

***MAJOR PROJECT ASSESSMENT
Myuna Colliery Mining Project***



Director-General's
Environmental Assessment Report
Section 75I of the
Environmental Planning and Assessment Act 1979

December 2011

Cover Photo: View of Myuna Colliery Pit Top Facilities. Source: Centennial Coal, *Myuna Colliery Extension of Mining, Environmental Assessment*, February 2010.

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EXECUTIVE SUMMARY

Centennial Myuna Pty Ltd (Centennial), a wholly owned subsidiary of the Centennial Coal Company Pty Ltd, operates the Myuna Colliery, located approximately 25 kilometres southwest of Newcastle in the Lake Macquarie and Wyong local government areas. Myuna Colliery is an existing underground mining operation which was granted development consent in 1982 and employs approximately 175 people. Centennial mines coal from three seams, using bord and pillar and partial pillar extraction methods, predominantly under Lake Macquarie. The mine produces up to 1.3 million tonnes (Mt) of run-of-mine (ROM) coal annually to supply the Eraring Power Station.

The project, known as the Myuna Colliery Mining Project, would allow Centennial to continue and expand the existing underground mining operations within the project application area. The mining operations would use existing mining methods, but with an increase in maximum production to 2 Mt of ROM coal annually.

The Department received 15 submissions on the project, including nine from government authorities, one submission from a special interest group and five public submissions. The public authorities raised issues associated with potential subsidence impacts to aquatic flora and fauna; noise and air assessment methodologies; terrestrial flora and fauna survey methodologies; Aboriginal and historic heritage; and surface water impacts. One public submission raised concerns and two others opposed the project for reasons related to impacts from mine subsidence, use of explosives underground, increased noise and air quality impacts and foreign ownership of the mine. Centennial provided additional information that addressed the majority of these concerns. Two public submissions and the submission from the special interest group supported the project, citing local employment.

The Department has carried out a detailed assessment of the merits of the project, in accordance with the requirements of the *Environmental Planning and Assessment Act 1979*. This assessment has found that, with the implementation of reasonable mitigation measures, the project would generally result in minimal environmental impacts. In particular, land-based subsidence impacts from the project are likely to be minimal, with all land and the shallower parts of Lake Macquarie predicted to experience a maximum of 20 millimetres (mm) vertical subsidence, with resulting negligible impacts. The maximum predicted vertical subsidence (650 mm) would be restricted to deeper areas of Lake Macquarie. Centennial has committed to establish a predictive model to assess the impacts of subsidence and reduced light penetration on the benthic communities in the Lake. The investigations would be undertaken prior to any secondary extraction and would inform management actions to avoid or minimise predicted impacts. Such management actions may include the revision of the footprint for second workings to minimise impacts in critical areas or depths.

The Department has recommended a range of conditions of approval to ensure that potential impacts of the project are suitably mitigated or managed. These conditions are consistent with other recently-approved underground coal mines in New South Wales and require Centennial to monitor and manage environmental performance in accordance with best practice. No residences are expected to be directly affected by noise or dust emissions.

The Department's assessment has found that the project represents an appropriate continuation of an existing mine, which would provide for continued social and economic benefits to the Lake Macquarie district and the State, including:

- direct employment for 210 employees for up to 21 years;
- capital investment of \$2 million;
- provision of coal as fuel for electricity production at Eraring Power Station; and
- provision of royalties and payroll taxes for the State Government.

The project is well-placed to support the State Plan, *NSW 2021*, and in particular *Goal 3 – Drive economic growth in regional NSW*. The project is located in the Lake Macquarie area and would be a significant contributor to the regional economy. It would expand existing employment from 175 to 210.

On balance, the Department believes that the project's benefits sufficiently outweigh its residual costs and that it is therefore in the public interest and should be approved, subject to conditions.

1. BACKGROUND

1.1 Project Setting

Myuna Colliery is operated by Centennial Myuna Pty Ltd (Centennial), a wholly owned subsidiary of Centennial Coal Company Pty Ltd, which is in turn a subsidiary of Banpu Public Company Limited.

Myuna Colliery is located within the Lake Macquarie and Wyong local government areas (LGAs), approximately 25 kilometres (km) southwest of Newcastle (see **Figure 1**). The majority of the project application area lies under Lake Macquarie and the suburbs of Arcadia Vale, Wangi Wangi, Myuna Bay, Morisset Peninsula and Point Wolstoncroft. To a lesser degree, it affects the suburbs of Coal Point, Fishing Point and Rathmines (see **Figure 2**).

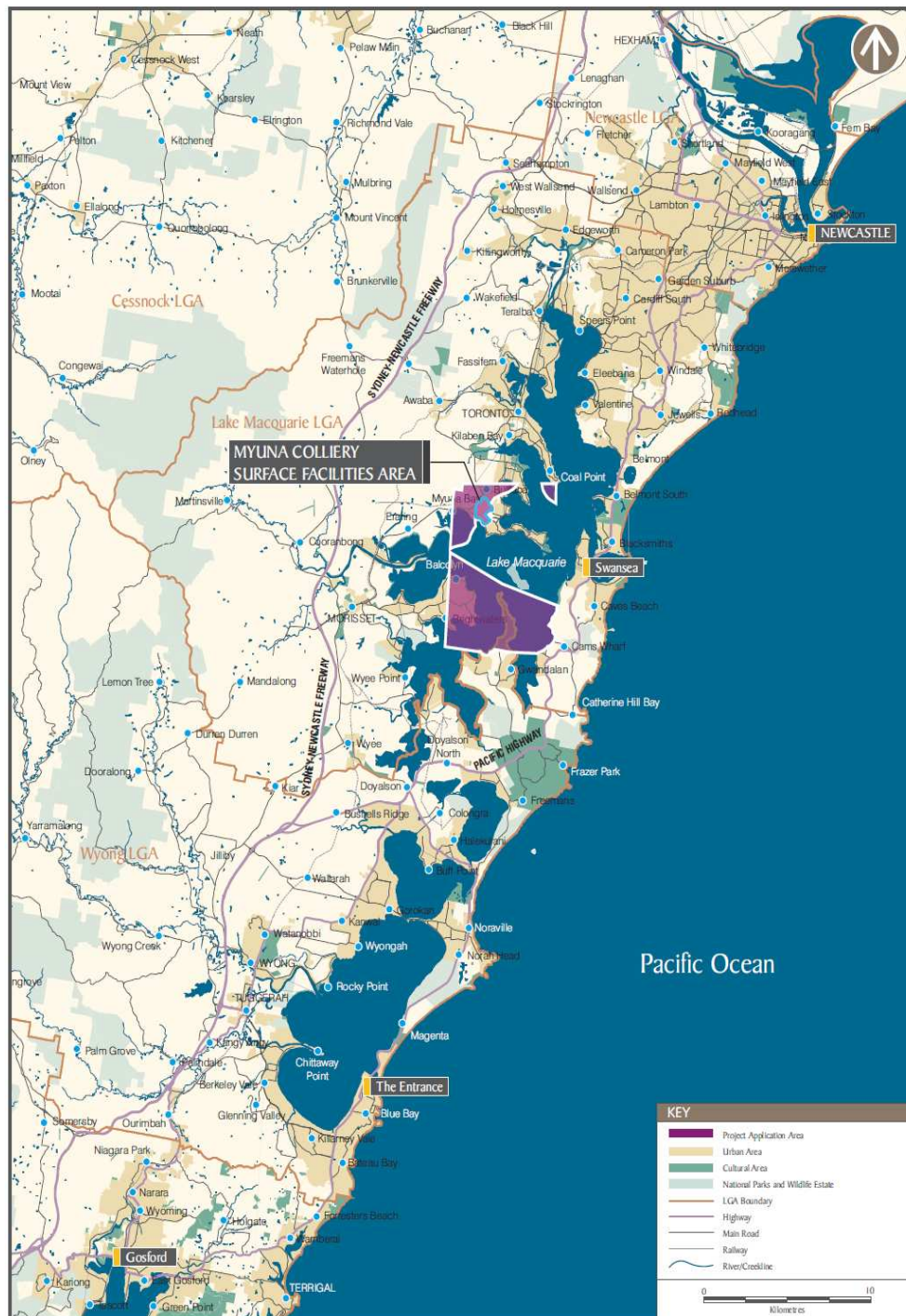


Figure 1: Project Location Map

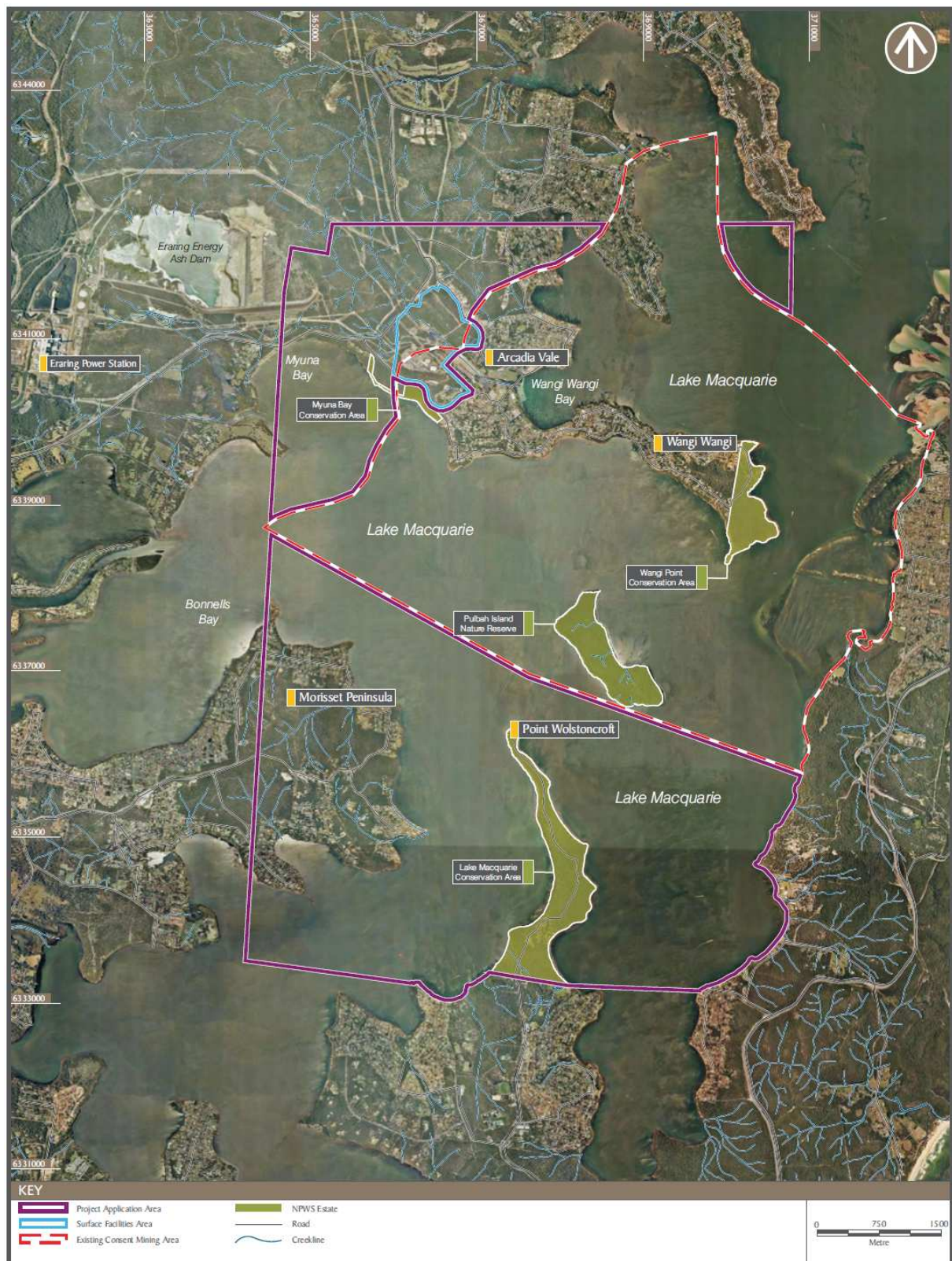


Figure 2: Project Application Area, Existing Development Consent Area and Surface Features

1.2 Existing Operations and Approvals

Myuna Colliery is an existing underground mining operation, employing approximately 175 people, which produces coal from the Wallarah, Great Northern and Fassifern seams. The mine produces up to 1.3 million tonnes (Mt) of run-of-mine (ROM) coal annually to supply the Eraring Power Station.

The mine's surface facilities occupy an area of about 33 hectares (ha) located off Wangi Point Road, west of the residential area of Arcadia Vale and north-west of Wangi Wangi (see **Figure 3**). The surface facilities area provides access to the underground workings, and includes the Coal Handling Plant (CHP), workshop, administration building, water management infrastructure, emergency coal stockpile, portal, buildings, storage areas, roads and substation.



Figure 3: Existing Surface Facilities Area

The surface facilities are surrounded by vegetated ridgelines, and are adjacent to the disused Wangi Power Station. The nearest receiver to the surface facilities area is approximately 500 m distance at Wangi Wangi. ROM coal is crushed at the Myuna CHP prior to being transported to the Eraring Power Station via the Eraring Overland Conveyor, which is owned by the power station. Coal is not washed at the colliery and, accordingly no coal rejects are produced.

Part of the colliery is the subject of an existing development consent. In 1977, Lake Macquarie City Council (LMCC) granted development consent (SH 110/148) for both the Myuna and Cooranbong (now Mandalong) Collieries under the *Local Government Act 1919*. Mining commenced at Myuna in 1982 within this consented area.

Mining has also taken place within large sections of Myuna's underground mining lease outside the development consent area. This mining did not then require development consent due to provisions in the *Lake Macquarie Local Environmental Plan 2004* (and its predecessors) which reflected the *Environmental Planning & Assessment Model Provisions 1980* and had the effect that development consent was not required. A similar protection was provided by the operation of the then section 74(1) of the *Mining Act 1992*. These protections for existing mines against requiring consent were removed in 2005, subject to a statutory transitional period. In the case of the then section 74(1), this transitional period currently remains in effect (see clause 8K of the *Environmental Planning and Assessment Regulation 2000*).

The mine now requires a project approval under Part 3A of the *Environmental Planning & Assessment Act 1979* (EP&A Act) prior to the expiry of this transitional period in order to continue operations outside the existing consented area. The project application area excludes the existing consented area (see **Figure 2**). Mining operations within the area of consent SH 110/148 will continue to take place under the provisions of that consent and Myuna's mining lease.

2. PROPOSED PROJECT

Centennial proposes to continue existing operations at Myuna Colliery as well as to expand underground mining operations within the area referred to as the project boundary. The major components of the project are summarised in **Table 1**. The project is described in full in Centennial's Environmental Assessment (EA), which is attached as **Appendix 1**.

Table 1: Project Summary

Aspect	Summary
Project Summary	<p>The project consists of:</p> <ul style="list-style-type: none"> • extracting up to 2 Mt of ROM coal per year from the Wallarah, Great Northern and Fassifern seams for up to 21 years; • crushing coal at Myuna Colliery's Coal Handling Plant (CHP); • transporting crushed coal from Myuna Colliery by conveyor directly to Eraring Power Station for domestic use; and • decommissioning and rehabilitating the surface facilities site.
<i>Project Life</i>	Mining operations may continue until 2032.
<i>Reserves</i>	37 Mt.
<i>Mining Methods</i> (see Figure 4 for location of zones)	<ul style="list-style-type: none"> • Zone A – long term stability zone underneath sensitive features (ie all land, High Water Level Subsidence Control Zone and seagrass beds): limited to bord and pillar extraction (first workings) only for both single and multi-seam extraction, which would result in a maximum predicted subsidence of 20 mm; • Zone B – underneath deeper areas of Lake Macquarie: includes bord and pillar (first workings) for multi-seam extraction and non-caving partial pillar extraction (secondary workings) restricted to the bottom two seams, which would result in a maximum predicted subsidence of up to 650 mm; and • Transition Area – mining in Zone B would be undertaken with an angle of draw of 26.5° from the boundary of Zone A, resulting in a transition area between the two zones.
<i>Existing Surface Infrastructure</i>	<p>The following existing surface facilities would continue to be utilised:</p> <ul style="list-style-type: none"> • men / materials portal and conveyor drift portal to and from underground workings; • drive houses;

	<ul style="list-style-type: none"> • upcast and downcast ventilation shafts and fan-house; • bore holes to deliver road ballast and concrete underground; • petroleum storage and handling facilities; • water storage tanks; • CHP and associated stockpiles; • ROM coal bin and finished product bin; • workshop and administration buildings; • pollution control infrastructure; and • water management infrastructure.
<i>Proposed Surface Infrastructure</i>	Construction of a series of diversion drains to divert clean water from the CHP Dam and the Emergency Coal Stockpile Sediment Dam.
<i>Water Discharge</i>	Up to 13 megalitres (ML) a day.
<i>Coarse Reject and Tailings Management</i>	Coal would not be washed. No coarse rejects or tailings management required.
<i>Hours of Operation</i>	All mining and transport operations 24 hours a day, 7 days a week.
<i>Mine Access</i>	Existing road access from Wangi Point Road.
<i>Socio-Economic Benefits</i>	Up to \$278 million net benefit value would be contributed to the local, regional, State and national economies over the life of the project.
<i>Employment</i>	210 full-time jobs (continued employment of 175 staff plus hiring an additional 35).
<i>Capital Investment Value</i>	\$2 million.

STATUTORY CONTEXT

3.1 Major Project

The project was declared to be a major project under Part 3A of the EP&A Act because it constitutes development for the purposes of coal mining, and therefore met the criteria in Clause 5 of Schedule 1 of the former *State Environmental Planning Policy (Major Development) 2005*.

Part 3A of the EP&A Act, as in force immediately before its repeal on 1 October 2011 and as modified by Schedule 6A to the Act, continues to apply to the project application, since it is a “transitional Part 3A project” for the purposes of Schedule 6A. Consequently, the Minister for Planning and Infrastructure is the approval authority for the project application. However, as Centennial has made reportable political donations, the Planning and Assessment Commission (PAC) must determine the project under the Minister’s delegation of 14 September 2011.

3.2 Permissibility

The project is permissible with consent under the *Lake Macquarie Local Environmental Plan 2004*, *Wyong Local Environment Plan 1991* and *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007*.

Consequently, the PAC may approve the carrying out of the project.

3.3 Other Approvals

Under Section 75U of the EP&A Act, a number of other approvals have been integrated into the Part 3A approval process, and are not required to be separately obtained for the project. These include:

- heritage-related approvals under the *Heritage Act 1977* and *National Parks and Wildlife Act 1974*;
- disturbance of fish habitat under the *Fisheries Management Act 1994*; and
- water-related approvals under the *Water Management Act 2000*.

Under Section 75V of the EP&A Act, a number of further approvals are required to be obtained, but must be approved in a manner that is substantially consistent with any Part 3A approval for the project. These include:

- approvals under section 15 of the *Mine Subsidence Compensation Act 1961*;
- a mining lease under the *Mining Act 1992*; and

- an environmental protection licence (EPL) under the *Protection of the Environment Operations Act 1997*.

The Department has consulted with the relevant public authorities responsible for these other approvals (see **Section 4**), and considered the relevant issues relating to these approvals in its assessment of the project (see **Section 5**). These authorities support the project, subject to the imposition of suitable conditions of approval.

3.4 Exhibition and Notification

Under Section 75H(3) of the EP&A Act, the Director-General is required to make the EA for a project publicly available for at least 30 days. After accepting the EA for the project, the Department:

- made the EA publicly available from 18 March 2011 until 21 April 2011;
 - on the Department's website; and
 - at the Department's Information Centre, Lake Macquarie Council's office in Speers Point, Wyong Shire Council's office in Wyong, Myuna Colliery office in Wangi Wangi, and at the office of the Nature Conservation Council of NSW;
- notified relevant State Government authorities and Lake Macquarie and Wyong Councils by letter; and
- advertised the exhibition in the *Newcastle Herald* on 18 March and *Lakes Mail* on 24 March and 7 April 2011.

This satisfies the requirements in Section 75H(3) of the EP&A Act.

During the assessment process, the Department also made a number of documents available on its website, including the:

- project application;
- Preliminary Environmental Assessment;
- Director-General's environmental assessment requirements;
- EA;
- submissions; and
- Centennial's response to submissions.

3.5 Environmental Planning Instruments

Under Section 75I of the EP&A Act, the Director-General's report is required to include a copy of, or reference to, the provisions of any environmental planning instruments that substantially govern the carrying out of the project.

The Department has considered Centennial's assessment of the project against the relevant provisions of several State Environmental Planning Policies and other environmental planning instruments (see **Section 5.2** of the EA, which is attached in **Appendix 1**), and carried out its own assessment of these matters (see **Appendix 2**). Based on this assessment, the Department is satisfied that none of the relevant instruments substantially govern the carrying out of this project.

3.6 Objectives of the EP&A Act

The Minister's delegate should consider the objects of the EP&A Act when making decisions under the Act. The objects of most relevance to the PAC's decision on whether or not to approve the project are found in Section 5(a), (i), (ii), (vi) and (vii) of the Act. They are:

(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,*
- ii. *the promotion and co-ordination of the orderly and economic use and development of land,*
- 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, and*
- vii. *ecologically sustainable development.*

The Department is satisfied that the project encourages the proper use of resources (Object 5(a)(i)) and the promotion of orderly and economic use of land (Object 5(a)(ii)), particularly as the project is a permissible land use in an existing mining lease; the subject coal resource is located adjacent to existing mining activities and a coal fired electricity generating plant; and the project would make efficient use of the existing mining facilities and infrastructure.

The encouragement of environmental protection (Object 5(a)(vi)) is considered under Section 5 of this report. Following this consideration, the Department is satisfied that the potential impacts of the project can be suitably mitigated or managed to ensure an acceptable level of environmental performance. The Department has also considered the encouragement of ecologically sustainable development (ESD) (Object 5(a)(vii)) during its assessment of the project application.

3.7 Statement of Compliance

Under Section 75I of the EP&A Act, the Director-General's report is required to include a statement relating to compliance with the environmental assessment requirements issued by the Director-General with respect to the project. The Department is satisfied that the environmental assessment requirements have been complied with.

4. CONSULTATION

During the exhibition period the Department received a total of 15 submissions on the project, including:

- Office of Environment and Heritage (OEH), part of the Department of Premier and Cabinet;
- Heritage Branch of OEH;
- NSW Office of Water (NOW, part of the Department of Primary Industries);
- Roads and Traffic Authority, now part of Roads and Maritime Services (RMS);
- Division of Resources and Energy (DRE), part of the Department of Trade and Investment, Regional Infrastructure and Services (DTIRIS);
- Dams Safety Committee (DSC);
- Hunter-Central Rivers Catchment Management Authority (Hunter CMA);
- Lake Macquarie City Council (LMCC);
- Wyong Shire Council (WSC);
- Construction, Forestry, Mining and Energy Union (CFMEU); and
- five public submissions.

A copy of these submissions is provided in **Appendix 3**. A copy of Centennial's response to submissions report is provided in **Appendix 4**. Since receiving Centennial's response to submissions, the Department has carried out further consultation with the relevant public authorities, considered their comments carefully and incorporated appropriate amendments to the recommended conditions of approval.

A summary of the issues raised during the consultation process is provided below.

4.1 Public Authorities

OEH does not oppose the project. However, its submission raised a number of issues, including:

- representativeness of night-time measured background noise levels;
- lack of detail in survey and assessment work on the impact of subsidence and sea level rise on benthic ecology and seagrass beds in Lake Macquarie;
- lack of detail in methods and frequency of subsidence monitoring;
- lack of survey and assessment work for terrestrial threatened species during summer months; and
- need for further consultation with the local Aboriginal community over Aboriginal Cultural Heritage.

OEH also recommended conditions of approval to manage noise, air quality, biodiversity, water and Aboriginal heritage. OEH's concerns have been addressed in Centennial's response to submissions (RTS) and/or by the recommended conditions of approval.

OEH's **Heritage Branch** raised concerns regarding the lack of detailed assessment of project impacts on the decommissioned Wangi Power Station and associated railway line. The Department notes that

the Wangi Power Station is outside the project application area, and that no particular impact is anticipated.

NOW recommended that the mine's Water Management Plan be updated, based on any revisions of the site water balance and impact trigger levels.

RMS did not object to the project, as it considered there would be no significant impact on the State road network.

DRE raised concerns about the lack of a conceptual rehabilitation plan for the site. The Department has recommended conditions to ensure a rehabilitation management plan is prepared within 12 months of project approval.

DSC noted that the proposed mining footprint falls partially within its Notification Area for the Eraring Power Station Ash Dam. Consequently the DSC has power to regulate mining within the Notification Area, under the *Dams Safety Act 1978* and *Mining Act 1992*.

Hunter CMA initially did not support the project, given the uncertainty of subsidence impacts on Lake Macquarie's benthic ecology and cumulative impacts of subsidence and sea level rise on the Lake's overall ecology. Additional information provided in Centennial's response to submissions, as well as commitments to undertake further studies prior to secondary extraction, have addressed Hunter CMA's concerns.

LMCC does not oppose the project. However, its submission raised a number of issues, including:

- all seagrass beds should be contained within Zone A;
- lack of assessment on the impacts of subsidence on lake hydrology and subsequent potential impact on wave energy and foreshore accretion and erosion ;
- insufficient mitigation measures detailed to manage water discharged into Wangi Creek and the impact of recorded exceedances of total suspended solids on water quality; and
- land at Summerhill Drive and Donnelly Road, Wangi Wangi has not been correctly identified as being a sensitive receiver, given the applicable Residential (Urban Living) zone and mixed use zone under the Lake Macquarie LEP.

The Department has considered the Council's comments and addressed them in **Section 5**.

WSC highlighted a number of issues for further consideration, including particulate matter 2.5 microns (PM_{2.5}), acid sulphate soils, the Government's Sea Level Rise Policy and relevant WSC environmental planning instruments. The Department has considered the Council's comments and addressed them in **Section 5**.

4.2 Special Interest Groups and General Public

One submission was received from a special interest group, the **CFMEU**, which supported the project.

Five submissions were received from members of the general public. One public submission raised concerns and two others opposed the project for reasons related to impacts from mine subsidence, use of explosives underground, increased noise and air quality impacts and foreign ownership of the mine. Centennial provided additional information that addressed the majority of these concerns. Two public submissions and the submission from the special interest group supported the project, citing local employment.

5. ASSESSMENT

5.1 Subsidence

Existing Mining Operations

Centennial has mined three coal seams at Myuna Colliery for up to 29 years, without major incident. These seams are the Wallarah (the shallowest), Great Northern (intermediate) and the Fassifern (the deepest and thickest). All mine workings have been designed in accordance with the Myuna Colliery Mine Planning and Design Document (the Mine Plan), which incorporates recommendations from a

number of key Government and other documents which establish particular geotechnical limits for coal extraction, including:

- *Mining Under Tidal Waters* (Wardell, 1975), known as the Wardell Guidelines;
- Mining Lease CCL762 (contains mining limits based on the Wardell Guidelines); and
- *Systems Approach to Pillar Design*, Strata Control Technologies Pty Ltd, UNSW School of Mining, Coffey Geosciences Pty Ltd, ACARP Project No C9018 (May 2005).

These geotechnical limits have ensured that coal extraction has been designed generally as follows:

- multi heading layout (generally 7 parallel mine headings) with 30 m x 30 m centre pillars and extraction roadways 5.5 m in width;
- minimum of 30 m of solid rock strata between mined areas of the three coal seams;
- minimum of 40 m of solid rock strata (excludes lake sediments) between the Lake bed and the uppermost mined coal seam;
- pillar stability factor criterion of 2.11, which represents a probability of pillar failure of 1 in 1,000,000; and
- partial pillar extraction only after a pillar-specific assessment by geotechnical experts.

These mine design constraints have resulted in little secondary extraction (ie partial pillar extraction) under Lake Macquarie, with the majority of coal extraction being first workings only. Subsidence monitoring locations along the foreshore at Point Wolstoncroft, Pulbah Island and Wangi Peninsula show that mining in two seams within these areas has resulted in less than 20 mm of subsidence.

Proposed Mining Operations

Centennial proposes to continue to extract coal using these proven methodologies. However, Centennial has not submitted a geotechnically-engineered mine design for proposed underground extraction. Instead, Centennial has proposed particular vertical subsidence limits across the proposed mining area, similar to those allowed under its existing development consent and mining lease.

The proposed mine design would generally incorporate existing extraction design elements described in the Mine Plan, such as pillar stability factors and minimum thickness of rock strata between seams and the Lake bed. Centennial would also not undertake any second workings unless approval is granted under either a Subsidence Management Plan (required under its mining lease, and administered by DRE) or an Extraction Plan (required under any project approval).

Centennial is proposing that mining methods would vary across the project area, based on differing levels of environmental sensitivity and risk. This has led to the identification of two distinct mining zones, known as Zones A and B (see **Figure 4**). Mining in Zone A would be restricted to limit vertical subsidence to not more than 20 mm. To obtain this outcome, mining methods would be restricted to first workings only. Zone A is proposed to include all land above the high-water mark of the Lake, a lake foreshore fringing zone known as the High Water Subsidence Control Zone (see **Figures 4 and 5**), and all seagrass beds. The pillars of coal left behind to support the roof would be designed to be long-term stable. Surface subsidence would be a maximum of 20 mm, which is below the detectable limit (due to the inability to separate out other factors which affect the height of surface features, such as soil swelling) and is considered to have no discernable impact on surface features.

Zone B is located only beneath the deeper sections of Lake Macquarie (see **Figure 4**). Mining in Zone B would be restricted to limit vertical subsidence to not more than 650 mm. Zone B covers an area of 20.2 km², representing 17.7% of the total area of Lake Macquarie. The proposed extraction method would initially be first workings, followed by limited second workings (ie partial pillar extraction), where the geology allows. Partial pillar extraction would only occur within the bottom two seams (ie the Great Northern and Fassifern seams).

Because of the substantial difference in the proposed subsidence limits (ie 20 mm vs 650 mm), there must be a transitional area between Zones A and B. Centennial proposes that use of Zone B mining systems is limited by an angle of draw of either 26.5° from the deepest extent of any seagrass bed present, or by an angle of draw of 35° from the high-water mark of the Lake if no seagrass bed is present. This effectively provides a transitional area between Zones A and B. The mining methods proposed in Zones A & B within each coal seam are summarised in **Table 2** and displayed graphically in **Figure 5** below.

It should be noted that Centennial initially sought full pillar extraction within Zone B, as this method of extraction is currently permitted within its development consent area. However, as part of its response to submissions, Centennial revised its proposal to seek approval for partial pillar extraction only (as shown in **Table 2** and **Figure 5**). There is no longwall mining proposed for any part of the project.



AECOM

PROPOSED PROJECT AREA AND SUBSIDENCE ZONES
Environmental Assessment

Figure 4: Mining Zones A and B

Mine Subsidence

The EA includes a subsidence impact assessment undertaken by Seedsman Geotechnics Pty Ltd (the Seedsman report), which provided:

- a review of geological conditions within the site;
- a discussion and analysis of historical mining conditions at the site and nearby mines;
- an assessment of geological constraints and proposed mining methods (see **Table 2**) against the feasibility of limiting the maximum proposed subsidence levels within:
 - Zone A – sensitive surface features (< 20 mm subsidence); and
 - Zone B – no sensitive surface features (< 650 mm subsidence).

In essence, the Seedsman report assessed the proposed mining methods against geological conditions and surface features for the two Zones, to determine if the proposed subsidence limits are achievable.

Table 2: Proposed mining methods

Seam	Location (at Surface level)	Mining System (at seam level)
Wallarah	<i>Zone A and Transition area</i>	<i>First Workings ONLY</i>
	<i>Zone B</i>	
Great Northern	<i>Zone A and Transition area</i>	<i>First Workings ONLY</i>
	<i>Zone B</i>	<i>First Workings and Partial Extraction (typically Non Caving)</i>
Fassifern	<i>Zone A and Transition area</i>	<i>First Workings ONLY</i>
	<i>Zone B</i>	<i>First Workings and Partial Extraction</i>

Zone A

The Seedsman report affirms that the deformation of the roof/pillar/floor system for multi-seam mining (ie extraction in two or more seams) can be designed to ensure that the overall subsidence within Zone A is limited to a maximum of 20 mm. The Department accepts that first workings of the type proposed (ie extraction roadways of 5.5 m in width, leaving pillars of coal 30 m x 30 m in place) is a recognised, standard, and reliable means of ensuring ongoing roof and floor stability, thereby preventing significant long-term vertical subsidence of the surface.

Zone B

The Seedsman report states that, given the presence of strong overlying geological units such as the Karigan and Munmorah Conglomerates (which have a materials strength sufficient to provide a substantial “spanning” ability over underlying voids) and the depth of the coal seams, mining operations can be reliably designed to ensure that partial pillar extraction would safely achieve subsidence of no greater than 650 mm.

Prior to commencement of partial pillar extraction, Centennial would engage a geotechnical expert to review the proposed design criteria for each partial extraction. Design criteria would involve a review of the seam floor and roof strength and the multi-seam system to determine the parameters (ie extent) of partial pillar extraction in the two lower seams. Decisions would then be made regarding the proportion of individual coal pillars that could be extracted without compromising the mine design targets for that location (either maintaining roof integrity or particular limits on resulting subsidence). It should also be noted that partial extraction of pillars in the middle seam (the Great Northern) will generally be non-caving under the mine’s design criteria (see **Table 2**). That is, most subsidence will result from final pillar extraction in the lowermost seam, which provides increased control over the total quantum of mine subsidence. The Department considers that the maximum predicted subsidence outcome in Zone B is conservative under the mining methods proposed by Centennial in its response to submissions, and the likely actual level of vertical subsidence may well be substantially less.

The assessment of the impact of subsidence on benthic communities is addressed in **Section 5.2**.

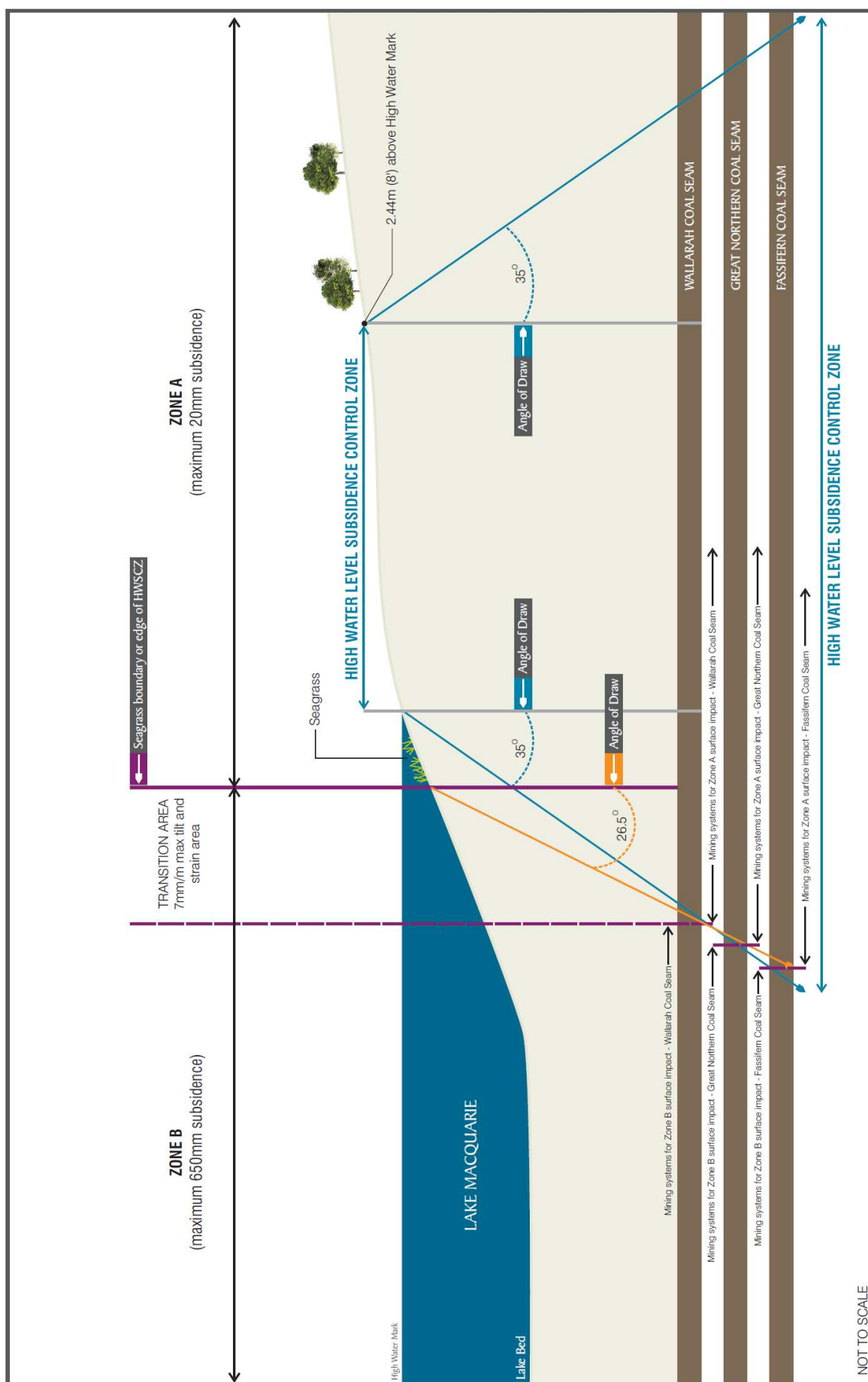


Figure 5: Cross section, showing Zone A, Transition Area and Zone B

Transition Area

The Seedsman report affirms that the design of the transition area would limit vertical subsidence at the boundary of Zone A to a maximum of 20 mm and limit maximum tilts and strains at this point to 7 mm/m. The proposed 26.5° angle of draw by which Zone B mining systems would be offset from the deepest extent of any seagrass bed present is predicted to provide seagrass beds with adequate protection from vertical subsidence, which may otherwise impact on matters such as the penetration of light through the water column. Seagrasses are further discussed in **Section 5.2**.

Built Features

The majority of built features are located on land within Zone A. Accordingly, vertical subsidence would not exceed 20 mm and the impacts of subsidence are predicted to be negligible. Part of Zone A is within the DSC's Notification Area for the Eraring Power Station Ash Dam. Subsidence impacts are predicted to be negligible within the Notification Area, since vertical subsidence will be limited to 20 mm. Nonetheless, to ensure that DSC is properly notified, the Department has recommended a condition requiring Centennial to seek approval from DSC prior to mining within the Notification Area.

Recommended conditions require a Built Features Management Plan, prepared in consultation with DRE, which must address all items of public infrastructure and all classes of other built features, and be prepared in consultation with the owners of those features. Some infrastructure, such as communication cables and sewage pipes, are located on the Lake bed in Zone B, and may be impacted by the predicted vertical subsidence of up to 650 mm. The Department has recommended conditions of approval requiring performance measures for all built features (see **Table 3** below) to ensure that serviceability of this important public infrastructure is maintained. Strict limitations on impacts on benthic communities would also require that impacts on sewage infrastructure are minimal.

Lake Hydrology and Sea Level Rise

LMCC, WSC and Hunter CMA all raised concerns regarding potential subsidence impacts on sea level rise and lake hydrology. The Government's Sea Level Rise Policy is aimed at protecting the built environment adjacent to coastal foreshores from the future threat of sea level rise. The project has been designed to cause negligible vertical subsidence to all terrestrial land and throughout the High Water Subsidence Control Zone (see **Figure 5**). Consequently the project is not predicted to place any part of the built environment (or the Lake's foreshores) under any increased threat from sea level rise.

The Department does not anticipate that the conservative mining methods proposed would lead to significant changes in the hydrology of Lake Macquarie (eg currents, tidal flows, sites of erosion and deposition). Many of these factors are subject to significant degrees of natural variation, depending on tides, rainfall, droughts and sediment input to the lake. Nonetheless, these factors would have to be taken into account under the proposed benthic communities performance measures and Benthic Communities Management Plan (see **Section 5.2**).

Subsidence Management

The mining industry in NSW (including Centennial and its operations at Myuna and other collieries on the Central Coast) has very extensive experience in undertaking coal extraction by first workings methods, and the Department considers that there is no necessity for such extraction to be managed under an Extraction Plan. However, all second workings within the project area should be subject to further review, approval and regulation under an approved Extraction Plan. The Extraction Plan proposed in the recommended conditions would be based on specific geotechnical detail and provide a layout for proposed second workings to ensure that the mine design criteria for Zone B (ie vertical subsidence <650 mm) can be reliably delivered. The recommended conditions also include a detailed and strict set of performance measures (see **Table 3** below). The Department also considers that Centennial should develop contingency measures in the unlikely event of pillar failure.

The Extraction Plan would include:

- detailed plans of second workings;
- detailed performance indicators for each of the subsidence impact performance measures listed in **Table 3** above;
- measures to ensure compliance with the performance measures in **Table 3** and remediation of any subsidence impacts and environmental consequences;
- a Built Features Management Plan;
- procedures for the management of public safety;

- a subsidence monitoring program to validate subsidence predictions over the life of the mine; and
- procedures for baseline data collection.

Table 3: Recommended Subsidence Impact Performance Measures

Biodiversity	
Threatened species, populations or their habitats and endangered ecological communities	Negligible impact or environmental consequences.
Seagrass beds	Negligible environmental consequences including: <ul style="list-style-type: none"> • <i>negligible</i> change in the size and distribution of seagrass beds; • <i>negligible</i> change in the functioning of seagrass beds; and • <i>negligible</i> 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.
Built Features	
Key public infrastructure: Eraring Power Station Ash Dam	Negligible impact or consequence.
Other public infrastructure (including sewage pipes; power and telecommunications cables)	Always safe. Serviceability should be maintained wherever practicable. Loss of serviceability must be fully compensated.
Other built features (including jetties and boat moorings)	Damage must be fully repaired, replaced or fully compensated.
Public Safety	
Public Safety.	Negligible additional risk.

Conclusion

The Seedsman report concluded that the mine could be successfully designed to meet the maximum proposed subsidence limits in both Zone A and Zone B. Both the Department and DRE are satisfied that these proposed maximum subsidence levels are appropriate and achievable.

The Department is satisfied that the recommended conditions of approval would provide an adequate and appropriate level of protection for the natural and built environment. The requirement to prepare an Extraction Plan, to be approved by the Director-General prior to any second workings, would ensure that the mine is designed and planned in a geotechnically sound manner. The proposed performance measures are strict, and would provide an appropriate level of protection for both biodiversity (notably seagrasses and benthic communities, see **Section 5.2** below) and built features.

5.2 Biodiversity

The EA contains an ecological assessment which assessed the project's potential impacts on both the terrestrial and aquatic environments. The EA determined that the primary potential impact would be on aquatic ecology, resulting from subsidence impacts on the Lake bed in both Zone B and the transition area. Subsidence impacts could destabilise aquatic vegetation and affect benthic species in and on the lake bed sediments, and potentially affect threatened species and fishery species which use them.

Seagrass Beds

The aquatic ecological assessment determined that seagrass beds in Lake Macquarie predominantly occur in water up to 2 m in depth; however seagrasses may occur at depths up to of 5 m. **Figure 6** shows all mapped seagrasses within the project area. Seagrasses are a sensitive estuarine vegetation community which provide an important ecological community, including nursery habitat for fish species subject to commercial and recreational fishing. To photosynthesise, seagrasses depend on light penetration through the water column, and so are sensitive to both water depth and cloudiness.

Centennial has committed to include *all* seagrass beds within Zone A (including those up to 5 m). **Figure 4** shows all seagrass areas within Zone A. Subsidence impacts to seagrass beds are therefore predicted to be negligible.



Figure 6: Seagrasses within the project area

Centennial states that the angle of draw of 26.5° from the edge of Zone A to any partially extracted pillar within Zone B would limit vertical subsidence to 20 mm and tilts and strains to 7 mm/m, at the edge of Zone A. The impacts of these subsidence effects are also likely to be minimal (even at the margin of Zone A), given factors such as the amount of soft sediment sitting above hard rock strata, and the scale of lacustrine processes such as sedimentation, erosion, tidal differences and tidal flows.

Both OEH and LMCC raised concerns about the lack of detailed assessment of the potential impacts on seagrass beds in the EA. Apart from clarifying its intention to include all seagrasses within Zone A, Centennial has since proposed monitoring and surveying of seagrass beds at the edge of Zone A, both pre- and post-mining. If impacts are detected, then Centennial proposes detailed field investigations to quantify these impacts.

The Department agrees with the need to monitor areas where seagrass may be impacted by subsidence and has recommended conditions accordingly. However, while monitoring is an appropriate management strategy, it offers in itself no particular protection (either proactive or reactive) for this important vegetation community. In order to provide an appropriate level of protection for seagrass beds, the Department has recommended performance measures requiring that subsidence has “negligible” environmental consequences on all seagrass beds. The Department has also recommended that Centennial develop a Seagrass Management Plan, which must include:

- identification of all seagrass beds at the edge of Zone A that may experience subsidence effects from second workings in Zone B;
- 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 seagrass performance measures are met.

The Department is satisfied that Centennial's commitments and the recommended conditions would protect all areas of seagrass which would be undermined by the project. In particular, Centennial's inclusion of all seagrass beds within Zone A, and the consequent limit on vertical subsidence to 20 mm, is critical in protecting seagrasses. This would limit changes in both light penetration (due to increased depth of the water column) and water cloudiness (due to increased near-shore erosion). By protecting seagrasses, the threatened, endangered and protected aquatic species which utilise them would also be protected. The Department considers that the recommended conditions fully address the concerns raised by Government agencies concerning subsidence impacts to seagrass beds.

Benthic Communities

The EA reported that the diversity and abundance of benthic species found on or within the lake bed sediments were typical of a temperate NSW estuary. The EA considered that the maximum predicted subsidence in Zone B of 650 mm could result in an alteration in species composition in the benthic communities, due to depth changes and reduction of light penetration. However, given the large area of available similar habitat within Lake Macquarie for these species, the EA predicted that localised changes to benthic soft sediment assemblages from subsidence would be minimal.

Centennial has committed to establish a predictive model to assess the impacts of subsidence and reduced light penetration on the benthic communities in Zone B. The investigations would be undertaken prior to any secondary extraction and would inform management actions to avoid or minimise predicted impacts on benthic communities. Such management actions may include the revision of the footprint for second workings to minimise impacts in critical areas or depths. Details of the predicted impacts and proposed management or mitigation measures would be included in future Extraction Plans prior to any secondary extraction occurring.

The Department has recommended conditions that would require the model to be developed prior to secondary extraction. Performance measures would require that subsidence impacts do not exceed “minor” environmental consequences for benthic communities. The Department also proposes that Centennial develop a Benthic Communities Management Plan, which would include:

- 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 Zone B, as well as control sites outside Zone B (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 survey data collected.

The Department is satisfied that the recommended conditions would appropriately protect benthic communities in Lake Macquarie.

Terrestrial Vegetation

No terrestrial vegetation is proposed to be cleared for the project and subsidence impacts on all land above high-water mark are predicted to be negligible. The vegetation along Wangi Creek is identified in the EA as the endangered ecological community (EEC) *Swamp Sclerophyll Forest on Coastal Floodplains*. The EA predicts that water quality of continued mine water discharges into Wangi Creek would be within acceptable limits. Conditions recommended by the Department are likely to improve this water quality (see **Section 5.3** below). The EA identified a potential risk to riparian vegetation along Wangi Creek from the proposed increased volumes of saline mine water discharge, however this impact is predicted to be minor (see **Section 5.3** below).

OEH recommended that this EEC should be protected over the life of the mine. The Department agrees and has recommended a condition requiring Centennial to prepare a Biodiversity Management Plan which must contain measures to ensure all vegetation within the surface facilities sites, and in particular this EEC, are properly managed over the life of the project. Accordingly, predicted impacts on terrestrial biodiversity, including threatened species and endangered ecological communities, are expected to be negligible.

5.3 Water Resources

The EA contains a specialist hydrological assessment, prepared by GHD, which assessed the project's potential impacts on surface water and groundwater.

Centennial operates a surface facilities site water management system, which is based on separating clean water catchments from dirty water catchments, and then separately managing the runoff from each. However, the separation is not complete, and there is a significant amount of clean water catchment runoff which currently reports to the dirty water management system. Consequently, the dirty water management system is subject to peak stresses which would otherwise not occur.

There are four key storages at the surface facilities site used to contain surface water runoff and dirty mine water. Their purpose, capacity and catchments are shown in **Table 4** below.

Table 4: Key Existing Water Storages at the Surface Facilities Site

Water Storage	Capacity (ML)	Catchment (ha) (existing/proposed)	Purpose
CHP Dam	1.05 (usable freeboard 0.31)	11.5 / 7.8	Clean and dirty water runoff capture and retention. Excess storage of mine water (up to 1 ML/day). Discharges through LDP002 to Wangi Creek.
Emergency Coal Stockpile Sediment Dam	1.36	5.6 / 3.2	Clean and dirt water runoff capture and retention. Excess runoff capture transferred to MWSP 2. Emergency discharge to Wangi Ck.
Mine Water Settling Pond 2	1.80	N/A	Storage for underground mine water make. Transfers to MWSP 3 and/or CHP Dam, for eventual discharge.
Mine Water Settling Pond 3	1.65	N/A	Storage for underground mine water make. Discharges through LDP001 to Wangi Creek.

Water Balance

The EA contains an assessment of existing and proposed water balance for the site during dry, average and wet rainfall years. The proposed water balance for the project is shown in **Table 5** below.

It can be seen that, for all scenarios, the site has a large excess of water, arising from dewatering of the underground workings. Groundwater is the highest input into the dirty water management system, with an approximate maximum of 3017 ML/year proposed to be discharged from the site. This is a significant increase from the existing level, which apparently ranged between 1296 and 2218 ML/year between 2005 and 2007. The anticipated increase is due to the impacts of additional underground mining. Small amounts of underground water are currently transferred to the CHP Dam (only 16.9 ML/year, but up to 1 ML/day), and then discharged via LDP002. However, the great majority of underground mine water is discharged directly from Mine Water Settling Pond 3 to LDP001.

Table 5: Proposed Project Water Balance

	Average Rainfall Year (2005)	Dry Rainfall Year (2006)	Wet Rainfall Year (2007)
Inputs (total rainfall/runoff) (ML/year)	106.6	81.4	223.6
Rainfall/runoff to CHP Dam (ML/year)	40.3	30.4	79.4
Rainfall/runoff to Emergency Coal Stockpile Sediment Dam (ML/year)	3.6	4.9	14.1
Outputs (evaporation) (ML/year)	4.3	4.7	4.9
Underground water transfers to LDP001 (ML/year)	3010.6	3011.3	3018.7
Underground water transfers to LDP002	18.6	18.8	16.9
Discharge through LDP001 (ML/year)	3009.1	3009.9	3017.2
Discharge through LDP002 (ML/year)	61.3	51.5	98.7

Rainfall and runoff to the CHP Dam is predicted to vary from 30 to 80 ML/year (substantially less than the current range, which over the years 2005 to 2007 varied from 41 to 112 ML/year). The mine is connected to town water, which is used for all amenities (including the washhouse) and for underground mining purposes. The potential to re-use groundwater is limited as the groundwater is too salty to be used either in underground mining operations or for amenity purposes without substantial treatment, such as via a reverse osmosis plant. Centennial has committed to investigate water re-use options at Myuna within 6 months of project approval.

Surface Water Impacts

Mine water discharges into Wangi Creek pose a potential risk to the creek's water quality, and a lesser risk to the water quality of downstream receiving waters within Lake Macquarie. However, Wangi Creek is already a heavily modified waterway as a result of discharges from the Wangi Power Station outflow canal and from 29 years of discharges and other impacts from the Myuna Colliery.

A critical limitation in the existing water management system is the capacity of the CHP Dam. While it has an overall capacity of 1.05 ML, its usable capacity is currently only 0.31 ML, since the dam has a permanent water level only 0.5 m below the outlet. This dam's key function is sediment settling from dirty water runoff, and its limited capacity is only slightly enhanced by a primary settling tank of just 40 kL capacity. This usable capacity is so limited that the CHP Dam would overflow in any rainfall event greater than 15 mm in 24 hours (based on its existing catchment of 11.5 ha and without deliberate discharge). An additional capacity of 1.29 ML would be required to cater for a 47 mm in 1 hour rainfall event, again based on the existing catchment. The hydrological assessment notes that discharges through LDP002 met the TSS standard of 50 mg/L in the mine's environment protection licence (EPL) for 93% of monthly samples over the period January 2007 to May 2010. However, this EPL contains a rainfall pollutant exemption criteria for LDP002 of 15 mm in 24 hours (reflecting the dam's usable capacity), which may be the key reason for this small number of TSS exceedances. That is, discharges of >50 mg/L are not currently a breach of the EPL, providing that there has been a rainfall event of >15 mm in the previous 24 hours.

Centennial is now proposing to substantially reduce the catchment areas of both the CHP Dam and the Emergency Coal Stockpile Sediment Dam by constructing a number of clean water diversion bunds. This is anticipated to remove a total of 6.1 ha of clean water catchment from the mine's dirty water management system (see **Table 4**). It is this reduction in catchment which reduces predicted rainfall/runoff to the two dams (see **Table 5**). With the reduction in its catchment, the Emergency Coal Stockpile Sediment Dam would be able to cater for rainfall events up to approximately 140 mm in 24 hours, which is a substantial increase from the existing 80 mm in 24 hours. Despite this proposed improvement, the Department is concerned that Myuna's dirty water management system (and in particular the CHP Dam) would continue to have very limited capacity. This is confirmed by Centennial's proposal to seek to maintain its EPL rainfall pollutant exemption criteria for rainfall events in excess of 15 mm in 24 hours.

For these reasons, the Department recommends conditions requiring Centennial to undertake a detailed review of water management at the Myuna Colliery surface facilities 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 CHP Dam) are sufficient to ensure that water discharged from the site meets relevant water quality criteria;
- assess appropriate options to improve storage and retention times in accordance with *The Blue Book - Managing Urban Stormwater (MUS): Soils and Construction* (a widely-accepted erosion and sediment control manual);
- propose upgrades of the dirty water storages sufficient that discharges meet these criteria; and
- propose any other appropriate changes to the water management system.

As the underground workings gradually progress, the rate at which groundwater is proposed to be pumped to the surface and discharged would incrementally increase. The EA states that average daily discharge would increase gradually over time from 5.1 ML/day to 8.6 ML/day. Centennial's existing EPL discharge limit for LDP001 of 12 ML/day would accommodate this increase.

Wangi Creek is a highly disturbed aquatic environment. Although naturally a freshwater stream next to the Myuna surface facilities site, it has been receiving Myuna's highly saline mine water discharges for up to 29 years. The lower reaches of Wangi Creek are also not in a natural state, having been substantially modified for the now-decommissioned Wangi Power Station. These modifications included channelling and concreting for approximately 1 km from the Lake, above which the creek is affected by tracks, electrical easements and other cleared areas. The lower channel also receives runoff from the Eraring Power Station ash tailings pond. However, the remaining creekline upstream of this section has ecological value and performs important functions, particularly in limiting water quality impacts to the Lake. The EA predicts no significant impacts on the creek or its remaining ecosystem from the project, primarily due to the anticipated impacts simply continuing those of the past 29 years. Nonetheless, the Department has recommended conditions that require monitoring Wangi Creek's stream health, channel stability, water flows and water quality and investigation of mitigation and management measures to prevent or limit any incision and degradation of the Wangi Creek channel.

Centennial is also proposing to merge licensed discharge points LDP001 (mine water from underground workings) and LDP002 (stormwater from surface facilities catchment) to form a single combined discharge point (proposed to be known as LDP B). While it is the responsibility of OEHL to regulate all EPLs, the Department considers that this merger may be inappropriate, unless the CHP Dam and dirty water retention capacity and detention time are significantly increased. The reason for this is that, by merging the 2 LDPs, Centennial is effectively seeking to apply the rainfall pollutant exemption criteria for rainfall events in excess of 15 mm in 24 hours to any minewater discharge which is released at the same time. Until stormwater retention and discharge is properly managed on the site, it is the Department's view that underground mine water should be separately managed and discharged. OEHL advised the Department late in the assessment process that it also did not support Centennial's proposal to merge the 2 LDPs, unless the rainfall exemption was removed.

The Department has recommended conditions of approval which would require Centennial to meet all water quality criteria included in any EPL that is granted for the project and to update the Water Management Plan to include measures to:

- monitor upstream and downstream of the licensed discharge points;
- monitor discharge water, including monitoring of geomorphic impacts; and
- ensure best practice sediment control measures.

The Department is satisfied that, with the implementation of these recommended conditions, the project's surface water quality would be managed to ensure that existing surface water risks are reduced and surface water impacts are minimised.

Groundwater Impacts

The hydrological assessment indicates that there are two types of aquifers in the project area - shallow alluvial or weathered rock aquifers and deeper coal seam aquifers.

The shallow alluvial or weathered rock aquifers are hydraulically separated from the coal seam aquifers by impermeable conglomerate strata. The EA indicates that 82 groundwater bores, used for a combination of domestic and monitoring purposes, are located within 3 km of the project area. None of these bores are actually located within the project area. The majority of domestic bores (67) draw water from shallow alluvial aquifers, with depths ranging from 1 to 10 m. The subsidence assessment has demonstrated that underground mining would result in negligible subsidence under alluvial aquifers, in that vertical subsidence would be limited, thus limiting subsidence impacts such as cracking of aquifer zones. Accordingly, the EA concludes that the 82 groundwater users near to the project area, as well as groundwater dependent ecosystems, would not be impacted.

To ensure these predictions are met the Department has recommended conditions of approval requiring Centennial to:

- monitor groundwater systems;
- establish groundwater assessment criteria based upon analysis of baseline data
- groundwater trigger levels for investigating any potentially adverse groundwater impacts; and
- include contingency protocols should any impact to the alluvial aquifers be detected.

While large areas of the coal seams have been mined and dewatered, the Wallarah and Fassifern seams outcrop under Lake Macquarie and the Pacific Ocean respectively and the Great Northern seam subcrops along elevated areas towards the east of the project area. Consequently, the underground workings receive constant recharge and are generally wet and have high water ingress. The reason why underground mine water is so saline at Myuna is this direct connection between key seams and saline marine and lake waters. Impacts on the coal seam aquifers themselves are not of concern, since they have no current beneficial use and no foreseeable beneficial use. The key environmental issue associated with seam dewatering is therefore the disposal of the produced mine water (see above).

The Department has recommended a condition of approval requiring Centennial to obtain and/or maintain all water licences and approvals required for the project, including licences for groundwater dewatering. The Department has also recommended conditions to monitor groundwater transfer rates to the surface to allow an improved understanding of the volumes of groundwater being pumped to the surface to validate predictions. The Department is satisfied that with the implementation of these conditions, the project would have no impact on groundwater users and groundwater dependent ecosystems.

5.4 Noise

The EA includes a Noise Impact Assessment (NIA) prepared in accordance with OEH's *Industrial Noise Policy* (INP). Where noise issues are not addressed in the INP, such as sleep disturbance, the NIA refers instead to the *NSW Environmental Noise Control Manual* (ENCM) and the *Environmental Criteria for Road Traffic Noise* (ECRTN). The NIA was based on existing 24-hour operations and identified eight assessment locations (R1 – R8) which are representative of nearby suburbs, see **Figure 7**.

The NIA included the results of background noise monitoring undertaken at two locations representative of the suburbs of Wangi Wangi (R1 to R2) and five locations in Arcadia Vale (R4 to R8). For residences near Myuna Bay (R3), a background noise level of 30 dB(A) was assumed, which is the lowest accepted background noise level used to establish project specific noise levels (PSNLs) under the INP. Analysis of seasonal wind records also indicated that “prevailing wind” conditions apply for the locality during the evening and night-time periods, as follows:

- Evening – ESE and WSW; and
- Night – ESE, SE, SSE, S, SSW, SW, and WSW.

Operational Noise

Two operational scenarios were modelled - Standard Operations (see **Table 6**), and the worst-case scenario, based on Emergency Stockpile Operations (see **Table 7**).



Figure 7: Sensitive Noise Receiver Locations

The NIA concludes that the noise levels generated for either Standard Operations or Emergency Stockpile Operation would not exceed the PSNLs at any residence under either calm or prevailing weather conditions. However, the NIA recommended that some site activities should be avoided, as follows:

- limiting the use of front end loaders to day and evening periods only;
- returning coal to the reclaim hopper in the day period only; and
- limiting the number of trucks working on the emergency stockpile to three per 15 minute period.

Table 6: Predicted Noise Levels (Standard Operations) and PSNLs

Location	Period	Adopted Background Rating LevelL (L _{A90})	Predicted Noise Level LAeq(15minute) (dBA)									Project Specific Noise Criteria (LAeq,15min)
			Wind Direction								Temperature Inversion	
			calm	ESE	SE	SSE	S	SSW	SW	WSW		
R1	Day	35	<30	-	-	-	-	-	-	-	-	40 dBA
	Evening	34	<30	<30	-	-	-	-	-	<30	-	39 dBA
	Night	30	<30	<30	<30	<30	<30	<30	<30	<30	<30	35 dBA
R2	Day	35	<30	-	-	-	-	-	-	-	-	40 dBA
	Evening	34	<30	<30	-	-	-	-	-	<30	-	39 dBA
	Night	30	<30	<30	<30	<30	<30	<30	<30	<30	<30	35 dBA
R3	Day	30	<30	-	-	-	-	-	-	-	-	35 dBA
	Evening	30	<30	<30	-	-	-	-	-	<30	-	35 dBA
	Night	30	<30	<30	<30	<30	<30	<30	<30	<30	<30	35 dBA
R4	Day	39	35	-	-	-	-	-	-	-	-	44 dBA
	Evening	37	35	35	-	-	-	-	-	40	-	42 dBA
	Night	34	35	32	36	37	37	38	38	37	37	39 dBA
R5	Day	39	37	-	-	-	-	-	-	-	-	44 dBA
	Evening	37	37	34	-	-	-	-	-	42	-	42 dBA
	Night	34	37	31	35	38	39	39	39	39	39	39 dBA
R6	Day	39	37	-	-	-	-	-	-	-	-	44 dBA
	Evening	37	37	31	-	-	-	-	-	42	-	42 dBA
	Night	34	37	<30	32	36	38	38	38	39	38	39 dBA
R7	Day	39	37	-	-	-	-	-	-	-	-	44 dBA
	Evening	37	37	31	-	-	-	-	-	42	-	42 dBA
	Night	34	37	<30	30	34	38	39	39	39	39	39 dBA
R8	Day	39	37	-	-	-	-	-	-	-	-	44 dBA
	Evening	37	37	30	-	-	-	-	-	42	-	42 dBA
	Night	34	37	<30	30	32	36	39	39	39	39	39 dBA

Note: dash (-) indicates wind direction not a feature during this period.

Table 7: Predicted Noise Levels (Emergency Stockpile Operations) and PSNLs

			Predicted Noise Level LAeq(15minute) (dBA)									Project Specific Noise Criteria (LAeq,15min)
Location	Period	Adopted Background Rating LevelL (L _{A90})	Wind Direction							Temperature Inversion		
			calm	ESE	SE	SSE	S	SSW	SW			WSW
R1	Day	35	37	-	-	-	-	-	-	-	-	40 dBA
	Evening	34	<30	<30	-	-	-	-	-	<30	-	39 dBA
	Night	30	<30	<30	<30	<30	<30	<30	<30	<30	<30	35 dBA
R2	Day	35	<30	-	-	-	-	-	-	-	-	40 dBA
	Evening	34	<30	<30	-	-	-	-	-	<30	-	39 dBA
	Night	30	<30	<30	<30	<30	<30	<30	<30	<30	<30	35 dBA
R3	Day	30	<30	-	-	-	-	-	-	-	-	35 dBA
	Evening	30	<30	<30	-	-	-	-	-	<30	-	35 dBA
	Night	30	<30	<30	<30	<30	<30	<30	<30	<30	<30	35 dBA
R4	Day	39	42	-	-	-	-	-	-	-	-	44 dBA
	Evening	37	35	35	-	-	-	-	-	40	-	42 dBA
	Night	34	35	32	36	37	38	38	38	37	37	39 dBA
R5	Day	39	44	-	-	-	-	-	-	-	-	44 dBA
	Evening	37	37	34	-	-	-	-	-	42	-	42 dBA
	Night	34	37	31	35	38	39	39	39	39	39	39 dBA
R6	Day	39	42	-	-	-	-	-	-	-	-	44 dBA
	Evening	37	37	31	-	-	-	-	-	42	-	42 dBA
	Night	34	37	<30	32	36	38	39	38	39	38	39 dBA
R7	Day	39	42	-	-	-	-	-	-	-	-	44 dBA
	Evening	37	37	31	-	-	-	-	-	42	-	42 dBA
	Night	34	37	<30	30	34	38	39	39	39	39	39 dBA
R8	Day	39	41	-	-	-	-	-	-	-	-	44 dBA
	Evening	37	37	30	-	-	-	-	-	42	-	42 dBA
	Night	34	37	<30	30	32	36	39	39	39	39	39 dBA

Note: dash (-) indicates wind direction not a feature during this period.

As Emergency Stockpile Operation is only predicted to occur up to 3 days per year, and these activities would only occur during the day-time, the Department has recommended a condition allowing noise levels of up to 40 dB(A) at receivers R-1 to R-3 and 44 dB(A) at receivers R-4 to R-8, but only for the day period when Emergency Stockpile Operation is undertaken. For Standard Operations, the Department has recommended a condition limiting operational noise levels to those predicted in **Table 6**, or a minimum of 35 dB(A) when the predicted noise levels are lower, which is the customary approach under the INP.

Apart from these standard noise conditions, OEH recommended that Myuna install a meteorological monitoring station with the capacity to accurately measure temperature inversions. The Department supports OEH's comments and has recommended conditions of approval accordingly.

LMCC expressed its concern that the de-commissioned Wangi Power Station (which may be subject to some future alternative use) was not considered to be a sensitive receiver in the NIA. The Department understands that Council's LEP requires that any future development of the power station site must consider the existing Myuna Colliery. That is, existing noise emissions from the Colliery should be taken into account in redeveloping the power station site. The Department also considers that the noise limits required for sensitive receivers will sufficiently protect future redevelopment of the Wangi Power Station from excessive noise impacts.

To further protect the amenity of privately-owned residences, the Department has recommended conditions of approval requiring Centennial to implement a Noise Management Plan, including:

- measures to be implemented to ensure compliance with noise criteria;
- attended noise monitoring at representative locations; and
- procedures to respond to noise complaints.

Sleep Disturbance

The NIA's modelling predicted that noise levels would be below the ENCM's sleep disturbance criteria for all nearby receivers, even during the worst-case scenario of night-time temperature inversion conditions. However, attended night-time noise monitoring recorded a 10 dBA exceedance of the night-time criteria. The source was from a forklift "moving and banging metal objects", Centennial has committed to ensuring that the forklift does not undertake these types of activities during the night-time period. The recommended conditions require that the Noise Management Plan contains measures to ensure that night-time noise criteria are met, and attended monitoring is undertaken.

Vibration

One public submission raised concerns regarding vibration impact to their residence. Underground shot firing may be required on rare occasions when igneous intrusions impede development of mine headings. Vibration from underground shot firing is predicted to be negligible at nearby residential locations. Centennial has committed in the EA to plan and design shot firing to achieve minimal impact upon residential receivers. The Department is satisfied that Centennial's commitments would ensure that vibration impacts would be minimal.

Road Noise

As all coal is transported by conveyor to Eraring Power Station, project-related traffic noise would only be generated by employee vehicles. The NIA did not assess traffic noise from employee vehicles. The Department is satisfied that the maximum number of employee vehicle movements, for each time period on both Summerhill Drive and Donnelly Road, is unlikely to result in an exceedance of the ECRTN criteria. The Department also notes that Council, OEH and RMS did not raise road traffic noise as an issue.

Construction Noise

The construction of the proposed clean water diversion banks would take up to 3 weeks. The Department has recommended conditions of approval to limit construction activities to 7 am – 6 pm weekdays and 8 am to 1 pm Saturdays with no construction operations allowed on Sundays. Additionally, the Department has recommended conditions of approval to limit construction noise to criteria set by OEH's *Construction Noise Guideline 2010*.

Conclusion

The Department is satisfied that the project would not have significant noise impacts on any receiver. Recommended conditions impose strict noise emission criteria and require development and implementation of a Noise Management Plan to manage noise emissions and ensure that noise impacts on all receivers are minimal.

5.5 Greenhouse Gas Emissions

The project would generate direct and indirect greenhouse gas emissions (GHGEs) that contribute to global warming and climate change. The EA includes a Greenhouse Gas Assessment prepared in accordance with relevant guidelines, which determined that the project would generate the following GHGEs:

- Scope 1 emissions – 606,616 tpa CO₂-e, an increase of approximately 165,852 tpa over existing operations;
- Scope 2 emissions – 32,955 tpa CO₂-e, an increase of approximately 9,521 tpa; and
- Scope 3 emissions – 4,778,000 tpa CO₂-e, an increase of approximately 2,070,000 tpa.

Myuna is known to be a “gassy” mine. Fugitive methane gas emissions (which are counted as Scope 1 emissions) are released when coal is mined, predominantly from the Fassifern Seam. The methane is emitted through the mine’s ventilation system and is known as ventilation air methane (VAM), which is difficult to use for power generation or flaring purposes as the methane is highly diluted. Additionally, there is limited ability for methane pre-drainage to extract concentrated methane as the majority of mining would occur beneath Lake Macquarie.

Centennial has committed to offset 10% of Myuna’s Scope 1 and 2 emissions. This commitment would be managed via reporting and auditing obligations set out in Commonwealth legislation, whereby the tonnes of CO₂-e offset each year would be verified. Centennial has said that these offsets would be located in Australia, independently verified, accredited to a recognised scheme or standard, and undertaken in accordance with relevant Commonwealth Government policies and standards. Offsets would be put in place where opportunities to avoid or mitigate emissions are not available. Myuna is also likely to be subject to the Commonwealth Government’s new Carbon Pricing Mechanism, under the *Clean Energy Act 2011*, which will provide economic incentives to implement measures to reduce the mine’s GHGs. Accordingly, Centennial’s offset commitments may be of increased value once the pricing mechanisms for carbon emissions under the Act are implemented. Centennial also has an existing Energy Savings Action Plan for the mine, which aims to reduce energy use and hence Scope 1 emissions.

All Scope 3 GHGs from the burning of coal mined at Myuna would occur even if the project was not to proceed, since Eraring Power Station would simply source coal from other suppliers for its fuel needs. Accordingly, the continuation of mining at Myuna mine would not increase Scope 3 GHGs from the NSW electricity generation sector above those that would otherwise occur.

The Department acknowledges that Centennial has committed to reducing its GHGs for this project, and has recommended a condition requiring Centennial to monitor its emissions as well as implement all reasonable and feasible measures to reduce them.

5.6 Air Quality

The EA includes an air quality impact assessment (AQIA) prepared in accordance with relevant OEH guidelines. The AQIA modelled potential emissions of total suspended particulates (TSP), dust deposition and particulate matter (PM₁₀), as well as nitrogen dioxide (NO₂) and carbon dioxide (CO₂) emissions entrained in ventilation air fans from combustion of diesel fuel in underground workings.

Dust emissions were modelled for all nearby residential receivers (see **Figure 7**) from all coal processing and handling, including ROM stockpile and conveyor operation. All haul roads and the hardstand area at the surface facilities are sealed and regularly swept. Accordingly, emissions from these sources were discounted and not included in the AQIA model. The primary source of dust emissions is therefore the emergency coal stockpile. Centennial only uses this stockpile occasionally, when the conveyor that feeds product coal to Eraring Power Station is shutdown due to maintenance or malfunction. Dust emissions generated by the project are therefore predicted to comply with all relevant criteria at all sensitive receptors. The AQIA also provides a qualitative assessment of emissions that would be released from the two ventilation shafts on the site. The AQIA predicted that NO₂ and CO₂ emissions from the mine would be below relevant criteria.

The Department and OEH are satisfied with the approach used for the AQIA and the Department considers that its results are conservative and justified. The Department has recommended conditions of approval requiring Centennial to:

- comply with relevant air quality criteria;
- improve and update the existing air quality monitoring network; and
- prepare and implement an Air Quality and Greenhouse Gas Management Plan.

WSC raised concerns that the AQIA did not include analysis of PM_{2.5}, which is primarily created by the combustion of fuels or heavy industrial processes and is not usually associated with wind blown dust,

which is the primary source of dust emissions for this project. While management of PM_{2.5} may be considered to be an emerging issue, currently there are no applicable environmental criteria in NSW for this size of particulate matter.

The Department is satisfied that the recommended conditions of approval and commitments made by Centennial would ensure the impact to local and regional air quality would be minimal.

5.7 Other Issues

The EA considered several other issues that are addressed in **Table 8** below.

Table 8: Assessment of Other Issues

Aspect	Consideration and Assessment	Conclusion and Recommendations
<i>Traffic and Transport</i>	<p>No coal trucks would use the local road network, as no coal would be hauled off-site. The traffic impact assessment (TIA) reviewed the impact of project-related employee traffic on the local road network. The TIA concluded that additional employee traffic would add, at most, 1.5% to average annual daily traffic volume on the surrounding road network.</p> <p>The TIA concluded that the key intersections (Summerhill Drive / Wangi Point Road and Donnelly Road / Wangi Road) are of an adequate standard for continued safe operation. However, it considered that a third major intersection (Summerhill Drive / Wangi Road) has limited sight distance to the west. The TIA states that for the worst case scenario (the 2:30 pm shift change over), the project would contribute up to 170 vehicle movements within a one hour period. However, monitoring indicates that only 20% of employees use the Summerhill Drive/ Wangi Road intersection, or 34 vehicle movements in this hour, of which half would be coming to the mine and half leaving it. Daily traffic numbers on Summerhill Drive are 2361, and for Wangi Rd are 9,913.</p>	<p>The Department carefully considered project-related impacts at the Summerhill Drive / Wangi Road intersection. It concluded that, given the existing slip and turning lanes at this intersection and the relatively small number of Myuna employees using it at a time which is outside of the local traffic peak, the overall impacts of employee traffic is negligible.</p> <p>Insofar as there may be limited sight distances at this intersection to the west, it is a matter for the RMS. Neither the Council nor the RMS raised concerns regarding this intersection.</p>
<i>Aboriginal Heritage</i>	<p>The EA includes a specialist Aboriginal cultural heritage assessment, undertaken in consultation with registered Aboriginal stakeholders, which referenced previous archaeological assessments and included surveys within the project area. These surveys identified six new Aboriginal heritage sites, which have been subsequently registered with OEH.</p> <p>The assessment determined that there would be no disturbance from infrastructure or subsidence to the land surface and that consequently no Aboriginal heritage items, sites or relics would be impacted.</p> <p>However, the registered Aboriginal stakeholders outlined concerns regarding the amount of time provided to respond during consultation about proposed survey methods and to undertake the surveys. These stakeholders also requested further investigations and studies in areas of high archaeological and cultural significance, and to be consulted about the management of Aboriginal cultural heritage items or areas.</p>	<p>The Department considers that sufficient time was given to registered stakeholders and notes that Centennial allowed for a further day of field investigations in response to the stakeholders' requests.</p> <p>The Department has recommended conditions of approval which would require Centennial to develop an Heritage Management Plan and an heritage training package, in consultation with the registered stakeholders to ensure Aboriginal cultural heritage sites and items are correctly preserved and managed in accordance with relevant guidelines and the wishes of local Aboriginal people. The Department is satisfied that this management plan would appropriately manage Aboriginal cultural heritage values within the project area.</p>
<i>European Heritage</i>	<p>The European heritage assessment determined that, due to the negligible level of terrestrial subsidence (20 mm) and minor construction activities within the surface facilities area, impacts on European heritage items (both known and unknown) would be negligible.</p>	<p>No surface disturbing activities are proposed which might impact the section of remnant railway line within the project area. Any undermining of this area would be subject to the 20 mm limitation on vertical subsidence, and subsidence impacts</p>

	<p>OEH's Heritage Branch raised concerns about the lack of assessment of a remnant railway line associated with the decommissioned Wangi Power Station. The Power Station is listed on the State Heritage Register; however it is not located within the project area. Some sections of the remnant railway line are located within parts of the project area which may be undermined, but not within the surface facilities site.</p>	<p>would therefore be negligible.</p> <p>The Department is satisfied that the project would have no impact on European heritage. Nonetheless, it has recommended a condition requiring Centennial to prepare a Heritage Management Plan, which must set out measures to protect the section of railway line located within the project area, as well as standard conditions of approval to protect any heritage items discovered during the project.</p>
<i>Rehabilitation</i>	<p>Mining operations at Myuna may continue up until 2032, before the mine is placed on care and maintenance, unless options for further future use are earlier identified.</p> <p>The project would not result in large areas requiring rehabilitation. The focus of rehabilitation would be the surface facilities area, once mining has ceased. DRE requested that a conceptual rehabilitation plan for the site be prepared.</p>	<p>The Department has recommended conditions requiring Centennial to prepare and implement a comprehensive Rehabilitation Management Plan, in consultation with Council, relevant agencies and the mine's Community Consultative Committee, and to the satisfaction of DRE, within 12 months of project approval.</p> <p>The Department has also recommended conditions requiring Centennial to undertake detailed mine closure planning (as part of the Rehabilitation Management Plan) prior to the site being placed on care and maintenance, due to the proximity of the rezoned Wangi Power Station.</p>
<i>Hazards</i>	<p>The EA included a consideration of the risks posed by hazardous materials and bushfires. The EA stated that the existing management systems are considered adequate to manage risks posed by hazardous materials (primarily hydrocarbons). There is no significant change proposed to storage, use or management of hazardous materials.</p> <p>Regarding bushfire management, the EA states that bushfires usually occur in the type of vegetation that surrounds the site every two to five years, however a fire has not occurred since 2004.</p>	<p>The Department is satisfied with Centennial's commitment to continue to implement its Hydrocarbon Management Plan, which has successfully managed the risks associated with hydrocarbon use and storage at Myuna.</p> <p>Given the length of time since the last bushfire in the area, and recent significant rains which have increased fuel loads, the Department has recommended a condition requiring Centennial to review its existing bushfire management procedures and fire fighting equipment to ensure that the project is suitably equipped to respond to the threat of bushfire at the site.</p>
<i>Erosion and Soils</i>	<p>The EA concludes that potential impacts on soils and land capability would be limited. The clean water diversions have been intentionally located in areas which have previously been disturbed. No topsoil stripping or clearing would be required for their construction. No acid sulphate soils would be excavated.</p>	<p>The Department is satisfied with the approach taken and conclusions regarding soil management in the EA.</p> <p>The Department has recommended a condition of approval requiring Centennial to prepare and implement an Erosion and Sediment Control Plan, and also a Surface Water Monitoring Plan which addresses monitoring of creek lines for erosion impacts.</p>

<i>Waste</i>	Centennial operates a waste management system for the mine which would continue to be implemented. As coal is not washed, no coal reject is generated.	The Department has recommended conditions of approval requiring Centennial to minimise and otherwise manage wastes generated by the project.
<i>Visual</i>	Myuna Colliery's surface facilities are located away from local residences and have minimal impact on visual amenity. However, night-lighting could cause a diffuse glow in the night sky.	The Department is satisfied that the project would have a minimal effect on visual amenity in the local area. The Department has recommended conditions that require the company to minimise visual impacts, particularly off-site night-time lighting impacts.
<i>Socio-Economic</i>	<p>The EA includes a specialist socio-economic assessment which calculated the net present value (NPV) of the project, which is the net value benefits (value of resource, capital investment, wages, taxes) minus the net value costs (operating costs and potential costs of GHGE).</p> <p>The socio-economic benefits of the project were predicted to be:</p> <ul style="list-style-type: none"> • 210 full-time jobs for up to 21 years; • NPV of \$278 million; • contributions to local sporting groups and other organisations; and • provision of domestic coal to Eraring Power Station to provide for the energy requirements of the NSW population. 	<p>The Department considers that the continuation of the Myuna Colliery would be of benefit to the local, regional and State economies.</p> <p>To minimise the potential impact of the future care and maintenance period planned for the site. The Department has recommended that Centennial be required to develop a Rehabilitation Management Plan that includes detailed mine closure planning prepared in consultation with all relevant stakeholders.</p>

6. RECOMMENDED CONDITIONS

The Department has prepared recommended conditions of approval for the Myuna Colliery Mining Project. These conditions are required to:

- prevent or minimise adverse impacts of the project;
- set standards and performance measures for acceptable environmental performance;
- ensure regular monitoring and reporting; and
- provide for the ongoing environmental management of the project.

Centennial does not object to the proposed conditions of approval. The Department believes these conditions reflect current best practice for the regulation of underground coal mines in NSW.

7. CONCLUSION

Centennial is seeking project approval for the existing Myuna Colliery to extract up to 2 Mt of ROM coal annually and transfer it by conveyor to Eraring Power Station for a period of 21 years.

The Department has assessed the project application, EA, public and agency submissions and Centennial's response to submissions and additional information supplied in response to Departmental questions, and is satisfied that there is sufficient information available to determine the application.

Subsidence impacts to sensitive features, including all terrestrial land, the High Water Level Subsidence Control Zone and seagrass beds, would be negligible, since vertical subsidence would be limited to 20 mm. The key subsidence impacts are expected to take place on the bed of Lake Macquarie, where Centennial has committed to limit vertical subsidence to 650 mm. However, Centennial's proposed mining methods are conservative, and this level of subsidence may not eventuate in many locations. Centennial has committed to establish a predictive model to assess the impacts of subsidence and reduced light penetration on the benthic communities in the Lake. The investigations would be undertaken prior to any secondary extraction and would inform management

actions to avoid or minimise predicted impacts. Such management actions may include the revision of the footprint for second workings to minimise impacts in critical areas or depths.

The Department has recommended conditions of approval requiring Centennial to prepare an Extraction Plan that would refine subsidence predictions prior to any secondary extraction that would cause subsidence. The Extraction Plan is designed to limit subsidence impacts, and includes monitoring to ensure predicted negligible impacts to terrestrial land are achieved.

The EA predicts that the project would have minimal impacts on surface water, groundwater and biodiversity within the site. The Department has recommended a number of conditions which would require Centennial to validate the predictions and findings of the EA, in particular the predictions relating to seagrass beds and benthic communities in and on the Lake bed.

The project is expected to have a minimal impact on surrounding residences, with no residences predicted to be impacted by air or noise emissions in excess of relevant OEH criteria. The Department has recommended conditions requiring Centennial to monitor air and noise emissions to ensure that residences are not impacted by the mine's operations.

Myuna is known to be a "gassy" mine. Consequently, Myuna is likely to be subject to the Commonwealth Government's new Carbon Pricing Mechanism, which will provide economic incentives to implement measures to reduce the mine's GHGs. To further manage fugitive coal seam methane emissions, the Department has recommended conditions requiring monitoring of emissions and implementation of all reasonable and feasible measures to reduce emissions.

The Department's assessment has found that the project would provide for the continued use and operation of the Myuna Colliery, which would make use of existing facilities and would provide long-term economic and social benefits. The project would provide continued employment for 175 staff and employment for 35 new staff and would generate millions of dollars in wages and State and Federal taxes. The project is also uniquely positioned to supply coal at a competitive price to the Eraring Power Station, enabling continued supply of coal for the energy requirements of the NSW population.

The project is well-placed to support the State plan, *NSW 2021*, and in particular *Goal 3 – Drive economic growth in regional NSW*. The project is located in the Lake Macquarie area and would be a significant contributor to the regional economy. It would expand existing employment from 175 to 210.

On balance, the Department believes that the project's benefits sufficiently outweigh its residual costs, and that it is therefore in the public interest and should be approved, subject to conditions.

RECOMMENDATION

It is RECOMMENDED that the Planning and Assessment Commission:

- consider the findings and recommendations of this report;
- approve the project application, subject to conditions; and
- sign the attached instrument of project approval (see **Appendix 6**).

Howard Reed
Manager
Mining Projects

David Kitto
Director
Mining and Industry Projects

Chris Wilson
Executive Director,
Major Project Assessment

Richard Pearson
Deputy Director-General
Development Assessment and Systems Performance

APPENDIX 1 – ENVIRONMENTAL ASSESSMENT

See attached CD ROM containing a folder named “EA”.

APPENDIX 2 – CONSIDERATION OF ENVIRONMENTAL PLANNING INSTRUMENTS

State Environmental Planning Policy (Major Development) 2005

See Section 3.1.

State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007 (Mining SEPP)

Part 3 of the Mining SEPP lists a number of matters that a consent authority must consider before determining an application for consent for development for the purposes of mining, including:

- compatibility with other land uses;
- natural resource management and environmental management;
- resource recovery;
- transport; and
- rehabilitation.

This part of the SEPP does not apply in respect of the determination of project applications under Part 3A. Nonetheless, the Department has considered these matters in its assessment report, where appropriate. The Department considers that the project is able to be managed in a manner that is generally consistent with the aims, objectives and provisions of the Mining SEPP.

State Environmental Planning Policy (Infrastructure) 2007 (Infrastructure SEPP)

The Department has considered clause 104 of the Infrastructure SEPP. The application was referred to the RMS. The RMS did not object to the project and did not have any recommended conditions.

State Environmental Planning Policy No. 33 – Hazardous and Offensive Development (SEPP33)

The Department is satisfied that the project is not potentially hazardous or offensive, and that the project is generally consistent with the aims, objectives and provisions of SEPP 33.

State Environmental Planning Policy No. 44 – Koala Habitat Protection

The project would not clear any native vegetation. Accordingly, the Department considers that the project would not impact on core Koala habitat and is satisfied that the project is generally consistent with the aims, objectives and requirements of SEPP 44.

State Environmental Planning Policy No. 55 – Remediation of Land (SEPP 55)

SEPP 55 relates to the remediation of contaminated land. Clause 7 of SEPP 55 requires that a consent authority consider a number of matters when determining a development application. While it is not required to undertake this assessment, the Department has considered these matters and is satisfied that the land can be used for mining purposes.

State Environmental Planning Policy No. 71 – Coastal Protection (SEPP 71)

SEPP 71 applies to a portion of the Project Area. SEPP 71 aims to protect the natural, cultural, recreational and economic attributes of the NSW coast, and to improve existing public access. The proposed project is not inconsistent with these aims.

Lake Macquarie Local Environmental Plan 2004

See Section 3.2.

Wyang Local Environment Plan 1991

See section 3.2

APPENDIX 3 – SUBMISSIONS

See attached CD ROM containing a folder named “Submissions”.

APPENDIX 4 – RESPONSE TO SUBMISSIONS

See attached CD ROM containing a folder named “Response to Submissions”.

APPENDIX 5 – ADDITIONAL INFORMATION PROVIDED BY CENTENNIAL

See attached CD ROM containing a folder named “Additional Information”.

APPENDIX 6 – RECOMMENDED PROJECT APPROVAL
