The current peak hour intersection traffic volumes were surveyed on Friday 20 March 2015 at the intersection of Ruttleys Road and Construction Road. The traffic survey was completed while truck haulage to PWCS was being undertaken, thus ensuring typical heavy vehicle traffic volumes associated with coal haulage on public roads was captured. The count recorded the following combined two way traffic volumes for these roads at the intersection during the morning and afternoon mine peak traffic hours, ie 6.30 am to 7.30 am and 3.00 pm to 4.00 pm:

- Construction Road (CVC morning peak hour) = 89 vehicles (25.8 % heavy vehicles).
- Construction Road (CVC afternoon peak hour) = 68 vehicles (20.6 % heavy vehicles).
- Ruttleys Road –south (CVC morning peak hour) = 557 vehicles (9.2 % heavy vehicles).
- Ruttleys Road –south (CVC afternoon peak hour) = 777 vehicles (4.2 % heavy vehicles).
- Ruttleys Road –north (CVC morning peak hour) = 524 vehicles (5.7 % heavy vehicles).
- Ruttleys Road –north (CVC afternoon peak hour) = 767 vehicles (4.0 % heavy vehicles).

Full intersection traffic count results are provided in the traffic and transport assessment (Appendix J).

Construction Road has a high proportion of truck traffic currently as a result of the coal haulage from CVC, but this effect is less evident on Ruttleys Road both to the north or the south of the intersection and other traffic routes in the vicinity of VPPS and the adjoining locality generally.

ii Ruttleys Road and Construction Road intersection

The intersection of Construction Road with Ruttleys Road is an unsignalised intersection which is controlled by ‘stop’ signs on the Construction Road approach. A right turn lane is provided on Ruttleys Road for the traffic which is approaching the intersection from the south.

The operating performance of intersections in NSW is defined by Roads and Maritime Services (RMS) in terms of the ‘level of service’ and ‘degree of saturation’ thresholds as follows.

Level of service which is summarised in Table 5.10, is an index of the operating traffic delays at an intersection and is based on the average delays for either the entire intersection (where there are traffic signals) or a selected vehicle for an un-signalised intersection movement, normally the right turn egress movement.

Degree of saturation provides an overall measure of the capability of an intersection to accommodate the traffic levels, with a degree of saturation of 1.0 indicating that an intersection is operating at capacity. A satisfactory degree of saturation is considered to be 0.90 or lower at a traffic signal controlled intersection and 0.80 or lower at other intersections.

Table 5.10 RMS Intersection level of service standards

Level of service	Average delay (seconds per vehicle)	Traffic signals, roundabout	Priority intersection ('stop' and 'give way')
A	Less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity and accident study required
E	57 to 70	At capacity. At signals, incidents will cause excessive delays. Roundabouts require other control mode	At capacity; requires other control mode
F	Greater than 71	Unsatisfactory with excessive queuing	Unsatisfactory with excessive queuing; requires other control mode

Source: (Roads and Traffic Authority (RTA), 2002).

The existing (2015) intersection traffic results presented in Table 5.11, show the Ruttleys Road and Construction Road intersection is not congested currently, with either good or satisfactory peak hour operating delays (level of service either B or C) and with the highest traffic delays (for the right turn egress traffic) generally 30 seconds or less and the intersection degrees of saturation generally low at 0.22 or less.

Table 5.11 Peak hour intersection performance for 2015 base traffic

Intersection assessment	Peak hour period	Vehicles (pcu*)	Degree of saturation	Average delay (seconds/vehicle)	Level of service
Ruttleys Road and Construction Road (existing traffic volumes in 2015)	Morning peak hour (6.30 am - 7.30 am)	616	0.151	22.5	B
	Afternoon peak hour (3.00 pm -4.00 pm)	848	0.224	30.2	C

*Notes: * Intersection vehicle accounts are increased by factor x1.05 by SIDRA to correspond to passenger car units (pcu).*

The SIDRA intersection analyses results for the future base year 2027 morning and afternoon peak hour traffic volumes with the proposed additional traffic arising should the modification be approved are included in detail in the traffic and transport assessment (Appendix J). The base year intersection performance, ie assuming no increase in CVC-related traffic, is summarised in Table 5.12.

Table 5.12 Peak hour intersection performance for 2027 base traffic

Intersection assessment	Peak hour period	Vehicles (pcu*)	Degree of saturation	Average delay (seconds/vehicle)	Level of service
Ruttleys Road and Construction Road (existing traffic volumes in 2027)	Morning peak hour (6.30 am – 7.30 am)	760	0.188	26.5	B
	Afternoon peak hour (3.00 pm -4.00 pm)	1063	0.284	42.5	D

*Notes: * Intersection vehicle accounts are increased by factor x1.05 by SIDRA to correspond to passenger car units (pcu).*

In the 2027 base traffic situation, with no additional CVC workforce traffic, the Ruttleys Road and Construction Road intersection will not generally be congested in the morning CVC peak traffic period and will have good operating delays (level of service B). However, in the afternoons, with the CVC peak hour operating delays, the intersection will be classified as near capacity (level of service D) and the highest traffic delays (for the right turn egress traffic) will be approximately 42 to 43 seconds. Notwithstanding, the intersection degree of saturation will remain relatively low at 0.284.

5.9.3 Impact assessment

The proposed increase in coal extraction from 1.5 Mtpa to 2.1 Mtpa will not generally cause any additional vehicle traffic movements using the public roads external to the mine as it is intended that the additional coal produced at CVC will be sent via overland conveyor to VPPS via MC. However, the proposed increase in the full time personnel at CVC from approximately 160 to approximately 220 persons, in combination with some potential refinements to the shift change times during the afternoons on weekdays, will potentially result in some additional mine-related car traffic movement in the mine traffic peak hours, currently 6.30 to 7.30 am and 3.00 to 4.00 pm.

The traffic and transport assessment (Appendix J) included future traffic projections and SIDRA analyses for the intersection of Ruttleys Road and Construction Road to determine its suitability to accommodate the increased traffic generated by the additional workforce for both the current year (2015) and the year 2027.

The total current CVC workforce is approximately 160 persons of which approximately 120 are full time employees and the remainder are classified as contractors. The current workforce traffic movements are greatest on weekdays when on average a total of 143 persons would normally travel to and from work within a 24 hour period for the mine day, afternoon or night shifts. The average weekday and weekend workforce numbers for each shift (full time equivalent) at CVC are:

- weekday day shift including administrative staff (7.00 am to 3.00 pm) - 76 persons;
- weekday afternoon shift (1.30 pm to 11.00 pm) - 35 persons;
- weekday night shift (9.30 pm to 7.00 am) - 32 persons; and
- weekend shifts (7.00 am to 7.00 pm and 7.00 pm to 7.00 am) - 17 persons.

For assessment purposes, a 90% car driver ratio is applicable for the current CVC workforce traffic movements, as the locality is remote from major public transport services.

Full time equivalent workforce numbers and the increases due to the proposed modification are as follows:

- weekday day shift (including admin staff) - 87 persons (an increase of 11);
- weekday afternoon shift - 41 persons (an increase of 6);
- weekday night shift - 41 persons (an increase of 9); and
- weekend shifts (each) - 54 persons (an increase of 37).

The majority of the additional workforce would work on the weekend shifts and there would be comparatively much lower workforce (and traffic) increases on weekdays. However, the weekday peak hourly traffic periods are the primary traffic flow periods which should be considered for the traffic associated with the proposed modification.

Assuming the same 90% car driver ratio would apply to the additional workforce traffic movements, there will be approximately:

- 10 additional vehicle movements inbound to CVC during the weekday day shift morning peak entry period (6.30 to 7.00 am);
- 8 additional vehicle movements outbound from CVC during the corresponding weekday night shift traffic departure period (7.00 to 7.30 am); and
- 10 additional vehicle movements occurring outbound from CVC during the current weekday day shift traffic departure period (3.00 to 4.00 pm).

It is noted that although the weekday afternoon shift currently starts at 1.30 pm, which is outside the 3.00 pm to 4.00 pm CVC afternoon peak traffic period, this may change in the future. Therefore, the traffic assessment conservatively assumed that 37 additional inbound afternoon shift vehicles may occur during the afternoon CVC peak traffic period of 3.00pm to 4.00pm, in addition to the current day shift outbound vehicles.

The intersection impact assessment for 2015 (summarised in Table 5.13) includes the existing surveyed base mine traffic movements with the additional mine workforce traffic also included. The intersection assessment for 2027 (summarised in Table 5.14) also includes the locality traffic growth (at +2.3% annually) occurring for the through traffic movements on Ruttleys Road over the 12 years between 2015 and 2027.

Table 5.13 Peak hour intersection performance for 2015 base with CVC modification traffic

Intersection assessment	Peak hour period	Vehicles (pcu*)	Degree of saturation	Average delay (seconds/vehicle)	Level of service
Ruttleys Road and Construction Road (with the proposed CVC modification traffic in 2015)	Morning peak hour (6.30 am - 7.30 am)	635	0.154	21.5**	B
	Afternoon peak hour (3.00 pm - 4.00 pm)	898	0.235	30.3	C

Notes: ** Intersection vehicle accounts are increased by factor x1.05 by SIDRA to correspond to passenger car units (pcu).*

*** Average delay per vehicle reduces as car traffic is reduced by the influence of a high proportion of trucks on Construction Road.*

Table 5.14 Peak hour intersection performance for 2027 base with CVC modification traffic

Intersection assessment	Peak hour period	Vehicles (pcu*)	Degree of saturation	Average delay (seconds/vehicle)	Level of service
Ruttleys Road and Construction Road (with the proposed CVC modification traffic in 2027)	Morning peak hour (6.30 am - 7.30 am)	779	0.191	25.2	B
	Afternoon peak hour (3.00 pm -4.00 pm)	1113	0.294	43.5	D

Notes: ** Intersection vehicle accounts are increased by factor x1.05 by SIDRA to correspond to passenger car units (pcu).*

The results in Table 5.13 show that the additional workforce traffic movements generated by the proposed modification in 2015 (including the relocation of the existing afternoon shift start time to around 3.00 pm) will have minimal effect on the existing morning intersection operations. Only during the afternoon peak hour (3.00 to 4.00 pm) will the average traffic delays increase for the traffic which is turning from Construction Road onto Ruttleys Road, by approximately 0.1 second, with a correspondingly minimal change in the intersection degree of saturation from 0.224 to 0.235.

With the additional workforce traffic movements which will be generated by the proposed modification in 2027 (including the relocation of the existing afternoon shift start time to around 3.00 pm) the total workforce traffic movements will still generally have minimal effect on the future intersection operations (Table 5.14) with unchanged levels of service. During the afternoon peak hour (3.00 to 4.00 pm) the intersection traffic delays for the traffic which is turning right from Construction Road onto Ruttleys Road will increase by approximately 1 second, with a corresponding minor increase in the intersection degree of saturation from 0.284 to 0.294, however the level of service remains unchanged from the 2027 base case.

The on-site car parking areas at CVC are distributed around the northern and western sides of the main administration building and are located approximately 330 m inside the entrance from Construction Road. During the time of the peak daytime parking demand on a typical weekday (which is at the dayshift/afternoon shift overlap), approximately 100 cars are currently parked in these areas. These car parking areas have previously accommodated the car parking demand for a peak mine workforce of approximately 380 persons during the mid 1980s. As a consequence, no additional workforce car parking areas are anticipated to be required for the current mine workforce numbers or the additional mine dayshift or afternoon shift vehicles which would be likely to be parked at CVC on a typical weekday under the proposed modification.

5.9.4 Conclusion

The intersection of Ruttleys Road with Construction Road, which currently provides access to CVC, is operating with either good or satisfactory peak hour intersection delays (level of service B or C). In the year 2027, with the background through traffic using Ruttleys Road continuing to grow at approximately +2.3% (linear traffic growth) annually, the morning peak hour intersection level of service will remain at level of service B although the afternoon peak hour level of service will have changed from C to D.

Notwithstanding this predicted change to the future base case traffic conditions at the intersection, the future intersection peak hour traffic delays and level of service will not be adversely affected as a consequence of the proposed modification and, accordingly, no intersection improvements or other traffic management measures would be required.

5.10 Greenhouse gases

5.10.1 Introduction

A greenhouse gas (GHG) assessment of the proposed modification was prepared by Pacific Environment Operations Pty Ltd (PE). The assessment is presented in full in Appendix K and a summary provided below.

5.10.2 Existing environment

The World Resources Institute/World Business Council for Sustainable Development's (WRI/WBCSD) GHG Protocol – A Corporate Accounting and Reporting Standard Revised Edition (WRI/WBCSD 2004) establishes an international standard for accounting and reporting of GHG emissions. Three 'scopes' of emissions (Scope 1, Scope 2 and Scope 3) are defined for GHG accounting and reporting purposes, as described below. This terminology has been adopted in Australian GHG reporting and measurement methods and has been employed in this assessment.

i Scope 1: Direct greenhouse gas emissions

Scope 1 or direct GHG emissions, are those that occur from sources that are owned or controlled by the reporting entity including those arising from activities undertaken by that entity. These emissions include generation of electricity, heat or steam, physical or chemical processing and manufacturing, transportation of materials, products, waste and employees, and fugitive emissions resulting from intentional or unintentional releases.

ii Scope 2: Energy product use indirect greenhouse gas emissions

Scope 2 GHG emissions are a category of indirect emissions that account for those arising from the generation of purchased energy products. For coal mines, Scope 2 emissions typically include purchased electricity that is brought into the organisational boundary of the entity.

iii Scope 3: Other indirect greenhouse gas emissions

Scope 3 emissions are those arising as a consequence of the activities of an entity, but which arise from sources not owned or controlled by that entity. For example, extraction and production of purchased materials, transportation of purchased fuels, and use of sold products and services.

For the proposed modification, Scope 3 emissions will include emissions associated with the transportation and combustion of product coal, as well as the minor emissions associated with the extraction, processing and transport of fuel used on site.

5.10.3 Impact assessment

The potential impact arising from the proposed modification on greenhouse gases as compared to the approved development is limited to that due to the increase in the maximum rate of ROM coal extraction at CVC from 1.5 Mtpa to 2.1 Mtpa, ie an additional 600,000 tpa. It is noted that neither the extractable resource nor the mine production schedule allow for this increase to be sustained to 2027, ie the duration of the development consent period. Notwithstanding, to provide a highly conservative assessment, the PE (2015) GHG assessment assumed that an additional 600,000 t of coal would be produced annually throughout that period.

GHG emissions have been estimated based on the methods outlined in the following documents:

- GHG Protocol (WRI/WBCSD, 2004);
- National Greenhouse and Energy Reporting (Measurement) Amendment Determination 2008; and
- The Australian Government Department of the Environment (DoE) National Greenhouse Accounts (NGA) Factors 2014 (DoE, 2014).

Carbon dioxide (CO_2) and methane (CH_4) comprise the most significant GHGs produced from CVC. These gases are formed and released during the combustion of fuels used on site and as fugitive emissions occurring during the mining process, due to the liberation of CH_4 and CO_2 from coal seams or mined coal.

Project-related GHG sources included in the assessment are as follows.

- Scope 1:
  - fuel consumption (diesel) during on-site mining operations; and
  - release of fugitive CO_2 and CH_4 during mining.
- Scope 2:
  - indirect emissions associated with purchased electricity brought into the organisational boundary to supplement the on-site electricity generation.
- Scope 3:
  - indirect emissions associated with purchased electricity brought into the organisational boundary to enable mining operations to occur;
  - indirect emissions associated with the production and transport of fuels;
  - emissions from coal transportation; and
  - emissions from the use of the product coal.

Other minor emissions, such as those from oil and grease, represent less than 0.1% of the total emissions and, accordingly, have not been included within the GHG assessment.

Table 5.15 presents a summary of the total annual Scope 1, Scope 2 and Scope 3 GHG emissions from the existing approved development and from the increased production as a consequence of the proposed modification. It should be noted that the annual summary presented in Table 5.15 represents the maximum in any year as it assumes a total production of 2.1 Mtpa. Details on emissions by year and type are provided in Table 5.16.

Table 5.15 Comparison of annual CVC greenhouse gas emissions

Parameter	Annual Average GHG Emissions (Mt CO_{2-e})		
	Approved Development (1.5Mtpa)	**Increase due to proposed modification (0.6 Mtpa)**	**Total (2.1 Mtpa)**
Scope 1 Emissions	0.590	0.134	0.724
Scope 2 Emissions	0.018	0.008	0.026
Scope 3 Emissions	3.593	1.434	5.027
Total	4.199	1.576	5.777

Table 5.16 Summary of additional annual greenhouse gas emissions due to the proposed modification

Year	Scope 1 Emissions (t CO_{2-e})					Scope 2 Emissions (t CO_{2-e})	Scope 3 Emissions (t CO_{2-e})					
	Diesel	Fugitive Gas	Post-mining	Total (Modification)*	Total (Project)**	Electricity	Diesel	Electricity	Transport	Coal burning	Total (Modification)	Total (Project)
2015	614	125,090	8,400	*134,104*	*469,363*	8,104	47	1,225	0	1,432,566	*1,433,838*	*5,026,450*
2016	614	125,090	8,400	*134,104*	*469,363*	8,104	47	1,225	0	1,432,566	*1,433,838*	*5,026,450*
2017	614	125,090	8,400	*134,104*	*469,363*	8,104	47	1,225	0	1,432,566	*1,433,838*	*5,026,450*
2018	614	125,090	8,400	*134,104*	*469,363*	8,104	47	1,225	0	1,432,566	*1,433,838*	*5,026,450*
2019	614	125,090	8,400	*134,104*	*469,363*	8,104	47	1,225	0	1,432,566	*1,433,838*	*5,026,450*
2020	614	125,090	8,400	*134,104*	*469,363*	8,104	47	1,225	0	1,432,566	*1,433,838*	*5,026,450*
2021	614	125,090	8,400	*134,104*	*469,363*	8,104	47	1,225	0	1,432,566	*1,433,838*	*5,026,450*
2022	614	125,090	8,400	*134,104*	*469,363*	8,104	47	1,225	0	1,432,566	*1,433,838*	*5,026,450*
2023	614	125,090	8,400	*134,104*	*469,363*	8,104	47	1,225	0	1,432,566	*1,433,838*	*5,026,450*
2024	614	125,090	8,400	*134,104*	*469,363*	8,104	47	1,225	0	1,432,566	*1,433,838*	*5,026,450*
2025	614	125,090	8,400	*134,104*	*469,363*	8,104	47	1,225	0	1,432,566	*1,433,838*	*5,026,450*
2026	614	125,090	8,400	*134,104*	*469,363*	8,104	47	1,225	0	1,432,566	*1,433,838*	*5,026,450*
2027	614	125,090	8,400	*134,104*	*469,363*	8,104	47	1,225	0	1,432,566	*1,433,838*	*5,026,450*
Total	**7,985**	**1,626,165**	**109,200**	***1,743,349***	***6,101,722***	**105,358**	**609**	**15,926**	**0**	**18,623,358**	**18,639,893**	***65,343,855***

Notes: ** conservatively assumes production of 600,000 t ROM coal annually.*

*** conservatively assumes production of 2.1 Mt ROM coal annually.*

According to the Intergovernmental Panel on Climate Change's (IPCC) Fifth Assessment Report, global surface temperature has increased by 0.89ºC ± 0.2ºC during the 100 years ending 2012 (IPCC, 2013).

CVC's contribution to climate change and associated impacts arising from the increase in annual emissions under the proposed modification would be in proportion with its contribution to global GHG emissions. Average annual Scope 1 and Scope 2 emissions from the proposed modification (0.142 Mt $CO_{2\text{-}e}$) are conservatively assessed to represent approximately 0.02% of Australia's commitment under the Kyoto Protocol (591.5 Mt $CO_{2\text{-}e}$) and a very small portion of global GHG emissions, given that Australia contributed approximately 1.25% of global GHG emissions in 2012 (PBL Netherlands Environmental Assessment Agency, 2013).

The estimated Scope 1 GHG emissions intensity of CVC, should the proposed modification be approved, is approximately 0.224 t CO_2/t saleable coal. By far the largest source of scope 1 GHG emissions are fugitive CH_4 and CO_2 emissions (~94%) followed by emissions from post-mining activities (~6%).

5.10.4 Mitigation and management

LakeCoal is committed to implementing reasonable and feasible GHG mitigation and management measures in accordance with CVC's air quality management plan (AQMP). LakeCoal participates in the Commonwealth Government's National Greenhouse and Energy Report System (NGERS). Under NGERS, relevant sources of GHG emissions and energy consumption must be measured and reported on annually.

5.10.5 Conclusion

The GHG assessment conservatively assessed that the Scope 1 and Scope 2 emissions from the proposed modification would represent approximately 0.02% under the Kyoto Protocol and a very small portion of global GHG emissions. LakeCoal will continue to manage GHG emissions in accordance with the AQMP and measure and report annually as part of its NGERS requirements.

5.11 Other aspects

An assessment of the environmental, social and economic aspects as a consequence of the proposed modification (other than those addressed in the preceding sections) is provided in Table 5.17. This method of assessment is commensurate with the outcomes of the risk assessment undertaken and the low levels of projected impacts arising from the proposed modification on each of these aspects.

No specific management measures regarding these aspects are warranted as a result of the proposed modification. Environmental management of these aspects will continue in accordance with the management plans, licences and consents specified in Section 3.1.4.

Table 5.17 Other environmental, social and economic aspects

Environmental aspect	Assessment
Noise	Noise emissions from CVC's operations are managed as prescribed in CVC's noise management plan which was prepared in accordance with the requirements of Condition 9, Schedule 3, of SSD-5465 and approved by the Secretary on 13 May 2014. Potentially sensitive receivers are located in Mannering Park, Kingfisher Shores and Chain Valley Bay. The noise assessment for the Mining Extension 1 Project (EMM 2013b) predicted that worst case operational noise would comply with relevant noise criteria at the majority of sensitive receivers. Existing traffic noise levels for roads along CVC's coal transport route to PWCS currently exceed relevant day and night noise criteria even in the absence of any CVC related traffic. The proposed modification assumes that all additional coal extracted will be sent to VPPS via the underground linkage and MC's conveyors (which will not increase coal transport on private roads above existing levels). The proposed modification will only involve additional operations underground and will not change any aspect of the CVC surface operations which have the potential to generate noise emissions at potentially sensitive receivers. There will be some additional traffic generated by the proposed modification, with the greatest increase in traffic movements occurring at weekends shift changes (7 am and 7 pm) for an approximate one hour duration (ie 6:30-7:30 am and 6:30-7:30 pm) as a consequence of an additional 17 inbound and 17 outbound vehicles. It is unlikely that this relatively small increase in vehicle movements will result in adverse noise impacts at any of the potentially sensitive receivers. It is anticipated that enabling the transportation of additional coal from CVC to the VPPS via MC surface facilities and conveyor will provide for an improved amenity outcome when compared with the alternative of hauling the increase production by truck to VPPS.
Air quality	Dust emissions from CVC's operations are managed as prescribed in CVC's AQMP which was prepared in accordance with Condition 13, Schedule 3, of SSD-5465 and approved by the Secretary on 23 July 2014. As with noise, potentially sensitive receivers are located in Mannering Park, Kingfisher Shores and Chain Valley Bay. The air quality and greenhouse gas impact assessment for the Mining Extension 1 Project (Pacific Environment Limited 2013) found that emissions from CVC are below relevant impact assessment criteria at all sensitive receivers. As the proposed modification will only involve additional operations underground and will not increase surface plant and equipment types/numbers, coal movements or stockpiling, no increase in dust emissions would be expected. To the contrary, it is anticipated that enabling the transportation of additional coal from CVC to the VPPS via MC surface facilities and conveyor will provide for an improved amenity outcome when compared with the alternative of hauling the increased production by truck to VPPS.

Table 5.17 Other environmental, social and economic aspects

Environmental aspect	Assessment
Surface water	Water management at CVC is undertaken in accordance with the WMP prepared in consultation with NOW, DRE and Wyong Shire Council and to the satisfaction of the Director-General. The plan contains a site water balance, an erosion and sediment control plan, surface water management plan, groundwater monitoring program and a surface and groundwater response plan. The surface water management system for CVC was most recently assessed as part of the Mining Extension 1 Project (GSS Environmental 2013). Water entering the underground workings is pumped to the pit top area. Mine water and surface runoff is managed through a series of 13 interconnected sediment ponds. Water is discharged from the site as defined in EPL 1770. The proposed increase in extraction of ROM coal at CVC from 1.5 Mtpa to 2.1 Mtpa will result in a commensurate increase in the requirement for potable water from 120 to 160 ML per annum. All potable water will be drawn from Wyong Shire Council's potable water supply mains. Potable water is used at CVC to support the pit top and underground operations. Potable water is used in CVC's underground operations for the following processes: • reduction of respirable dust and the propensity for frictional ignition when cutting coal; • dust suppression when transferring coal along the underground conveyor system and at transfer points; • cleaning and equipment use; and • emergency fire fighting purposes. Potable water is used in the pit operations in the amenities, for dust suppression and wash down of plant and equipment. Measures to minimise potable water use and to resuse and recycle water where possible are identified in the WMP. Groundwater pumped from the mine workings is not suitable for potable or operational purposes due to its high salinity. As described in Section 5.3, it is anticipated that although there will be a reduction (approximately 3.8%) in the extent of the underground mine area there will be no observable changes in the inflow of groundwater to mine workings. Additionally, no alterations to surface infrastructure are proposed and only minor surface disturbance as result of the APZs for bushfire protection will occur, which are unlikely to lead to changes in surface water flows or quality. Surface water will continue to be managed in accordance with CVC's WMP which will be updated to reflect the proposed modification (if approved).
Rehabilitation and land suitability	The mine closure and rehabilitation measures for CVC are described in the Mining Extension 1 Project EIS (EMM 2013) and CVC's MOP and rehabilitation management plan. Mine closure and rehabilitation will be undertaken in accordance with Condition 25 of Schedule 3 of SSD-5465 with the surface facilities to be rehabilitated to the satisfaction of the Executive Director Mineral Resources. As the proposed modification does not entail changes to the surface infrastructure and only minor surface disturbance (approximately 1.42 ha) there will be no significant adverse impact on mine rehabilitation as a result of the proposed modification.
Soils and landform	Erosion and sedimentation, surface cracking, contamination and acid sulphate soils associated with the surface facilities and activities were assessed as part of the Mining Extension 1 Project EIS (EMM 2013). Current operations are not likely to have a significant impact on geology or soils as the mine layout prevents surface cracking associated with subsidence. As mentioned above, the existing WMP includes an erosion and sediment control plan for management of soils. Only minor surface disturbance will be associated with the extension/establishment of APZs. Potential erosion and sediment impacts during their development will be managed in accordance with CVC's existing erosion and sediment control plan, contained within the water management plan.

Table 5.17 Other environmental, social and economic aspects

Environmental aspect	Assessment
Socio-economic	The Mining Extension 1 Project EIS (EMM 2013) assessed potential social and economic impacts from the continued operation of CVC. Approximately 90% of the CVC workforce resides within the Wyong and Lake Macquarie LGAs, with over half residing in the area for more than 15 years. This shows low levels of residential mobility and close connection with the community. Approximately 80% of the CVC workforce already lived in the area when they commenced employment, indicating CVC sources employment from the local labour pool. The EMM (2013) assessment found there would be positive direct and in-direct (or flow-on) impacts associated with continued employment; revenue contributions at a local, regional, state and national level, and community support under the project. The proposed modification would not only enhance the economic viability of CVC, but also increase employment. It will enable the continued employment of approximately 160 people and create employment for approximately 60 additional employees, providing further employment opportunities for people residing in the local area. This will further enhance the socio-economic benefits of project identified in EMM 2013. The proposed modification will enable LakeCoal to continue to support community infrastructure and services, for example, through LakeCoal's commitment to contribute $0.035 per tonne of ROM coal production at CVC to improve public infrastructure and provide community projects in Chain Valley Bay, Mannering Park, Summerland Point and Gwandalan. This will also apply to proposed increase in ROM coal and is in addition to the significant social and economic benefits that CVC has provided for over 50 years. Potential amenity impacts relating to noise, dust and visual are addressed in this table. The change in potential for adverse impacts under the proposed modification is negligible when compared to the approved development. In fact, the proposed modification will generally result in improved amenity (noise and air quality) by enabling the transportation of additional coal from CVC to the VPPS via MC surface facilities and conveyor.
Hazards/risks	The proposed modification will comply with the provisions of the Work Health and Safety (Mines) Regulation 2014. As described in Section 1.5, the proposed mine design changes are being undertaken primarily for geotechnical and operational reasons as numerous projected faults have been mapped as running parallel to the current mining alignment which not only slow the mining rate but, due to the poorer strata conditions, result in a potentially more hazardous working environment. These strata conditions can be significantly improved simply by the realignment of the mine workings to intersect the faults at an angle closer to the perpendicular and improving strata conditions. In addition, a review of CVC's operational risk assessment for environmental aspects will be undertaken by LakeCoal to identify potential risks and recommend appropriate controls. Approval from DRE will be required prior to implementation of the modified mine plan, with their assessment considering, amongst other matters, safety. All mining operations will continue to be undertaken in accordance with CVC's suite of major hazard management plans and safety management system. As described in Section 1.5, the proposed extension/establishment of APZs adjacent to some CVC assets is an outcome of a bushfire management risk assessment and subsequent bushfire hazard assessment completed subsequent to the major bushfires in the immediate vicinity of MC's pit top and CVC ventilation fan site at Summerland Point on 17 October 2013. The APZs will afford an improved level of bushfire protection for both the employees and assets essential for the continued operation of CVC.
Waste management	CVC's waste streams and management procedures were described in the Mining Extension 1 Project EIS (EMM 2013). Waste is managed according to OEH guidelines and Schedule 3, Condition 23 of SSD-5465. Consistent with this condition and continual improvement in waste management, LakeCoal has implemented a total waste management system at the CVC. The proposed modification will not generate any additional waste streams or significantly increase existing waste volumes.

Table 5.17 Other environmental, social and economic aspects

Environmental aspect	Assessment
Visibility	The proposed modification will not result in new surface infrastructure or intensification of visible activities. Only minor vegetation will be required to be cleared/disturbed (approximately 1.42 ha in total) for the extension/establishment of APZs for bushfire protection purposes and this will be within or adjacent to existing areas of disturbance which are generally not visible from publically accessible vantage points. Therefore, any change in visual impacts beyond those currently approved will be negligible. Visual amenity/lighting impacts will continue to be managed in accordance with Schedule 3, Condition 22 of SSD-5465.

Chapter 6

Statement of commitments

Chapter 6 — Statement of commitments

6 Statement of commitments

This chapter provides commitments made to negate or minimise potential environmental impacts arising from the proposed modification. Environmental management will continue in accordance with the processes and procedures outlined in Section 3.1.4. Table 6.1 provides commitments specific to aspects of the proposed modification relevant to CVC and are additional to those identified in Development Consent SSD-5465.

Table 6.1 Commitments

Aspect	Commitment
Terrestrial ecology	CVC's BMP will be updated to include: • the completion of pre-disturbance surveys in the survey area for Black-eyed Susan, Leafless Tongue Orchid and Variable Midge Orchid during their flowering periods (July to December, November to February and September to October, respectively); • pre-disturbance surveys by an ecologist to determine the important components of vegetation communities and fauna habitats that should be preferentially retained in the APZs; • installation of delineation fencing around threatened flora populations (if found) to ensure their protection during development and maintenance of the APZs; • condition monitoring for threatened flora populations (if found); • retention of hollow-bearing trees in the APZs, where possible; • installation of nest boxes to replace hollows where hollow-bearing trees cannot be retained in the APZs; • measures for APZ maintenance that include weed control; and • relocation of suitable felled trees adjacent to the APZs to create additional fauna habitat.
Surface water	CVC's WMP will be updated to include any changes as a result of the proposed modification.

Chapter 7

Modification justification and conclusion

Chapter 7 — Modification justification and conclusion

7 Modification justification and conclusion

7.1 Introduction

This chapter considers the proposed modification against the relevant objects of the EP&A Act and provides a justification for its approval.

7.2 Substantially the same development

The proposed modification constitutes a minor change to an existing approved underground mine that has been operating successfully for over 50 years. Only minor mine design changes are proposed, primarily the re-orientation of miniwall panels in CVC's northern mining area, resulting in a reduction in the mining area by 3.8% when compared to the previously approved layout. All secondary extraction will remain limited to areas beneath Lake Macquarie with protection barriers for the foreshore and seagrass continuing to apply. There will be no change to the existing CVC surface infrastructure, maximum road coal haulage or development consent period.

The proposed modification is, therefore, considered substantially the same as the approved development.

7.3 Objects of the Environmental Planning and Assessment Act 1979

The relevant objects of the EP&A Act are presented below, followed by a discussion on their application with regard to the proposed modification.

(a) to encourage

(i) the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment.

The proposed mine design changes will enable improved mining efficiency and productivity and potentially better mining conditions than the approved mine design.

The increase in production would facilitate LakeCoal's agreement to supply increased coal to VPPS for local power generation without impacting on supply to LakeCoal's other domestic customers and the export coal market. This would also increase the efficiency of product coal delivery to VPPS and improve the overall financial viability CVC.

The proposed modification would not only enhance the economic viability of CVC, but also increase employment. It will enable the continued employment of approximately 160 people and create an approximately 60 full time additional positions. A high proportion (approximately 90%) of the current CVC workforce resides in the Wyong and Lake Macquarie LGAs. The additional employment will provide potential employment opportunities for people residing in the local area.

Positive direct and in-direct (or flow-on) socio-economic impacts would arise as a consequence of continued employment, revenue contributions at a local, regional, state and national level, and community support.

The minor vegetation clearing and disturbance necessary to extend/establish APZs for bushfire protection purposes are required to afford an appropriate level of bushfire protection for both the employees and assets essential for the continued operation of CVC.

The minimal/negligible potential environmental impacts associated with the proposed modification will be managed in accordance with CVC's contemporary approval issued on 23 December 2013 (as modified) and the additional commitments identified in Table 6.1 of this report.

As substantiated above, the proposed modification encourages the proper management and development of a natural resource for the purpose of promoting the social and economic welfare of the community and a better environment.

(ii) the promotion and co-ordination of the orderly and economic use and development of land

The proposed modification is a minor alteration to an approved coal mine operation which represents an orderly and economic use of a resource approved for extraction for export uses and use in domestic power generation. The proposed modification will not impinge on land uses within and surrounding CVC.

(vi) the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats

The proposed modification will result in minimal native vegetation clearing (approximately 0.03 ha) and disturbance (approximately 1 ha) for bushfire protection purposes. This will not significantly impact on native animals and plants, including threatened species, populations and ecological communities and their habitats.

It is noted that vegetation clearing/disturbance for bushfire protection will have a positive effect on the key threatening process, '*high frequency fire resulting in disruption of life cycle processes in plants and animals and loss of vegetation structure and composition*' by reducing the bushfire risk to the Swamp Sclerophyll Forest EEC in the event of a fire arising within the pit top area.

With regard to marine ecology, all secondary extraction will remain limited to areas beneath Lake Macquarie with protection barriers for the foreshore and seagrass continuing to apply under the proposed modification. No impacts on the seagrass communities are predicted.

Similarly, based on the monitoring undertaken to-date and the area and depth of the Lake in the areas of maximum predicted subsidence, it is not anticipated that any significant impact on benthic communities will occur as a result of the modification.

CVC's BMP, seagrass management plan, BCMP and extraction plan, which provide a robust approach to the management and monitoring of terrestrial and marine ecology, will be updated to incorporate management measures presented in this SEE to avoid and/or minimise potential impacts on biodiversity.

(vii) ecologically sustainable development

The principles of ESD are outlined in Section 6 of the NSW *Protection of the Environment Administration Act 1991* and Schedule 2 of the Environmental Planning and Assessment Regulation 2000. The consistency of the modification with each of these principles is discussed below.

Precautionary principle:

As described in Section 5.1, a preliminary environmental risk assessment was completed for the proposed modification with all risks rated as low with the exception of terrestrial ecology, greenhouse gas and traffic and transport (see Appendix C). Despite this, and in accordance with the precautionary principle, a more detailed assessment was not only completed for these aspects, but also for potential subsidence, groundwater, marine ecology, wave climate, bushfire, and Aboriginal cultural heritage impacts, given the nature of the proposed modification.

Assessments were completed in accordance with current government policies and guidelines by leading technical specialists. Robust subsidence modelling, based on conservative assumptions and subsidence monitoring data for previously extracted miniwall panels, was prepared to support the assessment of potential impacts. Where applicable, environmental safeguards have been developed to avoid or minimise any effect on the environment. On this basis, the proposed modification is consistent with the precautionary principle.

Inter-generational equity:

The principle of inter-generational equity puts an onus on society to ensure that the health, diversity and productivity of the environment are maintained, or enhanced, for the benefit of current and future generations. The proposed modification has negligible potential to adversely affect the health, diversity or productivity of the environment and, therefore, will not adversely impact the current or future generations.

Conservation of biological diversity and maintenance of ecological integrity:

An assessment of the potential terrestrial and marine ecology impacts of the proposed modification has been undertaken in this SEE. The modification will not significantly impact TECs, important fauna habitats, movement corridors, or potentially-present terrestrial or marine threatened flora or fauna species or populations.

Improved valuation and pricing of environmental resources:

Potential adverse environmental impacts from the proposed modification are limited. It is anticipated that enabling the transportation of additional coal from CVC to the VPPS via MC surface facilities and overland conveyor will provide for an improved amenity outcome when compared with the truck haulage alternative.

Continued operation of CVC in accordance with SSD-5465 will ensure that environmental resources are valued both during and post mining.

(b) to promote the sharing of the responsibility for environmental planning between the different levels of government in the State, and

The preparation of this SEE has involved engagement with relevant State and local government bodies as described in Chapter 4.

(c) to provide increased opportunity for public involvement and participation in environmental planning and assessment.

The community has been consulted during the preparation of the SEE through existing LakeCoal engagement tools and provision of briefing information, and will continue to be involved and consulted through CVC's CCC and other mechanisms. The community will also have the chance to comment on the application during the public exhibition process. As of 1 June 2015, no issues of concern have been raised.

7.4 Conclusion

The proposed modification is a minor alteration to the approved development and should be approved as:

- it improves the overall financial viability of CVC, promoting the continuation of the CVC's social and economic benefits;
- it provides for approximately 60 additional full time employees, including employment opportunities for people residing in the local area, further enhancing CVC's social and economic benefits;
- it supports LakeCoal's obligations to supply increased coal to VPPS for local power generation;
- it enables an increased level of bushfire protection for both the employees and assets essential for the continued operation of CVC;
- benefits can be achieved with little to no risk of adverse environmental impact;
- it is aligned with the principles of ESD; and
- it meets all relevant government policies.

References

Australian and New Zealand Environment and Conservation Council 2000, *Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Vol 1 & 2.*

Australian Coal Association Research Program (ACARP) 2003, *Review of Industry Subsidence Data in Relation to the Impact of Significant Variations in Overburden Lithology and Initial Assessment of Sub-Surface Fracturing on Groundwater.*

BioAnalysis 2008, *Assessment of seagrasses associated with proposal to expand the Lake Macquarie Yacht Club in Belmont Bay*. Report prepared for Lake Macquarie Yacht Club.

Bureau of Meteorology (BoM) 2015, Cooranbong (Lake Macquarie AWS), viewed 14 April 2015, http://www.bom.gov.au/.

Cardno Ecology Lab 2011, *Mannering Colliery Extension of Mining – Aquatic Ecology Assessment*. Report prepared for Centennial Coal.

Cropper, S 1993*, Management of Endangered Plants*, CSIRO, East Melbourne.

Department of the Environment 2013, *Significant impact guidelines 1.3: Coal Seam Gas and large coal mining developments – Impacts on water resources*. Commonwealth Government.

Department of Environment (DoE) 2014, National Greenhouse Account (NGA) Factors. Viewed 17 March 2015, http://www.environment.gov.au/climate-change/greenhouse-gas-measurement/publications/national-greenhouse-accounts-factors-dec-2014.

Department of Environment (DoE) 2015a, Protected Matters Search Tool, viewed 14 April 2015, http://www.environment.gov.au/epbc/protected-matters-search-tool.

Department of Environment (DoE) 2015b, Species Profile and Threats Database, viewed 14 April 2015, http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl.

Department of Environment and Conservation (DEC) 2004, *Interim Community Consultation Requirements for Applicants*, NSW Government.

Department of Environment and Conservation (DEC) 2005a, *Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation*, NSW Government.

Department of Environment and Climate Change (DECC) 2008, *Recovery Plan for the Koala (Phascolarctoscinereus)*, NSW Government.

Department of Environment, Climate Change and Water (DECCW) 2010, *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010,* NSW Government.

Department of Primary Industries (DPI) 2007, *Prime facts: Seagrasses*. NSW Government.

Ditton Geotechnical Services (DGS) 2013, *Subsidence Impact Assessment for the Chain Valley Colliery Mining Extension 1 Project*. Report prepared for LakeCoal Pty Limited.

Ecotone Ecological Consultants 2010, *Flora and Fauna Investigations Vales Point Power Station Perimeter Lands Biodiversity Update.* Report prepared for Aurecon Australia and Delta Electricity.

EMGA Mitchell McLennan Pty Limited (EMM) 2013, *Chain Valley Colliery Mining Extension 1 Project – Environmental Impact Statement*. Report prepared for LakeCoal Pty Limited.

EMGA Mitchell McLennan Pty Limited (EMM) 2013a, *Chain Valley Colliery Mining Extension 1 Project – Traffic Impact Assessment*. Report prepared for LakeCoal Pty Limited.

EMGA Mitchell McLennan Pty Limited (EMM) 2013b, *Chain Valley Colliery Mining Extension 1 Project – Noise Impact Assessment*. Report prepared for LakeCoal Pty Limited.

EMGA Mitchell McLennan (EMM) 2014, *Vales Point Power Station Perimeter Lands Biodiversity Surveys,* (unpublished). Report prepared for LakeCoal Pty Limited.

EMGA Mitchell McLennan (EMM) and LDO 2014, *Chain Valley Colliery Biodiversity Management Plan.* Report prepared for LakeCoal Pty Limited.

Geoterra Pty Ltd 2013, *Chain Valley Colliery Mining Extension 1 Project – Groundwater Assessment.* Report prepared for LakeCoal Pty Limited.

Gray, R and Wellington, C 2004, 'Aquatic Vegetation Survey of Lake Macquarie', Connell Wagner PPI, unpublished report.

GSS Environmental 2013, *Chain Valley Colliery Mining Extension 1 Project – Surface Water Assessment.* Report prepared for LakeCoal Pty Limited.

Intergovernmental Panel on Climate Change (IPCC) 2013, Working Group I Contribution to the IPCC Fifth Assessment Report Clime Change 2013: The Physical Science Basis: Final Draft Underlying Scientific-Technical Assessment, viewed 17 March 2015, http://www.ipcc.ch/report/ar5/wg1/.

JSA Environmental 2012, *Chain Valley Colliery Domains 1 & 2 Continuation Project - Marine Benthic Communities*. Report prepared for LakeCoal Pty Limited.

JSA Environmental 2013, *Chain Valley Colliery Mining Extension 1 Project – Marine Ecology Assessment*. Report prepared for LakeCoal Pty Limited.

Keith, D 2004, *Ocean Shores to Desert Dunes: The Native Vegetation of New South Wales and the ACT*. NSW Department of Environment and Conservation.

King, R and Barclay, B 1986, 'Aquatic angiosperms in coastal saline lagoons of New South Wales IV.Long-term changes', *Proceedings Linnaean Society NSW* 109, pp. 25-39.

Laxton and Laxton (2009) Benthic Communities Survey of Chain Valley Bay, Summerland Point and Crangan Bay, Lake Macquarie, NSW.

Laxton and Laxton (2014) Seagrass Survey of Chain Valley Bay, Summerland Point and Crangan Bay, Lake Macquarie, , NSW (Results for 2008, 2010, 2011, 2012, 2013, 2014).

Laxton and Laxton (2015) Benthic Communities Survey of Chain Valley Bay, Summerland Point and Crangan Bay, Lake Macquarie, NSW.

Lower Hunter and Central Coast Regional Environment Management Strategy (LHCCREMS) 2000, Vegetation survey, classification and mapping, Lower Hunter and Central Coast Region v1.2, report to the Lower Hunter and Central Coast Regional Environment Management Strategy.

Luketina, D 1998, 'Simple tidal prism models revisited', Estuarine, Coastal and Shelf Science 46, pp. 77-84.NSW Scientific Committee (NSWSC) 2011, Final Determination Alteration of Habitat Following Subsidence due to Longwall Mining KeyThreatening Process Listing, viewed 14 April 2015, http://www.environment.nsw.gov.au/determinations/LongwallMiningKtp.htm

Macintyre, R 1959, 'Some aspects of the ecology of Lake Macquarie, NSW with regard to an alleged depletion of fish. VII. The benthic macrofauna', *Australian Journal of Marine and Freshwater Research* 10(3), pp. 341-353.

NSW Office of Water (NOW) 2012, *NSW Aquifer Interference Policy*. NSW Government.

Office of Environment and Heritage (OEH) 2012, *Definitions of Vegetation Types for Hawkesbury-Nepean CMA,* NSW Government.

Office of Environment and Heritage (OEH) 2014, *Biobanking Assessment Methodology,* NSW Government.

Office of Environment and Heritage (OEH) 2015a, Atlas of NSW Wildlife, viewed 14 April 2015, www.environment.nsw.gov.au/atlasapp.

Office of Environment and Heritage (OEH) 2015b, Threatened Species Profile Search, viewed 14 April 2015, www.environment.nsw.gov.au/threatenedSpeciesApp/.

Office of Environment and Heritage (OEH) 2015c, VIS Classification 2.1, viewed 14 April 2015, www.environment.nsw.gov.au/NSWVCA20PRapp/LoginPR.aspx.

Pacific Environment Limited 2013, *Chain Valley Colliery Mining Extension 1 Project – Air Quality and Greenhouse Gas Impact Assessment.* Report prepared for LakeCoal Pty Limited.

Pacific Environment 2015, *Chain Valley Colliery Modification 2 – Greenhouse Gas Assessment.* Report for EMGA Mitchell McLennan.

PBL Netherlands Environmental Assessment Agency 2013, Trends in Global CO2 Emissions 2013 Report, viewed 17 March 2015, http://edgar.jrc.ec.europa.eu/news_docs/pbl-2013-trends-in-global-co2-emissions-2013-report-1148.pdf.

Roads and Traffic Authority (RTA) 2002, *Guide to Traffic Generating Developments*.

AECOM 2011, *Environmental Assessment Chain Valley Colliery Domains 1 & 2 Continuation Project*. Report prepared for LakeCoal Pty Ltd.

Roy, P 1981, 'Fossil shell assemblages in Lake Macquarie', *Quarterly Notes of the Geological Survey of New South Wales* 42, pp. 1-19.

Royal Botanic Gardens and Domain Trust (RBGDT) 2015, PlantNET – The Plant Information Network System of The Royal Botanic Gardens and Domain Trust, Sydney Australia, viewed 14 April 2015, plantnet.rbgsyd.nsw.gov.au.

Rural Fire Service (RFS) 2006, *Planning for Bush Fire Protection Guideline*s.

Rural Fire Service (RFS) 2008, *Bush Fire Risk Management Planning Guidelines for Bushfire Management Committees.*

Rural Fire Service (RFS) 2014, *Development Planning: A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan.*

The Ecology Lab 2007, *Concept Plan for Trinity Point Marina and Mixed Use Development: Aquatic Ecological Investigations.* Report prepared for Johnson Property Group.

Threlkeld L, in Gunson, N, 1974, *Australian Reminiscences and Papers of L E Threlkeld Missionary to the Aborigines (1824-1859)*, Canberra: Australian Institute of Aboriginal Studies.

Tindale N, 1974, *Aboriginal tribes of Australia, their terrain, environmental controls, distribution, limits, and proper names,* Berkeley: University of California Press.

Watterson, E, Burston, J, Stevens, H and Messiter, D 2010, 'The Hydraulic And Morphological Response of a Large Coastal Lake to Rising Sea Levels', *Climate Change 2010: Practical Responses to Climate Change, Engineers Australia,* Barton, ACT,pp. 97-109.

Wellington, C 2000, 'Aquatic Vegetation Survey of Lake Macquarie', Earth Sense Consulting, unpublished report.

WRI/WBCSD 2004, *The Greenhouse Gas Protocol – A Corporate Accounting and Reporting Standard Revised Edition March 2004*.

Water Research Laboratory (WRL) 2013, *Mine Subsidence Impacts on Wave Climate in Lake Macquarie.* Report prepared for LDO Group.

Abbreviations

ACARP	Australian Coal Association Research Program
ACHA	Aboriginal cultural heritage assessment
AHD	Australian height datum
AHIMS	Aboriginal heritage information system
ANZECC	Australian and New Zealand Environment Conservation Council
APZ	asset protection zone
AQMP	air quality management plan
BCMP	benthic communities management plan
BoM	Bureau of Meteorology
BMP	biodiversity management plan
Centennial	Centennial Coal Company
CCC	community consultative committee
CCL	consolidated coal lease
CMA	catchment management authority
CO_2	carbon dioxide
CVC	Chain Valley Colliery
DEC	Department of Environment and Conservation
DECC	Department of Environment and Climate Change
DECCW	Department of Environment, Climate Change and Water
DGS	Ditton Geotechnical Services
DoE	Department of Environment
DoP	Department of Planning
DP&E	Department of Planning and Environment
DPI	Department of Primary Industries
DRE	Division of Resources and Energy
EA	environmental assessment
ESD	ecologically sustainable development
EMM	EMGA Mitchell McLennan Pty Limited
EEC	endangered ecological community
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
EPA	Environment Protection Authority
EPL	environment protection licence
EIS	environmental impact statement
EP&A Act	*Environmental Planning and Assessment Act 1979*
FM Act	*Fisheries Management Act 1994*
FoS	factor of safety
GDEs	Groundwater dependent ecosystems
GPS	global positioning system
GHG	greenhouse gas

GwMP	groundwater management plan
ha	hectares
HMP	heritage management plan
HWMSB	high water mark subsidence barrier
ICCRs	interim community consultation requirements
IPA	inner protection area
IPCC	Intergovernmental Panel on Climate Change
km	kilometre
LakeCoal	LakeCoal Pty Ltd
LGAs	local government areas
LEP	local environmental plan
LHCCREMS	Lower Hunter and Central Coast Regional Environment Management Strategy
MC	Mannering Colliery
MSC Act	*Mine Subsidence Compensation Act 1961*
ML	megalitre
m	metre
Mtpa	million tonnes per annum
Mining Act	*Mining Act 1992*
ML	mining lease
mm	millimetre
MOP	mining operations plan
MPa	MegaPascal
NES	national environmental significance
NGA	National Greenhouse Account
NOW	NSW Office of Water
NSW	New South Wales
NSWSC	New South Wales Scientific Committee
OEH	Office of Environment and Heritage
NGERS	national greenhouse and energy reporting system
OPA	outer protection area
PBP	Planning for Bushfire Protection
PE	Pacific Environment Operations Pty Limited
POEO Act	Protection of the Environment Operations Act 1997
PWCS	Port Waratah Coal Services
RAPs	registered Aboriginal parties
RBGDT	Royal Botanic Gardens and Doman Trust
RMS	Roads and Maritime Service
RFS	Rural Fire Service
ROM	run-of-mine
RTA	Roads and Traffic Authority
s	second

SPB	seagrass protection barrier
SEPP	state environmental planning policy
SSD	state significant development
SEE	statement of environmental effects
SMP	subsidence management plan
TEC	threatened ecological community
tpa	tonnes per annum
UNSW	University of New South Wales
TSC Act	*Threatened Species Conservation Act 1995*
VPPS	Vales Point Power Station
Water Act	*Water Act 1912*
WBCSD	World Business Council for Sustainable Development
WM Act	*Water Management Act 2000*
WMP	water management plan
WRI	World Resources Institute
WRL	Water Research Laboratory

Appendix A

Development Consent SSD-5465

Appendix A— Development Consent SSD-5465

A

Development Consent

Section 89E of the *Environmental Planning & Assessment Act 1979*

As delegate of the Minister for Planning and Infrastructure, I approve the development application referred to in Schedule 1, subject to the conditions in Schedules 2 to 6.

These conditions are required to:

- prevent, minimise, and/or offset adverse environmental impacts;
- set standards and performance measures for acceptable environmental performance;
- require regular monitoring and reporting; and
- provide for the ongoing environmental management of the development.

Chris Wilson
Executive Director
Development Assessment Systems and Approvals

Sydney 2013

SCHEDULE 1

Application Number:	SSD-5465
Applicant:	LakeCoal Pty Limited
Consent Authority:	Minister for Planning and Infrastructure
Land:	See Appendix 1
Development:	Chain Valley Extension Project

Red type represents November 2014 Modification (SSD_5465 MOD 1)

TABLE OF CONTENTS

DEFINITIONS

Adaptive management	Adaptive management includes monitoring subsidence impacts and subsidence effects and, based on the results, modifying the mining plan as mining proceeds to ensure that the effects, impacts and/or associated environmental consequences remain within predicted and designated ranges and in compliance with the conditions of this consent
Annual Review	The review required by Condition 4 of Schedule 6
Applicant	LakeCoal Pty Limited, or any other person or persons who rely on this consent to carry out the development that is subject to this consent
Approved mine plan	The mine plan show in Appendix 3, as varied by any Extraction Plan approved under this consent
BCA	Building Code of Australia
Built features	Any building or work erected or constructed on land or water, and includes dwellings and infrastructure such as any formed road, street, path, walk, marina or driveway; any pipeline, water, sewer, telephone, gas or other service main
CCC	Community Consultative Committee
Coal haulage route	The route proposed in the EIS for haulage of coal by trucks between the site and Port Waratah Coal Services (as shown in Appendix 5).
Conditions of this consent	Conditions contained in Schedules 2 to 6 inclusive
Construction	The demolition of buildings or works, carrying out of works and erection of buildings covered by this consent
Day	The period from 7am to 6pm on Monday to Saturday, and 8am to 6pm on Sundays and Public Holidays
Delta Electricity	Delta Electricity, or subsequent owners of the Vales Point Power Station
Department	Department of Planning & Environment
Development	The development described in the EIS, as amended by SEE Mod 1
DRE	Division of Resources and Energy within the Department of Trade and Investment, Regional Infrastructure and Services
DPI Fisheries	Fisheries Division of the Department of Primary Industries
DRE	Division of Resources and Energy, within the Department of Trade & Investment, Regional Infrastructure & Services
EA	Environmental Assessment titled '*Environmental Assessment – Chain Valley Colliery Domains 1 and 2 Continuation Project*' dated July 2010 and associated response to submissions titled '*Submissions Report – Chain Valley Colliery Domains 1 and 2 Continuation Project',* dated 14 November 2011
EIS	Environmental Impact Statement titled '*Chain Valley Colliery Mining Extension 1 Project*' dated 28 May 2013, as modified by the response to submissions, titled '*Chain Valley Colliery Mining Extension 1 Project* Response to Submissions', dated August 2013, and the letter by EMM to the Applicant, dated 29 October 2013
Endangered population	As defined under the *Fisheries Management Act 1994*
Environmental consequences	The environmental consequences of subsidence impacts, including: damage to built features; loss of surface water flows to the subsurface; loss of standing pools; slope changes to streams; adverse water quality impacts; development of iron bacterial mats; landslides; damage to Aboriginal heritage sites; impacts on aquatic ecology; and ponding.
EPA	Environment Protection Authority
EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Regulation	*Environmental Planning and Assessment Regulation 2000*
EPL	Environment Protection Licence issued under the POEO Act
Evening	The period from 6pm to 10pm
Feasible	Feasible relates to engineering considerations and what is practical to build or carry out
First workings	Development of the main headings and gateroads in the underground mining area
Ha	Hectare
Heritage item	An item as defined under the *Heritage Act 1977* and/or an Aboriginal object or Aboriginal place as defined under the *National Parks and Wildlife Act 1974*
High Water Mark Subsidence Barrier	The area of land defined: a) on the surface by the highwater level of Lake Macquarie and a point 2.44 metres in elevation above that highwater level; and b) in the seam, where it is intersected by lines: • drawn landwards from all points 2.44 metres elevation above the highwater level of Lake Macquarie; and • drawn lakewards from the highwater level of Lake Macquarie,

	at an angle of 35 degrees from the vertical.
Incident	A set of circumstances that: • causes or threatens to cause material harm to the environment; and/or • breaches or exceeds the limits or performance measures/criteria in this consent
Land	As defined in the EP&A Act, except for where the term is used in the noise and air quality conditions in Schedule 3 of this consent where it is defined to mean the whole of a lot, or contiguous lots owned by the same landowner, in a current plan registered at the Land Titles Office at the date of this consent
LMCC	Lake Macquarie City Council
Material harm to the environment	Actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial
Mining operations	Includes all extraction, processing, handling, storage and transportation of coal carried out on the site
Minister	Minister for Planning, or delegate
Minor	Not very large, important or serious
Mitigation	Activities associated with reducing the impacts of the development
MSB	Mine Subsidence Board
NCC	Newcastle City Council
Negligible	Small and unimportant, such as to be not worth considering
Night	The period from 10pm to 7am on Monday to Saturday, and 10pm to 8am on Sundays and Public Holidays
NOW	NSW Office of Water
OEH	Office of Environment and Heritage
Peak hour periods	7 am to 9 am and 4:30 pm to 6 pm weekdays
POEO Act	*Protection of the Environment Operations Act 1997*
Privately-owned land	Land that is not owned by a public agency, Delta Electricity or a mining company (or its subsidiary)
Reasonable	Reasonable relates to the application of judgement in arriving at a decision, taking into account: mitigation benefits, cost of mitigation versus benefits provided, community views and the nature and extent of potential improvements
Reasonable costs	The costs agreed between the Department and the Applicant for obtaining independent experts to review the adequacy of any aspects of the Extraction Plan, or where such costs cannot be agreed, the costs determined by a dispute resolution process
Rehabilitation	The treatment or management of land disturbed by the development for the purpose of establishing a safe, stable and non-polluting environment
Remediation	Activities associated with partially or fully repairing or rehabilitating the impacts of the development or controlling the environmental consequences of this impact
Road Maintenance Agreement	The document prepared by McCullough Robertson Lawyers and titled '*Road Maintenance Agreement*', signed by WSC on 1 July 2013 and by LakeCoal on 5 July 2013
ROM coal	Run-of-mine coal
RMS	Roads and Maritime Services
Safe, serviceable & repairable	Safe means no danger to users who are present; serviceable means available for its intended use; and repairable means damaged components can be repaired economically
Second workings	Extraction of coal by miniwall or pillar extraction methods
Secretary	Secretary of the Department, or nominee
SEE Mod 1	Statement of Environmental Effects titled *'Chain Valley Colliery – Modification 1, Statement of Environmental Effects, Section 96 Modification to SSD-5465'* dated April 2014, as modified by the associated Response to Submissions dated 15 September 2014.
Site	All land within the Development Area (see Appendices 1 and 2)
Statement of commitments	The Applicant's commitments in Appendix 9
Subsidence	The totality of subsidence effects, subsidence impacts and environmental consequences of subsidence impacts
Subsidence effects	Deformation of the ground mass due to mining, including all mining-induced ground movements, such as vertical and horizontal displacement, tilt, strain and curvature
Subsidence impacts	Physical changes to the ground and its surface caused by subsidence effects, including tensile and shear cracking of the rock mass, localised buckling of strata caused by valley closure and upsidence and surface depressions or troughs
Surface facilities sites	The Chain Valley Colliery surface facilities site; the Summerland Point ventilation shaft site; and any other site subject to existing or proposed surface

	disturbance associated with the development
Threatened Species	As defined under the *Threatened Species Conservation Act 1995* and the *Environment Protection and Biodiversity Conservation Act 1999*
WSC	Wyong Shire Council

SCHEDULE 2
ADMINISTRATIVE CONDITIONS

OBLIGATION TO MINIMISE HARM TO THE ENVIRONMENT

1. In addition to meeting the specific performance criteria established under this consent, the Applicant shall implement all reasonable and feasible measures to prevent and/or minimise any harm to the environment that may result from the construction, operation, or rehabilitation of the development.

TERMS OF CONSENT

2. The Applicant shall carry out the development generally in accordance with the:
   (a) EA;
   (b) EIS;
   (c) SEE Mod 1;
   (d) Statement of Commitments; and
   (e) conditions of this consent.

   Note: The general layout of the development is shown in Appendices 2 to 4

3. If there is any inconsistency between the above documents, the more recent document shall prevail to the extent of the inconsistency. However, the conditions of this consent shall prevail to the extent of any inconsistency.

4. The Applicant shall comply with any reasonable requirement/s of the Secretary arising from the Department's assessment of:
   (a) any strategies, plans, programs, reviews, audits, reports or correspondence that are submitted by the Applicant in accordance with this consent; and
   (b) the implementation of any actions or measures contained in these documents.

LIMITS ON CONSENT

Mining Operations

5. The Applicant may carry out mining operations on the site until 31 December 2027.

   Note: Under this consent, the Applicant is required to rehabilitate the site and perform additional undertakings to the satisfaction of either the Secretary or the DRE. Consequently this consent will continue to apply in all other respects other than the right to conduct mining operations until the rehabilitation of the site and these additional undertakings have been carried out satisfactorily.

Coal Extraction

6. The Applicant shall not extract more than 1.5 million tonnes of ROM coal from the site in any calendar year.

Coal Transport – Public Roads

7. The Applicant shall ensure that no laden coal trucks are dispatched from the site to public roads outside of the hours of 5:30 am to 5:30 pm, Monday to Friday, and not at all on Saturdays, Sundays or public holidays.

8. The Applicant shall not dispatch from the site more than:
   (a) 660,000 tonnes of product coal in any calendar year to Port Waratah Coal Services for export;
   (b) 180,000 tonnes of product coal in any calendar year to domestic customers other than Vales Point Power Station;
   (c) a total of 270 laden coal trucks per day by public roads;
   (d) a total of 32 laden coal trucks per hour; and
   (e) an average of 16 laden coal trucks per hour by public roads during peak hour periods, calculated monthly, until the intersection of M1 Motorway and Sparks Road Interchange (East Side - unsignalised with stop sign) is upgraded to a signalised intersection.

Coal Transport – Vales Point Power Station

9. The Applicant shall ensure that only private roads are used for the transport of coal by truck to Vales Point Power Station, except in an emergency. In an emergency, product coal may be transported by public roads, with the prior written approval of the Secretary, and subject to any restrictions that the Secretary may impose.

10. The Applicant shall restrict the transport of coal by truck to the Vales Point Power Station between 10 pm and 5:30 am to:
    (a) 16 laden trucks per hour for the Spring and Autumn months; and
    (b) zero during Winter months.

PLANNING AGREEMENT

11. Within 12 months of the date of this consent, unless otherwise agreed by the Secretary, the Applicant shall enter into a planning agreement with the WSC in accordance with Division 6 of Part 4 of the EP&A Act that provides for payment to the WSC for community enhancement purposes.

    The agreement must include provision for those matters set out in condition 12 below.

    If there is any dispute between the Applicant and WSC relating to the preparation or implementation of the planning agreement, then either party may refer the matter to the Secretary for resolution.

COMMUNITY ENHANCEMENT

12. The Applicant shall pay WSC $0.035 for each tonne of product coal produced by the development for the purposes of improving public infrastructure and providing community projects for the communities of Summerland Point, Gwandalan, Chain Valley Bay and Mannering Park. Payments from the approval date of project approval 10_0161 must be:
    (a) made by the end of March, for coal produced in the previous calendar year;
    (b) made for each year that coal is produced by the colliery; and
    (c) subject to indexation in accordance with the Australian Bureau of Statistics Consumer Price Index.

SURRENDER OF EXISTING PROJECT APPROVAL

13. Within 12 months of the date of this development consent, unless the Secretary agrees otherwise, the Applicant shall surrender its project approval for the Chain Valley Colliery Domains 1 & 2 Continuation Project (10_0161) to the satisfaction of the Secretary, in accordance with section 75YA of the EP&A Act.

    Note: This requirement does not extend to the surrender of construction and occupation certificates for existing and proposed building works under Part 4A of the EP&A Act. Surrender of a consent or approval should not be understood as implying that works legally constructed under a valid consent or approval can no longer be legally maintained or used.

14. Prior to the surrender of the existing project approval, the conditions of this consent (including any notes) shall prevail to the extent of any inconsistency with the conditions of the existing project approval (10_0161).

STRUCTURAL ADEQUACY

15. The Applicant shall ensure that all new buildings and structures, and any alterations or additions to existing buildings and structure, that are part of the development are constructed in accordance with:
    (a) the relevant requirements of the BCA; and
    (b) any additional requirements of the MSB where the building or structure is located on land within declared Mine Subsidence Districts.

    Notes:
    - *Under Part 4A of the EP&A Act, the Applicant is required to obtain construction and occupation certificates for the proposed building works;*
    - *Part 8 of the EP&A Regulation sets out the requirements for the certification of the development; and*
    - *Under Section 15 of the Mine Subsidence Compensation Act 1961, the Applicant is required to obtain the MSB's approval before constructing any improvements in a Mine Subsidence District.*

DEMOLITION

16. The Applicant shall ensure that all demolition work is carried out in accordance with *Australian Standard AS 2601-2001: The Demolition of Structures,* or its latest version.

OPERATION OF PLANT AND EQUIPMENT

17. The Applicant shall ensure that all plant and equipment used at the site is:
    (a) maintained in a proper and efficient condition; and
    (b) operated in a proper and efficient manner.

STAGED SUBMISSION OF STRATEGIES, PLANS OR PROGRAMS

18. With the approval of the Secretary, the Applicant may submit any strategy, plan or program required by this consent on a progressive basis.

To ensure these strategies, plans or programs are updated on a regular basis, the Applicant may at any time submit revised strategies, plans or programs to the Secretary for approval.

With the agreement of the Secretary, the Applicant may prepare any revised strategy, plan or program without undertaking consultation with all parties under the applicable condition of this consent.

Notes:

- *While any strategy, plan or program may be submitted on a progressive basis, the Applicant will need to ensure that the existing operations on site are covered by suitable strategies, plans or programs at all times.*
- *If the submission of any strategy, plan or program is to be staged, then the relevant strategy, plan or program must clearly describe the specific stage to which the strategy, plan or program applies, the relationship of this stage to any future stages, and the trigger for updating the strategy, plan or program.*

ROAD MAINTENANCE CONTRIBUTION

19. The Applicant must pay Road Maintenance Fees to WSC in accordance with its Road Maintenance Agreement with WSC.

SCHEDULE 3
ENVIRONMENTAL CONDITIONS – GENERAL

TRANSPORT

Monitoring of Coal Transport

1. The Applicant shall:
   (a) keep accurate records of the amount of coal transported from the site (on a weekly basis); and
   (b) make these records publicly available on its website at the end of each calendar quarter.

Road Works

2. The Proponent shall upgrade the Ruttleys Road and Construction Road intersection within 6 months of the date of this consent, unless the Secretary directs otherwise, by:
   (a) installing additional signage on and adjacent to Construction Road prior to the intersection;
   (b) repairing the surface of Construction Road as required and ensuring the edge seal of the left turn lane is of sufficient width to accommodate coal trucks;
   (c) installing or replacing "Stop" signs in accordance with Austroads guidelines;
   (d) repainting road line markings and raised pavements associated with this intersection; and
   (e) installing barriers to prevent trucks parking on the gravel area adjacent to the intersection and the electricity substation located in the vicinity of this intersection.

   The design and construction of these works must be undertaken in consultation with, and to the relevant satisfaction of, WSC, RMS and Delta Electricity and to the satisfaction of the Secretary.

Road Transport Protocol

3. The Applicant shall prepare and implement a Road Transport Protocol to the satisfaction of the Secretary. This protocol shall:
   (a) be prepared in consultation with RMS, NCC, WSC, DRE and CCC and submitted to the Secretary for approval within 6 months of the date of this consent;
   (b) describe the designated haulage routes to be used (as shown in Appendix 5); the maximum number of road movements proposed and the haulage hours permitted under this consent;
   (c) include a Traffic Management Plan, which includes:
      - procedures to ensure that drivers adhere to the designated haulage routes;
      - measures to maximise the use of a low frequency (regular) trucking schedule rather than an intermittently-high frequency (campaign) trucking schedule, especially during the morning peak hour;
      - contingency plans to apply when (for example) the designated haulage route is disrupted, including procedures for notifying relevant agencies and affected communities of the need to implement such contingency plans;
      - procedures to ensure that all haulage vehicles associated with the development are clearly distinguishable as Chain Valley Colliery coal haulage trucks;
      - details of procedures for receiving and addressing complaints from the community concerning traffic issues associated with truck movements to and from the site;
      - measures to ensure that the provisions of the Traffic Management Plan are implemented, eg driver training in the heavy vehicle driver's Code of Conduct and contractual agreements with heavy vehicle operators; and
      - procedures for ensuring compliance with and enforcement of the heavy vehicle driver's Code of Conduct;
   (d) include a Code of Conduct for heavy vehicle drivers that addresses:
      - travelling speeds;
      - instructions to avoid grouping or convoying of trucks;
      - instructions to drivers not to overtake each other on the haulage route, as far as practicable, and to maintain appropriate distances between vehicles;
      - instruction to drivers to adhere to the designated haulage routes;
      - instruction to drivers to be properly safety conscious and to strictly obey all traffic regulations; and
      - appropriate penalties for infringements of the Code.

Independent Traffic Audit

4. Prior to 31 March 2014, and every 12 months thereafter, unless the Secretary directs otherwise, the Applicant shall commission a suitably qualified person, whose appointment has been approved by the Secretary, to conduct an Independent Traffic Audit of the development. This audit must:
   (a) be undertaken without prior notice to the Applicant, and in consultation with RMS, NCC, WSC and the CCC;

(b) assess the impact of the development on the performance and safety of the road network, including a review of:
- haulage records;
- accident records on the haulage route, infringements relating to the code of conduct and any incidents involving haulage vehicles;
- community complaints register; and

(c) assess the effectiveness of the Road Transport Protocol; and, if necessary, recommend measures to reduce or mitigate any adverse (or potentially adverse) impacts.

5. Within 1 month of receiving the audit report, or as otherwise agreed by the Secretary, the Applicant shall submit a copy of the report to the Secretary, with a detailed response to any of the recommendations contained in the audit report, including a timetable for the implementation of any measures proposed to address the recommendations in the audit report.

A summary of the audit report must be included in the Annual Review.

Alternative Coal Transport Options

6. Prior to 31 December 2014, and every three years thereafter, the Proponent shall prepare and submit to the Secretary for approval, a study of the reasonable and feasible options to reduce or eliminate the use of public roads to transport coal from the development. The assessment must include:
(a) an analysis of the capital, construction and operating costs of the alternative transport options; and
(b) quantified social and environmental impacts associated with road and rail transport.

NOISE

Noise Impact Assessment Criteria

7. The Applicant shall ensure that the noise generated by the development at any residence on privately-owned land does not exceed the criteria for the location in Table 1 nearest to that residence.

Table 1: Noise Criteria dB(A)

Location	***Day***	***Evening***	***Night***	
	$L_{Aeq(15\ min)}$	$L_{Aeq(15\ min)}$	$L_{Aeq(15\ min)}$	$L_{A1(1\ min)}$
R8	38	38	38	45
R11	49	49	49	54
R12	49	49	49	53
R13	43	43	43	49
R15	36	36	36	45
R19	37	37	37	45
R22	46	46	46	46
all other privately-owned land	35	35	35	45

Notes:
- *To interpret the locations referred to in Table 1, see Appendix 6 and the EIS; and*
- *Noise generated by the development is to be measured in accordance with the relevant requirements, and exemptions (including certain meteorological conditions), of the NSW Industrial Noise Policy. Appendix 8 sets out the meteorological conditions under which these criteria apply, and the requirements for evaluating compliance with these criteria.*

However, these criteria do not apply if the Applicant has a written agreement with the relevant landowner to exceed the noise criteria, and the Applicant has advised the Department in writing of the terms of this agreement.

Operating Conditions

8. The Applicant shall:
(a) implement best management practice, including all reasonable and feasible noise mitigation measures, to minimise the construction, operational and transport noise generated by the development;
(b) regularly assess the noise monitoring and meteorological data and relocate, modify, and/or stop operations on site to ensure compliance with the relevant conditions of this consent;
(c) minimise the noise impacts of the development during meteorological conditions under which the noise limits in this consent do not apply (see Appendix 8);
(d) use its best endeavours to achieve the long-term noise goals in Table 2, where reasonable and feasible, and report on progress towards achieving these goals in each Annual Review;

(e) carry out a comprehensive noise audit of the development in conjunction with each independent environmental audit; and

(f) prepare an action plan to implement any additional reasonable and feasible onsite noise mitigation measures identified by each audit;

to the satisfaction of the Secretary.

Table 2: Long-term Noise Goals dB(A)

Location	Day	Evening	Night
	$L_{Aeq(15\ min)}$	$L_{Aeq(15\ min)}$	$L_{Aeq(15\ min)}$
R11 – R13	41	41	41
R22	40	40	40

Notes:

- *To interpret the locations referred to in Table 2, see Appendix 6 and the EIS; and*
- *Noise generated by the development is to be measured in accordance with the relevant requirements, and exemptions (including certain meteorological conditions), of the NSW Industrial Noise Policy. Appendix 8 sets out the meteorological conditions under which these criteria apply, and the requirements for evaluating compliance with these criteria.*

Noise Management Plan

9. The Applicant shall prepare and implement a Noise Management Plan for the development to the satisfaction of the Secretary. This plan must:

(a) be prepared in consultation with the EPA and submitted to the Secretary for approval within 4 months of the date of this consent, unless otherwise agreed by the Secretary;

(b) describe the measures that would be implemented to ensure compliance with the noise criteria and operating conditions in this consent;

(c) describe the proposed noise management system in detail including the mitigation measures that would be implemented to minimise noise during construction and operations, including on and off site road noise generated by vehicles associated with the development; and

(d) include a monitoring program that:

- uses attended monitoring to evaluate the compliance of the development against the noise criteria in this consent;
- evaluates and reports on:
  - the effectiveness of the on-site noise management system; and
  - compliance against the noise operating conditions; and
- defines what constitutes a noise incident, and includes a protocol for identifying and notifying the Department and relevant stakeholders of any noise incidents.

AIR QUALITY

Odour

10. The Applicant shall ensure that no offensive odours are emitted from the site, as defined under the POEO Act.

Air Quality Criteria

11. The Applicant shall ensure that all reasonable and feasible avoidance and mitigation measures are employed so that particulate matter emissions generated by the development do not cause exceedance of the criteria listed in Tables 3, 4 and 5 at any residence on privately-owned land.

Table 3: Long-term criteria for particulate matter

Pollutant	Averaging period	[d] Criterion
Total suspended particulate (TSP) matter	Annual	[a] 90 µg/m^3
Particulate matter < 10 µm (PM_{10})	Annual	[a] 30 µg/m^3

Table 4: Short-term criterion for particulate matter

Pollutant	Averaging period	[d] Criterion
Particulate matter < 10 µm (PM_{10})	24 hour	[a] 50 µg/m^3

Table 5: Long-term criteria for deposited dust

Pollutant	Averaging period	Maximum increase in deposited dust level	Maximum total deposited dust level
[c] Deposited dust	Annual	[b] 2 g/m^2/month	[a] 4 g/m^2/month

Notes for Tables 3 to 5:

- [a] *Total impact (i.e. incremental increase in concentrations due to the development plus background concentrations due to other sources);*
- [b] *Incremental impact (i.e. incremental increase in concentrations due to the development on its own);*
- [c] *Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method*; *and*
- [d] *Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents, illegal activities or any other activity agreed to by the Secretary.*

Operating Conditions

12. The Applicant shall:
    (a) implement best practice air quality management at the site, including all reasonable and feasible measures to minimise the off-site odour, fume and dust emissions generated by the development;
    (b) implement best practice management to minimise the risk of spontaneous combustion and related emissions;
    (c) implement all reasonable and feasible measures to minimise the release of greenhouse gas emissions from the site;
    (d) operate an air quality management system on site to ensure compliance with the relevant conditions of this consent;
    (e) minimise the air quality impacts of the development during adverse meteorological conditions and extraordinary events (see note d to Tables 3-5 above);
    (f) regularly assess the air quality monitoring data, and modify operations on site to ensure compliance with the relevant conditions of this consent,

    to the satisfaction of the Secretary.

Air Quality Management Plan

13. The Applicant shall prepare and implement an Air Quality Management Plan for the development to the satisfaction of the Secretary. This plan must:
    (a) be prepared in consultation with the EPA, and submitted to the Secretary for approval within 6 months of the date of this consent;
    (b) describe the measures that would be implemented to ensure compliance with the relevant air quality criteria and operating conditions of this consent;
    (c) describe the measures that would be implemented to minimise the release of greenhouse gas emissions from the site;
    (d) describe the proposed on-site air quality management system; and
    (e) include an air quality monitoring program that:
        - is capable of evaluating the operating conditions of this consent;
        - evaluates and reports on:
            - the effectiveness of the air quality management system; and
            - compliance against the air quality operating conditions;
        - defines what constitutes an air quality incident, and includes a protocol for identifying and notifying the Department and relevant stakeholders of any air quality incidents.

METEOROLOGICAL MONITORING

14. During the life of the development, the Applicant shall ensure that there is a suitable meteorological station operating in the vicinity of the site that:
    (a) complies with the requirements in the *Approved Methods for Sampling of Air Pollutants in New South* Wales guideline; and
    (b) is capable of continuous real-time measurement of temperature lapse rate in accordance with the NSW Industrial Noise Policy, unless a suitable alternative is approved by the Secretary following consultation with the EPA.

SOIL & WATER

Note: Under the Water Act 1912 and/or the Water Management Act 2000, the Applicant is required to obtain the necessary water licences for the development.

Water Supply

15. The Applicant shall ensure that it has sufficient water for all stages of the development, and if necessary, adjust the scale of mining operations to match its available water supply, to the satisfaction of the Secretary.

Water Pollution

16. Unless an EPL authorises otherwise, the Applicant shall comply with Section 120 of the POEO Act.

Sewage Management

17. The Proponent shall manage on-site sewage in accordance with *NSW Environmental Guidelines: Use of Effluent by Irrigation* (DEC 2004) and the *National Guidelines for Sewerage Systems - Effluent Management (ANZECC 1997)* or its latest version, to the satisfaction of EPA.

Water Management Plan

18. The Proponent shall prepare and implement a Water Management Plan for the surface facilities sites to the satisfaction of the Secretary. This plan must be prepared in consultation with NOW and EPA, by suitably qualified and experienced persons whose appointment has been endorsed by the Secretary, and submitted to the Secretary for approval within 6 months of the date of this consent. This plan must include:
    (a) a comprehensive water balance for the development that includes details of:
        - sources and security of water supply;
        - water make in the underground workings;
        - water transfers from the underground operations to the surface;
        - water use; and
        - any water discharges;
    (b) management plans for the surface facilities sites, that include:
        - a detailed description of water management systems for each site, including:
            - clean water diversion systems;
            - erosion and sediment controls; and
            - any water storages;
        - measures to minimise potable water use and to reuse and recycle water;
        - measures to manage acid sulphate soils, if encountered;
        - activities that would involve ground disturbance at the site; and
        - monitoring and reporting procedures.
    (c) a Surface Water Management Plan which:
        - includes baseline data on surface water flows and quality of Swindles Creek;
        - details surface water impact assessment criteria, including trigger levels for investigating any potentially adverse impacts on surface water resources or surface water quality;
        - provides a program to monitor:
            - surface water discharges;
            - surface water flows and quality; and
            - channel stability;
    (d) a Ground Water Monitoring Program which includes a program to:
        - monitor and report groundwater inflows to underground workings;
        - predict, manage and monitor impacts to nearby groundwater bores on privately-owned land that may be impacted by the development; and
    (e) a detailed review of surface water management at the site, with particular reference to the water storages within the dirty water management system, to:
        - determine whether the capacity, integrity, retention time and management of the dirty water storages (particularly the final Pollution Control Dam) are sufficient to ensure that water discharged from the site meets the EPL limits and surface water impact assessment criteria within the Surface Water Management Plan; and
        - propose any appropriate changes to the surface water management system.

    Note: The Secretary may require the Applicant to implement upgrades and other changes identified under paragraph (e), in accordance with condition 4 of schedule 2.

BIODIVERSITY

Biodiversity Enhancement Strategy

19. The Applicant shall implement a Biodiversity Enhancement Strategy as described in the EIS and summarised in Table 6, in consultation with OEH, and to the satisfaction of the Secretary.

Table 6: Summary of the Biodiversity Enhancement Strategy

Area	***Offset Type***	***Minimum Size/Amount***
Biodiversity Enhancement Area	Enhancement and restoration measures, including weed and rubbish removal, return of natural hydrological regime and regeneration with native endemic species.	3 ha (in total) of Swamp Sclerophyll Floodplain Forest and Swamp Oak Floodplain Forest endangered ecological communities within the surface facilities sites

Note: To identify the Biodiversity Enhancement Area referred to in Table 6 see the applicable figures in Appendix 7.

Biodiversity Management Plan

20. The Applicant shall prepare and implement a Biodiversity Management Plan for the surface facilities sites, for all areas that are not, or will not, be subject to condition 7 of schedule 4, to the satisfaction of the Secretary. This plan must:
    (a) be prepared by a suitably qualified person approved by the Secretary; in consultation with OEH, and submitted to the Secretary within 6 months of the date of this consent;
    (b) establish baseline data for the existing habitat in the Biodiversity Enhancement Area and elsewhere on the site;
    (c) describe the short, medium, and long term measures that would be implemented to:
        - manage the impacts of clearing vegetation;
        - manage the remnant vegetation and habitat in the Biodiversity Enhancement Area and elsewhere on the site; and
        - implement the Biodiversity Enhancement Strategy, including detailed performance and completion criteria;
    (d) include a program to monitor and report on the effectiveness of these measures, and progress against the detailed performance and completion criteria;
    (e) identify the potential risks to the successful implementation of the Biodiversity Enhancement Strategy, and the contingency measures that would be implemented to mitigate these risks; and
    (f) include details of who would be responsible for monitoring, reviewing, and implementing the plan.

HERITAGE

Heritage Management Plan

21. The Proponent shall prepare and implement a Heritage Management Plan for the development to the satisfaction of the Secretary. This Plan must:
    (a) be prepared in consultation with any relevant Aboriginal stakeholders;
    (b) be submitted to the Secretary for approval within 6 months of the date of this consent;
    (c) include consideration of the Aboriginal and non-Aboriginal cultural context and significance of the site;
    (d) detail the responsibilities of all stakeholders; and
    (e) include programs/procedures and management measures for:
        - the ongoing monitoring of site 45-7-0189 at Summerland Point;
        - managing the discovery of any human remains or previously unidentified Aboriginal objects on site, including (in the case of human remains) stop work provisions and notification protocols;
        - ongoing consultation and involvement of the Aboriginal community in the conservation and management of Aboriginal heritage within the site; (including procedures for keeping records of this);
        - appropriate identification, management, conservation and protection of both Aboriginal and non-Aboriginal heritage items identified on the site; and
        - ensuring relevant workers on site receive suitable heritage inductions prior to carrying out any activities which may disturb Aboriginal sites, and that suitable records are kept of these inductions.

VISUAL

Visual Amenity and Lighting

22. The Applicant shall:
    (a) minimise visual impacts, and particularly the off-site lighting impacts, of the Surface facilities sites;
    (b) take all reasonable and feasible measures to further mitigate off-site lighting impacts from the development; and
    (c) ensure that all external lighting associated on site complies with *Australian Standard AS4282 (INT) 1995 – Control of Obtrusive Effects of Outdoor Lighting,*

    to the satisfaction of the Secretary.

WASTE

23. The Applicant shall:
    (a) minimise and monitor the waste generated by the development;
    (b) ensure that the waste generated by the development is appropriately stored, handled and disposed of; and
    (c) report on waste management and minimisation in the Annual Review,

    to the satisfaction of the Secretary.

BUSHFIRE MANAGEMENT

24. The Applicant shall:
    (a) ensure that the development is suitably equipped to respond to any fires on site; and
    (b) assist the Rural Fire Service and emergency services as much as possible if there is a fire in the vicinity of the Surface facilities sites.

REHABILITATION

Rehabilitation Objectives

25. The Applicant shall rehabilitate the site to the satisfaction of the DRE. This rehabilitation must be generally consistent with the proposed rehabilitation strategy described in the EIS, and comply with the objectives in Table 7.

Table 7: Rehabilitation Objectives

Feature	***Objective***
Mine site (as a whole)	• Safe, stable and non-polluting. • Final land use compatible with surrounding land uses.
Surface infrastructure	• To be decommissioned and removed, unless the Executive Director Mineral Resources agrees otherwise.
Portals and ventilation shafts	• To be decommissioned and made safe and stable. • Retain habitat for threatened species (eg bats), where practicable.
Other land affected by the development	• Restore ecosystem function, including maintaining or establishing self-sustaining ecosystems comprised of: - local native plant species (unless the Executive Director Mineral Resources agrees otherwise); and - a landform consistent with the surrounding environment.
Built features damaged by mining operations	• Repair to pre-mining condition or equivalent unless: - the owner agrees otherwise; or - the damage is fully restored, repaired or compensated under the *Mine Subsidence Compensation Act 1961.*
Community	• Ensure public safety. • Minimise the adverse socio-economic effects associated with mine closure.

Notes:

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

Progressive Rehabilitation

26. The Applicant shall carry out the rehabilitation of the site progressively, that is, as soon as reasonably practicable following disturbance.

Rehabilitation Management Plan

27. The Applicant shall prepare and implement a Rehabilitation Management Plan for the development, in consultation with OEH, NOW, WSC, LMCC, and the CCC, and to the satisfaction of the Executive Director Mineral Resources. This plan must:
    (a) be submitted to the Secretary and the DRE for approval within 12 months of the date of approval of this development consent;
    (b) be prepared in accordance with any relevant DRE guideline and be consistent with the rehabilitation objectives in the EIS and in Table 7;
    (c) describe how the performance of the rehabilitation would be monitored and assessed against the objectives in Table 7;
    (d) describe the process whereby additional measures would be identified and implemented to ensure the rehabilitation objectives are achieved;
    (e) provide for detailed mine closure planning, including measures to minimise socio-economic effects due to mine closure, to be conducted prior to the site being placed on care and maintenance; and
    (f) be integrated with the other management plans required under this consent.

    Note: The Rehabilitation Management Plan should address all land impacted by the development whether prior to, or following, the date of this consent.

SCHEDULE 4
ENVIRONMENTAL CONDITIONS – UNDERGROUND MINING

SUBSIDENCE

1. The Proponent shall ensure that vertical subsidence within the High Water Mark Subsidence Barrier and within seagrass beds is limited to a maximum of 20 millimetres (mm). If at any stage predicted subsidence levels are exceeded within these areas, an ecological monitoring program shall be initiated to assess the impacts to ecological communities and threatened species and if appropriate, offsets are to be provided for any impacts detected.

Performance Measures – Natural Environment

2. The Applicant shall ensure that the development does not cause any exceedance of the performance measures in Table 8 to the satisfaction of the Secretary.

Table 8: Subsidence Impact Performance Measures – Natural and Heritage Features

Biodiversity	
Threatened species or endangered populations	Negligible environmental consequences
Seagrass beds	Negligible environmental consequences including: • *negligible* change in the size and distribution of seagrass beds; • *negligible* change in the functioning of seagrass beds; and • *negligible* change to the composition or distribution of seagrass species within seagrass beds.
Benthic communities	Minor environmental consequences, including minor changes to species composition and/or distribution.
Mine workings	
First workings under an approved Extraction Plan beneath any feature where performance measures in this table require negligible environmental consequences	To remain long-term stable and non-subsiding.
Second workings	To be carried out only in accordance with an approved Extraction Plan.

Notes:

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

Offsets

3. If the Applicant exceeds the performance measures in Table 8 and the Secretary determines that:
   (a) it is not reasonable or feasible to remediate the impact or environmental consequence; or
   (b) the remediation measures implemented by the Proponent have failed to satisfactorily remediate the impact or environmental consequence;

   then the Proponent shall provide a suitable offset to compensate for the impact or environmental consequence to the satisfaction of the Secretary.

   Note: Any offset required under this condition must be proportionate with the significance of the impact or environmental consequence.

Performance Measures – Built Features

4. The Applicant shall ensure that the development does not cause any exceedances of the performance measures in Table 9, to the satisfaction of the Secretary.

Table 9: Subsidence Impact Performance Measures – Built Features

Built Features	***Performance Measure***
Trinity Point Marina Development Other built features	• Always safe. • Serviceability should be maintained wherever practicable. Loss of serviceability must be fully compensated. • Damage must be fully repaired, replaced or fully compensated.
Public Safety	
Public Safety.	Negligible additional risk.

Notes:

- *The Applicant will be required to define more detailed performance indicators for each of these performance measures in Built Features Management Plans or a Public Safety Management Plan (see Condition 7 below).*
- *Measurement and/or monitoring of compliance with performance measures and performance indicators is to be undertaken using generally accepted methods that are appropriate to the environment and circumstances in which the feature or characteristic is located. These methods are to be fully described in the relevant management plans. In the event of a dispute over the appropriateness of proposed methods, the Secretary will be the final arbiter.*
- *The requirements of this condition only apply to the impacts and consequences of mining operations undertaken following the date of this development consent.*
- *Requirements regarding safety or serviceability do not preclude preventative actions or mitigation being taken prior to or during mining in order to achieve or maintain these outcomes.*
- *Requirements under this condition may be met by measures undertaken in accordance with the Mine Subsidence Compensation Act 1961.*

5. Any dispute between the Applicant and the owner of any built feature over the interpretation, application or implementation of the subsidence performance measures in Table 9 is to be settled by the Secretary, following consultation with the MSB and the DRE. Any decision by the Secretary shall be final and not subject to further dispute resolution under this consent.

Multi-Seam Mining Feasibility Investigation

6. Prior to the submission of an Extraction Plan for Miniwalls 41 to 45 in Chain Valley Bay, the Applicant must prepare a detailed Multi-Seam Mining Feasibility Investigation to the satisfaction of the Secretary. This plan must:
   (a) be prepared in consultation with DRE by suitably qualified and experienced persons whose appointment has been endorsed by the Secretary;
   (b) assess the extent of the soft claystone floor/roof conditions within former workings in the Great Northern and Wallarah Seams;
   (c) assess the stability of remnant coal pillars within former workings in the Great Northern and Wallarah Seams;
   (d) give particular consideration to the risks of irregular subsidence, pillar run and long-term subsidence leading to subsidence outside of the predicted angle of draw;
   (e) include revised multi-seam subsidence predictions for the proposed second workings; and
   (f) recommend final design of the second workings and any necessary adaptive management measures.

Extraction Plan

7. The Applicant shall prepare and implement an Extraction Plan for all second workings on site, to the satisfaction of the Secretary. Each Extraction Plan must:
   (a) be prepared by suitably qualified and experienced persons whose appointment has been endorsed by the Secretary;
   (b) be approved by the Secretary before the Applicant carries out any second workings covered by the plan;
   (c) include detailed plans of existing and proposed first and second workings and any associated surface development, including any applicable adaptive management measures;
   (d) include detailed performance indicators for each of the performance measures in Tables 8 and 9;
   (e) provide revised predictions of the potential subsidence effects, subsidence impacts and environmental consequences of the proposed second workings, incorporating any relevant information obtained since this consent;
   (f) describe the measures that would be implemented to ensure compliance with the performance measures in Tables 8 and 9, and manage or remediate any impacts and/or environmental consequences;
   (g) include a Built Features Management Plan, which has been prepared in consultation with DRE and the owners of affected public infrastructure, to manage the potential subsidence impacts and/or environmental consequences of the proposed second workings, and which

- addresses in appropriate detail all items of public infrastructure and other public infrastructure and all classes of other built features;
- has been prepared following appropriate consultation with the owner/s of potentially affected feature/s;
- recommends appropriate remedial measures and includes commitments to mitigate, repair, replace or compensate all predicted impacts on potentially affected built features in a timely manner; and;

(h) include a Benthic Communities Management Plan, which has been prepared in consultation with OEH, LMCC, and DPI Fisheries, which provides for the management of the potential impacts and/or environmental consequences of the proposed second workings on benthic communities, and which includes:
- surveys of the lake bed to enable contours to be produced and changes in depth following subsidence to be accurately measured;
- benthic species surveys within the area subject to second workings, as well as control sites outside the area subject to second workings (at similar depths) to establish baseline data on species number and composition within the communities;
- a program of ongoing seasonal monitoring of benthic species in both control and impact sites;
- development of a model to predict likely impact of increased depth and associated subsidence impacts and effects, including but not limited to light reduction and sediment disturbance, on benthic species number and benthic communities composition, incorporating the monitoring and survey data collected; and
- updating the model every 2 years using the most recent monitoring and survey data;

(i) include a Seagrass Management Plan, which has been prepared in consultation with OEH, LMCC, and DPI Fisheries, which provides for the management of the potential impacts and/or environmental consequences of the proposed second workings on seagrass beds, and which includes:
- a program of ongoing monitoring of seagrasses in both control and impact sites; and
- a program to predict and manage subsidence impacts and environmental consequences to seagrass beds to ensure the performance measures in Table 8 are met;

(j) include a Public Safety Management Plan, which has been prepared in consultation with DRE, to ensure public safety;

(k) include a Subsidence Monitoring Program which has been prepared in consultation with DRE, to:
- provide data to assist with the management of the risks associated with subsidence;
- validates the subsidence predictions;
- analyses the relationship between the predicted and resulting subsidence effects and predicted and resulting impacts under the plan and any ensuing environmental consequences; and
- informs the contingency plan and adaptive management process;

(l) include a contingency plan that expressly provides for adaptive management where monitoring indicates that there has been an exceedance of any performance measure in Tables 8 and 9, or where any such exceedance appears likely;

(m) include appropriate revisions to the Rehabilitation Management Plan required under Condition 28 of Schedule 3; and

(n) include a program to collect sufficient baseline data for future Extraction Plans.

Notes:
- *To identify the underground mining areas approved under this consent referred to in this condition, see Appendix 3.*
- *This condition does not limit secondary extraction under a Subsidence Management Plan approved as at the date of this consent.*

8. The Applicant shall ensure that the management plans required under conditions 7(g)-(j) above include:
(a) an assessment of the potential environmental consequences of the Extraction Plan, incorporating any relevant information that has been obtained since this consent; and
(b) a detailed description of the measures that would be implemented to remediate predicted impacts.

First Workings

9. The Applicant shall not carry out first workings on site that are not generally in accordance with the approved mine plan without written approval of the Secretary.

9A. Within 3 months of the approval of MOD 1, the Applicant shall produce and subsequently implement a Built Features Management Plan that considers surface infrastructure potentially affected by the first workings of the Underground Linkage between Chain Valley Colliery and Mannering Colliery, including WCS's MP01 sewer rising main, TransGrid's electricity transmission assets and infrastructure associated with the Vales Point Power Station, to the satisfaction of the Secretary.

Payment of Reasonable Costs

10. The Applicant shall pay all reasonable costs incurred by the Department to engage suitably qualified, experienced and independent experts to review the adequacy of any aspect of an Extraction Plan.

SCHEDULE 5
ADDITIONAL PROCEDURES

NOTIFICATION OF LANDOWNERS

1. As soon as practicable after obtaining monitoring results showing:
   (a) an exceedance of any relevant criteria in Schedule 3, the Applicant shall notify affected landowners in writing of the exceedance, and provide regular monitoring results to each affected landowner until the development is again complying with the relevant criteria; and
   (b) an exceedance of any relevant air quality criteria in Schedule 3, the Applicant shall send a copy of the NSW Health fact sheet entitled "Mine Dust and You" (as may be updated from time to time) to the affected landowners and/or existing tenants of the land (including the tenants of any mine-owned land).

INDEPENDENT REVIEW

2. If an owner of privately-owned land considers the development to be exceeding the relevant criteria in Schedule 3, then he/she may ask the Secretary in writing for an independent review of the impacts of the development on his/her land.

   If the Secretary is satisfied that an independent review is warranted, then within 2 months of the Secretary's decision the Applicant shall:
   (a) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Secretary, to:
      - consult with the landowner to determine his/her concerns;
      - conduct monitoring to determine whether the development is complying with the relevant criteria in Schedule 3; and
      - if the development is not complying with these criteria then identify the measures that could be implemented to ensure compliance with the relevant criteria; and
   (b) give the Secretary and landowner a copy of the independent review.

SCHEDULE 6
ENVIRONMENTAL MANAGEMENT, REPORTING AND AUDITING

ENVIRONMENTAL MANAGEMENT

Environmental Management Strategy

1. The Applicant shall prepare and implement an Environmental Management Strategy for the development to the satisfaction of the Secretary. This strategy must:
   (a) be submitted to the Secretary for approval within 7 months of the date of this consent;
   (b) provide the strategic framework for environmental management of the development;
   (c) identify the statutory approvals that apply to the development;
   (d) describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the development;
   (e) describe the procedures that would be implemented to:
      - keep the local community and relevant agencies informed about the operation and environmental performance of the development;
      - receive, handle, respond to, and record complaints;
      - resolve any disputes that may arise during the course of the development;
      - respond to any non-compliance;
      - respond to emergencies; and
   (f) include:
      - copies of any strategies, plans and programs approved under the conditions of this consent; and
      - a clear plan depicting all the monitoring required to be carried out under the conditions of this consent.

Adaptive Management

2. The Applicant must assess and manage development-related risks to ensure that there are no exceedances of the criteria and/or performance measures in Schedules 3 and 4. Any exceedance of these criteria and/or performance measures constitutes a breach of this consent and may be subject to penalty or offence provisions under the EP&A Act or EP&A Regulation.

   Where any exceedance of these criteria and/or performance measures has occurred, the Applicant must, at the earliest opportunity:
   (a) take all reasonable and feasible steps to ensure that the exceedance ceases and does not recur;
   (b) consider all reasonable and feasible options for remediation (where relevant) and submit a report to the Department describing those options and any preferred remediation measures or other course of action; and
   (c) implement remediation measures as directed by the Secretary,
   to the satisfaction of the Secretary.

Management Plan Requirements

3. The Applicant shall ensure that the management plans required under this consent are prepared in accordance with any relevant guidelines, and include:
   (a) detailed baseline data;
   (b) a description of:
      - the relevant statutory requirements (including any relevant approval, licence or lease conditions);
      - any relevant limits or performance measures/criteria;
      - the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures;
   (c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;
   (d) a program to monitor and report on the:
      - impacts and environmental performance of the development;
      - effectiveness of any management measures (see c above);
   (e) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;
   (f) a program to investigate and implement ways to improve the environmental performance of the development over time;
   (g) a protocol for managing and reporting any:
      - incidents;
      - complaints;
      - non-compliances with statutory requirements; and

- exceedances of the impact assessment criteria and/or performance criteria; and

(h) a protocol for periodic review of the plan.

Note: The Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans.

Annual Review

4. By the end of March each year, or other timing as may be agreed by the Secretary, the Applicant shall review the environmental performance of the development to the satisfaction of the Secretary. This review must:
   (a) describe the development (including any rehabilitation) that was carried out in the past calendar year, and the development that is proposed to be carried out over the current calendar year;
   (b) include a comprehensive review of the monitoring results and complaints records of the development over the past calendar year, which includes a comparison of these results against the:
      - relevant statutory requirements, limits or performance measures/criteria;
      - requirements of any plan or program required under this consent;
      - monitoring results of previous years; and
      - relevant predictions in the EIS;
   (c) identify any non-compliance over the past calendar year, and describe what actions were (or are being) taken to ensure compliance;
   (d) identify any trends in the monitoring data over the life of the development;
   (e) identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and
   (f) describe what measures will be implemented over the current financial year to improve the environmental performance of the development.

Revision of Strategies, Plans and Programs

5. Within 3 months of:
   (a) the submission of an annual review under Condition 4 above;
   (b) the submission of an incident report under Condition 7 below;
   (c) the submission of an audit report under Condition 9 below; or
   (d) any modification to the conditions of this consent, (unless the conditions require otherwise),

   the Applicant shall review, and if necessary revise, the strategies, plans, and programs required under this consent, to the satisfaction of the Secretary. Where this review leads to revisions in any such document, then within 4 weeks of the review the revised document must be submitted for the approval of the Secretary.

   Note: This is to ensure the strategies, plans and programs are updated on a regular basis, and incorporate any recommended measures to improve the environmental performance of the development.

Community Consultative Committee

6. The Applicant shall continue to operate a Community Consultative Committee (CCC) for the development to the satisfaction of the Secretary. This CCC must be operated in accordance with the *Guidelines for Establishing and Operating Community Consultative Committees for Mining Developments* (Department of Planning, 2007, or its latest version).

   Notes:
   - *The CCC is an advisory committee. The Department and other relevant agencies are responsible for ensuring that the Applicant complies with this consent.*
   - *In accordance with the guideline, the Committee should be comprised of an independent chair and appropriate representation from the Applicant, Council, recognised environmental groups and the local community.*
   - *In operating the CCC, the Department will accept the continued representation from existing CCC members.*

REPORTING

Incident Reporting

7. The Applicant shall immediately notify the Secretary and any other relevant agencies of any incident that has caused, or threatens to cause, material harm to the environment. For any other incident associated with the development, the Applicant shall notify the Secretary and any other relevant agencies as soon as practicable after the Applicant becomes aware of the incident. Within 7 days of the date of the incident, the Applicant shall provide the Secretary and any relevant agencies with a detailed report on the incident, and such further reports as may be requested.

Regular Reporting

8. The Applicant shall provide regular reporting on the environmental performance of the development on its website, in accordance with the reporting arrangements in any plans or programs approved under the conditions of this consent.

INDEPENDENT ENVIRONMENTAL AUDIT

9. By the end of February 2016 (or other such timing as agreed by the Secretary), and every 3 years thereafter, unless the Secretary directs otherwise, the Applicant shall commission and pay the full cost of an Independent Environmental Audit of the development. This audit must:
   (a) be conducted by a suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Secretary;
   (b) include consultation with the relevant agencies;
   (c) assess the environmental performance of the development and assess whether it is complying with the requirements in this consent and any relevant EPL or Mining Lease (including any assessment, plan or program required under these approvals);
   (d) review the adequacy of strategies, plans or programs required under the abovementioned approvals; and
   (e) recommend appropriate measures or actions to improve the environmental performance of the development, and/or any assessment, plan or program required under the abovementioned approvals.

   Note: This audit team must be led by a suitably qualified auditor and include experts in any field specified by the Secretary.

10. Within 6 weeks of the completion of this audit, or as otherwise agreed by the Secretary, the Applicant shall submit a copy of the audit report to the Secretary, together with its response to any recommendations contained in the audit report.

ACCESS TO INFORMATION

11. The Applicant shall:
   (a) make copies of the following publicly available on its website:
      - the EIS;
      - all current statutory approvals for the development;
      - all approved strategies, plans and programs required under the conditions of this consent;
      - a comprehensive summary of the monitoring results of the development, which have been reported in accordance with the various plans and programs approved under the conditions of this consent;
      - a complaints register (updated monthly);
      - minutes of CCC meetings;
      - the Annual Reviews of the development;
      - any Independent Environmental Audit, and any other audit, and the Applicant's response to the recommendations in these audits;
      - any other matter required by the Secretary; and

   (b) keep this information up-to-date,

   to the satisfaction of the Secretary.

APPENDIX 1
SCHEDULE OF LAND

Notes:	
1.	All proposed secondary extraction for the Project (Mining Extension 1) is to occur under Lake Macquarie.
2.	The surface facilities for the Colliery are limited to “pit top area” adjacent to Vales Point Power Station, and the “ventilation shaft site” at Summerland Point.
3.	Refer to Figure 1 of Appendix 2 for the Site.

Project Related Surface Facilities			
Pit Top Area		Ventilation shaft site	
Lot	Deposited Plan	Lot	Deposited Plan
A	379918	1	226133
B	379918		
C	349733		
A	187570		
1B	339441		

All other areas within the Site			
Lot	Deposited Plan	Lot	Deposited Plan
7339	1167067	20	708344
7330	1148105	19	708344
593	727722	18	708344
594	727722	17	708344
D	349733	34	714879
1	410653	33	714879
23	708344	32	714879
21	708344	31	714879
2	1043151	64	31306
426	755266	65	31306
427	755266	66	31306
136	755266	67	31306
2	515214	68	31306
1	515214	69	31306
1	214300	70	31306
2	214300	71	31306
167	755266	72	31306
1	388154	73	31306
144	661695	74	31306
19	25593	75	31306
20	25593	76	31306
21	25593	77	31306
22	25593	78	31306
23	25593	79	31306
24	25593	139	31306
25	25593	140	31306
26	25593	141	31306
27	25593	142	31306
58	31306	143	31306
59	31306	144	31306
60	31306	145	31306
61	31306	146	31306
62	31306	147	31306
63	31306	148	31306
149	31306	175	31306
150	31306	176	31306
151	31306	177	31306
152	31306	178	31306
153	31306	179	31306
154	31306	180	31306
155	31306	181	31306

156	31306
157	31306
158	31306
159	31306
160	31306
161	31306
162	31306
163	31306
164	31306
165	31306
166	31306
167	31306
168	31306
169	31306
170	31306
171	31306
172	31306
173	31306
174	31306
243	31306
244	31306
245	31306
246	31306
247	31306
248	31306
249	31306
250	31306
251	31306
252	31306
253	31306
254	31306
255	31306
256	31306
257	31306
258	31306
259	31306
37	31322
38	31322
39	31322
40	31322
41	31322
42	31322
43	31322
44	31322
45	31322
32	13123
33	13123
34	13123
35	13123
36	13123
37	13123
38	13123
39	13123
40	13123
41	13123
42	13123
168	13123
182	31306
183	31306
184	31306
185	31306
186	31306

187	31306
188	31306
189	31306
190	31306
191	31306
192	31306
193	31306
194	31306
195	31306
238	31306
239	31306
240	31306
241	31306
242	31306
46	31322
47	31322
48	31322
78	31322
4	981106
3	981104
11	13120
12	13120
13	13120
14	13120
15	13120
16	13120
17	13120
18	13120
19	13120
20	13120
21	13120
22	13120
23	13120
24	13120
60	13120
27	13123
28	13123
29	13123
30	13123
31	13123
A	368634
100	1065718
102	1065718
20	1113256
7329	1148149

APPENDIX 2
DEVELOPMENT AREA

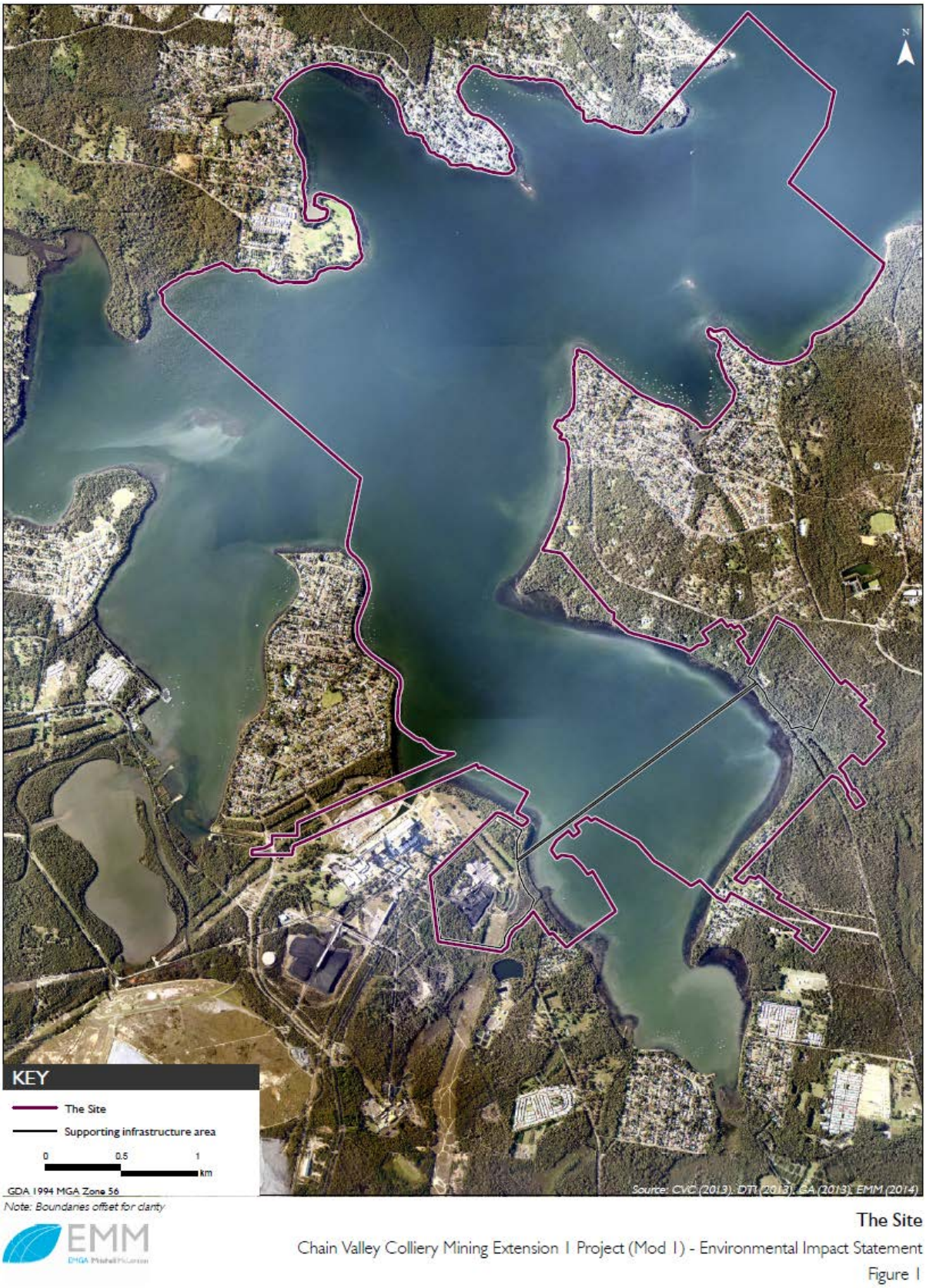


Figure 1: *Chain Valley Extension Project – Development Application Area (The Site)*

APPENDIX 3
DEVELOPMENT LAYOUT

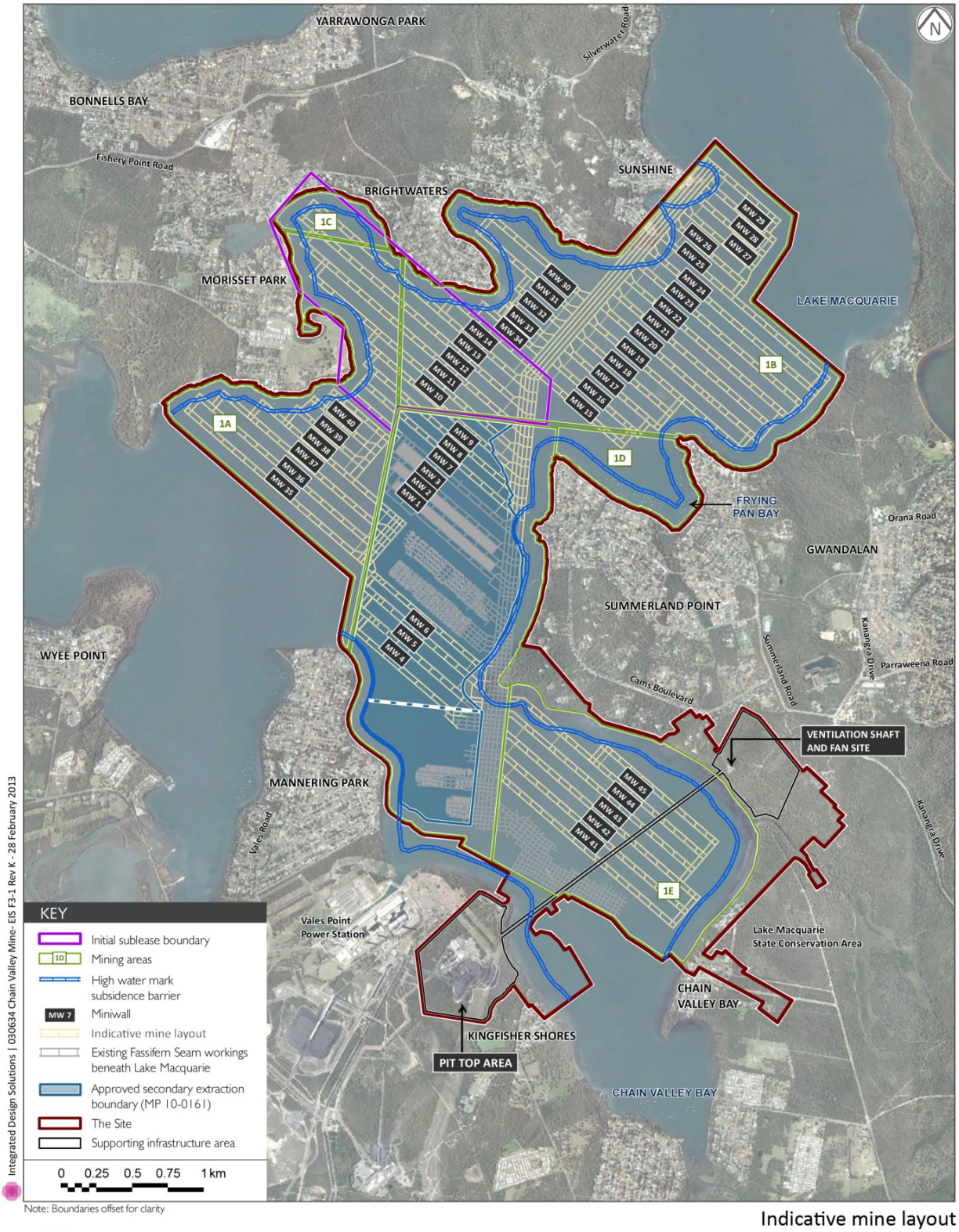


Figure 1: *General Layout of the Chain Valley Extension Project*

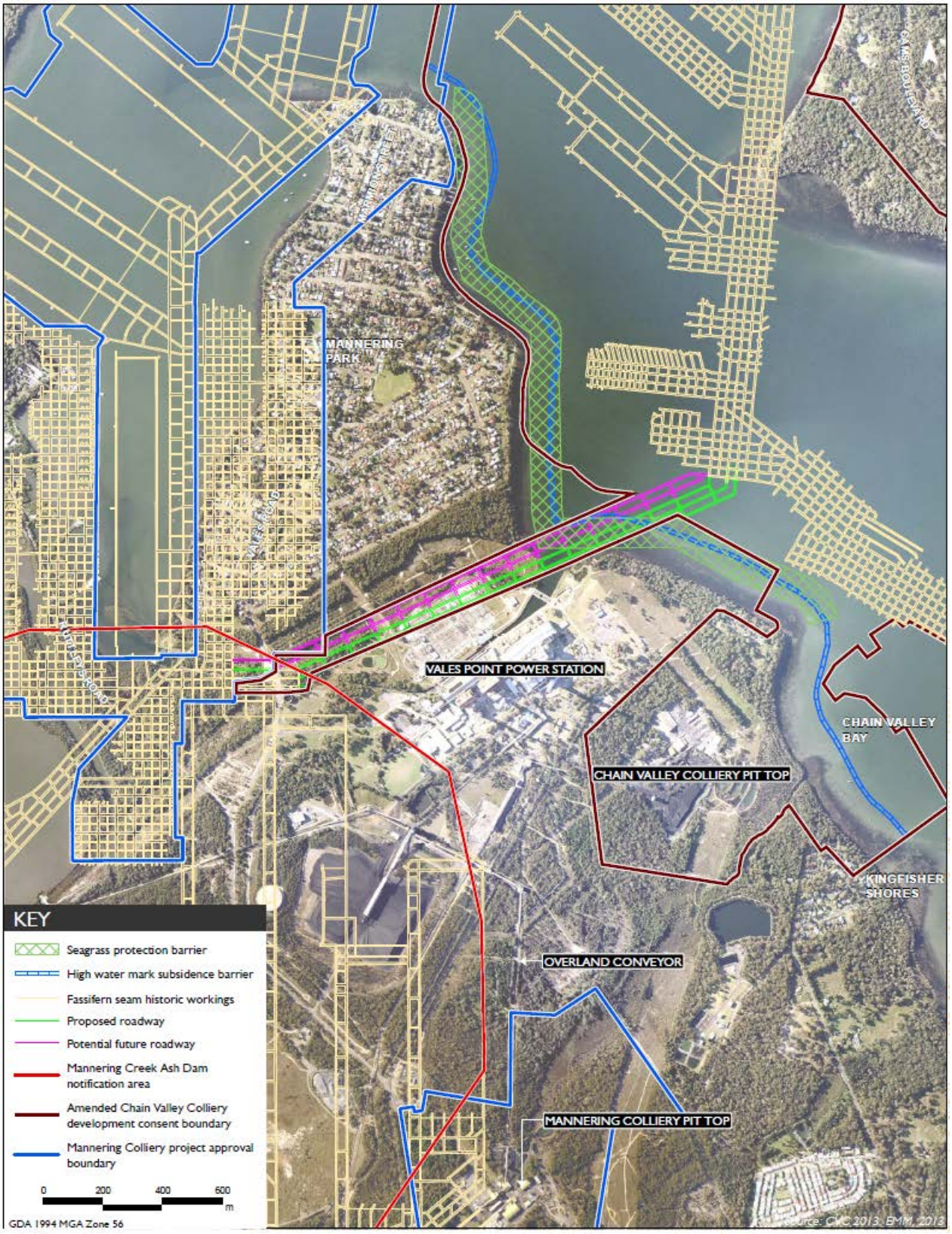


Figure 2: *Location of the underground linkage to Mannering Colliery*

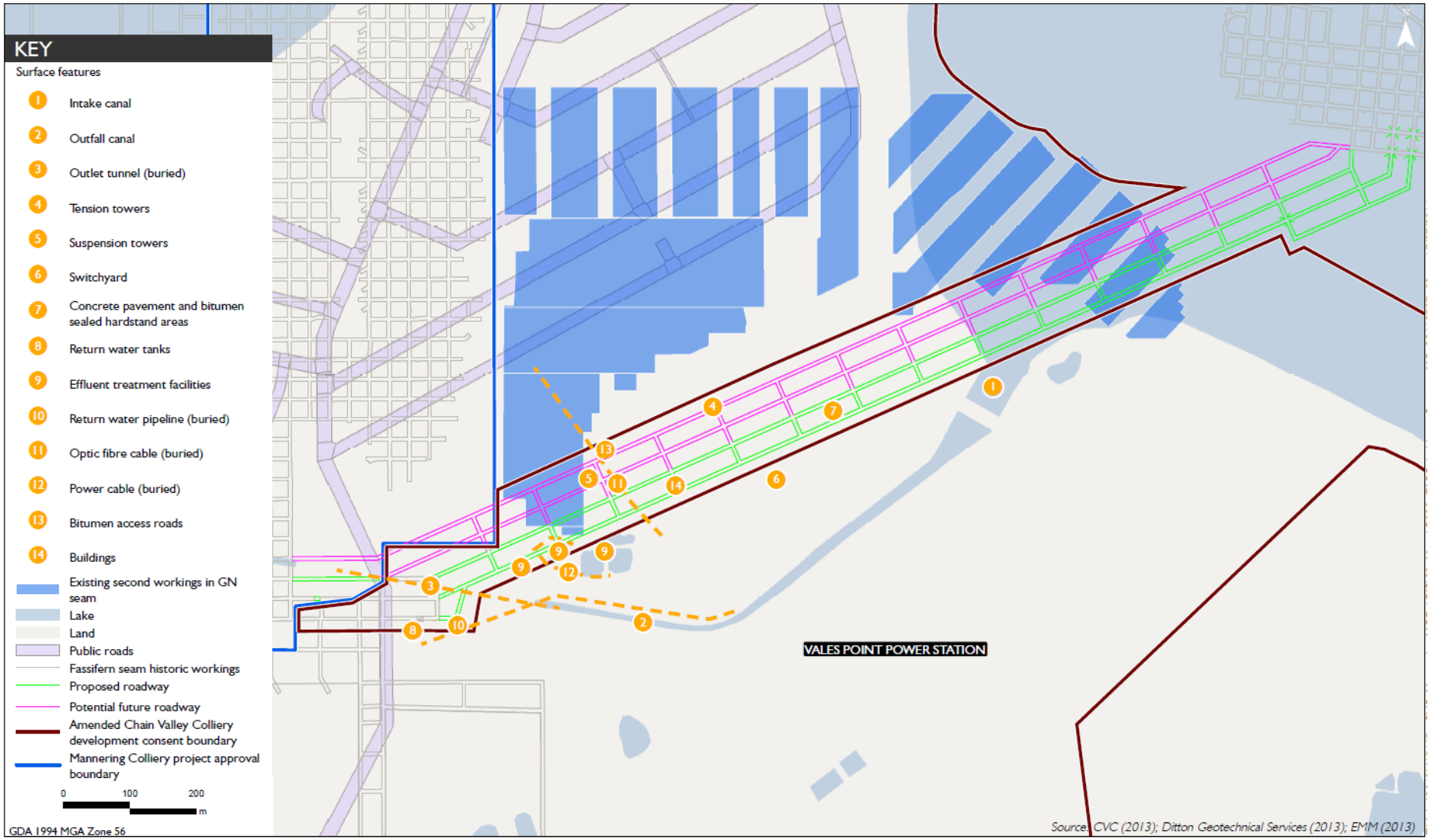
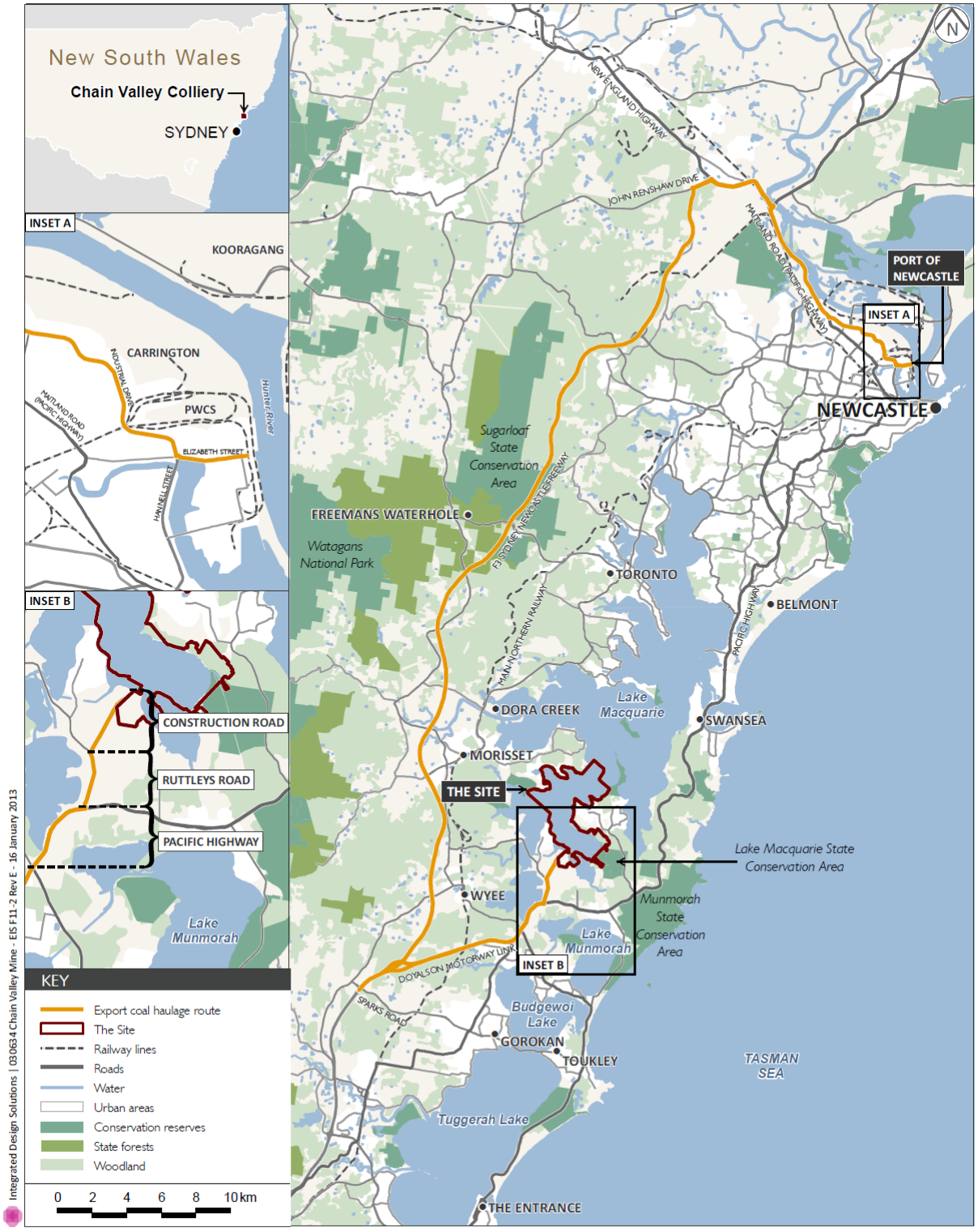


Figure 3: *Location of the underground linkage and surface infrastructure*

APPENDIX 4
KEY SURFACE FACILITIES

Figure 1: *General Arrangement of the Chain Valley Colliery surface facilities site*

APPENDIX 5
COAL HAULAGE ROUTE – PUBLIC ROADS



Export coal haulage route

EMM

Chain Valley Colliery Mining Extension I Project - Environmental Impact Statement

Figure 1: *Export Coal Haulage Route*

APPENDIX 6
NOISE RECEIVER LOCATIONS

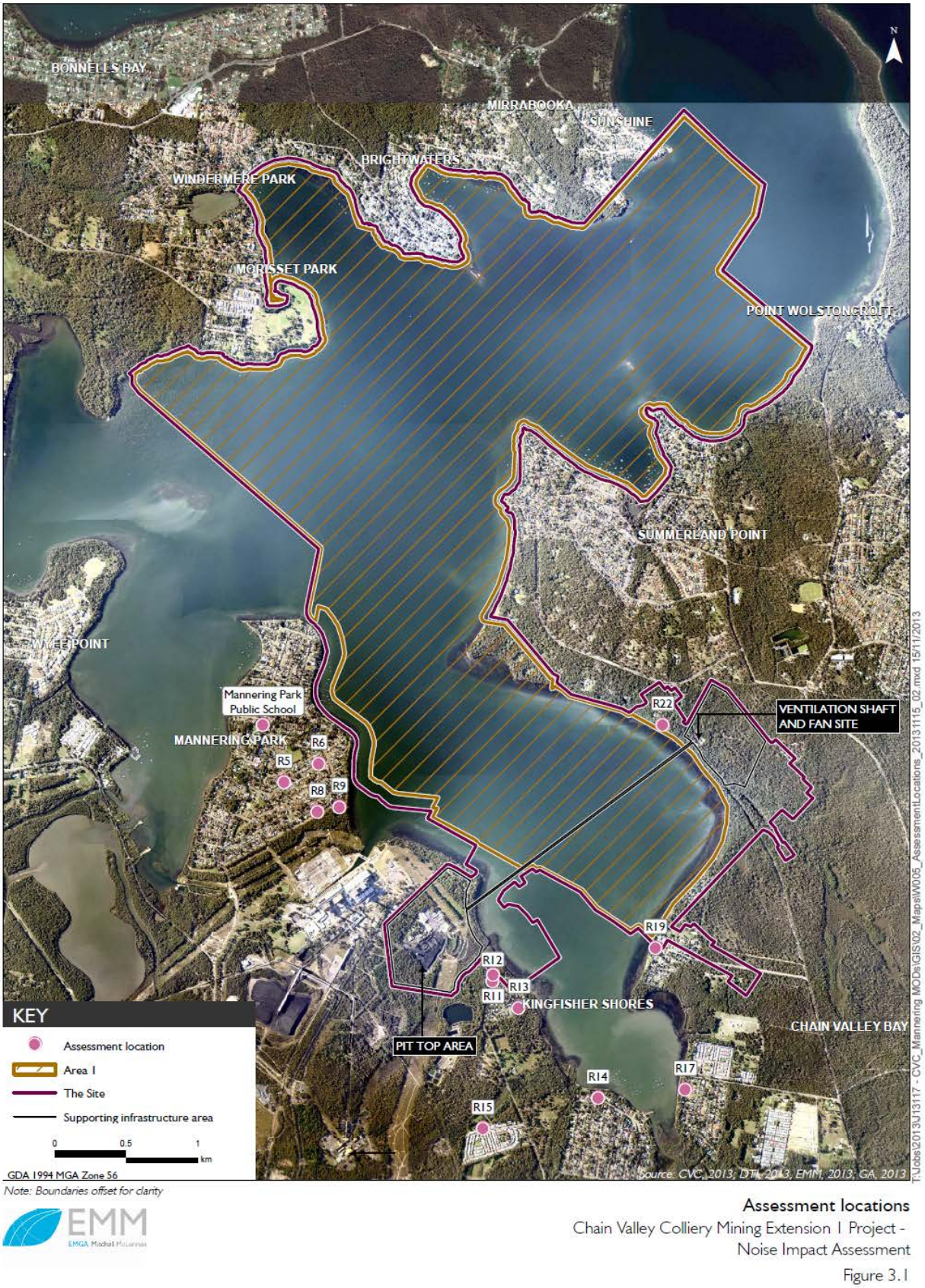


Figure 1: *Noise Receiver Locations*

APPENDIX 7
BIODIVERSITY ENHANCEMENT AREA

Figure 1: *Location of the Biodiversity Enhancement Area, shown in red and orange hatching*

APPENDIX 8
NOISE COMPLIANCE ASSESSMENT

Applicable Meteorological Conditions

1. The noise criteria in Table 1 of the conditions are to apply under all meteorological conditions except the following:
   (a) during periods of rain or hail;
   (b) average wind speed at microphone height exceeds 5 m/s;
   (c) wind speeds greater than 3 m/s measured at 10 m above ground level; or
   (d) temperature inversion conditions greater than 3°C/100 m.

Determination of Meteorological Conditions

2. Except for wind speed at microphone height, the data to be used for determining meteorological conditions shall be that recorded by the meteorological station described in condition 15 of schedule 3.

Compliance Monitoring

3. Attended monitoring is to be used to evaluate compliance with the relevant conditions of this consent.

4. This monitoring must be carried out at least 4 times in each calendar year (ie at least once every 3 months), unless the Secretary directs otherwise.

5. Unless otherwise agreed with the Secretary, this monitoring is to be carried out in accordance with the relevant requirements for reviewing performance set out in the *NSW Industrial Noise Policy* (as amended from time to time), in particular the requirements relating to:
   (a) monitoring locations for the collection of representative noise data;
   (b) meteorological conditions during which collection of noise data is not appropriate;
   (c) equipment used to collect noise data, and conformity with Australian Standards relevant to such equipment; and
   (d) modifications to noise data collected, including for the exclusion of extraneous noise and/or penalties for modifying factors apart from adjustments for duration.

APPENDIX 9
STATEMENT OF COMMITMENTS

Item	Commitment
Groundwater	In addition to the management and mitigation measures undertaken at the Colliery for groundwater as described in the WMP, the following commitments specific to the Proposal will be undertaken. Some commitments are already undertaken under the WMP. LakeCoal will: • assess whether abnormal or significant groundwater inflow changes occur in the active panels; • maintain the water flow monitoring appliances used to measure pumped water volumes to and from the Colliery in good working order; • maintain and plot records of daily total Colliery water pumping and annually communicate an interpretation of the findings within the Annual Review. A copy of the Annual Review will be supplied to NOW; • measure water levels and quality within private bores, where access is possible, in relevant areas to assess if any adverse effects occur due to subsidence from the Proposal; and • develop groundwater assessment criteria and triggers, response protocols and contingency measures. Although it is not anticipated that private bore yields would be impacted due to subsidence, should such a situated arise, LakeCoal would provide an alternative water supply until the impacted bore recovers. Any monitored or reported adverse impacts on the yield, saturated thickness or quality of a private registered bore will be investigated by LakeCoal. In the event of a groundwater level drop of over 2 m for a period of two months or more, a notable increase in iron hydroxide, or an adverse change in salinity as a consequence of subsidence, LakeCoal will enter into negotiations with the affected landowners and the Mine Subsidence Board with the intent of formulating an agreement which provides for one, or a combination of: • re-establishment of saturated thickness in the affected bore(s) through bore deepening; • establishment of additional bores to provide a yield at least equivalent to the affected bore prior to mining; • provision of access to alternative sources of water; and/or • compensation to reflect increased water extraction costs (eg. due to lowering pumps or installation of additional or alternative pumping equipment).
Surface water	Management and monitoring of surface water will continue to be undertaken in accordance with the Colliery's WMP, which will be reviewed and updated as required to include the commitments made below. LakeCoal will: • limit the main underground pumps to a maximum pump out rate of 10.5 ML/day within 12 months of approval; • request an amendment of EPL1770 to include a condition on the daily discharge volume limit stating that "Exceedance of the volume limit for Point 1 is permitted only if the discharge from Point 1 occurs solely as a result of rainfall at the premises exceeding 10 mm during the 24 hours immediately prior to commencement of the discharge"; • undertake daily measurements of discharge volumes and report publicly on a monthly basis via LakeCoal's website; • continue collection of baseline water quality data to aid in the development of appropriate discharge water quality trigger values; • engage suitably qualified expert to conduct an assessment of the metals contained within discharge water in accordance with the ANZECC water quality guidelines and provide this assessment to the EPA by 31 December 2013; • investigate water saving measures to minimise the amount of potable water required from WSC for Colliery operations; • quantify the groundwater storage capacity in the Great Northern and Wallarah Seams; • continue effluent monitoring regime of receiving soils from the AWTS in accordance with the parametres and testing frequencies identified in the Colliery's WMP. The results of this monitoring program will be reviewed by a suitably qualified expert and used to determine the appropriateness of the existing irrigation area to receive this effluent; • develop a program to monitor creek line channel stability and the health of riparian vegetation within Swindles Creek. Monitoring will be undertaken in accordance with Section 8.5.2 of the Surface Water Impact Assessment (EIS Appendix E) and incorporated into the Colliery's WMP or Biodiversity Management Plan; and • record monitoring data in accordance with the Colliery's WMP and EPL 1770. Monitoring data will be interpreted as it is received to ensure appropriate operational guidance on monitoring water quality within desired parametres. Results of water quality monitoring will be reported in the Annual Review and made available to the CCC, as well as Wyong and Lake Macquarie Councils.

Noise	Management and monitoring of noise will continue to be undertaken in accordance with the Colliery's NMP, which will be reviewed and updated as required to include the commitments made below. LakeCoal will: • continue attended compliance monitoring on site which will be used to identify potential hot spots and primary noise sources; • continue real-time noise monitoring alerts to site personnel to enable implementation of any required rapid noise management initiatives; • manage potential non-compliance through a noise complaint handling and response system, including the identification of responsible sources to enable targeted remedial action; • assess if further noise mitigation options for the ventilation fans are reasonable and feasible following the receipt of attenuation proposals; and • discuss potential management measures or agreement options with the landowner at 275 Cams Boulevard, following receipt of proposals from acoustics specialists. In addition to the above, LakeCoal is committed to the progressive implementation of feasible measures to target long term noise goals which are designed to reduce noise emissions from the Colliery. Long term options for investigation include: • modification to belt/movement alarms; • investigation of surface conveyer and coal preparation equipment, to determine if noise reductions are possible; • identifying sound attenuation options for the surface bulldozer and front end loader; • strategic placement of acoustic barriers; • attenuation for the surface screener/shaker; • installation of quiet rollers for surface conveyor belts; • acoustic treatments around compressors; and • the use of a conveyor stacker for product coal stockpiling.
Air Quality and greenhouse gases	Management and monitoring of air quality and greenhouse gases will continue to be undertaken in accordance with the Colliery's AQCHCMP, which will be reviewed and updated as required to include the commitments made below. LakeCoal will: • investigate the use of a stacker to replace hauling between current conveyor system and stockpiles; • undertake GHG monitoring comprising measurement of carbon dioxide and methane at the ventilation shaft and fan sites; and • record and report annual diesel, oil, grease, acetylene and electricity use to fulfil National Greenhouse and Energy Reporting Scheme requirements.
Traffic and transport	Management and monitoring of traffic and transport will continue to be undertaken in accordance with the Colliery's RTP. In addition, LakeCoal will continue to investigate alternative options for transporting export coal to the PWCS, specifically the preferred rail transport option, requiring the construction of a private haul road to the VPPS coal unloading facility and associated infrastructure upgrades. In addition, LakeCoal will: • provide a detailed feasibility report of rail transport options to DP&I as part of the next coal transport options report to be submitted, by 31 December 2014. Should the report identify that coal transport via rail is feasible, and subject to obtaining necessary agreements, LakeCoal will prepare and lodge an application to modify the relevant approval so as to permit the installation and operation of facilities necessary to undertaken rail transport of coal to PWCS; • discuss the potential to utilise proposed rail loading facilities associated with the Wallarah 2 Coal Project, following this project receiving approval; and • investigate options to reduce peak hour traffic would be investigated including potentially limiting the peak hourly volumes of the Colliery truck traffic which would be permitted to travel via this intersection should the Colliery not be using rail transport for export coal by five years from the granting of development consent. Alternatively, a pro rata financial contribution to the cost of installing traffic signals at the southbound intersection of the F3 and Sparks Road interchange could be made commensurate with the percentage of Colliery generated traffic using the intersection.
Subsidence	Management and monitoring of subsidence will continue to be undertaken in accordance with the Colliery's SMP, which will be reviewed and updated as required to include the commitments made below. LakeCoal will: • undertake annual bathymetric surveys of the lake bed to determine actual subsidence and undertake a comparison with predicted levels. Should measured subsidence significantly exceed predicted levels, LakeCoal will review future panel designs to limit future impacts to acceptable levels; • install a new foreshore survey line above the first and second workings panels where the underground linkage passes beneath them and possibly extending from the foreshore to the point of connection with the MC workings; • inspect existing conditions in the Fassifern Seam and undertake geotechnical and

	geological mapping in the roadways proximate to the proposed linkage in both CVC and MC workings; • complete representative borehole core drilling and sampling of the Fassifern Seam floor at the start and finishing ends of the underground linkage and where the headings pass beneath the SPB. Development below the foreshore will be limited to two headings only until floor conditions can be confirmed; • develop infrastructure monitoring and management plans in consultation with infrastructure owners and other relevant stakeholders; • re-establish and re-survey Survey Line 24; • install a suitable survey line at the starting end above Great Northern Seam first workings to provide early warning monitoring data for the tension towers and switchyard structures; • monitor tension and suspension towers and switchyard conductor suspension frames directly above the panels, foreshore and adjacent inlet canal wall; • ensure that a monitoring and management plan for the MP01 sewer rising main is in place prior to commencement of mining that may impact Council's infrastructure; and • complete an annual subsidence report and make this report publicly available on the Colliery's website.
Marine ecology	Management and monitoring of marine ecology will continue to be undertaken in accordance with the Colliery's BCMP and SGMP, which will be reviewed and updated as required to include the commitments made below. LakeCoal will • revise the BCMP to include the sampling locations in the assessment of the Proposal; • undertake seasonal surveys (spring and autumn) for the Site as required under the BCMP; • commission additional independent sampling and analysis to validate results obtained during monitoring, and review future panel design if impacts due to subsidence are determined to be moderate or greater; • revise the SGMP to include the transect locations utilised in the assessment of the Proposal; • continue annual seagrass surveys/monitoring; • continue annual subsidence surveys (bathymetric surveys) and land based surveys; • include results from the BCMP and SGMP within the Colliery's Annual Review; and • make the Annual Review and annual subsidence surveys available on the Colliery's website.
Terrestrial ecology	In addition to the management and mitigation measures undertaken at the Colliery for terrestrial ecology as described in the BMP, the following commitments specific to the Proposal will be undertaken. Some commitments are already undertaken under the BMP. LakeCoal will: • undertake the design of the dam embankment and spillway works in consultation with an ecologist to minimise potential impacts on the Swamp Oak Floodplain Forest EEC; • ensure pre-clearing surveys are undertaken by an ecologist to minimise the potential impact to fauna and significant vegetation prior to clearing works being undertaken within the embankment and spillway area; • clearly delineate the clearing footprint and cordon off surrounding vegetation as a 'no go' zone during works to the dam embankment and spillway; • minimise disturbance areas where possible by ensuring all stockpiling of materials, parking of machinery etc, is undertaken in previously cleared areas; • ensure that, wherever possible, dead standing timber and fallen timber will be avoided by any clearing works, or if required to be removed, be relocated into suitable habitat areas nearby; • ensure all equipment used for the earthworks associated with the dam embankment and spillway will be cleaned of excess soil potentially containing pathogens and weed seeds prior to entering the Site; • install sediment fencing surrounding the proposed earthwork areas, in accordance with a site-specific erosion and sediment control plan for the works; • ensure that in the event that sedimentation dam water is released from Dam 10 prior to the works being undertaken, it will be undertaken in a controlled manner over a number of days to ensure that the release does not result in significant erosion and sedimentation to the Swamp Oak Floodplain Forest; • continue the management and monitoring of flora and fauna in accordance with the BMP for the life of the mine, including: - the condition and composition of the Swamp Oak Floodplain Forest area; - the condition of vegetation adjacent to the ventilation shaft and fans; - the location and distribution of weed infestations; and - the abundance and distribution of feral animal use. • noxious weeds will be removed and continually controlled from the pit top area, allowing

	for natural regeneration of vegetation; • weed invasion will be monitored as part of the Colliery's BMP; and • the condition of the EEC areas will be monitored through the Colliery's BMP.
Heritage	Management and monitoring of heritage will continue to be undertaken in accordance with the Colliery's HMP, which will be reviewed and updated as required to include the commitments made below. LakeCoal will: • update the HMP following approval of the Proposal to include the extended area to which it relates; • ensure that should unanticipated Aboriginal or historic heritage artefacts be found during dam embankment and diversion works, work will cease and the site assessed by an archaeologist; and • ensure that in the unlikely event that skeletal remains are found during dam embankment and diversion works, work will cease immediately in the area and the NSW Police Coroner called to determine if the material is of Aboriginal origin. OEH and relevant Aboriginal community stakeholders will be notified if the remains are positively identified as being of Aboriginal origin to determine their appropriate management prior to works recommencing.
Wastes	Management and monitoring of waste will continue to be undertaken in accordance with the Colliery's Waste Management Standard. In addition, LakeCoal will continue to try and improve its waste volumes and waste management practices in line with its objective for 60% of all wastes generated at the Colliery (excluding wastewater) to be recyclable or reusable.
Hazards	Management and monitoring of hazards will continue in accordance with the Colliery's existing hazard management measures. Periodic review of the effectiveness of existing measures will occur in accordance with the Colliery's safety management system and additional measures implemented as warranted.
Visual	Management and monitoring of visual impacts will continue to be undertaken in accordance with the Colliery's existing commitment. In addition, LakeCoal will: ensure additional surface lighting at the Colliery complies with *AS4282 (INT) 1995 – Control of Obtrusive Effects of Outdoor Lighting.*
Soil	Management and monitoring of soils will continue to be undertaken in accordance with the Colliery's WMP, which will be reviewed and updated as required to include the commitments made below. LakeCoal will: • prevent disturbance of ASS where practicable during any construction activities; • prepare an ASSMP where there is potential that ASS will be disturbed; • test and handle any ASS disturbed in accordance with the ASSMP and treat or dispose of to an appropriately licensed facility; • limit the area of any disturbance at the surface infrastructure sites and period of exposure; • implement site management procedures such as watering of disturbed areas and unsecured stockpiles; • ensure relevant licences and management plans are in place for the correct storage and handling of hydrocarbons; • maintain suitable bunding around all hazardous liquid storage areas; • maintain oil separation facilities on the wash down sump for the treatment of oily water; and • remove all waste oil from site and dispose via a licensed external waste collection company.
Rehabilitation and mine closure	Rehabilitation will be undertaken in accordance with the Colliery's RMP and the MOP in force at the time. Detailed management and monitoring proposals for final rehabilitation will be included within a Mine Closure Plan to be prepared at least two years prior to cessation of mining activities.
Economic	LakeCoal will contribute $0.035/t of coal from the Colliery into a dedicated community fund to improve public infrastructure and for the provision of community projects in the surrounding communities of Chain Valley Bay, Mannering Park, Summerland Point and Gwandalan.
Social	LakeCoal will continue to implement management measures and monitoring programs to prevent or minimise negative impacts and enhance positive impacts in accordance with its Environment and Community Policy. LakeCoal will: • maintain open and constructive communication with affected individuals and groups; • participate in the CCC; • provide environmental monitoring data and other relevant information in a timely manner via the LakeCoal website; • be responsive to community issues and actual and/or perceived impacts from the Colliery's activities; • work in partnership with stakeholders to address community needs; • ensure effective management of LakeCoal's social impacts; • liaise regularly with relevant government agencies and councils; • provide regular Colliery updates with landowners and local residents through the CCC;

	• continue payments, throughout the life of the Proposal, to the community fund established; and • consider individual sponsorship opportunities throughout the life of the Proposal.
Other	LakeCoal will commit to only carrying out mining operations in the extension areas consistent with the development consent granted pursuant to this Proposal.

Appendix B

Schedule of land

Appendix B — Schedule of land

B

SCHEDULE OF LAND

Notes:	
1.	All proposed secondary extraction for the Project (Mining Extension 1) is to occur under Lake Macquarie.
2.	The surface facilities for the Colliery are limited to “pit top area” adjacent to Vales Point Power Station, and the “ventilation shaft site” at Summerland Point.
3.	The Site also includes the land underlying the water body of Lake Macquarie (which does not have a specific lot and deposited plan reference).
4.	Refer to Figure 2.1 of the Statement of Environmental Effects for the Site.

Project Related Surface Facilities				
Pit Top Area			Ventilation shaft site	
Lot	Deposited Plan		Lot	Deposited Plan
A	379918		1	226133
B	379918			
C	349733			
A	187570			
1B	339441			

All other areas within the Site				
Lot	Deposited Plan		Lot	Deposited Plan
7339	1167067		20	708344
7330	1148105		19	708344
593	727722		18	708344
594	727722		17	708344
D	349733		34	714879
1	410653		33	714879
23	708344		32	714879
21	708344		31	714879
2	1043151		64	31306
426	755266		65	31306
427	755266		66	31306
136	755266		67	31306
2	515214		68	31306
1	515214		69	31306
1	214300		70	31306
2	214300		71	31306
167	755266		72	31306
1	388154		73	31306
144	661695		74	31306
19	25593		75	31306
20	25593		76	31306
21	25593		77	31306
22	25593		78	31306
23	25593		79	31306
24	25593		139	31306
25	25593		140	31306

26	25593
27	25593
58	31306
59	31306
60	31306
61	31306
62	31306
63	31306
149	31306
150	31306
151	31306
152	31306
153	31306
154	31306
155	31306
156	31306
157	31306
158	31306
159	31306
160	31306
161	31306
162	31306
163	31306
164	31306
165	31306
166	31306
167	31306
168	31306
169	31306
170	31306
171	31306
172	31306
173	31306
174	31306
243	31306
244	31306
245	31306
246	31306
247	31306
248	31306
249	31306
250	31306
251	31306
252	31306
253	31306
254	31306
255	31306
256	31306
257	31306
258	31306

141	31306
142	31306
143	31306
144	31306
145	31306
146	31306
147	31306
148	31306
175	31306
176	31306
177	31306
178	31306
179	31306
180	31306
181	31306
182	31306
183	31306
184	31306
185	31306
186	31306
187	31306
188	31306
189	31306
190	31306
191	31306
192	31306
193	31306
194	31306
195	31306
238	31306
239	31306
240	31306
241	31306
242	31306
46	31322
47	31322
48	31322
78	31322
4	981106
3	981104
11	13120
12	13120
13	13120
14	13120
15	13120
16	13120
17	13120
18	13120
19	13120
20	13120

259	31306
37	31322
38	31322
39	31322
40	31322
41	31322
42	31322
43	31322
44	31322
45	31322
32	13123
33	13123
34	13123
35	13123
36	13123
37	13123
38	13123
39	13123
40	13123
41	13123
~~42~~	~~13123~~
168	13123

21	13120
22	13120
23	13120
24	13120
60	13120
~~27~~	~~13123~~
~~28~~	~~13123~~
~~29~~	~~13123~~
30	13123
31	13123
A	368634
100	1065718
102	1065718
20	1113256
7329	1148149
5	981103
9	13120
100	713777
25	13120
26	13120
27	13120
28	13120
29	13120

Appendix C

Preliminary risk assessment

Appendix C — Preliminary risk assessment

C

C.1 Methodology

A preliminary environmental risk assessment was undertaken for the proposed modification. It should be noted that the risk assessment and ranking applied relate only to the incremental change arising from the proposed modification as compared to the approved development and does not reflect the overall environmental risks related to each aspect considered (which were covered in the Mining Extension 1 Project EIS – EMM 2013a).

The risk assessment was undertaken using two variables, namely:

- the potential severity or consequences of the impact; and
- the likelihood of the impact occurring.

The variables were evaluated, assuming that appropriate mitigation measures would be in place.

The following definitions were applied.

Severity or consequences of impact:

- Minor - Near-source confined and promptly reversible impact on-site with little or no off-site impact expected.
- Medium - Near source confined and short-term reversible impact on-site with little promptly reversible off-site impact.
- Serious - Near-source confined and medium-term recovery impact on-site with near-source and short-term reversible off-site impact.
- Major - Impact that is unconfined and requiring long-term recovery, leaving residual damage on-site with near-source confined and medium-term recovery of off-site impacts.
- Catastrophic - Impact that is widespread and unconfined and requiring long-term recovery, leaving major residual damage on-site with off-site impact that is unconfined and requiring long-term recovery and leaving residual damage.

Likelihood of impact:

- Rare - Impact that is very unlikely to occur during the lifetime of the project.
- Unlikely - Impact that is unlikely to occur during the lifetime of the project.
- Possible - Impact that may occur during the lifetime of the project.
- Likely - Impact that may occur frequently during the lifetime of the project.
- Almost Certain - Recurring event during the lifetime of the project.

Table C.1 shows the risk matrix used to identify the environmental risks which were subsequently used to determine priorities for the SEE. In each case, a score of 1 to 5 is given for the consequence and likelihood of impact, with the sum of the scores used to determine the environmental risk. There are four classes of environmental risk utilised in this assessment, namely:

- Low - Risks that are below the risk acceptance threshold and do not require active management. Certain risks could require additional monitoring.
- Moderate - Risks that lie on the risk acceptance threshold and require active monitoring. The implementation of additional measures could be used to reduce the risk further.
- High - Risks that exceed the risk acceptance threshold and require proactive management. Includes risk for which proactive actions have been taken, but further risk reduction is impractical.
- Critical - Risks that significantly exceed the risk acceptance threshold and need urgent and immediate action.

Table C.1 Environmental assessment matrix

Likelihood of Impact	***Consequence***					
		1 Minor	2 Medium	3 Serious	4 Major	5 Catastrophic
	5 Almost Certain	6 (Moderate)	7 (High)	8 (Critical)	9 (Critical)	10 (Critical)
	4 Likely	5 (Moderate)	6 (High)	7 (High)	8 (Critical)	9 (Critical)
	3 Possible	4 (Low)	5 (Moderate)	6 (High)	7 (Critical)	8 (Critical)
	2 Unlikely	3 (Low)	4 (Low)	5 (Moderate)	6 (High)	7 (Critical)
	1 Rare	2 (Low)	3 (Low)	4 (Moderate)	5 (High)	6 (High)

C.2 Results

The results of the environmental risk assessment are provided in Table C.2. The risks were based on the premise that the increase in subsidence arising from the proposed modification would be less than 20 mm. All risks were rated low.

Table C.2 Environmental risk rating

Environmental attribute	Likelihood	Consequence	Risk rating
Subsidence			
Material increase in vertical subsidence	2 (Unlikely)	1 (Minor)	3 (Low)
Ecology			
Impacts on foreshore ecology from subsidence and change in wave climate	1 (Rare)	1 (Minor)	2 (Low)
Subsidence impacts on marine ecology	2 (Unlikely)	1 (Minor)	3 (Low)
Impacts on native vegetation from extension/establishment of APZs around CVC's pit top and ventilation fan site	4 (Likely)	1 (Minor)	5 (Moderate)
Impacts on fauna from habitat disturbance	2 (Unlikely)	1 (Minor)	3 (Low)
Traffic			
Traffic impacts on public roads	3 (Unlikely)	1 (Minor)	2 (Low)
Aboriginal heritage			
Subsidence impacts on Aboriginal heritage	1 (Rare)	1 (Minor)	2 (Low)
Impacts on Aboriginal heritage from extension/establishment of APZs around CVC's pit top and ventilation fan site	2 (Unlikely)	1 (Minor)	3 (Low)
Air quality and greenhouse gases			
Increase in assessed and approved annual rate of greenhouse gas emissions	4 (Likely)	1 (Minor)	5 (Moderate)
Increased dust emissions at sensitive receptors	1 (Rare)	1 (Minor)	2 (Low)
Groundwater			
Impacts on beneficial aquifers	1 (Rare)	1 (Minor)	2 (Low)
Increase in rate and volume of mine water inflow	3 (Possible)	1 (Minor)	4 (Low)
Impacts on GDEs and other groundwater users	1 (Rare)	1 (Minor)	2 (Low)
Depressurisation impacts	1 (Rare)	1 (Minor)	2 (Low)
Water quality impacts	1 (Rare)	1 (Minor)	2 (Low)
Surface water			
Changes to surface water management system to accommodate the potential increase in groundwater inflow	2 (Unlikely)	1 (Minor)	2 (Low)
Increase requirement for potable water to support increase in production rate	3 (Possible)	1 (Minor)	4 (Low)
Rehabilitation and land suitability			
Elements of the proposed modification impacting on the ability to effectively rehabilitate	1 (Rare)	1 (Minor)	2 (Low)
Soils and landform			
Increase foreshore erosion from change in wave climate	2 (Unlikely)	1 (Minor)	3 (Low)
Socio-economic			
General amenity impacts on local community	1 (Rare)	1 (Minor)	2 (Low)

EMM
EMGA Mitchell McLennan

www.emgamm.com

SYDNEY
Ground Floor, Suite 1, 20 Chandos Street
St Leonards NSW 2065
T 02 9493 9500 F 02 9493 9599

NEWCASTLE
Level 5, 21 Bolton Street
Newcastle NSW 2300
T 02 4927 0506 F 02 4926 1312

BRISBANE
Suite 1, Level 4, 87 Wickham Terrace
Spring Hill Queensland 4000
T 07 3839 1800 F 07 3839 1866

LakeCoal