Appendix 15

Transport

South East Open Cut Project

&

Modification to the

Existing ACP Consent

Ashton Coal Mine
South East Open Cut

TRAFFIC IMPACT ASSESSMENT

- Final
- June 2009

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South East Open Cut

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1. Introduction

SKM was commissioned by Ashton Coal Operations Limited (ACOL) to undertake a traffic impact assessment of the proposed South East Open Cut (SEOC), to be located on the southern side of the New England Highway, and immediately south of the village of Camberwell. The findings of the assessment are contained in this report.

The report has the following structure:

- **Section 2** describes existing conditions in the vicinity of the proposal, with reference to traffic counts, historical growth, and road safety records;
- **Section 3** outlines the details of the proposal;
- **Section 4** discusses the potential impacts of the proposal, including traffic generation and the proposed new access onto the New England Highway; and
- **Section 5** contains the conclusions of the assessment.

This report addresses the requirements of the Director-General, NSW Department of Planning, Singleton Council and the NSW Roads and Traffic Authority, with respect to the potential traffic and transport related issues associated with the proposed SEOC. **Table 1-1** details the requirements and where they are addressed in this report.

Table 1-1 Agency Requirements

Agency Requirements	Where Addressed in the Report
NSW Department of Planning Director-General	
■ Accurate predictions of the road and rail traffic of the project.	**Sections 4.1** and **4.2.1**
■ A detailed assessment of the potential impacts of this traffic on the capacity, efficiency, and safety of the road and rail networks.	**Sections 4.2**, **0**, **4.3**, **4.3.1**, **4.4**, **4.4.1** and **4.4.2**
Singleton Council	
■ An assessment of traffic impacts on the New England Highway and Glennies Creek Road.	**Sections 4.1**, **4.2**, **4.2.1**, **0**, **4.3.1**, **4.4.1** and **4.4.2**
NSW Roads and Traffic Authority	
The traffic study shall be prepared in accordance with the RTA's Guide to Traffic Generating Developments and is to include (but not limited to) the following:	
■ Assessment of all relevant vehicular traffic routes and intersections for access to / from the subject area during the construction and operational phases.	**Sections 4.1**, **4.2**, **4.2.1**, **0**, **4.4**, **4.4.1** and **4.4.2**
■ Current traffic counts for all of the traffic routes and intersections.	**Sections 2.2** and **2.3**
■ The anticipated additional vehicular traffic generated from the proposed development and associated trip distribution on the road network during both the construction and operational phases.	**Sections 4.1**, **4.2.1** and **0**

Agency Requirements	Where Addressed in the Report
■ Consideration of the traffic impacts on existing and proposed intersections and the capacity of the local and classified road network to safely and efficiently cater for the additional vehicular traffic generated by the proposed development. The traffic impact shall also include the cumulative traffic impact of other proposed developments in the area.	**Sections 4.1**, **4.2**, **4.2.1**, **0** and **4.3**
■ Identify the necessary road network infrastructure upgrades that are required to maintain existing levels of service on both the local and classified road network. In this regard, concept drawings shall be submitted with the EIA for any identified road infrastructure upgrades and the cost of these upgrades shall also be provided. However, it should be noted that any identified road infrastructure upgrades will need to be to the satisfaction of Council / RTA.	**Sections 4.2** and **0**. **Figure 4-2** and **Figure 4-3**
■ Intersection analysis (such as SIDRA) shall be submitted to determine the need for intersection and road capacity upgrades. The intersection analysis shall include (but not limited to) the following: - Current traffic counts and 10 year traffic growth projections - 95th percentile back of queue lengths - Delays and level of service on all legs for the relevant intersections - Electronic data for RTA review.	**Sections 2.3** and **0**
■ Impact of construction traffic on the road network in the vicinity of the development and measures to minimise any identified impact.	**Sections 4.3.1**, **4.4**, **4.4.1** and **4.4.2**

2. Existing Conditions

The Ashton Coal Project (ACP) is located near the village of Camberwell, 14km north-west of Singleton on the New England Highway. The location of the mine is shown in **Figure 2-1** overleaf.

The ACP's current operations are accessed via Glennies Creek Road, which intersects with the New England Highway north-west of Camberwell. Current operations include administrative offices, a coal handling and processing plant, the north-east open cut (NEOC) and an underground mine.

2.1. Road Network

The New England Highway is part of the National Highway network, and forms the main inland route between Sydney and Brisbane. In the vicinity of the ACP's operations, the highway varies in width from two to four lanes. South-east of the intersection with Glennies Creek Road the highway is generally one lane per direction; however a southbound overtaking lane commences approximately 1km south-east of the village of Camberwell. A four-lane section (two lanes per direction) begins north of the intersection with Glennies Creek Road and extends to the north-west. Details of the lane configuration of the New England Highway in the vicinity of the ACP are shown in **Figure 2-2**.

Glennies Creek Road is a local road providing access to the existing ACP, and to rural landholdings north of the New England Highway.

Access to the village of Camberwell is via McInerney Road.

Figure 2-1 Site Location

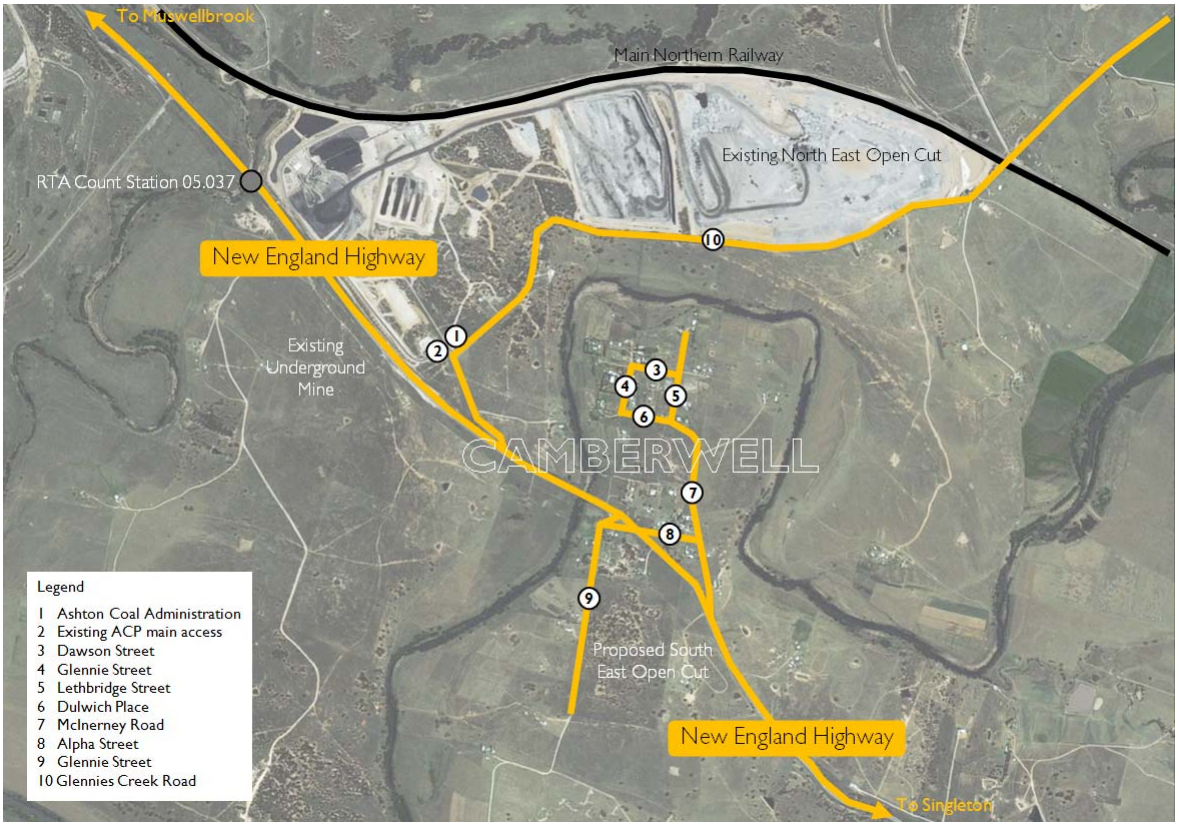
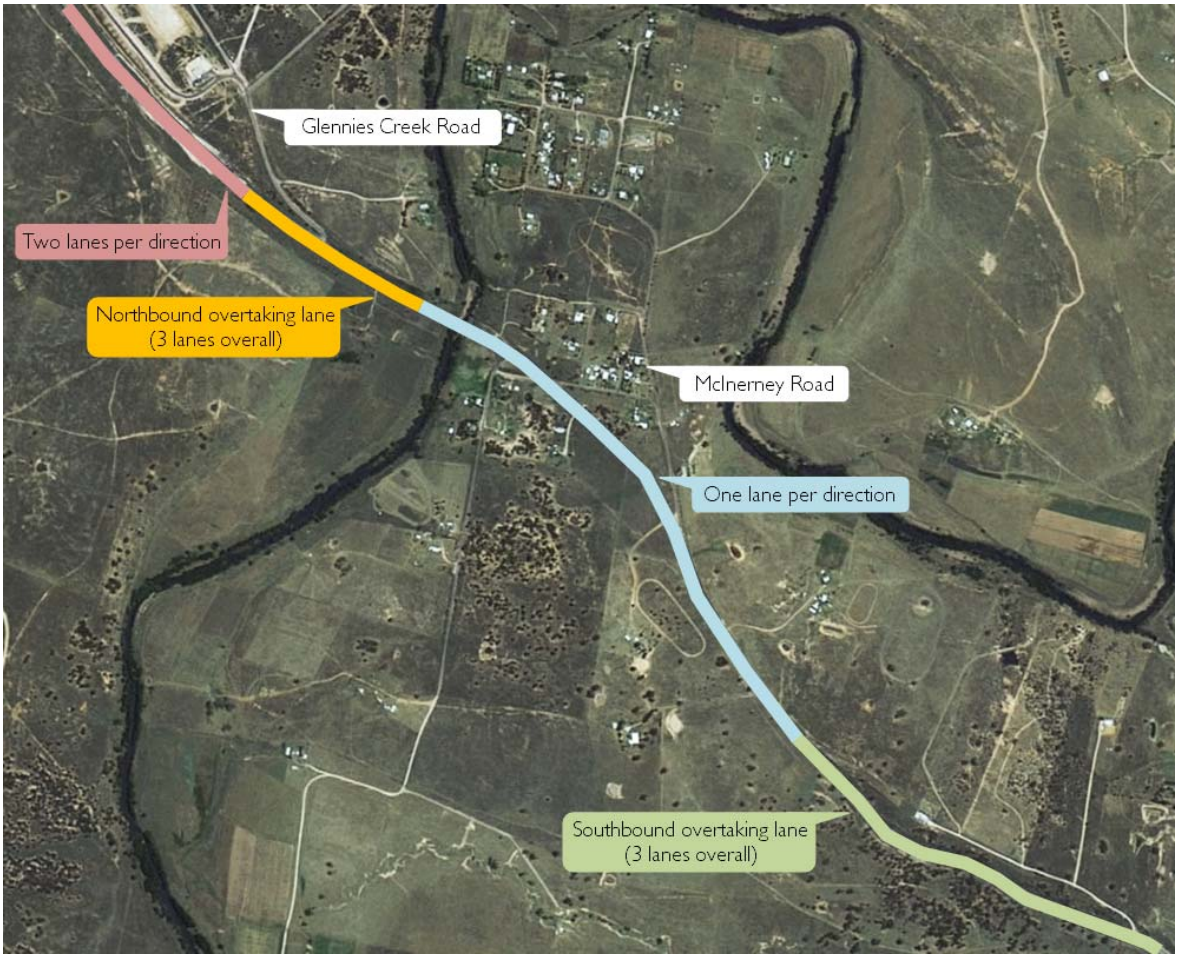


Figure 2-2 Lane Configuration on New England Highway



2.2. Traffic Volumes

A 7-day classified count of traffic on the New England Highway east of Camberwell was undertaken from the 23rd to 29th October 2008. The average daily traffic volume during that week was 11,109 vehicles, including 17% heavy vehicles. The average weekday volume was slightly higher at 12,391 vehicles, including 18% heavy vehicles.

The average weekday hourly profile of traffic activity is shown in **Figure 2-3**.

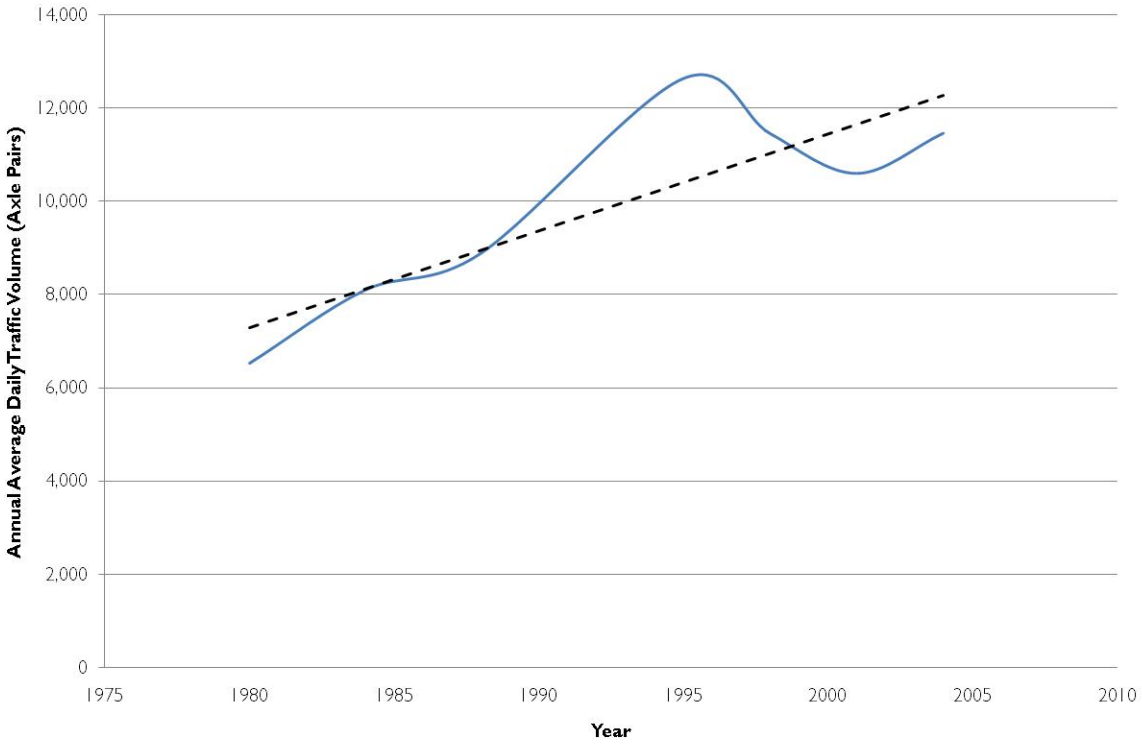
- **Figure 2-3 New England Highway Weekday Average Hourly Profile**

The peak hour on a weekday is between 6:00 and 7:00AM, with an average weekday volume of 1,306 vehicles per hour, the majority of which are heading westbound. The PM peak is between 4:00 and 5:00PM, with an average of 947 vehicles per hour. The peak direction in the afternoon is eastbound.

The NSW Roads and Traffic Authority (RTA) also collect and publish traffic volume data for the New England Highway. The nearest RTA data point is located at Foy Brook Bridge (over Bowmans Creek) in Camberwell (station number 05.037, see **Figure 2-1** for location). **Figure 2-4** shows growth in traffic[1] on the New England Highway at this RTA data point since 1980. Traffic has generally risen steadily, with a peak in the late 1990s and an overall linear trend growth rate of 1.7% per annum (base year 2004). In the absence of any major changes in rates of development in the corridor, it is reasonable to assume that traffic will continue to grow at this rate for the foreseeable future.

[1] Volume at this location is measured in axle pairs, rather than vehicles. A 2-axle car is one axle pair. A 3-axle truck is 1.5 axle pairs. The number of vehicles is less than the number of axle pairs.

- **Figure 2-4 Growth in Annual Average Daily Traffic on the New England Highway at Foy Brook Road, Camberwell (Station Number 05.037)**



2.3. Traffic Generating Activity

A peak-period traffic count was undertaken at the intersection of the New England Highway with Glennies Creek Road, on 22nd October 2008. The existing ACP operations is the main land use that uses Glennies Creek Road, and so the count of vehicles turning into and out of this road gives a good indication of existing traffic generation from the ACP. The peak hourly volume entering Glennies Creek Road in the AM peak was 40 vehicles, with 13 vehicles leaving in the same hour. In the afternoon peak, there were 60 vehicles exiting Glennies Creek Road, with 32 vehicles entering. Some of this activity will transfer to the proposed SEOC.

The New England Highway / Glennies Creek Road intersection was analysed using the *SIDRA Intersection* software, which refers to various performance measures for intersection performance. One performance measure that is commonly quoted is the Level of Service (LoS), determined by the average delays experienced by vehicles using the intersection. The LoS criteria set by the RTA is shown in **Table 2-1**. For unsignalised intersections, LoS is based on the worst-performing movement. It is generally accepted that in the long term (15 years +), when future conditions have been taken into account, Level of Service should be D or better. In the short term, intersections should be operating at Level of Service C or better.

Table 2-1 Level of Service (LoS) Criteria

Level of Service	Average Delay (seconds / vehicle)	Traffic Signals, Roundabout	Give Way and Stop Signs
A	<14	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity and accident study required
E	57 to 70	At capacity; at signals incidents will cause excessive delays	At capacity, requires other control mode
F	>70	Roundabouts require other control mode	

Source: RTA Guide to Traffic Generating Developments (2002)

Another measure that aids in the determination of intersection performance is the 95th percentile back of queue length, which is relevant to the design of appropriate queuing space (for example, for short lane design). It is also useful in determining short lane capacities.

The results are shown in **Table 2-2** (AM peak) and

Table 2-3 (PM peak).

Table 2-2 Current performance of New England Highway / Glennies Creek Road Intersection (AM Peak)

Movement	Average Delay per Vehicle (seconds)	Level of Service	95% Back of Queue (metres)
New England Highway westbound (through)	0.0	A	0
New England Highway westbound (right)	15.7	B	1
New England Highway westbound approach	**0.8**	**A**	**1**
Glennies Creek Road (left)	28.6	C	2
Glennies Creek Road (right)	28.7	C	2
Glennies Creek Road approach	**28.6**	**C**	**2**
New England Highway eastbound (left)	14.9	B	0
New England Highway eastbound	0.0	A	0
New England Highway eastbound approach	**0.6**	**A**	**0**
All Vehicles	**1.1**	**N/A**	**2**

- **Table 2-3 Current performance of New England Highway / Glennies Creek Road Intersection (PM Peak)**

Movement	Average Delay per Vehicle (seconds)	Level of Service	95% Back of Queue (metres)
New England Highway westbound (through)	0.0	A	0
New England Highway westbound (right)	15.0	B	1
New England Highway westbound approach	**1.1**	**A**	**1**
Glennies Creek Road (left)	18.5	B	4
Glennies Creek Road (right)	17.8	B	4
Glennies Creek Road approach	**18.4**	**B**	**4**
New England Highway eastbound (left)	13.8	A	0
New England Highway eastbound	0.0	A	0
New England Highway eastbound approach	**0.4**	**A**	**0**
All Vehicles	**1.8**	**N/A**	**4**

The LoS for the New England Highway / Glennies Creek Road intersection is C in the AM peak and B in the PM peak. Therefore the intersection is currently operating satisfactorily.

2.4. Road Safety

Data was obtained from the RTA about the recent road crash history of the New England Highway between Singleton and Muswellbrook. In the five years from September 2003 to August 2008, there were 88 crashes recorded, including four fatal crashes and 32 injury crashes. The most common types of crashes were where the vehicle left the carriageway, accounting for 52% of all crashes. The number of crashes was highest in the year September 2003 to August 2004, when 24 crashes were recorded. There were 13 crashes recorded in the year September 2007 to August 2008.

A crash rate, where the number of crashes is compared to the volume of passing traffic, has been calculated at approximately 10 crashes per 100 Million Vehicle Kilometres Travelled (MVKT). This is significantly below the NSW state average crash rate of approximately 75 crashes per 100MVKT.

In the immediate vicinity of the proposed SEOC, there were three crashes recorded in the past five years, including one injury crash. There were two off-path type crashes and one where a temporary object on the roadway was hit.

2.5. Public Transport and School Buses

The proposed SEOC is located away from regular public transport services. Singleton and Muswellbrook are the main public transport hubs near Camberwell. Bus and coach services operating through Camberwell (but not stopping) are detailed in **Table 2-4**.

Table 2-4 Bus and Coach Services Operating Through Camberwell

Route Number	Route	Bus / Coach Operator	Nearest Pick-Up / Set Down Locations	Service Frequency
242	Sydney – Toowoomba – Brisbane via New England Highway	Greyhound Australia	Singleton - Shell Service Station, New England Highway; Muswellbrook – Interchange adjacent Muswellbrook Station, Market Street	One service per day
424	Brisbane – Toowoomba – Sydney via New England Highway			One service per day
1	Newcastle to Dubbo	Sid Fogg's Coachlines	Singleton – Shell Service Station, New England Highway; Muswellbrook – Beaurepaires Tyre Service	One service per day
1	Dubbo to Newcastle			One service per day

Source: http://www.131500.com.au/countrytransport/index.asp (2009)

The nearest railway stations to Camberwell are at Singleton and Muswellbrook. Services operating through those stations are detailed in **Table 2-5**.

Table 2-5 Rail Services

Rail Service	Rail Service Provider
Newcastle to Scone	CityRail
Scone to Newcastle	CityRail
Armidale to Sydney	CountryLink
Sydney to Armidale	CountryLink
Moree to Sydney	CountryLink
Sydney to Moree	CountryLink

Source: http://www.131500.com.au/countrytransport/index.asp (2009)

Two school bus services operate through Camberwell and are detailed in **Table 2-6**.

Table 2-6 School Bus Services

School Bus Route	School Bus Operator
Singleton to Camberwell	Blue Ribbon Bus Company Pty. Ltd.
Hebden – Ravensworth – Singleton	Blue Ribbon Bus Company Pty. Ltd.

Source: http://www.131500.com.au/countrytransport/index.asp (2009)

3. Details of the Proposal

Approval is sought for open cut mining in the SEOC, south of the New England Highway and east of Glennies Creek approximately 2.5km south east of the ACP processing plant.

The SEOC project comprises the following key elements:

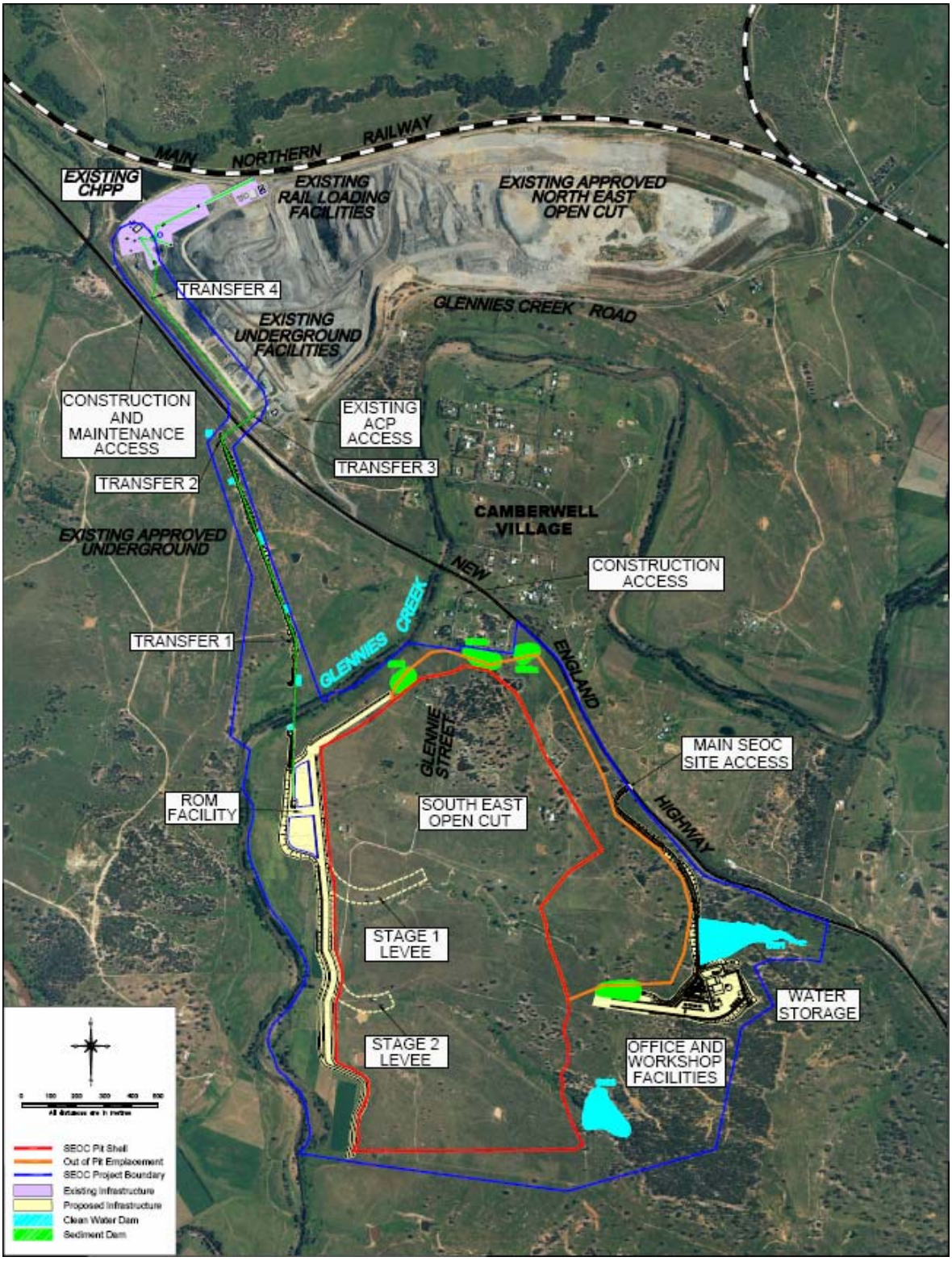
- One open cut coal mine (the SEOC);
- Environmental bund adjacent to the New England Highway blended into the out of pit emplacement and final landform;
- Free draining, stable final landform sympathetic to the surrounding topography;
- Rehabilitation of the final landform to a combination of woodland and grazing lands including in-spoil creek alignments;
- Embellishment of the Glennies Creek riparian corridor and revegetation of other cleared lands.
- Final void in the south eastern corner;
- ROM pad, stockpiles and crushers with a conveyor to transport the ROM coal to the existing ACP CHPP;
- Conveyor over New England Highway;
- Conveyor over Glennies Creek;
- New workshop, bathhouse and administration buildings;
- New access road from New England Highway;
- Power supply and water supply infrastructure;
- The diversion of Energy Australia power lines and relocation of telecommunication lines;
- Piping between SEOC and ACP CHPP to transfer water and tailings;
- Staged 1 in 100 year event designed flood levee around ROM pad and along pit edge parallel with Glennies Creek;
- Alluvial barrier wall keyed in below flood levee; and
- Large inline water storage dam east of the SEOC.

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. 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. ACOL seeks to modify the existing ACP Development Consent in the following manner:

- Increase the through put of the existing ACP CHPP and rail loading facilities to cater for approximately 8.6Mtpa of ROM coal (or an additional 2.3Mtpa of product 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;
- Increased coal extraction rate from 2.95Mtpa ROM to 5.0Mtpa ROM coal in the existing underground coal mine to provide operational flexibility; and
- Associated modifications to the conditions of (DA) 309-11-2001-i to facilitate the above changes.

The proposed SEOC layout is shown in **Figure 3-1** overleaf.

- **Figure 3-1 Proposed SEOC Layout**



4. Impact Assessment

4.1. Traffic Generation

The SEOC would employ approximately 160 people, working in two shifts. The SEOC employees would essentially be transferred from the existing NEOC when mining ceases there.

Given the SEOC is located remote to significant residential areas where employees reside, and away from regular public transport services, it has been assumed that each worker at the SEOC would drive their own vehicle to and from each shift. As such, at each change of shift it is expected that there will be 80 vehicles arriving to start work, and 80 leaving soon after. There would be little overlap between arriving and departing vehicles.

In addition to employee travel which would be focussed on shift changeover times, there would also be deliveries to the facilities that take place at other times. Based on the current activities, these are expected to include:

- 15-20 light trucks per week delivering general stores;
- One to three trucks per week delivering explosives;
- 10-15 trucks per week delivering diesel; and
- 30 courier vans per week.

It should be noted that these will not be "new" trips added to the network, as there will be a corresponding reduction in traffic accessing the ACP facilities off Glennies Creek Road. Some traffic generating activity will remain at Glennies Creek Road, associated with the existing underground facility, CHPP and administration offices.

Rail Traffic

On average the existing ACP requires approximately 1.5 trains per day to transport product coal to the Port of Newcastle. The proposed SEOC project combined with the proposed increase in peak production will increase train numbers to approximately 2.5 trains per day on average, or an additional one train per day.

Consultation has been undertaken with the Hunter Valley Coal Chain Logistics Team (HVCCLT) regarding forecast growth in rail system capacity over forthcoming years. HVCCLT has confirmed that the current system capacity is approximately 95 Mtpa. Modelling undertaken by HVCCLT indicates that with the on-time delivery of committed track works it will be possible to achieve 105 Mtpa rail system capacity by the end of 2009 and 110 Mtpa within the same period with the accelerated completion of the 3rd Road at Minimbah Bank, and by 2011 with further works it will

be possible to achieve 140 Mtpa. These increases in system capacities are also contingent upon the securing of commercial arrangements to secure additional trains.

Considering the relatively small increase in required trains and the planned track upgrades, the proposed SEOC project and increase in peak production will not have a significant impact on rail capacities.

4.2. Access to the SEOC

It is proposed to construct a new intersection on the New England Highway, approximately 450m to the east of McInerney Road, to facilitate access to the SEOC. With the exception of Glennie Street, which will remain open during the construction period and possibly for future restricted maintenance access, all existing roads and driveways that currently service the land to be occupied by the SEOC will be closed.

The location of the intersection, at the eastern edge of Lot 3, DP 747327, has been chosen taking into consideration the available sight distances. This location coincides with an existing driveway access, as shown in **Figure 4-1**. Locations further east of the chosen site, whilst preferable due to a reduced length of internal access road required, were rejected due to topographical features that restrict sight distance to the east.

- **Figure 4-1 Proposed Location of New Access Intersection (View Looking South-East)**

4.2.1. Future Traffic Volumes

Whilst there is expected to be no change in the volume of traffic associated with the SEOC, through traffic on the New England Highway is likely to continue to grow. As detailed in **Section 2.2**, traffic is expected to grow at a rate of approximately 1.7% per annum. The SEOC will operate from 2010/11, for approximately 7 years. Through traffic has therefore been forecast for 2018 using this growth rate. The forecast peak hour volumes on the New England Highway are shown in **Table 4-1**.

Table 4-1 Existing and Forecast New England Highway Peak Hour Volumes

	2008		2018	
	Eastbound	Westbound	Eastbound	Westbound
AM	370	1,090	430	1,270
PM	350	340	760	400

The existing and forecast peak hour volumes on the New England Highway were assessed against its theoretical capacity which, based on uninterrupted single lane sections, is approximately 1,500 vehicles per hour in each direction.[2] This is a conservative estimate as overtaking lanes on some sections of the road in the vicinity of the Ashton SEOC have not been taken into account. Therefore the actual capacity of the New England Highway is higher than 1,500 vehicles per hour in each direction. Volumes compared to capacity are presented in **Table 4-2**.

Table 4-2 Peak Hour Volumes and Capacity for New England Highway

Direction and Scenario	Peak Hour Volume	Capacity	Volume / Capacity Ratio
Eastbound 2008 AM	370	1,500	0.25
Eastbound 2008 PM	350	1,500	0.23
Westbound 2008 AM	1,090	1,500	0.73
Westbound 2008 PM	340	1,500	0.23
Eastbound 2018 AM	430	1,500	0.29
Eastbound 2018 PM	760	1,500	0.51
Westbound 2018 AM	1,270	1,500	0.85
Westbound 2018 PM	400	1,500	0.27

It can be seen from **Table 4-2** that the New England Highway is currently operating well below capacity, and is expected to operate below capacity in 2018, as indicated by the volume / capacity

[2] Based on the *Austroads Guide to Traffic Engineering Practice*, Part 2, Section 2 (Uninterrupted Single Lane Flow). The heavy vehicle proportion has been estimated as 10 percent, which is a conservative estimate.

ratio. A volume / capacity ratio of greater than 1 indicates that a section of road is operating in excess of its theoretical capacity and some reduction in the level of service afforded to motorists can be expected.

Enquiries regarding any other proposed new developments adjacent to the site were made with the RTA and Singleton Council; however no feedback regarding any future developments was received. As there is no new traffic generation resulting from the proposed SEOC, the proposed changes will not impact on the capacity of the adjoining network to cater for future adjacent development.

The future expansion of neighbouring mines is not expected to result in any new intersections in the vicinity of the SEOC. With current and predicted growth on the New England Highway expected to result in traffic volumes below capacity, even assuming two new projects of the same scale as the SEOC, cumulative traffic impacts are likely to be manageable.

4.2.2. Intersection Features

We have nominated Channelised Right Turn (CHR) and Auxiliary Left Turn (AUL) treatments for the proposed SEOC access intersection, as these will result in the least impact on New England Highway traffic, and will provide a safer environment for turning vehicles than lesser alternatives. The localised widening to accommodate the additional turning lanes has been contained within the existing road corridor. However, provision has also been made for future widening of the New England Highway. The RTA has recently been granted approval to widen the New England Highway road corridor to the west of the proposed intersection[3], and it is prudent to assume that there may be some future widening to the east also. There are no firm plans at this stage to actually widen the carriageway.

The existing highway is a two-way, two-lane road with a slight curved horizontal alignment and a 2.5% to 3% grading in the vicinity of the proposed intersection. It has a 12m wide sealed road surface which is comprised of two 4m wide lanes and 2m wide sealed shoulders on each side.

The existing westbound lane will be maintained as the through lane of the proposed intersection while the existing eastbound lane will be utilised for the right turn auxiliary lane and for the extended overtaking lane. The northern side of the highway will generally be widened to accommodate the eastbound through lane. The extent of road widening on the northern side of the New England Highway associated with the proposed intersection is limited to an approximately 500m section along the highway which starts from 220m east of McInerney Road.

[3] Advised by Tom Prsa, RTA Property Services, 23/10/2008

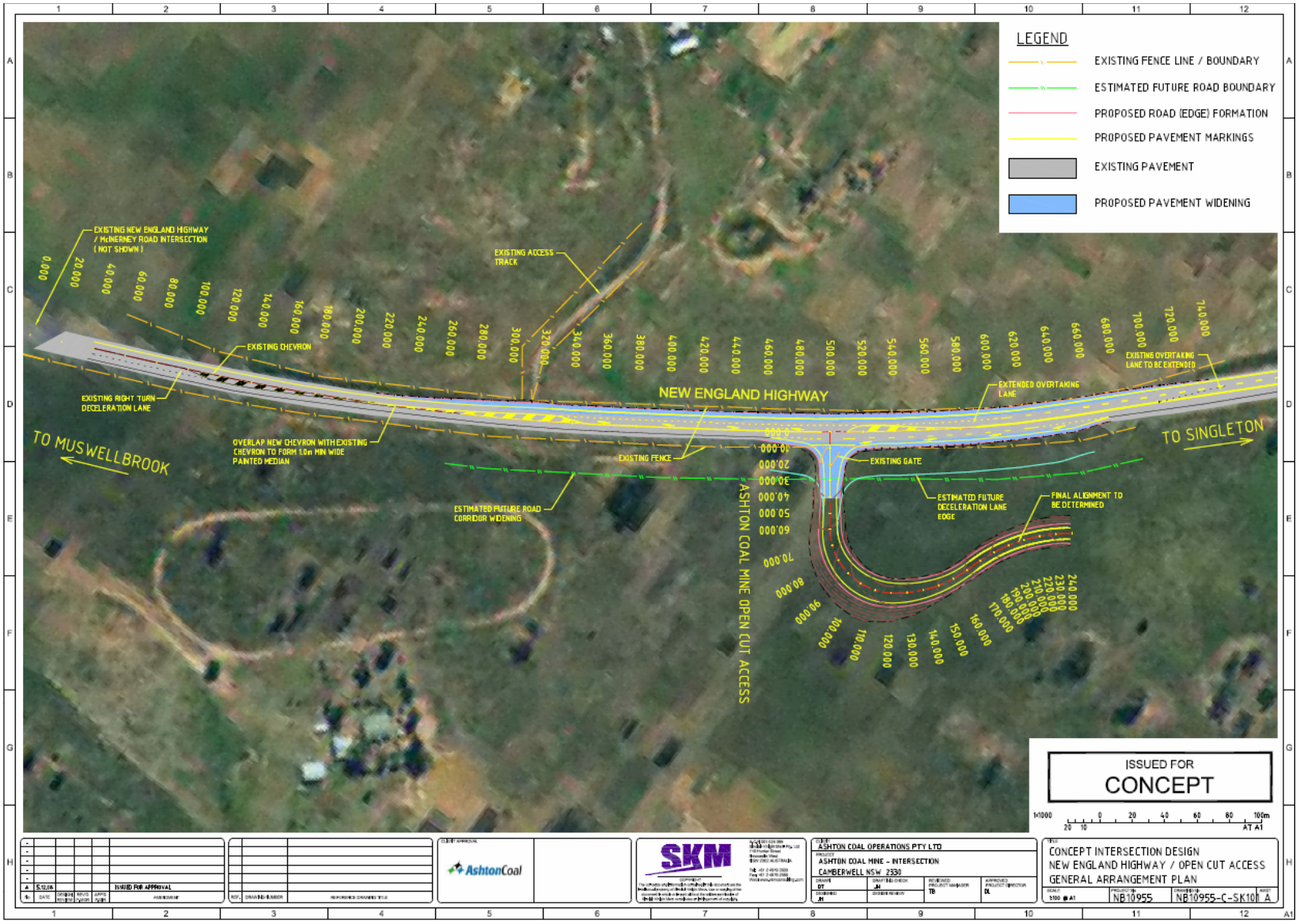
The existing eastbound overtaking lane has been extended to provide a smooth alignment of the eastbound through lane. This also allows a vehicle turning right from the access road onto the highway to accelerate up the 3% grade without impeding other through traffic. A chevron between the intersection and the overtaking lane has been provided to prevent eastbound traffic from using the auxiliary right turn lane as the through lane.

The dimensions of the auxiliary lanes have been based on the RTA Road Design Guide, taking into account deceleration requirements from the 100km/hr that vehicles will be travelling on the New England Highway. The length of right turn lane provided assumes deceleration from 100km/h to zero, before turning into the new side road. A 30m storage length has also been added to form the total length of the right turn lane. The left turn lane has been designed to allow deceleration from 100km/h to 20km/h to turn.

The western chevron associated with the CHR treatment has been extended to overlap with the eastern chevron of the existing New England and McInerney Road intersection. This is to form a minimum of 1.0m painted median between the existing and the new intersection which will further separate opposing traffic streams, improving safety for all road users.

Figure 4-2 and **Figure 4-3** illustrate the proposed intersection design.

- **Figure 4-2 Proposed New Intersection Layout (General Arrangement Plan)**



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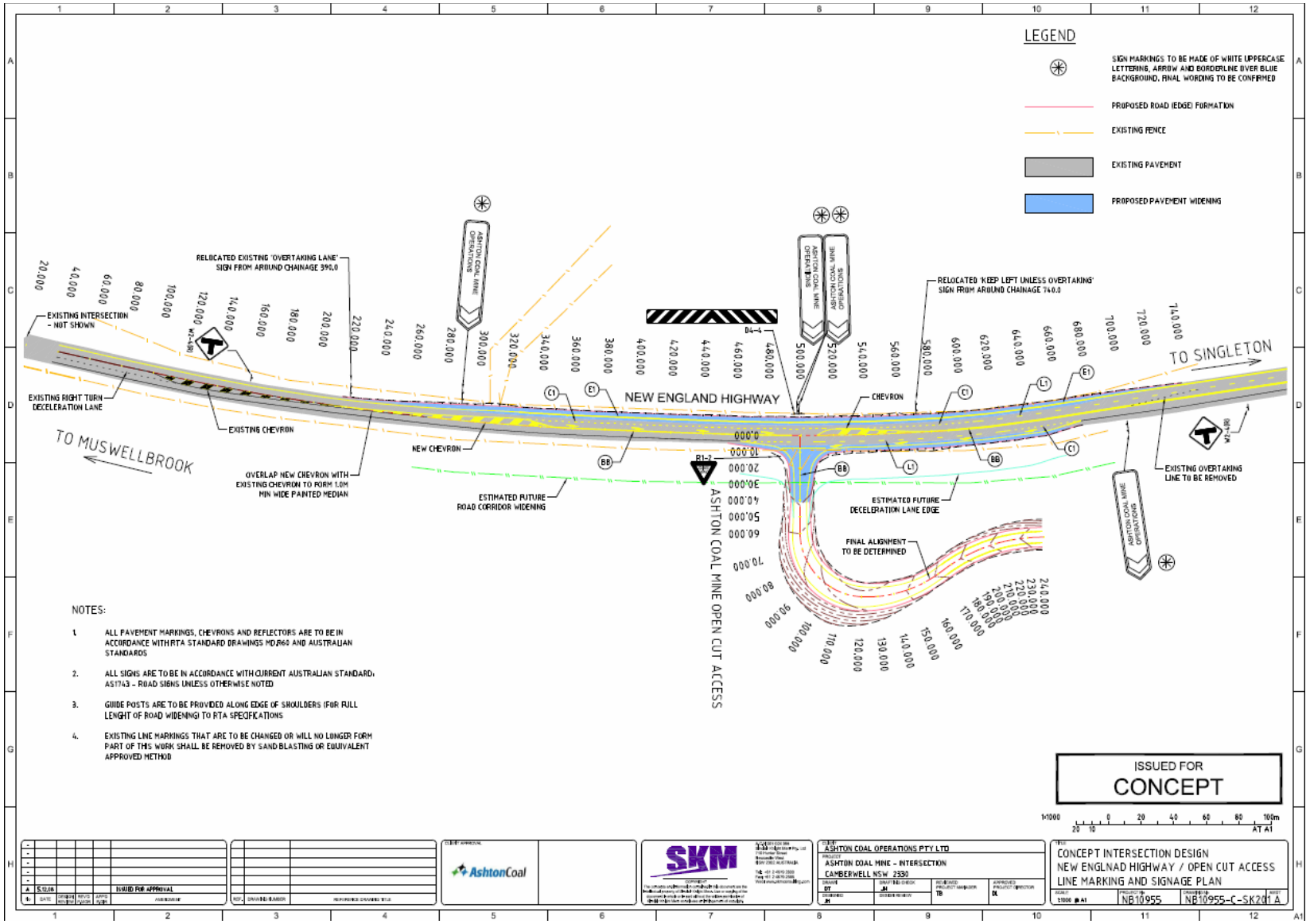
- **Figure 4-3 Proposed New Intersection Layout (Line Marking and Signage Plan)**



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The operation of the new intersection has been assessed using the *SIDRA Intersection* modelling software. Forecast traffic volumes for 2018 presented in **Table 4-1** for the New England Highway were used in the analysis. The unique situation with this intersection, with almost all inbound and outbound movements occurring separately, has been addressed by assuming that all staff will arrive in the 30 minutes prior to the start of a shift, and leave in the 30 minutes after the completion of the previous shift, and by analysing each 30 minute period separately. Each scenario contains a small volume of counter-direction traffic entering or leaving the access road, and uses worst-case scenarios.

The results are shown in **Table 4-3**.

Table 4-3 Operation of the Proposed Access Intersection

Scenario	Average Delay per Vehicle (seconds)	Level of Service	95% Back of Queue (metres)
AM – Staff arriving (from west)	52.5 seconds	D	3
AM – Staff leaving (to east)	39.8 seconds	C	15
PM – Staff arriving (from west)	26.7 seconds	B	1
PM – Staff leaving (to east)	14.2 seconds	A	2

The highest average delays are experienced in the AM peak, when staff are arriving to start the day shift. However, the delay reported in **Table 4-3** is for traffic leaving the access road, which would be minimal. Traffic turning into the access road operates at LoS C. There is expected to be minimal queuing in the right turn lane on the New England Highway, and on the access road waiting to turn onto the highway.

4.3. Road Safety

As there will be no net increase in traffic associated with the ACP, no change is expected in the rate of accidents on the highway between Singleton and Muswellbrook.

The proposed new access intersection is designed so as to provide a safe road environment for all users. There are sufficient sight distance and acceleration / deceleration provisions to ensure compliance with relevant design standards.

4.3.1. Conveyor Bridge over the New England Highway

A coal conveyor bridge will be constructed above the existing New England Highway. The bridge will be a single span, 5.4m or higher above the top of pavement. Preliminary design indicates that the height will be closer to 6m above pavement level.

In this configuration the bridge provides sufficient clearance to accommodate over height vehicles. Bridge piers will be constructed outside the Clear Zone or will be suitable protected by an approved road safety barrier. Consequently, the coal conveyor bridge will not present a road safety hazard nor an impediment to the functionality of the New England Highway.

4.4. Construction Traffic Management

Construction of the SEOC will take approximately 6 months, and will be timed so that there is a transition of staff from NEOC to SEOC once mining operations at the NEOC cease.

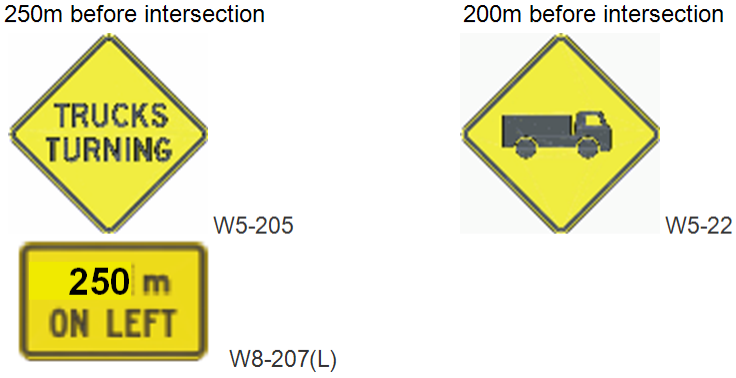
The new access intersection will be one of the first items of infrastructure completed, allowing construction staff and associated traffic to safely enter and exit the site. The intersection will have sufficient capacity to cater for expected construction traffic levels. A Construction Traffic Management Plan, including specific Traffic Control plans and Road Occupancy Licences, will be prepared and submitted to the RTA prior to commencement of construction of the new intersection. No significant delays to through traffic on the highway are expected.

Any increase in traffic associated with the additional staff required to construct the SEOC would be temporary, and is not expected to adversely impact on road capacity, amenity or safety.

4.4.1. Glennie Street

Some construction activities will require access to the western boundary of the SEOC. For these activities, it is proposed to make use of the existing intersection of the New England Highway and Glennie Street (see **Figure 2-1**). It is expected that use of this intersection will be minimal, and limited to the construction period. Sight distance to the west is very good, but to the east there are some restrictions due to a crest in the road. Whilst not substandard, it would be appropriate to install, for the duration of construction works, some warning signage such as those shown in **Figure 4-4**.

- **Figure 4-4 Proposed Warning Sign on Approach to Glennie Street**



4.4.2. Conveyor Construction & Maintenance

The construction and occasional maintenance of a section of the conveyor that is bounded by Glennies Creek to the east and the New England Highway to the north will be via an existing access road to the former Ashton property that is used for access to the underground area.

It is anticipated that the volume of traffic using this access will be extremely low and concentrated during the construction period. Access for maintenance will be on an infrequent basis and generate negligible numbers of vehicular trips.

Sight distance from the intersection of the access road along the New England Highway is extremely good in both directions and far in excess of the minimum required.

Other construction access will be via the existing ACP mine access road off Glennies Creek Road.

5. Conclusion

This report has reviewed the proposed SEOC, to be located on the southern side of the New England Highway, immediately south of the village of Camberwell. The SEOC would replace the existing NEOC operations, providing continuity of employment for mine workers, and no net change in traffic generated by ACP operations.

The New England Highway currently carries over 11,000 vehicles per day, including 17% heavy vehicles. Traffic has been growing, and is expected to continue growing, at approximately 1.7% per annum. The peak hourly volume is approximately 1,300 vehicles, travelling westbound between 6am and 7am.

In the five years to 2008, there were 88 crashes recorded on the New England Highway between Singleton and Muswellbrook, although only three occurred in the vicinity of the proposed SEOC. The crash rate on this section of the highway is relatively low when compared to other roads in NSW. This is not expected to change with the opening of the SEOC, as there will be no net increase in traffic volumes.

The SEOC will employ approximately 160 staff, working in two shifts. It has been assumed, as a worst case, that all staff would drive their own cars to and from work, resulting in 80 vehicles arriving and 80 vehicles departing on either side of the change in shift.

A new intersection would be constructed on the New England Highway approximately 450m east of McInerney Road, to provide access to the SEOC facilities. The intersection would have a channelised right turn lane and a separate left turn lane, allowing vehicles to decelerate and wait for a gap in opposing traffic if required. Provision has been made for the potential future widening of the New England Highway. The intersection is forecast to operate at an acceptable level of service for the life of the SEOC, and provide a safe environment for all road users.

Some minor construction traffic management may be required during construction of the new intersection, and where Glennie Street is used for construction access.