Section 4

South East Open Cut Project
&
Modification to the
Existing ACP Consent

SECTION 4 – PROJECT DESCRIPTION

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4 PROJECT DESCRIPTION

This section describes the existing Ashton Coal Project (ACP), the proposed SEOC Project and the modification of the existing ACP development consent. 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; and
- The Ashton CHPP which processes the ROM coal and loads product coal onto trains for shipment.

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

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.

As the SEOC is outside of the area of the existing development consent for the ACP, it 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 annual production to 8.6 Mtpa of ROM coal.

4.1 Project Summary

The SEOC project comprises the following key elements:

- One open cut coal mine (the SEOC) producing up to 3.6Mtpa of ROM coal.
- Demolition of existing structures within the footprint of the project.
- Environmental bund adjacent to the New England Highway blended into the out of pit emplacement and final landform.
- Free draining, stable final landform sympathetic to the surrounding topography.
- Rehabilitation of the final landform to a combination of woodland and grazing lands including in-spoil creek alignments.
- Final void in south eastern corner, to be used for tailings storage for the existing approved underground operations.

- ROM pad, stockpiles and crushers with a conveyor to transport the ROM coal to the existing ACP CPP.
- Conveyor and bridge over New England Highway.
- Conveyor and gantry over Glennies Creek.
- Piping between SEOC and ACP CPP to transfer water and coal reject.
- Disposal of coal reject in the NEOC, Ravensworth Void and the SEOC.
- New office and workshop facilities, bathhouse and administration buildings located east of the SEOC and south of the New England Highway.
- New access road from New England Highway to the office and workshop facilities.
- Power supply and water supply infrastructure.
- The diversion of Energy Australia power lines and relocation of telecommunication lines.
- Staged 1 in 100 year event designed flood levee and associated flood mitigation works around ROM pad and along the western pit edge parallel with Glennies Creek.
- Water storage dam east of the SEOC.
- Enhancement of the Glennies Creek riparian corridor and revegetation of other cleared lands.

Figure 4.1 illustrates the proposed SEOC mine general arrangement.

Like all resource development projects, the SEOC mine is dependent on the underlying geology and reserves. Exploration drilling commenced in 1969 and has helped define the resource in the area of the proposed open cut. From the identification of a potential resource the project has then been developed taking into account key 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 SEOC Project occupies an area of approximately 300ha. Mining will commence in the north of the SEOC area via a box cut and progress to the south. Initially overburden will be emplaced out of pit along the northern boundary of the open cut forming an environmental bund adjacent to the New England Highway.

In-pit emplacement of overburden will commence in accordance with the mining schedule.

The environmental bund will be integrated with the in pit emplacement reaching maximum height in approximately 1 to 2 years. Rehabilitation of the environmental bund will commence progressively following its construction and have the bund and northern face of the emplacement vegetated within 12 months of its emplacement.

The SEOC will advance to the south over a period of 7 years, extracting up to 3.6Mt of ROM coal per annum, creating approximately 2.4Mtpa of product coal.

The mining method utilised will be primarily truck and excavator with a haul back system to maximise in-pit backfill of overburden. Variations including throw blasting and dozer push may also be used. The final void will be located in the south-eastern corner and filled with coarse and fine washery reject material. It is anticipated that the final void will be used for approximately 6-7 years after the completion of mining for storage of tailings from the approved underground operations.

The SEOC offices, workshop and associated facilities are located east of the SEOC. Access to the facilities will be from a new intersection with the New England Highway. ROM coal will be hauled from the coal face to the ROM coal facility located west of the SEOC and east of Glennies Creek by truck along the haul roads within and adjacent to the open cut.

The SEOC project will be operated as part of the ACP and utilize the coal handling, preparation and loading facilities, and other office and surface facilities approved by the Ashton development consent (DA) 309-11-2001-i in 2002, shown in **Figure 4.2**. In order to allow the effective integration and combined operation of the SEOC with the existing ACP an application to modify the existing ACP development consent under Section 75W of the EP&A Act 1979 has been made and assessed in this

MAIN NORTHERN RAILWAY

EXISTING CHPP

EXISTING RAIL LOADING FACILITIES

EXISTING APPROVED NORTH EAST OPEN CUT

TRANSFER 4

GLENNIES CREEK ROAD

EXISTING UNDERGROUND FACILITIES

CONSTRUCTION AND MAINTENANCE ACCESS

EXISTING ACP ACCESS

TRANSFER 3

TRANSFER 2

CAMBERWELL VILLAGE

EXISTING APPROVED UNDERGROUND

NEW

CONSTRUCTION ACCESS

TRANSFER 1

GLENNIES CREEK

SD2b

SD3

SD2a

ENGLAND

GLENNIE STREET

MAIN SEOC SITE ACCESS

ROM FACILITY

SOUTH EAST OPEN CUT

HIGHWAY

STAGE 1 LEVEE

CW1

SD1

WATER STORAGE

STAGE 2 LEVEE

OFFICE AND WORKSHOP FACILITIES

CW2

N

W E

S

0 100 200 300 400 500

All distances are in metres

SEOC Pit Shell

Out of Pit Emplacement

SEOC Project Boundary

Existing Infrastructure

Proposed Infrastructure

Clean Water Dam

Sediment Dam

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South East Open Cut Project

Proposed SEOC General Arrangement

Figure 4.1

Plan 4

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NEW ENGLAND HIGHWAY
MAIN NORTHERN RAILWAY
SWAMP CREEK
BETTY'S CREEK
MT OWEN RAIL SPUR
RAIL LOADING FACILITIES
EXISTING APPROVED NORTH EAST OPEN CUT
CHPP
UNDERGROUND FACILITIES
GLENNIES CREEK ROAD
BARRETT PIT
CAMBERWELL VILLAGE
BOWMANS CREEK
EXISTING APPROVED UNDERGROUND
NEW ENGLAND HIGHWAY
GLENNIES CREEK
HUNTER RIVER
SOUTH EAST OPEN CUT
PROPOSED WATER STORAGE
PROPOSED SURFACE FACILITIES
GLENNIES CREEK

N
W E
S

0 250 500 750 1000m

- ACP Development Consent Area
- SEOC Project Area
- Approved North East Open Cut
- Approved Underground
- Voluntary Conservation Area
- Existing Infrastructure Area
- Proposed Infrastructure
- Proposed South East Open Cut
- Watercourses
- Conveyor

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South East Open Cut Project

Existing Ashton Coal Project and Proposed SEOC General Arrangement and Topography

Figure 4.2

Plan 5

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CAD FILE: 05401D.dwg

EA Report. ACOL seeks to modify the existing ACP development consent in the following manner:

- Increase the throughput of the existing ACP coal handling and preparation plant (CHPP) and rail loading facilities to cater for a potential peak production of 8.6Mtpa of ROM coal.
- Modification of the existing CHPP facilities to allow the receipt of coal from the SEOC.
- Disposal of coal tailings from the existing underground coal mine in the SEOC final void.
- Increase the coal extraction rate to 5.0Mtpa of ROM coal in the existing underground coal mine to reflect the peak production potential of the mine.
- Associated modifications to the conditions of (DA) 309-11-2001-i to facilitate the above changes.

Refer to *Section 4.3* and *Section 4.5* for additional detail on the existing ACP and proposed modifications.

4.2 South East Open Cut Coal Resource Evaluation

4.2.1 Licence and Tenement Details

The western portion of the SEOC is located within the bounds of EL 4918 granted in December 1995 covering an area of 370ha. The eastern portion of the SEOC is located within EL 5860 granted in May 2001.

Authorisation 81 (A81) located immediately to the east of EL 5860 is controlled by Navidale Pty Limited. It is proposed to locate the office and workshop facilities and a portion of the out of pit emplacement within A81. No coal extraction will occur within this tenement.

The ACOL mining tenements and adjoining tenements are illustrated in **Figure 4.3**, also illustrated on this plan is an indicative Mining Lease Application boundary over the SEOC area. Consultation has been undertaken with the holders of A81. Navidale Pty Limited have provided a letter of support for this major project application. Ongoing consultation is directed towards some form of agreement that will enable the transfer of the surface entitlements to provide a mining lease over this area for the stockpiles, dams, office and workshop facilities.

Adjoining the proposed SEOC to the south is EL 5291 currently held by Coal and Allied. This EL includes coal seams contained within the SEOC. This application does not include any proposal to undertake mining within EL 5291.

4.2.2 Previous Exploration and Mining

Initial investigations within the area began in late 1969, after the original proponents (Durham Holdings) acquired the mineral rights to the Ashton property. In 1969 and 1970, thirty four (34) fully cored holes comprising 4500m were drilled within the Ashton area. This work formed part of a larger exploration program that was serviced and managed by the Joint Coal Board for Durham Holdings Ltd, a subsidiary of Consolidated Gold Fields Australia Ltd and Dalgety Australia Ltd. The proportion of this exploration within the footprint of the South East Open Cut consists of 10 fully cored holes with a total of 635 metres of NQ and HQ core (NQ = 47.6mm, HQ = 63.5mm cores on a wire line).

In September 1999, the Minister for the Department of Mineral Resources transferred to White Mining Limited (WML) all rights, title and interests in the Ashton area. During the period February 2000 and June 2005, WML completed an additional 8 fully cored holes within the SEOC area comprising 533 metres of HQ cored drilling. All holes were geophysically logged and coal seams were sampled for detailed quality analysis.

Since 2005 a more extensive exploration programme has been undertaken with ten cored holes comprising 1400 metres of core, 32 open holes comprising 1750 metres of drilling and 35 shallow open holes comprising 700 metres of drilling having been completed.

ML 1349
(XSTRATA NEWPAC PTY LIMITED)
ML 1484
(MACQUARIE GENERATION RESOURCE PACIFIC LIMITED)
ML 1357
CL 380
(RAVENSWORTH OPERATIONS PTY LIMITED)
CL 358
(XSTRATA GLENDELL)
MPL 343
(XSTRATA GLENDELL)
CL 382
(MAITLAND MAIN COLLIERIES PTY LIMITED)
ML 1623
ML 1476
(XSTRATA GLENDELL)
ML 1529
ML 1533
A440
(CAMBERWELL COAL PTY LIMITED)
A81
(NAVIDALE PTY LIMITED)
CL 357
(CAMBERWELL COAL PTY LIMITED)
A440
EL 5291
(COAL & ALLIED OPERATIONS PTY LIMITED)
ML 1432
(BLOOMFIELD)
NEW ENGLAND HIGHWAY
MAIN NORTHERN RAILWAY
SWAMP CREEK
BETTY'S CREEK
BOWMANS CREEK
HUNTER RIVER
GLENNIES CREEK
MT OWEN RAIL SPUR
GLENNIES CREEK ROAD
RAIL LOADING FACILITIES
CHPP
UNDERGROUND FACILITIES
BARRETT PIT
CAMBERWELL VILLAGE
EXISTING APPROVED NORTH EAST OPEN CUT
EXISTING APPROVED UNDERGROUND
SOUTH EAST OPEN CUT
PROPOSED WATER STORAGE
PROPOSED SURFACE FACILITIES
N
W
E
S
0 250 500 750 1000m
Indicative SEOC Mining Lease Boundary
Existing ACOL Mining Lease
Proposed Infrastructure
Proposed South East Open Cut
Watercourses
Conveyor

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South East Open Cut Project

Mining Tenements

Figure 4.3

Plan 6

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All holes have been geophysically logged, with seams sampled in the cored holes for quality analysis. Geotechnical logging was also completed on cored holes. Selected deeper holes have had vibrating wire piezometers installed for groundwater monitoring within the coal seam aquifers whilst shallower holes have stand pipe piezometers installed for delineation of aquifers potentially associated with the Glennies Creek alluviums.

The geology of the proposed SEOC mine area has been defined by surface drilling on an approximate grid of 300m.

Results of drilling are compiled and entered into a geological model, taking into account known structural features of the area to allow estimates of potential coal resources to be calculated.

4.2.3 Geology

4.2.3.1 Regional Setting

The ACP lies within the Hunter Coalfields of the Sydney Basin and includes coal resources and reserves that occur largely within the Foybrook Formation. The Foybrook Formation is a part of the Vane Subgroup of the Whittingham Coal Measures and represents the early component of the Late Permian Singleton Super Group.

Foybrook Formation

The ACP lies mostly on the western limb of the Camberwell Anticline. However, in the northeast a small component is located on the crestal and eastern limb of this structure. The strata strikes is in a northerly direction with dips ranging from 5 to 10 degrees and 9 to 18 degrees on the western and eastern limbs respectively. A full sequence of the Foybrook Formation, generally about 250m thick is present within ML 1533. The most important seams occur in the lower 180m of the Foybrook Formation. These are the Lemington, Pikes Gully, Upper Liddell, Upper Lower Liddell, Lower Barrett and Hebden seams.

Within the SEOC area east of ML 1533, the Foybrook Formation has been progressively eroded until at the eastern boundary of the area the coal seams have been completely eroded and the underlying Saltwater Creek Formation exposed.

Along the eastern boundary of EL 4918, Glennies Creek has incised a course into and around the plunging nose of the Camberwell Anticline. The creek appears to have preferentially followed the less resistant, coal prone, basal part of the Foybrook Formation.

The coal measure sequences are primarily fluvial and are composed of variously interbedded sandstone, siltstone, conglomerate, mudstone, shale and coal. Many of the sandstone units are massive and include significant wedges and lenses of channel filling pebble and granule, polymictic-conglomerate.

Alluvium and Colluvium

Unconsolidated sediments made up of alluvium, colluvium and regolith, comprising clay-bound and silt bound sands and gravels with occasional lenses or coarser horizons of gravels and sands occur within the project area along Glennies Creek. *Alluvium* is clay, silt, sand, gravel type material deposited by running water (i.e. Glennies Creek and the Hunter River) and the gravels are typically well rounded from being transported long distances. The alluvium occurs in association with the deposition of paleo-sediments by Glennies Creek within two main terraces that include a lower terrace adjacent to the river and an upper terrace that merges with colluvium and finally regolith associated with the slopes of the rising Permian subcrop to the east.

Colluvium is similar to alluvium but has been transported shorter distances, is more angular in nature and is deposited at the base of a slope (where its source was immediately upslope). *Regolith* is insitu weathered basement material, in this case, weathered coal measures.

A detailed drilling program and investigation was undertaken by ACOL to determine the extent of alluvium and colluvium in the project area and determine their respective hydraulic properties and

potential connectivity with Glennies Creek. The investigation (detailed further within *Section 5 – Groundwater*) determined that the alluvium and colluvium are in parts interlaid, 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, while water within the colluvium is significantly higher and a poorer quality. This investigation was essential in defining appropriate limits of open cut mining.

4.2.4 Coal Geology

Seven coal seams are currently mined in the ACP's NEOC operation. The presence of the Camberwell anticline to the east results in the SEOC being located on the west dipping limb; this results in the uppermost seams not being present.

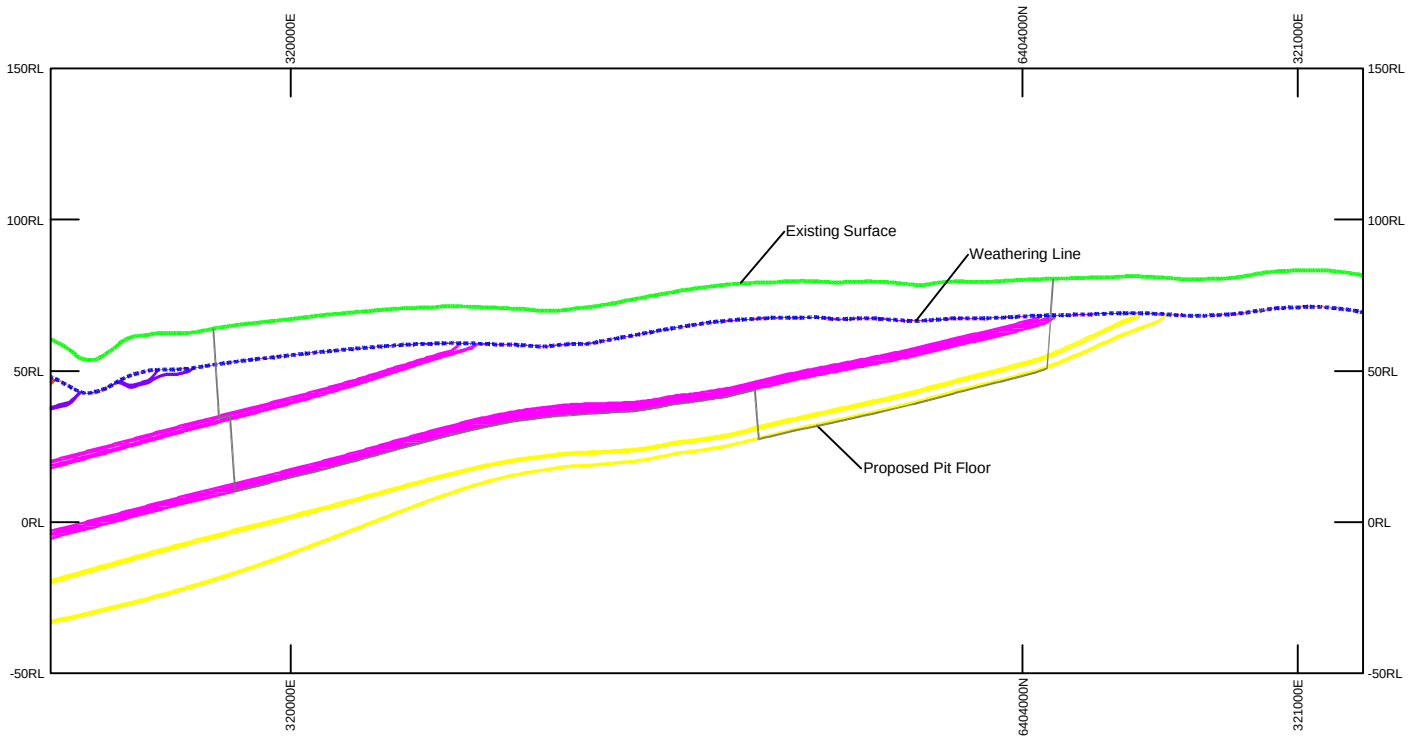
Six of the seams encountered in the NEOC are planned to be mined in the SEOC, with the Hebden seams not currently mined in the NEOC.

4.2.4.1 Seam Structure

Table 4.1 describes the key characteristics of the coal seams within the SEOC area. The term 'subcrop' refers to the coal near the ground surface overlain by weathered strata and soil. **Table 4.1** and **Figure 4.4** show the coal seams subcrop within the SEOC. Figure 4.3 illustrates the coal seams within the SEOC area and the proposed pit boundaries. Cross section locations are west to east, taken from both the northern and southern areas of the SEOC.

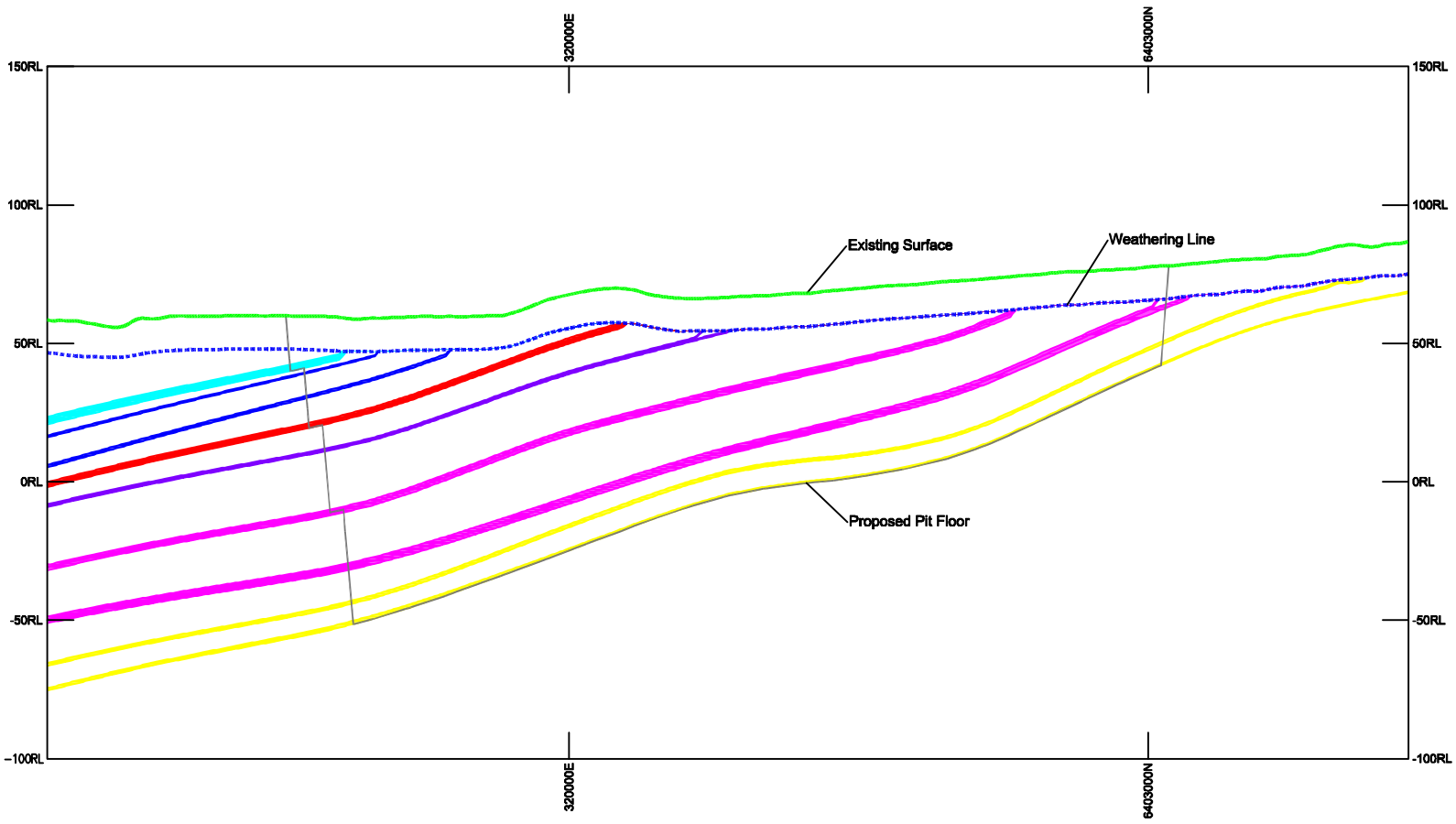
Table 4.1: Seam structure within the SEOC.

Seam	Seam Name	Depth	Thickness	Description
ULD	Upper Liddell Seam	Subcrop to 26m	1.50 to 3.2m	Subcrops in the east and is best developed in the southern and northern parts of the area.
MLD	Middle Liddell Seam	Subcrop to 28m	1.4 to 2.0m	Typically bright coal with minor mudstone and claystone partings. A consistent brown claystone occurs near the middle of the seam where it is coalesced.
ULLD	Upper Lower Liddell Seam	Subcrop to 40m	1.6m to 2.8m	Typically composed of mainly bright-banded coal with frequent mudstone and claystone bands.
LLLD	Lower Lower Liddell Seam	Subcrop to 56m	0.9m to 1.3m	Comprises dull stony and minor bright and dull-banded coal with a few tuffaceous mudstone bands and dark brown claystone near the centre.
UB	Upper Barrett Seam	Subcrop to 75m	0.5m to 1.6m	Develops a lower split (UBS) that coalesces with the Lower Barrett Seam to the north in NEOC. A bright coal with minimal stone banding.
LB	Lower Barrett Seam	Subcrop to 106m	0.8m to 2.5m	Most extensively developed seam in the project area. The coal is generally bright banded, with a few dull and stony plies.
HEB	Hebden Seam	Subcrop to 112m	0.5m to 2.0m	A dull-banded and inter-banded coal and contains numerous stone bands.



NORTHERN AREA OF THE OPEN CUT

VERTICAL EXAGGERATION 1:4



SOUTHERN AREA OF THE OPEN CUT

VERTICAL EXAGGERATION 1:4

- Seam ULD1-4
- Seam MLD1-2
- Seam ULLD1-3
- Seam LLLD1-2
- Seam UB-LB
- Seam HEB1-2

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South East Open Cut Project

Cross Section of the SEOC illustrating Relevant Stratigraphy

Figure 4.4

Plan 7

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CAD FILE: 05011D.dwg

4.2.5 Coal Quality

Product coal from the SEOC will have the potential to yield semi-soft coking coal, or low moisture, high energy, and steam raising coal for both domestic and export markets. The coal generally has the following characteristics:

- Sulphur moderate (0.6%);
- Fluidity 500 – 2000ddpm;
- Virtrinite reflectance 78 -82%;
- Swell generally exceeds 6.5;
- Moisture approximately 2.5% (adb);
- Ash fusion temp > 1560^{O}C; and
- Hardgrove Index approx 50.

4.2.6 Coal Resources and Reserves

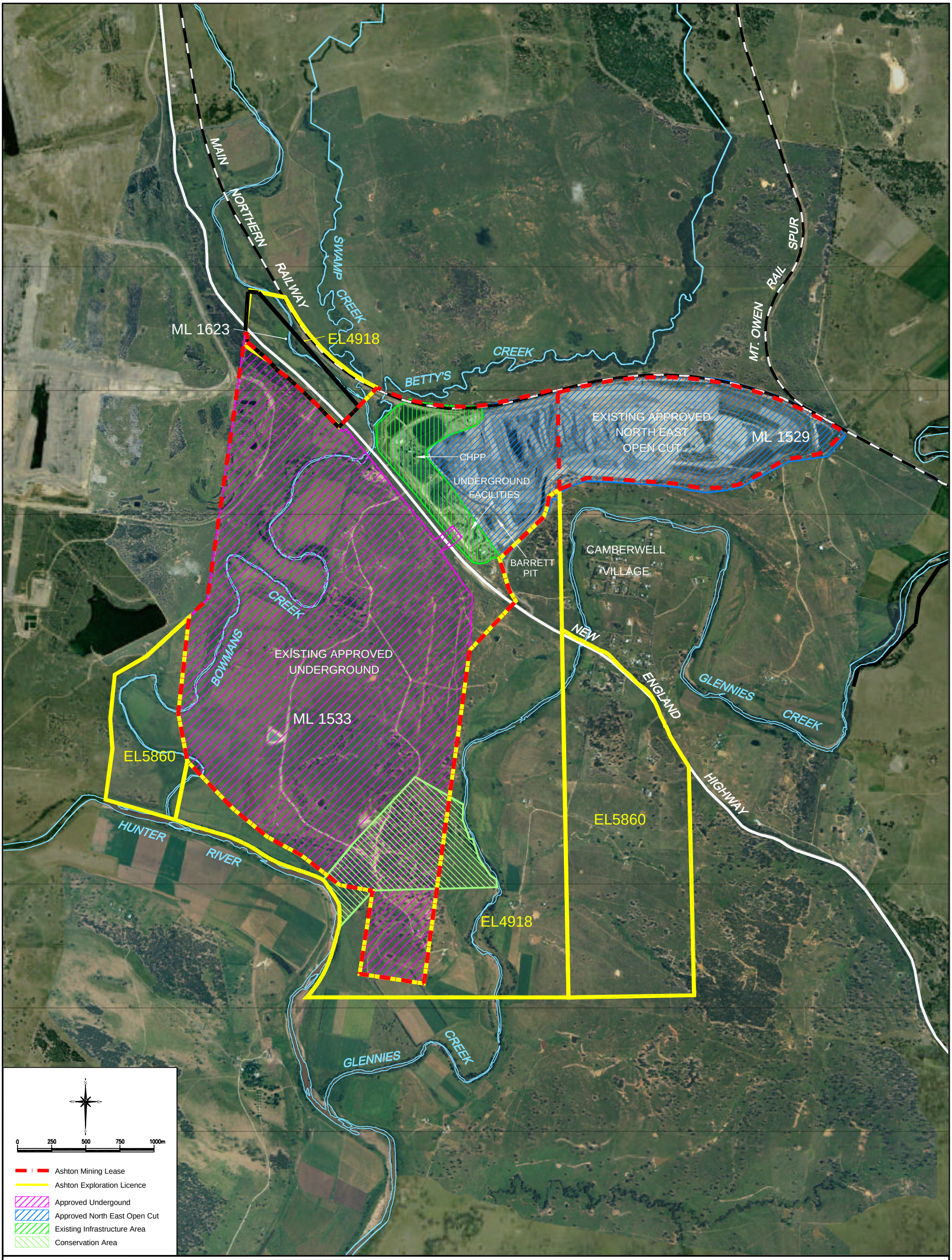
Total coal resources within the SEOC are estimated at 20.6Mt of ROM coal. The base of weathering ranges up to 10m with pit depths to approximately 110m.

4.3 The Existing Ashton Coal Project

A summary of the existing ACP approved by Development Consent (DA) 309-11-2001-i as amended is provided in **Table 4.2**. The general layout of the existing ACP is shown by **Figure 4.5**.

Table 4.2: Summary of the approved ACP operations and their status.

Aspect	Approved Operations	Existing Status of Operations	Modification Required *(refer Section 4.5)*
Project Life	ACP approved in October 2002 for 21 years from grant of Mining Lease.	ML 1529 covers the eastern end of the NEOC and was granted on 10 September 2003, and expires on 11 November 2012. ML 1533, covers the CHPP and underground area and was granted 26 February 2003 to 25 February 2024. ML1623 covers the north-western corner of the underground area and was granted on 30 October 2008 for 21 years until 30 October 2029.	No Existing consent sufficient.
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.
Open Cut	Two pits – Arties Pit and Barrett Pit (forming the NEOC).	Expected to be completed by October 2010.	No
	Total output of open cut 12Mtpa of product coal over 7 year period.	Anticipated as per approval.	No
	Extraction of approximately 1.7Million tonne per annum (Mtpa) of product coal. Equating to approximately 2.5Mtpa ROM coal as used in the air quality modelling.	During the 2007 – 2008 reporting period ACOL produced approximately 2.3 Mtpa of ROM coal from the open cut.	No



AshtonCoal

South East Open Cut Project

Existing Ashton Coal Project General Arrangement

Figure 4.5

Plan 8

Prepared by Pegasus Technical

CAD FILE: 05010E.dwg

Table 4.2: Summary of the approved ACP operations and their status, (continued).

Aspect	Approved Operations	Existing Status of Operations	Modification Required (refer Section 4.5)
Open Cut	Construction of environmental bunds.	Completed as per EIS and under vegetation.	No
	Construction of the Eastern Emplacement Area (north of the highway) to RL125m (modified in January 2005 by MOD 2 to elevate to RL135m).	Completed as per EIS and modification.	No
	Construction of Western Emplacement (south of the highway) to RL 105m.	Effectively became redundant following approval of MOD 2.	No
	Use of highwall mining at appropriate times.	No highwall mining has occurred to date.	No
	Final void filled with reject material.	As per approval (see surface facilities).	No
	Rehabilitation to combination of woodland and pastures.	Consistent with approval,	No
Underground	EIS estimated 18 years total production for the four descending seams.	Commencing in December 2005, the Underground would be estimated to be completed by 2023. (assumes maximum production rates).	
	Entry via highwall of the Arties Pit on the north side of the New England Highway with main headings aligned beneath the New England Highway.	Development of the underground entries and infrastructure commenced in December 2005, with the extraction of the first panel commencing following the SMP Approval in March 2007.	No
	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.
	Approval for underground mining 24 hours per day 7 days per week.	The underground mine currently operates as per the project approval.	No
	Diversion of Bowmans Creek proposed within EIS to minimise impacts to alluvials. Diversion excluded from Approval with conditional approval of undermining of alluvials pending studies showing minimal impact.	Studies undertaken, determined that mining design could be modified through alteration of panel width to reduce potential of connective cracking and protection of Bowmans Creek Alluvials. SMP lodged on 2 July 2009 documents these studies.	No
	Six panels approximately 250m wide proposed within EIS, later replaced by 7 panels (LW1 to LW7) approximately 210m wide, conditional on no impacts to Bowmans Creek Alluvium.	The SMP for Longwall (LW) Panels 1 to 4 in the Pikes Gully Seam was approved on 8 March 2007. Longwall 1 and 2 are complete, Longwall 3 commenced in September 2008 with development of Longwall 4 underway. SMP prepared and approved on 2 July 2009 for the remaining panels. The mine design now consists of longwall panels and miniwall panels, ranging from 60 to 216m wide starting at Longwall 5 through to Miniwall 8.	No

Aspect	Approved Operations	Existing Status of Operations	Modification Required (refer Section 4.5)
		LW/MW 9 is the subject of a modification (MOD 4) and is located west of MW8.	
	Descending multi seam operation targeting Pikes Gully, Upper Liddell, Upper Lower Liddell and Lower Barrett Seams.	Currently working the Pikes Gully Seam.	No
Coal handling, preparation, and processing	Train loading and CHPP operation 24 hours per day, 7 days per week.	Currently operated 24 hours per day, 7 days per week.	No
	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.
Support facilities and utilities	Administration, car parking, stores and bathhouse facilities.	Constructed as per EIS.	No
	Power and water supply infrastructure.	Consistent with approval.	No
Conservation and Offsets	Conservation Agreement Under Part 4 Division 12 Of The National Parks And Wildlife Act 1974 for 65.66ha land known as the "Southern Conservation Area" containing: • Hunter Valley vegetation, comprising Open Grassy Woodland, characterised by Bull Oak, Narrow-leaved Ironbark, Yellow Box and Grey Box. • Containing populations and habitat for the threatened Grey-crowned Babbler (eastern subspecies). • Important Aboriginal cultural heritage with occupation evidence in addition to the landscape setting and context. The draft agreement recognises that underground mining may disturb the surface, and require rehabilitation.	Final stage of agreement with DECCW pending. Area subject to regular flora and fauna survey.	Proposed realignment of powerlines may traverse the area and require some modification to the existing 132kV line through the area.
Mine Access	Via Glennies Creek Road.	As per approval.	No

Aspect	Approved Operations	Existing Status of Operations	Modification Required (refer Section 4.5)
Operating Hours	Open cut operations 7am to 10pm Monday to Saturday and 8am to 10pm on Sunday.	Operating as approved.	No
	Blasting 9am to 5pm Monday to Saturday.	Operating as approved.	No
	Underground operations 24 hours per day, 7 days per week.	Currently operating as approved.	No
	Coal handling and preparation facilities 24 hours per day 7 days per week.	Currently operating as approved.	No
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.

4.4 The South East Open Cut Mine

4.4.1 Summary of Key Aspects

A summary of the key aspects of the SEOC project are shown within **Table 4.3** and discussed further below.

Table 4.3: Summary of the key aspects of the proposed SEOC project.

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,

Aspect	Key Aspects of the Proposed SEOC
	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. Construction and maintenance access off the existing Glennie Street and an existing property access off the New England Highway above the ACP underground.
Operating Hours	24 hours per day, 7 days per week.
	Blasting 7am to 5pm excluding Sundays and Public Holidays.
Employment	A continuation of existing employment for 160 personnel working in the existing ACP open cut mine.

4.4.2 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 location of Camberwell village was considered in the design of the open cut to reduce impacts to the village. The location of the environmental bund and out of pit emplacement 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.

Section 7 details the various alternatives that were considered during the design of the project and provides an assessment of the alternative and justification for the chosen configuration.

4.4.3 Mining Schedule

The SEOC will produce approximately 3.6Mtpa of ROM coal. At planned extraction rates mining within the SEOC mine will occur for approximately 7 years. The final void will be used after mining for the storage of coal reject. Mine closure is expected to occur after 18 years. The mine will commence prior to the completion of the Barrett Pit within the NEOC to ensure continuity of employment for mine workers and coal production.

The open cut is planned to operate 24 hours per day, 7 days per week.

Staging plans of the SEOC are illustrated for years 1, 3, 5, 7, 9 and 18 in **Figure 4.6, Figure 4.7, Figure 4.8, Figure 4.9, Figure 4.10 and Figure 4.11.**

4.4.4 Mining Method

Open cut mining will be undertaken using conventional truck and excavator techniques. However, as mining technologies advance and economies change, the provision of new or revised mining methods will be pursued generally in accordance with industry best practice.

The following sections progressively describe the open cut mining operations. Prior to disturbance of the land surface, clean water diversions and erosion and sediment control works will be established.

The design principles and conceptual sizing of the surface water diversion and erosion and sediment control structures are further discussed in *Section 5* of the EA report.

4.4.4.1 Erosion and Sediment Controls

Erosion and sediment controls will be established during the initial stages of construction and will be ongoing throughout the life of the project to prevent and minimise erosion and maintain water qualities of the receiving waters. Controls will include:

- Disturbance of minimum area necessary.
- Erection of sediment control measures (e.g. strawbales, geotextile fences etc) during construction.
- The progressive construction of clean water diversions to convey clean water around the disturbed areas of the project.
- Dirty water containment swales, silt traps and sediment basins to capture and settle sediment laden run-off.
- Early stabilisation of disturbed areas.

The proposed water storage dam located east of the SEOC will be integral in preventing clean water entering the disturbed areas of the site, but will also serve as a valuable water source for the project.

4.4.4.2 Vegetation Clearing and Topsoil Stripping

Vegetation clearing will be generally undertaken 3 to 4 months in advance of mining operations. The clearing of vegetation generally involves the following processes:

- Selection and marking of significant hollowed and potential habitat trees for use as whole or in part timber habitat in the rehabilitation process.
- Clearing of other vegetation for construction.
- Removal of remaining tree limbs, stumps, shrubs and other woody vegetation that may be mulched for use in post-mining rehabilitation.
- Delineation of areas of weed infestation. Vegetation from weed infested areas will be stockpiled and composted or burnt.

Topsoil stripping will typically be undertaken using a bulldozer and front end loader loading topsoil into trucks to be stockpiled at selected locations or applied directly to shaped overburden for rehabilitation. The key stages of topsoil management are as follows:

1. Prior to disturbance of the topsoil it is necessary to:
    - Quantify soil resources, *Section 5.14* provides detail on the SEOC soil resources.
    - Characterise suitability of material for rehabilitation purposes. This may include use of materials other than topsoil, such as a specific strata with good rehabilitation properties, or may indicate the need to ameliorate existing soils, refer *Section 5.14*.

MAIN NORTHERN RAILWAY

EXISTING CHPP

EXISTING RAIL LOADING FACILITIES

EXISTING APPROVED NORTH EAST OPEN CUT

TRANSFER 4

EXISTING UNDERGROUND FACILITIES

TRANSFER 3

TRANSFER 2

EXISTING APPROVED UNDERGROUND

CAMBERWELL VILLAGE

NEW ENGLAND HIGHWAY

TRANSFER 1

SD2H

SD2

SD1

CW1

ROM FACILITY

SOUTH EAST OPEN CUT

WATER STORAGE

STAGE 1 LEVEE

OFFICE AND WORKSHOP FACILITIES

0 100 200 300 400 500

All distances are in metres

- SEOC Project Boundary
- SEOC Pit Shell
- Out of Pit Emplacement
- Coal Haul Road
- Emplacement Haul Road
- Pit Access Roads
- Existing Infrastructure
- Proposed Infrastructure
- Topsoil Pre-Strippping
- Active Pit
- Unshaped Overburden
- Rehabilitation
- Clean Water Dam
- Sediment Dam
- Mine Water Dam

AshtonCoal

South East Open Cut Project

Proposed mining progression plan for Year 1

Figure 4.6

Plan 9

Prepared by Pegasus Technical

CAD FILE: 05012C.dwg

MAIN NORTHERN RAILWAY

EXISTING CHPP

EXISTING RAIL LOADING FACILITIES

EXISTING APPROVED NORTH EAST OPEN CUT

TRANSFER 4

EXISTING UNDERGROUND FACILITIES

TRANSFER 3

TRANSFER 2

EXISTING APPROVED UNDERGROUND

CAMBERWELL VILLAGE

NEW ENGLAND HIGHWAY

TRANSFER 1

SD2b

SD2a

SD3

ROM FACILITY

SOUTH EAST OPEN CUT

WATER STORAGE

CW1

SD1

STAGE 2 LEVEE

OFFICE AND WORKSHOP FACILITIES

0 100 200 300 400 500

All distances are in metres

- SEOC Project Boundary
- SEOC Pit Shell
- Out of Pit Emplacement
- Coal Haul Road
- Emplacement Haul Road
- Pit Access Roads
- Existing Infrastructure
- Proposed Infrastructure
- Topsoil Pre-Strippping
- Active Pit
- Unshaped Overburden
- Rehabilitation
- Clean Water Dam
- Sediment Dam
- Mine Water Dam

AshtonCoal

South East Open Cut Project

Proposed mining progression plan for Year 3

Figure 4.7

Plan 10

Prepared by Pegasus Technical

CAD File: 05013C.dwg

MAIN NORTHERN RAILWAY

EXISTING CHPP

EXISTING RAIL LOADING FACILITIES

EXISTING APPROVED NORTH EAST OPEN CUT

TRANSFER 4

EXISTING UNDERGROUND FACILITIES

TRANSFER 3

TRANSFER 2

EXISTING APPROVED UNDERGROUND

CAMBERWELL VILLAGE

NEW ENGLAND HIGHWAY

TRANSFER 1

SD2b

SD2a

SD3

ROM FACILITY

SOUTH EAST OPEN CUT

WATER STORAGE

CW1

SD1

STAGE 3 LEVEE

CW2

OFFICE AND WORKSHOP FACILITIES

0 100 200 300 400 500

All distances are in metres

- SEOC Project Boundary
- SEOC Pit Shell
- Out of Pit Emplacement
- Coal Haul Road
- Emplacement Haul Road
- Pit Access Roads
- Existing Infrastructure
- Proposed Infrastructure
- Topsoil Pre-Strippping
- Active Pit
- Unshaped Overburden
- Rehabilitation
- Clean Water Dam
- Sediment Dam
- Mine Water Dam

AshtonCoal

South East Open Cut Project

Proposed mining progression plan for Year 5

Figure 4.8

Plan 11

Prepared by Pegasus Technical

CAD FILE: 05014C.dwg

MAIN NORTHERN RAILWAY

EXISTING CHPP

EXISTING RAIL LOADING FACILITIES

EXISTING APPROVED NORTH EAST OPEN CUT

TRANSFER 4

EXISTING UNDERGROUND FACILITIES

TRANSFER 3

TRANSFER 2

EXISTING APPROVED UNDERGROUND

CAMBERWELL VILLAGE

NEW ENGLAND HIGHWAY

TRANSFER 1

SD2b

SD2a

SD3

ROM FACILITY

SOUTH EAST OPEN CUT

WATER STORAGE

CW1

SD1

STAGE 3 LEVEE

CW2

OFFICE AND WORKSHOP FACILITIES

0 100 200 300 400 500

All distances are in metres

- SEOC Project Boundary
- SEOC Pit Shell
- Out of Pit Emplacement
- Coal Haul Road
- Emplacement Haul Road
- Pit Access Roads
- Proposed Dam
- Existing Infrastructure
- Proposed Infrastructure
- Topsoil Pre-Strippping
- Active Pit
- Unshaped Overburden
- Rehabilitation
- Clean Water Dam
- Sediment Dam

AshtonCoal

South East Open Cut Project

Proposed mining progression plan for Year 7

Figure 4.9

Plan 12

Prepared by Pegasus Technical

CAD FILE: 05015C.dwg

MAIN NORTHERN RAILWAY

EXISTING CHPP

EXISTING RAIL LOADING FACILITIES

EXISTING APPROVED NORTH EAST OPEN CUT

EXISTING UNDERGROUND FACILITIES

EXISTING APPROVED UNDERGROUND

CAMBERWELL VILLAGE

NEW ENGLAND HIGHWAY

SD3

SD2b

SD2a

SD1

CW1

CW2

SOUTH EAST OPEN CUT

WATER STORAGE

STAGE 3 LEVEE

TAILINGS DISPOSAL AND WATER RECOVERY PIPELINES

TAILINGS STORAGE

OFFICE AND WORKSHOP FACILITIES

0 100 200 300 400 500

All distances are in metres

- SEOC Project Boundary
- SEOC Pit Shell
- Out of Pit Emplacement
- Tailings Disposal Pipeline
- Existing Infrastructure
- Proposed Infrastructure
- Tailings Storage Area
- Unshaped Overburden
- Rehabilitation
- Clean Water Dam
- Sediment Dam

AshtonCoal

South East Open Cut Project

Proposed mining progression plan for Year 9 of the SEOC tailings deposition

Figure 4.10

Plan 13

Prepared by Pegasus Technical

CAD FILE: 05016C.dwg

MAIN NORTHERN RAILWAY

EXISTING CHPP

EXISTING RAIL LOADING FACILITIES

EXISTING APPROVED NORTH EAST OPEN CUT

EXISTING UNDERGROUND FACILITIES

EXISTING APPROVED UNDERGROUND

CAMBERWELL VILLAGE

NEW ENGLAND HIGHWAY

SOUTH EAST OPEN CUT

Note: For Vegetation refer to Plan 69

CAPPED TAILINGS STORAGE AREA

0 100 200 300 400 500

All distances are in metres

- SEOC Pit Shell
- Out of Pit Emplacement
- Proposed Drainage
- Existing Infrastructure
- Rehabilitation
- Capped Tailings Area
- Clean Water Dam

AshtonCoal

South East Open Cut Project

Proposed final landform, after tailings storage is capped Year 18, approximately 2028

Figure 4.11

Plan 14

Prepared by Pegasus Technical

CAD FILE: 05017D.dwg

- Formulate a stripping and stockpiling plan that includes nomination of appropriate depths, scheduling, and location of areas to be stripped and stockpile locations (detailed in the Mining Operations Plan).

2. During stripping and stockpiling activities it is necessary to:
    - Minimise over-clearing.
    - Selective stockpiling of soil according to type (i.e. soil type, topsoil, subsoil) and salinity.
    - Storage of soil in a manner that does not compromise the long term viability of the resource.
3. Prior to and during rehabilitation activities it is necessary to:
    - Monitor soil suitability for and during rehabilitation.
    - Implement amelioration measures to ensure the long term viability of the soil resources and manage salinity.
    - Progressively rehabilitate final landforms as soon as practicable after completion or when areas are no longer required.

4.4.4.3 Flood Mitigation

A staged levee system will be constructed to protect the pit and ROM coal facility from inundation in a 1 in 100 year ARI flood event.

The top of the levee will have a reduced level (RL) of 64m AHD, providing 1.3m freeboard above the 1 in 100yr flood level of 62.7m. The levee will be utilised as a haulage road with the crest 40m wide.

The western side of the levee will have a clay facing and sloped at 1 vertical (V): 3 horizontal (H) and grassed incorporating scour protection as appropriate to resist scour due to flood flows based on the peak overbank flow velocities for the 500 year recurrence flood. The levee will be integrated into the final landform on completion of mining. **Figure 4.12** illustrates a section of the proposed levee.

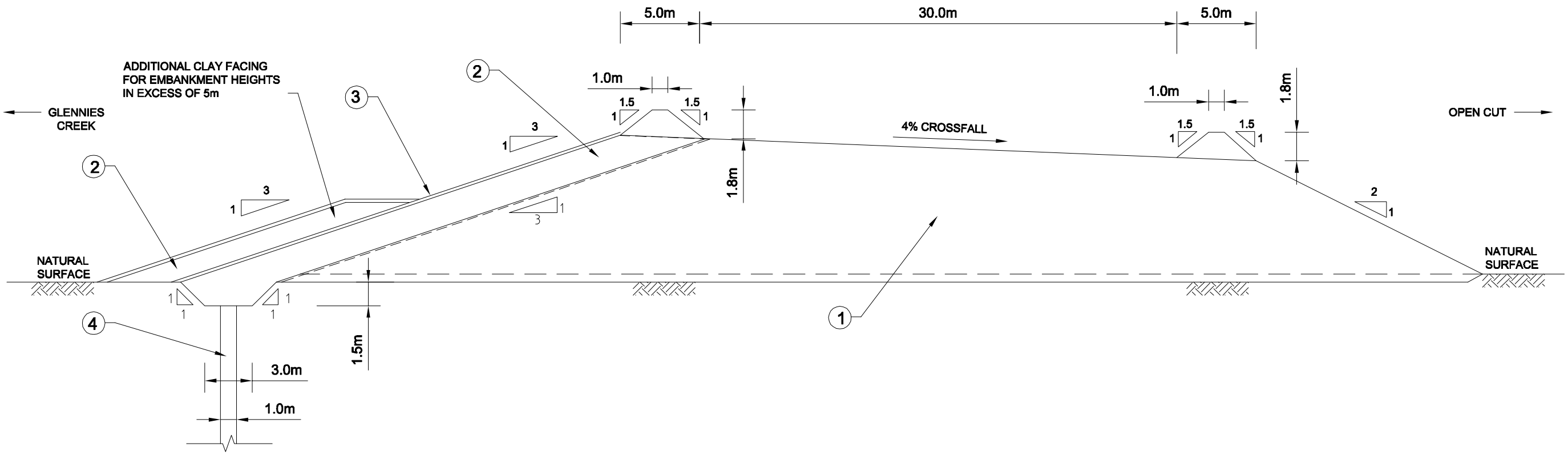
The SEOC is located adjacent to Glennies Creek, east of the estimated boundary between alluvium associated with Glennies Creek and the colluviums from upslope (refer to *Section 5.10* for greater discussion on this boundary). The alluviums and colluviums are interlaid and contain lenses of permeable gravels. Groundwater investigations have determined inflows from the alluvium are minimal and can be managed by standard operational practices.

However, given the variability of the colluvium and alluvium materials, geotechnical investigation will be undertaken during the construction of the levee, and where required a subsurface barrier will be installed to improve flood mitigation and highwall stability. Based on existing geotechnical information, it is likely that if a barrier is required then it will be required in isolated locations where saturated gravels at the base of the alluvium are more permeable.

4.4.4.4 Overburden Removal and Emplacements

The SEOC contains numerous economic coal seams that subcrop along the eastern boundary of the resource. Following the removal of vegetation and stripping of topsoil, overburden above the upper most seam is excavated, and coal removed. The open cut is then developed further in a series of benches progressively removing interburden between the coal seams until the lowermost seam is removed. Initially overburden is emplaced outside of the pit to provide sufficient in-pit space to establish benches and extract the coal. Once the lower most seam is removed and space established overburden is emplaced within the pit.

The methods of overburden removal are dependent on the strength characteristics of the material. Potentially all material will be drilled and blasted, however some material (such as weathered rock) may not require blasting and in this instance it can be ripped and excavated.



LEGEND:

EMBANKMENT HEIGHT VARIES WITH NATURAL GROUND LEVEL.

1. COMPACTED EARTH FILL
2. COMPACTED CLAY FACING
3. 100mm THICK TOPSOIL, SEED, FERTILISE.
4. SUBSURFACE BARRIER INSTALLED WHERE NECESSARY FOR HIGHWALL STABILITY

THE ARRANGEMENT SHOWN IS INDICATIVE ONLY AND SUBJECT TO CONFIRMATION OF THE CONSTRUCTION TECHNIQUE TO BE ADOPTED.

Figure 4.12

Plan 15

South East Open Cut Project

Conceptual cross section of proposed levee

Parsons Brinckerhoff

AshtonCoal

Prepared by Pegasus Technical

CAD FILE: 05096D.dwg

4.4.4.5 Emplacements

The out of pit emplacement has been designed and located to provide maximum environmental protection in terms of noise, safety and visuals whilst blending the emplacement into a final landform that is sympathetic to the surrounding topography.

The out of pit emplacement is located adjacent to the New England Highway blending south into the in pit emplacement. Figure 4.5 and Figure 4.6 illustrate the plan view of the initial emplacements and blending into the final landform, achieving maximum height within the 3 years. **Figure 4.13** illustrates sections of the environmental bund and out of pit emplacement.

The emplacement will contain a variety of water management structures to ensure the emplacement is free draining and not susceptible to erosion. To allow water to flow across the landform from the east to west a drainage alignment will be constructed through the centre of the in pit emplacement. Further detail on the emplacement is contained within *Section 5.11 on Water Management.*

4.4.4.6 Blasting

Blasting will be designed to achieve optimal fragmentation of the coal (if necessary) and overburden, taking into consideration experience gained at the NEOC. This is achieved using a combination of blast spacing and charge weight. A maximum instantaneous charge (MIC) is determined based on predicted strata strength and the proximity of neighbouring sensitive receptors and infrastructure, such as utility services, bridges and heritage buildings.

Blasting using the calculated MIC (refer to *Section 5.9*) will generally be conducted between the hours of 7.00 am to 5.00 pm excluding public holidays and may at times require more than one (1) blast per day.

The wider period for blasting will provide operational flexibility and allow blasting to take advantage of calmer wind conditions in the morning while recognising limitations associated with the increased frequency of inversions during the morning period.

Variations including throw blasting and dozer push will also be used. Blasted overburden and coal will be loaded by hydraulic excavators into rear dump trucks and transported to the emplacement and coal stockpile areas.

Further detail on blasting and vibration levels is contained within *Section 5.9 – Blasting and Vibration*.

4.4.4.7 Dewatering

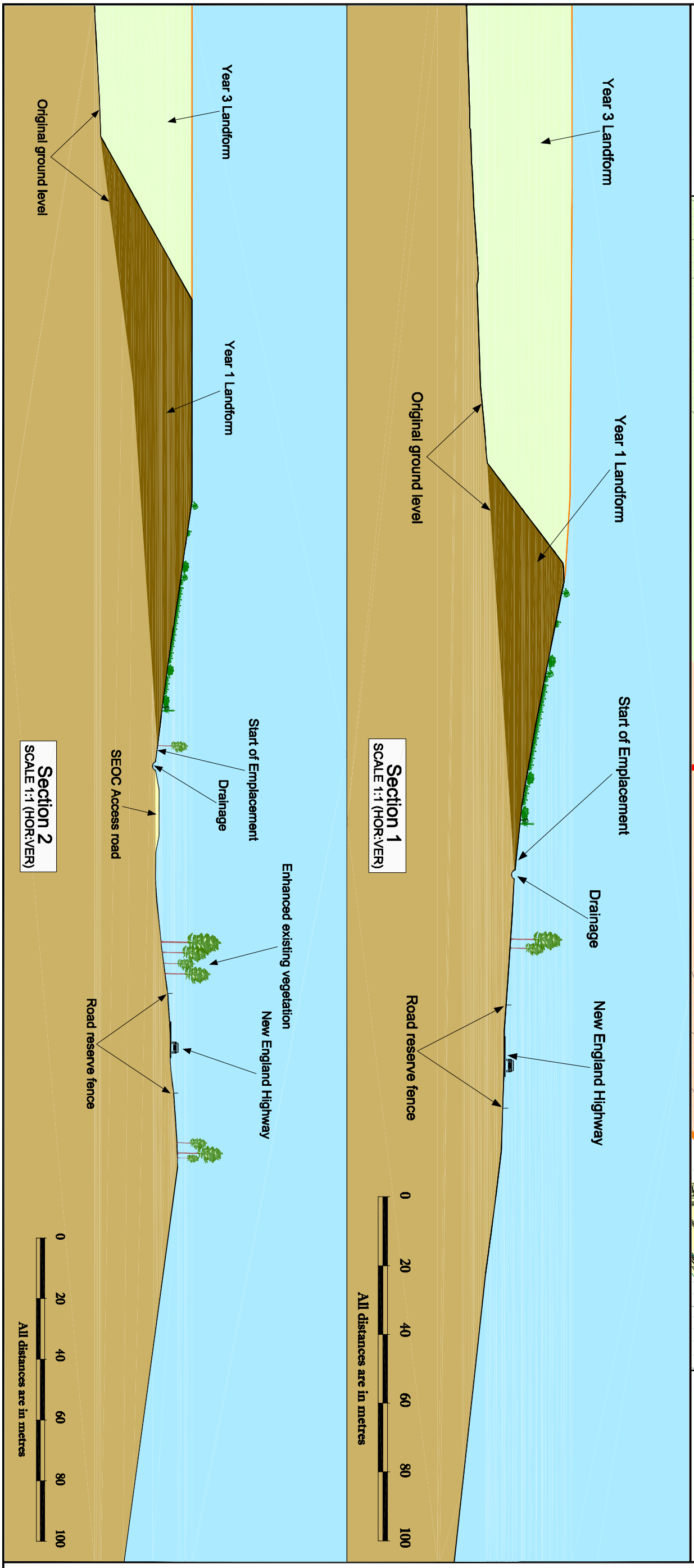
The open cut is established along the eastern side of Glennies Creek and is expected to encounter groundwater within unconsolidated sediments and the underlying coal seams.

The groundwater will be (where necessary) extracted in advance of mining from within the open cut area. Other inflows will be captured within in pit sumps and distributed to water storages for operational use managed in accordance with *Section 5.11.3 – Water Management.*

4.4.4.8 Removal and Transport of Coal

On removal of the overburden, the exposed coal is blasted or ripped and loaded by hydraulic excavator into rear dump trucks. The SEOC contains multiple seams and will be mined in a series of benches to enable optimum recovery of coal.

Coal is transported out of the open cut via a series of ramps and along the western side of the open cut and along the flood levee to the run of mine (ROM) facility, where it is either stockpiled or dumped directly into the hopper.



South East Open Cut Project

Cross sections of the proposed SEOC Year 3 environmental bund and out of pit emplacement

Figure 4.13

Plan 16

Prepared by Pegasus Technical

CAD File: 05052C.dwg

4.4.4.9 Proposed Equipment Fleet

The equipment fleet for the SEOC will consist primarily of equipment transferred from the existing ACP open cut operations, replaced or upgraded where necessary. **Table 4.4** provides details of the anticipated SEOC equipment fleet.

Table 4.4: Equipment fleet for the SEOC.

Equipment	Size	Proposed Quantity	
		Year 1	Year 7
Mining Operations			
Coal and Overburden Excavators	26m^3 to 34m^3	4	4
Coal and Overburden Trucks	170 to 240t	18	18
Graders	5.0m blade	2	2
Water Carts	100,000L	3	3
Dozers – Coal/Dump/Face	19.0m^3	4	4
Rubber Tyred Dozers	8m^3 blade	1	1
Drills		2	2
Ancillary Equipment			
Tool Carrier		1	1
Shot Crew FEL	3.5m^3	1	1
Ancillary Excavator		1	1
Dewatering Pumps		2	2
Puddle Jumper Pumps		2	2
Service Carts		2	2
Maint Truck / Hyab		1	1
18t Crane		1	1
Scissor Lift		1	1
Light Vehicles		12	12
ROM Facility			
Coal Stockpile Dozers		2	2
Coal Rehandle Front End Loader		2	2
Ancillary FEL		1	1
Light Vehicles		2	2

4.4.5 Final Landform and Rehabilitation

The following terms are used in this section to describe processes that occur following the removal of coal:

- *The Final Landform* is essentially the precursor to rehabilitation. It is the shaping of the overburden to the final topography that remains on the completion of mining.
- *Rehabilitation* refers to the establishment of vegetation on the final landform through the planting of trees or pasture within an area disturbed by mining, i.e. on the overburden emplacement.

- *Revegetation* should not be confused with rehabilitation as it refers to the planting of trees or pastures in areas that have **not** been directly disturbed by mining, but may have been degraded over the years by land clearing and the former/existing land use.

4.4.5.1 Landform and Rehabilitation Objectives

The objectives for the rehabilitation of the SEOC are to:

- Re-establish stable, safe and effective landforms and surfaces sympathetic to the existing and surrounding topography.
- Create final landforms cognisant of revegetation potential, slope stability, surface drainage and erosion control.
- Rapid rehabilitation of emplacements visible from the New England Highway and Camberwell village.
- Progressively rehabilitate the final landform as mining is completed.
- Creation of a final landform consisting of pastures and open woodlands.
- Integrate the open cut rehabilitation with the surrounding revegetation proposed along the riparian corridor of Glennies Creek.
- Maintain the diversity and genetic resource of the flora currently existing within the locality.
- Maintain and enhance habitat for native fauna.
- Provide necessary access for the suppression of fires, control of noxious animals and weeds and to monitor the rehabilitation.
- Undertake rehabilitation activities utilising a Landscape and Rehabilitation Management Plan (LRMP) consistent with an approved Mining Operations Plan (MOP).

4.4.5.2 Final Landform

The design of the SEOC has been premised on providing a final landform that will in time integrate with the surrounding landscape at the conclusion of mining.

The design of the final landform will be shaped by utilising software packages such *Natural Regrade*© to establish 'natural' landforms that 'mimic' surrounding topography while taking into consideration the material types (soils and overburden) and natural erosion processes. The final landform will include various drainage lines and rolling landforms to support a variety of native vegetation types consisting of open woodlands and pastures.

The final landform at the completion of mining of the SEOC, and after partially filling the void with reject from the ACP descending longwall in 2028 is shown in Figure 4.9.

4.4.5.3 Final Void

The SEOC final void is located in the south eastern corner of the open cut (refer to Figure 4.9). The void will be approximately 80m deep and have an area of approximately 37ha. The void has been located toward the eastern side of the open cut to ensure that future uses of the void do not adversely impact on Glennies Creek.

The void will be utilised for the deposition of tailings and other reject from the processing of coal at the existing ACP underground operations.

On completion of the approved ACP descending longwall operation in 2023 the final void is estimated to be filled to 31m AHD. Following 4 to 5 years of drying (i.e. by 2028) the final void tailing storage will be capped with 1-2 metres of material and revegetated. Water diversion structures will be constructed around the crest of the void to prevent ponding or inflow of surface water. The final depth of the void will be approximately 30m. Remaining highwalls will be benched and/or battered depending on highwall stability.

4.4.5.4 Rehabilitation

ACOL has gained valuable experience from rehabilitation activities at the NEOC, through trials of different cover-crops, and seed mixes aimed at improving native vegetation growth and reducing weeds. At the NEOC, ACOL has successfully used soil ameliorants to reintroduce organic matter into soils and improve vegetation growth. The use of these will be continued for the rehabilitation of the SEOC.

Rehabilitation of the SEOC will use flora species to provide linkages of the vegetation between Glennies Creek to the west and the timbered hills to the east, and also aid in connectivity along the Glennies Creek riparian corridor. Species composition will reflect typical vegetation communities throughout the local area.

4.4.5.5 Connectivity and Integration with Adjoining Lands

A review of the existing vegetation in the area and the proposed offset and rehabilitation proposed by neighbouring mines and the existing ACP has been undertaken to determine paths where vegetation connectivity can be improved across the local landscape.

Key paths have been identified in a north south direction starting in the south with offsets proposed by HVO South on the southern side of the Hunter River, north to the existing ACP Conservation Area above the underground, the enhancement of the Glennies Creek riparian corridor can then provide connectivity to existing vegetation on Glennies Creek Road that ties into the rehabilitation of the NEOC, through to the offsets and rehabilitation of the Glendell, Ravensworth East and Mt Owen open cut mines and the Ravensworth State Forest. This connectivity is consistent with and improves connectivity as proposed in the 1999 *Synoptic plan: integrated landscapes for coal mine rehabilitation in the Hunter Valley of NSW* published by the Department of Mineral Resources.

Other more localised connectivity will be promoted in an east-west direction through the rehabilitated SEOC to existing vegetation to the east of the SEOC Project.

While the SEOC will result in the short term loss of vegetation that is within the footprint the long term rehabilitation and revegetation proposed will improve vegetation connectivity across the valley floor. ACOL currently control a substantial section of the area proposed for riparian corridor enhancement, however the complete implementation of the proposed revegetation along Glennies Creek will be subject to approval from landowners.

Refer to Section 5.28 for further detail.

4.4.6 South East Open Cut Infrastructure and Facilities

The SEOC project will require the construction of three key areas of infrastructure, and the modification of the existing ACP CPP. The three infrastructure areas fundamental to the SEOC are:

- The office and workshop facility area located east of the SEOC.
- The ROM coal facility located west of the SEOC.
- The conveyor and pipelines to transport coal, water and tailings between the ROM facility, SEOC and the CPP.

4.4.6.1 Office and Workshop Facility Area

The SEOC office and workshop facility area will be the first point of access for mine visitors and include mine reception office, offices, bathhouse, first aid room, muster and crib rooms, training rooms, sewage treatment facility, fuel farm, emergency helipad, parking, stores, workshop facilities and other associated facilities. **Figure 4.14** and **Figure 4.15** illustrate the proposed office and workshop facility layout.

The facilities will cater for approximately 90 light vehicle parking spaces, along with sufficient parking for mine vehicles and heavy equipment. The design ensures that vehicles entering from the New England Highway do not readily mix with mine vehicles, and all delivery vehicles have easy access, entering and leaving in a forward direction.

Figure 4.14

Plan 17

South East Open Cut Project

Proposed office and workshop area facilities layout

ACCESS ROAD

HELI PAD

BOOM GATE

CARPARK

ADMINSTRATION OFFICE

BATH HOUSE

FIRST AID ROOM

OCE SHOTFIRES OFFICE

TRAINING ROOM

CRIB AND MUSTER FACILITIES

IN PIT VEHICLE CAR PARK

STP

OVER SIZE VEHICLE ENTRY

FUEL FARM

STORE

WORKSHOPS

COMPOUND

KOMATSU 830 TURNING PATH

APRON

TYRE CHANGE SLAB

MAINTENANCE OFFICE

HV PARK UP

HAUL ROAD

HV WASH & LV WASH

RAW WATER

90

100

0 10 20 30 40 50

All distances are in metres

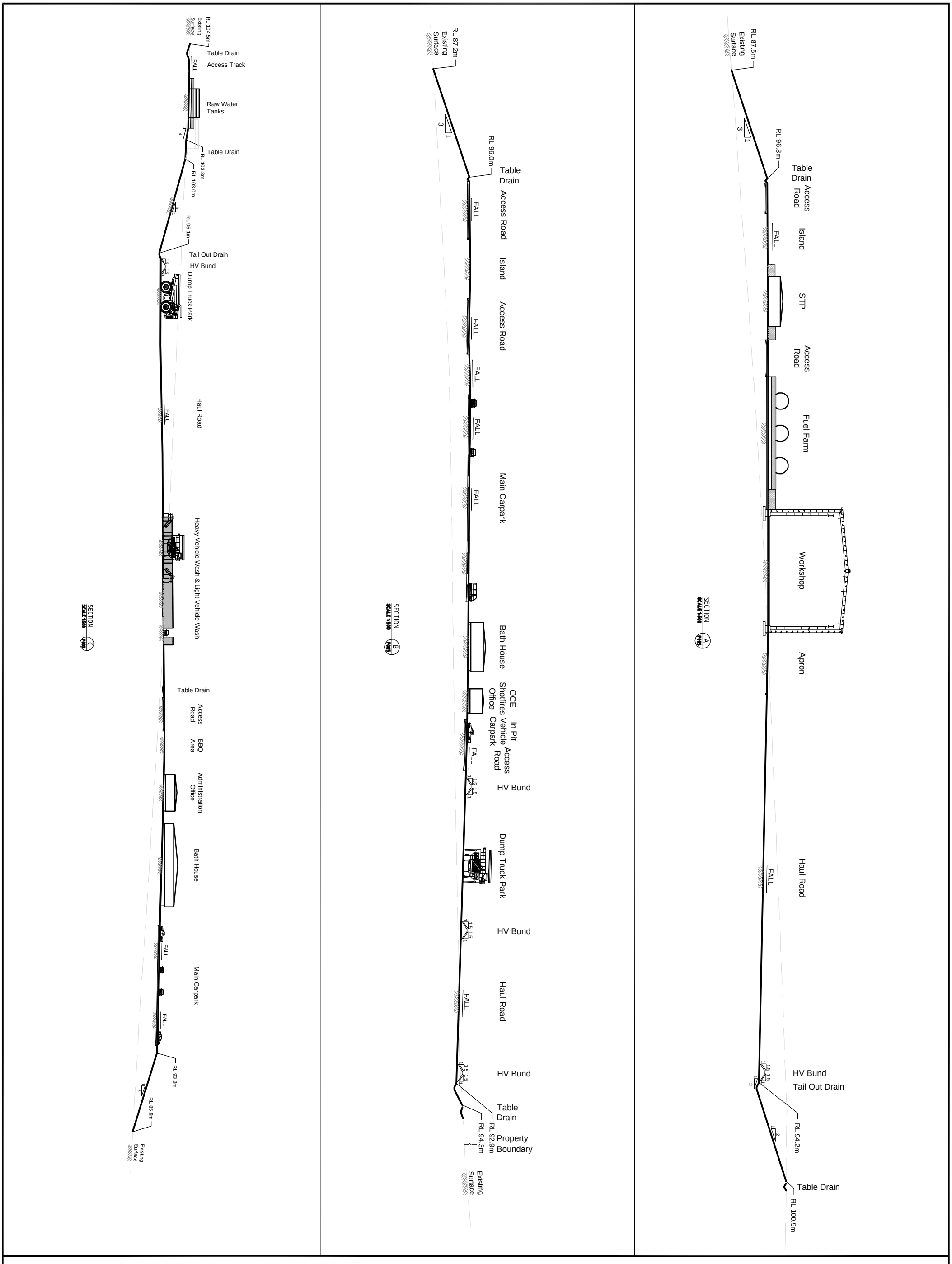
SEOC Project Boundary

Out of Pit Emplacement

AshtonCoal

Prepared by Pegasus Technical

CAD FILE: 050108E.dwg



South East Open Cut Project

Proposed office and workshop area facilities layout

Figure 4.15

Plan 18

Prepared by Pegasus Technical

CAD FILE: 05168B.dwg

The facilities area will incorporate a bunded fuel farm containing three (3) 110,000 litre diesel storage tanks and storage of various lubricants, fluids and oils within a bunded storage area.

The facilities will include effluent treatment facilities and necessary hydrocarbon management systems, refer to *Section 4.3.8* for additional detail on waste management.

A water storage dam is proposed to be constructed to the east of the proposed SEOC facilities (refer to *Section 4.3.7.2*).

Access

The access to the office and workshop facility area will be the main point of access to the SEOC.

An intersection will be constructed on the New England Highway at the site of an existing property access approximately 450m east of the McInerney Road intersection. A conceptual design of the intersection has been prepared; refer to *Section 4.7* and *Section 5.21.3.2* for further detail and illustration, consultation has occurred with the RTA to determine the necessary requirements fpr the intersection as detailed in *Section 3*.

The SEOC main access road will be a bitumen sealed road approximately 10m wide with gravel shoulders, batters and table drains. The access road is aligned to cross on top of the storage dam wall, where guardrails will be erected along its edge. The access road will require sections of up to 3m of cut and 2.5m of fill.

Refer to *Section 4.7* for a summation of access to the mine site from the public road network.

4.4.6.2 ROM Coal Facility

Coal mined from the SEOC will be trucked to the ROM coal facility. The ROM coal facility will be located on the western side of the SEOC, and the eastern side of Glennies Creek. A flood levee around its perimeter will protect the facility from 1 in 100 year flood events.

The ROM coal facility provides ROM coal stockpiling and preliminary processing (primary and secondary sizing) of the ROM coal for transport on the conveyor to the existing ACP CPP (located approximately 2.5km to the north west) for processing. ROM coal will be stockpiled or dumped directly into the ROM coal hopper and a front-end loader and/or dozer will be used for management of coal stockpiles. **Figure 4.16** and **Figure 4.17** illustrate the ROM coal facility in plan and section view respectively.

The facility has been designed having consideration to acoustical shielding of components such as the primary sizer. Stockpile sprays will be used along the western perimeter of the facility to prevent coal dust from entering Glennies Creek, while dirty water collection systems will capture run-off for subsequent treatment and re-use.

Access

During the construction phase access to the ROM coal facility will be gained via Glennies Street off the New England Highway.

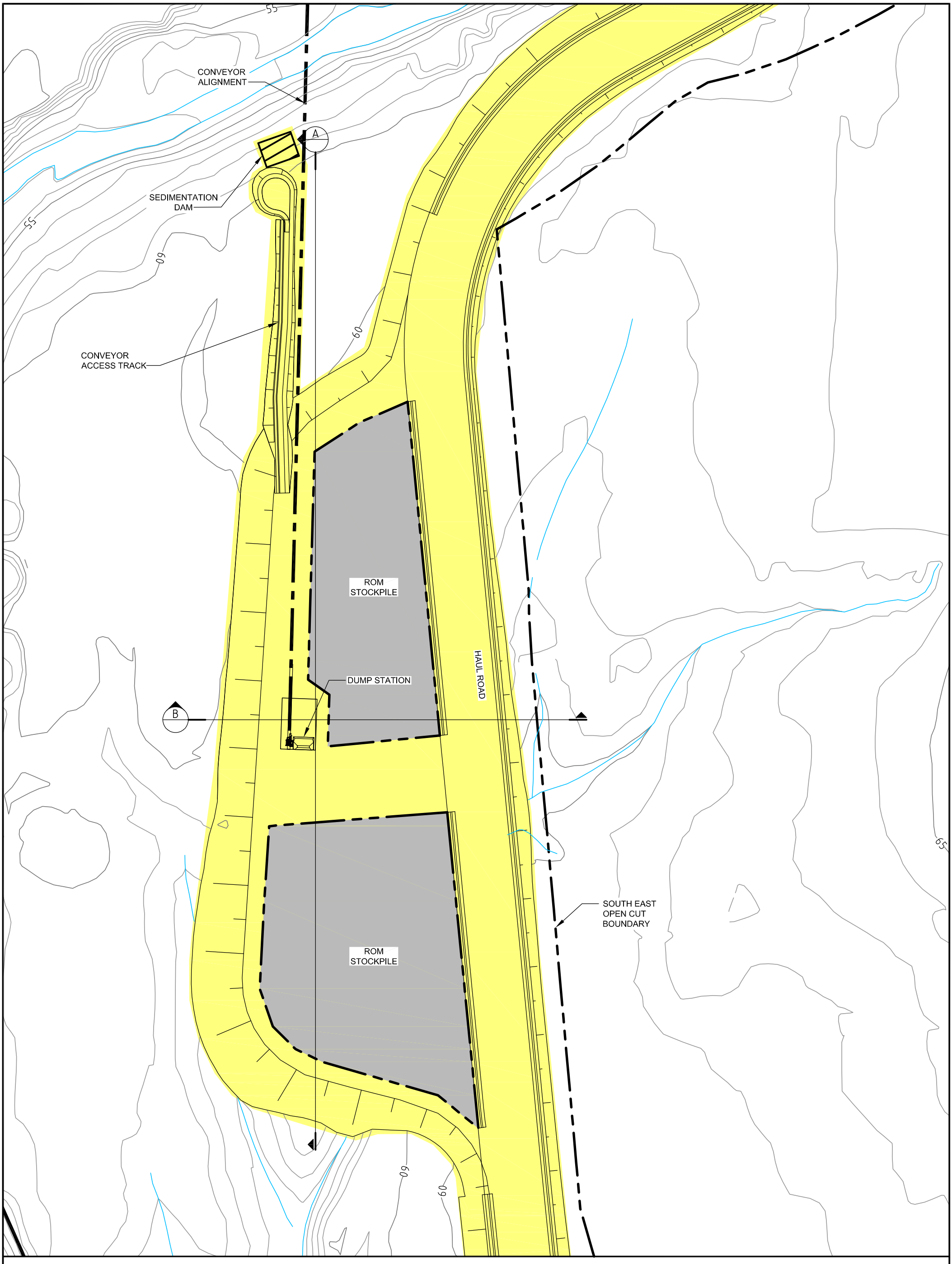
Following the completion of construction activities, access to the ROM facility will be primarily via internal access roads from the office and workshop facility access, with occasional maintenance access from this intersection. The access road from the office and workshop facilities to the ROM Coal Facility will be relocated as the mine progresses to the south.

Refer to *Section 4.7* for a summation of access to the mine site from the public road network.

4.4.6.3 Conveyor and Pipelines

The conveyor network from the ROM facility to the ACP CPP traverses Glennies Creek and the New England Highway with a length of approximately 2700m.

The conveyor network will consist of a series of conveyors and associated transfer stations.



AshtonCoal

South East Open Cut Project

Proposed ROM Coal Facility

Parsons Brinckerhoff

Figure 4.16

Plan 19

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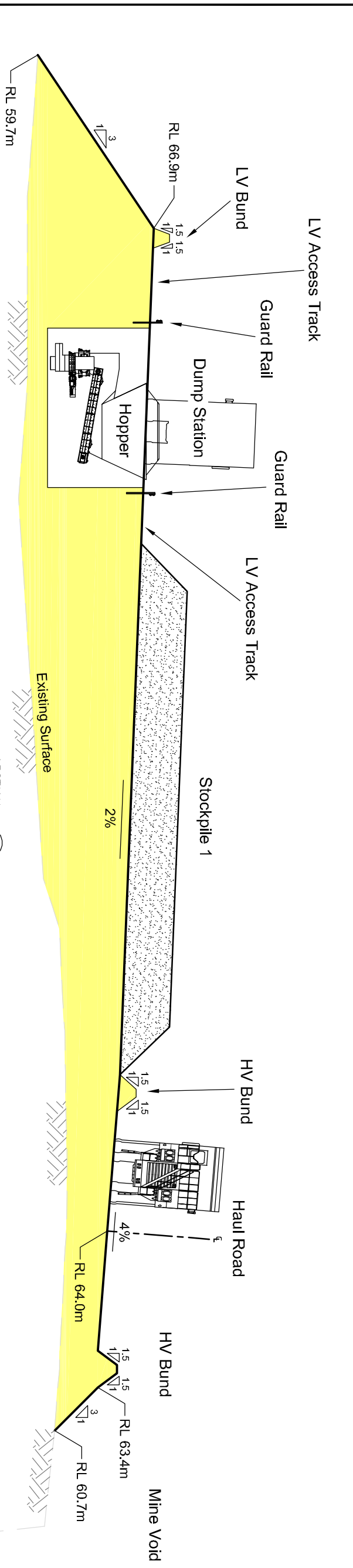
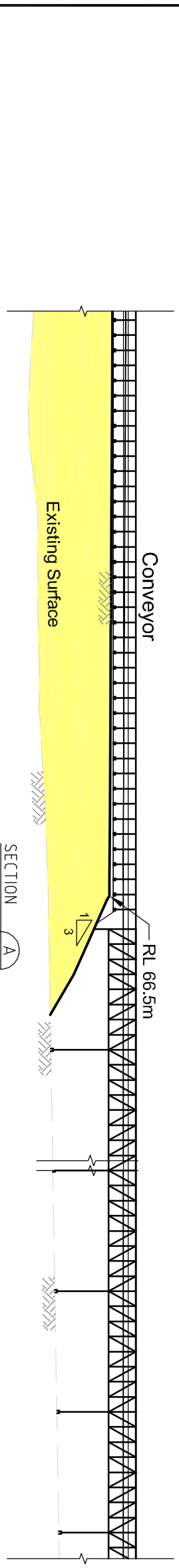
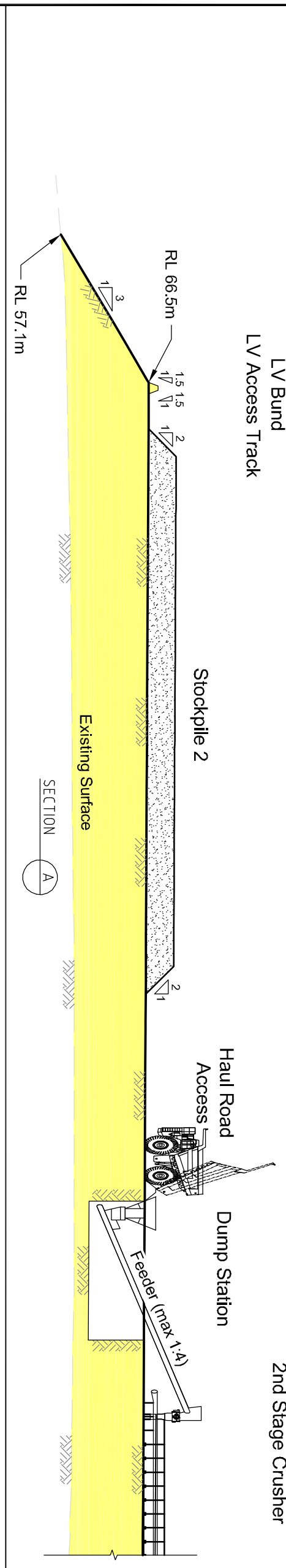






South East Open Cut Project

Cross sections of the proposed ROM Coal Facility

Figure 4.17

Plan 20

Prepared by Pegasus Technical

CAD FILE: 05415B.dwg

Figure 4.18 illustrate conceptual design sections and elevations of the key aspects of the conveyor network.

The conveyor network will be elevated on stanchions for approximately 700m through the lower lying areas near Glennies Creek above the 1 in 100 year flood level. The conveyor will have a continuous span over the creek, ensuring no stanchions are located between the banks of the creek.

The conveyor crosses the New England Highway above the cutting in a continuous span with a minimum 5.4m clearance above the highway, therefore minimising large load restrictions. Elevated sections over the highway will be fully enclosed to ensure any spillage or maintenance activities do not adversely impact highway users. Consultation has occurred with the RTA in regards to the crossing of the New England Highway to determine appropriate requirements, refer to *Section 3* for further detail.

The conveyor structure incorporates a series of pipelines required to transfer water and tailings between the SEOC and existing ACP. To improve security of pipelines, pipes will be double sheaved, with a breach detection system and a series of emergency containment ponds along the conveyor route.

Selected sections of the transfer stations and conveyors will be fully or partially enclosed by coloured profiled metal sheeting, to improve safety, visual, dust and acoustic impacts where required.

Access

Access to the conveyor network will only be required for the purposes of construction and maintenance. Conveyors crossing the New England Highway and Glennies Creek include personnel walkways only. As such it will be necessary to access the conveyor in three sections divided by the Glennies Creek and the New England Highway. Access to the conveyor will be derived from the main ACP entrance, the existing property access above the ACP underground, and the section east of Glennies Creek off either Glennie Street or main SEOC site access.

Access and maintenance roads will be provided adjacent to the conveyor network. All batters will be appropriately graded and vegetated.

Refer to *Section 4.7* for a summation of access to the mine site from the public road network.

4.4.6.4 Coal Handling and Preparation Facilities

Coal will be processed in the existing approved ACP CPP (refer DA 309-11-2001-i as amended) and loaded onto trains for rail transport to the consumer. These facilities will require modification as detailed within *Sections 4.3 and 4.5.*

Reject and Tailings

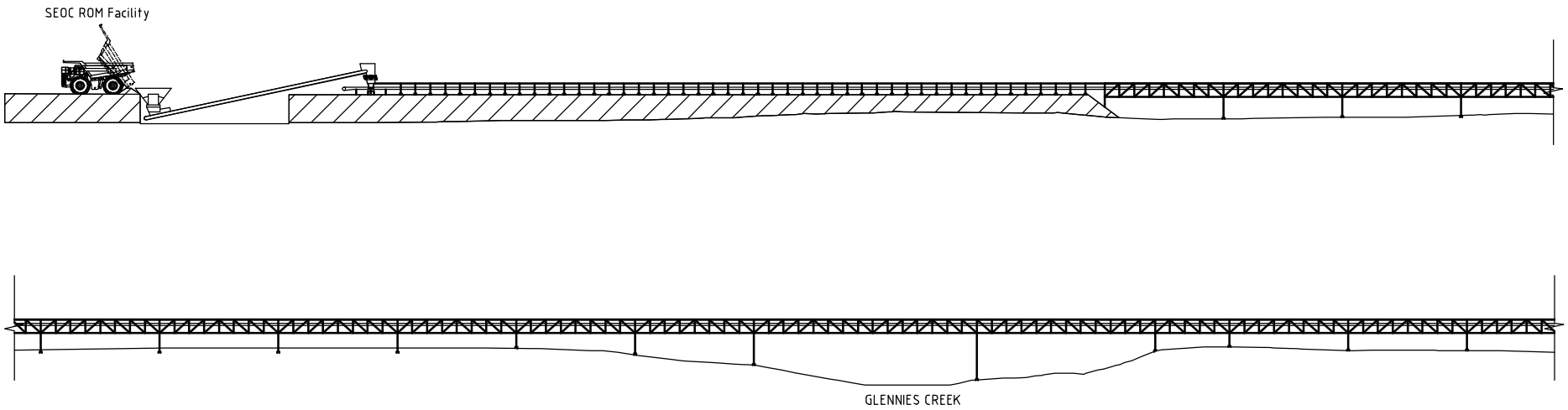
The processing of coal from the SEOC will generate approximately 1.2Mtpa of coarse and fine reject material based on the existing knowledge of coal quality.

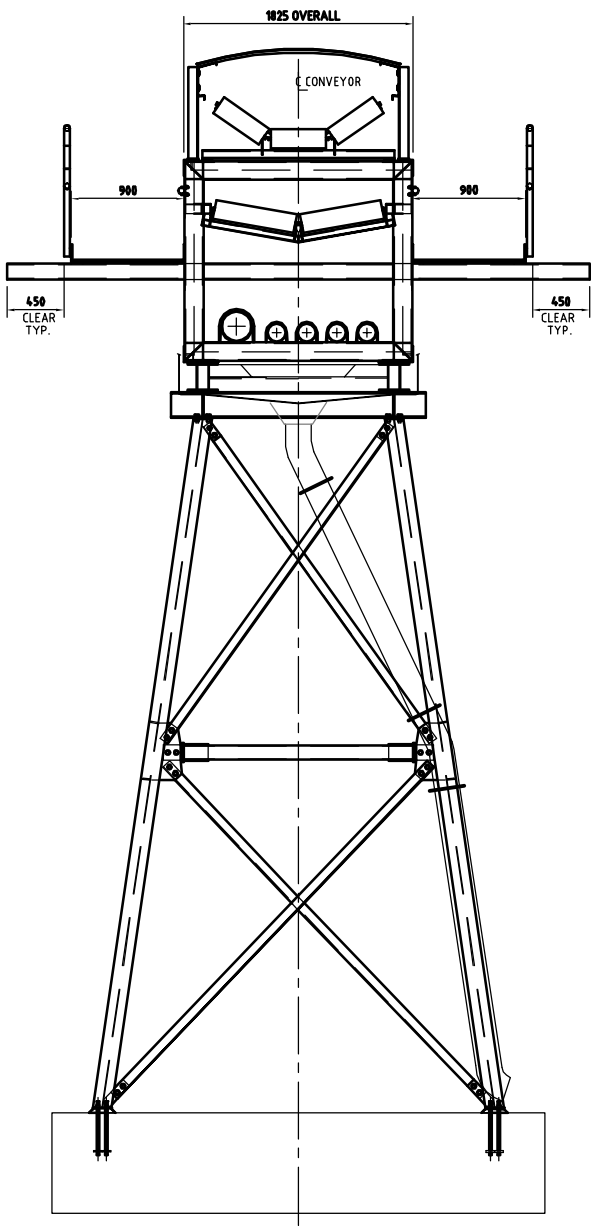
The proposed increases in underground ROM extraction will not generate total reject in excess of what has been previously approved. The additional ROM tonnes applied for in this modification only increases the rate of generation from approximately 1Mtpa to 2Mtpa in any one given year.

The quantum of reject generated in any one year is dependent on the prevailing coal market and coal quality. Where market contracts are established for lower ash coal or insitu ash is high, the relative quantity of reject increases. Conversely markets for higher ash coal, or coal with low insitu ash generate less reject.

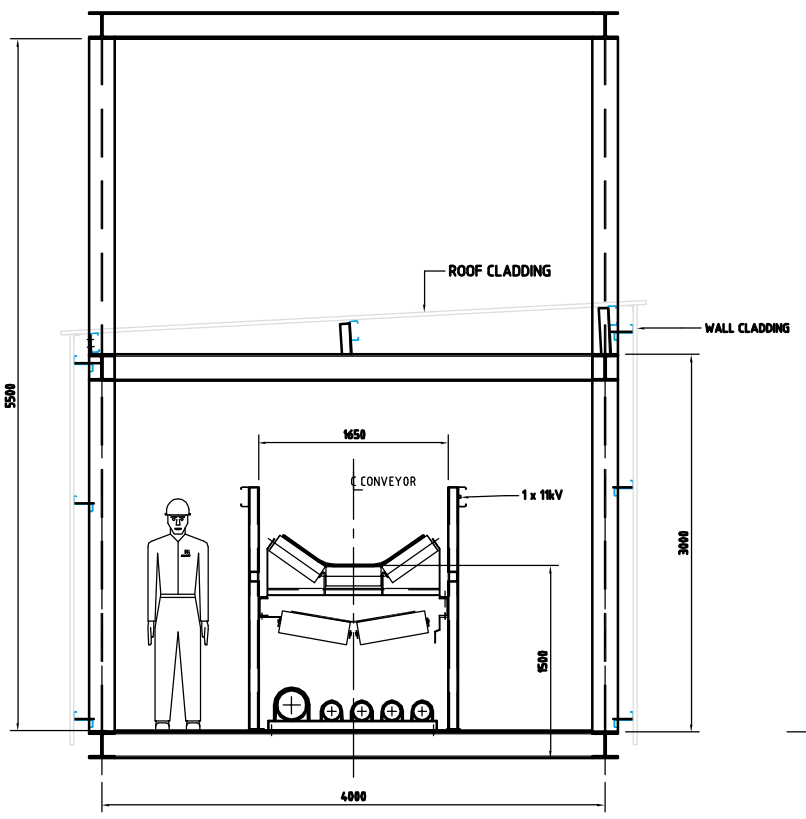
Disposal of coarse and fine reject has been considered for the whole of the ACP to ensure there is adequate disposal available for existing approved operations and the proposed SEOC.

Estimates of coarse and fine reject material show that the currently approved storage areas will not be sufficient to cater for the existing ACP operations and the proposed SEOC. As such it will be necessary to provide for tailings storage within the SEOC area, either within the final void or progressively in in-pit storages.

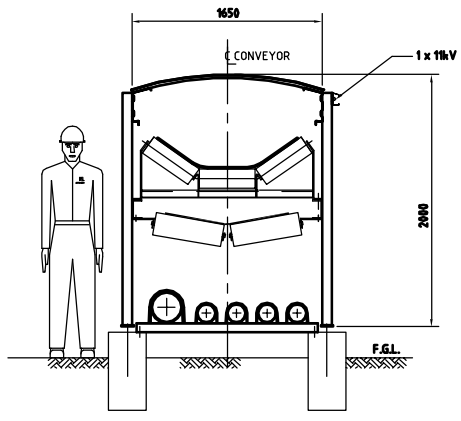




TYPICAL ELEVATED CROSS SECTION



HIGHWAY CROSSING



TYPICAL GROUND MODULE

AshtonCoal

South East Open Cut Project

Conceptual design sections and elevations of key aspects of the conveyor network

Parsons Brinckerhoff

Figure 4.18

Plan 21

Prepared by Pegasus Technical

CAD FILE: 05019F.dwg

Disposal of the coarse reject (from the underground and SEOC) will be within voids associated with the NEOC. The disposal of fine reject material will continue as currently approved within the Ravensworth void, until this reaches capacity. At this point ACOL will move to the disposal of tailings at the NEOC and finally to the SEOC for the reminder of the tailings generated from the Underground Operations.

Reject will be piped to the SEOC via a series of pipelines that will run along the conveyor route. These pipelines will have the capacity to pipe tailings to the SEOC, decant water back from the SEOC storage, and transfer clean water through to the SEOC facilities and associated water storages.

4.4.7 Water Management

Water management at the SEOC will be based on the fundamental principle of the separation of clean and dirty (sediment laden or mine water). This requires a series of clean water dams, clean water diversions to direct clean water away from disturbance areas, sediment drains and basins to detain sediment and mine water dams and drains and to contain and direct water contaminated from mining and facilities.

Water drains and diversions will be constructed to cater for flows up to a 1 in 100 year average recurrence interval (ARI), while clean water and sediment dams will retain up to 1 in 20 year, 12 hour ARI events.

Management will be integrated with the existing ACP, where a series of transfer pipelines will allow water to be pumped between existing operations and the dams in the SEOC area to ensure operational needs are maintained and offsite impacts are avoided.

The ACP and SEOC have been designed to ensure sufficient flexibility is available in the management of water on the site such that there is zero discharge required as part of the mining operations. This effective use of water on the site means ACOL does not require credits under the Hunter River Salinity Trading Scheme (HRSTS).

Conceptual water management for the life of the SEOC is detailed with *Section 5.11.3.*

4.4.7.1 Water Supply and Demand

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 by truck from local reticulated networks 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.

A detailed analysis of the water demand is presented within *Section 5.11.4.*

4.4.7.2 Water Storage and Flood Protection

The SEOC Project includes a water storage dam located east of the SEOC and immediately north of the office and workshop facilities within a gully of a 2nd order ephemeral creek. The dam has been termed the "CW1 dam" and is required to prevent water inflows into the mine from the upstream clean water catchment.

The dam will be designed to have a permanent storage in the order of 100ML, with an additional 90ML of flood storage capacity to cater for high flow events up to a 1 in 20 year 12 hour ARI event. Clean water captured in the dam as a result of the events will be pumped from the dam around mining operations to Glennies Creek. The point of this clean water discharge will be designed having regard to maintaining bank stability and channel integrity within Glennies Creek, given the release of clean water will be infrequent and only undertaken during periods of high flow the impacts associated with its release are expected to be minimal.

The dam will be constructed of compacted material. The dam wall is approximately 7.5m high with a crest width of approximately 14m to accommodate the mine access road traversing the top of the wall.

The dam spillway will be designed to cater for flows up to a 1 in 100 year ARI. The dam wall has been positioned adjacent to the out of pit overburden emplacement, providing added dam wall stability and allowing the dam to be integrated into the final landform.

The dam will be connected to the water supply integrated network, assisting in the management of predominantly clean water from the existing approved operations and the SEOC project. The dam will provide for storage of licenced water extraction from Glennies Creek, increased wet weather storage capacity and also provides the necessary containment of water upslope of the SEOC.

At completion of mining and use of the SEOC facilities area, the dam wall and spillway can be lowered to more effectively integrate with the surrounding topography, the spillway forming the headwaters of an ephemeral creek traversing the SEOC final landform to Glennies Creek.

4.4.8 Waste Management

A Waste Management Plan will be developed for the construction and operation of the SEOC integrating with existing waste management at the ACP. Waste management will generally follow the hierarchy listed below:

- Avoidance
- Reduction.
- Reuse.
- Recycling or reclamation.
- Waste treatment.
- Disposal.

A summary of the various components of waste and their management is listed below, with further information on waste management and the potential impacts detailed within *Section 5.25.*

- **Effluent -** effluent disposal will be via accepted on-site sewage management systems in accordance with the DECC requirements at the office and workshop facilities area. Effluent will be used for landscaping and initial establishment revegetation works adjoining the facilities area.
- **Demolition Waste** – there are 7 dwellings and associated structures within the SEOC footprint that will require demolition and disposal of associated materials. Materials will be segregated and reused then recycled where feasible, or disposed of to an appropriately licensed waste facility.
- **Construction Waste** – is likely to include timbers, metal, oils and fuels, batteries and general domestic rubbish. All waste will be segregated to allow responsible waste management with recycling or disposal to a local licensed waste facility via a licensed waste contractor consistent with the existing ACP operations.
- **Operational Waste** - Operational waste (other than effluent or coal processing wastes) is likely to include metal, oils and fuels, batteries and general domestic rubbish. All waste will be

segregated to allow responsible waste management with recycling or disposal to a local licensed waste facility via a licensed waste contractor consistent with the existing ACP operations.

- **Coal Reject** – consists of coarse and fine reject generated from the processing of coal. Reject will be disposed of into existing voids, refer *Section 4.4.6.4.* Anticipated reject from the SEOC is considered to have a low potential for acid generation and has been characterised as detailed within *Section 5.15.* The reject storage area will incorporate the necessary water diversion structures and will be capped with a suitable capping material at mine closure.

4.4.8.1 Hazardous Materials Management

The SEOC Project will require the use of hazardous materials throughout the mining operation. Hazardous materials management will follow leading practice incorporating the following key principles (from *Leading Practice Sustainable Development Program For The Mining Industry, 2005)*:

- Knowledge of which hazardous materials are on site.
- Allocating clear responsibility for managing hazardous materials.
- Understanding the actual or potential hazards and environmental impacts in transporting, storing, using and disposing of these materials.
- Minimising the use and/or generation of hazardous materials.
- Constructing storage facilities that contain the materials in all foreseen circumstances.
- Disposing of waste materials in a way that eliminates or minimises environmental impacts.
- Seeking alternatives to disposal such as reducing, reusing and recycling products.
- Implementing physical controls and procedural measures to ensure that no materials escape during normal or abnormal operations.
- Having emergency response plans in place to ensure immediate action to minimise environmental effects should accidental or unplanned releases occur.
- Monitoring any discharges and the local environment to detect any escapes of the materials and measure any subsequent impacts.
- Keeping adequate records including Material Safety Data Sheets (MSDS's) of chemicals onsite and reviewing them regularly so that future environmental and health and safety problems are anticipated and avoided.

4.4.9 Project Electricity Supply

The SEOC will require the construction of a power supply to both the ROM Coal Facility and the office and workshop facility. The power will be supplied from the nearest available supply locations via overhead and/or underground methods.

4.4.10 Workforce and Working Hours

4.4.10.1 Construction

It is anticipated that 100 full time equivalent jobs will be created for the construction of the SEOC facilities. It is proposed to undertake construction Monday to Sunday, 7.00am to 6.00pm.

4.4.10.2 Operations

The SEOC provides for the continuation of employment for the existing 160 people at the NEOC. It is proposed to maintain similar rosters and shift times with the incorporation of an additional shift as operations move to 24 hours per day. It is proposed to operate the SEOC 24 hours per day, 7 days per week.

Indicative open cut shift hours are anticipated to be as follows:

- Monday to Sunday day shift 1 06:30-17:00
- Monday to Sunday day shift 2 06:30-19:00
- Monday to Sunday afternoon shift 1 16:30-03:00
- Monday to Sunday night shift 18:30-07:00

4.4.11 Mining Operations Plan

Prior to the commencement of mining, ACOL is required under the Mining Act 1992 to develop and have approved a detailed Mine Operations Plan (MOP). The MOP must contain detailed plans of the proposed mining operations and be supported by an environmental management strategy (EMS) and environmental management plans. ACOL will update and expand the existing environmental management framework to incorporate the SEOC project.

4.4.12 SEOC Mine Closure

A Mine Closure Plan will be prepared to address the key issues of safety, environment, financial expectations and future land uses. The Mine Closure Plan will need to document and detail the closure process, final rehabilitation including final voids, post closure maintenance, monitoring of environmental parameters, land tenure and future land use of the area.

Following Planning Approval and prior to approval of the Mining Lease for the SEOC, ACOL is required to provide a security bond to the DII (formerly DPI). The security bond is held until such time that the DII are satisfied the final landform is appropriately rehabilitated consistent with the Mine Closure Plan. Where these are not satisfactory, the bonds may be used to rectify deficiencies, and conversely partial release of the bond may be awarded to reward progressive rehabilitation.

The SEOC mine at this stage has an expected mining life (at maximum extraction rates) of 7 years. At the conclusion of mining the SEOC final void would be used for storage of reject from the ongoing ACP underground operations until approximately 2023 or the closure of the underground, the tailings will then be allowed to dry for 4-5 years before being capped (i.e. 2028). The final landform will be rehabilitated to ensure a stable landform, conveyors and ROM facility removed (e.g. after Year 9, with exception to tailings and water pipelines that will remain until the tailings disposal is finished) and the workshop and office facilities either removed or potentially reused in future developments consistent with the planning provisions that prevail at that time.

The final land use of the rehabilitated SEOC at mine closure is proposed to be a combination of open woodland and pastures that improve connectivity between remnant vegetation communities. Use of pastures and open woodland may include cattle grazing (at appropriate intensities) and environment conservation.

Further consideration of the Mine Closure Plan and the mine closure of the SEOC with respect to the principles and objectives of the ANZEC MCA document *Strategic Framework for Mine Closure*, 2000 is provided within *Section 5.29*.

4.5 Proposed Modifications to the Existing Ashton Coal Project

As previously discussed in order to allow the effective integration of the SEOC operations with the existing ACP an application to modify the existing development consent under Section 75W of the EP&A Act, 1979 has also be lodged. ACOL seeks to modify the existing ACP development consent in the following manner:

- Increase the throughput of the CHPP and rail loading facilities to cater for an additional 2.3Mtpa of product coal.
- Rearrange the existing CHPP facilities to allow the receipt of coal from the SEOC.
- Dispose of coal tailings from the existing underground coal mine in the SEOC final void.
- Increased the coal extraction rate to 5.0Mtpa ROM of coal in the existing underground coal mine.

4.5.1 CHPP and Rail Facilities Throughput

The original ACP development consent approved the extraction and processing through the CHPP of up to 5.2Mtpa of ROM coal, requiring at that time up to 2 trains per day to transport product coal.

This application will seek to increase the throughput of the CHPP and coal loading facilities from the approved limit to 8.6Mtpa of ROM coal (i.e. 3.6Mtpa from the SEOC and 5Mtpa from the approved underground). With recent increases in train capacity, this requires on average only 2.5 trains per day, or an additional train every second day.

4.5.2 CHPP Facilities Integration with the South East Open Cut Project

The existing CHPP facilities will be modified to allow SEOC conveyors and pipelines (water and tailings) to integrate with the CHPP to deliver water and coal for processing, and allow reject disposal at the SEOC.

4.5.3 Disposal of Reject in the South East Open Cut Final Void.

The ACP currently disposes of tailings within the Ravensworth void (pursuant to Mod 3 of DA 309-11-2001-i approved on 29 February 2007) and coarse reject within the NEOC. The current reject (coarse and fine) disposal locations will not have sufficient capacity to accept all reject from the SEOC. To alleviate potential shortfalls in available void capacity it is proposed to pipe reject from the approved underground mine back to the SEOC for disposal within in-pit storage cells and the final void.

4.5.4 Mining Rate of the Approved Underground Mine

The approved descending longwall underground coal mine was granted approval to operate 24 hours per day, 7 days per week. ACOL seeks to increase the production from the underground to a maximum of 5Mtpa of ROM coal.

The increase in the production rate is not expected to result in any significant impacts to the environment above those already approved in the original development consent. The increase in the production rate has been modelled to determine impacts from the total ACP inclusive of the SEOC.

4.6 Existing Structures and Utilities

The development of the SEOC requires the relocation, removal or closure of existing structures and utilities within the area of disturbance. This section identifies these features and the proposed actions to be implemented.

4.6.1 Power Lines

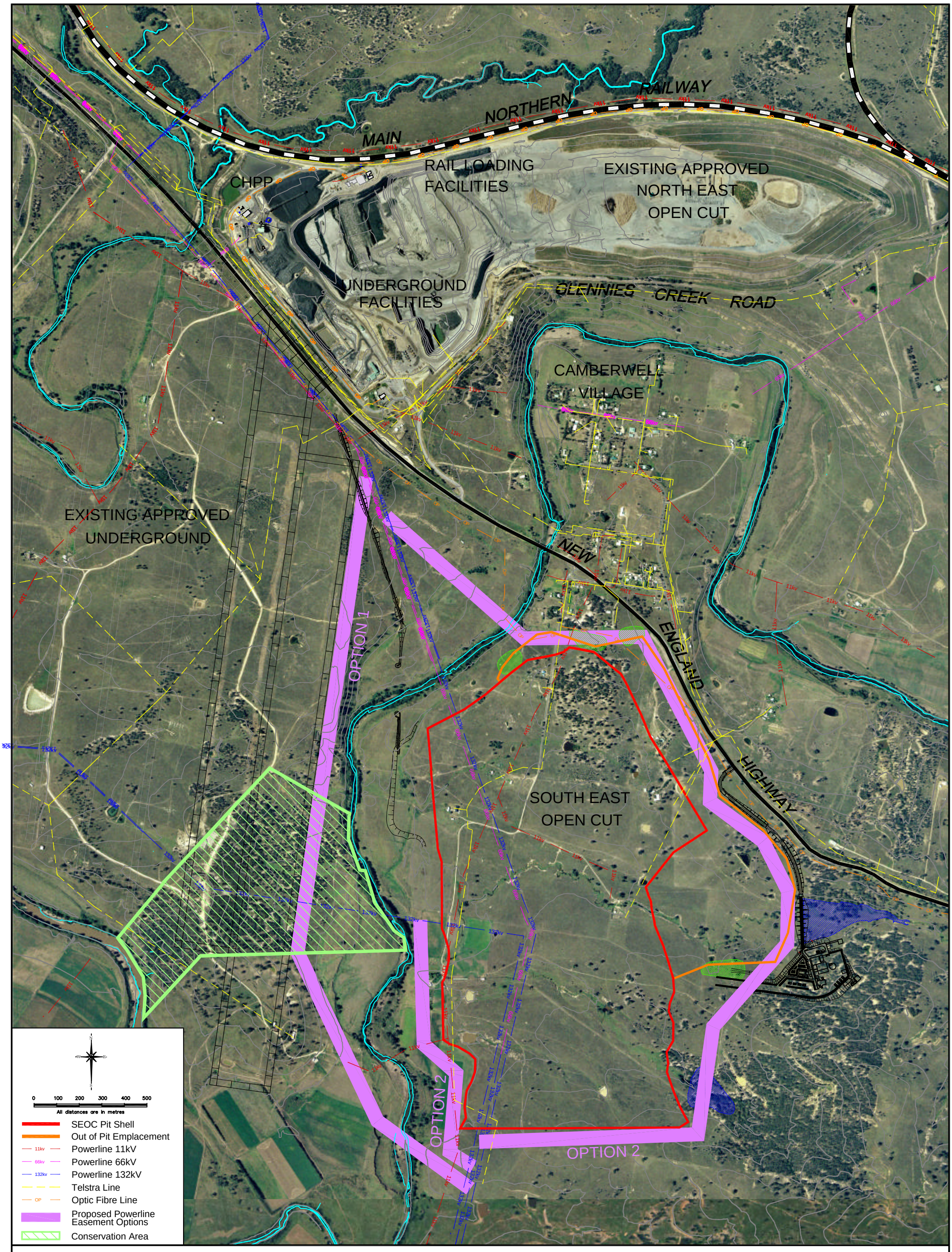
Energy Australia own and maintain several overhead power lines within the bounds of the SEOC. These include two (2) 132kV power lines, one (1) 66kV power line and multiple local 11kV powerlines that supply power to local properties. These power lines are illustrated on **Figure 4.19.**

ACOL have undertaken extensive consultation with the service provider to determine the most appropriate path for the realignment of the necessary lines. There are currently two options and it is proposed to assess these, with the final decision to be dependent on detailed engineering design and landowner consultation. The two proposed options are shown within Figure 4.19.

4.6.1.1 Option 1 (Preferred)

The preferred realignment is for the northern 132kV and 66kV lines to be realigned south parallel with Longwall Panel 1 of the approved underground. These lines would intersect the southern 132kV line and be realigned in a south easterly direction off the hill, across the flood plain and Glennies Creek, merging with the existing alignment south of the SEOC.

This is the shortest route, passing the dwelling and dairy on Property 130A and through a Voluntary Conservation Agreement (VCA) established for the existing ACP. A section of the southern 132kV line that already crosses through the VCA and Glennies Creek would be removed.



AshtonCoal

South East Open Cut Project

Existing and Proposed Electrical and Utility Easements

Figure 4.19

Plan 22

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4.6.1.2 Option 2

Where Option 1 is not feasible due to landowner consent or Energy Australia requirements, the northern 132kV and 66kV lines would be realigned to cross Glennies Creek at the northern end of the open cut and traverse the foot of the out of pit emplacement, crossing the office and workshop access road and water storage dam along the western side of the facilities and eastern side of open cut before merging with the existing alignment south of the open cut. The southern 132kV line would be realigned to the south between Glennies Creek and the SEOC levee before merging with the existing alignment south of the open cut, keeping clear of existing riparian vegetation.

This alignment is longer, requires two separate crossings of Glennies Creek and will be more visible from the New England Highway.

4.6.2 Existing Buildings

There are seven (7) rural dwellings with associated structures such as sheds that will be removed in advance of mining operations.

Demolition works will be undertaken in accordance with relevant standards, guidelines and codes (e.g., AS 2601-2001: Demolition of Structures), following archival recording where required (see *Section 5.25*). Demolition waste will be handled and managed in accordance with the Waste Management Plan.

4.6.3 Optical Fibre

An optical fibre cable owned and maintained by AAPT traverses the northern area of the SEOC running generally parallel with the New England Highway, refer to Figure 4.19.

In the initial mine designs the optic fibre cable intersected the open cut and continued beneath the overburden spoil. While the placement of overburden over the cable has no consequence, direct impacts to the cable by mining would necessitate its relocation. Relocation options would potentially require the removal and installation of up to 6km of cable to ensure integrity of the cable is maintained.

To avoid the relocation of the cable, a section of the open cut was cropped, allowing sufficient buffer to avoid potential blasting impacts. Where the cable exists below the proposed out of pit emplacement it will remain insitu. The conveyor and access road also cross the cable alignment.

AAPT field technicians will provide advice during topsoil scraping, construction of conveyors and access roads and during the first open cut blast on acceptable buffers to the cable.

The avoidance of the AAPT cable results in less surface disturbance than would otherwise have been associated with its relocation.

4.6.4 Telecommunications

Numerous copper telecommunications cables under the management of Telstra exist within the area of the proposed SEOC, refer to Figure 4.19. While many of these cables will become obsolete with the mining of the SEOC, properties south of the open cut are connected to the network.

The resultant status of this cable will be determined through consultation with the relevant property owners. Should the property owners seek to keep the connection, ACOL will, in consultation with the service provider, realign the cable around mining operations to maintain the service.

All other obsolete cables will be removed in consultation with the service provider.

4.7 Roads and Commons

The SEOC project will necessitate the utilisation of existing roads and intersections for project access and the development of new intersections. Road closures and the closure or relocation of a Temporary Common will also be required during the development of the SEOC Project. The location of these features are illustrated in **Figure 4.20**. It should however be noted that for the proposed ACP modification, there are no changes required, to the existing ACP entrance, no road closures required or changes to any Commons.

4.7.1 Site Access

Access to the SEOC Project will be derived as follows:

- The main access to the SEOC will be via a new intersection 450m east of McInerney Road.
- Construction and maintenance access via the existing underground area access off the New England Highway above the ACP underground.
- Construction and maintenance access from Glennie Street, south of the New England Highway.
- Construction and maintenance access via the existing ACP entrance.

Access to the site during construction will be via the main entrance, Glennie Street, the underground area entrance and the existing ACP entrance. Access using the main entrance during its construction will be dependent on safety and conditional to prior RTA approval.

Refer to *Section 4.4.6* for further information on how these access roads relate to the various aspects of the SEOC Project.

4.7.2 Road Closures

There are two roads both formed and unformed within the SEOC area, these are:

- The southern end of Glennies Street, starting south of the New England Highway, running north-south. The road is a formed bitumen and gravel road. It is proposed to close this road between its intersection with Perry Street and Alpha Street.
- Perry Street is an unformed “paper” road running east-west. The western end is freehold. It is proposed to also close the eastern end.

4.7.2.1 Commons

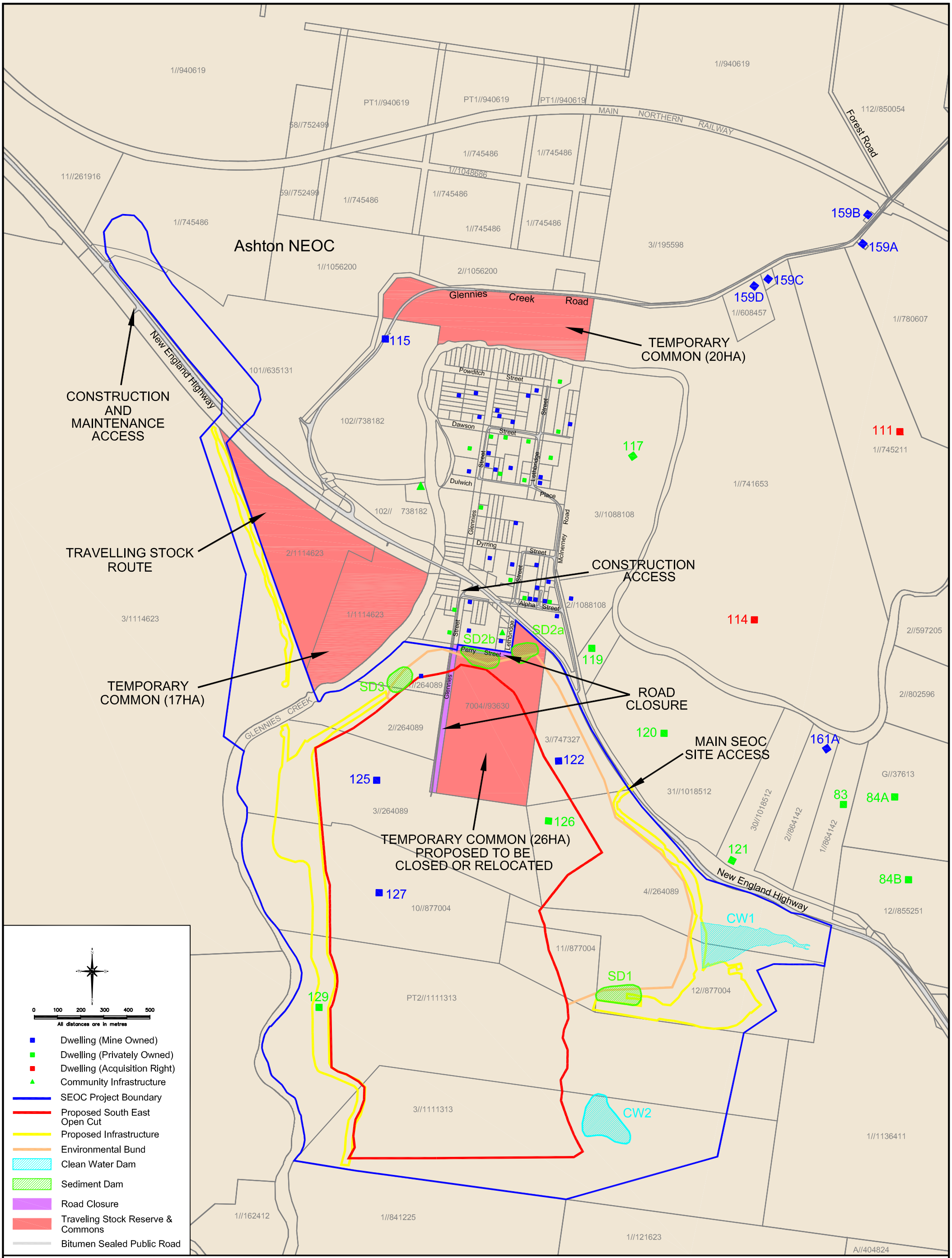
From the late 1800s, commons were established “*for use by town residents or small-scale local farmers, providing a common area for grazing, watering of stock and collection of firewood*” (NSW Department of Lands).

In October 1872 the New South Wales Government announced the provision of a Temporary Commonage at Camberwell. Two areas of land were set aside for the purpose, about 200 acres (81 hectares) on the northern boundary of the village and a second area of about 120 acres (49 hectares) adjoining the south-eastern boundary.

Each Camberwell householder (a “commoner”, based upon being a "resident" not an "owner" of land) was initially permitted to graze eight head of stock on the common, which was managed by a trust (the “Common Trust”) comprised of local residents.

Commons are now administered under the Commons Management Act 1989, by the Common Trust and the Department of Lands.

Under clause 5 of the Commons Management Regulation 2006, the eligibility of a commoner is if *“the person resides in the land district in which the common is located and does not hold more than 20 hectares of land in that land district”* and *”...is not enrolled on another commoners’ roll”.* Eligibility may also be determined specifically by the notice establishing the trust in respect of the common, and certain provisions relating to the previous act (the Commons Regulation Act 1898) as specified in Schedule 5 of the Commons Management Act 2006.



AshtonCoal

South East Open Cut Project

Local Roads, Commons and Road Closures

Figure 4.20

Plan 23

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Under clause 5.1)(a) of the Commons Management Act eligibility to common (on the basis of an assumed landholding of less than 20 hectares) would extend to the following Camberwell residents (not withstanding other eligibility criteria referenced above):

- 15 private landholders or their tenants.
- The tenants of 29 ACOL owned dwellings.

Since the first announcement of the Temporary Commons in 1872 and their later notifications in 1876 the location of some have changed, and it appears that the area has also changed. Today there are three existing Temporary Commons in and adjacent to Camberwell village, these are:

1. 20ha located immediately north of Glennies Creek and Camberwell village.
2. 17ha located to the west of Glennies Creek and south of the New England Highway with frontage to Glennies Creek (this Common was formed during the development of the ACP, from the transfer of a Temporary Common located at the present ACP open cut).
3. 26ha east of Glennies Street and south of Perry Street, south of Camberwell village.

The third 26ha Temporary Common listed above is within the footprint of the SEOC. Enquiries at the Department of Lands have failed to explain the continuing "temporary" nature of the commonage, although it would appear that this could have allowed for future relinquishment of the land by the Crown for other purposes if required. Consultation has also occurred with the Department of Lands to determine potential options for the closure and/or relocation of affected common, the Common has also been discussed during CCC meetings.

The northern portion of the 26ha Temporary Common, east of Lethbridge Street is reserved (but not enacted) for the purposes of a "children's playground". This area will not be disturbed. The area to the south of Perry Street is within the direct footprint of the SEOC and as such is proposed for closure and/or relocation.

Consultation with the Common Trust, Department of Lands, and residents of Camberwell village will be undertaken by ACOL to negotiate the closure and or relocation of the impacted common.

4.8 Project Development Schedule

The successful development of the SEOC that will avoid employment layoffs for the existing NEOC personnel and a break in the coal supply is dependent on the following key aspects:

- Project Approval and approval of subordinate approvals such as the Mine Operations Plan (MOP), Environmental Protection Licence (EPL), Environmental monitoring programs and management plans and licences with sufficient time to allow construction to commence onsite.
- The commencement of the initial environmental bund and out of pit emplacement construction utilising employees from the NEOC as works in the NEOC wind down.
- The commencement of construction activities in sufficient time to allow the completion of the infrastructure to supply coal to the ACP processing plant prior to the depletion of coal reserves in the NEOC.

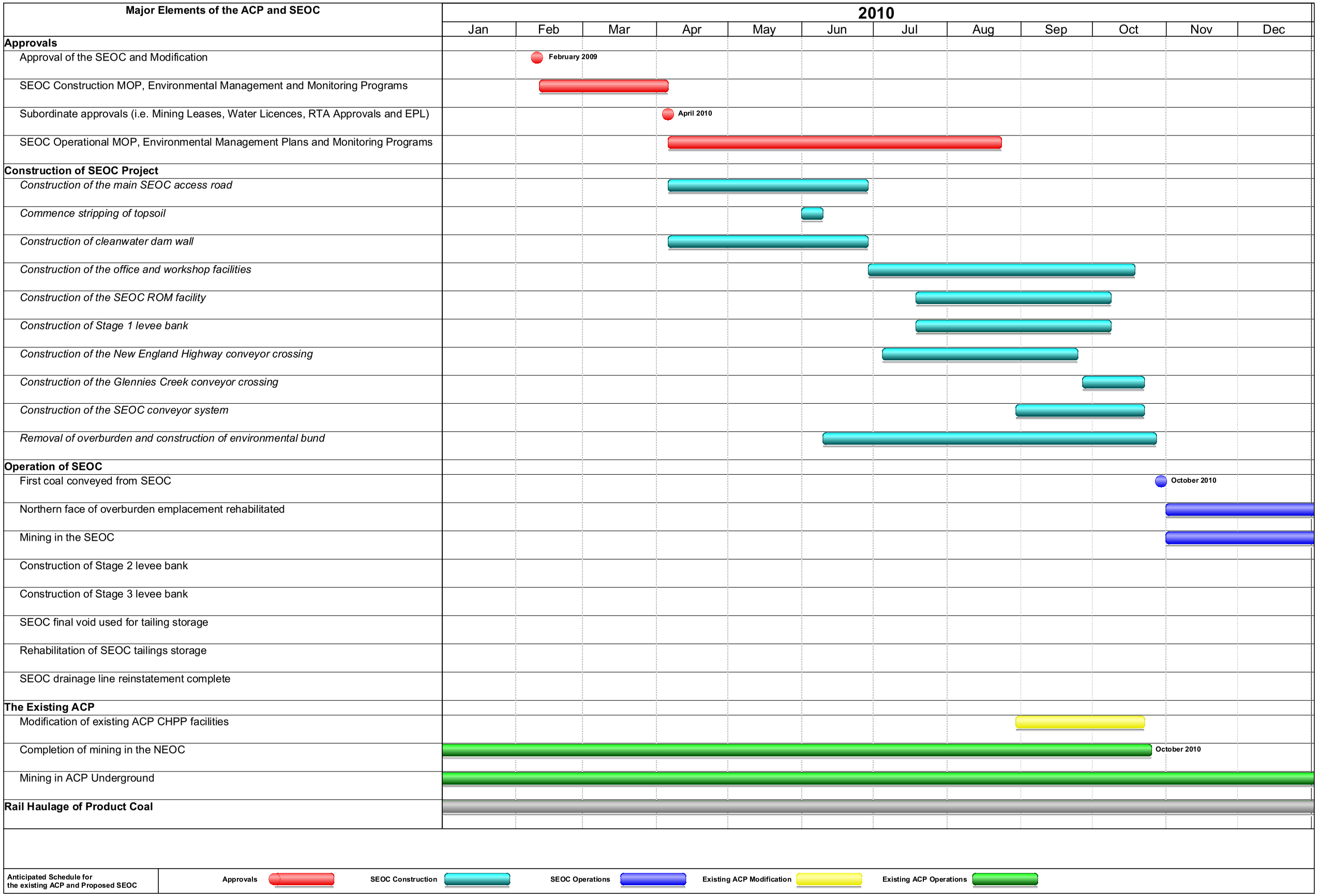
The indicative project development schedule is shown within **Figure 4.21** and **Figure 4.22**. Figure 4.21 illustrates the first 12 months of the SEOC development, highlighting the critical time path of the project.

Construction activities for the SEOC will undertaken in accordance with site specific construction management plans that will be developed for the project, these plans will be replaced by operational plans at the completion of the key construction activities. Initial activities will commence with the construction of the SEOC main access road, followed by the other key infrastructure components, with the SEOC operations commencing on the conveyance of coal to the ACP CHPP. It should be noted that in the construction of the environmental bund sub-cropping coal will be removed and stockpiled until the ROM facility is operational.

Figure 4.21

South East Open Cut Project

Anticipated Construction Development Schedule (first 12 months from Figure 4.22)



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Major Elements of the ACP and SEOC	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Approvals																		
Approval of the SEOC and Modification	February 2009																	
SEOC Construction MOP, Environmental Management and Monitoring Programs																		
Subordinate approvals (i.e. Mining Leases, Water Licences, RTA Approvals and EPL)	April 2010																	
SEOC Operational MOP, Environmental Management Plans and Monitoring Programs																		
Construction of SEOC Project																		
Construction of the main SEOC access road																		
Commence stripping of topsoil																		
Construction of cleanwater dam wall																		
Construction of the office and workshop facilities																		
Construction of the SEOC ROM facility																		
Construction of Stage 1 levee bank																		
Construction of the New England Highway conveyor crossing																		
Construction of the Glennies Creek conveyor crossing																		
Construction of the SEOC conveyor system																		
Removal of overburden and construction of environmental bund																		
Operation of SEOC																		
First coal conveyed from SEOC	October 2010																	
Northern face of overburden emplacement rehabilitated																		
Mining in the SEOC																		
Construction of Stage 2 levee bank																		
Construction of Stage 3 levee bank																		
SEOC final void used for tailing storage											Use of void may be delayed depending on existing storage availability							
Rehabilitation of SEOC tailings storage																Allows 4 years for drying		
SEOC drainage line reinstatement complete										2020 - allows time for overburden settlement								
The Existing ACP																		
Modification of existing ACP CHPP facilities																		
Completion of mining in the NEOC	October 2010																	
Mining in ACP Underground																		
Rail Haulage of Product Coal																		

Anticipated Schedule for the existing ACP and Proposed SEOC

Approvals | SEOC Construction | SEOC Operations | Existing ACP Modification | Existing ACP Operations

Figure 4.22

Plan 24

South East Open Cut Project

Anticipated Project Development Schedule

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