Executive Summary

South East Open Cut Project

&

Modification to the

Existing ACP Consent

South East Open Cut & ACP Modification

Environmental Assessment Report

Executive Summary

ES1 INTRODUCTION

Ashton Coal Operations Pty Limited (ACOL) operates the Ashton Coal Project (ACP) which is located approximately 14 kilometres (km) north-west of Singleton in the Camberwell district of the upper Hunter Valley, NSW as shown by **Figure 1**.

Development Consent (DA) 309-11-2001-i was granted for the ACP by the Minister for Planning in October 2002. The approval was subsequently modified in 2003, 2005 and 2007.

The approval allows the extraction of coal at a rate of up to 5.2 Million tonnes per annum (Mtpa) of Run of Mine (ROM) coal and for the undertaking of associated coal mining activities.

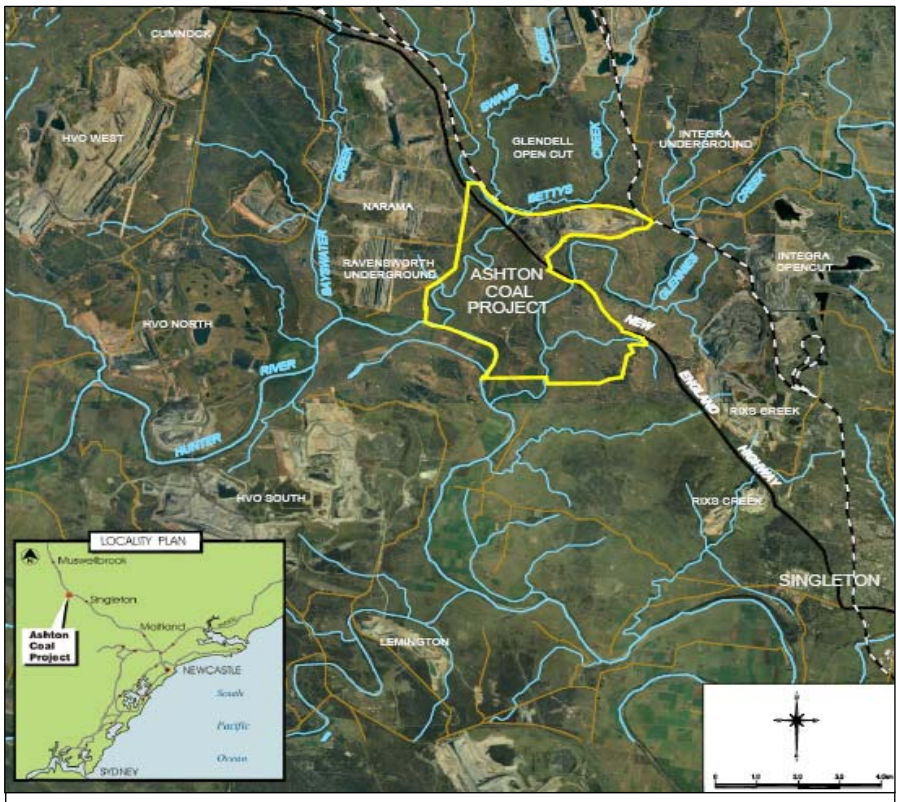

Figure 1: Location of the Ashton Coal Project and the South East Open Cut.

The ACP currently comprises three main operational entities. These are:

- The North East Open Cut (NEOC), which operates day and afternoon shifts (seven days per week) and produces 2.0 – 2.4 Mtpa of ROM coal.
- The Ashton Underground Mine, which uses longwall extraction methods to produce 2.9 – 3.2 Mtpa of ROM coal.
- The Ashton coal handling and preparation plant (CHPP) which processes the ROM coal and loads product coal onto trains for transport to the port at Newcastle.

The NEOC will exhaust available coal by the end of 2010 and it is proposed to transfer the existing equipment and workforce to a new open cut coal mine called the South East Open Cut (SEOC) in an orderly manner that facilitates continuity of coal supply and employment for the 160 full time employees at the NEOC.

This Environmental Assessment (EA) report has been prepared for the SEOC and required modifications to the ACP.

ES 1.1 The Project Applications and Environmental Assessment

Two applications have been made:

- An application (Major Project number 08_0182) for Project Approval for the construction and operation of the SEOC pursuant to Section 75E, Part 3A of the *Environmental Planning and Assessment (EP&A) Act 1979*.
- An application to modify the existing ACP development consent (DA 309-11-2001-i - MOD 5) pursuant to Section 75W of the EP & A Act 1979.

This EA report has been prepared to address the Director-General (DG) of Planning's Environmental Assessment Requirements (DGRs) issued on 19 May 2009 for the above applications.

The EA has been prepared by Wells Environmental Services Pty Limited on behalf of ACOL with input from a team of specialist consultants to address both the SEOC and modification to the existing ACP consent.

ES2 PROJECT DESCRIPTION

The SEOC will integrate with the existing ACP via the modification of the existing ACP development consent to form an integrated mining complex, the ACP.

At peak production, the ACP will produce approximately 8.6 Mtpa of ROM coal. The proposed general layout for the SEOC project is shown in **Figure 2**.

The SEOC will operate in a similar manner to the existing NEOC, with the following exceptions:

- One of the small excavators and its fleet of trucks will be replaced by larger equipment.
- The SEOC will have the ability to operate 24 hours/day, 7 days / week.
- ROM coal production will increase to 3.6 Mtpa.
- The ROM coal will be crushed at the SEOC and then transported by conveyor to the existing CHPP for processing.

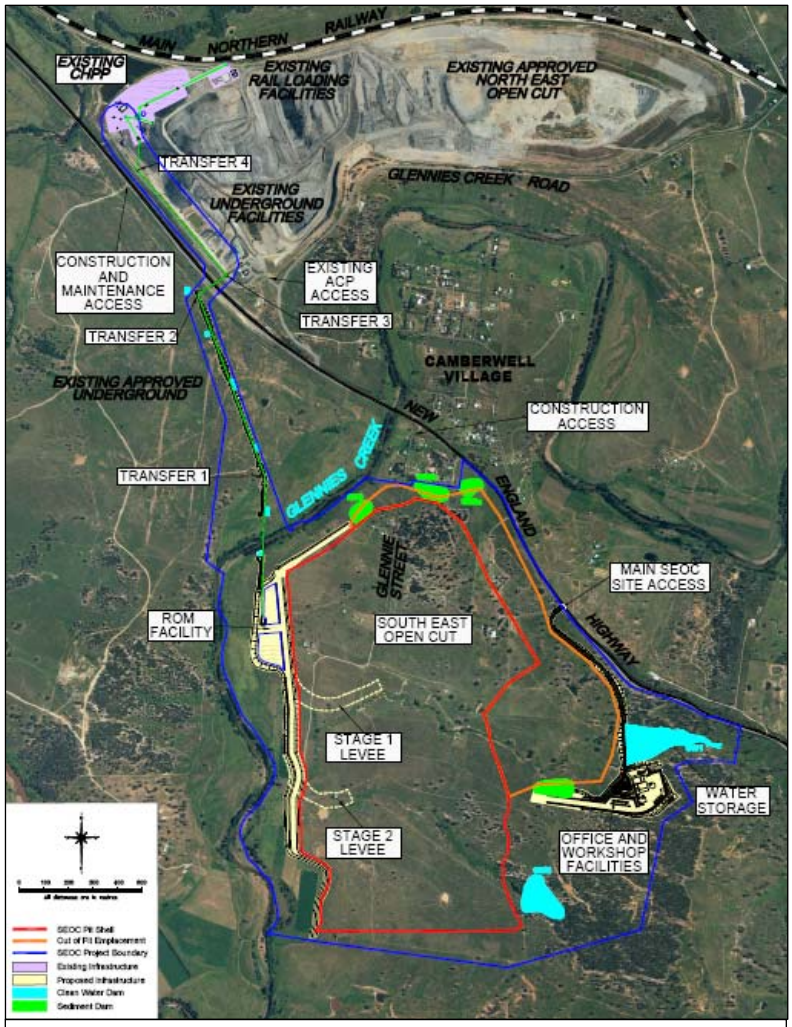

Figure 2: The Proposed South East Open Cut Project

The SEOC is located outside of the area of the existing development consent for the ACP and will be developed as a separate project with its own Project Approval, but it is intended that it will be managed as an integral part of the Ashton operation. To achieve this integration it will be necessary to also modify the existing ACP

development consent, that places a limit of 5.2 Mtpa on the amount of ROM coal that can be processed on the site. This increase is required for three reasons:

- The SEOC is planned to produce 1.2 – 1.6 Mtpa more than the existing NEOC.
- The Ashton Underground Mine is performing better than planned and can produce up to 5.0 Mtpa in those years when there is only one longwall move required.
- In the original application for the ACP, the annual production of 5.2 Mt was intended as an average annual production, not the peak production that would not be exceeded.

This application therefore proposes to increase the production limit to 8.6 Mtpa of ROM coal.

The benefit cost analysis for the SEOC project found that after consideration of greenhouse gas effects, air quality impacts, noise and vibration impacts, Aboriginal and European heritage impacts, ecological impacts, groundwater and surface water impacts, visual and traffic impacts that the project would result in a net community benefit of $368 million.

ES 2.1 Objectives

The principal objectives of this project are to:

- Maintain employment of 160 people currently employed at the ACP open cut operations.
- Ensure that the selected mining methods and mine design safe and efficient.
- Minimise adverse social, environmental and amenity impacts.
- Maximise the recovery of the mineable resources within the area.
- Maintain a cost effective, efficient business, with low capital and operating costs.
- Utilise existing infrastructure where possible.
- Minimise capital expenditure requirements.

ES 2.2 Mining Constraints

Key constraints to the development of the SEOC are the New England Highway to the north, cropping coal seams to the east, Glennies Creek and the associated alluvium to the west and mining tenement boundaries to the south.

The proximity of Camberwell village in relation to the coal resource was a major consideration in the design of the project. To reduce mining impacts the design includes an environmental bund and out of pit emplacement which provides shielding of the village from operations and has been contoured to reduce visual impact. The mining direction creates a final landform with a void isolated from the village. Mining impacts to the village, while reduced as a result of mine design, may still be above accepted criteria, in this regard ACOL accepts the acquisition of properties impacted above the criteria by the SEOC project and proposes a plan to maintain and enhance Camberwell for the future where mining is no longer in the immediate locality.

The mine and infrastructure design has been undertaken with regard to the 1 in 20 and 1 in 100 year flood events associated with the Hunter River and Glennies Creek. Infrastructure has been designed where possible at a level of 64m Australian Height Datum (AHD), (above the 1 in 100 year Hunter River flood level of 62.7m AHD).

The open cut limit has been designed to generally be above the 1 in 20 year flood event, a minimum of 150m from the banks of Glennies Creek, and outside of the connected Glennies Creek alluvium to ensure the protection of both Glennies Creek and open cut mining operations. A staged flood

mitigation levee system has been designed to protect the creek and open cut operations during a 1 in 100 year flood event.

ES 2.3 Project Summary

The main components of the SEOC are summarised in **Table ES.1**, the modification of Stage 1 is summarised in **Table ES.2**.

Table ES.1 South East Open Cut project summary

Aspect	Key Aspects of the Proposed SEOC
Project Life	21 years from grant of Mining Lease. SEOC is estimated to have a seven (7) year life at maximum production rates, with a further 7 years required for the deposition of tailings within the void.
Mine Production	3.6Mtpa of ROM coal from open cut mining methods from a total resource of 20.6Mt of ROM coal.
Open Cut Operations	Truck and excavator extraction.
	Blasting of overburden.
	Environmental bund and out of pit emplacement adjacent to New England Highway.
	Final landform combination of pastures and open woodland.
	Final void in south-east corner filled with reject and capped.
Coal handling, preparation, and processing	Utilise existing ACP coal processing plant.
	Rejects disposed of within the existing ACP final voids and within final void of SEOC.
	ROM coal facility between open cut and Glennies Creek.
	Conveyor and pipeline network between SEOC area and the existing ACP crossing Glennies Creek and the New England Highway.
Water demand and supply	Water supply to be integrated with existing ACP network.
	Water supply from site run-off, underground mine dewatering, open cut inflows, excess mine water from neighbouring mines, licensed surface water extraction, potable water collected from roof tops, and imported water when required.
	Water demand for SEOC and existing ACP estimated to be approximately 2100 ML per annum based on peak production.
	Water storage dam constructed east of the SEOC.
Support facilities and utilities	Administration, workshop, stores, car parking and bathhouse facilities.
	Power supply from local network.
Existing Roads and Utility Services	Relocation of existing Energy Australia 132kV, 66kV and 11kV powerlines. Relocation of telecommunication copper cables. Open cut footprint and mining design configured to avoid impact to AAPT fibre optic cable.
Mine Access	New access from the New England Highway approximately 450m east of the McInerney Road intersection.
Operating Hours	24 hours per day, 7 days per week.
	Blasting 7am to 5pm, excluding Sundays and Public Holidays.
Employment	A continuation of employment for 160 personnel working in the existing ACP open cut mine.

Table ES.2 Summary of the ACP Modification

Aspect	Approved Operations	Existing Status of Operations	Modification Required
Mine Production	Production from open cut and a descending underground coal mine. Annual production of coal from the ACP not to exceed 5.2Mtpa of ROM coal.	During the 2007 – 2008 reporting period ACOL produced approximately 4.4 Mtpa of ROM coal.	Yes Increase to 8.6Mtpa ROM coal.
Underground	Extraction of up to 2.4Mtpa of product coal. Equating to approximately 2.95Mtpa of ROM coal as used in the air quality modelling.	During the 2007 – 2008 reporting period ACOL produced approximately 2.1 Mtpa of ROM coal from the underground.	Yes Proposed increase to 5.0Mtpa ROM coal to account for low yields and flexibility.
Coal handling, preparation, and processing	Construction and operation of pit top facilities for coal preparation, stockpiling, train loading.	Constructed as per EIS and approved modifications.	Yes Changes required to integrate conveyors from SEOC.
	Coarse and fine rejects to be disposed of within final void.	Final void will continue to be filled with reject, however MOD 3 dated February 2007 provided for the disposal of fine reject within voids of the Ravensworth Open Cut.	Yes SEOC final void required for disposal location
Water Demand and supply	Water supply from site run-off, underground mine dewatering, excess mine water from neighbouring mines, potable water collected from roof tops, and imported water when required.	Water is currently sourced as approved, with a water sharing agreement with the Glennies Creek Coal Mine and from licenced water allocations on Bowmans Creek, Glennies Creek and the Hunter River.	Yes SEOC will be integrated into the existing ACP network.
Employment		Currently employ 386 personnel and contractors, made up from: • 160 in open cut. • 180 in underground. • 27 in CHPP. • 19 management, support staff.	No Open cut employees move to SEOC.

ES 2.4 Work Force and Working Hours

The existing NEOC employs approximately 160 personnel and contractors, with the NEOC closure scheduled for late 2010, the SEOC is planned to provide a continuum of employment for those currently employed.

The existing open cut operations operate 7am to 10pm Monday to Saturday, and 8am to 10pm on Sundays, the SEOC will increase current open cut operating hours by mining 24 hours per day 7 days per week. This will result in a change to the current shift configuration.

The Underground and CHPP are not proposed to be modified form the approved 24hours, 7 days per week.

ES 2.5 Project Alternatives

ACOL evaluated a number of alternatives to the design of the SEOC, including mine layout and design, mining methods, extraction rates, infrastructure and facilities development, as well as the no development option. The proposed mine layout and design comprises the best economic, efficient operational, community and safety outcomes with the least potential to cause environmental impacts.

ES 2.6 Location and Land Ownership

The site is bounded by the Main Northern Railway to the north, the Hunter River to the south and Glennies Creek to the east. The proposed SEOC is located to the south east of the existing ACP and effectively replaces the existing Ashton NEOC. Figure 1 illustrates the location of the site.

Figure 3: Land Ownership

For the purpose of describing Camberwell village (refer to **Figure 4**), the village has been assumed to include those lands zoned 1(d) Small Rural Holdings and extending some 500 metres from the zone boundary. Within this area there are:

- Thirty three (33) dwellings owned by ACOL.
- Seventeen (17) dwellings privately owned.
- St Clements Church.
- Camberwell Community Hall.

The SEOC is located immediately south of Camberwell village and the New England Highway.

The SEOC project straddles two Exploration Licences, EL 4918 and EL 5860A, both held by White Mining Pty Limited (a subsidiary of Felix Resources Limited). Authorisation 81 held by Navidale (Camberwell Mine) exists to the east of EL 5860A where it is proposed to construct out of pit emplacements, water management facilities and infrastructure.

The SEOC project area is made up of land owned (refer to **Figure 3**) by two private landowners, land owned by ACOL and land owned by the Crown. Several privately owned properties are located in close proximity to the project.

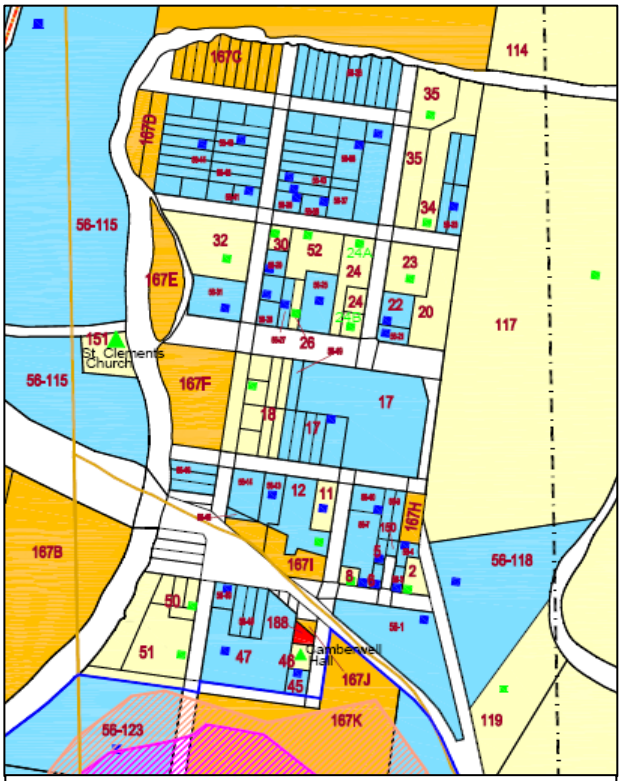

Figure 4: Camberwell Village

ES3 STAKEHOLDER AND COMMUNITY CONSULTATION

Community and stakeholder consultation for the ACP has been ongoing since the establishment of the ACP. This has included the establishment and implementation of:

- Community information sessions.
- Newspaper notices.
- Newsletters.
- Website.
- 'One-on–one' discussions.
- The Ashton Coal Community Consultative Committee.

Issues of concern raised during community consultation include the cumulative impacts of the SEOC and neighbouring mines on local residents, in particular those within Camberwell Village. Issues of noise; air quality; dust; groundwater; creeks and river systems; visuals and lighting; vibration; clearing of native vegetation; rehabilitation; proximity to residences; land acquisition; property values; general quality of life; cumulative impacts; and the impact to Camberwell Village itself have been raised.

ACOL recognises the importance of the NEOC in the livelihood of the 160 people employed in the operation and has continually kept the employees up to date with the process of the SEOC.

Representatives of ACOL have also been communicating and liaising with government authorities throughout the planning and compiling the EA report for the SEOC and ACP modification.

ES4 ENVIRONMENTAL ASSESSMENT

The existing ACP has an established and proven Environmental Management Strategy with a series of environmental management and monitoring programs. An extensive environmental monitoring network has been established for the ACP and includes monitoring of meteorological conditions, air quality, noise, flora and fauna, aquatic ecology, surface water and groundwater.

Key issues identified through stakeholder consultation, a preliminary risk assessment and in the DGRs for the SEOC and the modification of the ACP were used to focus detailed investigations undertaken by specialist consultants. The potential impacts of the SEOC and its integration with the ACP on the existing environment are summarised below. This includes consideration of cumulative impacts with other mines, where applicable.

The DGR's sought the proponent to undertake an assessment of the findings of the Independent Review of Cumulative Impacts on the village of Camberwell regarding noise and dust. At the time of preparing the EA report the findings of the Independent Review of Cumulative Impacts on Camberwell village have not been publicly released.

ES 4.1 Past, Existing and Surrounding Land Use

The SEOC project area has had a history of agricultural cropping along the alluvial flats of Glennies Creek and grazing on the higher grounds. A review of aerial photography show some agriculture persists although the intensity has decreased. Vegetation over the past 50 years has changed

substantially with much of the regenerating woodlands absent 50 years ago, demonstrating the resilience of the native vegetation.

The SEOC is surrounded by existing mining operations, the Rix's Creek and the Integra Coal complex to the east consisting of existing open cut and underground mining operations, with the Integra open cut extension currently being exhibited. To the north is the existing ACP and Mt Owen Complex that consists of the Glendell, Ravensworth East and Mt Owen open cut mines. To the west is the existing ACP underground, the Narama and Ravensworth West open cuts and Ravensworth underground. To the south west is the Hunter Valley Operations open cut complex.

Both the agriculture and mining operations contribute to the prevailing air quality in the local area.

ES 4.2 Air Quality

Air quality modelling was undertaken to determine the likely air quality impacts associated with the SEOC project and modification to the existing ACP. The modelling assessed both the SEOC project in isolation and the cumulative impact of the project in conjunction with the existing air quality and contributions from neighbouring mining sources.

The modelling identified several properties that will be impacted above the DECC criteria both on an annual average 30µg/m^3 cumulative basis and more than 5 days exceedance of the 24 hour PM_{10} 50µg/m^3 criteria that will require acquisition. The majority of these are associated with lands within 1-2km of the northern boundary of the site.

ES 4.3 Greenhouse Gases

The SEOC will give rise to greenhouse gas emissions including carbon dioxide, nitrous oxide and methane. The (Commonwealth) Department of Climate Change defines three scopes of emissions for greenhouse gases. Scope 1 emissions are those that will be generated directly by the mining operation, such as emissions resulting from diesel fuel combustion and fugitive gases liberated from the coal during mining. Scope 2 emissions are indirect emissions that are derived from the production of electricity purchased and consumed on site, such as electricity used in the mining and processing of coal. Scope 3 emissions are all other indirect emissions from sources that are not owned or controlled by ACOL. These include emissions from the combustion of diesel fuel used in the transportation of coal to market, and also the burning of coal by expected coal customers.

The total Scope 1 and 2 greenhouse gas emissions generated from the mining and processing of coal from the SEOC are estimated to be 1.35 Mt of carbon dioxide equivalent (CO_2-e) during the seven years of mining. The Scope 3 greenhouse gas emissions from the transport and use of the coal is expected to generate a further 33.77 Mt CO_2-e.

It is estimated that the Scope 1, 2 and 3 greenhouse gas emissions generated from the project will potentially lead to an increase in global temperature of 0.000004 ^oC. Any environmental assessment would conclude that the effects of the emissions from the Project are unable to be measured. Given this, it is clear that the Project would comply with the principles of ESD. It should be noted that if coal is not produced at the SEOC project, given the international and domestic demand for coal and the burning of coal on greenhouse gas emissions, should the SEOC not proceed, coal would be extracted at someplace else (including other existing New South Wales or Australian mines) and have a similar potential impact. Accordingly, there is no substantial benefit, in respect of climate change in limiting or preventing coal production at SEOC.

ES 4.4 Noise and Blasting

Acoustic modelling has been undertaken for the SEOC project to determine the potential noise impacts associated with the SEOC. The modelling predicted that all private residences within 1 – 2km of the northern boundary of the site including all dwellings within Camberwell village are likely to be impacted at noise levels above the adopted amenity criteria.

Blasting will be required for open cut mining. It is proposed to vary the MIC based on the location of the blast relative to the receiver such that impacts are maintained below the criteria for residences outside the Noise Acquisition Zone. A blast exclusion zone will be established prior to each blast to limit impacts associated with fly rock. Details of blasting will be posted on the Ashton website and distributed weekly to the community, land owners and residents as to the time of blasts and associated road closures. Telephone contact will be made prior to blasting with residents of the area. Residents within 500 metres of a blast will be evacuated and returned to their dwelling after the blast. Public notices will also be placed in the Singleton Argus newspaper advising of blasting and road closures. ACOL will enter into an agreement with the Roads and Traffic Authority (RTA) of NSW regarding the closing of the New England Highway during blasting activities.

ES 4.5 Summary of Air Quality and Noise Property Impacts

Table ES3 provides a summary of the predicted impacts to privately owned receptors as a result of the SEOC Project and ACP Modification and the proposed Integra Open Cut Extension (08_0102).

Privately owned dwellings that are predicted to be within the SEOC Project Affectation Zone are shown in bold, this includes all privately owned dwellings within Camberwell village and immediate surrounds with the exception of properties 111 and 184A. These properties (111, 184) and St Clements Church are within a management zone. The Camberwell Community Hall is currently unused, impacts to this building will be significant and above the criteria.

Potentially impacted properties as detailed in the table below are illustrated in **Figure 5.**

Table ES3: Receptors predicted to be impacted by SEOC and Integra Open Cut Extension.

Property Number	Landowner	Impacts from the Ashton SEOC Year 1 = 2010, Year 3 = 2013, Year 5 = 2015, Year 7 = 2017					Proposed Integra Open Cut Extension (MP Number 08_0102)
		Air Quality (PM_{10})		Noise			
		24 hour ($50\mu g/m^3$)	Annual ($30\mu g/m^3$)	Management Zone		Acquisition Zone	First Year of Predicted impact above acquisition criteria Year 1 = 2009 Year 4 = 2013
		Project alone[a)]	Cumulative	1-2dB (Minor)	3-4dB (Moderate)	5dB or more (Major)	
2	Ninness	Year 1 Year 3 Year 5 -	-	-	-	Year 1 Year 3 Year 5 Year 7	-
8	Chisholm	Year 1 Year 3 Year 5 -	-	-	-	Year 1 Year 3 Year 5 Year 7	-
11	Richards	Year 1 - Year 5 -	-	-	-	Year 1 Year 3 Year 5 Year 7	-

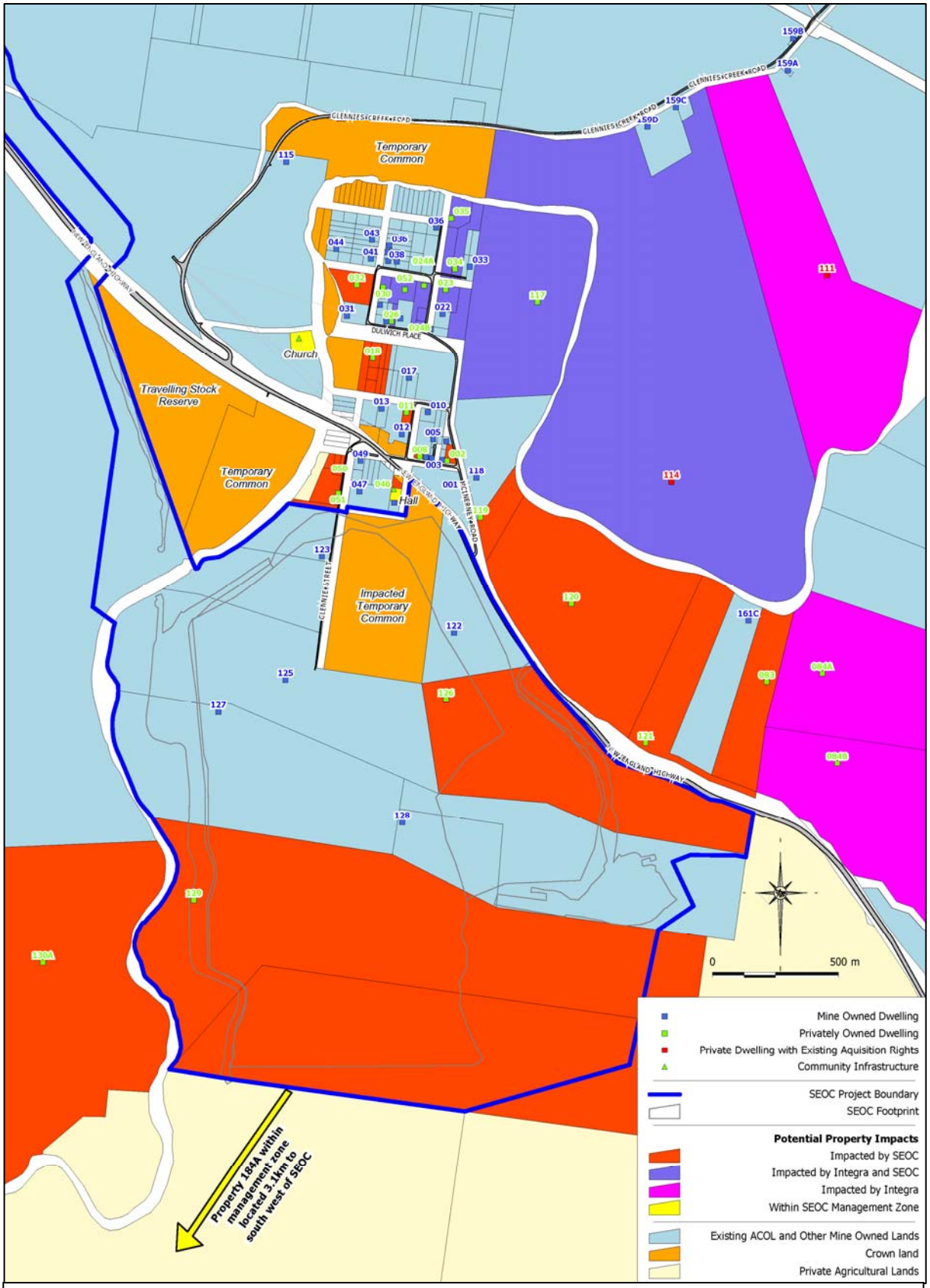

Figure 5: Impacted Properties

Table ES3: Receptors predicted to be impacted by SEOC and Integra Open Cut Extension, (continued).

Property Number	Landowner	Impacts from the Ashton SEOC Year 1 = 2010, Year 3 = 2013, Year 5 = 2015, Year 7 = 2017					Proposed Integra Open Cut Extension (MP Number 08_0102)
		Air Quality (PM_{10})		Noise			
		24 hour ($50\mu g/m^3$)	Annual ($30\mu g/m^3$)	Management Zone		Acquisition Zone	First Year of Predicted impact above acquisition criteria Year 1 = 2009 Year 4 = 2013
		Project alone[a)]	Cumulative	1-2dB (Minor)	3-4dB (Moderate)	5dB or more (Major)	
18	Turner	-	-	-	-	Year 1 Year 3 Year 5 Year 7	-
23	Lopes	-	Year 1 - - -	-	-	Year 1 Year 3 Year 5 Year 7	Year 1 – Annual PM10
024A	Vollebreght & Clarke	-	Year 1 - - -	-	-	Year 1 Year 3 Year 5 Year 7	Year 1 – Annual PM10
024B	Vollebreght & Clarke	-	Year 1 - - -	-	-	Year 1 Year 3 Year 5 Year 7	Reference unknown
26	Schubert	-	Year 1 - - -	-	-	Year 1 Year 3 Year 5 Year 7	Reference unknown, assume Pty 29 values. Year 1 – Annual PM10
30	Bennett	-	Year 1 - - -	-	-	Year 1 Year 3 Year 5 Year 7	Reference unknown, assume Pty 29 values. Year 1 – Annual PM10
32	Stapleton	-	Year 1 - - -	-	-	Year 1 Year 3 Year 5 Year 7	-
34	Olofsson	-	Year 1 - - -	-	-	Year 1 Year 3 Year 5 Year 7	Year 1 – Annual PM10
35	De Jong	-	Year 1 - - -	-	-	Year 1 Year 3 Year 5 Year 7	Year 1 – Annual PM10
46	Camberwell Community Hall	Year 1 Year 3 Year 5 -	Year 1 - - -	-	-	Year 1	-
50	Standing	Year 1 Year 3 Year 5 -	Year 1 - - -	-	-	Year 1 Year 3 Year 5 Year 7	-
51	Bailey	Year 1 Year 3 Year 5 -	Year 1 - - -	-	-	Year 1 Year 3 Year 5 Year 7	-
52	Foord	-	Year 1	-	-	Year 1	Year 1 – Annual PM10

Property Number	Landowner	Impacts from the Ashton SEOC Year 1 = 2010, Year 3 = 2013, Year 5 = 2015, Year 7 = 2017					Proposed Integra Open Cut Extension (MP Number 08_0102)
		Air Quality (PM_{10})		Noise			
		24 hour ($50\mu g/m^3$)	Annual ($30\mu g/m^3$)	Management Zone		Acquisition Zone	First Year of Predicted impact above acquisition criteria Year 1 = 2009 Year 4 = 2013
		Project alone[a)]	Cumulative	1-2dB (Minor)	3-4dB (Moderate)	5dB or more (Major)	
			- - -			Year 3 Year 5 Year 7	
83	Hall	- Year 3 Year 5 -	-	-	-	Year 1 - - -	Year 8 – 24hr PM10 Noise
084A	Tisdell	- Year 3 - -	-	-	Year 1 - - -		Year 1 – Noise
084B[c]	Tisdell	- Year 3 Year 5 -	-	-	-		Year 1 - Noise
111	Richards	-	-	Year 1	-		Glendell / Year 1 Noise
114	Richards	-	-	- Year 3 - -	- - Year 5 -	Year 1 - - -	Glendell / Year 1 Noise
117	McInerney	-	Year 1 - - -	-	Year 3 - -	Year 1 - Year 5 Year 7	Year 1 – Annual PM10
119	Beasley	Year 1 Year 3 Year 5 -	Year 1 - - -	-	-	Year 1 - - -	-
120	Ernst	Year 1 Year 3 - -	Year 1 - - -	-	-	Year 1 - - -	Year 4 – Annual PM10
121	Burgess	Year 1 Year 3 Year 5 -	Year 1 Year 3 - -	- Year 3 Year 5 -	-	Year 1 - - -	-
126	Smiles	Year 1	Year 1			Year 1	Year 4 – Annual PM10
129	Bowman, W., M., G.	-	- Year 3 - -	-	-	Year 1 Year 3 Year 5 Year 7	-
130A	Bowman, A	- - Year 5 Year 7	- - Year 5 Year 7	-	-	Year 1 Year 3 Year 5 Year 7	-
130B	Bowman, A.	-	-	-	-	Year 1 Year 3 Year 5 Year 7	-
151 Church	Trustees of Church				Year 1	-	-

Property Number	Landowner	Impacts from the Ashton SEOC Year 1 = 2010, Year 3 = 2013, Year 5 = 2015, Year 7 = 2017					Proposed Integra Open Cut Extension (MP Number 08_0102)
		Air Quality (PM_{10})		Noise			
		24 hour (50µg/m³)	Annual (30µg/m³)	Management Zone		Acquisition Zone	First Year of Predicted impact above acquisition criteria Year 1 = 2009 Year 4 = 2013
		Project alone[a)]	Cumulative	1-2dB (Minor)	3-4dB (Moderate)	5dB or more (Major)	
184A	Moxey	-	-	- Year 3 Year 5	-	-	-

Note: a. Only includes residences where the predicted concentrations exceed the 24-hour average PM_{10} impact assessment criteria on more than five days.
b. These residences have Acquisition Right under Glendell Mine.

ES 4.6 Groundwater

Aquaterra Consulting Pty Ltd was engaged to investigate the state of the groundwater environment within the SEOC and surrounds and assess the potential impacts from the ACP on groundwater levels and quality, and the impacts this may have on the environment, groundwater dependant ecosystems and existing users.

A detailed drilling program and investigation was undertaken by ACOL for groundwaters in the SEOC area, both within the Permian coal measures and overlying alluvium, colluvium and regolith. The investigations focused in part on determining the extent of alluvium and colluvium in the project area and determine their respective hydraulic properties and potential connectivity with Glennies Creek.

The investigation determined that the alluvium and colluvium are in parts intercalated, complicating their differentiation, however the hydraulic properties, chemistry and in particular the electrical conductivity (EC) suggest water where present within the colluvium is not well connected with the alluvium or Glennies Creek. Water within the alluvium is generally good quality with a low EC (refer to **Figure 6**), while water within the colluvium is significantly higher and a poorer quality.

This investigation was essential in defining appropriate limits of open cut mining and provided the necessary conditions for a groundwater model to estimate predicted inflows to the open cut.

Total predicted groundwater inflow to the pit ranges from 56 m^3/d in year 1 to around 200m^3/annum for mine years 2 to 7, with a maximum of only 24m^3/d from

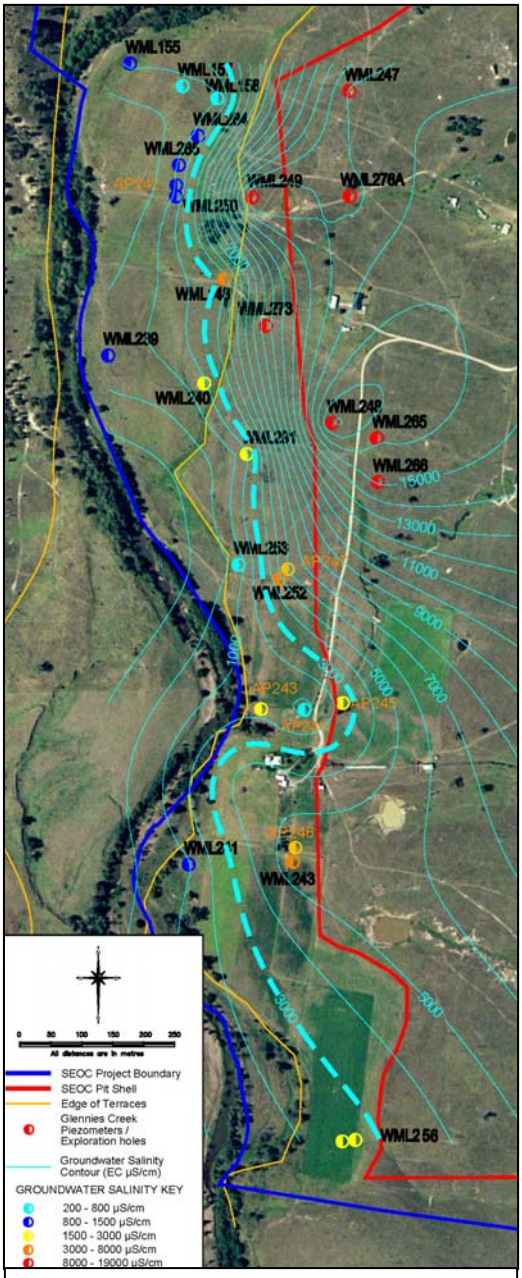

Figure 6: Groundwater conductivity in alluvium/ colluvium.

the alluvium/ colluvium.

The SEOC is predicted to have the following impacts on water within the alluvium/ colluvium:

- A maximum drawdown of less than 1.5m in a small area near the pit shell, with drawdown nearer the creek generally less than 0.5m.
- Complete recovery of drawdown within 100 years.

The SEOC is predicted to have the following impacts on Glennies Creek:

- Loss of around 47m^3/d, representing around 0.03% of the average flow or 0.33% of the 5 percentile flows in this section of the creek.
- Impacts are transient and will recover back to pre-mining conditions within 100 years of the end of mining.

The SEOC will result in the drawdown of water levels within the Permian coal seams groundwater levels are expected to recover with exception to some minor residual drawdown.

Overall groundwater quality impacts during the post closure phase are expected to be minimal. The reversal of hydraulic gradient within the alluvium, is expected to result in an overall reduction in salt load to the creek and to the Hunter River, in the longer term there is likely to be a negligible difference in overall water quality.

ES 4.7 Surface Water

The SEOC is located in the Glennies Creek catchment, where six (6) unnamed tributaries (referred to as T1 to T6) drain generally in a westerly direction to Glennies Creek. Flow in Glennies Creek is regulated from Glennies Creek dam (or Lake St Claire) with an average recorded flow of 152ML per day.

The SEOC will result in the complete removal of sections of T2, T3, T4, and T5. Tributary T4 is the largest catchment in the SEOC area and will have a clean water dam (CW2) installed east of the SEOC pit, immediately north of the office and workshop facilities. The dam will be designed with a permanent 100ML water storage and flood protection to retain flows up to a 1 in 20 year ARI event. A water transfer facility will convey excess clean waters from the dam to a controlled release point on Glennies Creek.

A series of conceptual water management plans have been developed addressing water management for the life of the SEOC, containing sediment laden and mine water and separating clean water.

A site water balance was developed for the life of the proposed SEOC taking into account the existing underground operations at peak production. The balance determined:

- Periods of water deficit are generally associated with extended dry spells, where the license extraction allocations are reduced and no significant surface runoff is collected.
- Water availability over the 7 year SEOC mining period will be governed by the rainfall patterns.
- ACOL operation is likely to have:
    - Sufficient water during above average rainfall years.
    - Possible minor water shortages during average rainfall years.
    - Likely shortages of varying levels of severity during below average rainfall years.

- As the ACP underground mine progresses the resultant water make is likely to increase generally consistent with the predictions made in the original ACP EIS. This increase may provide for the anticipated shortfall during most periods.

In the event of operational water shortages, ACOL could implement the following measures:

- Reduce the throughput through the CPP, which accounts for approximately 70% of the water usage.
- Obtain additional water extraction licenses.

It is proposed to re-establish drainages to convey water across and from the final landform. T4 will be constructed to convey water through the final landform from undisturbed portion of the T4 and T5 catchments upstream to Glennies Creek. The construction of the tributary will be staged such that the overburden has an adequate period for settlement and vegetation can be established prior to the integration of the reconstructed tributary into the outside catchment.

ES 4.8 Flooding

A flood study was undertaken to guide the design of the infrastructure and the open cut. The flood study determined that the 100 year ARI flood level was 62.7m, and was governed by backwater flooding from the Hunter River, as opposed to flooding in Glennies Creek.

An infrastructure design level of 64m was adopted to provide an additional 1.3m of freeboard. The SEOC project incorporates a staged flood levee at 64m to be constructed along the western extent of the open cut and around the ROM facility.

The SEOC pit will result in a minor loss of flood storage capacity that is predicted to result in a change to local 1 in 100 year flood levels of only 30mm, as such the project is not expected to result in any measurable divergence or convergence of flood levels on nearby properties.

ES 4.9 Glennies Creek Geomorphology

The geomorphology of Glennies Creek in the area of the SEOC was assessed to determine the potential impact of the open cut mine on the geomorphology of Glennies Creek, including the potential for the creek to migrate towards the mine footprint in the longer term.

The results of hydraulic flood modelling indicate that flow velocities across the eastern overbank of Glennies Creek are expected to be less than 0.9 m/s during events up to and exceeding the 500 year recurrence flood. As a result, the potential for erosion of the floodplain to occur across the footprint of the proposed mine is minimal.

The magnitude of flooding that would be required to provide large scale geomorphic change of the floodplain would need to be significantly rarer than the 500 year recurrence event.

Four sites along the western extent of the proposed mine have been identified as potentially being affected by geomorphic processes. However, further inspection and assessment has confirmed that the footprint of the proposed open cut mine at Sites 1, 2, 3, and 4 is not within the active geomorphic zone of Glennies Creek.

Similarly, the proposed mining operation is not expected to impact on the geomorphic processes of Glennies Creek.

ES 4.10 Water Demand and Supply

An integrated water supply system between the existing ACP and the SEOC will be developed for the site utilising the following water sources:

- Water from site run-off within the disturbance bounds of the SEOC and existing ACP.
- Groundwater inflows from the existing ACP underground mine.
- Recovery of water from the NEOC and Ravensworth Void reject storages.
- Groundwater inflows into the SEOC pit.
- Excess mine water from neighbouring mines.
- Potable water collected from roof tops or imported as required.
- Water extracted from the Hunter River, Bowmans Creek and Glennies Creek in accordance with licensed extraction limits.
- Water captured from catchments upstream of the SEOC.

The proposed approach to sourcing water for the project is to firstly make use of all groundwater mine inflows and runoff from disturbed mine areas, and recycling of water from the tailings. At peak production the SEOC, CHPP and underground mine are anticipated to consume 5.8ML/day.

ES 4.11 Ecology

The SEOC Project will result in the clearing of 24.7ha of regenerating Central Hunter Ironbark-Spotted Gum-Grey Box Forest, from two areas located within the Temporary Common and near the office and workshop facilities. The remainder of the site is open grasslands with isolated shade trees.

The Central Hunter Ironbark-Spotted Gum-Grey Box Forest was given preliminary determination by the NSW Scientific Committee as an endangered ecological community (EEC) under Part 3 of Schedule 1 of the Threatened Species Conservation (TSC) Act 1995.

Two bird species (Grey-crowned Babbler and Speckled Warbler) listed in the Threatened Species Conservation Act were identified within the site, no other threatened, mammals, frogs or reptiles were identified. The assessment concluded the project was unlikely to significantly affect the threatened biodiversity provided appropriate mitigation measures are implemented to adequately mitigate and offset impacts.

To mitigate and offset impacts to flora and fauna it is proposed to establish a flora and fauna offset package in consultation with the DECC and the DoP for the clearing of approximately 24.7ha of native vegetation. The management and offset package is to include:

- Revegetation of open cut operations with suitable species for a mix of grasslands and woodlands.
- Offset the loss of hollows with replacement of 3 nest boxes/hollows for each hollow removed.
- Enhance and manage the Glennies Creek riparian corridor consisting of approximately 35ha.
- Offset and manage at least 62 hectares of ‘like’ vegetation in the local area.

ES 4.12 Aboriginal Heritage

Community consultation with Aboriginal stakeholder groups and individuals was undertaken in accordance with the DECCW guidelines. An archaeological field survey of the SEOC footprint and surrounding lands was conducted during December 2008 by a qualified archaeologist and local aboriginal community representatives who identified 85 sites.

The results of the survey indicate that the study area has been well utilised by Aboriginal people. The site is of very high cultural significance.

The majority of sites will be impacted directly by the open cut, second to the open cut in impact is the ROM facility area on the alluvial terrace. Numerous sites are located on the fringe of disturbance, with expected impacts to be determined during detailed design and construction to be documented in an Aboriginal Cultural Heritage Management Plan (ACHMP) developed for the SEOC in consultation with the Aboriginal stakeholders and government agencies.

ES 4.13 Transport

As the SEOC will replace the existing NEOC, no additional traffic will be generated once the SEOC is operational. A small increase in traffic is likely during the construction phase. The primary access to the site will be from a new intersection east of McInerney Road. Construction and occasional maintenance access will be derived from Glennie Street and the existing access to the ACP underground area.

As the SEOC replaces the NEOC, at peak production rail transport is expected to increase in the order of only 1 to 2 trains per day above existing levels, sufficient capacity is available on the rail line to facilitate the small peak increase.

ES 4.14 Visual

The major visual elements of the SEOC project are the environmental bund and out of pit emplacement and the conveyor between the SEOC and existing ACP that includes a crossing of the New England Highway.

The environmental bund and out of pit emplacement is located adjacent to the New England Highway and as such will be visible and during construction have a high visual impact, however over time as vegetation is established on the northern face the visual impacts will decrease. The bund and emplacement have been designed to incorporate undulations and relief and will be planted with a mix of grass and trees to break up the slope. The bund is one of the first elements to be constructed, and entire northern face of the bund and emplacement will be vegetated within 12 months of its emplacement.

The conveyor will cross Glennies Creek and the flood plain before traversing the ridge line to the ACP crossing the New England Highway. The conveyor will be clad in profiled coloured steel in a colour that minimises bulk and scale.

ES 4.15 Social and Economic

The socio-economic benefit of the SEOC project and proposed modifications include:

- Expenditure on construction of the SEOC facilities has been estimated to total $49.9 million over two years apportioned over four (4) (mining, machinery and equipment, construction, property and business services) sectors. Total expenditure of $49.9 million over 2 years is expected to stimulate additional production in the region valued at $31 million and additional consumption worth $20 million – providing a total benefit to the Hunter Region of $101 million.
- Total construction expenditure of $49.9 million is expected to create an average of 127 full time equivalent jobs in each year of the two (2) year construction period. Additional production in the region will create a further 52 jobs and additional consumption will create a further 57 jobs – an induced benefit of 109 jobs providing a total employment benefit to the Hunter region of 236 full – time equivalent positions in each year of construction in the sectors of mining, machinery/equipment, construction, property and business services.
- The Hunter Valley Research Foundation (HVRF) estimates that in total, 430 full-time equivalent positions will be created for the construction phase of the SEOC project.
- Over the 2 year construction period the HVRF estimates that taxation revenue to the Federal Government will total approximately $9 million, $5.8 million from income tax, $1.8 million from indirect taxes and $1.3 million from company tax. Payroll taxation revenue to the State Government has been estimated at $1.6million yielding a total public sector benefit of $10.6 million.
- Output and employment impacts resulting from the ongoing operation of the SEOC will be directly generated in the mining sector of the input output model analysis. The HVRF have assessed that production will be over 7 years with saleable output valued at $100 AUD per tonne.
- On the basis of these assumptions the total value of the SEOC is estimated at $1.2 billion whilst operational employment should remain constant at 160 full time equivalent positions in each year of production.
- With total production at $1.2 billion this will stimulate further production in the Hunter Region to the value of $808 million and additional consumption estimated at $322 million an induced benefit of approximately $1.13 billion, providing a total benefit to the Region of approximately $2.3 billion.
- Employment at the SEOC will be equivalent to 160 full time positions for each of the seven years of production. Induced production and consumption in the Hunter Region attributable from the operations will generate a further 309 and 213 jobs respectively – an induced benefit of 522 jobs. In total approximately 682 full time equivalent positions will be created from the SEOC project.
- Over the seven years operational period, Federal Government taxation receipts are estimated to total $152 million - $92 million from income tax, $29 million from indirect taxes and $31 million from company tax. Revenue to the State Government is estimated at $125 million - $26 million from payroll tax and $99 million from production royalties.
- The total public sector is expected to benefit by $277 million.

In addition ACOL will continue to make available housing at affordable rentals within Camberwell.

The benefit cost analysis for the SEOC project found that after consideration of greenhouse gas effects, air quality impacts, noise and vibration impacts, Aboriginal and European heritage impacts, ecological impacts, groundwater and surface water impacts, visual and traffic impacts that the project would result in a net community benefit of $368 million.

ES 4.15.1 Maintaining and Sustaining Camberwell Village

ACOL and the authors of the EA report acknowledge that Camberwell village has been impacted by surrounding coal mining operations. To date, ACOL have acquired thirty three (33) dwellings within the village and is committed to acquiring further properties associated with the development of the SEOC.

The ACOL owned dwellings are rented or leased. ACOL has a "waiting list" of persons wanting to rent or lease dwellings as the weekly rentals are generally less than within the Singleton township. For those residing in Camberwell and employed within the mining industry there is generally less travel when compared to living in Singleton township. Importantly, these residents are tolerant and accepting of mining and associated impacts.

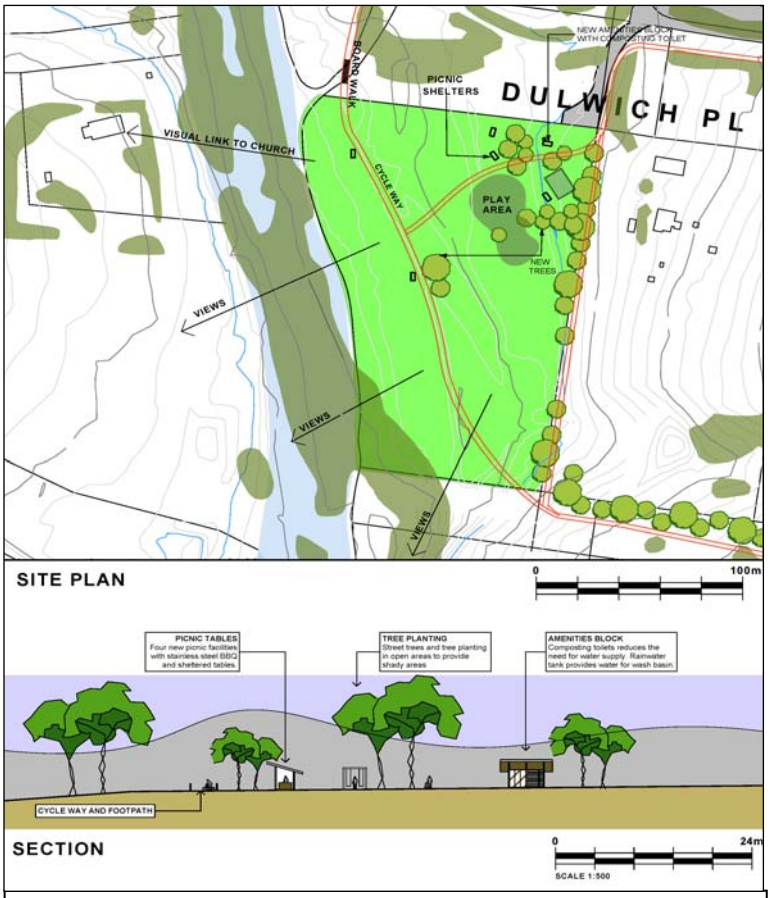

Figure 7: Concept plan for park within Camberwell

ACOL sees a future for Camberwell during and following the cessation of mining activities in the immediate vicinity, but recognises the risks that face the village in the future with mining in such close proximity.

ACOL's vision for Camberwell is based on the continuing occupancy and maintenance of dwellings for that part of the village located north of the New England Highway. Community surveys undertaken in April 2009 identified the positive aspects of living in Camberwell (the people, rural lifestyle, proximity to work and Glennies Creek). The survey also sought feedback with respect to initiating a village enhancement program that potentially provides for a cycleway, walking paths, small recreation area and possibly a meeting room and street plantings/landscaping were also canvassed.

To further develop the vision for Camberwell, ACOL are committed to developing a Camberwell village Enhancement Plan (refer to **Figure 7**) in consultation with the residents of the village, Singleton Council and the DoP to establish and implement works to maintain ACOL owned properties and enhance the village both during and post mining, under the provisions of a Voluntary Planning Agreement. Alternatively, ACOL is prepared to fund a program of works of other identified social – community infrastructure for the Singleton local government area via a Voluntary Planning Agreement with the Minister for Planning and the Singleton Council.

ES 4.16 Habitat Connectivity

The proposed rehabilitation, revegetation and offset areas have been prepared having regard and consideration of the Great Eastern Ranges Initiative conservative program and the Synoptic Plan - Integrated Landscapes for Coal Mine Rehabilitation in the Hunter Valley.

The Hunter Valley is identified as a priority area for improving north-south habitat connectivity across the valley floor.

The revegetation and rehabilitation of the ACP and SEOC has and will improve habitat connectivity locally by linking riparian corridors along creeks to existing vegetation and linking offset and rehabilitation areas to adjoining mining operations located north and south of the Ashton coal mine.

ES 4.17 Rehabilitation and Mine Closure

The conceptual design of the rehabilitation (refer to **Figure 8**) for the SEOC has been based on the following:

- The rapid establishment of the northern face of the environmental bund and out of pit emplacement.
- Creation of a varied northern face through the incorporation of grasses and trees along drainage lines.
- Initial establishment of grass on slopes to provide rapid binding of soil.
- Trees to be established along the ridge tops and drainage lines to promote diversity in the landscape.
- Trees around the final void slopes to reduce visual prominence.

Based on the conceptual revegetation strategy it is estimated that approximately 100ha or about one third of the rehabilitated land will consist of treed vegetation, with another 25ha of riparian rehabilitation will be undertaken along Tributary 4.

The remaining areas will consist of pasture grasses. Linkage from the rehabilitated SEOC site to remnant vegetation and the Glennies Creek Riparian Corridor will also be to help reduce fragmentation of natural bushland.

ACOL are currently participating in a Australian Coal Association Research Project (ACARP) that utilises software packages to establish final landforms that mimic the surrounding topography while taking into consideration the material types and natural erosion processes. The focus of the research will be developing an appropriate model for implementation on the SEOC landform.

The use of these software packages on the SEOC will provide ideal opportunities for research that aims to improve industry practices through the creation of final landforms that are more natural and nonlinear, avoiding “typical” rehabilitation techniques that can include benching and almost flat surfaces with linear drains and drop structures.

Management of the rehabilitation in the SEOC will be addressed through the integration of the SEOC with the existing ACP Landscape and Revegetation Plan.

ACOL will develop a mine closure plan for the SEOC, taking into consideration the principles and objectives for mine closure specified within the ANZEC MCA document Strategic Framework for Mine Closure, 2000 (or prevailing document). ACOL will relinquish the SEOC site in a condition that does not endanger public health and safety and allows the use of land for low intensity grazing and enhancement of local biodiversity. The SEOC site will be rehabilitated to a condition that does not require ongoing maintenance above that would be otherwise expected as part of responsible land management.

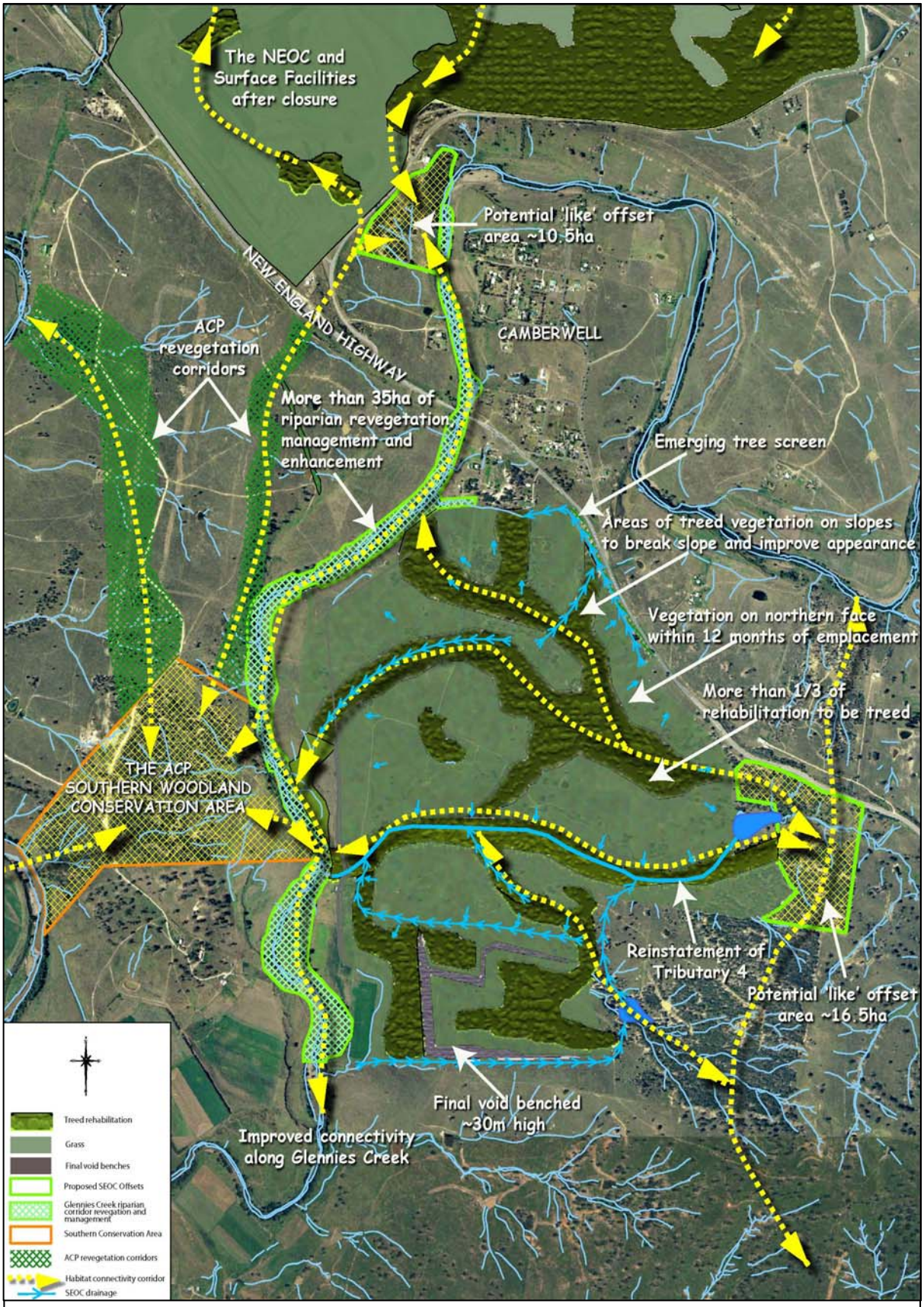

Figure 8: SEOC rehabilitation and connectivity

ES5 DRAFT STATEMENT OF COMMITMENTS

ACOL has developed a comprehensive set of commitments based the outcomes of the investigations undertaken, these commitments are detailed in full within Section 6 of the EA.

ACOL commits to construct, operate and manage the ACP and SEOC as one coal mine complex in an environmentally responsible manner in accordance with the ACP Development Consent (as amended), the SEOC Project Approval and all other applicable approvals.

ACOL commits, to the extent practicable and as may be required by the Director-General, to apply for and obtain further approvals (single or integrated), licences and/or authorities as are required for the operation of the ACP and SEOC.

ACOL will purchase affected properties (if so requested by any affected private landholder) in accordance with the conditions of Project Approval and where a private property is impacted by the ACP/ SEOC and a neighbouring mine to such an extent where cumulative impact criteria are exceeded, ACOL will, on request from the landowner establish a mechanism for joint acquisition.

ES6 JUSTIFICATION AND CONCLUSION

The SEOC will result in both positive and negative impacts. The project will impact Camberwell village, air quality, noise, water resources, flora and fauna, Aboriginal heritage and the visual amenity in the vicinity of the SEOC. However the project balances these impacts with positive benefits gained from the economic benefits at local, state and federal levels, retention of employment for 160 people and other indirect employment, the proposed enhancement program for the village of Camberwell together with the proposed mitigation and offset strategy to improve ecological connectivity across the landscape.

The coal mining industry is of fundamental importance to Australia's economic and social prosperity. Global energy demand is increasing and will continue to play a vital role in economic growth and social advancement. The SEOC project and ACP modifications will contribute toward satisfying both domestic and international energy markets, whilst contributing to the prosperity of local, national and international economies.

The ACP Modification will result in minor changes to air quality and noise associated with the increased coal processing. The modification will result in increased demand for water when mining and processing at peak production rates, this demand will be met through existing water supplies, new licences or a reduction in the production or processing rates.

ACOL has designed the project to where feasible avoid impacts. Where impacts are unavoidable ACOL are committed to minimising, managing and offsetting impacts to reduce the short, medium and long term effects of the South East Open Cut.

These measures detailed within Sections 3, 4 and 5 have been amalgamated to form the basis of ACOL's Statement of Commitments detailed within Section 6.

The management of the SEOC will be undertaken through the integration of the SEOC with existing management plans, or where relevant the creation of a new SEOC management plan.

The objectives and outcomes of the development of the SEOC and ACP modification are based upon the following principles:

- Maintain employment of 160 people currently employed at the ACP open cut operations.

- Maintain continuity of coal supplies to ACOL customers.
- Ensure that the selected mining methods and mine design are safe and efficient.
- Minimise adverse social, environmental and amenity impacts.
- Maximise the recovery of the mineable resources within the area.
- Maintain a cost effective business, with low capital and operating costs.
- Utilise existing infrastructure where possible.
- Minimise capital expenditure requirements.

The Environmental Assessment report has within *Section 5 – Existing Environment and Impact Assessment* considered the impacts, mitigation measures and benefits the SEOC and ACP modification will have on the physical and socio-economic environments, whilst an assessment of the project against the principles of ESD has been provided above.

The authors of this EA report have formed the opinion as detailed within *Section 7.4* that the SEOC and ACP modification meet the objects of the EP&A Act, 1979.

Based on the investigations for the SEOC and ACP modification and associated interactions with the environment the land is suited to open cut mining. The project is in the public's interest and accordingly it is respectfully requested that the Minister for Planning proceed to grant conditional approval to the SEOC Project and modification to the existing ACP development consent, subject to the implementation of the proponent's Statement of Commitments contained in Section 6 of the EA report.

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