

***MAJOR PROJECT ASSESSMENT
Awaba Colliery Mining Project***



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

April 2011

Cover Photo: View of Awaba Colliery Pit Top Facilities (2005).

© Crown copyright 2011
Published April 2011
NSW Department of Planning and Infrastructure
www.planning.nsw.gov.au

Disclaimer:
While every reasonable effort has been made to ensure that this document is correct at the time of publication, the State of New South Wales, its agents and employees, disclaim any and all liability to any person in respect of anything or the consequences of anything done or omitted to be done in reliance upon the whole or any part of this document.

NSW Government
Department of Planning and Infrastructure

EXECUTIVE SUMMARY

Centennial Newstan Pty Ltd, a wholly owned subsidiary of Centennial Coal Company Pty Ltd (Centennial) operates the Awaba Colliery, an underground coal mine, located approximately 5.5 kilometres southwest of Toronto in the Lake Macquarie local government area. Awaba Colliery is an existing mining operation which has been operating since 1947. Because of the age of the Colliery, Centennial was not previously required to obtain development consent. However, the mine now needs project approval to continue its operations past December 2011.

Underground mining at Awaba Colliery is undertaken using bord and pillar and pillar extraction methods. Up to 800,000 tonnes of run of mine (ROM) coal is currently extracted annually for use by Eraring Power Station or for export.

The project, known as the Awaba Colliery Mining Project, would allow Centennial to continue the underground mining operations within existing mining areas (Study Area 2), but also expand into an area which has not been mined previously (Study Area 3). The mining operations would continue to be undertaken using bord and pillar and pillar extraction methods, but with an increase in maximum annual production to 880,000 tonnes of ROM coal. Centennial is currently undertaking pillar extraction within Area 2 in accordance with approved Subsidence Management Plans (SMPs) and expects to complete mining in this area by December 2011. Area 3 contains sufficient coal for several years of mining. After this extraction, the mine is expected to be placed on care and maintenance in 2015 whilst the future options for the site are assessed.

The project has a capital investment value of \$6.5 million and would result in the continued employment of approximately 100 staff until the commencement of the care and maintenance period.

The Department received seven submissions on the project, including five from government authorities, one submission from a special interest group and one public submission. The public authorities raised issues associated with subsidence impacts, flora and fauna survey methodologies, Aboriginal heritage and groundwater impacts (including impacts to groundwater dependent ecosystems). Centennial provided additional information that addressed these concerns. The two submissions from the public and the special interest group supported the project.

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* (EP&A Act). This assessment has found that with the implementation of reasonable mitigation measures, the project would result in minimal environmental impacts. No residences are expected to be directly affected by noise or dust emissions. Subsidence impacts from the project are likely to be minimal, with the expected vertical subsidence being up to 200 mm. The Environmental Assessment (EA) identifies the possibility of a 'plug failure' (an unpredicted, localised subsidence failure to the surface) occurring and recommends mine design and management control measures in order to manage this risk. Centennial has undertaken to provide buffer zones to manage the risk of a plug failure, and protect the Main Northern Railway, the Newstan-Eraring Private Haul Road, power poles and Stony Creek. The Department has recommended conditions which would require Centennial to adhere to strict performance measures within these areas. With the implementation of a detailed Extraction Plan, the Department believes that risk of plug failure can be minimised and should it occur, the potential impacts can be managed.

The Department has recommended a range of conditions of approval to ensure that the potential impacts of the project are mitigated or managed. These conditions are consistent with other recently-approved underground coal mining operations in New South Wales and require Centennial to:

- undertake noise monitoring and manage operations in accordance with a Noise Management Plan;
- establish an air quality monitoring network and Air Quality Management Plan;
- comply with subsidence performance measures;
- prepare and implement a detailed Extraction Plan to manage mine subsidence, including subsidence monitoring, a Strata Management Plan, Built Features Management Plan and Spontaneous Combustion Management Plan;
- prepare and implement a Water Management Plan which considers the relationship between the management of surface water, alluvial aquifers and groundwater dependent ecosystems;

- prepare and implement a Biodiversity Management Plan;
- prepare and implement a Rehabilitation Plan requiring Centennial to undertake detailed rehabilitation and mine closure planning;
- establish a Community Consultative Committee for the site; and
- undertake an independent environmental audit within 12 months of project approval.

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 region and the State, including:

- direct employment for 100 employees for up to 4 years;
- capital investment of \$6.5 million;
- providing domestic coal for use in Eraring Power Station; and
- providing royalties and payroll taxes for the State Government.

BACKGROUND

Centennial Newstan Pty Ltd, a wholly owned subsidiary of Centennial Coal Company Pty Ltd (Centennial) operates the Awaba Colliery approximately one kilometre (km) south of Awaba Village and 5.5 km southwest of Toronto in the Lake Macquarie local government area (see **Figure 1**).

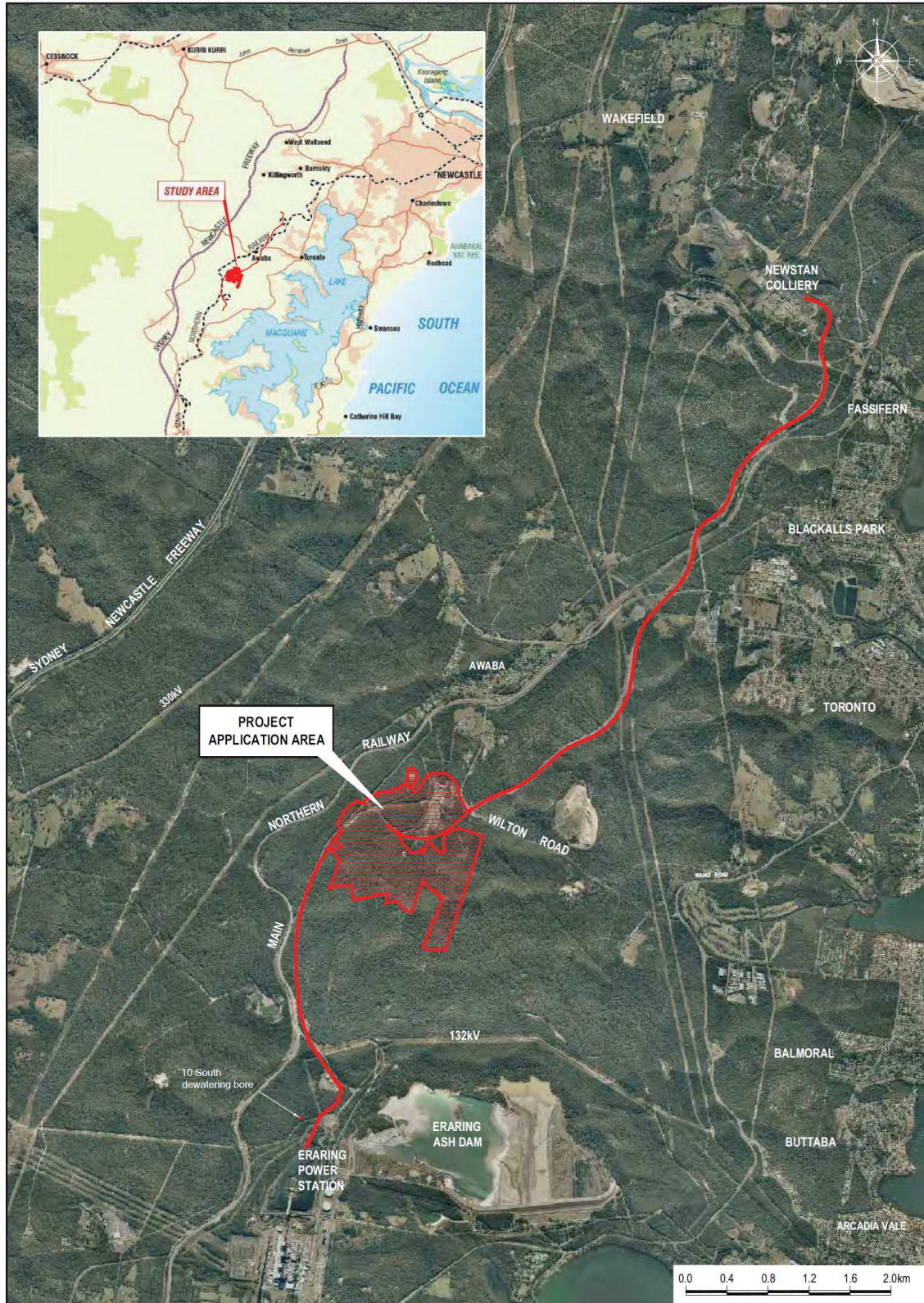


Figure 1: Project Location Map

Awaba Colliery is a small mining operation, employing approximately 100 people, mining the Great Northern Seam by underground methods relatively close to the surface, and typically producing up to 800,000 tonnes of coal annually. The Colliery has extracted over 30 million tonnes of coal since it first began operating in 1947. The existing mining operations are shown on **Figure 2**.

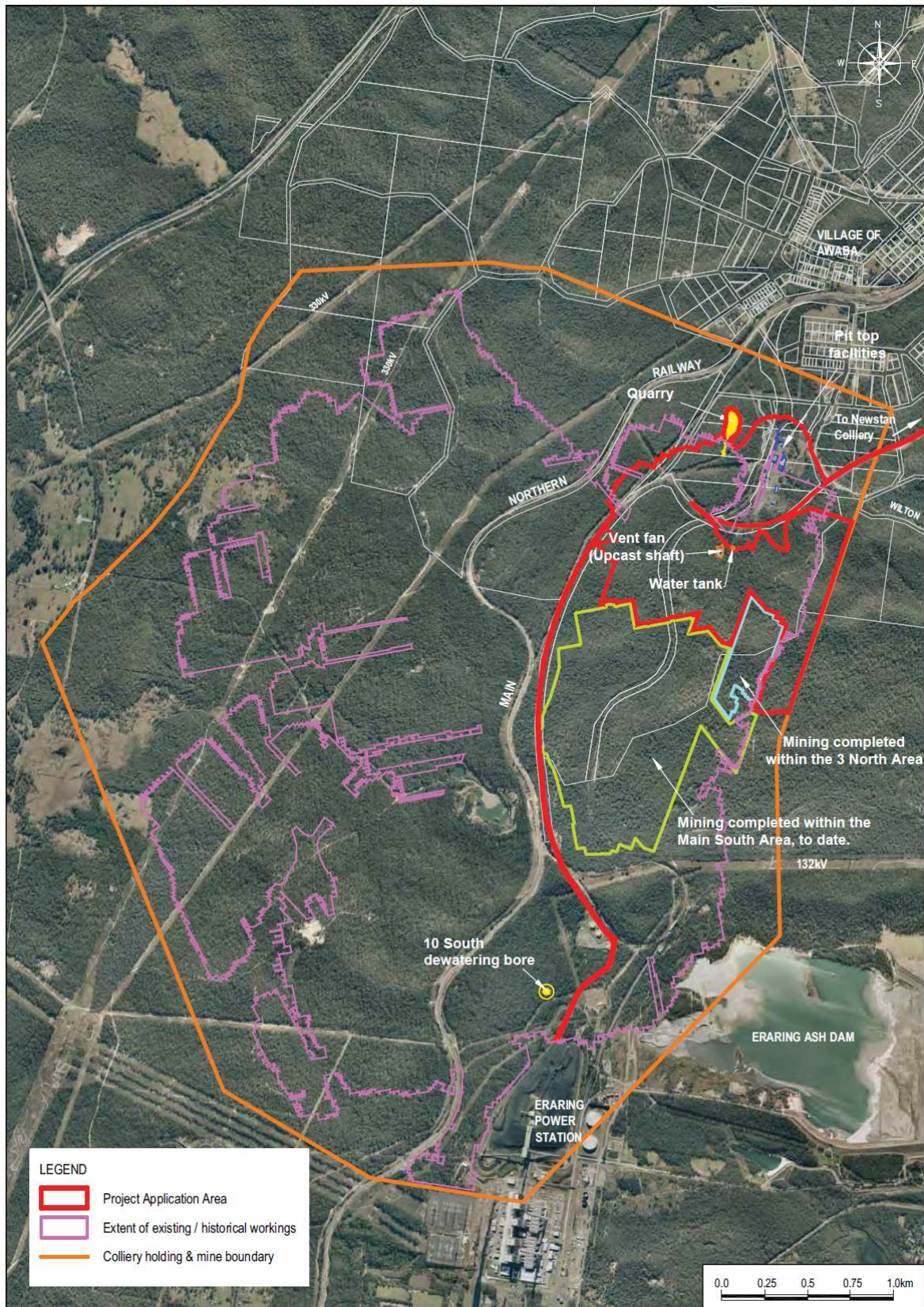


Figure 2: Existing Operations

Awaba Colliery is located on Crown land within the Newstan Colliery Holding and operates under Consolidated Coal Lease (CCL) 746 granted under the *Mining Act 1992*. Bord and pillar mining ("first workings") and pillar extraction ("second workings") of coal is currently undertaken in accordance with Clause 88 of the *Coal Mines Health and Safety Regulation 2006* and Subsidence Management Plans (SMPs) approved by the former Department of Primary Industries (DPI). Mining activities are currently undertaken within Study Area 2 (see **Figure 3**). Centennial expects that mining will be completed within Area 2 by the end of December 2011.

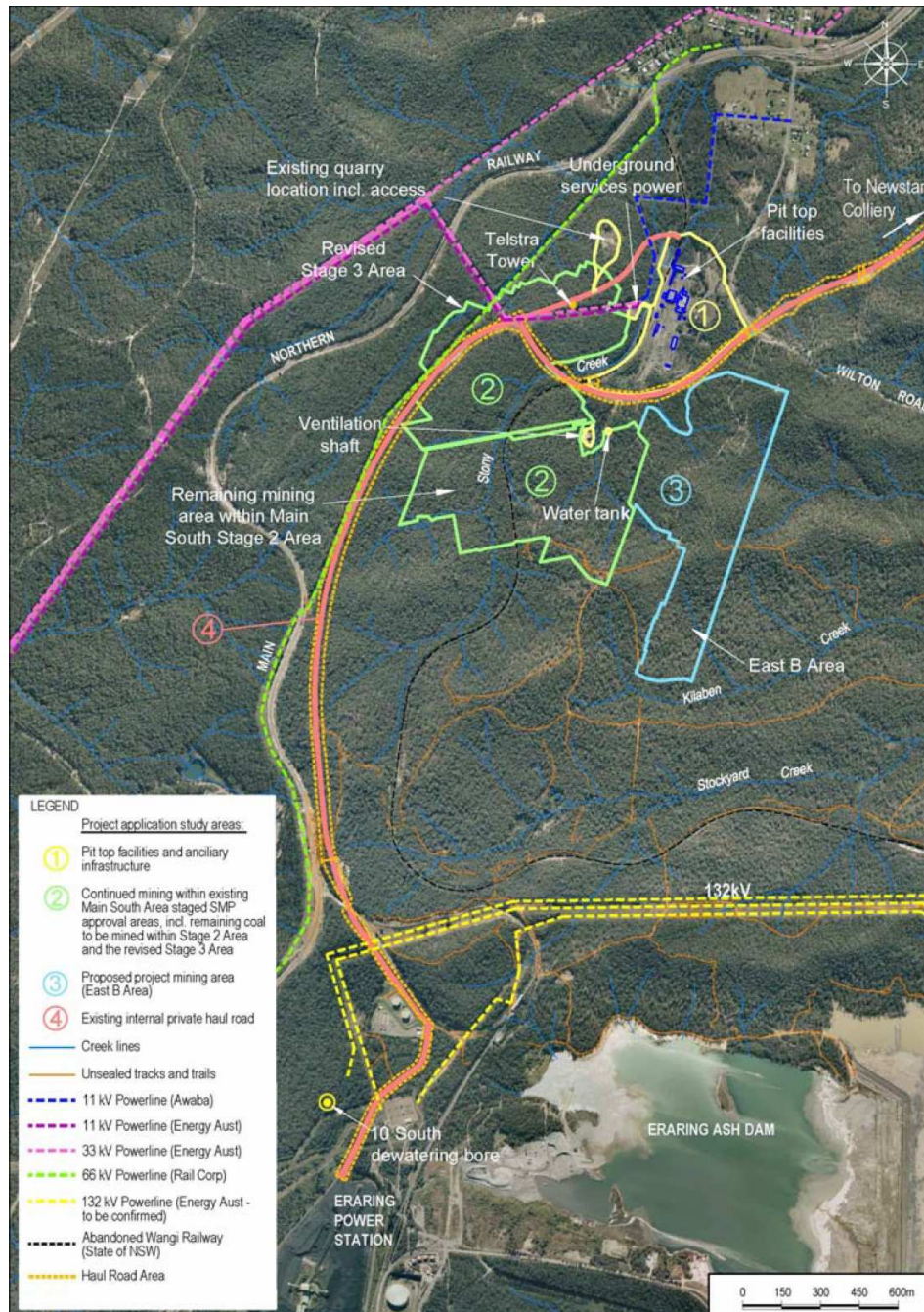


Figure 3: Project Study Areas and Infrastructure

Existing surface facilities at Awaba Colliery include a number of administration buildings, workshops, water management infrastructure (including an existing pollution control dam) and a coal handling and preparation plant (CHPP). The existing mine access infrastructure includes a men-and-materials drift (roadway from surface to seam), an overland conveyor drift, a tunnel conveyor drift and associated 800 tonne in-seam bin, a former men-and-materials drift used for ventilation purposes, an up-cast ventilation shaft and a downcast ventilation shaft. The location of the pit top facilities is shown on

Figure 3. Centennial Newstan also has approval (DA 73-11-98) to construct a ventilation shaft and access point for the Newstan Colliery within the Awaba pit top area. These facilities have not yet been constructed.

ROM coal is crushed at the Awaba CHPP prior to transportation to Newstan Colliery where the coal is either exported by rail via the Port of Newcastle or trucked to Eraring Power Station via the Newstan-Eraring Private Haul Road.

Awaba Colliery also operates a quarry, located west of the pit top facilities and used to extract material for subsidence repair works, road works and track maintenance (see **Figure 3**). Centennial proposes to use stockpiled material at the quarry and does not propose to undertake any further excavation at the quarry, with the exception of shaping the base for water management purposes.

Mining at Awaba Colliery predates the introduction of State or local environmental planning controls over mining. Approval under Part 4 of the *Environmental Planning & Assessment Act 1979* was not required 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 for development carried out on a mine for the purposes of a mine, and also due to similar provisions then in place under the *Mining Act 1992*.

As operations have continued without abandonment since 1947, the mine currently operates in accordance with Section 109(1) of the *Environmental Planning and Assessment Act 1979* (EP&A Act). However, due to the introduction of Part 3A of the EP&A Act on 1 August 2005 and the related passage of what is now the *State Environmental Planning Policy (Major Development) 2005*, and amendments to the *Environmental Planning & Assessment Regulation 2000*, the mine requires a project approval under Part 3A from the Minister for Planning and Infrastructure prior to 31 December 2011 in order to continue operations at the existing mine site after that date.

PROPOSED PROJECT

Centennial proposes to continue existing operations at the Awaba Colliery as well as expand underground mining operations within a new area, referred to as Study Area 3. 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	The project consists of: • extraction of up to 880,000 tonnes of ROM coal per year from the Great Northern Seam, until 2015; • crushing coal at Awaba Colliery's CHPP; • transportation of coal to Newstan's CHPP by private road for washing prior to rail transportation to the Port of Newcastle for export; • transportation of crushed coal from Awaba Colliery by private road directly to Eraring Power Station for domestic use; and • rehabilitation of natural features and man-made features affected by the project.
Mining and Reserves	• Mining to be undertaken as bord and pillar (first workings) and pillar extraction (second workings) using a continuous miner, with panels being between 40 and 100 metres (m) wide; and • 2 million tonnes of ROM coal.
Mining Methods	• Area 2 – previously mined using bord and pillar extraction, would be mined using second workings in areas with a depth of cover greater than 25 m; and • Area 3 – not previously mined, coal would be extracted through first workings (within areas with depth of cover greater than of 20 m) followed by second workings (areas with a depth of cover greater than 25 m).
Project Life	Mining operations may continue until 2015.
Project Staging	The project would be divided into three stages: • second workings within Area 2;

	• first workings and second workings within Area 3; and • a care and maintenance period.
Existing Surface Infrastructure	The following existing surface facilities would continue to be utilised: • men-and-materials drifts, tunnel conveyor drift and overland conveyor drifts; • up-cast and downcast ventilation shafts; • coal handling facilities for breaking, crushing, sizing and storing product; • private bitumen haul road connecting Awaba and Newstan Collieries with the Eraring Power Station; • surface covered conveyor systems; • administration and workshop facilities; and • water management infrastructure, including discharge points and groundwater bores.
Proposed Surface Infrastructure	Construction of a 3 megalitre (ML) pollution control dam.
Coal Processing	• Screening and crushing of ROM Coal at Awaba Colliery; and • washing of ROM Coal at Newstan.
Water Demand and Supply	• 10 South Bore would continue to be used for groundwater management and underground dewatering during operations and care and maintenance; and • no increase in potable water use.
Coarse Reject and Tailings Management	No coarse rejects or tailings management required at Awaba Colliery site, since coal would be washed at Newstan.
Hours of Operation	• All mining and transport operations 24 hours a day, 7 days a week; and • existing quarry operation between 7 am to 4 pm, 7 days a week.
ROM Coal Transport	• Road transportation via private haul road between Awaba Colliery and Newstan Colliery for processing of export coal; or • road transportation from Awaba Colliery via private haul road to Eraring Power Station for domestic coal.
Mine Access	Existing road access from Wilton Road.
Rehabilitation	• Progressive rehabilitation of subsidence impacts; and • decommissioning of surface facilities and final rehabilitation following mine closure.
Socio-Economic Benefits	Up to \$81 million would be contributed to the local, regional, State and national economies over the life of the project.
Employment	Continued employment of 100 existing staff.
Capital Investment Value	\$6.5 million.

STATUTORY CONTEXT

3.1 Major Project

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

Consequently, the Minister for Planning and Infrastructure is the approval authority for the project application. However, as reportable political donations were made by the Proponent, the Planning and Assessment Commission must determine the project under the former Minister's delegation of 18 November 2008.

3.2 Permissibility

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

Consequently, the Planning and Assessment Commission 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*; 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:

- 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 of a project publicly available for at least 30 days. After accepting the EA for the project, the Department:

- made the EA publicly available from 5 October 2010 until 4 November 2010;
 - on the Department's website; and
 - at the Department's Information Centre, Lake Macquarie Council's office in Speers Point and at the office of the Nature Conservation Council of NSW;
- notified relevant State Government authorities and Lake Macquarie Council by letter; and
- advertised the exhibition in the *Newcastle Herald* on 2 October and 16 October 2010.

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;
- Environmental Assessment (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 should consider the objects of the EP&A Act when he makes decisions under the Act. The objects of most relevance to the Minister'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:

- the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment,*
- the 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 the project would make efficient use of existing mining facilities and infrastructure at both Awaba and Newstan Collieries.

The encouragement of environmental protection (Object 5(a)(vi)) is considered in 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.

CONSULTATION

The Department exhibited the EA from 5 October 2010 until 4 November 2010. During the exhibition period, the Department received a total of seven submissions on the project, including:

- Department of Environment, Climate Change and Water (DECCW, now the Office of Environment and Heritage (OEH) within the Department of Premier and Cabinet);
- NSW Office of Water (NOW, now part of the Department of Primary Industries);
- Roads and Traffic Authority (RTA);
- Industry and Investment NSW (I&I NSW, now the Office of Energy and Resources within the Department of Trade and Investment, Regional Infrastructure and Services (DTIRIS));
- Lake Macquarie City Council (Council);
- Construction, Forestry, Mining and Energy Union (CFMEU); and
- one public submission.

A copy of these submissions is provided in **Appendix 3**. Centennial has subsequently provided a formal response to the issues raised in the submissions. A copy of the 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, and incorporated their comments into the recommended conditions of approval.

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

4.1 Public Authorities

OEH initially did not support the project and raised a number of issues, including:

- inadequacy of biodiversity survey details, threatened species assessment and proposed offset measure(s)/compensatory habitat;
- the shallow depth of mining;
- uncertainty in the risks of a 'plug' subsidence failure to the surface;
- depressurisation of alluvial aquifers or shallow weathered zone aquifers; and
- adequacy of the buffer zones surrounding natural streams and endangered ecological communities (EECs).

The majority of OEH's concerns were the result of insufficient information provided in the EA about the survey effort and methodologies used for the ecological assessment. Centennial then provided additional information, including previous ecological assessments referred to in the ecological assessment for the project. The Department has also undertaken further consultation with OEH in relation to the recommended conditions for the project.

NOW raised a number of issues in relation to the project, including:

- hydraulic links between the underground workings associated with Awaba and Newstan Collieries;
- ongoing risk of pillar collapse, with potential impacts on water sources governed under the *Water Sharing Plan for the Hunter Unregulated and Alluvial Water Sources 2009*;
- level of information available regarding the groundwater source, groundwater levels or qualities associated with the groundwater dependent ecosystems (GDEs) within the project area; and
- adequacy of the groundwater investigations of alluvium connected to Stony Creek.

To address these concerns NOW recommended a number of conditions which the Department has considered in its assessment.

The **RTA** did not object to the project. The RTA provided no requirements for the project as no additional traffic on public roads would be generated and no changes are required to current transport procedures/operations.

DTIRIS supported the continuation of mining at Awaba Colliery and recommended that the Department include conditions requiring Centennial to develop a rehabilitation plan for the site.

Council highlighted a number of potential issues for which it recommended conditions. These issues included the management of Aboriginal heritage, monitoring of subsidence and preparation of a final land use assessment for the site. The Department has considered the Council's comments.

4.2 Special Interest Groups and General Public

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

One submission was received from a member of the public which also supported the project.

ASSESSMENT

5.1 Subsidence

The EA includes a subsidence assessment, which included:

- a profile of the geological conditions within the site;
- discussion and analysis of historical mining conditions and previous 'plug' failure events;
- an assessment of mining operations undertaken in accordance with the approved SMP for Area 2 and historical subsidence impacts within this area;
- an assessment of subsidence impacts and management controls for second workings in Area 2, and for first workings and second workings in Area 3.

Area 2 has been previously mined using bord and pillar techniques. Second workings are currently being undertaken within Area 2 in accordance with two approved SMPs. The SMP covering the northern portion of Area 2 was approved on 15 December 2010. The maximum predicted subsidence in this SMP is less than 200 millimetres (mm), which compares to the maximum measured subsidence of 119 mm within previous mining areas.

The seam thickness within Area 2 is approximately 3.5 m and the depth of cover ranges between 30 and 50 m. The separated panels within which pillar extraction would be undertaken would vary between 60 and 80 m in width (see Figure 4). Second workings are not proposed beneath:

- haul roads and power lines;
- 2nd and 3rd order streams and creeks and adjacent buffer zones; and
- a protection zone for the Main Northern Railway.

The buffer zones for Stony Creek and an unnamed tributary are 20 m from the centre of the creek line for 2nd order sections, and 50 m from the centre of the creek line for 3rd order sections. The protection zone for the Main Northern Railway is defined as the sum of 20 m from the nearest rail or a step out distance defined by a 35° angle of draw (whichever is the greater), plus an additional distance of 100 m. A 20 m buffer is proposed for each power pole located within Area 2.

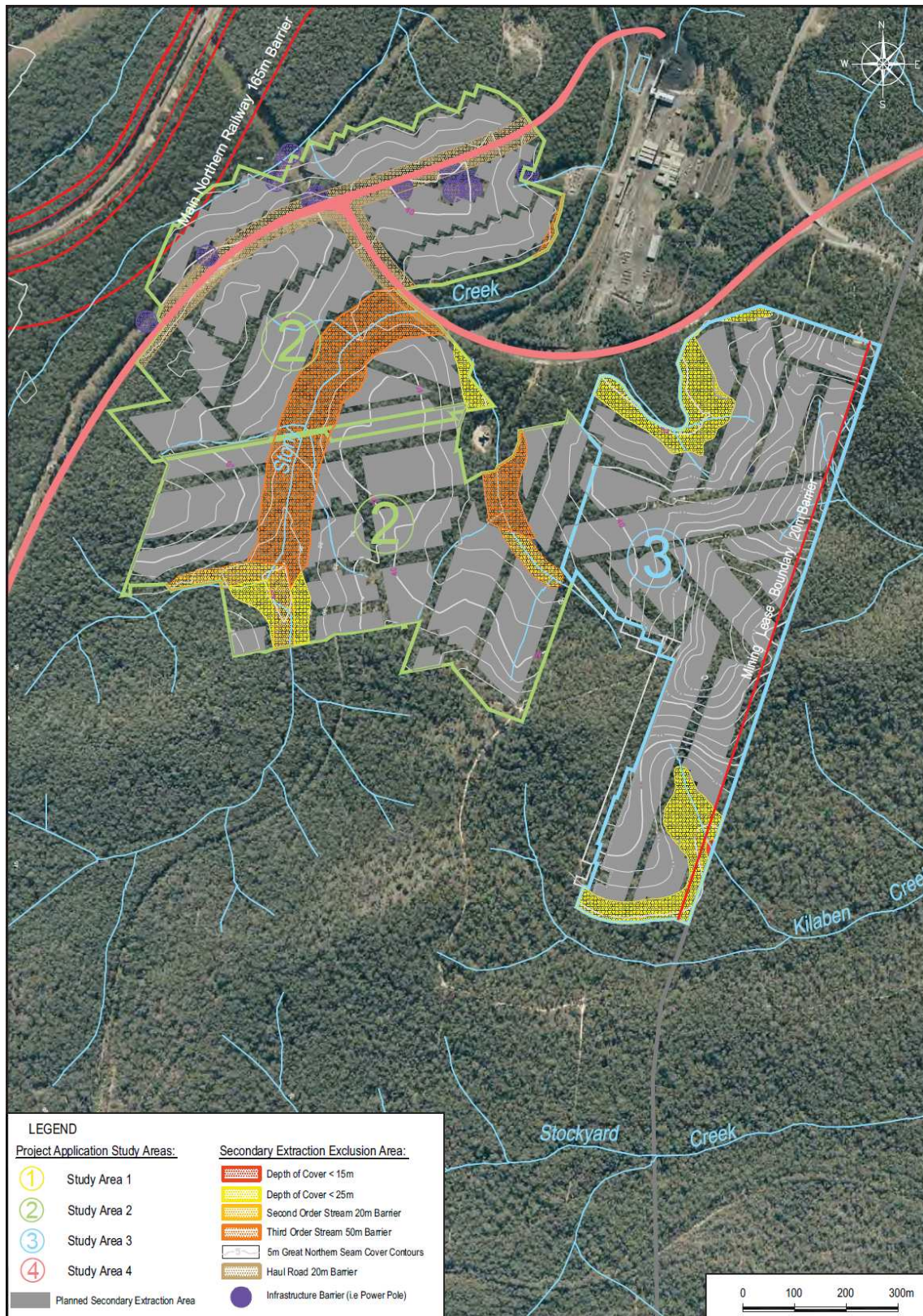


Figure 4: Proposed Second Workings Panels and Buffer Zones

Coal within Area 3 has not been mined previously and therefore would require the development of first workings prior to second workings. First workings within this area are expected to commence prior to the cessation of second workings in Area 2. There are no creeks classified as 2nd order or higher within Area 3, the depth of cover ranges from less than 20 m to approximately 80 m, and coal seam thickness ranges from 2 to 3 m. First workings would be undertaken with depths of cover greater as low as 20 m. Subsequent extraction of selected pillars would be undertaken to form a panel and pillar layout similar to that currently used at the colliery. Second workings would not be undertaken where the depth of cover is less than 25 m and pillar extraction panels would vary between 46 and 85 m in width. This mine design has been developed in consultation with DTIRIS as part of existing SMPs.

The mine design relies on the spanning capacity of the Teralba Conglomerate, a rock layer which immediately overlies the Great Northern Seam. This rock layer is strong and continuous, and is generally capable of spanning up to 150 m at a depth of cover of 30 m. This spanning capacity generally prevents significant subsidence. It is where an area of the conglomerate fails and then falls as a plug into the extracted coal seam that a plug failure may occur at the surface. This presents as a sinkhole anywhere between 10 and 100 m in diameter (or even larger) and up to 2.5 m in depth, with vertical faces at the edge of the failure. The mine design seeks to avoid plug failure (ie operating well within the mechanical properties of the Teralba Conglomerate) while still seeking to maximise the recovery of accessible coal.

The subsidence assessment predicted that the maximum vertical subsidence would be in the order of 200 mm, reducing to a negligible level (20 mm) within a 45° angle of draw developed over a width of approximately 200 m (two voids and one pillar row). The expected subsidence is the function of sag of the Teralba Conglomerate (in the order of 10 to 100 mm over the extracted panel widths) and compression of the pillar system (in the order of 50 to 100 mm) as a result of increased rock load. The 20 mm subsidence limit is predicted to be within 50 m of the end of the extraction panels. The associated tilts and strains are predicted to be approximately 1 mm/m and not measurable by standard survey equipment. Surface cracking is not expected to occur.

The subsidence assessment considers the potential of plug failures, which previously occurred at Awaba in 2006 and the 1980s. In response to the plug failure event in 2006, Centennial re-designed the mine plan and developed a hierarchy of management controls to minimise the risk of further failures. No plug failures have occurred since implementing this revised mine plan and these management controls would continue to be implemented for the project (see **Table 2**). With the implementation of these controls, the Department considers that plug failures are unlikely to occur.

Table 2: Hierarchy of Subsidence Management Control Measures

Subsidence Management Control		Area 2	Area 3
Elimination – second workings has been eliminated from the following areas	Within a nominal 125 m of the Main Northern Railway*	Yes	N/A
	Under haul roads, other infrastructure, identified watercourses and buffer zones on either side of the 2 nd and 3 rd order stream sections	Yes	N/A
	At depths of cover less than 25 m	Yes	Yes
Substitution	The adopted layout has significantly lower subsidence than the alternatives. The proposed mining method has been implemented successfully since 2007	Yes	Yes
Engineering Controls	Factor of safety for pillar failure	1.4-1.7	>1.6
	Factor of safety for compressive failure of the spanning Teralba Conglomerate	Not specified	2.0
Administrative Controls – undertaken to monitor and ensure mine design prevents subsidence levels above those predicted	Progressive coring or other testing of the floor in second workings areas and adjacent to the railway prior to second workings	Yes	Yes
	Regular inspections of any watercourses, especially after heavy rain	Yes	Yes
	Subsidence cross-line(s) to confirm pillar compression and sag predictions.	Yes	Yes

* Note: This represents the barrier width previously required by DTIRIS for this extraction method.

Both the Department and DTIRIS are satisfied that the subsidence predictions are well-founded, but believe that Centennial should be required to monitor and validate these predictions over the life of the mine. The Department also considers that Centennial should develop specific strategies to prevent the occurrence of a plug failure and contingency measures in the unlikely event of such failure. The Department has recommended a condition of approval requiring Centennial to prepare an Extraction Plan incorporating these requirements.

Watercourses and Associated Alluvium

The site contains a number of watercourses, which drain either to Lords Creek to the west, Stockyard Creek or Kilaben Creek to the east, or to Stony Creek to the northeast of the site. Each of these watercourses is in the Lake Macquarie catchment. With the exception of Stony Creek, all watercourses in the project area are 1st order streams. A small section of Stony Creek within Area 2 is classified as 2nd order, with a larger downstream 3rd order section.

The subsidence assessment considered the potential for subsidence impacts to occur within natural watercourses located within the project area. The proposed mine plan provides for the following buffer zones on either side of Stony Creek and an unnamed eastern tributary are (see **Figure 4**):

- 20 m from the centre of the creek line within the 2nd order sections; and
- 50 m from the centre of the creek line within the 3rd order sections.

In response to the Department's requests, as part of its response to submissions, Centennial provided a report (see **Appendix 5**) better identifying the alluvium associated with Stony Creek in the southern portion of Area 2. Centennial also provided detailed mapping of the alluvium on the proposed mine plan (see **Figure 5**). This report identifies that in some limited locations the alluvium extends beyond the nominated buffer zones. The additional information also identified that:

- subsidence within the alluvium is expected to be in the order of 100 mm;
- the depth of cover at a test pit (excavated adjacent to the A-A¹ cross-line shown on **Figure 5**) on Stony Creek is approximately 40 m comprising 25 m of Teralba Conglomerate; 12.5 m of weathered material and 2.4 m of alluvium;
- the spanning capabilities of the Teralba Conglomerate at the Stony Creek test pit location are well-within the design parameters used in the subsidence assessment; and
- cracking of the base of the alluvium is not expected to occur.

It is important to note that mining within Area 2 (in both the southern and northern sections) is currently being undertaken in accordance with these same buffer zones. In accordance with the assessment and additional information, the Department expects a minimal level of subsidence (between 20 mm and 100 mm) within Stony Creek and its associated alluvium. Nonetheless, the Department has recommended that Centennial be required to have a negligible impact on the Stony Creek alluvial aquifer.

Built Features

The project would not undertake second workings beneath any built feature, due to the proposed buffer zones (see above). The Main Northern Railway is not expected to be impacted by subsidence. The Department has recommended a condition of approval requiring Centennial to ensure that all built features remain safe, serviceable and repairable.

Conclusion

The Department has recommended conditions of approval requiring Centennial to prepare an Extraction Plan which would include:

- detailed plans of second workings;
- detailed performance indicators for each of the subsidence impact performance measures listed in **Table 3** below;
- measures to ensure compliance with the performance measures in **Table 3** and remediation of any subsidence impacts and environmental consequences;
- procedures for the management of public safety;
- procedures for baseline data collection;
- a subsidence monitoring program (to validate subsidence predictions);
- a Strata Management Plan focusing on the management of floor heave and the risk of plug failure;
- a Built Features Management Plan; and
- a Spontaneous Combustion Management Plan (see **Section 5.7**).

The consequences of subsidence impacts for Aboriginal heritage and ecology are considered in Sections 5.3 and 5.4.

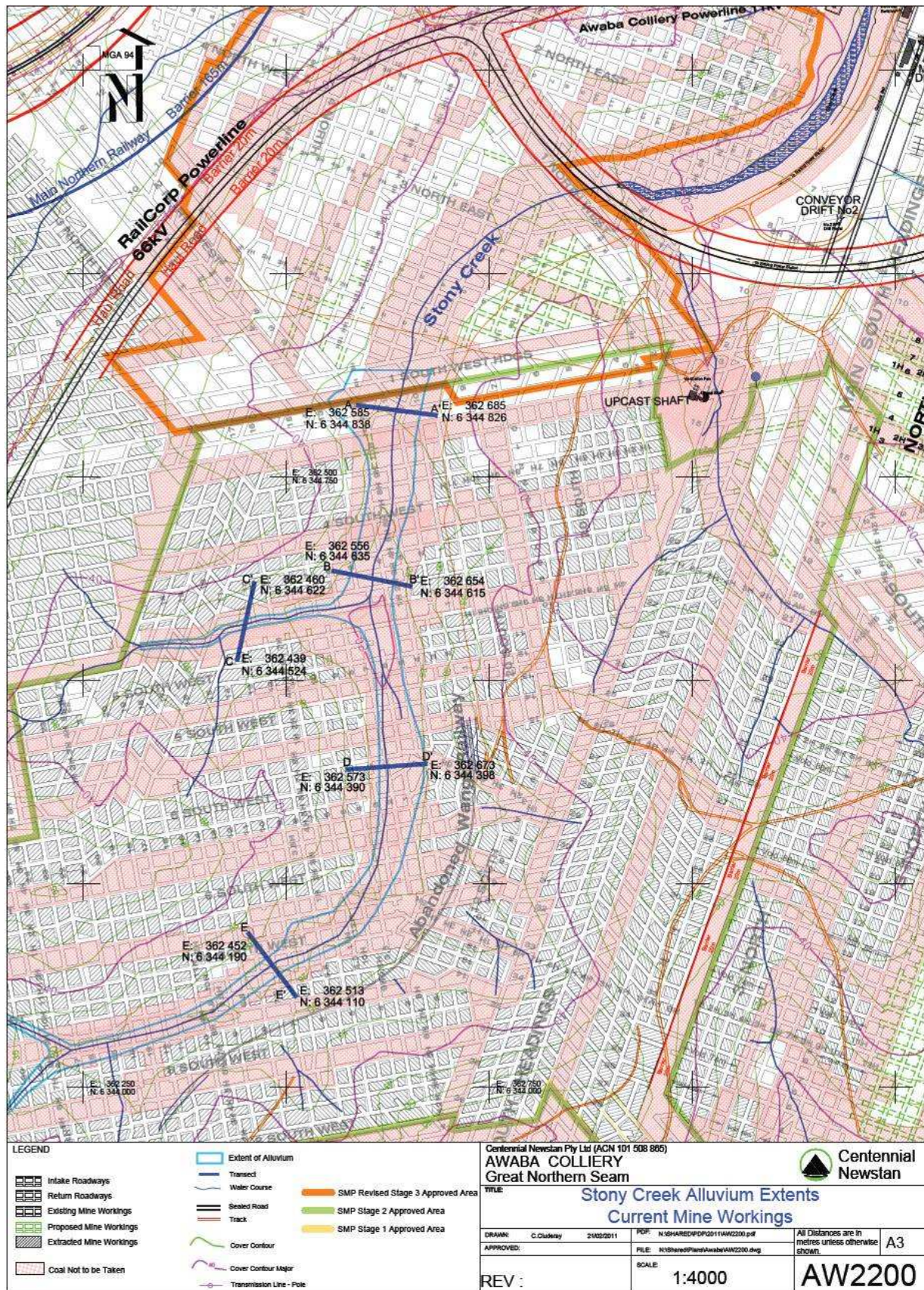


Figure 5: Extent of Stony Creek Alluvium and Proposed Mine Plan

Table 3: Recommended Subsidence Impact Performance Measures

Water	
Stony Creek alluvial aquifer.	Negligible impact.
Natural watercourses on site.	No greater environmental consequences than predicted in the EA.
Biodiversity	
Threatened species, populations or their habitats; endangered ecological communities and groundwater dependent ecosystems.	Negligible impact.
Built Features	
Main Northern Railway; transmission lines; Telstra communications tower; and Newstan-Eraring Haul Road.	Always safe and serviceable. Damage that does not affect safety or serviceability must be fully repairable, and must be fully repaired, unless the owner agrees otherwise in writing.
Other built features, including other public infrastructure.	Always safe. Serviceability should be maintained wherever practicable. Loss of serviceability must be fully compensated. Damage must be fully repairable, and must be fully repaired or else fully compensated.
Public Safety	
Public Safety.	No additional risk.

5.2 Water Resources

The EA includes an assessment of the potential impacts of the project on surface water and groundwater resources. This assessment includes modelling of the hydrogeology of the project area and a water balance for existing and proposed operations.

Surface Water

The existing operations at Awaba Colliery are undertaken in accordance with a water management system with established processes for clean water and dirty water management. In particular, the clean water system includes diversion of clean water around pit top facilities and stormwater to Stony Creek via existing stormwater systems. The dirty water management system includes the management of processing and workshop areas with an oil/water separator and a pollution control dam. The surface water assessment identified that the existing pollution control dam is not of a sufficient capacity to manage surface water runoff during a 1 year annual return interval (ARI) rainfall event of 2 hours duration. Overflows from the pollution control dam have previously resulted in total suspended solids (TSS) levels exceeding the EPL criteria for discharges to Stony Creek. As a result, Centennial proposes to double the capacity of the existing pollution control dam. The additional 3 ML of storage would allow the pollution control dam to manage a 24 hour 10 year ARI rainfall event and is expected to enable compliance with EPL criteria for surface water discharges. The Department has recommended a condition of approval which would require Centennial to meet all criteria included in any EPL that is granted for the project (including such future variations as may be imposed).

To improve water management measures at the existing gravel quarry, Centennial has committed to shape the quarry base to enable the retention of dirty water during a 20 year ARI event, installing a new sediment trap and undertaking monthly monitoring of sediment and erosion control measures, increasing to weekly monitoring when material is being removed from the quarry. The Department has recommended a condition of approval requiring Centennial to prepare and implement an Erosion and Sediment Control Plan for the site which would incorporate these commitments.

Water Balance

The water balance assessment determined that Awaba Colliery would need to increase its discharge of water through the 10 South dewatering bore (see **Figure 2**) in order to replace the previous discharges from LDP005, which is now inactive. The pumping capacity of 10 South Bore would be increased from 0.48 to 1.2 ML/day. Discharges of groundwater from the bore would need to be licensed under the *Water Act 1912*.

Water discharged from the 10 South Bore would be directed to the Eraring Ash Dam. This discharge currently averages 82 ML/year and Centennial is seeking Eraring Energy's permission to increase this to an average of 173.6 ML/year. Should agreement with Eraring Energy over this proposal not be reached, Centennial has identified that LDP005 would be reactivated to discharge water as a contingency measure. A copy of additional information provided by Centennial about 10 South Bore discharge is contained in **Appendix 5**.

Based on the historical results for discharges from LDP005, the Department considers that any future discharges from LDP005 are likely to be of minimal environmental impact. 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 bores.

Groundwater

Historical mining operations at Awaba Colliery have depressurised the coal seam aquifer within the Great Northern Seam. Consequently, the underground workings are generally dry and have little water ingress.

Sixteen groundwater users are located within a 7 km radius of the site. Many of the surrounding bores intercept the Fassifern Seam, which is lower than the Great Northern Seam and hydraulically separated from it by the Awaba Tuff. Based on this bore search, the EA concludes that groundwater use surrounding the site is limited. The Department is satisfied that groundwater users are unlikely to be impacted by the project.

The EA concludes that the project is expected to have a minimal impact on shallow weathered zone aquifers and alluvial aquifers within the project area due to the buffer zones established around the 2nd and 3rd order sections of Stony Creek and an unnamed tributary. NOW raised concerns about the level of information provided on the connectivity between alluvial groundwater and the surface water source. Consequently, Centennial provided an assessment of the Stony Creek alluvium in its response to submissions which concluded that the interconnection of the alluvial aquifer is restricted by an interbedded clayey sequence.

The Department has recommended conditions of approval requiring Centennial to undertake groundwater monitoring as part of the Water Management Plan in order to validate the findings of the EA. In addition, the Department has also recommended a condition of approval requiring Centennial to have a negligible impact on the Stony Creek alluvial aquifer as a result of subsidence impacts.

Groundwater Dependent Ecosystems (GDEs)

The riparian vegetation within the 2nd and 3rd order sections of Stony Creek was identified in the EA as a GDE. The EA concludes that subsidence effects (of up to 120 mm) are likely to only have a minimal impact on these GDEs, due to the establishment of the buffer zones around Stony Creek. The Department accepts that the project is unlikely to have a significant impact on these GDEs.

However, the Department considers that a plug failure has the potential to impact on GDEs. To manage the risk of a plug failure, the Department has recommended that Centennial be required to prepare an Extraction Plan, containing a Strata Management Plan focusing on the management of floor heave and the risk of plug failure, and providing a clear set of procedures to minimise the risk of plug failure, fully remediate any failures and remediate any consequential impacts (such as on GDEs).

5.3 Aboriginal Cultural Heritage

The EA includes a specialist Aboriginal cultural heritage assessment, undertaken in consultation with registered Aboriginal stakeholders. The assessment draws heavily on previous archaeological assessments of the site, but includes a survey of areas that had not been previously surveyed.

These surveys did not identify any Aboriginal heritage sites. However, areas of archaeological sensitivity were identified. Within Area 2, an area of high archaeological sensitivity was identified within the Stony Creek buffer zone and an area of moderate sensitivity along the northern boundary (see **Figure 6**). Three areas of moderate archaeological sensitivity were also identified within Area 3. Centennial has committed to management measures to address the identified areas of archaeological sensitivity, as well as to the implementation of contingency strategies for any additional heritage issues which may arise.

The Aboriginal cultural heritage assessment included consultation with seven registered Aboriginal stakeholders/groups who outlined concerns regarding the level of visibility of the ground surface and subsequent difficulty in identifying sites, the long-term effects of subsidence on unidentified sites and the lack of consideration of Aboriginal cultural significance. The Aboriginal stakeholder groups requested the completion of subsurface investigations within areas of high archaeological significance, and the development of an Aboriginal Cultural Heritage Management Plan and an Aboriginal Heritage training package.

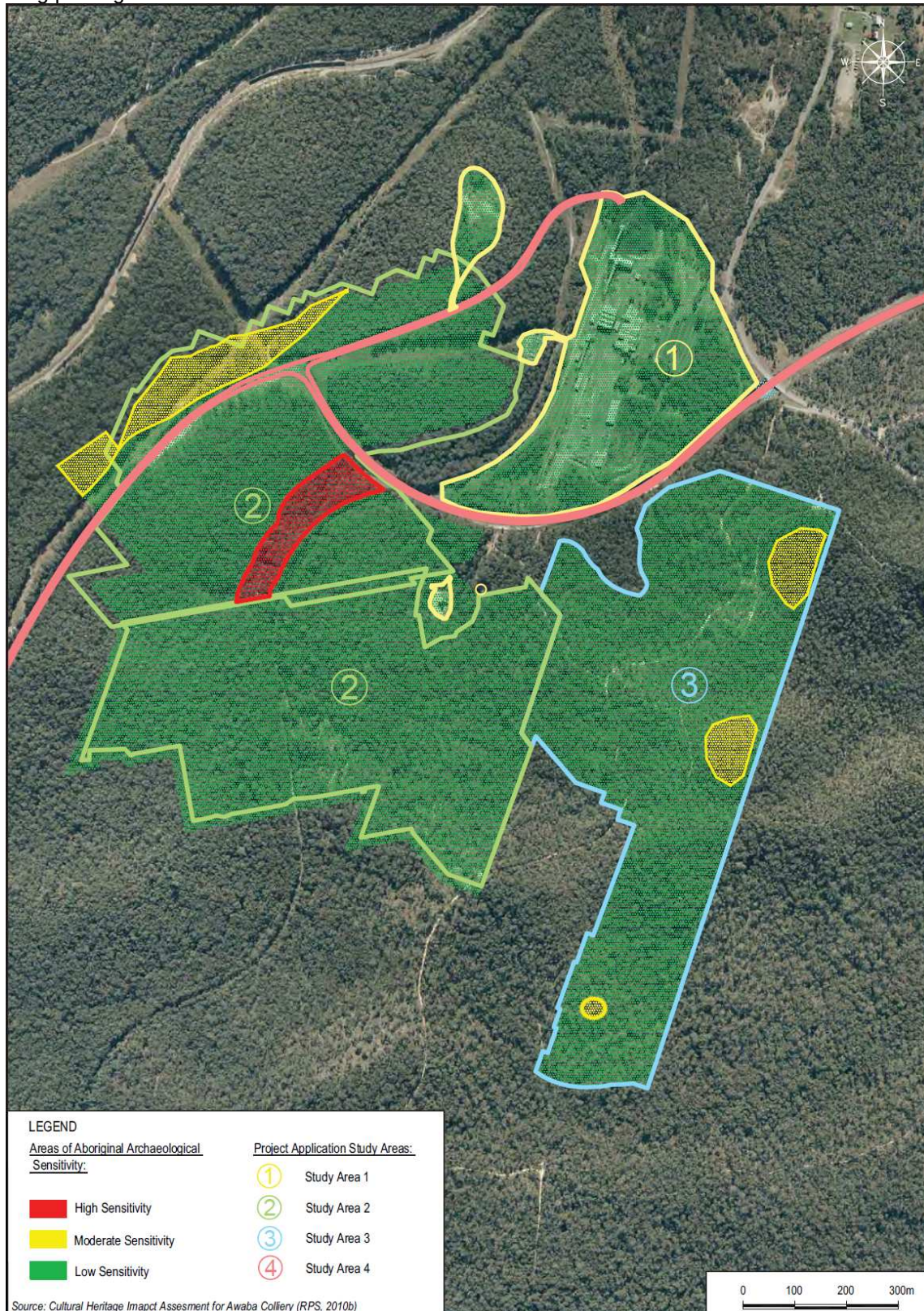


Figure 6: Areas of Aboriginal Archaeological Sensitivity

The Department and OEH are satisfied with the level of Aboriginal heritage assessment in the EA, and consider that the proposed mitigation measures are suitable for the management of identified Aboriginal heritage values. The area identified as being of high archaeological sensitivity on **Figure 6**, is located within the nominated buffer zone around Stony Creek and would therefore be substantially protected. Consequently, the Department considers that the subsurface archaeological investigations requested by some Aboriginal groups would not be necessary, due to the protection of these sensitive areas from mining impacts.

The Department is satisfied that, with the implementation of suitable mitigation measures, the project is unlikely to have a significant impact on Aboriginal cultural heritage values.

5.4 Biodiversity

The ecological assessment in the EA draws heavily on previous ecological surveys undertaken for SMPs prepared for the area and indicates that it was prepared in accordance with the OEH's *Draft Guidelines for Threatened Species Assessment*. However, the OEH submission identified that the ecological assessment was not reported in accordance with its recommended biodiversity survey methodology, in that the use of the results of previous ecological surveys resulted in a lack of detail being provided for the original survey methodologies. In response to this issue, Centennial provided the Department and OEH with copies of the original ecological assessments.

The ecological assessment included vegetation mapping and a threatened species assessment. The five vegetation communities identified on the site (see **Figure 7**) included the Swamp Mahogany Paperbark Forest Endangered Ecological Community (SMPF EEC), shown as Swamp Sclerophyll Forest EEC in Figure 7. The SMPF EEC is wholly within the nominated buffer zones which surround Stony Creek. Two threatened flora species, *Tetratheca juncea* and *Grevillea parviflora* subsp. *Parviflora*, were identified within the project area. The riparian vegetation located along Stony Creek is classified as a GDE (see section 5.2).

No threatened fauna species were identified within the project area, however the ecological assessment identifies that several threatened fauna species may use the site as part of foraging area or home range. Two threatened fauna species, the Glossy Black Cockatoo and Little Lorikeet, have been recorded south of the project area.

Flora and fauna impacts associated with the planned extension of the pollution control dam were considered to be nil, as the location is already disturbed land.

The ecological assessment considered the potential impact of two subsidence scenarios, the expected subsidence impacts of up to 200 mm of subsidence and the worst-case scenario of a plug failure. It concluded that the predicted subsidence impacts associated with up to 200 mm vertical movement would cause negligible strains and tilts and not cause connective cracking. Accordingly, the project would have a minimal impact on vegetation communities and threatened flora species, especially as the SMPF EEC and the GDE would not be undermined. Additionally, the threatened fauna species which may be present within the site are not expected to be impacted.

The ecological assessment outlines potential ecological impacts of an un-remediated plug failure as:

- hydrology of the surface would be altered, with rainfall flowing into the cavity and flowing into the underground mine workings resulting in local impacts and downstream impacts;
- the sheer-sided cavities would become a potential pit trap for terrestrial fauna species; and
- changes to the micro-environment possibly resulting in the loss of individual threatened species, should they be present.

The assessment considered the potential consequences of the largest possible plug failure (a sinkhole of 3.74 hectares, equivalent to a diameter of 220 m, was considered as a worst-case), and determined such consequences to be minimal, following rehabilitation. Should any plug failure occur, Centennial would remediate the sinkhole by first filling it with clean, compacted locally-derived gravel 'road base' material to the natural surface level (to limit infiltration of surface water), revegetating the surface of the remediated area and diverting upstream water flows away from and around the remediated area.

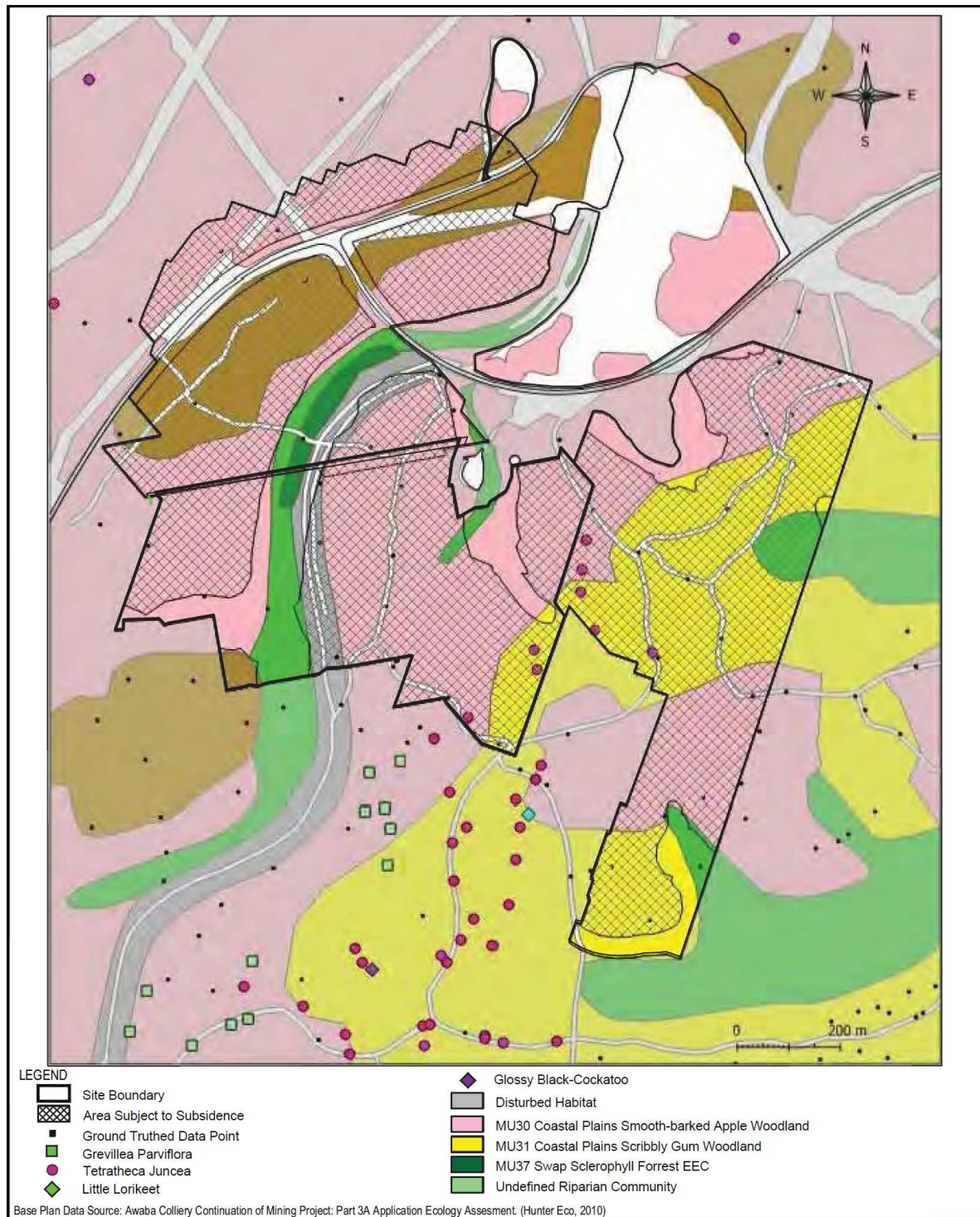


Figure 7: Vegetation Communities and Threatened Species

As there is a potential for the filled sinkhole to settle over time, aided by the action of rainfall and water flows, Centennial would continue to monitor the remediated area and repair any areas that settle.

In response to the uncertainty of a possible plug failure and the potential environmental consequences, the Department has recommended conditions of approval requiring Centennial to:

- prepare and implement a Biodiversity Management Plan for the project;
- monitor the subsidence occurring within the project area with particular consideration given to the EEC and GDE; and

- develop an Extraction Plan which provides specific strategies to prevent the occurrence of a plug failure, detail appropriate remediation strategies and list contingency measures which may also be required in the event of such failures.

The Department considers that biodiversity offsets are not required for the project due to the lack of direct vegetation disturbance impacts attributable to the project and the low risk of plug failures.

5.5 Air Quality

The EA includes an air quality impact assessment (AQIA) prepared in accordance with OEHS's *Approved Methods for the Assessment of Air Pollution Sources Using Dispersion Models*. The AQIA modelled potential emissions of total suspended particulates (TSP), dust deposition and particulate matter (PM₁₀).

The AQIA relies upon meteorology data from the nearby Newstan Colliery meteorological station. The meteorological data set is 93% complete and is in accordance with the Approved Methods. All sensitive receptors which could be impacted by the project are located north of the site. The AQIA assessed the activities undertaken within the infrastructure area and quarry site (together termed 'Study Area 1') including:

- existing quarry operations, including the removal of stockpiled material and transportation of quarry materials; and
- all coal processing and handling, including ROM stockpile and conveyor operation.

The AQIA provided no quantitative assessment of the prospective emissions from the ventilation shaft on the grounds that the emissions would be insignificant. The transportation of coal to Newstan or Eraring Power Station on the private haul road (Study Area 4) has also not been assessed on the grounds that the haul road is sealed and trucks are required to cover their loads. Activities within Areas 2 and 3 (the underground mining areas) have not been included as there would be limited surface activities within these areas.

The results of the air quality modelling are based on the assumption that existing dust management procedures would continue to be implemented including:

- designated haul routes;
- water spraying of the unsealed quarry haul road, manoeuvring areas and stockpiles;
- sealing of haul roads (with the exception of the quarry haul road);
- vacuum sweeping adjacent to coal stockpiles, haul roads and hard stand areas; and
- covering of truck loads entering and leaving the premises.

Dust emissions generated by the project alone are predicted to comply with all relevant air quality impact assessment criteria at all sensitive receptors. The predicted dust emissions of the project are outlined in **Table 4**.

Table 4: Predicted Maximum Air Quality Emissions

	OEHS Criterion	Background Air Quality	Maximum Predicted Emissions at Sensitive Receptors (Project Alone)	Maximum Predicted Emissions at Sensitive Receptor (Background and Project)
Annual average dust deposition (g/m ² /month)	4	2	0.6	2.6
Maximum 24-hour average PM ₁₀ (µg/m ³)	50	7.6 - 56.5	17.1	18.5 - 57.8
Maximum annual average PM ₁₀ (µg/m ³)	30	21.5	2.1	23.6
Maximum annual average TSP (µg/m ³)	90	47	5.4	52.4

The AQIA provides two predicted PM₁₀ emissions, one a predicted increment in PM₁₀ emissions, the second a highest predicted increment in PM₁₀ emissions. For the purposes of the Department's assessment, the highest predicted increment in PM₁₀ emissions has been considered to be the worst-case scenario. The assessment of PM₁₀ emissions is based on daily PM₁₀ data available from the Wallsend air quality monitor. Background PM₁₀ 24-hour emissions recorded at Wallsend exceeded the

OEH PM₁₀ 24-hour criteria of 50 µg/m³ on a number of occasions throughout 2008. These exceedances are considered by the AQIA to be the result of regional pollution events (such as bushfires), and in these instances the OEH criteria would not apply. Based on normal background air quality data from Wallsend (ranging from 7.6 to 23.3 µg/m³), the AQIA concluded that the project would comply with the relevant OEH air quality criteria. The Department and OEH are satisfied with the approach used for the AQIA and consider that its results are conservative and justified.

The Department has recommended conditions of approval requiring Centennial to:

- comply with relevant air quality criteria;
- implement best practice dust management on site and continue existing dust management procedures;
- establish an air quality monitoring network; and
- prepare and implement an Air Quality and Greenhouse Gas Management Plan.

5.6 Noise

The EA includes a Noise Impact Assessment (NIA) prepared in accordance with OEH's *Industrial Noise Policy* (INP). Where issues relating to noise are not addressed in the INP, such as sleep disturbance, the NIA references the *NSW Environmental Noise Control Manual* and the *Environmental Criteria for Road Traffic Noise*.

The NIA identifies four assessment locations located to the north of the site in the village of Awaba. There are a number of residences which surround the four identified assessment locations, some of which are located slightly closer to the mine. The NIA included the results of background noise monitoring undertaken at two residences located north of the site, on Onley Street, Awaba (see **Table 5**).

Table 5: Background Noise Levels and Project Specific Noise Levels (PSNLs)

Location	Period	Measured Background Noise Levels (L _{A90} dB(A))	Project Specific Noise Levels* (dB(A))
1A Onley Street, Awaba	Day	33	38
	Evening	38	38
	Night	36	38
11 Onley Street, Awaba	Day	33	38
	Evening	34	38
	Night	31	36
Puddy Lane, Awaba	Day	-	38
	Evening	-	38
	Night	-	36

*Note: The project specific noise levels equal the background noise level plus an additional 5dBA.

The PSNLs for Onley Street, Awaba were applied to Puddy Lane, Awaba as being representative of the background noise environment at this location. The application of this PSNL at this location is considered to be conservative as the background noise levels were likely to be higher than those recorded at Onley Street.

The NIA concludes that the noise levels generated by the project would not exceed the PSNLs at all residences under calm and prevailing weather conditions. The NIA also concluded that the potential noise impacts of trucks travelling on the private haul roads are isolated from any sensitive locations and would not exceed the relevant criteria.

At the Department's request, Centennial provide a revised NIA (provided in **Appendix 5**) containing PSNLs for each individual residence/vacant land property which had noise levels predicted to exceed 35 dB(A). Other than 1A Onley Street, Awaba, no residences were predicted to be impacted by noise levels greater than 35 dB(A) as a result of the project. Accordingly, the Department has recommended Day, Evening and Night noise impact assessment criteria of 35 dB(A) for all residences except the residence located at 1A Onley Street, Awaba. The predicted noise impacts due to Awaba Colliery have been recommended as the noise criteria for this residence. These are 37 dB(A) for the Day period and 36 dB(A) for the Evening and Night periods.

The NIA considers the operation of the quarry, based on existing hours of between 7am and 4 pm, 7 days a week. The Department has recommended a condition of approval restricting quarry operations to these hours. To protect the amenity of privately-owned residences, the Department has also recommended conditions of approval to require Centennial to prepare and implement a Noise Management Plan including:

- attended noise monitoring at representative locations; and
- provisions for ongoing evaluation of compliance with noise criteria.

5.7 Other Issues

The assessment raised several other issues that are considered in **Table 6** below.

Table 6: Assessment of Other Issues

Aspect	Consideration and Assessment	Conclusion and Recommendations
Soils and Land Capability	The EA includes a soils and land capability assessment which concludes that potential impacts on soils and land capability would be limited. The proposed pollution control dam has been intentionally located in an area which has been previously disturbed. No topsoil stripping or clearing would be required for its construction. In respect of second workings, Centennial proposes to undertake a number of management and mitigation measures, including erosion and sediment control measures, pre- and post-mining inspections along creek lines and inspection of any plug failure followed by planning of appropriate rehabilitation.	The Department is satisfied with the approach taken and conclusions in the soil and land capability assessment. The Department has recommended a condition of approval requiring Centennial to prepare and implement a Water Management Plan, including an Erosion and Sediment Control Plan and a Surface Water Monitoring Plan which addresses monitoring of creek lines.
Traffic and Transport	The project has the potential to impact on the local road network in respect of project-related traffic. The EA includes a traffic assessment which concludes that no additional traffic would be generated on public roads by the project. Traffic numbers are expected to be generally consistent throughout the life of the project. The traffic assessment concluded that the intersection of Wilton Road and Awaba Colliery is of an adequate standard for safe operation. However, it recommended that the signage on approach to the intersection be relocated. The RTA does not have any objections to, or requirements for, the project as it is unlikely to have a significant impact on the classified road network. No coal would be transported by public roads as the existing Newstan to Eraring private haul road provides for the transportation of coal to Newstan or Eraring Power Station.	The Department is satisfied with the taken and conclusions in the traffic assessment and considers that the project would have a minimal impact on the local road network. Centennial has committed to undertake the road signage upgrades identified in the traffic assessment report. The Department has recommended conditions of approval requiring Centennial to limit the transportation of all coal to the Newstan-Eraring Private Haul Road.
Rehabilitation	The EA includes a life of mine and rehabilitation assessment. Awaba Colliery is planned to operate until 2015 before being placed on care and maintenance whilst options for future use are considered. Centennial has an existing life of mine management plan which is referenced in the EA. The project is not expected to result in large areas requiring rehabilitation. The focus of rehabilitation would be the pit top facilities (once use has ceased) and any plug failure, should it occur.	The Department is satisfied that Centennial's rehabilitation strategy and final land use strategies outlined in the EA are consistent with the relevant guidelines and are achievable. The Department has recommended a condition of approval requiring Centennial to prepare and implement a comprehensive Rehabilitation Management Plan to the satisfaction of DTIRIS, and in consultation with OEH, NOW, Council and the Community Consultative Committee. The Department considers that further detailed analysis of final land use options and mine closure standards should be undertaken, due to the

		imminent closure of Awaba Colliery and has recommended a condition 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.
Non-Aboriginal Heritage	The project has the potential to impact on existing non-Aboriginal heritage items due to mine subsidence. The EA included a Cultural Heritage Assessment which considered non-Aboriginal heritage items. The mine's pit top facilities area contains buildings constructed as part of the original Awaba State Mine. The assessment reports that the 1993 City of Lake Macquarie heritage study considers that these buildings are of very high local significance, high regional significance and moderate State significance. However they are not located within the mining area and therefore not proposed to be affected by the proposed project (until the mine enters its final rehabilitation phase). Underground mining within Area 2 is expected to cause deformation of the abandoned Awaba-Wangi Railway (the rails have been removed). The Cultural Heritage Assessment concluded that the deformation of the remaining railway alignment due to subsidence would not detract from the significance of this heritage item.	The Department is satisfied with the assessment of non-Aboriginal heritage in the project area and that the project would have a minimal impact on non-Aboriginal heritage. As the mine will close in the near future, the Department has also recommended that Centennial be required to assess the significance of non-Aboriginal heritage items at the pit top facilities and provide for the on-going management and/or use of these items.
Greenhouse Gas	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 the Commonwealth Government's <i>National Greenhouse Account Factors (2008)</i>. The greenhouse gas assessment determined that the project would generate: • Scope 1 emissions – 14,565 tonnes per annum of CO₂-e, an increase of approximately 116 tonnes per annum in comparison with existing operations; • Scope 2 emissions – 12,601 tonnes per annum of CO₂-e, an increase of approximately 1,062 tonnes per annum; and • Scope 3 emissions – 715,484 tonnes per annum of CO₂-e, an increase of approximately 61,000 tonnes per annum. The 742,650 t of GHGEs from the project represent 0.00000012% of Australia's annual GHGEs.	The Scope 3 GHGEs due to the consumption of coal mined from Awaba would occur even if the project were not to proceed, as the power stations supplied by Awaba would source coal from other suppliers to fill their fuel needs. Accordingly, the continuation of mining at the Awaba mine would not increase Scope 3 GHGEs above those that would continue to occur. The Department is satisfied that the project's GHGEs represent a negligible contribution to national and global greenhouse gas emissions. However, the Department has recommended a condition of approval which requires Centennial to implement measures to minimise GHGEs from the project.
Hazards	The EA included a consideration of hazards including hazardous materials management, bushfire and public safety. Centennial currently operates in accordance with a Spontaneous Combustion Management Plan, Bushfire Management Plan and Public Safety Management Plan, and has committed to continue to implement these plans. The site is located within bushfire-prone land and has the potential to be affected by bushfires. Two sections of vehicle track located in the southern portions of Area 2 and Area 3 (see Figure 3) would not be undermined by second workings in order to avoid potential plug failure and resulting restrictions on access for fire management purposes.	The Department has recommended conditions of approval requiring appropriate bushfire management. The Department is satisfied that the small risk to public safety posed by the project can be appropriately managed.

Spontaneous Combustion	The EA included a consideration of spontaneous combustion. The site has not had any recent occurrences of spontaneous combustion and spontaneous combustion is not expected to occur. Nonetheless, at least one former shallow underground coal mine in the district has experienced on-going problems with spontaneous combustion in the same coal seam as that mined at Awaba.	Spontaneous combustion is not expected to occur at the mine. The Department has recommended that any Extraction Plan for the mine include a Spontaneous Combustion Management Plan containing measures to minimise the risk of spontaneous combustion and contingency plans for implementation, should spontaneous combustion occur.
Visual	Awaba Colliery's surface facilities are located away from local residences and do not impact on visual amenity. However, night lighting could cause a diffuse glow in the night sky.	The Department is satisfied that the project would be unlikely affect the visual amenity of the local area. The Department has recommended a condition of approval that requires the company to minimise visual impacts, particularly off-site lighting impacts.
Waste	The EA included an assessment of waste management which addressed the management of general wastes and scrap metal; waste oils/grease and hydrocarbon-contaminated water; and sewage. Centennial operates a waste management system for the existing operations at the site which would continue to be implemented. The project would not generate coal rejects on site as all coal washing would be undertaken at Newstan Colliery.	The Department has recommended conditions of approval requiring Centennial to minimise, monitor and manage waste generated by the project.
Socio-Economic	The EA includes a socio-economic assessment which outlines the consultation undertaken for the project and considers the project's potential social and economic impacts. The socio-economic benefits of the project were predicted by the EA to be: • continuation of 100 direct jobs; • royalties, state and local taxes totalling \$5.2 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.	The Department is satisfied with the socio-economic assessment prepared for the project and considers that the continuation of the Awaba Colliery would be of benefit to the local, regional and state economies. However, the Department has concerns relating to planning for the future use of the site and considers that good forward planning should be undertaken in order 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.

RECOMMENDED CONDITIONS

The Department has prepared recommended conditions of approval for the Awaba 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.

The recommended conditions address the management of mining-induced subsidence (including protection of sensitive features); surface water and groundwater impacts; review, management and mitigation of existing noise impacts; air quality impacts and GHG emissions; landscape and rehabilitation management; environmental management systems and ongoing environmental

monitoring; community consultation and complaints management; environmental performance audits; and mine closure planning.

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.

CONCLUSION

Centennial is seeking project approval to extract up to 2 million tonnes of ROM coal at a rate of up to 880,000 tonnes per annum at the existing Awaba Colliery. Coal is expected to be extracted from the site for up to five years followed by a care and maintenance period whilst the future use of the site is determined.

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.

The expected subsidence impacts of up to 200 mm vertical subsidence are considered by the Department to be minimal. The possible worst-case scenario subsidence impact, a plug failure, is considered to be a low risk as the current and proposed mine plan has been conservatively designed to avoid any occurrence. Centennial has committed to continue with existing management plans which have been developed in conjunction with DTIRIS to minimise the potential risk of a plug failure. The Department has recommended conditions of approval requiring Centennial to continue to address measures to minimise potential for plug failure and contingency measures in such an event.

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 alluvial aquifers and GDEs.

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 the 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.

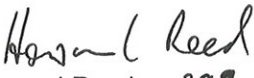
The Department's assessment has found that the project would provide for the logical continuation of an existing mining operation which would make use of existing facilities and would provide a continuation of the existing economic and social benefits of operating the Awaba Colliery. However, the project only provides for a short-term extension of these benefits and as such, the Department has recommended conditions of approval requiring Centennial to undertake detailed planning for the closure of the Colliery and the minimisation of the resultant socio-economic impacts.

Overall, the Department considers that the project is in the public interest and should be approved subject to conditions.

8. RECOMMENDATION

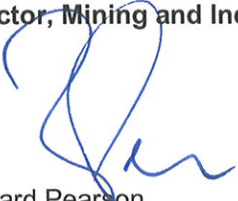
It is RECOMMENDED that the Planning and Assessment Commission:

- 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 20/4/11
Manager, Mining Projects


David Kitto 21/4/11
Director, Mining and Industry Projects


Chris Wilson
**Executive Director,
Major Project Assessment**


Richard Pearson 3/5/11
**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 approvals 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 Roads and Traffic Authority. The RTA made a submission in support of 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

Although the ecological assessment for the project includes Koalas in the probable species list for the site, it also identifies that few eucalypt tree species occur within the site. Koalas have not been identified within the project area. The Department considers that the project area is not 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. The Department has considered these matters and is satisfied that the land can be used for mining purposes.

Lake Macquarie Local Environmental Plan 2004

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
