workings and the like*". The proposed herringbone pattern approach to mine design would provide additional flexibility and still enable coal extraction to be designed to achieve currently approved levels of subsidence (ie less than 20 mm of vertical subsidence).
- 5.2.27 Delta Coal is proposing the following constraints to this mining method:
- average final pillar stresses of less than 12 Megapascals (Mpa); and
 - factors of safety of greater than, or equal to 2.3.
- 5.2.28 A factor of safety of 2.11 represents a one in a million chance of failure of any individual coal pillar. As the scale used is exponential, a factor of safety of 2.3 represents a significantly lower risk of failure.
- 5.2.29 The Department considers that amending the definition of first workings in the consent to clarify that a herringbone pattern of mining fits within the definition of first workings would not compromise or increase any risks associated with MC's mining operations. The existing environmental performance measure of less than 20 mm of vertical subsidence would be retained, but Delta Coal would have greater flexibility and operational efficiency by being able to choose either a checkerboard or herringbone layout for its first workings.

5.3 Operational Noise

Chain Valley Colliery

- 5.3.1 The proposal to increase the volume of coal permitted to be transported via the underground linkage to the MC pit top would not generate additional noise impacts at CVC, particularly as Delta Coal is not seeking any changes to CVC's annual extraction limit or any other surface operations at the CVC pit top.
- 5.3.2 Most coal would be transported by underground linkages and brought to the surface at MC to be processed, and onward to VPPS, consequently reducing product volumes transported by trucks above ground on private roads. Delta Coal is not proposing any increase in trucks using local roads for domestic or export markets, and the reduction in truck movements on private roads to VPPS would marginally decrease road traffic noise impacts experienced by surrounding receivers. A reduction in vehicle emissions would also be expected.

- 5.3.3 The Department considers that this would be a beneficial outcome of the proposed modifications and that operational and road traffic noise impacts generated by CVC could continue to be appropriately managed through the existing conditions of consent.
- 5.3.4 The current noise limits within CVC's consent would continue to apply to future mining operations. These are predicted to be met, as the proposed modification would not increase noise emissions at this site. Nevertheless, the Department has recommended updating CVC's Noise Management Plan and retaining current transport conditions which allow Delta Coal to transport coal via road if necessary. These matters are discussed further in **Table 6**.

Mannering Colliery

- 5.3.5 The SEE for MC included a *Noise Mitigation Study* (NMS) prepared by EMM Consulting in April 2019. The NMS detailed the noise mitigation measures undertaken at the site over the last 10 years and modelled predicted noise levels of the proposed modification in accordance with the *NSW Industrial Noise Policy 2000* (INP) (see **Appendix A**). In October 2017, the EPA released the *Noise Policy for Industry 2017* (NPfI), which replaces the INP as the relevant NSW Government policy for the management and control of industrial noise sources. Under transitional arrangements, the SEE assessment of noise impacts under the INP continues to be appropriate for Modification 5.
- 5.3.6 In accordance with both the INP and the NPfI, the Department's focus for existing operations is to ensure that Delta Coal implements all reasonable and feasible noise mitigation measures for the colliery. This approach acknowledges the high historical ambient noise environment associated with the VPPS, CVC and MC, all of which were approved and operating well before the construction of residential areas such as Kingfisher Shores and Macquarie Shores Home Village. Nevertheless, over the past decade the Department has built on noise mitigation campaigns at MC to progressively reduce its noise impacts at surrounding residences.
- 5.3.7 Delta Coal's NMS was supplemented by additional noise assessment information provided in the RTS and supplementary information dated 11 October and 17 September 2019 (see **Appendix C**). The potential noise impacts of an increased throughput of coal at MC pit top were assessed as being negligible.
- 5.3.8 The NMS modelled the predicted noise emissions, considered 'worst-case' applicable meteorological conditions (up to 3m/s wind speed) and contemporary sound power levels for all equipment and plant at the pit top, including the benefit of noise mitigation works undertaken since the NIA prepared for Mannering Modification 3. The NMS concluded that the site's noise emissions had decreased by between 2 and 5 dB(A) at all assessment locations (see **Figure 5**).
- 5.3.9 The NMS identified that the existing infrastructure at MC pit top had adequate capacity to accommodate the additional throughput of coal and no significant changes to surface infrastructure were proposed. Following consideration of the public submissions and results of recent noise monitoring, on 17 September 2019, Delta Coal advised the Department that it had committed to decommission the rotary coal breaker at MC pit top. Delta Coal advised that this could be achieved by installing underground coal crushing equipment and that the rotary coal breaker could be removed by 30 June 2020.
- 5.3.10 The Department estimates that this action could reduce noise emissions from MC by an additional 2 dB(A). To ensure this amenity improvement occurs, the Department has recommended a condition that would require Delta Coal to remove the rotary breaker within 3 months of the date of any approval for Modification 5.

Existing Noise Environment

- 5.3.11 Under the INP, Project Specific Noise Levels (PSNLs) are calculated based on the more stringent of a project's intrusiveness criteria (ie background noise environment + 5 dB) or the general amenity criteria (ie noise criteria specific to land use and associated activities). In this case, the Project's PSNL's are based on the intrusiveness criteria and reflect the fact that background noise levels are already quite high.
- 5.3.12 In 2008, when the Department assessed the project application for continuing operations at MC it noted that MC is located in a high ambient noise environment. This is due to its proximity to VPPS and, to a much lesser extent, CVC and major roads. Despite this existing environment, neither MC nor the Department received any complaints about the noise emanating from MC. The 2008 project approval set appropriate noise limits for each of the sensitive receivers and required the then owner (Centennial) to investigate and then implement noise mitigation measures to reduce MC's contribution to the high ambient noise environment.
- 5.3.13 In 2015, the conditions imposed as part of the approval of Modification 3 required MC to implement more rigorous noise mitigation measures and established a more stringent set of noise criteria. These requirements were scheduled so that they would apply from the re-commencement of mining operations following MC's care and maintenance period. The Modification 3 conditions required further reductions in noise emissions to be achieved within 18 months of re-commencement of mining operations and the production of an independent *Noise Compliance Report* (NCR) to verify that the revised noise criteria were being achieved.

Noise Compliance

- 5.3.14 The Department requested Delta Coal prepare a NCR in accordance with condition 4 of Appendix 4b of the MC consent. The Department received the NCR in October 2019 and has considered this additional information to supplement its assessment of the proposed modification (see **Appendix C**).
- 5.3.15 The main findings of the NCR were that MC had achieved its noise criteria for all locations in the day, evening and night periods, except on two occasions where it did not meet its sleep disturbance criteria. Delta Coal explained that these non-compliances were associated with a one-off machinery failure (drive chain mechanism for the rotary coal breaker) and human error.
- 5.3.16 The Department notes that sensitive receiver RA2, the Macquarie Shores Home Village, is the closest residential receiver at about 650 – 800 m from the MC pit top. The Department recognises that the existing conditions refer to this receiver location as "Location 8 – May" and has recommended that the relevant figures and tables in the consent be updated to reflect the current ownership status as "Macquarie Shores Home Village".

Noise Monitoring

- 5.3.17 On 13 November 2019 the Department approved MC's revised Noise Management Plan, which requires Delta Coal to:
- undertake attended noise monitoring at the RA1, RA2 and R3 sites on a monthly basis from November 2019 for a period of at least 12 months, to be followed by quarterly attended noise monitoring if approved by the Secretary;
 - concentrate the attended monitoring to the evening and night periods, the times of most impact to receivers; and
 - install a continuous noise monitor at Macquarie Shore Home Village (RA2) with the capability to determine the direction of received noise. This was installed in April 2020.

- 5.3.18 The Department considers that it is prudent to apply the principles of the contemporary NPfl to provide MC with up to date noise criteria. The criteria recommended by the Department reflect the on-going and successful efforts of MC to implement all reasonable and feasible noise mitigation measures at its operations.
- 5.3.19 One of the differences between the INP and the NPfl is the treatment of day time noise criteria, where a minimum criterion of 40 dB(A) is provided, rather than 35 dB(A). This change has arisen from the Government's experience in the operation of the INP over a 17 year period, and reflects the fact that receivers are more sensitive to noise impacts during the evening and night periods, which retain minimum criteria of 35 dB(A).
- 5.3.20 The Department has recommended noise criteria based on the data provided in the NIA in the SEE, which is based on noise modelling with inputs of measured noise emissions of the equipment used at MC pit top. Reduced intrusive criteria would apply for most nearby receivers, particularly in the evening and night periods. The exception to this is receivers 7, 11 and 18, which have slightly elevated daytime limits which match the minimum noise limit under the NPfl of 40 dB, but all of which have markedly reduced noise limits during the evening and night.
- 5.3.21 Delta Coal has committed to replace the rotary coal breaker at its pit top with an underground coal processing plant. Once this new equipment has been installed and is operational, the Department considers that noise emissions from the MC pit-top could potentially reduce by a further 2 dB(A).
- 5.3.22 The existing and recommended operating noise criteria are reproduced in **Table 5** below. The Department's recommended noise criteria are shown in bold. The location of all sensitive receivers is shown in **Figure 7**.

Table 5: Noise Limits dB(A), as described in MP 06_0311 and recommended limits (in bold)

Location	Day / Evening / Night		Night	
	LAeq(15min)		LA1(1min)	
	Existing	Recommended	Existing	Recommended
4 – di Rocco	40 / 40 / 40	40 / 36 / 36	49	46
5 – Keighran	41 / 41 / 41	40 / 39 / 39	49	49
6 – Swan	41 / 41 / 41	40 / 37 / 37	49	47
7 – Druitt	39 / 39 / 39	40 / 35 / 35	47	45
8 – Macquarie Shores Home Village	45 / 45 / 43	42 / 42 / 42	47	47
9 – Jeans	41 / 41 / 41	40 / 37 / 37	51	47
11 – Jeans	39 / 39 / 39	40 / 36 / 36	49	46
18 – Jeans	39 / 39 / 39	40 / 36 / 36	51	46
20 – Knight and all other Chain Valley Bay residences	40 / 40 / 40	40 / 36 / 36	51	46

- 5.3.23 In recent times, the Department has received a significant number of noise complaints from residents of Macquarie Shores Home Village. Delta Coal has been responding to these complaints efficiently, and in consultation with VPPS, EPA, the Department and residents. While the main complainant remains dissatisfied with the noise performance of both MC and VPPS, the Department notes that the current modification would in fact reduce the intrusive amenity impact criteria at surrounding receivers.

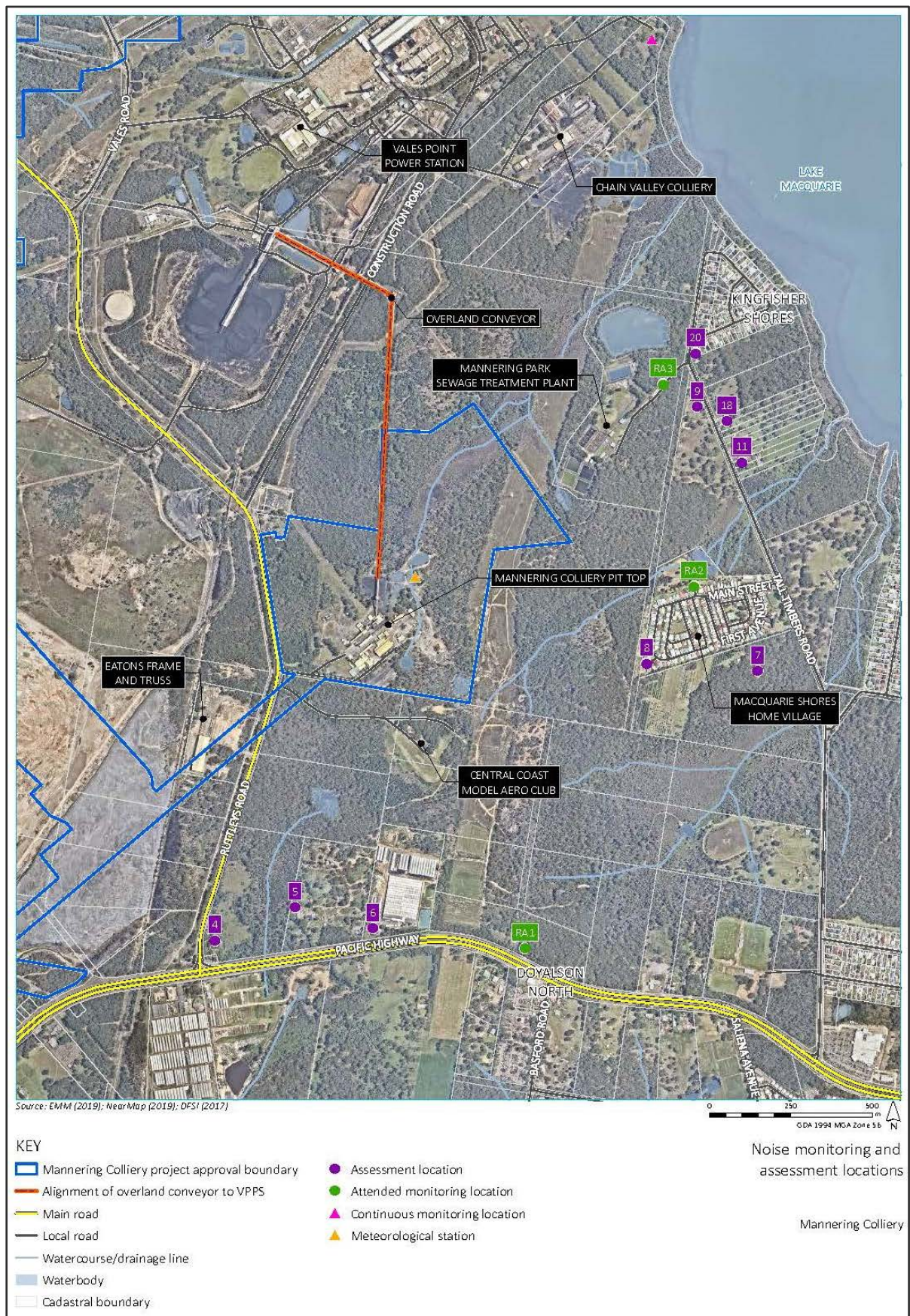


Figure 7 | Mannering noise monitoring locations

- 5.3.24 The Department notes that all evidence provided to date indicates that MC is complying with its current noise limits at Macquarie Shores Home Village. It is the Department's view that once Delta Coal has decommissioned the rotary coal breaker at MC, it will have undertaken all reasonable and feasible noise mitigation measures that are available, other than to continue to maintain the efficacy of implemented noise mitigation measures and to implement the robust noise monitoring program required by its approved Noise Management Plan.

Sleep Disturbance

- 5.3.25 As the mine operates during the night-time period (from 10pm to 7pm), assessment of sleep disturbance is required. Several public submissions raised the issue of sleep disturbance, citing frequent occasions when they were woken by loud noises which they believed were emanating from the MC pit top.
- 5.3.26 The Department has recommended contemporary sleep disturbance criteria in accordance with the NPfI, which would result in equal or lower limits for sleep disturbance for the majority of nearby receivers (see **Table 5**). The exception to this is the Macquarie Shores Home Village which should be afforded a maximum Night LA1(1 min) limit of 52 dB under the NPfI. However, in recognition of the concerns raised in submissions and the outcomes of the noise mitigation study conducted in 2019, the Department has recommended that the existing maximum Night LA1(1 min) limit of 47 dB is retained at this receiver and notes that this limit has been demonstrated as being achievable for the current operations. Delta Coal has not objected to the continued application of this limit.
- 5.3.27 In considering the likelihood and frequency of sleep disturbances, Delta Coal confirmed two known instances where existing sleep disturbance criteria were exceeded due as a result of an emergency alarm test and a significant mechanical failure of the rotary coal breaker. Delta Coal has taken steps to avoid these incidents from reoccurring, including by way of reducing the alarm noise levels and through a commitment to decommission the rotary coal breaker.
- 5.3.28 The Department is confident that the removal of the MC rotary coal breaker would reduce the potential for sleep disturbance incidents. The current Noise Monitoring Program would provide evidence of whether this measure achieves further reductions in noise impacts following the breaker's removal and would continue to provide an effective means of monitoring and enforcing the recommended revisions to the sleep disturbance criteria.

5.4 Air Quality

- 5.4.1 The SEE for MC included an Air Quality Assessment (AQA), prepared in accordance with the *Approved Methods for Modelling and Assessment of Air Pollutants in NSW* (Approved Methods, 2016) (EPA, 2016). The AQA modelled predicted annual average TSP, PM₁₀, PM_{2.5} and dust deposition levels, and cumulative 24-hour average concentrations for PM₁₀ and PM_{2.5} at representative assessment locations close to the MC surface facilities, at locations consistent with the MC NMS noise monitoring sites as shown in **Figure 7**.
- 5.4.2 The AQA predicts that the cumulative maximum 24-hour average PM₁₀ concentrations would continue to comply with relevant PM₁₀ criteria, except during regional dust events. This is reflected in the AQA modelling which predicted a single day of exceedances at all receivers locations that correlated to background data for a regional dust storm where elevated background levels reached over 50µg/m³. No exceedances of the cumulative 24-hour average PM_{2.5} criteria were predicted to occur. No exceedances of the annual average concentrations for any particle size were predicted to occur at any of the representative assessment locations.

- 5.4.3 The main source of air pollutants from the collieries pit top activities are the crushing, conveying and stockpiling of coal at the MC surface facilities. Fugitive dust emissions could also occur due to vehicle movement on unsealed surfaces, dozing of stockpiled material, wind erosion and from the ventilation shaft. The existing site infrastructure is considered adequate to manage the increase in coal throughput. There are no changes to mine ventilation, and the reduced truck movements may reduce emissions overall.
- 5.4.4 Air quality monitoring for the existing operations consists of dust deposition gauges at five locations within and surrounding the MC and CVC surface facilities. Monitoring data between 2006 (MC) and 2012 (CVC) indicate no exceedances of the annual average dust deposition criteria of 4g/m²/month.
- 5.4.5 CVC operate a Tapered Element Oscillating Microbalance (TEOM) station located at the Mannering Park Waste Water Treatment Facility near Kingfisher Shores, which monitors PM₁₀ levels. Monitoring data from 2013 to 2018 shows five exceedances of the 24-hour average PM₁₀ criterion of 50µg/m³, of which four are attributed to climatic conditions such as dust storms.
- 5.4.6 The Department notes that the MC consent does not currently contain PM₁₀ or PM_{2.5} air quality impact criteria. However, the AQA correctly applied the EPA's contemporary air quality assessment criteria, which is required to be applied and considered in the Department's assessment.
- 5.4.7 In 2015, the *National Environment Protection (Ambient Air Quality) Measure* (NEPM) was updated to include new standard environmental assessment criteria for air quality, including new PM_{2.5} criteria for 24-hour and annual averaging periods (25 µg/m³ and 8 µg/m³, respectively) and a lower annual average PM₁₀ criterion (down from 30 µg/m³ to 25 µg/m³). The EPA's Approved Methods 2016 reflect these new standards.
- 5.4.8 The Department has recommended that the EPA's contemporary air quality standards be applied to the MC consent. It is recommended that the CVC consent is also updated with these contemporary standards.
- 5.4.9 The modifications would not increase production output from the collieries and would not generate additional greenhouse gases emissions relative to what is already approved. The MC consent also requires the preparation of a stand-alone Greenhouse Gas and Energy Efficiency Plan, however as part of the contemporary changes to the air quality conditions for MC, the Department is proposing to incorporate these reporting and management requirements through conditions that require the development of a contemporary Air Quality Management Plan which is consistent with the approach taken by the Department for other coal mines in NSW.

5.5 Groundwater

- 5.5.1 The SEE for CVC included a semi-quantitative Groundwater Assessment, which modelled predicted potential groundwater inflows based on a generic mined section of the Fassifern Seam, regardless of exact location and timing within the mine footprint and schedule. This model comparatively assessed the two mining methods in terms of groundwater inflows.
- 5.5.2 The model suggested that the proposed use of a first workings mining method would likely result in a reduction in groundwater inflow to mine workings of around 1.9% to 2.3% for a bord and pillar style first workings compared to miniwall mining. This reduction is due to the elimination of overburden fracturing associated with miniwall mining. Any secondary workings would have similar groundwater impacts relative to the currently approved miniwall mining methods at CVC.

- 5.5.3 Overall, a decrease in the groundwater inflow to mine workings is likely in areas where first workings are to occur. This is a positive benefit of the adaptive management of mine design. Water management measures would continue to be undertaken in accordance with CVC's approved Water Management Plan, which the Department has also recommended be updated, should the modification be approved.

5.6 Other Issues

- 5.6.1 Other issues that are not considered above have been assessed in **Table 6** below.

Table 6 | Assessment of other issues

Issue	Consideration	Recommendation Condition
Visual Impacts	<ul style="list-style-type: none"> No additions to surface infrastructure at MC or CVC are proposed. The removal of the rotary coal breaker at MC would not result in any additional visual impacts and the replacement underground coal processing plant would not be visible to receivers. 	<ul style="list-style-type: none"> No change to existing conditions of consent.
Aboriginal Cultural Heritage	<ul style="list-style-type: none"> The BCD identified that MC did not have an separate approved Heritage Management Plan (HMP) in place at the time of the application. MC was still managing heritage under a complex plan prepared for Centennial Coal's Northern Holdings, dated November 2012. Due to the ownership changes at MC, this plan was no longer considered applicable. The Department notes that Delta Coal promptly responded to BCD's request for an updated plan, and on 16 August 2019, provided an Aboriginal Cultural Heritage Management Plan (ACHMP) to BCD for comment. 	<ul style="list-style-type: none"> The revised MC ACHMP was approved on 13 November 2019. The Department has recommended contemporary heritage management conditions which require that an ACHMP to be prepared in consult with Registered Aboriginal Parties. This plan may be provided as a component of a broader Heritage Management Plan and can incorporate both CVC and MC.
Traffic and Transport	<ul style="list-style-type: none"> No changes are proposed to the ability to utilise approved trucking rates, routes or hours on the road network. As the modifications would allow all coal produced at CVC to be preferentially transported via the underground linkage to MC, the Department considers that there would be a reduced likelihood that Delta Coal would need to exercise its approved ability to access other domestic and export markets by trucking on local roads. Nevertheless, CVC is required to conduct an annual traffic audit and the Department considers it appropriate that this condition remain whilst the option to transport coal by public roads remains within the CVC consent. 	<ul style="list-style-type: none"> An overall reduction in truck numbers is likely but changes are not proposed to the road transport conditions. Both collieries would be required to update existing Traffic Management Plans.

Issue	Consideration	Recommendation Condition
Biodiversity	<ul style="list-style-type: none"> • No surface disturbance or clearing of vegetation is proposed at either CVC or MC and no additional impacts to native vegetation, fauna or fauna habitat are predicted to occur, beyond what has been previously assessed and approved. • As subsidence impacts would remain within existing approved impact limits, the modifications are not predicted to result in any additional risks or impacts to aquatic fauna, flora or habitat, beyond what has been previously assessed and approved. • The Department considers that no additional assessment of biodiversity impacts is required. 	<ul style="list-style-type: none"> • No change to existing conditions of consent.
Sewage Management	<ul style="list-style-type: none"> • Under the current conditions of consent, CVC is required to manage sewage on-site to the satisfaction of the EPA. • The EPA has advised the Department that it has placed a Pollution Reduction Program (PRP) requirement on CVC's EPL to improve the management of sewage (eg by its treatment at an offsite Waste Water Treatment Plant). • In response to this PRP, Delta Coal is exploring options for offsite treatment of its sewage. • The Department considers this to be an appropriate outcome for the site and that the EPA is well placed to regulate this process. 	<ul style="list-style-type: none"> • To ensure the conditions of consent do not conflict with the EPA's EPL, the Department has recommended the removal of the requirement for on-site treatment of sewage from CVC's consent. • The management of wastewater generated at the site would continue to be effectively regulated by the requirements of CVC's EPL.

6 Recommended Conditions

- 6.1.1 In making its recommendations to the Commission, the Department has drafted recommended amendments to the existing conditions of consent for SSD 5465 and MP 06_0311, as modified, that reflect the Department's consideration of submissions, advice from Government agencies, assessment report and contemporary standards for environmental management and reporting for underground coal mining
- 6.1.2 The majority of recommended changes reflect updates to the naming conventions for government agencies and contemporary standards for general administrative and reporting conditions, to align these conditions with the Department's indicative standard conditions for State significant underground mining developments.
- 6.1.3 The Department has also recommended updated conditions that reflect the proposed modifications, including recognition of the increased coal throughput rates, mine design and mining methods discussed in **Section 5**. The conditions for CVC have been updated to define the subsidence management zone requirements for mining areas beneath the bed and foreshores of Lake Macquarie and provide regulatory oversight of mining operations and potential environmental impacts.
- 6.1.4 The underlying reason for Delta Coal's application to modify the consents for CVC and MC is to facilitate and promote operational efficiencies and integrated management of the mining operations. To reduce impediments, and achieve efficiencies in environmental management, the Department has updated the requirements for environmental management plans, reports, audits and strategies to reflect current standards and align across the two development consents. This would eliminate the production of two similar, but differing, management plans for say, air quality and Aboriginal cultural heritage. The requested extension of the life of MC to 2027 has also been reflected to allow the sought-after efficiencies to be achieved over the life of the integrated operations.
- 6.1.5 Schedule 6 of CVC's consent and Schedule 5 of MC's consent set out the requirements for environmental management, reporting and auditing. MC's consent was granted in 2008 and CVC's in 2013, with small differences in these requirements. The Department has recommended that each Schedule be replaced by identical contemporary reporting conditions, reflecting the standard wording used in recently issued consents.
- 6.1.6 These Schedules stipulate the requirements for environmental reporting, independent environmental audits, the content and structure of environmental management plans, reporting of environmental incidents and non-compliances, the timing of revisions of documentation and access to information by the public and agencies.
- 6.1.7 The existing conditions requiring the operation of a CCC for each mine has been relocated to Schedule 2 and updated to reflect the most recent guidelines for their functioning. The recommended conditions allow for a combined CCC and reflect the fact that the current CCC is already operating in this manner.
- 6.1.8 The requirements for the Air Quality and Greenhouse Gas Management Plans have been aligned. Previously, MC had a requirement to produce an Energy Action Savings Plan, addressing greenhouse gas emissions by way of energy efficiency, in accordance with guidelines issued by a Commonwealth agency. These guidelines are no longer in use and the nominated agency no longer exists. The recommended changes to conditions would allow Delta Coal to produce one integrated Air Quality and Greenhouse Gas Management Plan for its operations.

- 6.1.9 The recommended conditions of consent contain identical criteria for particulate emissions. These criteria have been aligned with the criteria that apply across the State. This has resulted in the application of a more stringent criterion for annual average PM₁₀ emissions. The Air Quality Impact Assessments in both SEEs were based on the application of currently applied criteria and the proposed conditions are in line with those assessments.
- 6.1.10 As CVC is not seeking to modify its predicted noise generation or noise generating activities, only MC's noise impact assessment criteria have been updated, as discussed in Section 5.3. These updates built on MC's ongoing efforts to implement all reasonable and feasible noise mitigation measures to reduce its noise emissions and would result in a general reduction in intrusive noise criteria for surrounding receivers.
- 6.1.11 The Department has also recommended a condition to specifically address the environmental management of exploration activities and minor surface infrastructure. This is a standard contemporary condition that explicitly addresses these activities, rather than relying on more general conditions for preventing harm to the environment.
- 6.1.12 For some years now, CVC has not transported coal by trucks to either the Port of Newcastle or domestic customers other than VPPS. While Delta Coal wishes to retain this option, CVC's consent currently requires the preparation of annual Independent Traffic Audits and three yearly studies of Alternative Coal Transport Options. The Department has recommended that each of these requirements should be extended by 12 months for each calendar year in which coal has not been transport by truck from the site (other than via private roads to VPPS).
- 6.1.13 As described in Table 6, the Department proposes to remove the restriction in the current consent that requires on-site sewage treatment of sewage. In 2015, the EPA attached a requirement to CVC's EPL to improve the management of sewage from the site. Delta Coal is exploring options to address this requirement and the Department is concerned that the retention of the condition in its current form may hinder the EPA's ability to improve outcomes for the regulatory of wastewater management at CVC under a pollution reduction program.
- 6.1.14 Overall, the Department considers that the recommended conditions reflect contemporary practice and provide a clear framework for the environmental management of the site. The Department believes that these recommended conditions are reasonable, achievable and appropriately scaled to the nature and extent of impacts associated with the proposed modifications. With these amended conditions in place, the Department considers that the developments as modified could be undertaken in an environmentally sustainable manner.
- 6.1.15 Delta Coal has reviewed the recommended conditions and has not objected to their imposition.

7 Evaluation

- 7.1.1 The Department has assessed the modification applications in accordance with the relevant provisions of the EP&A Act, including the principles of ESD.
- 7.1.2 The proposed modifications would continue to provide a reliable source of coal to the VPPS which generates over 10 percent of NSW's electricity. The modifications would also continue to provide social and economic benefits through ongoing local employment and broader economic and social benefits to the people of NSW through the payment of mining royalties. The Department considers these two aspects of the proposed modifications to be in the public interest and key reasons to recommend approval of the modifications.
- 7.1.3 The key issue of concern for the community was noise from MC. The Department considers that Delta Coal has demonstrated that it has already undertaken a range of reasonable and feasible measures over the last 10 years to reduce noise in an existing high noise environment. In addition, its commitment to decommission the rotary coal breaker, represents a further significant measure to reduce noise emissions.
- 7.1.4 The Department considers that residual noise impacts could continue to be adequately managed through existing and recommended conditions of consent, which continue to require the preparation of a Noise Management Plan and contain more stringent noise monitoring requirements for MC.
- 7.1.5 The proposed modifications also received significant support from the community with regard to continuing employment and the ongoing supply of reliable coal to VPPS. The Department notes that ongoing employment is a significant benefit to the region and agrees with the community on this matter.
- 7.1.6 The proposed mine design changes would improve resource recovery and increase operational efficiencies for Delta Coal, ensuring continuity of operations and employment.
- 7.1.7 The Department considers its revised recommended conditions of consent provide a comprehensive, rigorous and contemporary approach to ensuring that the operations of CVC and MC could continue to operate efficiently, whilst continuing to ensure that adequate environmental controls are in place to strictly manage subsidence risks, protect sensitive environmental areas, and minimise impacts on the surrounding community. Any residual impacts could continue to be managed and mitigated through the existing and recommended conditions of consent.
- 7.1.8 Based on its assessment, the Department considers that the proposed modifications are in the public interest and are approvable, subject to the recommended conditions outlined in **Appendices D and E**.
- 7.1.9 This assessment report is hereby presented to the Independent Planning Commission to determine the application.



27/05/2020

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Appendices

Appendix A – Statement of Environmental Effects

<https://www.planningportal.nsw.gov.au/major-projects/project/11671>

<https://www.planningportal.nsw.gov.au/major-projects/project/17006>

Appendix B – Submissions

<https://www.planningportal.nsw.gov.au/major-projects/project/11671>

<https://www.planningportal.nsw.gov.au/major-projects/project/17006>

Appendix C – Response to Submissions and Additional Information

<https://www.planningportal.nsw.gov.au/major-projects/project/11671>

<https://www.planningportal.nsw.gov.au/major-projects/project/17006>

Appendix D – Recommended Notices of Modification

<https://www.planningportal.nsw.gov.au/major-projects/project/11671>

<https://www.planningportal.nsw.gov.au/major-projects/project/17006>

Appendix E – Recommended Consolidated Consents

<https://www.planningportal.nsw.gov.au/major-projects/project/11671>

<https://www.planningportal.nsw.gov.au/major-projects/project/17006>