# WILPINJONG COAL PROJECT




## Operational Phase Mine Access Route and Blasting Frequency Modification

## ENVIRONMENTAL ASSESSMENT

Peabody

Wilpinjong Coal Pty Limited

Peabody

WILPINJONG COAL

5 April 2007

The Director-General
C/- Howard Reed
Department of Planning
Level 4
23-33 Bridge Street
SYDNEY NSW 2000

Dear Sir

**Environmental Assessment for Modification to the Wilpinjong Coal Project**

The enclosed Environmental Assessment for the proposed modification to the Wilpinjong Coal Project has been prepared on our behalf by Resource Strategies Pty Ltd.

Wilpinjong Coal Pty Limited believes the Environmental Assessment accurately represents the Company's intentions including the Company's proposed environmental impact mitigation, management and monitoring measures.

Yours faithfully

**Wilpinjong Coal Pty Limited**

**KEITH DOWNHAM**
Wilpinjong General Manager

cc: Michael Moore

**Wilpinjong Coal Pty Ltd** **ACN 104 594 694**
Registered Office:
Level 27, AMP Place, 10 Eagle Street
Brisbane Qld 4000

Postal Address:
Locked Bag 2005
Mudgee NSW 2850

Phone: +61 2 6373 4648
Fax: +61 2 8080 8170

## Submission of
## Environmental Assessment (EA)

prepared under the *Environmental Planning and Assessment Act 1979* (as amended)

**EA prepared by**

| | |
|---|---|
| name: | Joshua Hunt, Principal |
| qualifications: | Bachelor of Engineering (Civil) |
| address: | Resource Strategies Pty Ltd<br>Post Office Box 1842, MILTON QLD 4064 |
| in respect of | Wilpinjong Coal Project - Operational Phase Mine Access Route and Blasting Frequency Modification |

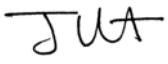
**project application**

| | |
|---|---|
| applicant name:<br>applicant address: | Wilpinjong Coal Pty Limited<br>1434 Ulan-Wollar Road<br>Wilpinjong NSW 2850 |
| land to be developed: | As described in the attached Environmental Assessment. |
| proposed development: | Modification to the mine access route and frequency of blasting as follows:<br>• Permitting the Project operational phase primary mine access to be via Ulan Road and Ulan-Wollar Road and the associated mine access road intersection to be located on Ulan-Wollar Road.<br>• Increasing the frequency of blasting to a maximum of two blasts per day and five blasts per week on average over any 12 month period.<br>The proposed modification is described in the attached Environmental Assessment. |

**environmental assessment** An Environmental Assessment is attached.

**certificate** I certify that the information contained in this Environmental Assessment is, to the best of my knowledge and belief, neither false nor misleading.

signature



| | |
|---|---|
| name | Joshua Hunt |
| date | 24 April 2007 |

## EXECUTIVE SUMMARY

The Wilpinjong Coal Project (the Project) is an existing open cut coal mine situated approximately 40 kilometres north-east of Mudgee, near the village of Wollar, within the Mid-Western Regional Local Government Area, in central New South Wales (Figure ES-1). Construction of the Project commenced in February 2006, and the Project is approved to produce up to 13 million tonnes per annum of run-of-mine coal.

The Project is owned and operated by Wilpinjong Coal Pty Limited (WCPL), a wholly owned subsidiary of Peabody Pacific Pty Limited.

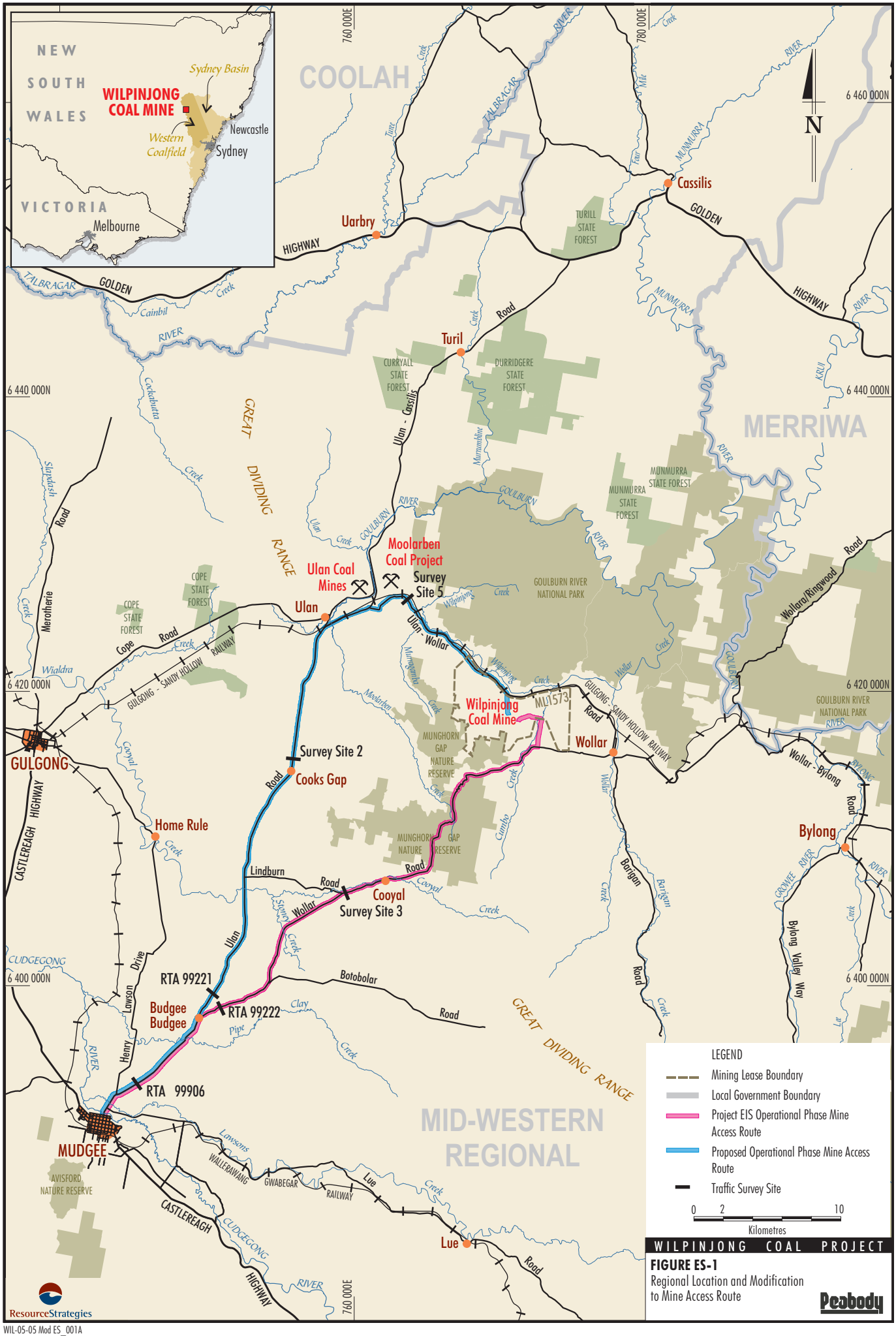
This Environmental Assessment has been prepared by WCPL to support an application to modify the Project Approval 05-0021. The modification comprises:

- Increasing the frequency of blasting to a maximum of two blasts per day and five blasts per week on average over any 12 month period. Project Approval 05-0021 currently limits blasting to one blast per day and one blast per week on average over any 12 month period.
- Permitting the Project operational phase primary mine access route to be along Ulan Road and Ulan-Wollar Road (rather than Ulan Road and Wollar Road) (Figure ES-1) and the associated mine access road intersection to be located on Ulan-Wollar Road.

In order to assess the modification, specialist environmental reviews with respect to traffic, traffic noise and blasting were commissioned by WCPL. The environmental reviews have shown that:

- Monitoring of blast emissions has indicated compliance with the relevant Project Approval and Environment Protection Licence criteria. The proposed increase in the frequency of blasting would not increase the ground vibration or airblast impacts assessed in the Wilpinjong Coal Project Environmental Impact Statement blast impact assessment. Amenity impacts associated with an increase in the frequency of blasting (including cumulative impacts) are likely to be minimal.
- The Project operational phase is predicted to generate less traffic than the Project construction phase. The existing daily traffic flows in the vicinity of the Project are low and the addition of the Project operational phase traffic on Ulan Road and Ulan-Wollar Road would have little impact on the existing levels of service and road safety of the local road network. Ulan Road and Ulan-Wollar Road would be suitable to accommodate the predicted traffic flows for the Project operational phase.
- Consideration of potential cumulative traffic growth associated with the Ulan Coal Mines and the Moolarben Coal Project (if approved) and future traffic growth indicates that flows on the local road network are unlikely to result in any significant additional traffic safety or capacity constraints in the medium to long-term.
- Based on conservative traffic noise predictions along Ulan Road and Ulan-Wollar Road the traffic noise impacts arising from the modification are considered acceptable.

The application of the existing environmental management measures and monitoring programmes at the Project would be expanded where relevant to include the modification.




WIL-05-05 Mod ES_001A

# TABLE OF CONTENTS

**LIST OF TABLES**



**LIST OF FIGURES**



**LIST OF PLATES**



**LIST OF ATTACHMENTS**



**LIST OF APPENDICES**

# 1 INTRODUCTION AND GENERAL OVERVIEW

This document is an Environmental Assessment (EA) for a modification to the Wilpinjong Coal Project (the Project) Project Approval 05-0021. The Project is owned and operated by Wilpinjong Coal Pty Limited (WCPL), a wholly owned subsidiary of Peabody Pacific Pty Limited. A copy of Project Approval 05-0021 is provided as Attachment 1.

The Project is an open cut coal mine situated approximately 40 kilometres (km) north-east of Mudgee, near the village of Wollar, within the Mid-Western Regional Local Government Area (LGA), in central New South Wales (NSW) (Figure 1). Construction of the Project commenced in February 2006, and the Project is approved to produce up to 13 million tonnes per annum (Mtpa) of run-of-mine (ROM) coal.

The modification comprises changes to the operational phase mine access route and mine blasting frequency. The assessment provided in this EA concentrates on those aspects of the Project that are related to the modification and has been prepared in accordance with the Director-General's Requirements (DGRs) issued by the Director-General of the Department of Planning (DoP) on 12 February 2007 (provided as Attachment 2).

The structure of the EA is as follows:

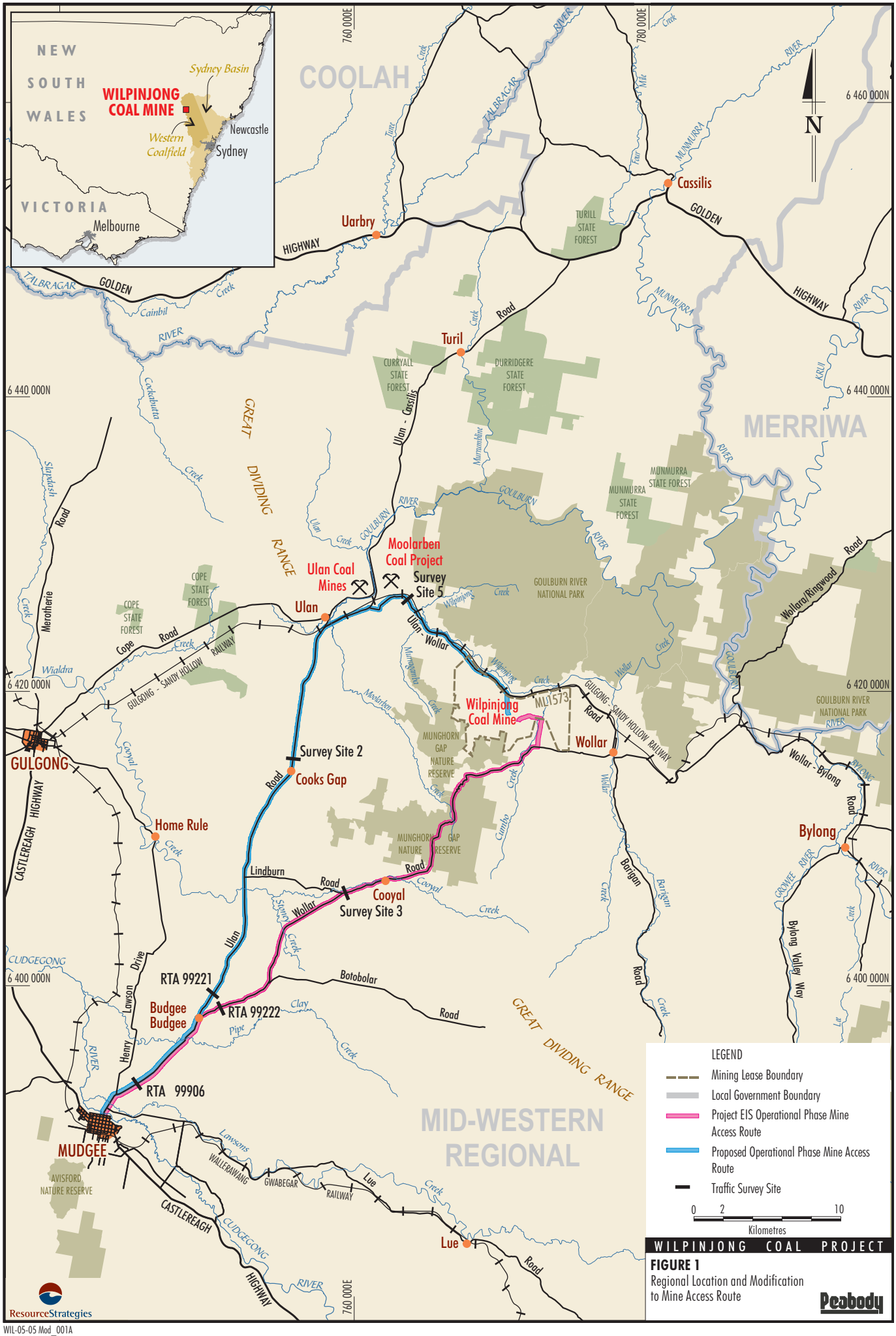
| | |
|---|---|
| Section 1 | Provides an overview of the Project, the modification, other relevant mining operations and the consultation programme undertaken for this EA. It also identifies the key potential environmental impacts of the modification. |
| Section 2 | Describes the modification including alternatives considered. |
| Section 3 | Describes the relevant statutory requirements for the modification and outlines those plans, licences and agreements that would require revision as a result of the modification. |
| Section 4 | Describes relevant aspects of the existing environment, potential impacts of the modification and proposed mitigation and management measures. |
| Section 5 | Provides a draft Statement of Commitments. |
| Section 6 | Provides a conclusion incorporating a justification for the modification. |
| Section 7 | Lists the references cited in this EA. |

Attachments are provided as follows:

| | |
|---|---|
| Attachment 1 | Project Approval 05-0021 |
| Attachment 2 | Director-General's Requirements – Environmental Assessment Requirements |

Appendices A to C provide supporting information as follows:

| | |
|---|---|
| Appendix A | Blast Emission Impact Assessment |
| Appendix B | Traffic Impact Assessment |
| Appendix C | Traffic Noise Impact Assessment |




WIL-05-05 Mod_001A

## 1.1 OVERVIEW OF THE PROJECT

### 1.1.1 General

The Project is an open cut coal mine that will produce up to 13 Mtpa of ROM coal. Six open cut pits will be developed to extract coal over the 21 year Project life.

Table 1 provides a snapshot description of the Project.

**Table 1**
**Project Snapshot**

| Summary | |
|---|---|
| Project | Open cut mine, extracting up to 13 million tonnes per annum (Mtpa) of run-of-mine (ROM) coal for processing and supply to both domestic electricity generation and export markets.<br>Construction and operation of rail and coal handling/train loading infrastructure to facilitate transport of product coal to market. |
| Mining | Open cut mining at a rate of up to 13 Mtpa of ROM coal with an average stripping ratio of 1.3:1 (bank cubic metres waste rock:tonne ROM coal) and an estimated total open cut reserve of approximately 251 million tonnes (Mt). |
| Mine Waste Rock Management | Waste rock would be deposited predominantly within mined-out voids. |
| Coal Washing | Construction and operation of a Coal Handling and Preparation Plant (CHPP) capable of washing up to approximately 8.5 Mtpa of ROM coal. |
| Water Supply | Peak make-up water demand of approximately 6.2 million litres (ML) per day to be met from runoff recovered from mine operational areas, recovery from tailings disposal areas, open cut dewatering, advanced dewatering of pit areas and supply from a borefield. |
| Coarse Rejects and Tailings Management | Coarse rejects would be placed predominantly within mined-out voids. Apart from initial tailings disposal in a partitioned section of the CHPP water supply storage, all tailings would be placed within in-pit tailings disposal areas. |
| Project Life | An expected Project life of 21 years (from the date of grant of a mining lease). |
| Employment | Construction workforce of 200 employees on average and an average operational workforce of 100 employees (with up to 162 employees at peak production). |
| Product Coal | Production of up to 10 Mtpa of coal predominantly for the purpose of fulfilling contractual obligations to Macquarie Generation. Approximately 147 Mt and 33 Mt of product coal would be produced for domestic use and export, respectively. |
| Roadworks | Mine access road, internal access roads, haul roads and temporary access to and from the construction camp.<br>Closure of Wilpinjong Road and Bungulla Road.<br>Realignment of two sections of Ulan-Wollar Road later in the Project life (including the relocation of two road-rail crossings). |
| Product Coal Transport | Product coal would be loaded onto trains and transported to market via the Project rail loop and rail spur connected to the Gulgong-Sandy Hollow railway. |

After: WCPL, 2005

The CHPP will facilitate the processing of raw coal, handling of raw and washed product and stockpiling and train loading of product coal.

An estimated 162 people will be employed at the Project during peak production, including a mix of direct WCPL employees and contractors (WCPL, 2005).

The Project operates 24 hours a day, seven days per week.

### 1.1.2 Site Access

The primary access route for the Project (as described in the Wilpinjong Coal Project Environmental Impact Statement [the Project EIS]) was from the south via construction of an unsealed two-lane mine access road connecting the mine facilities area to Wollar Road (Figures 1 and 2). As described in the Project EIS, the mine access road would have been constructed generally along the alignment of Wilpinjong Road. It was also proposed in the Project EIS to realign the intersection of Wilpinjong Road with Wollar Road.

In accordance with Condition 4, Appendix 2 of Project Approval 05-0021 (Attachment 1), a Route Assessment Study (incorporating a Road Safety Audit and a Road Conditions Audit) was conducted by J. Wyndam Prince Pty Ltd (JWP) (2006). The Route Assessment Study also addressed Condition 53, Schedule 2 of the Project Approval which requires:

> *53. Heavy vehicles must not access the site via Wollar Road until a suitably qualified structural engineer has certified that Wollar Road is suitable for use by heavy vehicles, and a copy of the engineer's report has been provided to the Department.*

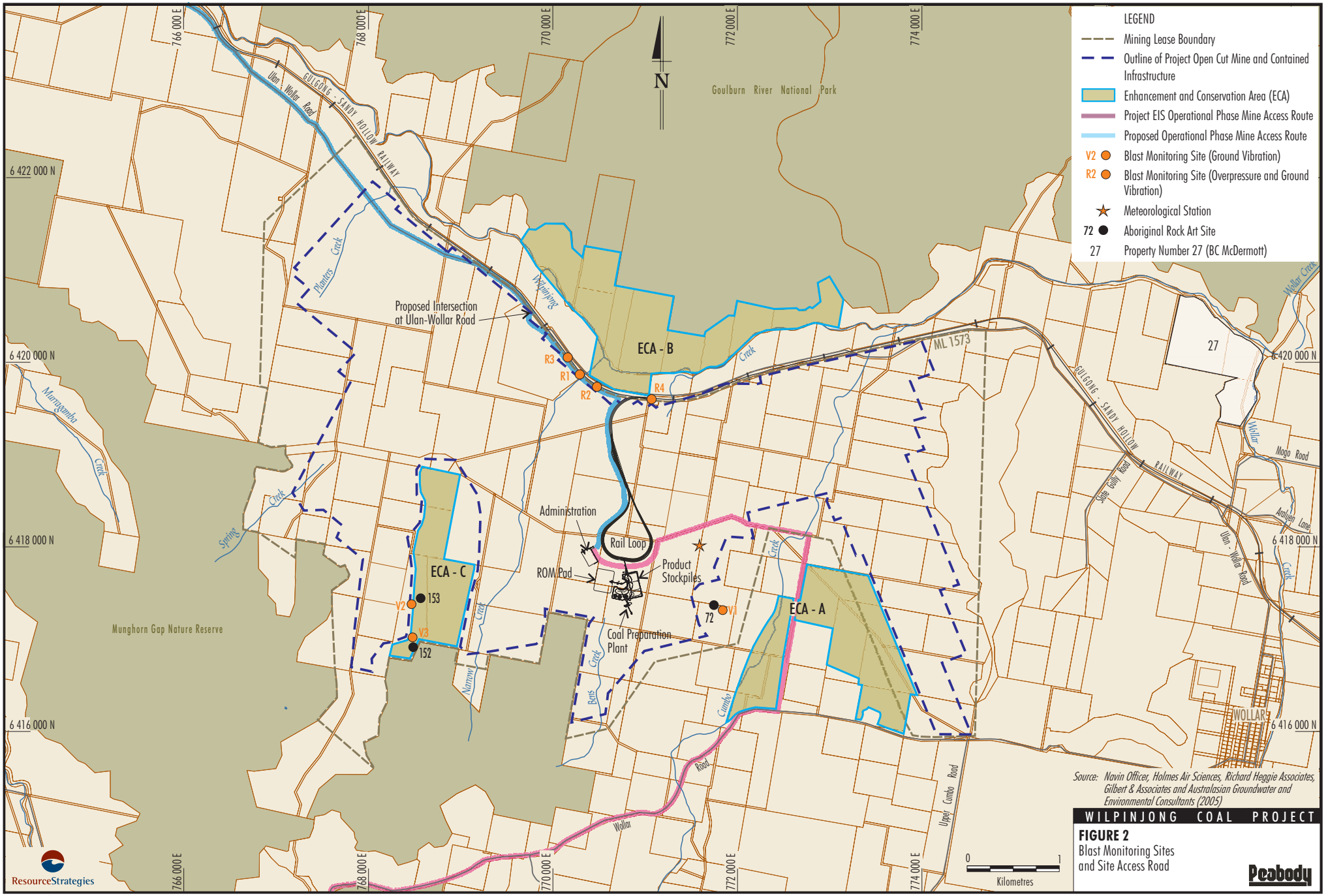
The objective of the Route Assessment Study was "*to identify the most appropriate traffic route for both construction traffic (including oversize-overmass vehicles) and operational traffic to and from the Wilpinjong Coal Project*" and included Ulan Road, Wollar Road and Ulan-Wollar Road (JWP, 2006).

Based on the investigations undertaken, the Route Assessment Study concluded "…*Ulan Road (MR214) and the Ulan-Wollar Road have been identified as the preferred construction and operational traffic route to the Project*" (JWP, 2006).

### 1.1.3 Environmental Management, Monitoring and Performance

Environmental management at the Project has included the development and implementation of a range of environmental management plans, procedures and monitoring programmes. Examples of current WCPL management plans and monitoring programmes include:

- Environmental Management Strategy (EMS).
- Environmental Monitoring Programme (EMP).
- Aboriginal and Cultural Heritage Management Plan (ACHMP).
- Noise Monitoring Programme (NMP).
- Blast Management Plan and Blast Monitoring Programme (BMP).
- Spontaneous Combustion Management Plan (SCMP).
- Air Quality Monitoring Programme (AQMP).
- Site Water Management Plan (SWMP):
  - Site Water Balance (SWB);
  - Erosion and Sediment Control Plan (ESCP);
  - Site Water Management and Monitoring Plan (SWMMP);
  - Groundwater Monitoring Programme (GMP); and
  - Surface and Groundwater Response Plan (SGWRP).
- Rehabilitation and Landscape Management Plan:
  - Rehabilitation Management Plan (RMP).




*Source: Navin Officer, Holmes Air Sciences, Richard Heggie Associates, Gilbert & Associates and Australasian Groundwater and Environmental Consultants (2005)*

WILPINJONG COAL PROJECT

**FIGURE 2**
Blast Monitoring Sites and Site Access Road

Peabody

WIL-05-05 Mod_002B

WCPL also maintains a 24 hour, seven day per week complaints phone line and complaints register.

## 1.2 OVERVIEW OF THE MODIFICATION

WCPL is proposing the following modification to Project Approval 05-0021 under Section 75W of the *Environmental Planning and Assessment Act, 1979* (EP&A Act) (refer Section 3):

- Increasing the permitted frequency of blasting to a maximum of two blasts per day and five blasts per week on average over any 12 month period. The Project Approval currently limits blasting to one blast per day and one blast per week on average over any 12 month period.
- Permitting the Project operational phase primary mine access route to be along Ulan Road and Ulan-Wollar Road (rather than Ulan Road and Wollar Road) (Figure 1) with the associated mine access road intersection to be located on Ulan-Wollar Road.

The modification is explained in further detail in Section 2.

## 1.3 OVERVIEW OF OTHER RELEVANT MINING OPERATIONS

### 1.3.1 Ulan Coal Mines

The Ulan Coal Mines is a combined open cut and underground coal mining complex located approximately 11 km to the north-west of the Project, near the village of Ulan (Figure 1). The Ulan Coal Mines incorporate underground and open cut mining areas; and associated surface infrastructure including a CHPP, rail loop, rail loading and administrative facilities. The Ulan Coal Mines operate under a number of consents.

The potential cumulative impacts of the Ulan Coal Mines and the Project modification are considered in Section 4 of this EA.

### 1.3.2 Moolarben Coal Project

The Moolarben Coal Project is a proposed open-cut and underground mining operation located between Ulan Coal Mines and the Project (Figure 1). The EA for the Moolarben Coal Project has been publicly exhibited and is currently being assessed by the DoP and the Minister for Planning. The Moolarben Coal Project would potentially involve the construction and operation of three open cuts, an underground mine and associated infrastructure (Moolarben Coal Mines Pty Limited, 2005).

The potential cumulative impacts of the Moolarben Coal Project and the Project modification are considered in Section 4 of this EA.

## 1.4 OUTCOMES OF THE CONSULTATION PROGRAMME

Consultation with respect to the modification commenced in January 2006. The objective of consultation was to familiarise stakeholders with the modification and to identify issues that should be considered in the EA. Government agencies, the local community, service providers and relevant local mining operations have been consulted. A fact sheet on the modification was prepared to assist with the consultation process.

An outline of the consultation undertaken and the general comments received is provided below. The outcomes of consultation have been considered in the development of this EA and the associated mitigation and management measures provided in Section 4 and in the draft Statement of Commitments provided in Section 5.

### 1.4.1 State and Local Government Agencies

State and local government agencies consulted include:

- DoP;
- Department of Environment and Conservation (DEC)[1];
- Mid-Western Regional Council (MWRC); and
- Roads and Traffic Authority (RTA).

The key outcomes of the consultation with these agencies are outlined below.

***Department of Planning***

In late 2006 and early 2007, WCPL consulted with DoP in regard to seeking the necessary approvals for the modification. In accordance with Section 75W of the EP&A Act, the Director-General of DoP issued DGRs (Attachment 2). Table 2 indicates where each of the requirements of the DGRs is addressed in this EA.

**Table 2**
**DGRs – Reference Summary***

| General/Key/Consultation Requirements | Document Reference |
|---|---|
| ***General Requirements*** | |
| The Environmental Assessment must include: | |
| An Executive Summary. | Executive Summary – front of EA document |
| A detailed description of the modification including the need for the modification, alternatives considered, the various components of the modification and the likely inter-relationship between the modification and the existing or approved mining operations in the region. | Sections 1, 2, 3, 4, 6 and Appendices A to C |
| Consideration of any relevant statutory provisions. | Section 3 |
| A general overview of the environmental impacts of the modification (General Overview), identifying the key issues for further assessment and taking into consideration the issues raised during consultation. | Section 1 |
| A detailed assessment of the key issues of the modification (and any other significant issues identified in the General Overview for the modification) including a description of the existing environment and an assessment of the potential impacts of the modification including potential cumulative impacts (particularly traffic, traffic noise and public safety) that may arise from the combined operation of the modified project, together with the other approved and existing mines in the region. | Section 4 and Appendices A to C |
| A description of the measures that would be implemented to avoid, minimise, mitigate, offset, manage and/or monitor the impacts of the modification, and whether the existing planning agreement with Mid-Western Regional Council needs to be revised as a result of the modification. | Sections 4 and 5 and Appendices A to C |
| Draft Statement of Commitments. | Section 5 |
| A conclusion justifying the modification, taking into consideration the environmental impacts of the modification, and the benefits of the modification. | Section 6 |
| Certification by the author of the Environmental Assessment. | Front of EA document |

* The complete version of the DGRs is presented in Attachment 2.

[1] The Department of Environment and Conservation (DEC) is now known as the Department of Environment and Climate Change, however, herein it is referred to as the DEC.

**Table 2 (Continued)**
**DGRs – Reference Summary***

| General/Key/Consultation Requirements | Document Reference |
|---|---|
| ***Key Assessment Requirements*** | |
| The Environmental Assessment must include assessment of the following key issues: | |
| Traffic and Transport – a detailed traffic impact assessment of the modified Project operational phase mine access route, including consideration of intersection performance; road safety; pavement conditions; school bus routes; the potential for staggered shift changes with other mines in the area; lighting and signage; and the likely interactions with other approved, existing or proposed mines in the area. A strategy must also be included that describes the measures to be undertaken (in consultation with other relevant mining companies) to maintain an appropriate level of road safety and road surface performance on Ulan Road (and other relevant local roads) that is consistent with it being used as the primary access route for the various coal mines in the area. | Sections 4 and 5 and Appendix B |
| Noise – a detailed road traffic noise assessment. | Sections 4 and 5 and Appendix C |
| Blasting and Vibration. | Sections 4 and 5 and Appendix A |
| ***Consultation Requirements*** | |
| During the preparation of the Environmental Assessment, you must consult with the relevant local, State or Commonwealth Government authorities, service providers, community groups or affected landowners. The consultation process and the issues raised must be described in the Environmental Assessment.<br>In particular consultation must be undertaken with:<br>• NSW Roads and Traffic Authority;<br>• Department of Environment and Conservation;<br>• Mid-Western Regional Council;<br>• Wilpinjong Community Consultative Committee;<br>• Ulan Coal Mine Pty Limited; and<br>• Moolarben Coal Mine Pty Limited. | Sections 1.4 and 1.5 |

* The complete version of the DGRs is presented in Attachment 2.

### *Department of Environment and Conservation*

WCPL provided the DEC with a copy of the modification fact sheet on 15 March 2007. Subsequent to this, WCPL organised a meeting with the DEC to discuss the modification and identify any concerns that the DEC had in relation to the modification. During the meeting (held on 21 March 2007), the DEC indicated they had no issues with the modification.

### *Mid-Western Regional Council*

WCPL provided the MWRC with a copy of the modification fact sheet on 15 March 2007. In response to the modification fact sheet and phone conversations, the MWRC advised the following (via an email on 30 March 2007):

> "*I have noted your outline of the proposed modification to Project approval 05-0021. At this stage Council does not have any adverse comment in relation to the modification and looks forward to review of the details of the application once lodged. In relation to the change in access arrangements it would appear that the proposed access will have less impact on the Mughorn Gap Nature Reserve. Subject to consideration of the details of the application Council would encourage any modification that would reduce the impact on the Reserve.*"

***Roads and Traffic Authority***

WCPL provided the RTA with a copy of the modification fact sheet on 16 March 2007. The RTA responded (via an email dated 27 March 2007) and outlined they would be required to approve detailed construction plans before any roadworks commenced in regard to the Ulan Road/Ulan-Wollar Road intersection. The RTA also advised that the EA should consider potential cumulative impacts of the modification when combined with the proposed Moolarben Coal Project and that potential blasting impacts should be adequately addressed.

### 1.4.2 Other Relevant Mining Operations

The Ulan Coal Mines and Moolarben Coal Mines Pty Limited (the proponent of the proposed Moolarben Coal Project) were provided with a copy of the modification fact sheet (emails dated 26 March 2007 and 15 March 2007 respectively) and their comments were requested.

Ulan Coal Mines advised (via an email dated 26 March 2007):

> *"Provided the necessary risk control processes are adopted regarding any roadworks/routes etc and all required approvals are obtained for the roadworks and blasting, UCML has no issue with your proposal."*

Moolarben Coal Mines Pty Limited advised (letter dated 22 March 2007):

> *"We refer to your email dated 15/03/07 and appreciate the opportunity to provide comments on Wilpinjong Coal Mine's proposed modifications in relation to blasting and public road access to the mine. The following comments are offered in relation to the proposed modifications:-*
>
> ***1. Public road access to Wilpinjong Coal Mine***
>
> *It is noted that Wilpinjong Coal Mine seeks to modify vehicular access arrangements from the Ulan Road and Wollar Road to the Ulan Road and Ulan-Wollar Road.*
>
> *In preparing the Moolarben Coal Project (MCP) Environmental Assessment Report, a traffic impact assessment was undertaken by Sinclair Knight Merz (SKM). SKM was instructed to assess traffic impacts on the assumption that the staff of Wilpinjong Coal Mine would utilise the Ulan Road and Ulan-Wollar Road for both its construction and operational phases. This was reported in the MCP Environmental Assessment Report (see Section 5.16.1 Volume 1 and Sections 3.4.1, 4.1.1 Volume 5).*
>
> *We note Wilpinjong Coal Mine's commitment to consult with "relevant mining companies to ensure that appropriate consideration is made in regard to the potential requirements for the realignment of the Ulan-Wollar Road and the Ulan Road-Wollar Road intersection".*
>
> *We would expect that if the Minister of Planning grants consent to the modification it would be subject to a cost sharing arrangement between the relevant parties in relation to road works commonly used by both coal mines.*
>
> ***2. Blasting Frequency***
>
> *Wilpinjong Coal Mine proposes to increase the blasting frequency from "one to two blasts per day". No objection is raised to increasing the blasting frequency provided ANZECC criteria are achieved.*
>
> *It should be noted that blasting for the MCP will generally be conducted between the hours of 9.00am to 5.00pm Monday to Saturday and may at times require more than one (1) blast per day.*
>
> *We expect that a co-ordinated Blast Management Plan will be prepared and implemented between MCP and Wilpinjong Coal Mine to minimise impacts upon operations and transportation associated with both coal mines."*

### 1.4.3 Public Consultation

Preliminary consultation regarding the modification was undertaken with the Wilpinjong Community Consultative Committee (CCC) in April and May 2006. The CCC members indicated (at the May 2006 meeting) that the access using Ulan Road was preferable to using Wollar Road.

The modification to the mine access route for operational traffic was further discussed with the CCC in July 2006 and November 2006. In addition, a copy of the modification fact sheet was provided to members of the CCC in March 2007 and the modification was discussed during a CCC meeting on 16 April 2007.

In addition to the consultation with the CCC, WCPL presented the proposed operational phase access route and blast frequency modification to the general public at a community meeting held in the Wollar town hall on 5 March 2007. Community members present at the meeting were generally in favour of the modification as it did not require additional traffic through the Munghorn Gap Nature Reserve and it would help to minimise operational phase traffic through Wollar. The community did not provide any particular comment regarding the proposed increase in blasting frequency at the meeting.

WCPL met with a local resident and school bus service provider (Mr Tuck-Lee) on 3 April, 2007 to discuss the proposed modification. Mr Tuck-Lee operates bus services on the Ulan Road between Ulan and Mudgee. Mr Tuck-Lee advised his preference for the Wollar Road to remain the primary Project access route from Mudgee. However, if the Ulan Road and Ulan-Wollar Road was to be utilised, Mr Tuck-Lee indicated he would like works to be undertaken by WCPL, local mining operations and the MWRC with respect to the safety of school bus and traffic interaction on the route. Mr Tuck-Lee's overriding comment was that the Project should cease operations.

In addition, the Project Application and DGRs were placed on the DoP's website in accordance with Section 75X(2)(f) of the EP&A Act in February 2007.

### 1.4.4 Commonwealth Government Agencies

As the modification would not be referred under the *Environment Protection and Biodiversity Conservation Act, 1999* (EPBC Act), no consultation with Commonwealth government agencies was required. The relevance of the EPBC Act is described in Section 3.

## 1.5 IDENTIFICATION OF THE KEY ENVIRONMENTAL IMPACTS OF THE MODIFICATION

The potential environmental impacts of the Project were assessed in the Project EIS (WCPL, 2005). As the modification is limited in scope, the majority of aspects assessed in the Project EIS would be unchanged by the modification and therefore do not require any additional assessment.

Assessment of the potential environmental impacts of the modification has been undertaken, including consideration of the issues raised during consultation (Section 1.4) and are summarised below.

Table 3 provides a general overview of the potential environmental impacts of the modification.

**Table 3**
**General Overview of Potential Environmental Impacts of the Modification**

| Characteristics of the Modification[1] | Key Issues |
|---|---|
| *How is the Modification likely to affect the physical aspects of the environment or introduce Pollution or Safety Risk Factors?* | Potential traffic flow or traffic safety impacts associated with moving Project operational phase traffic flows from Ulan Road and Wollar Road to Ulan Road and Ulan-Wollar Road, including cumulative traffic impacts with other mines on Ulan Road. |
| | Potential adverse amenity impacts from increased blasting frequency, including cumulative impacts with other mines. |
| *How is the Modification likely to affect the biological aspects of the environment?* | Possible decreased adverse impacts (vehicle strike) on fauna in the Munghorn Gap Nature Reserve due to decreased operational phase Project traffic on Wollar Road. |
| *How is the Modification likely to affect natural or community resources?* | Increased operational phase Project traffic on Ulan-Wollar Road, with a comparable reduction in traffic on Wollar Road. |
| | Ongoing contributions from WCPL to MWRC towards improving community infrastructure in the form of road upgrades. |
| *How is the Modification likely to affect the community?* | Would maintain Project input into the regional and state economy. |
| | Ongoing contributions from WCPL to MWRC towards improving community infrastructure in the form of road upgrades. |
| | Public concerns regarding road safety. |
| *How is the Modification likely to affect areas sensitive because of community factors?* | Not applicable. |
| *How is the Modification likely to affect environmentally sensitive areas?* | Possible decreased adverse impacts (vehicle strike) on fauna in the Munghorn Gap Nature Reserve due to decreased operational phase Project traffic on Wollar Road. |

[1] Adapted from DIPNR (2005)

It should be noted that WCPL would not be the proponent of any general upgrades of the public road network (e.g. sealing of Ulan-Wollar Road) that are undertaken in support of the Project. Such works would be undertaken by the MWRC or an approved contractor and any necessary environmental approvals for these works would be obtained by the MWRC (or approved contractor) prior to the works being undertaken.

Table 4 provides a summary of the key environmental issues assessed for the modification.

**Table 4**
**Key Environmental Issues Requiring Further Assessment**

| Key Issues | Document Reference |
|---|---|
| Acoustics, including: | |
| • road transport noise; and | Section 4.3 |
| • blasting. | Section 4.1 |
| Road Transport | Section 4.2 |

As outlined in Table 4, environmental issues requiring further assessment for the modification are provided in Section 4.

# 2 DESCRIPTION OF THE MODIFICATION

## 2.1 BLASTING FREQUENCY INCREASE

Condition 12, Schedule 3 of the Project Approval (Attachment 1) stipulates the following criteria for blasting frequency:

> ***Blasting Frequency***
>
> *The Proponent shall not carry out blasting associated with open cut mining more than:*
> - *1 blast per day; and*
> - *1 blast per week on average over any 12 month period,*
>
> *at the site without the written approval of the Director-General.*

Mining to date has indicated that some of the coal seams and interburden (rock between coal seams) are significantly harder than initially predicted and cannot be efficiently ripped via dozer as described in the Project EIS. Ripping trials have been undertaken with different size plant and have shown that ripping of the coal seams and interburden is impracticable.

Due to the harder than predicted nature of the coal seams and interburden, an increased frequency of blasting is required to enable the feasible continuation of mining at the Project.

The majority of additional blasts are expected to be significantly smaller than the Maximum Instantaneous Charge (MIC) of 885 kilograms (kg) assessed in the Project EIS.

The modification to the Project Approval criteria for blasting frequency is to increase the number of blasts to allow the regular blasting of coal and interburden material as follows:

- a maximum of two blasts per day; and
- a maximum of five blasts per week on average over any 12 month period.

### 2.1.1 Alternatives Considered

As outlined in the Project EIS, a range of open cut mining methods were considered for the Project, including (WCPL, 2005):

- dragline mining;
- truck/shovel;
- throw blast/dozer push; and
- BOSMIN overburden slusher mining technology (comprising winches pulling a hoe to strip waste rock material).

The throw blast/dozer push mining method was chosen as it provides for operational and planning flexibility. While all mining methods (outlined above) have been reconsidered as part of recent mine planning, WCPL considers the current mining method to be the most feasible option (with the addition of coal and interburden blasting) due to its operational and planning flexibility.

## 2.2 MINE ACCESS ROUTE ALTERATION

The mine access route alteration seeks to permit the primary mine access route from Mudgee to the Project for operational phase traffic to be via Ulan Road and Ulan-Wollar Road rather than via Ulan Road and Wollar Road as proposed in the Project EIS (Figure 1). Access into the Project from Ulan-Wollar Road would be provided via the construction of an internal mine access road connecting the mine facilities area to Ulan-Wollar Road (Figure 2) with a suitably designed intersection.

The Ulan Road and Ulan-Wollar Road route is currently being utilised for the movement of Project construction phase traffic, which at peak was estimated to comprise up to 312 vehicle movements per day, including some 24 light truck/heavy vehicle movements (WCPL, 2005). In comparison, peak Project operational phase traffic is expected to comprise some 236 vehicles movements per day, including some 16 light truck/heavy vehicle movements (WCPL, 2005).

Photographs of Ulan Road and Ulan-Wollar Road are provided as Plates 1 to 10.

### 2.2.1 Alternatives Considered

The majority of Project related traffic is expected to access the site from Mudgee (WCPL, 2005). There are two viable route options between Mudgee and the site (Figure 1):

- Ulan Road and Ulan-Wollar Road; and
- Ulan Road and Wollar Road.

The latter was assessed in the Project EIS and the former is assessed as part of the modification following the Route Assessment Study conducted in accordance with the Project Approval (Attachment 1) (Section 1.1.2), which indicated that (JWP, 2006):

> *"… Ulan Road (MR 214) and the Ulan-Wollar Road have been identified as the preferred construction and operational traffic route to the Project".*

# 3 PLANNING FRAMEWORK AND STATUTORY PROVISIONS

The Project EIS was originally prepared in accordance with Part 4 of the EP&A Act however it was accepted by the Director-General of the DoP under Clause 8J(2) of the *Environmental Planning and Assessment Regulation, 2000* (EP&A Regulation) as an EA for the purpose of Part 3A of the EP&A Act. Hence the Project was approved under Part 3A of the EP&A Act by the Minister for Planning in February 2006 (Project Approval 05-0021 – Attachment 1).

As outlined in Section 1.4.1, WCPL consulted with DoP in late 2006 and early 2007 with regard to seeking the necessary approvals for the modification. Based on this consultation, this EA has been prepared under Section 75W of the EP&A Act to assess the modification. Section 75W of the EP&A Act states:

> **75W Modification of Minister's approval**
>
> *(1) In this section:*
>
> ***Minister's approval** means an approval to carry out a project under this Part, and includes an approval of a concept plan.*
>
> ***modification of approval** means changing the terms of a Minister's approval, including:*
>
> *(a) revoking or varying a condition of the approval or imposing an additional condition of the approval, and*
>
> *(b) changing the terms of any determination made by the Minister under Division 3 in connection with the approval.*
>
> *(2) The proponent may request the Minister to modify the Minister's approval for a project. The Minister's approval for a modification is not required if the project as modified will be consistent with the existing approval under this Part.*
>
> *(3) The request for the Minister's approval is to be lodged with the Director-General. The Director-General may notify the proponent of environmental assessment requirements with respect to the proposed modification that the proponent must comply with before the matter will be considered by the Minister.*
>
> *(4) The Minister may modify the approval (with or without conditions) or disapprove of the modification.*
>
> *….*

The Director-General of DoP has issued DGRs for this EA (Section 1.4.1) (in accordance with Section 75W of the EP&A Act) which are provided as Attachment 2.

## 3.1 GENERAL STATUTORY REQUIREMENTS

The Project is wholly within the *Mudgee Local Environmental Plan, 1998* (Mudgee LEP) area under the EP&A Act.

Mudgee LEP refers throughout to "Council" in its capacity as consent authority. The Project has a Project Approval under Part 3A of the EP&A Act, for which the consent authority is the Minister for Planning. References to "Council" in the Mudgee LEP should therefore be interpreted as references to the Minister for Planning for this Project.

Division 4 of Part 3 of the Mudgee LEP provides a number of miscellaneous provisions of which Clause 34 is of some relevance to the Project:

*Clause 34 Access to main roads*

*(1) The Council must not grant consent to development involving vehicular access from a site to a main road unless it is satisfied that:*

*(a) no other reasonable and practicable access is available to the site, and*

*(b) the design of the vehicular access point will enable the safe entry and exit of vehicles to the site, and*

*(c) the level of traffic likely to be generated by development on the site will not prejudice the efficiency and safety of the main road.*

The Project EIS proposed an internal mine access road from the Project facilities area to Wollar Road (a main road) via the realignment of an existing intersection (i.e. the Wilpinjong Road/Wollar Road intersection). Under the modification, the internal mine access road would intersect Ulan-Wollar Road (Figures 1 and 2). As the Ulan-Wollar Road is a local road maintained by the MWRC, not a main road, Clause 34 above does not apply. Notwithstanding, the intersection of the internal mine access road and Ulan-Wollar Road would be designed to suitable standards in consultation with the RTA and MWRC (Section 4.2 and Appendix B).

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

The aim of this Policy is to provide for the proper management and development of mineral, petroleum and extractive material resources, including the establishment of appropriate planning controls to encourage ecologically sustainable development. This policy requires the consent authority to consider under Clause 16 whether consent should be issued subject to conditions that do any one or more of the following:

- require that some or all of the transport of materials in connection with the development is not to be by public road;
- limit or preclude truck movements, in connection with the development, that occur on roads in residential areas or on roads near to schools; and
- require the preparation and implementation, in relation to the development, of a code of conduct relating to the transport of materials on public roads.

It also requires the consent authority to refer a copy of the EA for the proposed Project modification to the RTA.

With respect to transport of materials by public road, Section 2.7 of the Project EIS states:

> *"WCPL does not propose to haul coal along public roads. All coal would be hauled on internal roads on WCPL-owned land and transported externally by rail."*

No haulage of coal on public roads is proposed for the modification.

***Environment Protection and Biodiversity Conservation Act, 1999***

The objective of the Commonwealth EPBC Act is to provide for the protection of those aspects of the environment that are of "*national environmental significance".* Proposals that are likely to have a significant impact on a matter of environmental significance are defined as a *"controlled action"* under the EPBC Act. Proposals that are, or may be, a controlled action are required to be referred to the Commonwealth Minister for the Environment to determine whether or not the action is a controlled action.

The modification is not likely to have a significant impact on any protected matters listed under the EPBC Act. It has therefore not been referred to the Commonwealth Minister for the Environment for consideration under the EPBC Act, as no "controlled action" is proposed.

***Other Approvals***

*Roads Act, 1993*

Under Section 138 of the *Roads Act, 1993* (the Roads Act), consent is required to:

*(a) erect a structure or carry out work in, on or over a public road, or*

*(b) dig up, or disturb the surface of a public road, or*

*(c) remove or interfere with a structure, work or tree on a public road, or*

*(d) pump water into a public road from any land adjoining the road, or*

*(e) connect a road (whether public or private) to a classified road.*

As described in Section 2.2, a suitably designed intersection would be developed where the internal mine access road connects the mine facilities area to Ulan-Wollar Road (Figure 2). These works and any other roadworks undertaken on the public road network by MWRC would require consent under the Roads Act.

## 3.2 PLANS, LICENCES AND AGREEMENTS THAT REQUIRE REVISION

### 3.2.1 Project Approval Conditions

Condition 12, Schedule 3 of the Project Approval (Attachment 1) stipulates criteria for blasting frequency as follows:

> ***Blasting Frequency***
>
> *The Proponent shall not carry out blasting associated with open cut mining more than:*
> - *1 blast per day; and*
> - *1 blast per week on average over any 12 month period,*
>
> *at the site without the written approval of the Director-General.*

The Project Approval (Attachment 1) criteria for blasting frequency would require revision as a result of the modification as follows:

> ***Blasting Frequency***
>
> *The Proponent shall not carry out blasting associated with open cut mining more than:*
> - ***2*** *blasts per day; and*
> - ***5*** *blasts per week on average over any 12 month period,*
>
> *at the site without the written approval of the Director-General.*

Condition 52, Schedule 3 of the Project Approval (Attachment 1) stipulates criteria for traffic management as follows:

> ***Traffic Management***
>
> *52. The Proponent shall design and construct:*
>
> *(a) the mine access road - Wollar Road intersection to the satisfaction of the RTA and Council;*
>
> *(b) the realignment of the Ulan-Wollar Road to the satisfaction of the Council; and*
>
> *(c) the road-rail crossings of the Gulgong - Sandy Hollow railway to the satisfaction of the ARTC and Council.*

The Project Approval conditions for traffic management would require revision as a result of the modification as follows:

> ***Traffic Management***
>
> *52. The Proponent shall design and construct:*
>
> *(a) the mine access road – **Ulan-**Wollar Road intersection to the satisfaction of the RTA and Council;*
>
> *(b) the realignment of the Ulan-Wollar Road to the satisfaction of the Council; and*
>
> *(c) the road-rail crossings of the Gulgong - Sandy Hollow railway to the satisfaction of the ARTC and Council.*

### 3.2.2 Environment Protection Licence Conditions

Condition L7.4 of the Environment Protection Licence (EPL) No. 12425 also stipulates blasting frequency:

> *Blasting at the premises is limited to 1 blast per day and 1 blast per week on average over a 12 month period, or at such times as may be approved by the EPA.*

This condition would require revision as a result of the modification as follows:

> *Blasting at the premises is limited to **2** blasts per day and **5** blasts per week on average over a 12 month period, or at such times as may be approved by the EPA.*

### 3.2.3 Wilpinjong Coal Project Planning Agreement

WCPL has reviewed the Wilpinjong Coal Project Planning Agreement and it is considered that no changes would be required as a result of the modification.

### 3.2.4 Project Management Plans

The BMP (WCPL, 2006) would require revision to reflect the revised blasting regime as a result of the modification.

### 3.2.5 Mining Operations Plan

The Mining Operations Plan (MOP) may require revision to reflect the revised blasting regime and the revised internal site access road as a result of the modification.

# 4 ENVIRONMENTAL ASSESSMENT

## 4.1 BLASTING, VIBRATION AND PUBLIC SAFETY

The Construction, Operation and Transportation Noise and Blasting Impact Assessment (Appendix D of the Project EIS) assessed potential blast emission impacts of the Project against the relevant criteria for private residences and Aboriginal rock art sites (Richard Heggie Associates, 2005).

Conditions 9 and 10, Schedule 3 of the Project Approval (Attachment 1) stipulate the following criteria for blasting emission limits:

> ***Airblast Overpressure and Ground Vibration***
>
> *The Proponent shall ensure that the airblast overpressure level from blasting at the project does not exceed the following criteria at any residence on privately owned land:*
>
> - *115 dB (Lin Peak) for more than 5% of the total number of blasts over a period of 12 months; and*
> - *120 dB (Lin Peak) at any time.*
>
> *The Proponent shall ensure that the ground vibration level from blasting at the project does not exceed the following criteria at any residence on privately owned land:*
>
> - *5mm/s for more than 5% of the total number of blasts over a period of 12 months; and*
> - *10 mm/s at any time.*

Conditions L7.1 and L7.2 of the Project EPL stipulate the following criteria for blasting emission limits:

> *L7 Blasting limits*
>
> *L7.1 The airblast overpressure level from blasting operations in or on the premises must not exceed:*
>
> *(a) 115 dB (Lin Peak) for more than 5% of the total number of blasts during each reporting period; and*
> *(b) 120 dB (Lin Peak) at any time.*
>
> *At any point within the grounds of noise and vibration sensitive locations and within 30 metres of any residence or other noise sensitive location such as a school or hospital .*
>
> *L7.2 The ground vibration peak particle velocity from blasting operations carried out in or on the premises must not exceed:*
>
> *(a) 5mm/s for more than 5% of the total number of blasts carried out on the premises during each reporting period; and*
> *(b) 10 mm/s at any time.*
>
> *At any point within the grounds of noise and vibration sensitive locations and within 30 metres of any residence or other noise sensitive location such as a school or hospital.*

### 4.1.1 Existing Environment

WCPL conducts blasting operations and monitoring in accordance with the BMP and the ACHMP. Blast monitoring results and management performance are reported annually by WCPL in the Annual Environmental Management Report (AEMR) and a summary is provided on the Project website.

To date, blast monitoring has been undertaken at two private residences; an Aboriginal rock art site (V1); two main line rail culverts and embankments (R1 and R2); a main line rail embankment, a concrete power pole and concrete railway antenna (R3); and a rail embankment (R4) (Figure 2). Blasting activities to date have been concentrated in Pits 1 and 2 at the northern end of the mining lease on either side of the rail loop (Figure 2).

Blasting commenced in March 2006 and the blast monitoring results for the period March 2006 to March 2007 are presented in Appendix A. No exceedances of the Project Approval or EPL ground vibration or airblast impact assessment criteria have been recorded to date (Appendix A).

In the period to 27 March 2007, only one blast related complaint has been received. This complaint was received following a blast on 2 March 2007 from a dwelling approximately 5 km away from the blast location. Monitoring results recorded for this blast did not exceed any of the ground vibration or airblast impact assessment criteria at the monitored sites (Appendix A).

### 4.1.2 Potential Impacts

A Blast Emission Impact Assessment has been conducted for the modification by Heggies Pty Ltd (Appendix A).

As outlined in Appendix A, compliance with ground vibration and airblast impact assessment criteria is not related to the frequency of blasting. The proposed increase in the frequency of blasting for the modification therefore would not result in any increase in the ground vibration or airblast impacts that were assessed in the Project EIS.

Heggies Pty Ltd Blast Emission Impact Assessment for the modification (Appendix A) concluded:

> *"Monitoring of blast emissions has indicated compliance with the relevant Project Approval and EPL criteria and only one blasting related complaint has been received in the period to 27 March 2007. Compliance with ground vibration and airblast impact assessment criteria is not related to the frequency of blasting and as such, the proposed increase in the frequency of blasting would not increase the ground vibration or airblast impacts assessed in the Project EIS blast impact assessment.*
>
> *The amenity impacts associated with an increase in the frequency of blasting are likely to be minimal with the continued implementation of the blast mitigation measures. It is recommended that the Project Approval and EPL blast emissions criteria remain unchanged, while Project Approval and EPL conditions limiting the frequency of blasting should be modified to accommodate the additional events."*

The modification in blasting frequency would result in a corresponding increase in the frequency of temporary road closures when blasting is undertaken close to public roads (i.e. within 500 metres [m]) to protect public safety.

### 4.1.3 Potential Cumulative Impacts

In regard to the other two mines in the local area (i.e. Ulan Coal Mines and the proposed Moolarben Coal Project), the potential cumulative impacts resulting from the increase in the frequency of Project blasting would be primarily related to public amenity (Appendix A). Potential amenity impacts may include increased or prolonged road closures due to multiple blasts in any one day resulting from the combined blasting requirements of the three separate mining operations. To manage these potential cumulative amenity impacts, WCPL would continue to implement the mitigation measures outlined in Section 4.1.4 below.

### 4.1.4 Mitigation and Management Measures

The BMP describes measures to manage potential blasting impacts of the operations, including:

- blast mitigation measures;
- remedial actions in the event of an exceedance;
- monitoring requirements; and
- blast notification requirements.

These blasting management and mitigation measures are outlined below:

- Operating a free-call Blasting Hotline that provides information on the daily and proposed weekly blasting schedule. Advertisement of the contact number in local newspapers at least quarterly, via the Wilpinjong Community Newsletter.
- Maintenance of road closure notification boards on Ulan-Wollar Road. Provision of at least three days warning of impending road closures subject to blasting demands.
- Traffic control signs set up in accordance with the RTA/MWRC guidelines for all temporary road closures.
- Modification of blast design to meet vibration and airblast limits and avoid damage to life or property from flyrock, including consideration of wind speed, direction and other meteorological factors prior to blasting to minimise impacts on neighbours.
- Assessment of wind speed and direction immediately prior to each blast to minimise the potential for dust emissions from blasting to adversely impact on neighbouring private residencies.
- Monitoring of blasts to determine whether airblast and ground vibration limits are met. Review of monitoring results and management practices to evaluate performance and identify responsive action, if required.
- Establishment of a meteorological assessment protocol so that blasts are postponed during adverse weather conditions.
- Restriction of blasting activities to Monday to Saturday inclusive between 9.00 am and 5.00 pm (Eastern Standard Time [EST]), with no blasting on Sundays, public holidays, or at any other time without the written approval of the DEC.
- Notification of private landholders within 2 km of the Project who have registered an interest in being informed of the blasting frequency via telephone, e-mail or as otherwise agreed.
- Repairing of any damage to buildings and/or structures on private residences confirmed to have been incurred as a result of blasting activities at the Project (via structural assessment process). Note that no repairs have been required to date.
- Gaining approval from the MWRC (in respect of public roads) and Australian Rail Track Corporation (in respect of the Gulgong-Sandy Hollow railway) prior to blasting within 500 m of a public road or railway.
- Operating the complaints line and register and managing all blast related complaints in accordance with the existing complaints protocol.

The above measures would continue to be implemented with the modification to blasting frequency. The BMP would be continued, with results reported in the AEMR and a summary provided on the Project website.

## 4.2 TRAFFIC AND PUBLIC SAFETY

A Project Road Transport Assessment was undertaken by TRAFFIX (2005) (Appendix K of the Project EIS) to assess road transport issues associated with the Project. The Road Transport Assessment outlined the existing traffic environment and the potential impact of the Project utilising the Ulan Road and Wollar Road as the main access route for Project operational phase traffic.

A route assessment study conducted by JWP (2006) in accordance with the Project Approval found that Ulan Road and Ulan-Wollar Road was more suitable as the primary access for the Project (Section 1.1.2).

### 4.2.1 Existing Environment

#### *Traffic Flows*

Existing traffic flows on Wollar Road, Ulan Road and Ulan-Wollar Road are provided in Table 5, including estimated peak Project construction phase traffic (up to 312 traffic movements), of which some 255 movements are estimated to travel west from the site on Ulan-Wollar Road.

**Table 5**
**Existing Traffic Flows**

| Road | Location | Measured Traffic Flows (excluding Project construction phase traffic)[1] | Project Construction Phase Traffic Flows[2] | Total Existing Traffic Flows |
|---|---|---|---|---|
| Wollar Road | Wollar Road - West of Wollar (near Wilpinjong Road) | 166 | 0 | 166 |
| | Wollar Road - West of Cooyal | 352 | 0 | 352 |
| | Wollar Road - East of Ulan Road | 613 | 0 | 613 |
| Ulan Road | Ulan Road - South of Ulan | 790 | 129 | 919 |
| | Ulan Road - North of Wollar Road/Budgee Budgee | 1,321 | 129 | 1,450 |
| | Ulan Road - North of Mudgee, South of Wollar Road | 3,482 | 129 | 3,611 |
| Ulan-Wollar Road | East of Ulan Road | 48 | 255 | 303 |

Source: WCPL, 2005; and traffic counts along Ulan-Wollar Road in October 2005 subsequent to the Project EIS studies.
[1] Values provided are the daily average of total traffic counts in both directions from Monday to Sunday.
[2] Values provided are the Project only peak predicted construction daily traffic counts in both directions.

#### *Traffic Accident Records*

A review of RTA accident data was undertaken for the Ulan Road and Ulan-Wollar Road. The data did not indicate any safety issues associated with the local road network that were of particular relevance to the Project. As would be expected based on traffic volumes, crash rates were higher for Ulan Road (46 recorded accidents between 2001 and 2005) than for Ulan-Wollar Road (four recorded accidents between 2001 and 2005).

***Relevant School Bus Routes***

School bus services operate along several routes in the area including along the proposed operational phase access route between the Project and Mudgee via Ulan Road and Ulan-Wollar Road, including (Moolarben Coal Mines Pty Ltd, 2006):

- Cooks Gap to Mudgee – Ulan Road;
- Ulan to Mudgee – Ulan Road; and
- Winchester Crescent and Ridge Road to Ulan – Ulan Road.

School buses generally travel on the above routes between 7.30 am and 9.00 am and between 3.00 pm and 5.00 pm (*ibid.*).

***Intersection Performance, Pavement Conditions, Road Safety, Lighting and Signage***

As described in Appendix B, the Route Assessment Study (JWP, 2006) identified a number of improvements to intersection performance, road safety, lighting, signage and pavement conditions that could be undertaken to raise the standard of the local road network.

### 4.2.2 Potential Impacts

The Project Road Transport Assessment (Traffix, 2005) outlined the daily traffic volumes that would be generated by the operational phase of the Project, as follows:

- 200 light vehicle (worker) movements;
- 20 light vehicle (visitor) movements;
- 16 small truck/heavy vehicle movements (representing 6.8% of the total volume); and
- 236 total movements (118 in, 118 out).

A Traffic Impact Assessment of the modification has been undertaken by JWP (2007) and is included as Appendix B. The Traffic Impact Assessment assessed the proposed use of Ulan Road and Ulan-Wollar Road (Figure 1), including consideration of:

- traffic generation;
- intersection performance;
- road safety;
- pavement conditions;
- school bus routes;
- lighting and signage; and
- potential interactions with other approved, existing or proposed mines in the area (i.e. Ulan Coal Mine and the proposed Moolarben Coal Project).

### *Operational Phase Traffic Movements*

Appendix B assessed the potential traffic flow implications of using Ulan Road and Ulan-Wollar Road as the primary operational phase access route for the Project (Table 6). Of the 236 vehicle movements associated with the peak operational phase, the modification would result in some 192 being transferred from Wollar Road to Ulan-Wollar Road.

**Table 6**
**Potential Impact of the Modification**
**on the Distribution Operational Phase Traffic Flows**

| Road | Location | Previously Predicted Traffic Flows[1] | Total Change due to Modification | New Traffic Volume with Modification | % Change |
|---|---|---|---|---|---|
| Wollar Road | Wollar Road - West of Wollar (near Wilpinjong Road) | 358 | -192 | 166 | -54 |
| | Wollar Road - West of Cooyal | 544 | -192 | 352 | -35 |
| | Wollar Road - East of Ulan Road | 805 | -192 | 613 | -24 |
| Ulan Road | Ulan Road - South of Ulan | 790 | 192 | 982 | 24 |
| | Ulan Road - North of Wollar Road/Budgee Budgee | 1,321 | 192 | 1,513 | 15 |
| | Ulan Road - North of Mudgee, South of Wollar Road | 3,674 | 0 | 3,674 | 0 |
| Ulan-Wollar Road | East of Ulan Road | 74 | 192 | 266 | 260 |

Source: WCPL, 2005; and traffic counts along Ulan-Wollar Road in October 2005 subsequent to the Project EIS studies.
[1] Includes existing traffic flows and approved Project operational phase traffic flows.
Note: Values provided are the daily average of total traffic counts in both directions from Monday to Sunday.

JWP (2007) concluded (Appendix B):

> *"The Project operational phase is predicted to generate less traffic than the Project construction phase (i.e. 312 total vehicle movements including 24 small truck/heavy vehicle movements during Project construction compared with 236 total vehicle movements including 16 small truck/heavy vehicle movements during Project operations) (TRAFFIX, 2005).*
>
> *The existing daily traffic flows in the vicinity of the Project are low and the addition of the Project operational phase traffic on Ulan Road and Ulan-Wollar Road would have little impact on the existing levels of service and road safety of the local road network. …*
>
> *Based on the above assessment, the proposed Project operational phase access route (i.e. Ulan Road and the Ulan-Wollar Road) (which is currently being utilised for Project construction traffic) would be suitable to accommodate the predicted traffic flows for the Project operational phase and is more suitable than the access route described in the Project EIS (i.e. via Wollar Road)."*

### *School Bus Movements*

Table 7 provides an indication of the potential for interaction between the traffic generated by the Project, Ulan Coal Mines, the Moolarben Coal Project (if approved) and school bus traffic.

**Table 7**
**Potential Interaction between Mine Generated Traffic and School Buses**

| Traffic Source | | Time of Day that the Majority of Traffic is Travelling | | |
|---|---|---|---|---|
| | | Morning | Afternoon | Evening |
| School Buses | | 7.30 am to 9.00 am | 3.00 pm to 5.00 pm | N/A |
| Wilpinjong Coal Project | | 3.30 am to 8.00 am | 3.30 pm to 7.00 pm | N/A |
| Ulan Coal Mines | Open Cut | 6.00 am to 7.00 am | 3.00 pm to 4.00 pm | N/A |
| | Underground | 5.30 am to 8.30 am | 1.30 pm to 4.30 pm | 9.30 pm to 12.30 am |
| Moolarben Coal Project | | 6.00 am to 8.00 am | 6.00 pm to 8.00 pm | N/A |

Source: Moolarben Coal Mines Pty Ltd (2006) and Thiess (2007).

### 4.2.3 Potential Cumulative Impacts

JWP (2007) considered the potential impacts of future traffic growth and the potential for cumulative traffic growth associated with Ulan Coal Mines and the Moolarben Coal Project (if approved). The assessment concluded (Appendix B):

> *"Consideration of potential cumulative traffic growth associated with the Ulan Coal Mines and the Moolarben Coal Project (if approved) and future traffic growth indicates that flows on the local road network are unlikely to result in any significant additional traffic safety or capacity constraints in the medium to long term."*

### 4.2.4 Mitigation and Management Measures

The Traffic Impact Assessment (Appendix B), JWP (2007) recommended a range of roadworks that could be undertaken to improve intersection performance, road safety (e.g. signage and lighting) and pavement conditions on the route between the Project and Mudgee for both the general public and mine related traffic. JWP (2007) also recommended that financial contributions provided by WCPL (and other local mining operations) to the MWRC should be directed towards the following recommended improvements:

- Bitumen the unsealed section of Ulan-Wollar Road between Ulan Road and the Project access road (approximately 7.3 km) in accordance with the MWRC requirements[1].
- Upgrade the signage and line marking along Ulan-Wollar Road between Ulan Road and the Project access road in accordance with current Australian Standard (AS) 1743:2001 *Road Signs – Specifications* (AS 1743), and RTA and AUSTROADS guides and standards.
- Install an intersection[2] of Ulan-Wollar Road with the Project site access road to accommodate Project operational related traffic (Figure 2). The intersection would include:
  - geometry and linemarking as per RTA type 'AUR Right Turn Treatment for vehicles traveling west on Ulan-Wollar Road and turning right into the Project access road; and
  - appropriate lighting at the intersection in accordance with AS 1158:2005 *Lighting for Roads and Public Spaces* (AS 1158) to Country Energy and RTA requirements.

[1] The determination of an appropriate design life and corresponding pavement design of the Ulan-Wollar Road would be developed in consideration of potential future road realignments (i.e. the re-alignment of the Ulan-Wollar Road required to accommodate the development of open pits approved as part of the Project) and in consultation with the MWRC and the RTA.

[2] The determination of an appropriate design life and corresponding intersection design would be developed in consideration of potential future road realignments (i.e. the re-alignment of the Ulan-Wollar Road required to accommodate the development of open pits approved as part of the Project) and in consultation with the MWRC and the RTA.

- Upgrade of the Ulan Road/Ulan-Wollar Road intersection[3] by:
  - upgrading the geometry and linemarking as per RTA type 'AUR Right Turn Treatment for vehicles traveling north on Ulan Road and turning right into Ulan-Wollar Road;
  - incorporating a separate left turn deceleration lane (for vehicles traveling southbound on Ulan Road) to improve safety and capacity for left turn traffic from Ulan Road; and
  - installing appropriate lighting at the intersection in accordance with AS 1158 to Country Energy and RTA requirements.
- A Traffic Management Plan would be prepared for any works required on Ulan-Wollar Road and works associated with the Ulan Road/Ulan-Wollar Road intersection in accordance with AS 1742.3: 2002 *Manual of Uniform Traffic Control Devices – Traffic Control Devices for Works on Roads* (AS 1742.3) and the RTA publication *Traffic Control at Work Sites*.

Further to the financial contributions that WCPL has provided to the MWRC to date, WCPL is also committed to future annual payments for community infrastructure and road maintenance via the Wilpinjong Coal Project Planning Agreement and Project Approval 05-0021.

***Road Safety and Road Surface Performance Strategy***

WCPL would implement a Road Safety and Road Surface Performance Strategy (the Road Performance Strategy) during the Project life to aid in the maintenance of an appropriate level of road safety and road surface performance on Ulan-Wollar Road and Ulan Road. The Road Performance Strategy would be implemented in consultation with the MWRC, RTA and other local mining operators.

Keys measures to be undertaken under the Road Performance Strategy would include:

- WCPL would encourage the MWRC to allocate a proportion of WCPL's (and other local mine operator's) annual financial contributions towards the cost of annual traffic count surveys to determine the relative contribution of each local mining operation to total traffic flows on the road network and for road dilapidation/safety surveys to identify any required works to maintain road safety and the road pavement surface on Ulan Road and Ulan-Wollar Road.
- WCPL would encourage employee traffic minimisation throughout the life of the Project by advocating car pooling through site inductions and regular tool box meetings and/or utilising employee bus services.
- WCPL would continue to actively promote safe driving on public roads.
- WCPL would undertake regular consultation with the MWRC, the RTA, local school bus service providers and other local mining operators to inform the direction of those annual financial contributions referred to above towards the progressive improvement of facilities for school bus stops on Ulan Road between Ulan-Wollar Road and Mudgee (e.g. to provide additional bus pull off areas).
- WCPL would consult with other local mining operators to identify whether the staggering of shift times could be undertaken to reduce cumulative peak hour traffic on Ulan Road and Ulan-Wollar Road if peak hour movements are identified as being excessive.
- WCPL would consult with the MWRC and other local mining operators to encourage the focussing of annual financial contributions from mining operations on road safety, road pavement improvements and general maintenance on Ulan Road and Ulan-Wollar Road.

[3] The determination of an appropriate design life and corresponding pavement design for intersection upgrades would be developed in consideration of potential future road re-alignments (i.e. a realignment of the western section of the Ulan-Wollar Road is proposed as part of the Moolarben Coal Project) and in consultation with the Moolarben Coal Project, the MWRC and the RTA.

## 4.3 TRAFFIC NOISE

The Project Construction, Operation and Transportation Noise and Blasting Impact Assessment (Appendix D of the Project EIS) assessed road traffic noise along sections of Wollar Road against the *Environmental Criteria for Road Traffic Noise, 1999* (DEC, 1999).

### 4.3.1 Existing Environment

The Project EIS predicted the majority of Project operational phase traffic would travel along Ulan Road and Wollar Road through the Munghorn Gap Nature Reserve. The traffic noise assessment undertaken during the Project approval process indicated (for Wollar Road) that, with the addition of Project related traffic, the daytime 60 dBA (A-weighted decibels) equivalent continuous noise level ($L_{Aeq[1\ hour]}$) and the night-time 55 dBA $L_{Aeq(1\ hour)}$ criteria was predicted to be exceed at a total of 12 dwellings. It was also noted, however, that the existing traffic may have been causing an exceedance of the day and night-time criteria at some of these dwellings.

### 4.3.2 Potential Impacts

Heggies Pty Ltd completed a Traffic Noise Impact Assessment for the modification (Appendix C).

Based on the *Environmental Criteria for Road Traffic Noise 1999* (DEC, 1999), Ulan Road is classified as a collector road and Ulan-Wollar Road is classified as a local road (Appendix C). The applicable noise assessment criteria are presented in Table 8.

**Table 8**
**Applicable Traffic Noise Criteria**

| Road | Daytime $L_{Aeq}$(1hour) | Night-time $L_{Aeq}$(1hour) |
|---|---|---|
| Ulan Road (Collector Road) | 60 dBA | 55 dBA |
| Ulan-Wollar Road (Local Road) | 55 dBA | 50 dBA |

Source: Appendix C

Where the nominated traffic noise criteria in Table 8 are already exceeded, traffic associated with the modification should generally not lead to an increase in the existing noise traffic levels by more than 2 dBA (Appendix C).

On the basis of conservative cumulative peak hour traffic movement assumptions for the modified Project, Ulan Coal Mines and the Moolarben Coal Project (if approved) Heggies Pty Ltd concluded (Appendix C):

> *"Based on conservative traffic noise predictions along Ulan Road and Ulan-Wollar Road the traffic noise impacts arising from the Project Modification are considered acceptable.*
>
> *No additional dwellings along the Ulan Road exceed the daytime criteria due to the Project Modification. Moreover, only three additional dwellings along the Ulan Road may exceed the night-time criteria due to the Project Modification but the increase above the baseline traffic noise is no more than 2 dBA.*

*Existing traffic noise levels along the Ulan-Wollar Road are lower than Ulan Road and Project related traffic is likely to increase noise levels by up to 9 dBA during the daytime peak hour and 8 dBA during the night-time peak hour. There are currently five private dwellings and one owned by Ulan Coal Mines located proximal to the Ulan-Wollar Road. Cumulative traffic noise levels are predicted to meet the daytime and night-time criteria at all five privately owned dwellings. Baseline traffic noise levels are predicted to already exceed the criteria at the Ulan Coal owned dwelling as it is only approximately 10 m from the road."*

### 4.3.3 Potential Cumulative Impacts

Potential cumulative traffic noise impacts from the modification, the Ulan Coal Mines, the Moolarben Coal Project and other road users are included in the assessment above and as part of the Traffic Noise Impact Assessment (Appendix C).

### 4.3.4 Mitigation and Management Measures

As described in Section 4.2, WCPL would continue to promote and encourage employees to car pool where possible and would consider operating a bus service (between Mudgee and site) to reduce the number of vehicle movements on the road during peak times.

# 5 DRAFT STATEMENT OF COMMITMENTS

As part of the modification, WCPL commits to the following:

***Blasting, Vibration and Public Safety***

- Operating a free-call Blasting Hotline that provides information on the daily and proposed weekly blasting schedule. Advertisement of the contact number in local newspapers at least quarterly, via the Wilpinjong Community Newsletter.
- Maintenance of road closure notification boards on Ulan-Wollar Road. Provision of at least three days warning of impending road closures subject to blasting demands.
- Traffic control signs set up in accordance with the RTA/MWRC guidelines for all temporary road closures.
- Modification of blast design to meet vibration and airblast limits and avoid damage to life or property from flyrock, including consideration of wind speed, direction and other meteorological factors prior to blasting to minimise impacts on neighbours.
- Assessment of wind speed and direction immediately prior to each blast to minimise the potential for dust emissions from blasting to adversely impact on neighbouring private residencies.
- Monitoring of blasts to determine whether airblast and ground vibration limits are met. Review of monitoring results and management practices to evaluate performance and identify responsive action, if required.
- Establishment of a meteorological assessment protocol so that blasts are postponed during adverse weather conditions.
- Restriction of blasting activities to Monday to Saturday inclusive between 9.00 am and 5.00 pm EST, with no blasting on Sundays, public holidays, or at any other time without the written approval of the DEC.
- Notification of private landholders within 2 km of the Project who have registered an interest in being informed of the blasting frequency via telephone, e-mail or as otherwise agreed.
- Repairing of any damage to buildings and/or structures on private residences confirmed to have been incurred as a result of blasting activities at the Project (via structural assessment process).
- Gaining approval from the MWRC (in respect of public roads) and Australian Rail Track Corporation (in respect of the Gulgong-Sandy Hollow railway) prior to blasting within 500 m of a public road or railway.
- Operating the complaints line and register and managing all blast related complaints in accordance with the existing complaints protocol.

***Traffic and Public Safety***

Appendix B (JWP, 2007) recommended a range of roadworks that could be undertaken to improve intersection performance, road safety (e.g. signage and lighting) and pavement conditions on the route between the Project and Mudgee for both the general public and mine related traffic. JWP (2007) also recommended that financial contributions provided by WCPL (and other local mining operations) to the MWRC should be directed towards the following recommended improvements:

- Bitumen the unsealed section of Ulan-Wollar Road between Ulan Road and the Project access road (approximately 7.3 km) in accordance with the MWRC requirements.
- Upgrade the signage and line marking along Ulan-Wollar Road between Ulan Road and the Project access road in accordance with current AS 1743:2001 *Road Signs – Specifications* (AS 1743), and RTA and AUSTROADS guides and standards.
- Install an intersection of the Ulan-Wollar Road with the Project site access road to accommodate Project operational related traffic (Figure 2). The intersection would include:
  - geometry and linemarking as per RTA type 'AUR Right Turn Treatment for vehicles traveling west on Ulan-Wollar Road and turning right into the Project access road; and
  - appropriate lighting at the intersection in accordance with AS 1158:2005 *Lighting for Roads and Public Spaces* (AS 1158) to Country Energy and RTA requirements.
- Upgrade of the Ulan Road/Ulan-Wollar Road intersection by:
  - upgrading the geometry and linemarking as per RTA type 'AUR Right Turn Treatment for vehicles traveling north on the Ulan Road and turning right into Ulan-Wollar Road;
  - incorporating a separate left turn deceleration lane (for vehicles traveling southbound on Ulan Road) to improve safety and capacity for left turn traffic from Ulan Road; and
  - installing appropriate lighting at the intersection in accordance with AS 1158 to Country Energy and RTA requirements.
- A Traffic Management Plan would be prepared for any works required on Ulan-Wollar Road and works associated with the Ulan Road/Ulan-Wollar Road intersection in accordance with AS 1742.3: 2002 *Manual of Uniform Traffic Control Devices – Traffic Control Devices for Works on Roads* (AS 1742.3) and the RTA publication *Traffic Control at Work Sites*.

Further to the financial contributions that WCPL has provided to the MWRC to date, WCPL is also committed to future annual payments for community infrastructure and road maintenance via the Wilpinjong Coal Project Planning Agreement and Project Approval 05-0021.

***Road Safety and Road Surface Performance Strategy***

WCPL would implement a Road Performance Strategy during the Project life to maintain an appropriate level of road safety and road surface performance on Ulan-Wollar Road and Ulan Road. The Road Performance Strategy would be implemented in consultation with the MWRC, RTA and other local mining operators.

Keys measures to be undertaken under the Road Performance Strategy would include:

- WCPL would encourage the MWRC to allocate a proportion of WCPL's (and other local mine operator's) annual financial contributions towards the cost of annual traffic count surveys to determine the relative contribution of each local mining operation to total traffic flows on the road network and for road dilapidation/safety surveys to identify any required works to maintain road safety and the road pavement surface on Ulan Road and Ulan-Wollar Road.
- WCPL would encourage employee traffic minimisation throughout the life of the Project by advocating car pooling through site inductions and regular tool box meetings and/or utilising employee bus services.
- WCPL would continue to actively promote safe driving on public roads.
- WCPL would undertake regular consultation with the MWRC, the RTA, local school bus service providers and other local mining operators to inform the direction of those annual financial contributions referred to above towards the progressive improvement of facilities for school bus stops on Ulan Road between Ulan-Wollar Road and Mudgee (e.g. to provide additional bus pull off areas).
- WCPL would consult with other local mining operators to identify whether the staggering of shift times could be undertaken to reduce cumulative peak hour traffic on Ulan Road and Ulan-Wollar Road if peak hour movements are identified as being excessive.
- WCPL would consult with the MWRC and other local mining operators to encourage the focussing of annual financial contributions from mining operations on road safety, road pavement improvements and general maintenance on Ulan Road and Ulan-Wollar Road.

***Traffic Noise***

WCPL would continue to promote and encourage employees to car pool where possible and would consider operating a bus service (between Mudgee and site) to reduce the number of vehicle movements on the road during peak times.

# 6 CONCLUSION

***Potential Benefits***

The economic benefits of the operational phase of the Project on the regional and state economy were described in the Project EIS (WCPL, 2005). The increased blast frequency would enable the feasible continuation of mining at the Project. This would facilitate the realisation of the associated Project economic benefits.

In addition to the above, the modification would remove approximately 192 Project operational phase traffic movements per day from the Wollar Road and from travelling through the Munghorn Gap Nature Reserve.

***Potential Environmental Impacts***

This EA and associated supporting studies provide an assessment of the potential environmental impacts of the modification and describe the mitigation and management measures to be employed by WCPL.

Heggies Pty Ltd Blast Emission Impact Assessment (Appendix A) concluded:

> *"Monitoring of blast emissions has indicated compliance with the relevant Project Approval and EPL criteria and only one blasting related complaint has been received in the period to 27 March 2007. Compliance with ground vibration and airblast impact assessment criteria is not related to the frequency of blasting and as such, the proposed increase in the frequency of blasting would not increase the ground vibration or airblast impacts assessed in the Project EIS blast impact assessment.*
>
> *The amenity impacts associated with an increase in the frequency of blasting are likely to be minimal with the continued implementation of the blast mitigation measures. It is recommended that the Project Approval and EPL blast emissions criteria remain unchanged, while Project Approval and EPL conditions limiting the frequency of blasting should be modified to accommodate the additional events."*

J. Wyndham Prince Pty Ltd Traffic Impact Assessment (Appendix B) concluded:

> *"The Project operational phase is predicted to generate less traffic than the Project construction phase (i.e. 312 total vehicle movements including 24 small truck/heavy vehicle movements during project construction compared with 236 total vehicle movements including 16 small truck/heavy vehicle movements during Project operations) (TRAFFIX, 2005).*
>
> *The existing daily traffic flows in the vicinity of the Project are low and the addition of the Project operational phase traffic on Ulan Road and Ulan-Wollar Road would have little impact on the existing levels of service and road safety of the local road network. …*
>
> *Based on the above assessment, the proposed Project operational phase access route (i.e. Ulan Road and the Ulan-Wollar Road) (which is currently being utilised for Project construction traffic) would be suitable to accommodate the predicted traffic flows for the Project operational phase and is more suitable than the access route described in the Project EIS (i.e. via Wollar Road)."*

Heggies Pty Ltd Traffic Noise Impact Assessment (Appendix C) concluded:

> *"Based on conservative traffic noise predictions along Ulan Road and Ulan-Wollar Road the traffic noise impacts arising from the Project Modification are considered acceptable."*

### *Conclusion*

Based on the potential benefits and environmental impacts described above, it is considered that the modification is justified.

# 7 REFERENCES

Department of Environment and Conservation (DEC) (1999) *Environmental Criteria for Road Traffic Noise.*

J. Wyndham Prince Pty Ltd (JWP) (2006) *Route Assessment Report – Wilpinjong Coal Project.* May 2006.

Moolarben Coal Mines Pty Limited (2005) *Moolarben Coal Project Preliminary Assessment*. December 2005.

Moolarben Coal Mines Pty Limited (2006) *Moolarben Coal Project Environment Assessment Report.*

Richard Heggie Associates Pty Ltd (2005) *Wilpinjong Coal Project Construction, Operation and Transportation Noise and Blasting Impact Assessment.* Report prepared for Wilpinjong Coal Pty Limited.

TRAFFIX (2005) *Road Transport Assessment*. *Appendix K of the Wilpinjong Coal Project Environmental Impact Statement.*

Wilpinjong Coal Pty Limited (WCPL) (2005) *Wilpinjong Coal Project Environmental Impact Statement*.

Wilpinjong Coal Pty Limited (WCPL) (2006) *Wilpinjong Coal Project Blast Management Plan and Monitoring Programme.*

# PLATES

Plate 1 Ulan Road - Looking North between Cooks Gap and Ulan Township

Plate 2 Ulan Road - Looking North between Cooks Gap and Ulan

Plate 3 Ulan Road - Looking North-east at the Intersection with Ulan Township

Plate 4 Ulan Road - Looking North-east over Moolarben Creek at the Intersection with the Ulan Coal Mines


Plate 5 Ulan Road - Looking North at Intersection with Ulan-Wollar Road

Plate 6 Ulan-Wollar Road - Looking West at Intersection with Ulan Road


Plate 7 Ulan-Wollar Road - Looking East at Advisory Speed Signs Installed by WCPL at Western End of the Road for Traffic Heading Toward the Wilpinjong Coal Project

Plate 8 Ulan-Wollar Road - Looking East through a Tree-lined Section of the Road

Plate 9 Ulan-Wollar Road - Looking East Across a Crossing of an Unnamed Tributary of Wilpinjong Creek

Plate 10 Ulan-Wollar Road - Looking East at the Approximate Location of the Proposed Entrance to the Project

# ATTACHMENT 1

# PROJECT APPROVAL 05-0021

# Project Approval

## Section 75J of the *Environmental Planning and Assessment Act 1979*

I, the Minister for Planning, approve the project referred to in schedule 1, subject to the conditions in schedules 2 to 5.

These conditions are required to:
- prevent, minimise, and/or offset adverse environmental impacts;
- set standards and performance measures for acceptable environmental performance;
- require regular monitoring and reporting; and
- provide for the ongoing environmental management of the project.

**SIGNED**

Frank Sartor MP
**Minister for Planning**

Sydney **1 February 2006** File No: S04/00699

**SCHEDULE 1**

| | |
|---|---|
| **Application No:** | 05-0021. |
| **Proponent:** | Wilpinjong Coal Pty Limited. |
| **Approval Authority:** | Minister for Planning. |
| **Land:** | See Appendix 1. |
| **Project:** | Wilpinjong Coal Project. |
| **Major Project:** | The proposal is classified as a Major Project under section 75B(1)(a) of the *Environmental Planning and Assessment Act 1979*, because it is a development of a kind described in clause 5 of schedule 1 to *State Environmental Planning Policy (Major Projects) 2005*. |

**TABLE OF CONTENTS**

**DEFINITIONS**

| | |
|---|---|
| AEMR | Annual Environmental Management Report |
| ARTC | Australian Rail Track Corporation Ltd |
| Proponent | Wilpinjong Coal Pty Limited, or its successors |
| BCA | Building Code of Australia |
| CCC | Community Consultative Committee |
| Council | Mid-Western Regional Council |
| Day | Day is defined as the period from 7am to 6pm on Monday to Saturday, and 8am to 6pm on Sundays and Public Holidays |
| DEC | Department of Environment and Conservation |
| DNR | Department of Natural Resources |
| Department | Department of Planning |
| Director-General | Director-General of Department of Planning, or delegate |
| DPI | Department of Primary Industries |
| EEC | Endangered Ecological Community as defined under the NSW *Threatened Species Conservation Act 1995* |
| EIS | Environmental Impact Statement |
| EP&A Act | *Environmental Planning and Assessment Act 1979* |
| EP&A Regulation | *Environmental Planning and Assessment Regulation 2000* |
| Evening | Evening is defined as the period from 6pm to 10pm |
| Land | Land means the whole of a lot, or contiguous lots owned by the same landowner, in a current plan registered at the Land Titles Office at the date of this approval |
| Mine Water | Water that accumulates within active mining areas, coal rejects emplacement areas, tailings dams and infrastructure areas |
| Minister | Minister for Planning, or delegate |
| Night | Night is defined as the period from 10pm to 7am on Monday to Saturday, and 10pm to 8am on Sundays and Public Holidays |
| Offset Strategy | The enhancement and regeneration program described in the EIS for the Wilpinjong Coal Project, dated May 2005 |
| Privately owned land | Land that is not owned by a public agency, or a mining company or its subsidiary |
| ROM | Run of Mine |
| RTA | Roads and Traffic Authority |
| Site | Land to which the Project Application applies |

## SCHEDULE 2
## ADMINISTRATIVE CONDITIONS

### Obligation to Minimise Harm to the Environment

1. The Proponent shall implement all practicable measures to prevent and/or minimise any harm to the environment that may result from the construction, operation, or rehabilitation of the project.

### Terms of Approval

2. The Proponent shall carry out the project generally in accordance with the:
   (a) Project Application 05-0021;
   (b) EIS titled *Wilpinjong Coal Project EIS*, volumes 1-5, dated May 2005, and prepared by Resource Strategies Pty Ltd; and
   (c) conditions of this approval.

3. If there is any inconsistency between the above, the conditions of this approval shall prevail to the extent of the inconsistency.

4. The Proponent shall comply with any reasonable requirement/s of the Director-General arising from the Department's assessment of:
   (a) any reports, plans or correspondence that are submitted in accordance with this approval; and
   (b) the implementation of any actions or measures contained in these reports, plans or correspondence.

### Limits on Approval

5. Apart from the conditions relating to the Rehabilitation and Landscape Management Plan, this approval expires 21 years after the grant of a mining lease for the project.

   *Note: Under this approval, the Proponent is required to implement the Rehabilitation and Landscape Management Plan for the life of the impact (as determined by the Director-General in consultation with the DPI). This approval will continue to operate during this period.*

6. The Proponent shall not extract more than 13 million tonnes of ROM coal a year from the site.

7. The Proponent shall not beneficiate more than 8.5 million tonnes of ROM coal a year at the Coal Handling and Preparation Plant.

8. The Proponent shall only transport coal from the site by rail.

### Management Plans/Monitoring Programs

9. With the approval of the Director-General, the Proponent may prepare and submit any management plan or monitoring program required by this approval on a progressive basis. Where a management plan and monitoring program is required before carrying out any development, or stage of development, the plans/programs may be prepared and submitted in relation to either discrete components of the project or for a specified time period.

### Structural Adequacy

10. The Proponent shall ensure that all new buildings and structures, and any alterations or additions to existing buildings and structures, are constructed in accordance with the relevant requirements of the BCA.

    *Notes:*
    - *Under Part 4A of the EP&A Act, the Proponent is required to obtain construction and occupation certificates for the proposed building works.*
    - *Part 8 of the EP&A Regulation sets out the requirements for the certification of the project.*

### Demolition

11. The Proponent shall ensure that all demolition work is carried out in accordance with *Australian Standard AS 2601-2001: The Demolition of Structures*, or its latest version.

**Operation of Plant and Equipment**

12. The Proponent shall ensure that all plant and equipment used at the site is:
    (a) maintained in a proper and efficient condition; and
    (b) operated in a proper and efficient manner.

**Planning Agreement**

13. Within 3 months of this approval, the Proponent shall enter into a planning agreement with Council, in accordance with Division 6 of Part 4 of the EP&A Act, and the terms of the offer made to the Council on 15 December 2005 by the Proponent which must include the matters set out in Appendix 2.

---

**SCHEDULE 3**
**SPECIFIC ENVIRONMENTAL CONDITIONS**

**ACQUISITION UPON REQUEST**

1. Upon receiving a written request for acquisition from the landowner of the land listed in Table 1, the Proponent shall acquire the land in accordance with the procedures in conditions 10-12 of schedule 4.

*Table 1: Land subject to acquisition upon request*

| | |
|---|---|
| 30 – Gaffney | 45 – Smith |
| 5 - Power | |

*Note: For more information on the numbering and identification of properties used in this approval, see Figures 1-5 and 1-6 in Volume 1 of the Wilpinjong Coal Project EIS, dated May 2005.*

**NOISE**

**Noise Impact Assessment Criteria**

2. The Proponent shall ensure that the noise generated by the project does not exceed the noise impact assessment criteria in Table 2.

*Table 2: Noise impact assessment criteria dB(A)*

| ***Day*** | ***Evening*** | ***Night*** | | ***Land Number*** |
|---|---|---|---|---|
| $L_{Aeq(15\ minute)}$ | $L_{Aeq(15\ minute)}$ | $L_{Aeq(15\ minute)}$ | $L_{A1(1\ minute)}$ | |
| *35* | *35* | *40* | *45* | *4 - Robinson* |
| *35* | *38* | *39* | *45* | *60A - Reid* |
| *35* | *37* | *39* | *45* | *49 - Harkin* |
| *35* | *35* | *37* | *45* | *29 - Kattau* |
| | | | | *59 – Langshaw* |
| *35* | *35* | *36* | *45* | *90 – Pattullo* |
| *35* | *39* | *39* | *45* | *51 – Bailey* |
| | | | | *52A – Long* |
| | | | | *52B – Long* |
| | | | | *53 – Reynolds* |
| | | | | *55 – Fox* |
| | | | | *56 – Rogers* |
| *35* | *38* | *38* | *45* | *23A - Bloomfield* |
| *35* | *37* | *37* | *45* | *23B - Bloomfield* |
| | | | | *31A - Conradt* |
| *35* | *36* | *36* | *45* | *31B - Conradt* |
| *36* | *35* | *35* | *45* | *Wollar - Residential* |
| *35* | *35* | *35* | *45* | *All other privately owned land, excluding the land listed in Table 1* |
| *35* | *35* | *35* | *-* | *901 – Wollar School* |
| *40* | *40* | *40* | *-* | *150A – St Luke's Anglican Church* |
| | | | | *900 – St Laurence O'Toole Catholic Church* |
| *50* | *50* | *50* | *-* | *Goulburn River National Park/Munghorn Gap Nature Reserve* |

However, if the Proponent has a written negotiated noise agreement with any landowner of the land listed in Table 2, and a copy of this agreement has been forwarded to the Department and the DEC, then the Proponent may exceed the noise limits in Table 2 in accordance with the negotiated noise agreement.

*Notes:*
*a) Noise from the project is to be measured at the most affected point or within the residential boundary, or at the most affected point within 30 metres of a dwelling (rural situations) where the dwelling is more than 30 metres from the boundary, to determine compliance with the $L_{Aeq(15\ minute)}$ noise limits in the above table. Where it can be demonstrated that direct measurement of noise from the project is impractical, the DEC may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy). The modification factors in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise levels where applicable.*
*b) Noise from the project is to be measured at 1 metre from the dwelling façade to determine compliance with the $L_{A1(1\ minute)}$ noise limits in the above table. Where it can be demonstrated that direct measurement of noise from the project is impractical, the DEC may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy).*
*c) For the Goulburn River National Park/Munghorn Nature Reserve noise levels are to be assessed at the most affected point within 50 metres of the Goulburn River National Park/Munghorn Nature Reserve. The limit applies when the area is in use.*
*d) The noise emission limits identified in the above table apply under meteorological conditions of:*
- *wind speeds of up to 3 m/s at 10 metres above ground level; or*
- *temperature inversion conditions of up to 3ºC/100m, and wind speeds of up to 2 m/s at 10 metres above ground level.*

**Land Acquisition Criteria**

3. If the noise generated by the project exceeds the criteria in Table 3, the Proponent shall, upon receiving a written request for acquisition from the landowner, acquire the land in accordance with the procedures in conditions 10-12 of schedule 4.

*Table 3: Land acquisition criteria dB(A)*

| ***Day/Evening/Night*** $L_{Aeq(15\ minute)}$ | ***Land*** |
|---|---|
| *40* | *All privately owned land, excluding the land listed in Table 1* |

*Note: Noise generated by the project is to be measured in accordance with the notes presented below Table 2.*

**Cumulative Noise Criteria**

4. The Proponent shall take all reasonable and feasible measures to ensure that the noise generated by the project combined with the noise generated by other mines does not exceed the following amenity criteria on any privately owned land, excluding the land listed in Table 1, to the satisfaction of the Director-General:
   - $L_{Aeq(11\ hour)}$ *50 dB(A) – Day;*
   - $L_{Aeq(4\ hour)}$ *45 dB(A) – Evening; and*
   - $L_{Aeq(9\ hour)}$ *40 dB(A) – Night.*

5. If the cumulative noise generated by the project combined with the noise generated by other mines exceeds the following amenity criteria on any privately owned land, excluding the land listed in Table 1, then upon receiving a written request from the landowner, the Proponent shall take all reasonable and feasible measures to acquire the land on as equitable basis as possible with the relevant mines, in accordance with the procedures in conditions 10-12 of schedule 4, to the satisfaction of the Director-General:
   - $L_{Aeq(11\ hour)}$ *53 dB(A) – Day;*
   - $L_{Aeq(4\ hour)}$ *48 dB(A) – Evening; and*
   - $L_{Aeq(9\ hour)}$ *43 dB(A) – Night.*

**Additional Noise Mitigation Measures**

6. Upon receiving a written request from:
   - a landowner of the land listed in Table 1 (unless the landowner has requested acquisition); or
   - the owner of any residence where subsequent noise monitoring shows the noise generated by the project is greater than, or equal to, $L_{Aeq(15\ minute)}$ 38 dB(A) (except where a negotiated noise agreement is in place),

   the Proponent shall implement additional noise mitigation measures such as double glazing, insulation, and/or air conditioning at any residence on the land in consultation with the landowner. These additional mitigation measures must be reasonable and feasible. If within 3 months of receiving this request from the landowner, the Proponent and the landowner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Director-General for resolution.

**Continuous Improvement**

7. The Proponent shall:
   (a) implement all reasonable and feasible best practice noise mitigation measures;
   (b) investigate ways to reduce the noise generated by the project, including off-site road and rail noise and maximum noise levels which may result in sleep disturbance; and
   (c) report on these investigations and the implementation and effectiveness of these measures in the AEMR,

   to the satisfaction of the Director-General.

**Monitoring**

8. Prior to carrying out any development, the Proponent shall prepare (and following approval implement) a Noise Monitoring Program for the project, to the satisfaction of the Director-General. The Noise Monitoring Program must include a combination of real-time and supplementary attended monitoring measures, and a noise monitoring protocol for evaluating compliance with the noise impact assessment and land acquisition criteria in this approval.

**BLASTING AND VIBRATION**

**Airblast Overpressure Criteria**

9. The Proponent shall ensure that the airblast overpressure level from blasting at the project does not exceed the criteria in Table 4 at any residence on privately owned land.

*Table 4: Airblast overpressure impact assessment criteria*

| Airblast overpressure level (dB(Lin Peak)) | Allowable exceedance |
|---|---|
| 115 | 5% of the total number of blasts over a period of 12 months |
| 120 | 0% |

**Ground Vibration Impact Assessment Criteria**

10. The Proponent shall ensure that the ground vibration level from blasting at the project does not exceed the criteria in Table 5 at any residence on privately owned land.

*Table 5: Ground vibration impact assessment criteria*

| Peak particle velocity (mm/s) | Allowable exceedance |
|---|---|
| 5 | 5% of the total number of blasts over a period of 12 months |
| 10 | 0% |

**Blasting Hours**

11. The Proponent shall only carry out blasting at the project between 9am and 5pm Monday to Saturday inclusive. No blasting is allowed on Sundays, public holidays, or at any other time without the written approval of the DEC.

**Blasting Frequency**

12. The Proponent shall not carry out blasting associated with open cut mining more than:
   (a) 1 blast per day; and
   (b) 1 blast per week on average over any 12 month period,

   at the site without the written approval of the Director-General.

**Operating Conditions**

13. During the life of the project, the Proponent shall implement best blasting practice to:
    (a) protect the safety of people, property, public infrastructure, and livestock; and
    (b) minimise the dust and fume emissions from blasting at the project, particularly during adverse meteorological conditions,
    to the satisfaction of the Director-General.

14. Prior to carrying out any blasting within 500 metres of a public road or railway, the Proponent must obtain approval from Council (in respect of public roads) and ARTC (in respect of the Gulgong-Sandy Hollow railway).

**Public Notice**

15. During the life of the project, the Proponent shall:
    (a) notify the landowner/occupier of any residence within 2 km of the project who registers an interest in being notified about the blasting schedule at the mine;
    (b) operate a Blasting Hotline, or alternate system agreed to by the Director-General, to enable the public to get up-to-date information on the blasting schedule at the project; and
    (c) advertise the blasting hotline number in a local newspaper at least 4 times each year,
    to the satisfaction of the Director-General.

**Property Inspections**

16. Within 3 months of this approval, the Proponent shall advise all landowners within 2 km of the project that they are entitled to a structural property inspection.

17. If the Proponent receives a written request for a structural property inspection from any landowner within 2 km of the project, the Proponent shall within 3 months of receiving this request:
    (a) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Director-General, to inspect the condition of any building or structure on the land, and recommend measures to mitigate any potential blasting impacts; and
    (b) give the landowner a copy of the property inspection report.

**Property Investigations**

18. If any landowner within 2 km of the site claims that buildings and/or structures on his/her land have been damaged as a result of blasting at the project, the Proponent shall within 3 months of receiving this request:
    (a) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Director-General, to investigate the claim; and
    (b) give the landowner a copy of the property investigation report.

    If this independent property investigation confirms the landowner's claim, and both parties agree with these findings, then the Proponent shall repair the damages to the satisfaction of the Director-General.

    If the Proponent or landowner disagrees with the findings of the independent property investigation, then either party may refer the matter to the Director-General for resolution.

    If the matter cannot be resolved within 21 days, the Director-General shall refer the matter to an Independent Dispute Resolution Process (see Appendix 7).

**Blast Monitoring Program**

19. Prior to carrying out any blasting at the site, the Proponent shall prepare (and following approval implement) a detailed Blast Monitoring Program, to the satisfaction of the Director-General. The Blast Monitoring Program must include a protocol for evaluating blasting impacts on privately owned residences and public infrastructure (including the Gulgong-Sandy Hollow railway), and demonstrating compliance with the blasting criteria in this approval.

**AIR QUALITY**

**Impact Assessment Criteria**

20. The Proponent shall ensure that the dust emissions generated by the project do not cause additional exceedances of the air quality impact assessment criteria listed in Tables 6, 7, and 8 at any residence on, or on more than 25 percent of, any privately owned land (excluding property 5 – Power).

*Table 6: Long term impact assessment criteria for particulate matter*

| Pollutant | Averaging period | Criterion |
|---|---|---|
| Total suspended particulate (TSP) matter | Annual | 90 µg/$m^3$ |
| Particulate matter < 10 µm ($PM_{10}$) | Annual | 30 µg/$m^3$ |

*Table 7: Short term impact assessment criterion for particulate matter*

| Pollutant | Averaging period | Criterion |
|---|---|---|
| Particulate matter < 10 µm ($PM_{10}$) | 24 hour | 50 µg/$m^3$ |

*Table 8: Long term impact assessment criteria for deposited dust*

| Pollutant | Averaging period | Maximum increase in deposited dust level | Maximum total deposited dust level |
|---|---|---|---|
| Deposited dust | Annual | 2 g/$m^2$/month | 4 g/$m^2$/month |

*Note: Deposited dust is assessed as insoluble solids as defined by Standards Australia, 1991, AS 3580.10.1-1991: Methods for Sampling and Analysis of Ambient Air - Determination of Particulates - Deposited Matter - Gravimetric Method.*

**Land Acquisition Criteria**

21. If the dust emissions generated by the project exceed the criteria in Tables 9, 10, and 11 at any residence on, or on more than 25 percent of, any privately owned land, the Proponent shall, upon receiving a written request for acquisition from the landowner, acquire the land in accordance with the procedures in conditions 10-12 of schedule 4.

*Table 9: Long term land acquisition criteria for particulate matter*

| Pollutant | Averaging period | Criterion |
|---|---|---|
| Total suspended particulate (TSP) matter | Annual | 90 µg/$m^3$ |
| Particulate matter < 10 µm ($PM_{10}$) | Annual | 30 µg/$m^3$ |

*Table 10: Short term land acquisition criteria for particulate matter*

| Pollutant | Averaging period | Criterion | Percentile[1] | Basis |
|---|---|---|---|---|
| Particulate matter < 10 µm ($PM_{10}$) | 24 hour | 150 µg/m$^3$ | 99[2] | Total[3] |
| Particulate matter < 10 µm ($PM_{10}$) | 24 hour | 50 µg/m$^3$ | 98.6 | Increment[4] |

*[1]Based on the number of block 24 hour averages in an annual period.*
*[2]Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents, illegal activities or any other activity agreed by the Director-General in consultation with the DEC.*
*[3]Background $PM_{10}$ concentrations due to all other sources plus the incremental increase in $PM_{10}$ concentrations due to the mine alone.*
*[4]Incremental increase in $PM_{10}$ concentrations due to the mine alone.*

*Table 11: Long term land acquisition criteria for deposited dust*

| Pollutant | Averaging period | Maximum increase in deposited dust level | Maximum total deposited dust level |
|---|---|---|---|
| Deposited dust | Annual | 2 g/m$^2$/month | 4 g/m$^2$/month |

*Note: Deposited dust is assessed as insoluble solids as defined by Standards Australia, 1991, AS 3580.10.1-1991: Methods for Sampling and Analysis of Ambient Air - Determination of Particulates - Deposited Matter - Gravimetric Method.*

**Operating Conditions**

22. The Proponent shall:
    (a) ensure any visible air pollution generated by the project is assessed regularly, and that mining operations are relocated, modified, and/or stopped as required to minimise air quality impacts on privately owned land;
    (b) ensure real-time air quality monitoring for 24-hour average $PM_{10}$ and the meteorological monitoring data are assessed regularly, and that mining operations are relocated, modified and/or stopped as required to ensure compliance with the relevant air quality criteria; and
    (c) implement all practicable measures to minimise the off-site odour and fume emissions generated by any spontaneous combustion at the project,
    to the satisfaction of the Director-General.

**Monitoring**

23. Prior to carrying out any development, the Proponent shall prepare (and following approval implement) a detailed Air Quality Monitoring Program to the satisfaction of the Director-General. The Air Quality Monitoring Program shall include a combination of real-time monitors, high volume samplers and dust deposition gauges to monitor the dust emissions of the project; and an air quality monitoring protocol for evaluating compliance with the air quality impact assessment and land acquisition criteria in this approval.

**METEOROLOGICAL MONITORING**

24. Prior to carrying out any development, the Proponent shall ensure that there is a suitable meteorological station operating in the vicinity of the project in accordance with the requirements in *Approved Methods for Sampling of Air Pollutants in New South Wales*, and to the satisfaction of the DEC and the Director-General.

**SURFACE AND GROUND WATER**

**Discharge Limits**

25. Except as may be expressly provided by a DEC Environment Protection Licence, the Proponent shall not discharge any Mine Water from the site.

**Cumbo Creek Relocation**

26. The Proponent shall design, construct, maintain, and rehabilitate the proposed relocation of Cumbo Creek, to the satisfaction of the Director-General.

27. Within one month of completing the construction of the Cumbo Creek relocation, the Proponent shall submit an as-executed report, certified by a practising registered engineer, to the Director-General.

28. Prior to destroying the original creek line, the Proponent shall demonstrate that the Cumbo Creek Relocation is operating successfully, in consultation with DNR, and to the satisfaction of the Director-General.

**Site Water Management Plan**

29. Prior to carrying out any development, the Proponent shall prepare (and following approval implement) a Site Water Management Plan for the mine, in consultation with the DNR, and to the satisfaction of the Director-General. This plan must be prepared by suitably qualified expert/s whose appointment/s have been approved by the Director-General, and must include:
    (a) a Cumbo Creek Relocation Plan;
    (b) a Site Water Balance;
    (c) an Erosion and Sediment Control Plan;
    (d) a Surface Water Management and Monitoring Plan;
    (e) a Ground Water Monitoring Program; and
    (f) a Surface and Ground Water Response Plan.

    *Note: The Department accepts that the initial Site Water Management Plan may not include the detailed plans for the proposed relocation of Cumbo Creek. However, if this occurs, the Proponent will be required to seek approval from the Director-General for an alternative timetable for completion and approval of the Cumbo Creek Relocation Plan.*

**Cumbo Creek Relocation Plan**

30. The Cumbo Creek Relocation Plan must include:
    (a) a vision statement for the creek relocation;
    (b) an assessment of the water quality, ecological, hydrological and geomorphic baseline conditions in Cumbo Creek;
    (c) the detailed design and specifications for the creek relocation;
    (d) a construction program for the creek relocation, describing how the work would be staged, and integrated with mining operations;
    (e) a revegetation program for the relocated creek using a range of suitable native species;
    (f) water quality, ecological, hydrological and geomorphic performance and completion criteria for the creek relocation based on the assessment of baseline conditions; and
    (g) a program to monitor and maintain the water quality, ecological, hydrological and geomorphic integrity of the creek relocation.

**Site Water Balance**

31. The Site Water Balance must:
    (a) include details of:
        - sources of water;
        - reliability of water supply;
        - water use on site;
        - water management on site;
        - off-site water transfers;
        - reporting procedures; and
    (b) describe measures to minimise water use by the project.

**Erosion and Sediment Control**

32. The Erosion and Sediment Control Plan must:
    (a) be consistent with the requirements of the Department of Housing's Managing Urban Stormwater: Soils and Construction manual;
    (b) identify activities that could cause soil erosion and generate sediment;
    (c) describe measures to minimise soil erosion and the potential for the transport of sediment to downstream waters;
    (d) describe the location, function, and capacity of erosion and sediment control structures; and
    (e) describe what measures would be implemented to maintain the structures over time.

**Surface Water Management and Monitoring**

33. The Surface Water Management and Monitoring Plan must include:
    (a) detailed baseline data on surface water flows and quality in creeks and other waterbodies that could potentially be affected by the project;
    (b) surface water and stream health assessment criteria;
    (c) a program to monitor surface water flows, quality and impacts on water users (upstream and downstream of the project in Wilpinjong and Cumbo Creeks);
    (d) a program to assess stream health conditions in Wilpinjong and Cumbo Creeks;
    (e) a program to monitor channel stability in Wilpinjong and Cumbo Creeks;
    (f) reporting procedures; and
    (g) a protocol for the investigation, notification, and mitigation of identified exceedances of the surface water and stream health assessment criteria.

**Groundwater Monitoring**

34. The Groundwater Monitoring Program must include:
    (a) detailed baseline data, based on sound statistical analysis, to benchmark the pre-mining natural variation in groundwater levels, yield and quality (including privately owned groundwater bores within the predicted drawdown impact zone identified in the EIS);
    (b) groundwater impact assessment criteria (including for monitoring bores and privately owned bores);
    (c) a program for accurately delineating the boundary of the Wilpinjong Creek alluvial aquifer in any areas intersected by mining;
    (d) a program to monitor:
        - impacts on the groundwater supply of potentially affected landowners;
        - impacts of the water supply borefield;
        - impacts on the Wilpinjong Creek alluvial aquifer;
        - connectivity and groundwater leakage to/from Cumbo Creek following relocation;
        - impacts on groundwater dependent ecosystems and riparian vegetation;
        - the volume of ground water seeping into the open cut mine workings;
        - regional ground water levels and quality in the alluvial, coal seam, and interburden aquifers; and
        - the groundwater pressure response in the surrounding coal measures.
    (e) procedures for the verification of the groundwater model; and
    (f) reporting procedures for the results of the monitoring program and model verification.

**Surface and Ground Water Response Plan**

35. The Surface and Ground Water Response Plan must include:
    (a) a protocol for the investigation, notification and mitigation of any exceedances of the surface water, stream health and groundwater impact assessment criteria;
    (b) measures to mitigate and/or compensate potentially affected landowners with privately owned groundwater bores within the predicted drawdown impact zone identified in the EIS, including provision of alternative long term supply of water to the affected landowner that is equivalent to the loss attributed to the project;
    (c) measures to mitigate and/or compensate potentially affected landowners for the loss of surface water flows in Wilpinjong Creek downstream of the open cut;
    (d) measures to minimise, prevent or offset groundwater leakage from the Wilpinjong Creek alluvial aquifer if the rate of leakage exceeds EIS predictions;
    (e) measures to mitigate any direct hydraulic connection between the backfilled open cut and the Wilpinjong Creek and Cumbo Creek alluvium if the potential for adverse impacts is detected; and
    (f) the procedures that would be followed if any unforeseen impacts are detected during the project.

36. Within 6 months of the Independent Environmental Audit (see condition 7 in schedule 5), the Proponent shall update the Site Water Management Plan to the satisfaction of the Director-General.

**REHABILITATION AND LANDSCAPE MANAGEMENT**

37. The Proponent shall:
    (a) implement the Offset Strategy described in the EIS and summarised in Table 12 (shown conceptually in Appendix 3) ; and
    (b) progressively rehabilitate the site in a manner that is generally consistent with the final landform in the EIS (shown conceptually in Appendix 4),

    to the satisfaction of the Director-General.

*Table 12: Offset Strategy*

| Area | Size |
|---|---|
| Enhancement and Conservation Areas | 480 ha |
| Regeneration Areas | 350 ha |

38. Within 3 years of this approval, the Proponent shall make suitable arrangements to provide appropriate long term security for the Enhancement and Conservation Areas, to the satisfaction of the Director-General.

39. Within 12 months of this approval, in consultation with DEC:
    (a) secure ownership of land beyond the boundary of the site which contains sufficient areas of Yellow Box White Box Blakely's Red Gum Woodland EEC to satisfactorily offset the impacts of the project on the EEC; and
    (b) make suitable arrangements to secure the long term protection of this land,
    to the satisfaction of the Director-General.

**Rehabilitation and Landscape Management Plan**

40. Within 6 months of this approval, the Proponent must prepare (and following approval implement) a detailed Rehabilitation and Landscape Management Plan for the project, in consultation with DNR, DEC, DPI, and to the satisfaction of the Director-General. This plan must be prepared by suitably qualified expert/s whose appointment/s have been approved by the Director-General, and must include a:
    (a) Rehabilitation Management Plan;
    (b) Final Void Management Plan; and
    (c) Mine Closure Plan.

    *Note: The Department accepts that the initial Rehabilitation and Landscape Management Plan may not include the detailed Final Void Management Plan and Mine Closure Plan. However, if this occurs, the Proponent will be required to seek approval from the Director-General for an alternative timetable for completion and approval of the Final Void Management Plan and Mine Closure Plan.*

**Rehabilitation Management Plan**

41. The Rehabilitation Management Plan must include:
    (a) the rehabilitation objectives for the site;
    (b) a description of the short, medium, and long term measures that would be implemented to:
        - rehabilitate the site;
        - implement the Offset Strategy; and
        - manage the remnant vegetation and habitat on the site;
    (c) detailed assessment and completion criteria for the rehabilitation of the site;
    (d) a detailed description of how the performance of the rehabilitation of the mine would be monitored over time to achieve the stated objectives;
    (e) a detailed description of what measures would be implemented over the next 3 years to rehabilitate and manage the landscape of the site including the procedures to be implemented for:
        - progressively rehabilitating areas disturbed by mining;
        - implementing revegetation and regeneration within the Offset Strategy;
        - protecting areas outside the disturbance areas;
        - rehabilitating creeks on the site (including Wilpinjong Creek);
        - undertaking pre-clearance surveys;
        - managing impacts on fauna;
        - landscaping the site to minimise visual impacts;
        - conserving and reusing topsoil;
        - collecting and propagating seed for rehabilitation works;
        - salvaging and reusing material from the site for habitat enhancement;
        - controlling weeds and feral pests;
        - controlling access;
        - bushfire management;
        - managing any potential conflicts between the rehabilitation of the mine and Aboriginal cultural heritage; and
    (f) details of who is responsible for monitoring, reviewing, and implementing the plan.

    *Note: Reference to "rehabilitation" in this approval includes all works associated with the rehabilitation and restoration of the site as described in the EIS, and applies to all areas within the Mining Lease, Offset Strategy, and the areas proposed to be rehabilitated along Wilpinjong Creek.*

**Final Void Management**

42. The Final Void Management Plan must:
    (a) justify the planned final location and future use of the final void/s;
    (b) incorporate design criteria and specifications for the final void/s based on verified groundwater modelling predictions and a re-assessment of post-mining groundwater equilibration;
    (c) assess the potential interactions between creeks on the site and the final void/s; and
    (d) describe what actions and measures would be implemented to:
        - minimise any potential adverse impacts associated with the final void; and
        - manage and monitor the potential impacts of the final void until the Mining Lease for the project is relinquished.

**Mine Closure Plan**

43. The Mine Closure Plan must:
    (a) define the objectives and criteria for mine closure;
    (b) investigate options for the future use of the site, including any final void/s;
    (c) describe the measures that would be implemented to minimise or manage the ongoing environmental effects of the project; and
    (d) describe how the performance of these measures would be monitored over time.

44. Within 6 months of the Independent Environmental Audit (see condition 7 in schedule 5), the Proponent shall update the Rehabilitation and Landscape Management Plan to the satisfaction of the Director-General.

**Conservation Bond**

45. Following the Independent Environmental Audit (see condition 7 in schedule 5) at the end of year 12 of the project, the Proponent shall lodge a conservation bond with the Department to ensure that there are sufficient resources available to fully implement the Offset Strategy. The size of the bond will be set by the Director-General, in consultation with the Proponent, at that time, of fully implementing the Offset Strategy in accordance with the completion criteria set out in the approved Rehabilitation and Landscape Management Plan. The bond will be adjusted by the Director-General, in consultation with the Proponent, after each subsequent Independent Environmental Audit.

    *Notes:*
    - *If the Offset Strategy is completed to the satisfaction of the Director-General, the Director-General will release the conservation bond.*
    - *If the Offset Strategy is not completed to the satisfaction of the Director-General, the Director-General will call in all or part of the conservation bond, and arrange for the satisfactory completion of the relevant works.*
    - *If amendments to the Mining Act 1992 allow the Minister for Mineral Resources to require rehabilitation securities under a Mining Lease which apply to the implementation of rehabilitation works outside the boundary of a Mining Lease, the Proponent may transfer the conservation bond required under this approval to the Minister of Mineral Resources provided the Director-General and the DPI agree to the transfer.*

**ABORIGINAL CULTURAL HERITAGE**

**Archaeological Salvage Program**

46. Prior to carrying out any development, the Proponent shall prepare and implement a salvage program for the project, in consultation with the DEC and the Aboriginal communities, and to the satisfaction of the Director-General.

47. Before the commencement of salvage operations, the Proponent shall ensure that a keeping place is established to temporarily house objects recovered from the salvage program.

48. The Proponent shall temporarily house the objects recovered during the salvage program in the keeping place established for the purpose, and in consultation with the DEC and the Aboriginal communities, replace the objects within the rehabilitated landscape.

**Aboriginal Cultural Heritage Management Plan**

49. Prior to carrying out any development, the Proponent shall prepare (and following approval implement) an Aboriginal Cultural Heritage Management Plan, in consultation with DEC and the Aboriginal communities, and to the satisfaction of the Director-General. The plan must include:
    (a) a detailed description of the measures that would be implemented to protect Aboriginal sites outside the project disturbance area;
    (b) a detailed monitoring program for Aboriginal sites 72, 152 and 153 (as shown in Appendix 5);
    (c) a description of the measures that would be implemented if any new Aboriginal objects or skeletal remains are discovered during the project; and
    (d) a protocol for the ongoing consultation and involvement of the Aboriginal communities in the conservation and management of Aboriginal cultural heritage on the site.

**HERITAGE**

50. The Proponent shall prepare an archival record of the remaining heritage sites listed in Table 3-20 of the EIS (shown in Appendix 6), prior to any activity associated with the project that may disturb these sites, in accordance with the requirements of the NSW Heritage Office, and to the satisfaction of the Director-General.

**TRAFFIC AND TRANSPORT**

**Monitoring of Coal Transport**

51. The Proponent shall:
    (a) keep records of the:
        - amount of coal transported from the site each year; and
        - number of coal haulage train movements generated by the project (on a daily basis); and
    (b) include these records in the AEMR.

**Traffic Management**

52. The Proponent shall design and construct:
    (a) the mine access road - Wollar Road intersection to the satisfaction of the RTA and Council;
    (b) the realignment of the Ulan-Wollar Road to the satisfaction of the Council; and
    (c) the road-rail crossings of the Gulgong - Sandy Hollow railway to the satisfaction of the ARTC and Council.

53. Heavy vehicles must not access the site via Wollar Road until a suitably qualified structural engineer has certified that Wollar Road is suitable for use by heavy vehicles, and a copy of the engineer's report has been provided to the Department.

**VISUAL IMPACT**

**Visual Amenity**

54. The Proponent shall minimise the visual impacts of the project to the satisfaction of the Director-General.

**Lighting Emissions**

55. The Proponent shall:
    (a) take all practicable measures to mitigate off-site lighting impacts from the project; and
    (b) ensure that all external lighting associated with the project complies with *Australian Standard AS4282 (INT) 1995 – Control of Obtrusive Effects of Outdoor Lighting*,
    to the satisfaction of the Director-General.

**GREENHOUSE GAS**

56. The Proponent shall:
    (a) monitor the greenhouse gas emissions generated by the project;
    (b) investigate ways to reduce greenhouse gas emissions generated by the project; and
    (c) report on greenhouse gas monitoring and abatement measures in the AEMR,
    to the satisfaction of the Director-General.

**WASTE MINIMISATION**

57. The Proponent shall:
    (a) monitor the amount of waste generated by the project;
    (b) investigate ways to minimise waste generated by the project;
    (c) implement reasonable and feasible measures to minimise waste generated by the project;
    (d) ensure irrigation of treated wastewater is undertaken in accordance with DEC's *Environmental Guideline for the Utilisation of Treated Effluent*; and
    (e) report on waste management and minimisation in the AEMR,

    to the satisfaction of the Director-General.

## SCHEDULE 4
## ADDITIONAL PROCEDURES FOR AIR QUALITY AND NOISE MANAGEMENT

**Notification of Landowners**

1. The Proponent shall notify the landowners of the land listed in Table 1 in writing that they have the right to require the Proponent to acquire their land at any stage during the project.

2. If the results of the air quality and/or noise monitoring required in schedule 3 identify that the air pollution and/or noise generated by the project is greater than any of the air quality and/or noise criteria in schedule 3, except where this is predicted in the EIS and except where a negotiated air quality or noise agreement has been entered into, then the Proponent shall notify the Director-General and the affected landowners and/or existing or future tenants (including tenants of mine owned properties) accordingly, and provide quarterly monitoring results to each of these parties until the results show that the project is complying with the air quality and/or noise criteria in schedule 3.

3. Within 6 months of this approval, the Proponent shall develop a brochure to advise landowners and/or existing or future tenants (including tenants of mine owned properties) of the possible health and amenity impacts associated with exposure to particulate matter, in consultation with NSW Health, and to the satisfaction of the Director-General.

   The Proponent shall review relevant human health studies and update this brochure every 3 years, to the satisfaction of the Director-General.

   The Proponent shall provide this brochure (and associated updates) to:
   (a) all landowners and/or existing or future tenants (including tenants of mine owned properties) in areas where the air dispersion model predictions in the EIS identify that the dust emissions generated by the project are likely to be greater than the air quality land acquisition criteria in condition 22 of schedule 3; and
   (b) all landowners and/or existing or future tenants (including tenants of mine owned properties) of properties where the monitoring results identify that the mine is exceeding the air quality land acquisition criteria in condition 22 of schedule 3.

**Independent Review**

4. If a landowner considers the project to be exceeding the air quality and/or noise criteria in schedule 3, except where this is predicted in the EIS, then he/she may ask the Director-General in writing for an independent review of the air pollution and/or noise impacts of the project on his/her land.

   If the Director-General is satisfied that an independent review is warranted, the Proponent shall within 3 months of the Director-General advising that an independent review is warranted:
   (a) consult with the landowner to determine his/her concerns;
   (b) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Director-General, to conduct air quality and/or noise monitoring on the land, to determine whether the project is complying with the relevant air quality and/or noise criteria in schedule 3, and identify the source(s) and scale of any air quality and/or noise impact on the land, and the project's contribution to this impact;
   (c) give the Director-General and landowner a copy of the independent review.

5. If the independent review determines that the project is complying with the relevant air quality and/or noise criteria in schedule 3, then the Proponent may discontinue the independent review with the approval of the Director-General.

6. If the independent review determines that the project is not complying with the relevant air quality and/or noise criteria in schedule 3, and that the project is primarily responsible for this non-compliance, then the Proponent shall:
   (a) take all reasonable and feasible measures, in consultation with the landowner, to ensure that the project complies with the relevant air quality and/or noise criteria; and
   (b) conduct further air quality and/or noise monitoring to determine whether these measures ensure compliance; or
   (c) secure a written agreement with the landowner to allow exceedances of the air quality and/or noise criteria in schedule 3,

   to the satisfaction of the Director-General.

   If the additional monitoring referred to above subsequently determines that the project is complying with the relevant air quality and/or noise criteria in schedule 3, then the Proponent may discontinue the independent review with the approval of the Director-General.

If the measures referred to in (a) do not achieve compliance with the air quality and/or noise land acquisition criteria in schedule 3, and the Proponent cannot secure a written agreement with the landowner to allow these exceedances within 3 months, then the Proponent shall, upon receiving a written request from the landowner, acquire the landowner's land in accordance with the procedures in conditions 10-12 below.

7. If the independent review determines that the relevant air quality and/or noise criteria in schedule 3 are being exceeded, but that more than one mine is responsible for this non-compliance, then the Proponent shall:
   (a) take all reasonable and feasible measures with the relevant mine/s, in consultation with the landowner, to ensure that the relevant air quality and/or noise criteria are complied with; and
   (b) conduct further air quality and/or noise monitoring to determine whether these measures ensure compliance; or
   (c) secure a written agreement with the landowner and other relevant mines to allow exceedances of the air quality and/or noise criteria in schedule 3,

   to the satisfaction of the Director-General.

8. If the independent review determines that the relevant air quality and/or noise land acquisition criteria in schedule 3 are being exceeded at the residence and/or on the landowner's land, and that more than one mine is responsible for this non-compliance, and the Proponent cannot secure a written agreement with the landowner to allow these exceedances within 3 months, then upon receiving a written request from the landowner, the Proponent shall acquire all or part of the landowner's land on as equitable a basis as possible with the relevant mine/s in accordance with the procedures in conditions 10-12 below.

   If the Proponent is unable to finalise an agreement with the landowner and/or other mine/s, then the Proponent or landowner may refer the matter to the Director-General for resolution.

   If the matter cannot be resolved within 21 days, the Director-General shall refer the matter to an Independent Dispute Resolution Process.

   If, following the Independent Dispute Resolution Process, the Director-General decides that the Proponent shall acquire all or part of the landowner's land, then the Proponent shall acquire this land in accordance with the procedures in conditions 10-12 below.

9. If the landowner disputes the results of the independent review, either the Proponent or the landowner may refer the matter to the Director-General for resolution.

   If the matter cannot be resolved within 21 days, the Director-General shall refer the matter to an Independent Dispute Resolution Process.

**Land Acquisition**

10. Within 3 months of receiving a written request from a landowner with acquisition rights, the Proponent shall make a binding written offer to the landowner based on:
   (a) the current market value of the landowner's interest in the property at the date of this written request, as if the property was unaffected by the project the subject of the project application, having regard to the:
      - existing and permissible use of the land, in accordance with the applicable planning instruments at the date of the written request; and
      - presence of improvements on the property and/or any approved building or structure which has been physically commenced at the date of the landowner's written request, and is due to be completed subsequent to that date, but excluding any improvements that have resulted from the implementation of condition 6 of schedule 3;
   (b) the reasonable costs associated with:
      - relocating within the Mid-Western Regional local government area, or to any other local government area determined by the Director-General;
      - obtaining legal advice and expert advice for determining the acquisition price of the land, and the terms upon which it is required; and
   (c) reasonable compensation for any disturbance caused by the land acquisition process.

   However, if at the end of this period, the Proponent and landowner cannot agree on the acquisition price of the land, and/or the terms upon which the land is to be acquired, then either party may refer the matter to the Director-General for resolution.

   Upon receiving such a request, the Director-General shall request the President of the NSW Division of the Australian Property Institute to appoint a qualified independent valuer or Fellow of the Institute,

to consider submissions from both parties, and determine a fair and reasonable acquisition price for the land, and/or terms upon which the land is to be acquired.

Within 14 days of receiving the independent valuer's determination, the Proponent shall make a written offer to purchase the land at a price not less than the independent valuer's determination.

If the landowner refuses to accept this offer within 6 months of the date of the Proponent's offer, the Proponent's obligations to acquire the land shall cease, unless otherwise agreed by the Director-General.

11. The Proponent shall bear the costs of any valuation or survey assessment requested by the independent valuer, or the Director-General and the costs of determination referred above.

12. If the Proponent and landowner agree that only part of the land shall be acquired, then the Proponent shall pay all reasonable costs associated with obtaining Council approval for any plan of subdivision, and registration of the plan at the Office of the Registrar-General.

---

## SCHEDULE 5
## ENVIRONMENTAL MANAGEMENT, MONITORING, AUDITING AND REPORTING

### ENVIRONMENTAL MANAGEMENT STRATEGY

1. Prior to carrying out any development, the Proponent shall prepare and implement an Environmental Management Strategy for the project to the satisfaction of the Director-General. This strategy must:
   (a) provide the strategic context for environmental management of the project;
   (b) identify the statutory requirements that apply to the project;
   (c) describe in general how the environmental performance of the project would be monitored and managed during the project;
   (d) describe the procedures that would be implemented to:
      - keep the local community and relevant agencies informed about the operation and environmental performance of the project;
      - receive, handle, respond to, and record complaints;
      - resolve any disputes that may arise during the course of the project;
      - respond to any non-compliance;
      - manage cumulative impacts; and
      - respond to emergencies;
   (e) describe the role, responsibility, authority, and accountability of all the key personnel involved in environmental management of the project; and
   (f) be updated following each Independent Environmental Audit required by condition 7 below.

2. Within 6 months of the completion of the Independent Environmental Audit (see condition 7 below), the Proponent shall review, and if necessary revise, the Environmental Management Strategy to the satisfaction of the Director-General.

### ENVIRONMENTAL MONITORING PROGRAM

3. Within 6 months of this approval, the Proponent shall prepare an Environmental Monitoring Program for the project in consultation with relevant agencies, and to the satisfaction of the Director-General. This program must consolidate the various monitoring requirements in schedule 3 of this approval into a single document.

4. Within 6 months of the completion of the Independent Environmental Audit (see condition 6 below), the Proponent shall review, and if necessary revise, the Environmental Monitoring Program to the satisfaction of the Director-General.

### INCIDENT REPORTING

5. Within 7 days of detecting an exceedance of the limits/performance criteria in this approval or an incident causing (or threatening to cause) material harm to the environment; the Proponent shall report the exceedance/incident to the Department (and any relevant agency). The report must:
   (a) describe the date, time, and nature of the exceedance/incident;
   (b) identify the cause (or likely cause ) of the exceedance/incident;
   (c) describe what action has been taken to date; and
   (d) describe the proposed measures to address the exceedance/incident.

### ANNUAL REPORTING

6. Within 12 months of this approval, and annually thereafter, the Proponent shall submit an Annual Environmental Management Report (AEMR) to the Director-General and the relevant agencies. This report must:
   (a) identify the standards and performance measures that apply to the project;
   (b) describe the works carried out in the last 12 months;
   (c) describe the works that will be carried out in the next 12 months;
   (d) include a summary of the complaints received during the past year, and compare this to the complaints received in previous years;
   (e) include a summary of the monitoring results for the project during the past year;
   (f) include an analysis of these monitoring results against the relevant:
      - impact assessment criteria/limits;
      - monitoring results from previous years; and
      - predictions in the EIS;
   (g) identify any trends in the monitoring results over the life of the project;
   (h) identify any non-compliance during the previous year; and
   (i) describe what actions were, or are being, taken to ensure compliance.

**INDEPENDENT ENVIRONMENTAL AUDIT**

7. At the end of year 2 of the project, and every 3 years thereafter, unless the Director-General directs otherwise, the Proponent shall commission and pay the full cost of an Independent Environmental Audit of the project. This audit must:
   (a) be conducted by suitably qualified, experienced, and independent expert/s whose appointment has been endorsed by the Director-General;
   (b) assess the various aspects of the environmental performance of the project, and its effects on the surrounding environment;
   (c) assess whether the project is complying with the relevant standards, performance measures, and statutory requirements;
   (d) review the adequacy of any strategy/plan/program required under this approval; and, if necessary,
   (e) recommend measures or actions to improve the environmental performance of the project, and/or any strategy/plan/program required under this approval.

8. Within 3 months of commissioning this audit, or as otherwise agreed by the Director-General, the Proponent shall submit a copy of the audit report to the Director-General, with a response to any recommendations contained in the audit report.

**ENVIRONMENTAL MANAGER**

9. Prior to carrying out any development, the Proponent shall employ a suitably qualified and experienced Environmental Manager, whose appointment has been endorsed by the Director-General, for the duration of the project to oversee the environmental performance of the project and compliance with the conditions of this approval.

**COMMUNITY CONSULTATIVE COMMITTEE**

10. Within 3 months of this approval, the Proponent shall establish a Community Consultative Committee (CCC) to oversee the environmental performance of the project. The CCC shall:
   (a) be comprised of:
      - 2 representatives from the Proponent, including the person responsible for environmental management at the mine;
      - at least 1 representative from Council (if available); and
      - at least 2 representatives from the local community,

      whose appointment has been approved by the Director-General in consultation with the Council. The local community representative positions will be re-appointed every two years unless otherwise agreed by the Director-General;
   (b) be chaired by an independent chairperson, whose appointment has been approved by the Director-General;
   (c) meet at least twice a year;
   (d) review the Proponent's performance with respect to environmental management and community relations;
   (e) undertake regular inspections of the mine operations;
   (f) review community concerns or complaints about the mine operations, and the Proponent's complaints handling procedures; and
   (g) provide advice to:
      - the Proponent on improved environmental management and community relations, including the provision of information to the community and the identification of community initiatives to which the Proponent could contribute;
      - the Department regarding the conditions of this approval; and
      - the general community on the performance of the mine with respect to environmental management and community relations; and
   (h) be operated generally in accordance with any guidelines the Department may publish in regard to the operation of Community Consultative Committees for mining projects.

   *Note: The CCC is an advisory committee. The Department and other relevant agencies are responsible for ensuring that the Proponent complies with this approval.*

11. The Proponent shall, at its own expense:
   (a) ensure that 2 of its representatives attend CCC meetings;
   (b) provide the CCC with regular information on the environmental performance and management of the project;
   (c) provide meeting facilities for the CCC;
   (d) arrange site inspections for the CCC, if necessary;
   (e) take minutes of the CCC meetings;
   (f) make these minutes available to the public;

(g) respond to any advice or recommendations the CCC may have in relation to the environmental management or community relations; and
(h) forward a copy of the minutes of each CCC meeting, including a response to any recommendations from the CCC, to the Director-General within a month of the CCC meeting.

**ACCESS TO INFORMATION**

9. Within 3 months of the approval of any plan/strategy/program required under this approval (or any subsequent revision of these plans/strategies/programs), the completion of the Independent Environmental Audits required under this approval, or the completion of the AEMR, the Proponent shall:
(a) provide a copy of the relevant document/s to the Council, relevant agencies and the CCC;
(b) ensure that a copy of the relevant document/s is made publicly available at the mine; and;
(c) put a copy of the relevant document/s on the Proponent's website;
to the satisfaction of the Director-General.

10. During the life of the project, the Proponent shall:
(a) make a summary of monitoring results required under this approval publicly available at the mine and on its website; and
(b) update these results on a regular basis (at least every 3 months),
to the satisfaction of the Director-General.

**APPENDIX 1**
**SCHEDULE OF LAND**

**Freehold Land**

| Property | Owner | Property | Owner |
|---|---|---|---|
| Lot 10 DP 703223 | Cumbo Coal Pty. Ltd. | Lot 1 DP 727117 | Cumbo Land Pty. Ltd. |
| Lot 123 DP 755425 | Cumbo Coal Pty. Ltd. | Lot 100 DP 755454 | Cumbo Land Pty. Ltd. |
| Lot 124 DP 755425 | Cumbo Coal Pty. Ltd. | Lot 109 DP 755454 | Cumbo Land Pty. Ltd. |
| Lot 2 DP 720305 | Cumbo Coal Pty. Ltd. | Lot 110 DP 755454 | Cumbo Land Pty. Ltd. |
| Lot 3 DP 583254 | Cumbo Coal Pty. Ltd. | Lot 116 DP 755425 | Cumbo Land Pty. Ltd. |
| Lot 3 DP 755425 | Cumbo Coal Pty. Ltd. | Lot 12 DP 755425 | Cumbo Land Pty. Ltd. |
| Lot 5 DP 703225 | Cumbo Coal Pty. Ltd. | Lot 128 DP 755425 | Cumbo Land Pty. Ltd. |
| Lot 90 DP 755425 | Cumbo Coal Pty. Ltd. | Lot 13 DP 755425 | Cumbo Land Pty. Ltd. |
| Lot 93 DP 755425 | Cumbo Coal Pty. Ltd. | Lot 14 DP 755425 | Cumbo Land Pty. Ltd. |
| Pt. Lot 237 DP 724588 | Cumbo Coal Pty. Ltd. | Lot 142 DP 755425 | Cumbo Land Pty. Ltd. |
| Lot 1 DP 724617 | Cumbo Creek Pastoral | Lot 143 DP 755425 | Cumbo Land Pty. Ltd. |
| Lot 1 DP 728756 | Cumbo Creek Pastoral | Lot 144 DP 755425 | Cumbo Land Pty. Ltd. |
| Lot 105 DP 755425 | Cumbo Creek Pastoral | Lot 145 DP 755425 | Cumbo Land Pty. Ltd. |
| Lot 11 DP 703223 | Cumbo Creek Pastoral | Lot 146 DP 755425 | Cumbo Land Pty. Ltd. |
| Lot 122 DP 755425 | Cumbo Creek Pastoral | Lot 148 DP 755425 | Cumbo Land Pty. Ltd. |
| Lot 125 DP 755425 | Cumbo Creek Pastoral | Lot 149 DP 755425 | Cumbo Land Pty. Ltd. |
| Lot 133 DP 755425 | Cumbo Creek Pastoral | Lot 150 DP 755425 | Cumbo Land Pty. Ltd. |
| Lot 134 DP 755425 | Cumbo Creek Pastoral | Lot 151 DP 755425 | Cumbo Land Pty. Ltd. |
| Lot 135 DP 755425 | Cumbo Creek Pastoral | Lot 152 DP 755425 | Cumbo Land Pty. Ltd. |
| Lot 136 DP 755425 | Cumbo Creek Pastoral | Lot 153 DP 755425 | Cumbo Land Pty. Ltd. |
| Lot 137 DP 755425 | Cumbo Creek Pastoral | Lot 156 DP 755425 | Cumbo Land Pty. Ltd. |
| Lot 138 DP 755425 | Cumbo Creek Pastoral | Lot 157 DP 755425 | Cumbo Land Pty. Ltd. |
| Lot 139 DP 755425 | Cumbo Creek Pastoral | Lot 158 DP 755425 | Cumbo Land Pty. Ltd. |
| Lot 140 DP 755425 | Cumbo Creek Pastoral | Lot 160 DP 755425 | Cumbo Land Pty. Ltd. |
| Lot 141 DP 755425 | Cumbo Creek Pastoral | Lot 183 DP 755425 | Cumbo Land Pty. Ltd. |
| Lot 161 DP 755425 | Cumbo Creek Pastoral | Lot 184 DP 755425 | Cumbo Land Pty. Ltd. |
| Lot 18 DP 755425 | Cumbo Creek Pastoral | Lot 186 DP 755425 | Cumbo Land Pty. Ltd. |
| Lot 25 DP 755425 | Cumbo Creek Pastoral | Lot 187 DP 755425 | Cumbo Land Pty. Ltd. |
| Lot 27 DP 755425 | Cumbo Creek Pastoral | Lot 188 DP 755425 | Cumbo Land Pty. Ltd. |
| Lot 35 DP 755425 | Cumbo Creek Pastoral | Lot 194 DP 755425 | Cumbo Land Pty. Ltd. |
| Lot 40 DP 755425 | Cumbo Creek Pastoral | Lot 195 DP 755425 | Cumbo Land Pty. Ltd. |
| Lot 50 DP 755425 | Cumbo Creek Pastoral | Lot 196 DP 755425 | Cumbo Land Pty. Ltd. |
| Lot 53 DP 755425 | Cumbo Creek Pastoral | Lot 26 DP 755425 | Cumbo Land Pty. Ltd. |
| Lot 54 DP 755425 | Cumbo Creek Pastoral | Lot 31 DP 755454 | Cumbo Land Pty. Ltd. |
| Lot 66 DP 654143 | Cumbo Creek Pastoral | Lot 34 DP 755425 | Cumbo Land Pty. Ltd. |
| Lot 71 DP 755425 | Cumbo Creek Pastoral | Lot 35 DP 755454 | Cumbo Land Pty. Ltd. |
| Lot 75 DP 755425 | Cumbo Creek Pastoral | Lot 37 DP 755425 | Cumbo Land Pty. Ltd. |
| Lot 76 DP 755425 | Cumbo Creek Pastoral | Lot 41 DP 583255 | Cumbo Land Pty. Ltd. |
| Lot 79 DP 755425 | Cumbo Creek Pastoral | Lot 42 DP 583255 | Cumbo Land Pty. Ltd. |
| Lot 9 DP 755425 | Cumbo Creek Pastoral | Lot 43 DP 583255 | Cumbo Land Pty. Ltd. |
| Lot 94 DP 755425 | Cumbo Creek Pastoral | Lot 44 DP 583255 | Cumbo Land Pty. Ltd. |
| Lot 95 DP 755425 | Cumbo Creek Pastoral | Lot 44 DP 755425 | Cumbo Land Pty. Ltd. |
| Pt. Lot 132 DP 755425 | Cumbo Creek Pastoral | Lot 45 DP 755425 | Cumbo Land Pty. Ltd. |
| Lot 1 DP 112124 | Cumbo Land Pty. Ltd. | Lot 45 DP 755454 | Cumbo Land Pty. Ltd. |
| Lot 1 DP 583254 | Cumbo Land Pty. Ltd. | Lot 46 DP 755454 | Cumbo Land Pty. Ltd. |
| Lot 49 DP 755425 | Cumbo Land Pty. Ltd. | Lot 48 DP 755454 | Cumbo Land Pty. Ltd. |

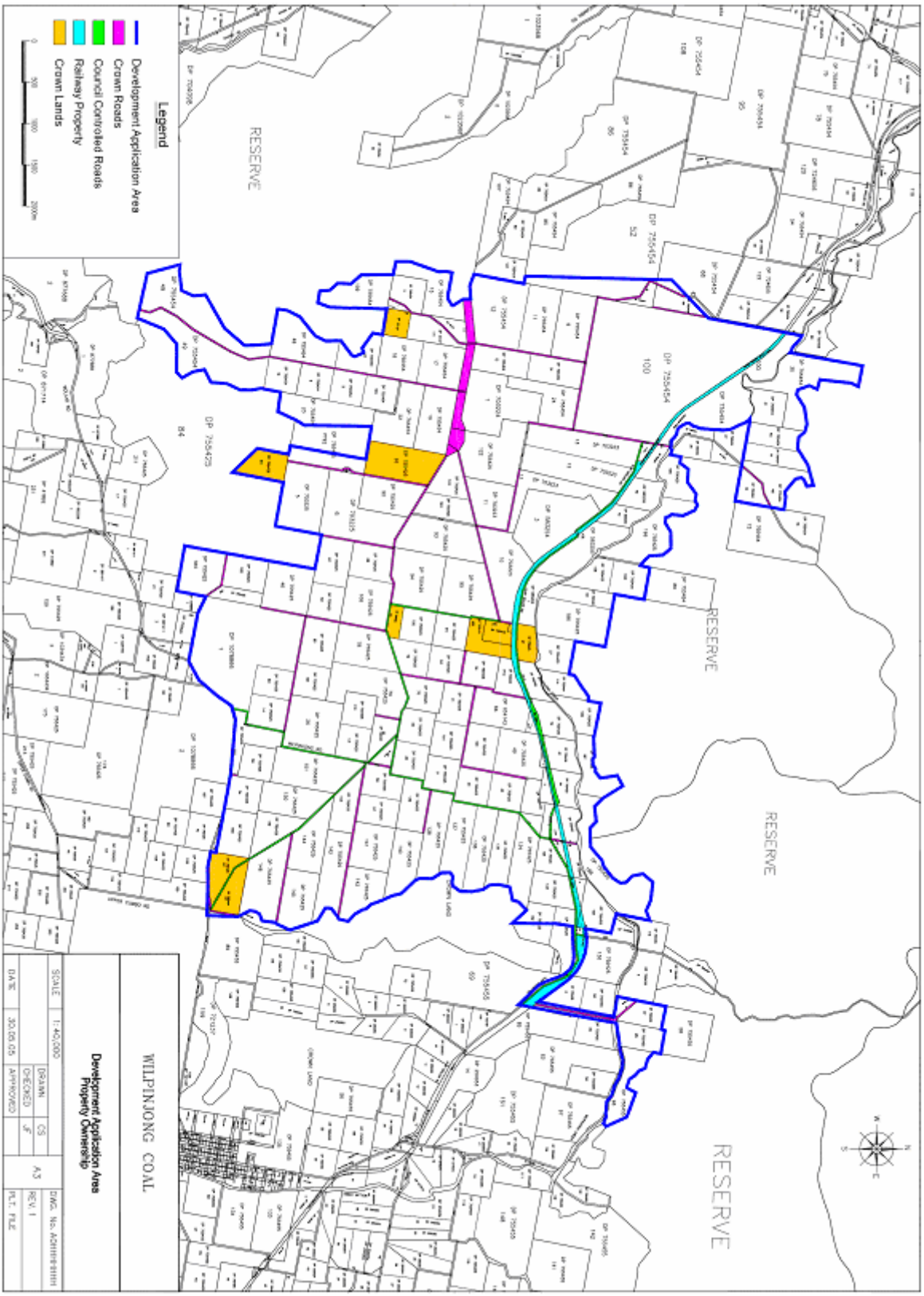
| Property | Owner | Property | Owner |
|---|---|---|---|
| Lot 49 DP 755454 | Cumbo Land Pty. Ltd. | Lot 14 DP 755454 | Cumbo Land Pty. Ltd. |
| Lot 55 DP 755425 | Cumbo Land Pty. Ltd. | Lot 15 DP 755454 | Cumbo Land Pty. Ltd. |
| Lot 56 DP 755425 | Cumbo Land Pty. Ltd. | Lot 17 DP 755454 | Cumbo Land Pty. Ltd. |
| Lot 57 DP 755425 | Cumbo Land Pty. Ltd. | Lot 18 DP 755454 | Cumbo Land Pty. Ltd. |
| Lot 57 DP 755455 | Cumbo Land Pty. Ltd. | Lot 182 DP 755425 | Cumbo Land Pty. Ltd. |
| Lot 59 DP 755425 | Cumbo Land Pty. Ltd. | Lot 19 DP 755454 | Cumbo Land Pty. Ltd. |
| Lot 70 DP 755425 | Cumbo Land Pty. Ltd. | Lot 22 DP 755454 | Cumbo Land Pty. Ltd. |
| Lot 72 DP 755454 | Cumbo Land Pty. Ltd. | Lot 23 DP 755454 | Cumbo Land Pty. Ltd. |
| Lot 83 DP 755425 | Cumbo Land Pty. Ltd. | Lot 24 DP 755454 | Cumbo Land Pty. Ltd. |
| Lot 95 DP 755455 | Cumbo Land Pty. Ltd. | Lot 3 DP 755454 | Cumbo Land Pty. Ltd. |
| Lot 96 DP 755455 | Cumbo Land Pty. Ltd. | Lot 46 DP 755425 | Cumbo Land Pty. Ltd. |
| Pt. Lot 1 DP 1078866 | Cumbo Land Pty. Ltd. | Lot 47 DP 755454 | Cumbo Land Pty. Ltd. |
| Pt. Lot 131 DP 755425 | Cumbo Land Pty. Ltd. | Lot 5 DP 755454 | Cumbo Land Pty. Ltd. |
| Pt. Lot 69 DP 755455 | Cumbo Land Pty. Ltd. | Lot 52 DP 755425 | Cumbo Land Pty. Ltd. |
| Pt. Lot 89 DP 755455 | Cumbo Land Pty. Ltd. | Lot 58 DP 755425 | Cumbo Land Pty. Ltd. |
| Pt. Lot 92 DP 755425 | Cumbo Land Pty. Ltd. | Lot 6 DP 703225 | Cumbo Land Pty. Ltd. |
| Lot 1 DP 703224 | Cumbo Land Pty. Ltd. | Lot 6 DP 755454 | Cumbo Land Pty. Ltd. |
| Lot 10 DP 755454 | Cumbo Land Pty. Ltd. | Lot 78 DP 755425 | Cumbo Land Pty. Ltd. |
| Lot 104 DP 755454 | Cumbo Land Pty. Ltd. | Lot 80 DP 755425 | Cumbo Land Pty. Ltd. |
| Lot 106 DP 755425 | Cumbo Land Pty. Ltd. | Lot 87 DP 755425 | Cumbo Land Pty. Ltd. |
| Lot 11 DP 755454 | Cumbo Land Pty. Ltd. | Lot 88 DP 755425 | Cumbo Land Pty. Ltd. |
| Lot 114 DP 42127 | Cumbo Land Pty. Ltd. | Lot 9 DP 755454 | Cumbo Land Pty. Ltd. |
| Lot 12 DP 703223 | Cumbo Land Pty. Ltd. | Lot 1 DP 653565 | M Bloom & R Beheit |
| Lot 12 DP 755454 | Cumbo Land Pty. Ltd. | Pt. Lot 1 DP 755455 | RWB & NJ & DB Reid |
| Lot 13 DP 703223 | Cumbo Land Pty. Ltd. | Pt. Lot 52 DP 755454 | Ulan Coal Mines Limited |
| Lot 13 DP 755454 | Cumbo Land Pty. Ltd. | Pt. Lot 68 DP 755454 | Ulan Coal Mines Limited |

**Crown Lands**

| Property | Owner |
|---|---|
| Lot 115 DP 42127 | Crown Land |
| Lot 147 DP 755425 | Crown Land |
| Lot 233 DP 723412 | Crown Land |
| Lot 234 DP 723412 | Crown Land |
| Lot 235 DP 723412 | Crown Land |
| Lot 77 DP 755425 | Crown Land |
| Lot 84 DP 755425 | Crown Land |
| Lot 91 DP 755425 | Crown Land |
| Lot 97 DP 755425 | Crown Land |

**Other Lands**

Crown Roads, Council Roads and property under the control of the State Rail Authority have been identified and are shown on the attached plan (00567A).


Legend
Development Application Areas
Crown Roads
Council Controlled Roads
Railway Property
Crown Lands
RESERVE
RESERVE
RESERVE
WILPINJONG COAL
Development Application Areas
Property Ownership
SCALE 1:40,000
DRAWN CS
CHECKED JF
APPROVED
DATE 30.09.05
A3
REV. 1
PLT. FILE

**APPENDIX 2**
**GENERAL TERMS FOR THE PLANNING AGREEMENT**

**Lump Sum Payment**

1. The Proponent must pay Council $450,000.00 prior to the first shipment of coal from the site.

**Community Infrastructure Contribution**

2. The Proponent must pay Council a Community Infrastructure Contribution of $40,000 each year commencing on the first anniversary of the first shipment of coal from the site for a period of 20 years.

   *Note: The Community Infrastructure Contribution must be reviewed and adjusted to take into account any increase in the CPI over time, in accordance with the Planning Agreement between the Proponent and Council required under this approval.*

**Road Maintenance Contribution**

3. The Proponent must pay Council a Road Maintenance Contribution of $30,000 each year commencing on the first anniversary of the first shipment of coal from the site for each year until the Proponent ceases mining coal on the site.

   *Note: The Road Maintenance Contribution must be reviewed and adjusted to take into account any increase in the CPI over time, in accordance with the Planning Agreement between the Proponent and Council required under this approval.*

**Route Assessment Study**

4. The Proponent must carry out a Route Assessment Study (incorporating a Road Safety Audit and a Road Conditions Audit) which identifies:

   (a) the standard of compliance of the Roads with the applicable [AUSROAD Standard];

   (b) traffic flows at the date of the Route Assessment Study which are not attributable to the Project;

   (c) predicted traffic flows over the life of the Project excluding traffic flows attributable to the Project;

   (d) predicted traffic flows and timing of traffic flows attributable to the Project;

   (e) whether the traffic flows identified in clause 4(b) or 4 (c) require the upgrade of any part of the Roads to comply with the relevant [AUSROAD Standard]; and

   (f) whether the predicted traffic flows attributable to the Project require the upgrade of any part of the Roads in order to comply with the relevant [AUSROAD Standard] where that upgrade would not be required, either at that time or at all, having regard to the traffic flows in clauses 4(b) and 4(c) only.

   *Note: "Roads" means:*
   - *Ulan Road between Mudgee and the intersection with the Ulan-Wollar Road;*
   - *Ulan-Wollar Road between the Project and the intersection with the Ulan Road; and*
   - *Wollar Road between the Project and the intersection with Ulan Road.*

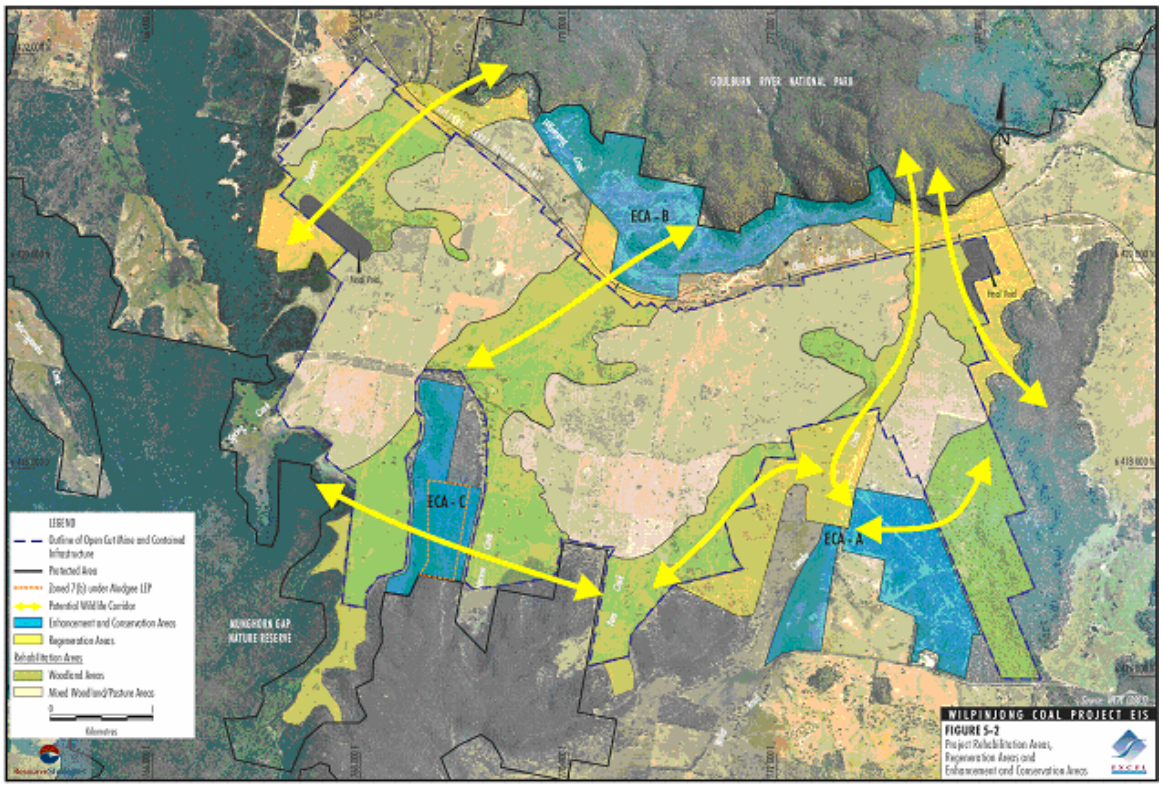
**Contribution to Road Upgrades**

5. The Proponent must, at its option, either carry out or pay the costs of each upgrade to the Roads identified as required in the Route Assessment Study if:

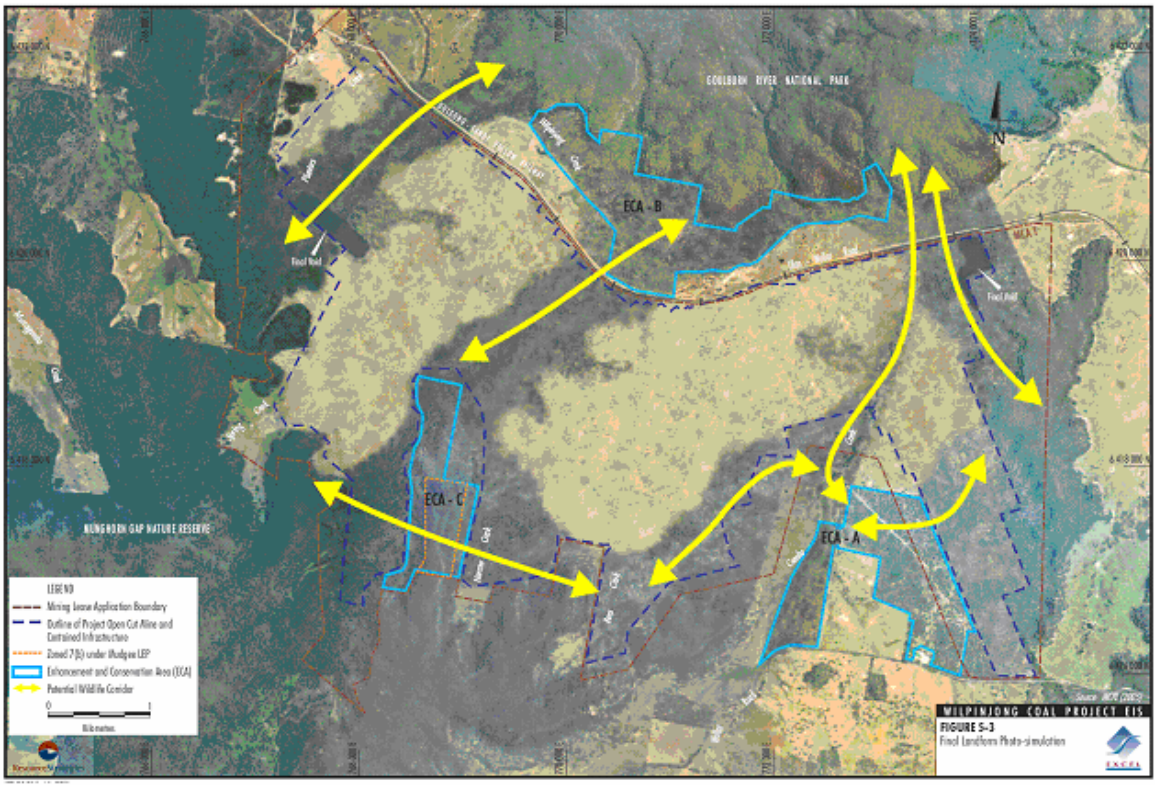
   (a) the incremental increase in traffic flow attributable to the Project require that upgrade of any part of the Roads in order to comply with the relevant [AUSROAD Standard]; and

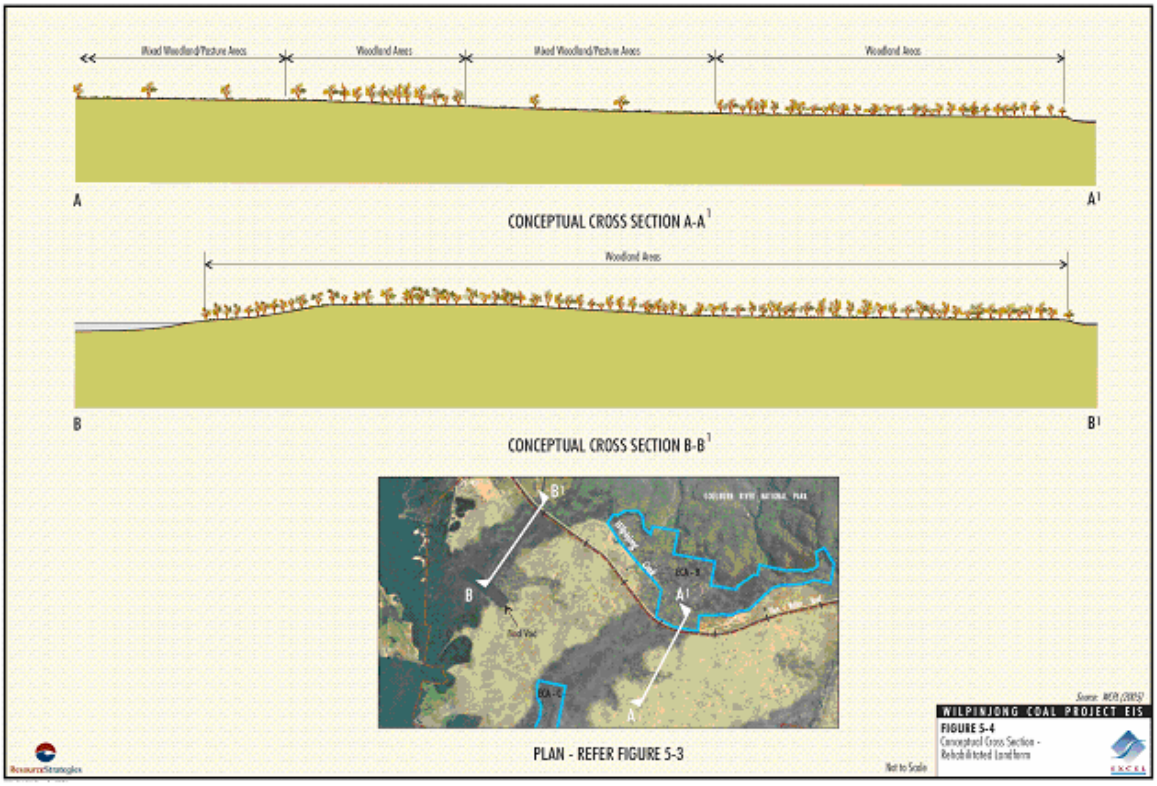
   (b) that upgrade would not be required at that time by the current or predicted traffic flows which are not attributable to the Project.

**APPENDIX 3**
**OFFSET STRATEGY**

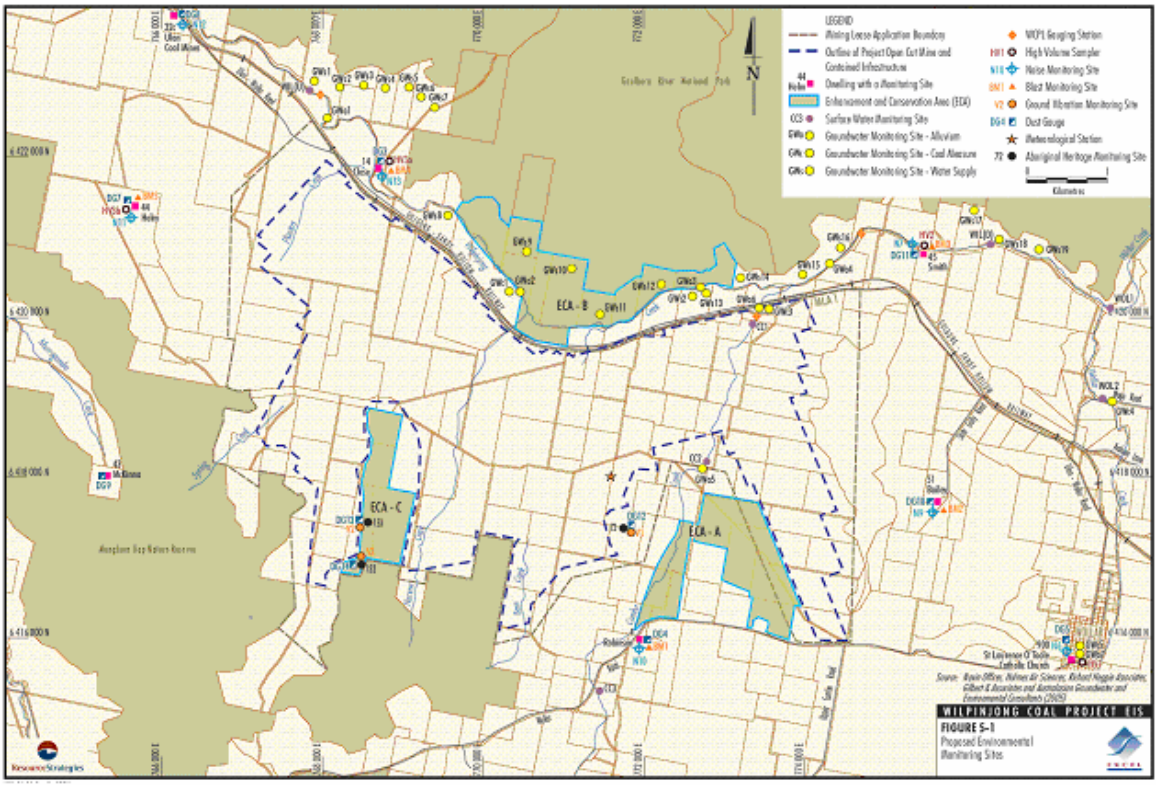


**APPENDIX 4**
**CONCEPTUAL REHABILITATION PLAN**



**APPENDIX 5**
**ABORIGINAL SITES**

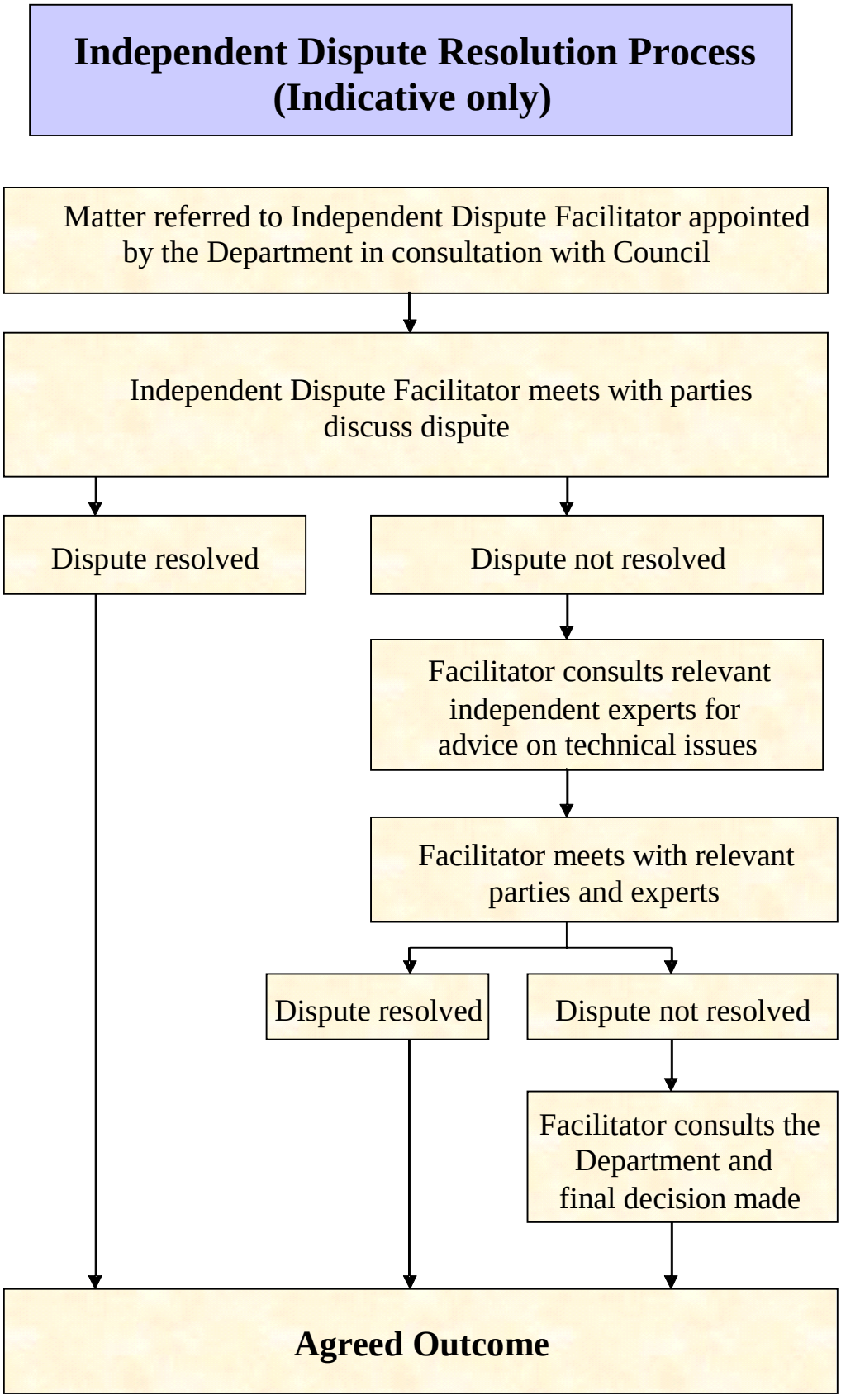


**APPENDIX 6**
**HERITAGE SITES**

**Table 3-20**
**Sites of Local Heritage Significance Identified in the Project Survey**

| Site No. | Place Name | History and Description |
|---|---|---|
| 1. | *Cumbo Creek* | Built 1912, stone cottage with later additions, now in poor condition. |
| 2. | *Hillside* | First building possibly built 1866, and added to over time. Key early slab buildings intact, but in poor condition. |
| 3. | *Keylah* | Slab building built 1896, stone section 1922. Intact and in good condition. |
| 4. | *Warrawong* | Slab cottage, originally built near the junction of Wilpinjong and Cumbo Creek, moved to present site 1912. |
| 5. | Atcheson's cottage, Wyangle Portion 19 Wilpinjong | Concrete structure, probably built 1930s now in poor condition. |
| 6. | Loy's cottage | Slab cottage, built circa 1894, and possibly used for a time as a school room. Now in ruin. |
| 7. | *Pine Park* woolshed | Slab woolshed built in 1930s. In good condition. |
| 8. | Post and rail fence, Portion 106 Cumbo | Long section of post and rail fence, unknown date and in poor condition. |
| 9. | Wilpinjong Road stone embankment, Portion 26 Cumbo | 43 m long stone road embankment, possibly from 19$^{th}$ century. Intact. |

**APPENDIX 7**
**INDEPENDENT DISPUTE RESOLUTION PROCESS**



# ATTACHMENT 2

# DIRECTOR-GENERAL'S REQUIREMENTS - ENVIRONMENTAL ASSESSMENT REQUIREMENTS

# Director-General's Requirements

**Section 75W of the *Environmental Planning and Assessment Act 1979***

| | |
|---|---|
| **Application number** | 05-0021-1 |
| **Modification** | Modification to the Wilpinjong Coal Project project approval (05_0021) that involves:<br>• changing access arrangements for the mine to the Ulan-Wollar Road, via Ulan Road; and<br>• increasing blast frequency to a maximum of 2 blasts a day, 5 blasts a week on average over any 12 month period. |
| **Location** | Approximately 45 kilometres northeast of Mudgee, NSW |
| **Proponent** | Wilpinjong Coal Pty Limited |
| **Date of Issue** | 12 February 2007 |
| **Date of Expiration** | 12 February 2009 |
| **General Requirements** | The Environmental Assessment must include<br>• an executive summary;<br>• a detailed description of the modification including the:<br>– need for the modification;<br>– alternatives considered;<br>– various components of the modification; and<br>– the likely inter-relationship between the proposed modification and the existing or approved mining operations in the region;<br>• consideration of any relevant statutory provisions;<br>• a general overview of the environmental impacts of the modification, identifying the key issues for further assessment, and taking into consideration the issues raised during consultation;<br>• a detailed assessment of the key issues specified below, and any other significant issues identified in the general overview of environmental impacts of the modification (see above), which includes:<br>– a description of the existing environment; and<br>– an assessment of the potential impacts of the modification including potential cumulative impacts (particularly traffic, traffic noise and public safety) that may arise from the combined operation of the modified project, together with the other approved and existing mines in the region;<br>• a description of the measures that would be implemented to avoid, minimise, mitigate, offset, manage and/or monitor the impacts of the modification, and whether the existing planning agreement with Mid-Western Regional Council needs to be revised as a result of the modification;<br>• a Statement of Commitments, outlining environmental management, mitigation and monitoring measures;<br>• a conclusion justifying the modification, taking into consideration the environmental impacts of the project, and the benefits of the project; and<br>• a signed statement from the author of the Environmental Assessment report certifying that the information contained in the report is neither false nor misleading. |
| **Key Issues** | • **Traffic and Transport –** a detailed traffic impact assessment of the proposed modified mine access route, including consideration of intersection performance; road safety; pavement conditions; school bus routes; the potential for staggered shift changes with other mines in the area; lighting and signage; and the likely interactions with other approved, existing or proposed mines in the area. A strategy must also be included that describes the measures to be taken by the proponent (in consultation with other relevant mining companies) to ensure that an appropriate level of road safety and road surface performance exists on Ulan Road (and |

| | |
|---|---|
| | other relevant local roads) that is consistent with it being used as the primary access route for the various coal mines in the area;<br>• **Noise** – a detailed road traffic noise assessment; and<br>• **Blasting and Vibration**. |
| **References** | The Environmental Assessment must take into account relevant State Government technical and policy guidelines. While not exhaustive, guidelines which may be relevant to the project are included in the attached list. |
| **Consultation** | During the preparation of the Environmental Assessment, you must consult with the relevant local, State or Commonwealth Government authorities, service providers, community groups or affected landowners. The consultation process and the issues raised must be described in the Environmental Assessment.<br><br>In particular you must consult with:<br>• NSW Roads and Traffic Authority;<br>• Department of Environment and Conservation;<br>• Mid-Western Regional Council;<br>• Wilpinjong Community Consultative Committee;<br>• Ulan Coal Mine Pty Limited; and<br>• Moolarben Coal Mine Pty Limited.<br><br>The consultation process and the issues raised must be described in the Environmental Assessment. |
| **Deemed refusal period** | 30 days |

## State Government Technical and Policy Guidelines - For Reference

| Aspect | Policy /Methodology |
|---|---|
| **Noise** | |
| | • *NSW Industrial Noise Policy* (DEC);<br>• *Environmental Criteria for Road Traffic Noise* (DEC);<br>• *Environmental Noise Control Manual* (DEC); |
| **Traffic** | |
| | • *Guide to Traffic Generating Development* (RTA);<br>• *RTA Road Design Guide* (RTA);<br>• relevant Austroad standards; |
| **Blasting and Vibration** | |
| | • *Technical Basis for Guidelines to Minimise Annoyance due to Blasting and Ground Vibration* (ANZECC)*;* |

# APPENDIX A

# BLAST EMISSION IMPACT ASSESSMENT

HEGGIES

24 April 2007

30-1313 Blast Emission Impact Assessment 20070424

Wilpinjong Coal Pty Ltd
c/- Resource Strategies Pty Ltd
Level 2, 11 Lang Parade
MILTON QLD 4064

**Attention: Mr Keith Downham**

Dear Keith

## Wilpinjong Coal Project
## Blasting Frequency Modification
## Blast Emission Impact Assessment

Please find enclosed a copy of our Blasting Emission Impact Assessment.

The enclosed assessment has been undertaken to assess potential impacts associated with increasing the currently approved frequency of blasting at the Wilpinjong Coal Project.

Regards

GLENN THOMAS

MEMBER FIRM OF THE ASSOCIATION OF AUSTRALIAN ACOUSTICAL CONSULTANTS

HEGGIES PTY LTD
ABN 29 001 584 612
2 Lincoln Street Lane Cove NSW 2066 Australia
PO Box 176 Lane Cove NSW 1595 Australia
Telephone 61 2 9427 8100 Facsimile 61 2 9427 8200
Email sydney@heggies.com Website www.heggies.com

Quality Endorsed Company
ISO 9001 Lic 3236
SAI Global

# BLAST EMISSION IMPACT ASSESSMENT

## 1 Introduction

Wilpinjong Coal Pty Ltd (WCPL) has approval to develop the Wilpinjong Coal Project (the Project) in accordance with the Department of Planning (DoP) Project Approval 05-0021 dated 1 February 2006. The Project is located approximately 40 km north-east of Mudgee in New South Wales (NSW).

The Project Environmental Impact Statement (Project EIS) (WCPL, 2005) included a detailed blasting impact assessment undertaken by Heggies Pty Ltd in accordance with the Department of Environment and Conservation's (DEC's) preferred assessment guideline *Technical Basis for Guidelines to Minimise Annoyance due to Blasting and Ground Vibration* (ANZECC). The assessment anticipated a blasting frequency of generally no more than one blast per day and an average of one blast week based on a typical overburden blast volume of 280,000 bank cubic metres (bcm). The EIS also noted that the actual number of blasts in any week would be dependent on mine production.

Mining to date has indicated that the coal seams and inter-burden (rock between coal seams) are much harder than initially predicted and cannot be efficiently ripped via dozer as described in the Project EIS. To mine this material, frequent small blasts are required to maintain coal production at the rate proposed in the Project EIS. As a result, WCPL are proposing to increase the frequency of blasting to up to two blasts per day, with a maximum average of five blasts per week over any 12 month period.

## 2 Comparative Blast Design Parameters

**Table 1** presents the proposed changes to the approved blast parameters.

**Table 1 Comparison of the Approved Project and Modified Project Blast Design Parameters**

| Parameter | Approved Project | Modified Project |
|---|---|---|
| Bench Height | 5 m to 8 m | Unchanged |
| Burden and Spacing | 6 m to 7 m and 7 m to 8 m | Unchanged |
| Hole Diameter | 229 mm | Unchanged |
| Number of Holes | Typically 715 holes | Unchanged |
| Holes per Delay | Typically 1 hole | Unchanged |
| Explosive Type | 95% ANFO (Dry) or 5% Emulsion Blends (Wet) | Unchanged |
| Explosive Mass | 25 kg/m or 38 kg/m | Unchanged |
| Maximum Instantaneous Charge (MIC) | MIC 855 kg (5 holes within 8 msec) or approximately 171 kg per blast hole | Unchanged |
| Powder Factor | Typically 0.20 kg/$m^3$ | Unchanged |
| Frequency | A maximum of 1 blast per day and 1 blast per week on average over any 12 month period | A maximum of 2 blasts per day and 5 blasts per week on average over any 12 month period |

Source: Wilpinjong Coal Project EIS (WCPL, 2005) and WCPL (2007)

It should be noted, that the Maximum Instantaneous Charge (MIC) associated with the majority of additional blasts is expected to be considerably lower (i.e. MIC up 180 kg) by comparison with the Approved Project (i.e MIC up to 855 kg).

# 3 Relevant Statutory Approvals

**Attachment A** presents relevant conditions from the Project Approval (05-0021) and the Environment Protection Licence (EPL) (No. 12425) that stipulate blasting criteria for the Project.

Condition 12, Schedule 3 of the Project Approval and Condition L7.4 of EPL 12425 currently restrict blasting operations to one blast per day and one blast per week on average over any 12 month period.

The Project Blast Management Plan and Monitoring Programme (BMP) (WCPL, 2006a) and the Aboriginal and Cultural Heritage Management Plan (ACHMP) (WCPL, 2006b) detail monitoring and management requirements for blast emission impacts (Section 4).

# 4 Existing Environment

### *Current Blast Emission Monitoring*

As noted above, WCPL conducts blasting operations and monitoring in accordance with the BMP and ACHMP. Blast monitoring results and management performance are reported annually by WCPL in the Annual Environmental Management Report and on the Project website in accordance with the Project Approval.

To date, blast monitoring has been undertaken at two private residences; an Aboriginal rock art site (V1); two main line rail culverts and embankments (R1 and R2); a main line rail embankment, a concrete power pole and concrete railway antenna (R3); and a rail embankment (R4) (Figure 1). Blasting activities to date have been concentrated at the northern end of the mining lease on either side of the rail loop (Figure 1).

Blast monitoring results for the period March 2006 to March 2007 are presented in **Attachment B**. As provided in **Attachment B**, no exceedances of the Project Approval or EPL ground vibration or airblast impact assessment criteria were recorded.

### *Blast Emission Related Complaints*

To 27 March 2007, only one blast related complaint has been received. This complaint was received following a blast on 2 March 2007 from a dwelling approximately 5 km away from the blast location. Monitoring results recorded for this blast did not exceed any of the ground vibration or airblast impact assessment criteria (**Attachment B**).

# 5 Impact Assessment of Additional Blasting

As discussed, the frequency of blasting is proposed to increase to up to two blasts per day, with a maximum average of five blasts per week over any 12 month period. This remains generally consistent with ANZECC assessment guideline that recommends that blasting should *generally* take place no more than once per day. In practice, some flexibility is required to accommodate blasting activity that occasionally may require up to two blasts per day due to efficiency, shift constraints and safety issues. However, on average there will be no more than five blasts per week over any 12 month period.

Compliance with ground vibration and airblast impact assessment criteria is not related to the frequency of blasting and as such, the proposed increase in the frequency of blasting would not increase the ground vibration or airblast impacts assessed in the Project EIS blast impact assessment.

The proposed increase in the frequency of blasting may impact on amenity for local residents, although this is difficult to quantify given its subjective nature. However, given that only one complaint regarding blasting has been received to date, together with the ongoing implementation of the mitigation measures outlined below, the amenity impacts associated with an increase in the frequency of blasting are likely to be minimal.

In regard to the other two mines in area (ie. Ulan Coal Mines and Moolarben Coal Project), the potential cumulative impacts resulting from the increase in the frequency of blasting would be primarily related to impacting public amenity. These impacts may include increased or prolonged road closures due to multiple blasts in any one day resulting from the combined blasting requirements of the three separate mining operations. To mitigate these cumulative amenity impacts, WCPL should continue to implement the measures outlined below.

In addition, potential blast emissions arising from the other two mines would be required to meet approved blast criteria. It is reasonable to assume that any approved blast criteria would be similar to that set out for the Project. Any potential cumulative emission impacts would be considered acceptable on the basis that each individual Project can demonstrate compliance with their respective blast criteria. The likelihood of blast effects coinciding sufficiently to generate reinforcement of ground vibration or airblast impacts at residences are considered minimal.

Blast emission mitigation measures have been undertaken at the Project since the commencement of blasting activities in March 2006. These measures have included (WCPL, 2006a; 2007):

- Operation of a free-call Blasting Hotline that provides information on the daily and proposed weekly blasting schedule. Advertisement of the contact number in local newspapers at least quarterly, via the Wilpinjong Community Newsletter.
- Maintenance of road closure notification boards on the Ulan-Wollar Road. Provision of at least three days warning of impending road closures subject to blasting demands.
- Traffic control signs set up in accordance with the Roads and Traffic Authority/Mid-Western Regional Council guidelines for all temporary road closures.
- Modification of blast design to meet vibration and airblast limits and avoid damage to life or property from flyrock, including consideration of wind speed, direction and other meteorological factors prior to blasting to minimise impacts on neighbours.
- Assessment of wind speed and direction immediately prior to each blast to minimise the potential for dust emissions from blasting to adversely impact on neighbouring private residencies.
- Monitoring of blasts to determine whether airblast and ground vibration limits are met. Review of monitoring results and management practices to evaluate performance and identify responsive action, if required.
- Establishment of a meteorological assessment protocol so that blasts are postponed during adverse weather conditions.
- Restriction of blasting activities to Monday to Saturday inclusive between 9.00 am and 5.00 pm (EST), with no blasting on Sundays, public holidays, or at any other time without the written approval of the DEC.
- Notification of private landholders within 2 km of the Project who have registered an interest in being informed of the blasting frequency via telephone, e-mail or as otherwise agreed.
- Repairing of any damage to buildings and/or structures on private residences confirmed to have been incurred as a result of blasting activities at the Project (via structural assessment process) (NB. this measure has not been required to date although it remains as a commitment should it be required).
- Gaining approval from the Mid-West Regional Council (in respect of public roads) and Australian Rail Track Corporation (in respect of the Gulgong- Sandy Hollow railway) prior to blasting within 500 m of a public road or railway.

# 6 Conclusion

Monitoring of blast emissions has indicated compliance with the relevant Project Approval and EPL criteria and only one blasting related complaint has been received in the period to 27 March 2007. Compliance with ground vibration and airblast impact assessment criteria is not related to the frequency of blasting and as such, the proposed increase in the frequency of blasting would not increase the ground vibration or airblast impacts assessed in the Project EIS blast impact assessment.

The amenity impacts associated with an increase in the frequency of blasting are likely to be minimal with the continued implementation of the blast mitigation measures. It is recommended that the Project Approval and EPL blast emissions criteria remain unchanged, while Project Approval and EPL conditions limiting the frequency of blasting should be modified to accommodate the additional events.

## References


- Wilpinjong Coal Pty Limited (WCPL) (2005) Wilpinjong Coal Project Environmental Impact Statement.
- Wilpinjong Coal Pty Limited (WCPL) (2006a) Blast Management Plan and Monitoring Programme.
- Wilpinjong Coal Pty Limited (WCPL) (2006b) Aboriginal and Cultural Heritage Management Plan.
- Wilpinjong Coal Pty Limited (WCPL) (2007) Wilpinjong Coal Project Annual Environmental Management Report.

# PROJECT APPROVAL - BLASTING AND VIBRATION

## Airblast Overpressure Criteria

9. The Proponent shall ensure that the airblast overpressure level from blasting at the project does not exceed the criteria in Table 4 at any residence on privately owned land.

*Table 4: Airblast overpressure impact assessment criteria*

| Airblast overpressure level (dB(Lin Peak)) | Allowable exceedance |
|---|---|
| 115 | 5% of the total number of blasts over a period of 12 months |
| 120 | 0% |

## Ground Vibration Impact Assessment Criteria

10. The Proponent shall ensure that the ground vibration level from blasting at the project does not exceed the criteria in Table 5 at any residence on privately owned land.

*Table 5: Ground vibration impact assessment criteria*

| Peak particle velocity (mm/s) | Allowable exceedance |
|---|---|
| 5 | 5% of the total number of blasts over a period of 12 months |
| 10 | 0% |

## Blasting Hours

11. The Proponent shall only carry out blasting at the project between 9am and 5pm Monday to Friday inclusive. No blasting is allowed on Sundays, public holidays, or at any other time without the written approval of the DEC.

## Blasting Frequency

12. The Proponent shall not carry out blasting associated with open cut mining more than:

- 1 blast per day; and
- 1 blast per week on average over any 12 month period, at the site without the written approval of the Director-General.

# ENVIRONMENT PROTECTION LICENCE - BLASTING LIMITS

L7.1 The airblast overpressure level from blasting operations in or on the premises must not exceed:

- 115 dB(Lin Peak) for more than 5% of the total number of blasts during each reporting period; and
- 120 dB(Lin Peak) at any time.

At any point within the grounds of noise and vibration sensitive locations and within 30 metres of any residence or other noise sensitive location such as a school or hospital.

L7.3 Blasting operations at the premises may only take place between 9am - 5pm Monday - Saturday. (Where compelling safety reasons exist, the Authority may permit a blast to occur outside the abovementioned hours. Prior written (or facsimile) notification of any such blast must be made to the Authority).

L7.4 Blasting at the premises is limited to 1 blast per day and 1 blast per week on average over a 12 month period, or at such other times as may be approved by the EPA.

## Summary of Blast Monitoring Results[1]

| Date | Robinson (4) | | Langshaw (59) | | Aboriginal Rock Art Site | | Main Line Rail Culvert[2] | Main Line Rail Embankment[2] | Main Line Culvert 2[2] | Main Line Rail Embankment 2[2] | Main Line Rail Embankment 3[2] | Concrete Power Pole[2] | Concrete Railway Antenna[2] | Pit 2 Rail Embankment 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | V1 | | R1 | | R2 | | R3 | | | R4 |
| | Vibration (mm/s) | Overpressure (dB) | Vibration (mm/s) | Overpressure (dB) | Vibration (mm/s) | Overpressure (dB) | Vibration (mm/s) | Vibration (mm/s) | Vibration (mm/s) | Vibration (mm/s) | Vibration (mm/s) | Vibration (mm/s) | Vibration (mm/s) | Vibration (mm/s) |
| 23/03/06 | Not detected | | Not detected | | 0.3 | 113 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| 31/03/06 | Not detected | | Not detected | | 0.7 | 118 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| 08/04/06 | Not detected | | Not detected | | 0.2 | 102 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| 18/05/06 | N/A | N/A | Not detected | | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| 02/06/06 | N/A | N/A | 0.2 | 102 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| 20/06/06 | N/A | N/A | 0.2 | 99 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| 13/07/06 | N/A | N/A | Not detected | | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| 02/08/06 | N/A | N/A | Not detected | | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| 08/08/06 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| 07/09/06 | N/A | N/A | Not detected | | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| 20/10/06 | N/A | N/A | Not detected | | N/A | N/A | 4.5 | 13.9 | N/A | 4.5 | N/A | N/A | N/A | N/A |
| 01/11/06 | N/A | N/A | Not detected | | N/A | N/A | 2.4 | 4.8 | N/A | 2.4 | N/A | N/A | N/A | N/A |
| 08/11/06 | N/A | N/A | Not detected | | N/A | N/A | N/A | N/A | 23.3 | N/A | N/A | N/A | N/A | N/A |
| 15/11/06 | N/A | N/A | Not detected | | N/A | N/A | N/A | N/A | 13.6 | N/A | N/A | N/A | N/A | N/A |
| 24/11/06 | N/A | N/A | Not detected | | N/A | N/A | N/A | N/A | 7.6 | N/A | N/A | N/A | N/A | N/A |
| 29/11/06 | N/A | N/A | Not detected | | N/A | N/A | N/A | N/A | 9.0 | N/A | N/A | N/A | N/A | N/A |
| 07/12/06 | N/A | N/A | Monitoring not undertaken[3] | | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| 13/12/06 | N/A | N/A | Monitoring not undertaken[3] | | N/A | N/A | N/A | N/A | 10.4 | N/A | N/A | N/A | N/A | N/A |
| 20/12/06 | N/A | N/A | Monitoring not undertaken[3] | | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| 29/12/06 | N/A | N/A | Monitoring not undertaken[3] | | N/A | N/A | N/A | N/A | N/A | N/A | 87.3 | 63.6 | 77.0 | N/A |
| 4/01/07 | N/A | N/A | Not detected | | N/A | N/A | 4.8 | N/A | N/A | N/A | 38.7 | 38.0 | 21.8 | N/A |
| 10/01/07 | N/A | N/A | Not detected | | N/A | N/A | 3.1 | N/A | N/A | 10.4 | N/A | 41.3 | 28.4 | N/A |
| 12/01/07 | N/A | N/A | Not detected | | N/A | N/A | 1.6 | 10.0 | N/A | N/A | N/A | 2.0 | 1.3 | N/A |
| 17/01/07 | N/A | N/A | Not detected | | N/A | N/A | 2.6 | N/A | N/A | N/A | 8.9 | 6.5 | 7.3 | N/A |
| 23/01/07 | N/A | N/A | Not detected | | N/A | N/A | 4.9 | N/A | N/A | N/A | 15.4 | 10.6 | 6.6 | N/A |
| 25/01/07 | N/A | N/A | Not detected | | N/A | N/A | 2.6 | N/A | N/A | N/A | 9.1 | 6.9 | 4.3 | N/A |
| 30/01/07 | N/A | N/A | Not detected | | N/A | N/A | 3.3 | N/A | N/A | N/A | 10.3 | 6.5 | 4.6 | N/A |
| 01/02/07 | N/A | N/A | Not detected | | N/A | N/A | 3.0 | 5.1 | N/A | N/A | N/A | N/A | N/A | N/A |

# ATTACHMENT B

| Date | Robinson (4) | | Langshaw (59) | | Aboriginal Rock Art Site | | Main Line Rail Culvert[2] | Main Line Rail Embankment[2] | Main Line Culvert 2[2] | Main Line Rail Embankment 2[2] | Main Line Rail Embankment 3[2] | Concrete Power Pole[2] | Concrete Railway Antenna[2] | Pit 2 Rail Embankment 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | V1 | | R1 | | R2 | | R3 | | | R4 |
| | Vibration (mm/s) | Overpressure (dB) | Vibration (mm/s) | Overpressure (dB) | Vibration (mm/s) | Overpressure (dB) | Vibration (mm/s) | Vibration (mm/s) | Vibration (mm/s) | Vibration (mm/s) | Vibration (mm/s) | Vibration (mm/s) | Vibration (mm/s) | Vibration (mm/s) |
| 06/02/07 | N/A | N/A | Not detected | | N/A | N/A | 2.1 | 4.1 | N/A | N/A | N/A | N/A | N/A | N/A |
| 08/02/07 | N/A | N/A | Not detected | | N/A | N/A | 1.3 | N/A | N/A | N/A | 17.2 | N/A | 9.4 | N/A |
| 12/02/07 | N/A | N/A | Not detected | | N/A | N/A | Not detected | N/A | N/A | N/A | 13.3 | 16.1 | 7.7 | N/A |
| 14/02/07 | N/A | N/A | Not detected | | N/A | N/A | Not detected | N/A | N/A | N/A | 3.3 | 3.7 | 2.3 | N/A |
| 16/02/07 | N/A | N/A | Not detected | | N/A | N/A | Not detected | N/A | N/A | N/A | 3.9 | 3.5 | 2.1 | N/A |
| 20/02/07 | N/A | N/A | Not detected | | N/A | N/A | 1.4 | N/A | N/A | N/A | 10.3 | 10.2 | 9.2 | N/A |
| 21/02/07 | N/A | N/A | Not detected | | N/A | N/A | 2.8 | 4.8 | N/A | N/A | N/A | N/A | N/A | N/A |
| 23/02/07 | N/A | N/A | Not detected | | N/A | N/A | 1.2 | N/A | N/A | N/A | 14.0 | 22.7 | 16.7 | N/A |
| 28/02/07 | N/A | N/A | Not detected | | N/A | N/A | 1.6 | N/A | N/A | N/A | 4.3 | 3.9 | 3.1 | N/A |
| 02/03/07 | N/A | N/A | Not detected | | N/A | N/A | Not detected | N/A | N/A | N/A | 5.7 | 10.6 | 4.1 | N/A |
| 06/03/07 | N/A | N/A | N/A | | N/A | N/A | 1.2 | N/A | N/A | N/A | 2.0 | 2.2 | 1.6 | N/A |
| 07/03/07 | N/A | N/A | N/A | | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 6.7 |
| 09/03/07 | N/A | N/A | N/A | | N/A | N/A | N/A | N/A | N/A | N/A | 1.1 | N/A | N/A | N/A |
| 13/03/07 | N/A | N/A | N/A | | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 13 |
| 14/03/07 | N/A | N/A | N/A | | N/A | N/A | 2.6 | 4.0 | N/A | N/A | N/A | N/A | N/A | N/A |
| 16/03/07 | N/A | N/A | N/A | | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| 19/03/07 | N/A | N/A | N/A | | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 10.9 |
| 21/03/07 | N/A | N/A | N/A | | N/A | N/A | N/A | Not detected | N/A | N/A | N/A | N/A | N/A | N/A |
| 23/03/07 | N/A | N/A | N/A | | N/A | N/A | 1.9 | N/A | N/A | N/A | 15.1 | 19.6 | 7.4 | N/A |
| 27/03/07 | N/A | N/A | N/A | | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | 60.0 |
| 28/03/07 | N/A | N/A | N/A | | N/A | N/A | Not detected | N/A | N/A | N/A | 5.0 | 3.6 | 2.2 | N/A |

Source: Thiess (2007)

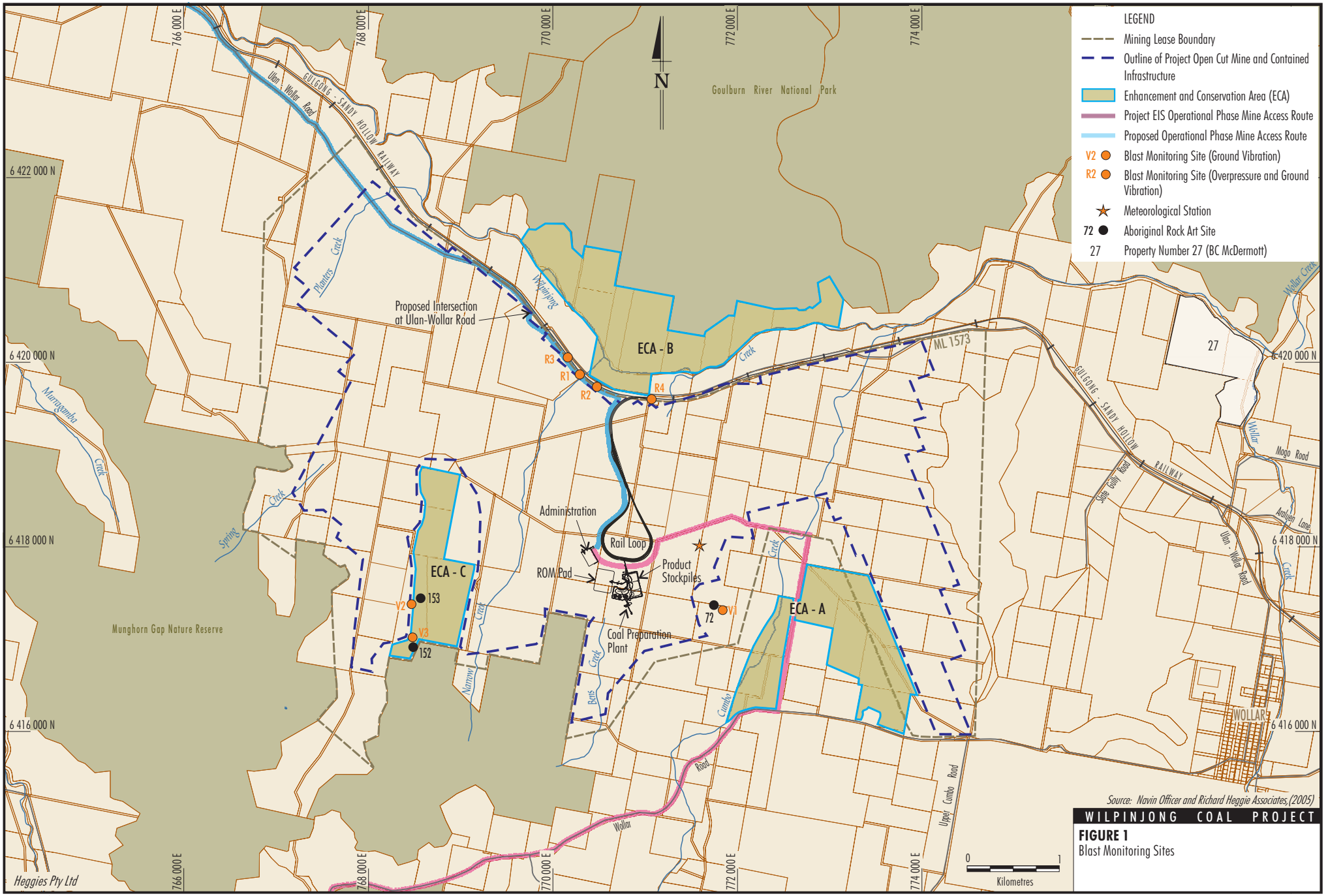
[1] Blast monitoring locations are shown on Figure 1.

[2] Blast monitoring locations are shown on Figure 1 as follows: R1 – main line rail culvert and embankment (1); R2 – main line rail culvert and embankment (2); R3 – main rail line embankment (3), concrete power pole and concrete railway antenna. ; R4 – main rail line embankment (1),

[3] Langshaw property acquired by Peabody Energy Corporation during the reporting period.

Notes:

- Not detected: Vibration below recording threshold of 0.1 mm/s.
- N/A: No monitoring required as blasting was not within the required distance specified in the BMP (WCPL, 2006) i.e. within 3 km of private residences; 350 m of concrete power poles; 350 m of railway culverts/bridges; 100 m of railway lines; and 1 km of Aboriginal rock art sites 72, 152 and 153.
- Vibration limits for public infrastructure as specified in the BMP (WCPL, 2006): Concrete power poles: 50 mm/s; Railway culverts/bridges: 80 mm/s; Railway lines: 200 mm/s ground vibration.
- A geological damage criterion for vibration at Aboriginal rock art sites is provided in the Project EIS (WCPL, 2005): 80 mm/s (there is no Project related overpressure criterion for Aboriginal rock art sites).




*Source: Navin Officer and Richard Heggie Associates,(2005)*

WILPINJONG COAL PROJECT

**FIGURE 1**
Blast Monitoring Sites

WIL-05-05 Mod BIA_001B

# APPENDIX B

# TRAFFIC IMPACT ASSESSMENT

# TRAFFIC IMPACT ASSESSMENT

# WILPINJONG COAL PROJECT – OPERATIONAL PHASE ACCESS ROUTE MODIFICATION

**FOR**

**WILPINJONG COAL PTY LIMITED**

Ref. 7714_TIA

April, 2007

Prepared By

J.WYNDHAM PRINCE PTY LTD
Civil Engineers & Project Managers

77 Union Road
PENRITH NSW 2750
PO BOX 4366
PENRITH WESTFIELD NSW 2750
DX;8032 Penrith
Tel: 02 4732 3366

# CONTENTS

## LIST OF TABLES



## LIST OF FIGURES



## LIST OF ATTACHMENTS

# 1.0 PROJECT INFORMATION

J. Wyndham Prince Pty. Ltd. has been engaged by Wilpinjong Coal Pty Limited (WCPL) to undertake a traffic impact assessment for the proposed modification to the Wilpinjong Coal Project (the Project) operational phase access route. The location of the Project and the proposed access route modification is shown on **Figure 1**.

This traffic impact assessment is a requirement specified by the Department of Planning in the Director-General's Requirements for the proposed modification to the Project operational phase access route, as follows:

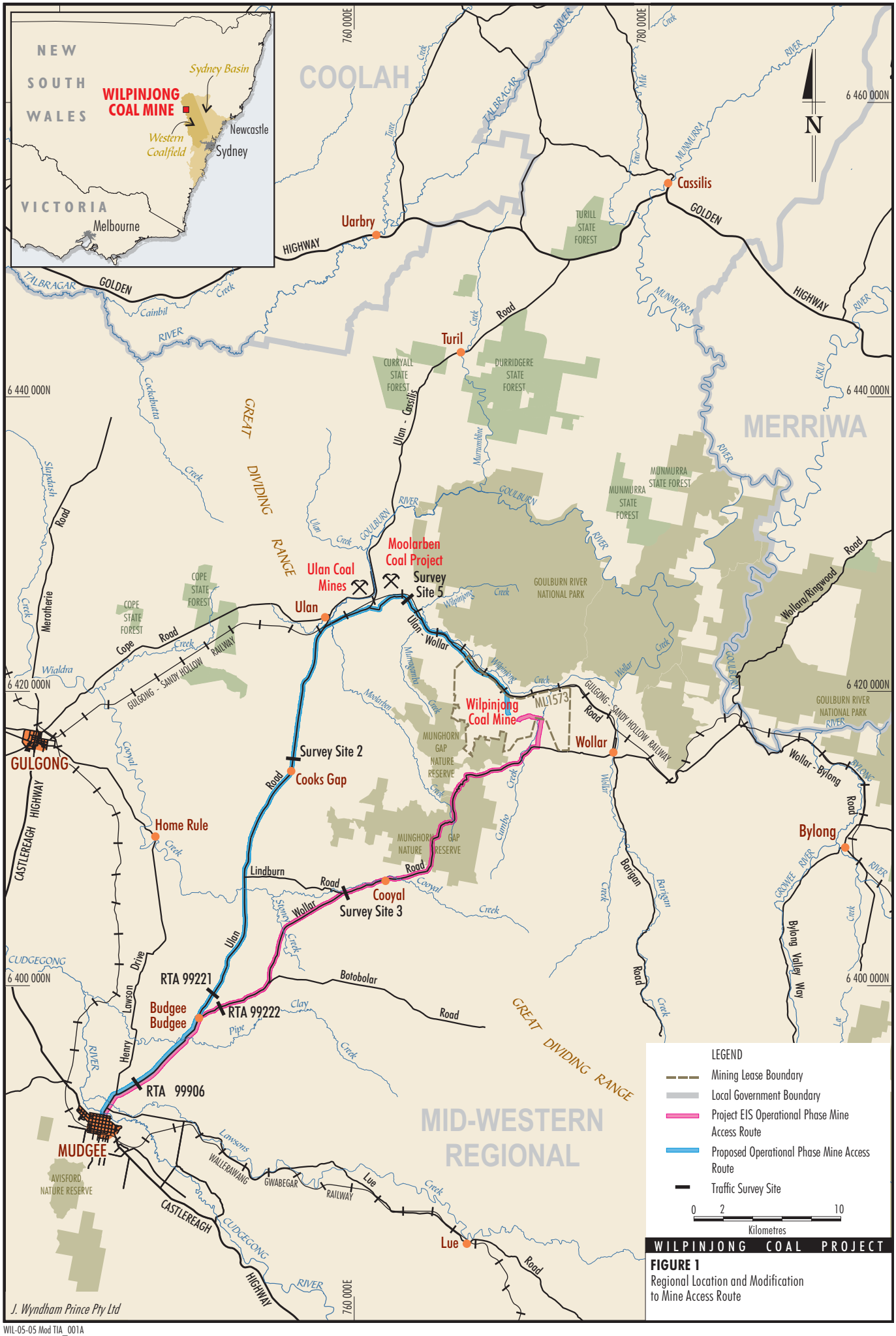
> ***Traffic and Transport*** *– a detailed traffic impact assessment of the proposed modified mine access route, including consideration of intersection performance; road safety; pavement conditions; school bus routes; the potential for staggered shift changes with other mines in the area; lighting and signage; and the likely interactions with other approved, existing or proposed mines in the area. A strategy must also be included that describes the measures to be taken by the proponent (in consultation with other relevant mining companies) to ensure that an appropriate level of road safety and road surface performance exists on Ulan Road (and other relevant local roads) that is consistent with it being used as the primary access route for the various coal mines in the area.*

Accordingly this traffic impact assessment includes:

- Consideration of:
  - traffic generation;
  - intersection performance;
  - road safety;
  - pavement conditions;
  - school bus routes;
  - lighting and signage; and
  - potential interactions with other approved, existing or proposed mines in the area (i.e. Ulan Coal Mine and the proposed Moolarben Coal Project).

## 1.1 Background Information

A Road Transport Assessment was undertaken for the Wilpinjong Coal Project Environmental Impact Statement (the Project EIS) (TRAFFIX, 2005) to assess road transport issues associated with the Project. The Road Transport Assessment outlined the existing traffic environment and the potential impact of the Project utilising Ulan Road and Wollar Road as the main access route for Project generated operational phase traffic.




WIL-05-05 Mod TIA_001A

In accordance with Condition 4, Appendix 2 of Project Approval (05-0021) for the Project, a Route Assessment Study (RAS) (incorporating a Road Safety Audit and a Road Conditions Audit) was undertaken in 2006 (J. Wyndham Prince Pty Ltd, 2006). Roads included in the RAS included (**Figure 1**):

- Ulan Road between Mudgee and the intersection with the Ulan-Wollar Road;
- Ulan-Wollar Road between the Project and the intersection with the Ulan Road; and
- Wollar Road between the Project and the intersection with Ulan Road.

The objective of the RAS was "*to identify the most appropriate traffic route for both construction traffic (including oversize-overmass vehicles) and operational traffic to and from the Wilpinjong Coal Project*" and included (for each of the above roads) an assessment of:

- traffic flows;
- road safety and signage;
- pavement conditions; and
- structural integrity of bridges, causeways and culverts.

The following documents and data were utilised and/or examined as part of the RAS:

1. "Appendix K Wilpinjong Coal Project Road Transport Assessment" (Traffix, 2005) -Wilpinjong Coal Project Environmental Impact Statement (EIS) (WCPL, 2005).
2. 1:25000 Topograhical Maps.
3. Video Data Capture dated 25 Nov 2005 and 16 February 2006.
4. Dial Before You Dig utility search papers.

Other specific reference documents, papers and manuals utilised during the course of the RAS are detailed as follows:

- "Road Environment Safety Guidelines" (Roads and Traffic Authority [RTA], 1992).
- "Road Design Guide" (RTA, 1999).
- "Traffic Engineering Manual" (RTA, 1994), Part 3 – Speed Zoning, Part 5 – Delineation, Part 8 – Guide Signs, Part 12 – Tourist Signs, Part 18 – Truck Routes.
- "Guide to Traffic Engineering Practice" (AUSTROADS, 1988), Part 1 – Traffic Flow, Part 5 – Intersections at Grade, Part 9 – Arterial Road Traffic Management, Part 12-Roadway Lighting, Part 14 – Bicycles.
- "Interim Guide to Signs & Markings" (DMR, 1978) and Australian Standard (AS) 1743-2001 "Road Signs-Specifications" (AS 1743).
- "Guide to Traffic Engineering Practice" (AUSTROADS, 1988).
- "Rural Road Design Guide, A Guide to the Geometric Design of Rural Roads" (AUSTROADS, 2003).
- Guide to Traffic Generating Developments, Version 2.2, RTA, October 2002.

- "Unsealed Road Manual – Guidelines to Good Practice" (ARRB Transport Research 2000).
- "Pavement materials in road building – Guidelines for making better use of local materials" (ARRB Transport Research 1999).
- "Pavement Design – A guide to the structural design of roads pavements" (AUSTROADS 1992).
- "A guide to the visual assessment of pavement conditions" (AUSTROADS 1987).

Based on the investigations undertaken, the RAS concluded (J. Wyndham Prince Pty Ltd, 2006):

- The Wollar Road pavement is generally in poor condition and would require massive remediation and reconstruction to cope with the Project related traffic.
- Wollar Road should not be utilised as the main access road to the Project during the construction period.
- The Ulan Road and the Ulan-Wollar Road is the preferred access route for both the construction and operational phases of the Project.

Following the RAS and in consultation with the Mid-Western Regional Council (MWRC), the majority of construction traffic generated by the Project has utilised the Ulan Road and Ulan-Wollar Road (rather than the Ulan Road and the Wollar Road) to access the Project.

As outlined above, this Traffic Impact Assessment assesses the potential impacts associated with the continued use of the current access route into the operational phase of the Project.

This traffic impact assessment draws on information provided in, and assessments undertaken for the RAS (J. Wyndham Prince Pty Ltd, 2006), the *Wilpinjong Coal Project Road Transport Assessment* (TRAFFIX, 2005) *Moolarben Coal Project Environmental Assessment Report* (Moolarben Coal Mines Pty Ltd, 2006) and traffic assessments undertaken for the Ulan Coal Mines (Kinhill Stearns, 1983; Kinhill, 1998; Martin and Associates, 2005).

## 1.2 Document Structure

The structure of this traffic impact assessment is as follows:

| | |
|---|---|
| Section 1 | Provides an overview of the Project operational phase access route modification and existing route assessment information. |
| Section 2 | Provides a description of the existing traffic environment. |
| Section 3 | Provides the traffic impact assessment including consideration of potential cumulative traffic impacts with other relevant mines in the area. |
| Section 4 | Describes recommended measures to improve the capacity and safety of the local road network. |

Attachments 1 and 2 provide supporting information as follows:

| | |
|---|---|
| Attachment 1 | RTA Standard Intersection Types |
| Attachment 2 | RTA and Australian Standard Signs & Markings |

# 2.0 EXISTING ENVIRONMENT

As outlined in Section 1, a road safety audit was undertaken as part of the RAS (J. Wyndham Prince Pty Ltd, 2006). The road safety audit was undertaken with specific reference to the procedures and guidelines outlined in Part Two of the RTA's Accident Reduction Guide entitled "Road Safety Audits" 2005 and with reference to the "Road Safety Handbook for Road Safety Audits" (SAA HB 43) as published by AUSTROADS and Standards Australia (J. Wyndham Prince Pty Ltd, 2006).

Each road (including Wollar Road, Ulan Road and Ulan-Wollar Road) was examined relative to current design standards for both day and night traffic conditions in terms of:

- the horizontal and vertical alignment;
- road and shoulder widths and batter treatments;
- speed zoning and clear zones;
- emergencies, breakdown emergency and service vehicle access;
- culverts and drainage structures;
- guard-rail;
- street lighting;
- positions of trees and poles;
- traffic merge and diverge conditions;
- road marking;
- signposting and delineation along the route;
- intersection control and channelisation;
- pedestrian features;
- provision for cyclists;
- adjoining land uses; and
- freight and bus movements.

The outcomes of the RAS and road safety audit are provided in Sections 2.1 to 2.6.

## 2.1 Intersection Performance

### 2.1.1 Wollar Road

Turning lane facilities at intersections and driveways is generally limited or non-existent. Consequently left turns are either made from the through lane or over adjacent gravel or grass shoulders. At most intersections, traffic avoiding right turn vehicles utilise unformed shoulders as a slip lane.

### 2.1.2 Ulan Road

Turning lane facilities at intersections and driveways are generally limited or non-existent. Consequently left turns are either made from the through lane or over adjacent gravel or grass shoulders. At intersections other than Cope Road, Ulan Coal Mine access and Ulan-Wollar Road, traffic avoiding right turn vehicles utilise unformed shoulders as a slip lane.

### 2.1.3 Ulan-Wollar Road

Intersections along the Ulan-Wollar Road and respective features include:

**Ulan Road with Ulan-Wollar Road (Austroads - Type 'B')**

This intersection comprises a typical RTA type 'AUR' formation with pavement widening for an unprotected right turn from Ulan Road. It is noted that edge lines and lane lines separating northbound from right turn traffic have not been provided. The intersection does not provide an auxiliary left turn lane into Ulan-Wollar Road for southbound traffic.

**Ulan-Wollar Road with Murragamba Road (Austroads Type 'A')**

This intersection comprises a typical RTA type 'BAR' 'Y' junction configuration although no line marking has been provided. There are no auxiliary lanes for turning and shoulders are inadequate width to enable separation of eastbound traffic from right turn traffic into Murragamba Road. Sight distance to the intersection is restricted by a crest on the western approach.

## 2.2 Road Safety

### 2.2.1 Wollar Road

***Road Hierarchy Form and Function***

Wollar Road (Main Road 208) is a designated tourist drive consisting of a two lane rural road providing direct access between Ulan Road and Wollar. The section being assessed is 33 kilometres (km) long between Ulan Road and the currently approved Project access road. The section (20.3 to 30.5 km) of winding road through the Munghorn Gap Nature Reserve is approximately 10.2 km long.

***Alignments & Design Speed***

A speed limit heading north-east from Ulan Road along Wollar Road has not been specified, accordingly 100 kilometres per hour (km/hr) maximum limit is assumed. Although the road horizontal and vertical alignment geometry appears to meet 100 km/hr design speed there are sections where stopping sight distance and free travel speed is limited by a combination of horizontal curves, intersections, driveways, causeways, adjacent heavy timber and overhang, high grass road verges and vertical crests.

### *Road Cross Section*

The road cross section is generally inconsistent with varying batter slopes, lane, shoulder, table drains and clear zone widths. Road shoulders have been constructed from various materials. Some shoulders are substituted by grass verges. Shoulders are noticeably narrow through the Munghorn Gap Nature Reserve area.

### *Drainage*

Road surface drainage facilities appear generally adequate, however there are six (6) causeways (Chainages 1.73, 3.83, 8.03, 11.93, 12.43 and 31.93) located in low lying areas along the route which are currently in a poor to fair condition rating.

Road shoulders overgrown with grass weed would restrict water shed from the road surface which would contribute to pavement failures and broken edges. At intersections and driveways drainage provisions are limited. Protruding headwalls at driveway crossings would be unsafe for errant vehicles.

### *Safety Barrier Fencing*

Issues relating to Barrier Fencing include:

#### Stoney Creek Bridge

Old timber crash rail over structure combined with 'Armco' Guardfence on approaches.

#### Cooyal Creek Culvert

The bridge culvert at chainage 33.7 adjacent to Kanes Flat Road only provides a pipe rail barrier over the structure. No guard fencing has been provided on approaches.

#### Munghorn Gap

No safety barriers are provided through Munghorn Gap.

## 2.2.2 Ulan Road

### *Road Hierarchy, Form and Function*

Ulan Road (Main Road 208 – 214) is a two lane rural road providing direct access between Mudgee and Ulan. Ulan Road links with the Ulan–Cassilis Road and the Golden Highway (State Highway 27) to the north of the Project. Speed zoning is 100 km/hr.

### *Alignments & Design Speed*

The current speed zoning limit along Ulan Road between Wollar Road and Ulan-Wollar Road is 100 km/hr. Although the road's horizontal and vertical alignment geometry appears to meet 100 km/hr design speed there are sections (3.5 km to 15.5 km north of the Wollar Road) where stopping sight distance is limited by a combination of adjacent heavy timber and overhang, high grass road verges and vertical crests.

### *Road Cross Section*

The road cross section is generally inconsistent with varying fill batter slopes, lane, shoulder, table drains and clear zone widths. Road shoulders have been constructed from various materials.

### *Drainage*

Road surface drainage facilities appear generally adequate. Road shoulders overgrown with grass weed are limiting water shed from the road surface which would contribute to pavement failures and broken edges. At intersections and driveways no or limited drainage facilities are provided, causing silt and gravel spill onto road edges. Some driveways over culverts include protruding headwalls which represent a traffic hazard for errant vehicles.

### *Safety Barrier Fencing*

Issues relating to Barrier Fencing include:

Short sections of Guard Fence adjacent to the culvert over Budgee Creek 0.15 km north of Wollar Road and 28.8 km north of Wollar Road are shorter than is recommended and do not include appropriate loader terminals.

## 2.2.3 Ulan-Wollar Road

### *Road Hierarchy, Form & Function*

Ulan-Wollar Road is a local road directly linking Ulan Road and Wollar Road with a section along the southern side of Wilpinjong Creek which traverses the northern side of the Project. Ulan-Wollar Road is currently sealed for approximately 4 km and 6 km at its western and eastern ends respectively. The remaining 14.4 km section linking the sealed sections consists of an unsealed road formation of various width.

In addition to providing road access to the northern boundary of the Project, the Ulan-Wollar Road provides direct access between Ulan and Wollar, some adjacent rural properties and the Goulburn River National Park.

Ulan-Wollar Road generally follows the alignment of the adjacent Gulgong Sandy Hollow Railway. Two separate railway level crossings are located along the road which transfers the alignment of the road to the northern side of the railway for approximately 4 km.

As part of the Project, it is understood that WCPL plan to construct a deviation of the Ulan-Wollar Road which would relocate the two Railway level crossings westwards and eastwards of their current location respectively. This would increase the length of road located on the northern side of the Railway line by approximately 3 km and 1 km respectively.

Speed zoning is mostly 100 km/hr although regulatory signs are only provided at the eastern end at the entry and exit outskirts to the Wollar township. Speed zoning of 50 km/hr also applies through Wollar including an isolated 40 km/hr school speed zone section.

### *Alignments & Design Speed*

### Road Alignment

Horizontal and vertical alignment along the route varies. Table 1 identifies homogeneous sections from the Ulan Road end.

**Table 1**
**Ulan-Wollar Road Alignment and Operating Speed**

| Section (Surface Road Verge Env) | Horizontal Alignment | Vertical Alignment | Assessed Operating Speed (km/hr) |
|---|---|---|---|
| CH 00 – CH 4200 (Sealed/Heavy Timbered) | Winding | Rolling | 70 |
| CH 4200-CH5200 (Bridge) (Unsealed/Open/Isolated Trees) | Winding | Rolling | 70 |
| CH 5200-CH6800 (Unsealed/Heavy Timbered) | Winding | Rolling | 70 |
| CH 6800-CH7500 (Unsealed/Open) | Winding | Rolling | 70 |
| CH 7500-CH8000 (Unsealed/Heavy Timbered) | Winding | Mountainous | 60 |
| CH 8000-CH9950 (Causeway) (Unsealed/Light Timber) | Winding/Straight | Rolling | 70 |
| CH 9950-CH12600 (R'way L X'ing) (Unsealed/Open/Isolated Trees) | Winding/Straight | Undulating/Flat | 70/80 |
| CH 12600-CH14900 (Unsealed/Isolated Trees to Heavy Timber) | Winding/Straight | Flat | 70/80 |
| CH 14900-CH 16400 (R'way L X'ing) (Unsealed/Open/Isolated Trees) | Winding/Straight | Rolling | 70/80 |
| CH 16400-CH 17400 (Unsealed /Open/Isolated Trees) | Winding | Rolling | 70/80 |
| CH 17400-CH18300 (Unsealed/Heavy Timber | Winding | Rolling | 70 |
| CH 18300-CH20400 (Sealed/Heavy Timber) | Winding | Rolling | 70 |
| CH 20400-CH23200 (Wollar) (Sealed/Open/Isolated Trees) | Winding | Rolling | 70 |

## Horizontal Alignment

As shown in Table 1 the horizontal alignment is generally winding. The road consists of combinations of curves of various radii (estimated range R60 metres [m] to R500 m) including various arc lengths connected by straights of various lengths.

At Railway level crossings radii of approximately R50 m are provided on the approaches where free travel speeds would reduce to approximately 25 to 30 km/hr.

## Vertical Alignment

The vertical alignment follows the natural terrain along the route and is generally rolling to flat. Estimated grades are in the range of 0% to 3% for the flat sections, 4% to 8% for the rolling sections and 10% to 15% for the mountainous section.

Short length crest vertical curves restricting stopping sight distance are also noted along the unsealed section at Chainages 6400, 7100, 8500, 8950, 10100 and 15100.

## Causeways

Three concrete causeways are located along the Ulan-Wollar Road at approximate chainages 9950 (Planters Creek), 13300 (Narrow Creek) and 16600 (Cumbo Creek).

The causeways are approximately 3.5 m wide x 21 m long. The causeways represent squeeze points along the route forcing traffic to slow down and give way if opposing vehicles are encountered. The vertical profile could cause clearance problems for Low-Loader type heavy vehicles. As noted in the “Preliminary Geotechnical Assessment” (J. Wyndham Prince Pty Ltd, 2006) the causeways are in poor condition.

## Speed Zoning

The current 100 km/hr speed zone is considered to be relatively high for the form and function of the road. Both sealed and unsealed parts of the road include winding sections passing through heavy timbered areas with overhanging trees, shrubs and long grasses restricting sight distances and safe overtaking opportunities.

### *Road Cross Section*

The road cross section is generally inconsistent along the route with varying road, shoulder, table drain formations and combinations. Both sealed and unsealed road carriageways are approximately 6 m wide, however clear zone offsets from the edge of the road to adjacent obstacles or hazards such as trees and culvert headwalls vary considerably.

The road carriageway formation narrows to approximately 5.5 m wide for sections from CH 9600 to CH 10300 and CH 16400 to CH 19500. The bridge and culverts along the route have also been constructed at various widths ranging from 5.8 m to 7.5 m.

Road shoulders and table drains have been constructed from various granular materials and include some grass and low vegetation cover through some sections.

***Drainage***

Existing drainage along the route includes:

**Causeways**

As mentioned above, three concrete causeways are located along the Ulan-Wollar Road at approximate chainages 9950 (Planters Creek), 13300 (Narrow Creek) and 16600 (Cumbo Creek). The causeways are in poor condition. Build up of silt and mud during wet weather would adversely affect hydraulic capacity and efficiency as well as road safety.

**Table Drains**

Longitudinal drainage along the Ulan-Wollar Road is provided via typical rural style table drains. In a few low lying areas such as the approaches to causeways there are no table drains or table drains tend to hold water due to flat grades and limited capacity. Tail-out drainage swales are also provided at numerous locations along the road which are restricted in capacity and efficiency due to silt deposits.

**Bridge & Culverts**

Major transverse or cross drainage structures include bridges and multi cell box culverts as follows:

- **Murragamba Creek Bridge (Ch 5250)**
  Single span timber bridge 5.8m wide with concrete deck overlay and timber safety rails.

- **Un-named Tributary of Wilpinjong Creek Culvert (Ch 6200)**
  Triple cell box culvert 7.5m wide with concrete deck and dual ‘Armco’ safety rails.

- **Cumbo Creek Culvert (Ch 12200)**
  Six cell box culvert 7.5m wide with concrete deck and dual ‘Armco’ safety rails.

- **Wollar Creek Culvert (Ch 19500)**
  Triple cell box culvert 7.3m wide with concrete deck and dual ‘Armco’ safety rails.

**Minor Drainage Structures**

Minor drainage facilities include small reinforced concrete pipe culverts located along the route and adjacent access driveways.

Some driveways over culverts include protruding headwalls which represent a traffic hazard for errant vehicles.

### *Safety Barrier Fencing*

Safety guard fences have been provided only over bridges and culverts along the route. These consist of short sections of old timber railings across the Murragamba Creek Bridge and dual 'Armco' safety rails over the remaining three culverts at the Un-named tributary of Wilpinjong Creek, Cumbo and Wollar Creek culverts. These guard fences do not extend beyond the abutments of the structures and do not include any loader terminals.

## 2.3 Pavement Conditions

As part of the RAS, a preliminary visual (geotechnical) pavement assessment was undertaken by Macquarie Geotechnical Pty Ltd. The roads investigated include Wollar Road, Ulan Road and the Ulan-Wollar Road.

The visual geotechnical assessment rates pavement condition along each road under the following five categories: Very Good; Good; Fair; Poor; and Very Poor. Definitions for each category is provided below.

### *Very Good*

Very good pavement condition and vehicle ride, minimal defects, shoulder to shoulder seal in very good condition, pavement material is of very good quality (potential RTA 3051 specification compliance), very good drainage, very good road formation and visibility.

### *Good*

Good pavement condition and vehicle ride, some defects, shoulder to shoulder seal with some shoulder widening, pavement material is of good quality (potential RTA 3051W specification compliance), good drainage, very good road formation and visibility.

### *Fair*

Fair pavement condition and vehicle ride, rough ride in numerous sections, seal to edge of road with numerous edge breaks, pavement material fair, mostly local road building materials from shoulder widenings, fair drainage fair road formations and visibility.

### *Poor*

Poor pavement condition and vehicle ride is generally rough for large sections, numerous edge breaks and drop offs, pavement material is generally sub-standard. Road requires remediation at current traffic volumes. Increased traffic volumes will result in rapid degradation of pavement seal.

***Very Poor***

Pavement comprises of numerous defects and localised repairs of potholes and heavy patches. Vehicle ride is very rough. Road requires urgent remediation at current traffic volumes. Increased traffic volumes will result in extremely rapid degradation of pavement and seal.

A summary of findings for each road is provided in Section 2.3.1 to 2.3.3.

### 2.3.1 Wollar Road

Wollar Road from Ulan Road to Wollar is a sealed road being approximately 38.7 km long and is in a poor to fair condition (Table 2).

**Table 2**
**Wollar Road Pavement Rating Over 38.7 km**

| Rating | Length (km) | Percentage of Total Length |
|---|---|---|
| Very Poor | 1.9 | 4.9 |
| Poor | 7.5 | 19.4 |
| Poor to Fair | 11.2 | 28.9 |
| Fair | 6.0 | 15.5 |
| Fair to Good | 5.1 | 13.2 |
| Good | 7.0 | 18.1 |

- Section 20.74 km to 25.82 km north-east of Ulan Road is in a low lying area prone to waterlogging.
- Section 25.82 km to 29.98 km north-east of Ulan Road through the Munghorn Gap Nature Reserve is not appropriate for oversize/overmass vehicle passage. The preliminary geotechnical risk assessment of this area is a high potential for slope instability due to the presence of large sandstone talus and boulders.

### 2.3.2 Ulan Road

Ulan Road between Wollar Road and Ulan-Wollar Road is a sealed road approximately 32 km long and is generally in good condition (Table 3). There are some small isolated sections of pavement failure and the road has recently undergone some shoulder widening and pavement rehabilitation works over some sections.

Two short sections both 200 m long located South of Nimoola Lane and Mrs Large's Gate are in poor to very poor condition.

**Table 3**
**Ulan Road Pavement Rating Over 31.8 km**

| Rating | Length (km) | Percentage of Total Length |
|---|---|---|
| Poor | 1.9 | 6 |
| Poor to Fair | 1.6 | 5 |
| Fair | 7.4 | 23 |
| Good | 16.3 | 51 |
| Very Good | 4.6 | 15 |

The majority of Ulan Road currently has a generally good pavement condition rating and requires no or minimal immediate remediation to cope with current and proposed traffic volumes.

### 2.3.3 Ulan-Wollar Road

The Ulan-Wollar Road from Ulan Road to Wollar is approximately 24.4 km long and comprises 4 km and 6 km sections which are sealed at its western and eastern ends respectively. The remaining unsealed 14.4 km section linking the sealed sections comprises a coarse textured road building material. There are numerous sections of corrugation, potholes and ruts. Table 4 details the general condition of the road pavement.

**Table 4**
**Ulan-Wollar Road Pavement Rating Over 23.3 km**

| Rating | Length (km) | Percentage of Total Length |
|---|---|---|
| Poor to Fair | 6.0 | 26 |
| Fair | 7.3 | 31 |
| Good to Very Good | 10.0 | 43 |

As part of the RAS, a detailed pavement investigation of the Ulan-Wollar Road was undertaken by Macquarie Geotechnical, April 2006. The detailed pavement investigation made recommendations for sealing the unsealed section of the Ulan-Wollar Road to improve pavement performance during the operational phase of the Project. Two sealing options were provided in the recommendations, as provided below:

<u>Section A Ch00 – Ch3735 (End of Existing Seal)</u>

- No further work is required on this section of road.
- Undertake localised patching and resurfacing of the pavement during the design life.

Section B Ch3735 (End of Existing Seal) – Ch1100

Option 1

- Overlay the existing pavement with a suitable road base material to a thickness of 100 millimetres (mm) and seal with a two-coat bitumen surface.

Option 2

- Stabilise the existing pavement to a depth of 150 mm utilising an appropriate additive and blend rate and seal with a two-coat bitumen surface.

## 2.4 School Bus Routes

School bus services operate along several routes in the area including along the proposed Project operational phase access route between the Project and Mudgee. School bus routes that operate in the vicinity of the Project include (Moolarben Coal Mines Pty Limited, 2006):

- Cooks Gap to Mudgee – Ulan Road;
- Ulan to Mudgee – Ulan Road;
- Turil to Gulgong – Cope Road;
- Yarrawanga to Gulgong – Yarrawanga Road; and
- Winchester Crescent and Ridge Road to Ulan – Ulan Road.

School buses generally travel on the above routes between 7:30am and 9:00am, and between 3:00pm and 5:00pm (Moolarben Coal Mines Pty Limited, 2006). Of the above, only the buses that travel on Ulan Road are of relevance to the Project operational phase access route.

## 2.5 Lighting and Signage

### 2.5.1 Wollar Road

***Lighting***

There is no street lighting along Wollar Road. Some street lights are provided in the Cooyal and Wollar townships.

***Linemarking***

Generally linemarking along Wollar Road is limited, in poor condition and fading. Generally a centreline has been provided and comprises combinations of broken ‘S1’, broken and solid ‘BS’ or double solid ‘BB’ lines. There are numerous overtaking opportunities, however, many overtaking sections commence where sight distance is restricted or poor.

Short sections of overtaking are provided just east of Munghorn Gap Nature Reserve (Ch 29 to 30 km) which are considered dangerous with motorists likely to take risks. No reflective pavement markers are installed.

Linemarking approaching Stoney Creek Bridge (Ch 9.4 km) has faded and/or has been covered by recent sealing.

Edge lines 'E1' have been provided only over short sections (Ch 0 km to 5.5 km and from 7.3 km to 8.1 km).

Section 0.7 km to 4.7 km provides a broken 'L1' line which allows overtaking through all horizontal curves, crests and through causeways where sight distance is limited.

***Signs***

Signs providing advance warning of concealed driveways, causeways, road curvature, chevron and recommended speed for curves, crests, trucks entering crossing or turning, approaching 'T Junction', changing road widths and reminding motorists of the speed zone are limited, missing or in need of replacement due to deterioration over time.

Generally through Munghorn Gap Nature Reserve, the road curvature and some advisory curve speed and chevron signs have been provided, however, provision of these signs is inconsistent.

### 2.5.2 Ulan Road

***Lighting***

Generally there is no street lighting along Ulan Road including at either existing intersections with Wollar Road and Ulan-Wollar Road. Street lighting has been installed at the Ulan Coal Mine access intersection.

***Linemarking***

Generally linemarking along Ulan Road is limited, in poor condition and fading. A centreline has been provided and comprises combinations of broken 'S1', broken and solid 'BS' or double solid 'BB' lines. There are numerous overtaking opportunities, however, many overtaking sections commence where sight distance is restricted or poor. No reflective pavement markers are provided.

Generally there are no edge or fog lines except for the section 15.5 km to 17 km north of Wollar Road which has recently undergone pavement reconstruction including new linemarking of the centreline and edges.

Linemarking at intersections is either faded, covered by silt and gravel or non-existent.

### *Signs*

Signs providing advance warning of concealed driveways, road curvature/recommended speed for curves, crests, trucks entering crossing or turning, approaching 'T Junction', changing road widths, bus stops, causeways and reminding motorists of the speed zone are limited or non-existent. Some existing signs appear to have deteriorated over time losing legibility and reflective properties.

## 2.5.3 Ulan-Wollar Road

### *Lighting*

There is no street lighting along the Ulan-Wollar Road.

### *Linemarking & Guideposts*

No linemarking or reflective pavement markers have been provided along the sealed sections of the Ulan-Wollar Road. Delineation of the road alignment is therefore very poor, however, a limited number of guideposts with reflectors have been installed at some locations.

### *Signs*

#### General

Signs providing advance warning of concealed driveways, road curvature/recommended speed for curves, crests, trucks entering crossing or turning, approaching 'T Junction', changing road widths and reminding motorists of the speed zone are limited or non-existent.

Some traffic control 'slippery surface' T3-3 and general advisory 'reduce speed' G9-9 signs have been provided along the route, however not all signs are mounted on posts and some are covered by road dust.

#### Railway Level Crossings

In addition to the two Railway level crossings intersecting with Ulan-Wollar Road there are numerous Railway level crossings on immediately adjacent side tracks and access roads. Advance warning signs for these existing level crossings along and adjacent to the route are limited or have not been provided.

## 2.6 Traffic Flows

### 2.6.1 Existing Traffic Flows

Existing traffic flows on the Wollar Road, the Ulan Road and Ulan-Wollar Road are provided in Table 5. As outlined in Section 1.1, the Project construction phase traffic is currently utilising the same access route as proposed for the operational phase traffic.

**Table 5**
**Existing Traffic Flows**

| Road | Location | Measured Traffic Flows (excluding Project construction phase traffic)[1] | Project Construction Phase Traffic Flows[2] | Total Existing Traffic Flows[3] |
|---|---|---|---|---|
| Wollar Road | Wollar Road - West of Wollar (near Wilpinjong Road) | 166 | 0 | 166 |
| | Wollar Road - West of Cooyal | 352 | 0 | 352 |
| | Wollar Road - East of Ulan Road | 613 | 0 | 613 |
| Ulan Road | Ulan Road - South of Ulan | 790 | 129 | 919 |
| | Ulan Road - North of Wollar Road/Budgee Budgee | 1,321 | 129 | 1,450 |
| | Ulan Road - North of Mudgee, South of Wollar Road | 3,482 | 129 | 3,611 |
| Ulan-Wollar Road | East of Ulan Road | 48 | 255 | 303 |

Source: WCPL, 2005; and traffic counts along Ulan-Wollar Road in October 2005 subsequent to the Project EIS studies.

[1] Includes non-mine vehicle movements and current Ulan Coal Mines generated vehicle movements with values provided being the daily average of total traffic counts in both directions from Monday to Sunday.

[2] Values provided are the peak predicted construction daily traffic counts in both directions.

[3] Includes non-mine vehicle movements, current Ulan Coal Mines generated vehicle movements and Wilpinjong Coal Project construction phase generated vehicle movements.

TRAFFIX (2005) outlined the daily traffic volumes that would be generated by the construction phase of the Project, as follows:

- 248 light vehicle (worker) movements;
- 40 light vehicle (visitor) movements; and
- 24 heavy vehicle/small truck movements (representing approximately 8.0% of the total volume).

*312 Total Movements*

Of the above 312 movements, TRAFFIX (2005) predicted that 255 would occur along Ulan-Wollar Road (Table 5).

### 2.6.2 Project Operational Phase Traffic Generation

The Project *Road Transport Assessment* (Appendix K of the Wilpinjong Coal Project Environmental Impact Statement) (TRAFFIX, 2005) assessed Ulan Road and Wollar Road as the access route that would be used for the majority of Project operational phase traffic.

TRAFFIX (2005) outlined the daily traffic volumes that would be generated by the operational phase of the Project, as follows:

- 200 light vehicle (worker) movements;
- 20 light vehicle (visitor) movements; and
- 16 small truck/heavy vehicle movements (representing 6.8% of the total volume).

  *236 Total Movements (118 in, 118 out)*

Table 6 outlines the previously predicted distribution of these traffic movements on the local road network. Of the above 236 movements, TRAFFIX (2005) predicted that 192 would occur along Ulan Road and Wollar Road (Table 6).

**Table 6**
**EIS Predicted Distribution of Operational Phase Project Traffic Movements**

| Road | Location | Measured Traffic Flows (excluding Project construction phase traffic)[1] | Operational Phase Project Traffic Movements[2] | | Total Operational Phase Project Traffic Movements | Total |
|---|---|---|---|---|---|---|
| | | | Project Workforce/ Visitors | Project Deliveries/ Trucks | | |
| Wollar Road | Wollar Road - West of Wollar (near Wilpinjong Road) | 166 | 180 | 12 | 192 | 358 |
| | Wollar Road - West of Cooyal | 352 | 180 | 12 | 192 | 544 |
| | Wollar Road - East of Ulan Road | 613 | 180 | 12 | 192 | 805 |
| Ulan Road | Ulan Road - South of Ulan | 790 | 0 | 0 | 0 | 790 |
| | Ulan Road - North of Wollar Road/Budgee Budgee | 1,321 | 0 | 0 | 0 | 1,321 |
| | Ulan Road - North of Mudgee, South of Wollar Road | 3,482 | 180 | 12 | 192 | 3,674 |
| Ulan-Wollar Road | East of Ulan Road | 48 | 24 | 2 | 26 | 74 |

Source: WCPL, 2005; and traffic counts along Ulan-Wollar Road in October 2005 subsequent to the Project EIS studies.
[1] Values provided are the daily average of total traffic counts in both directions from Monday to Sunday.
[2] Values provided are the peak predicted operational phase daily traffic counts in both directions.

# 3.0 POTENTIAL TRAFFIC IMPACTS OF THE MODIFICATION

### 3.1.1 Distribution of Operational Phase Traffic Flows

As outlined in Section 1, the modification does not seek approval for any additional traffic movements between Mudgee and the Project. Rather, it would result in the majority of operational phase traffic travelling on the same route as currently utilised for Project construction traffic (i.e. Ulan Road and Ulan-Wollar Road) rather than Ulan Road and Wollar Road (**Figure 1**).

The Project *Road Transport Assessment* (TRAFFIX, 2005) indicated that some 236 vehicle movements would be generated during the operational phase of the Project, and some 192 of these movements would occur along Ulan Road and Wollar Road (refer Table 6).

As indicated in Table 7, the access route modification would result in these 192 vehicle movements moving from Wollar Road to Ulan-Wollar Road.

**Table 7**
**Potential Impact of the Modification**
**on the Distribution of Operational Phase Traffic Flows**

| Road | Location | Previously Predicted Traffic Flows [1] | Total Change due to Modification | New Traffic Volume with Modification | % Change |
|---|---|---|---|---|---|
| Wollar Road | Wollar Road - West of Wollar (near Wilpinjong Road) | 358 | -192 | 166 | -54 |
| | Wollar Road - West of Cooyal | 544 | -192 | 352 | -35 |
| | Wollar Road - East of Ulan Road | 805 | -192 | 613 | -24 |
| Ulan Road | Ulan Road - South of Ulan | 790 | 192 | 982 | 24 |
| | Ulan Road - North of Wollar Road/Budgee Budgee | 1,321 | 192 | 1,513 | 15 |
| | Ulan Road - North of Mudgee, South of Wollar Road | 3,674 | 0 | 3,674 | 0 |
| Ulan-Wollar Road | East of Ulan Road | 74 | 192 | 266 | 260 |

Source: WCPL, 2005; and traffic counts along Ulan-Wollar Road in October 2005 subsequent to the Project EIS studies.
[1] Includes existing traffic flows and approved Project operational phase traffic flows.
Note: Values provided are the daily average of total traffic counts in both directions from Monday to Sunday.

Comparison of the traffic volumes during the Project peak construction phase (Table 5) and the operational phase traffic flows (Table 7) indicates that less Project related vehicles would operate on Ulan-Wollar Road during the operational phase and the overall daily movements would remain low.

As provided in Table 7, the modification would increase the traffic flows (excluding Project construction phase traffic currently using Ulan Road and Ulan-Wollar Road) of both Ulan Road and Ulan-Wollar Road by up to 192 vehicle movements per day by relocating these movements from Wollar Road. No net increase in the Project operational phase traffic would occur on the local road network (Table 7).

Comparison of the previously predicted traffic flows and new traffic flows as a result of the modified access route to the Project (Table 7) also indicates that total traffic flows along the Ulan-Wollar Road would remain low.

### 3.1.2 Consideration of Potential Cumulative Traffic Impacts with other Mining Projects

Table 7 includes consideration of the current Ulan Coal Mines traffic, as this is part of the measured baseline traffic.

There is potential for additional traffic on the local road network if the Ulan Coal Mines was to increase their current workforce to its stated potential (an addition of up to 100 vehicle movements per day) and if the proposed Moolarben Coal Project was approved (an addition of approximately 440 vehicle movements per day[1]).

If both of these developments were to coincide with Project operational traffic, cumulative flows would be increased. Conservative assumptions of the potential impact on peak daily traffic flows from these two operations are provided in Table 8.

Even with the addition of these potential cumulative vehicle movements, the overall daily traffic volumes remain low.

### 3.1.3 Consideration of Potential Future Traffic Growth

Forecasts of future traffic volumes for the section of Ulan Road between Budgee Budgee and Cooks Gap were undertaken as part of the *Moolarben Coal Project Traffic Impact, Road Safety and Railway Level Crossing Assessment* (SKM, 2006). The forecast for this section of Ulan Road indicated that traffic volumes would increase from some 1,321 traffic movements per day in 2002 to some 2,021 traffic movements per day in 2016, which equates to a change of approximately 53% (SKM, 2006).

1 The Moolarben Coal Project *Traffic Impact, Road Safety and Railway Level Crossing Assessment* (SKM, 2006) does not provide an indication of predicted daily vehicle movements for the Moolarben Coal Project, rather it provides an indication of peak hourly movements. The estimated 440 vehicle movements per day has been derived from Figure 3-5 of SKM, 2006 which outlines the predicted traffic generation associated with staff. SKM, 2006 indicates that these movements would be split between vehicles travelling to Mudgee and Gulgong However, to be conservative, the full 440 vehicle movements have been included in this Traffic Impact Assessment as occurring on the Ulan Road between Ulan and Mudgee. This conservative assumption also allows for some visitor and delivery movements that were not described in SKM , 2006.

## Table 8
## Potential Impact of Non-Developed Components of other Mining Projects on Existing Traffic Flows

| Road | Location | Traffic Flows Including Project Operational Phase Traffic | Potential Increase due to Ulan Coal Mines Staffing | Potential Increase due to the Moolarben Coal Project | Potential Traffic Flows |
|---|---|---|---|---|---|
| Wollar Road | Wollar Road - West of Wollar (near Wilpinjong Road) | 166 | 0 | 0 | 166 |
| | Wollar Road - West of Cooyal | 352 | 0 | 0 | 352 |
| | Wollar Road - East of Ulan Road | 613 | 0 | 0 | 613 |
| Ulan Road | Ulan Road - South of Ulan | 982 | 100 | 440 | 1,522 |
| | Ulan Road - North of Wollar Road/Budgee Budgee | 1,513 | 100 | 440 | 2,053 |
| | Ulan Road - North of Mudgee, South of Wollar Road | 3,674 | 100 | 440 | 4,214 |
| Ulan-Wollar Road | East of Ulan Road | 266 | 0 | 0[2] | 266 |

Source: WCPL, 2005; traffic counts along Ulan-Wollar Road in October 2005 subsequent to the Project EIS studies; SKM, 2006; and Kinhill (1998).
[1] Values provided are the daily average of total traffic counts in both directions from Monday to Sunday.
[2] Excluding the first 200 m of Ulan-Wollar Road that may be used for Moolarben Coal Project open cut traffic.

Traffic counts on Ulan-Wollar Road have only been undertaken once and therefore a future traffic growth forecast cannot be made based on a historical dataset. However, for the purpose of this Traffic Impact Assessment, a conservative assumption of a 100% increase in traffic flows by 2016 would indicate that traffic flows (excluding Project generated traffic) would increase from 48 traffic movements per day in 2005 to 96 traffic movements per day.

Even with this baseline traffic growth and the addition of Project operational phase traffic the overall daily traffic volumes would remain low.

Consideration of future baseline traffic growth and potential cumulative traffic growth associated with the Ulan Coal Mines and Moolarben Coal Project (Table 8) also indicates that the traffic levels would remain low.

### 3.1.4 Potential Interaction with School Bus Routes

As outlined in Section 2.4, school buses operate in the area including along the Ulan Road between Ulan and Mudgee. Table 9 provides the operational shift times and therefore the potential interaction between traffic generated from each of the three local mines (i.e. the Project, the Ulan Coal Mines and the proposed Moolarben Coal Project) and school bus services.

**Table 9**
**Potential Interaction between Mine**
**Generated Traffic and School Bus Services**

| Traffic Source | | Time of Day that the Majority of Traffic is Predicted to be Travelling | | |
|---|---|---|---|---|
| | | **Morning** | **Afternoon** | **Evening** |
| School Buses | | 7.30 am to 9.00 am | 3.00 pm to 5.00 pm | N/A |
| Wilpinjong Coal Project | | 3.30 am to 8.00 am | 3.30 pm to 7.00 pm | N/A |
| Ulan Coal Mines | Open Cut | 6.00 am to 7.00 am | 3.00 pm to 4.00 pm | N/A |
| | Underground | 5.30 am to 8.30 am | 1.30 pm to 4.30 pm | 9.30 pm to 12.30 am |
| Moolarben Coal Project | | 6.00 am to 8.00 am | 6.00 pm to 8.00 pm | N/A |

Source: Moolarben Coal Mines Pty Limited (2006); Thiess (2007); WCPL (2007).

### 3.1.5 Summary of Potential Traffic Impacts

As described in Section 3.1.1, the Project operational phase would generate some 236 vehicle movements per day, of which approximately 192 vehicle movements were predicted in the Project EIS to use the Ulan Road and Wollar Road to access the mine site from Mudgee. The modification would re-locate these movements to Ulan Road and Ulan-Wollar Road.

The Project operational phase is predicted to generate less traffic than the Project construction phase (i.e. 312 total vehicle movements including 24 small truck/heavy vehicle movements during Project construction compared with 236 total vehicle movements including 16 small truck/heavy vehicle movements during Project operations) (TRAFFIX, 2005).

The existing daily traffic flows in the vicinity of the Project are low and the addition of the Project operational phase traffic on Ulan Road and Ulan-Wollar Road would have little impact on the existing levels of service and road safety of the local road network.

As summarised in Section 2, the RAS (J. Wyndham Prince Pty Ltd, 2006) identified a number of areas of improvement to intersection performance, road safety, lighting, signage and pavement conditions that could be undertaken to raise the standard of the local road network. The majority of these works are recommended on the basis of the existing baseline traffic flows and the limited operational traffic Project traffic flows would not significantly effect the requirement for these works.

Consideration of potential cumulative traffic growth associated with the Ulan Coal Mines and the Moolarben Coal Project (if approved) and future traffic growth indicates that flows on the local road network are unlikely to result in any significant additional traffic safety or capacity constraints in the medium to long term.

# 4.0 RECOMMENDATIONS

Based on the above assessment, the proposed Project operational phase access route (i.e. Ulan Road and the Ulan-Wollar Road) (which is currently being utilised for Project construction traffic) would be suitable to accommodate the predicted traffic flows for the Project operational phase and is more suitable than the access route described in the Project EIS (i.e. via Wollar Road).

Notwithstanding, it is recommended that the following improvements be undertaken to improve intersection performance, road safety (eg. signage and lighting) and pavement conditions on the route between the Project and Mudgee for both the general public and mine related traffic. Financial contributions provided by WCPL (and other local mining operations) to the MWRC should be directed towards these recommended improvements:

- The unsealed section of the Ulan-Wollar Road between the Ulan Road and the Project access road should be sealed in accordance with the MWRC requirements. Consideration should be given to the options for sealing as detailed in Section 2.3.3. The determination of an appropriate design life and corresponding pavement design should be developed in consideration of potential future road realignments (i.e. the re-alignment of the Ulan-Wollar Road approved as part of the Project) and in consultation with the MWRC and the RTA.
- Signage and line marking along the Ulan-Wollar Road between Ulan Road and the Project access point should be upgraded in accordance with current AS 1743, RTA and AUSTROADS guides and standards.
- As outlined in Section 2.1.3, the Ulan Road/Ulan-Wollar Road intersection comprises a typical RTA type 'AUR' formation which currently provides pavement widening for an unprotected right turn from Ulan Road. It is noted that edge lines and lane lines separating northbound from right turn traffic have not been provided. The intersection does not provide an auxiliary left turn lane into Ulan-Wollar Road for southbound traffic. As this intersection will be the principle access intersection from Ulan Road to the Project, it is recommended that intersection works include:
    - Upgrading consistent with geometry and linemarking as per RTA type 'AUR' Right Turn Treatment. To improve safety and capacity for left turn traffic from Ulan Road it is recommended that a separate left turn deceleration lane be provided.
    - The determination of an appropriate design life and corresponding pavement design for the intersection in consideration of potential road re-alignments (should the Moolarben Coal Project be approved). The design should be developed in consultation with Moolarben Coal Mine, the MWRC and the RTA.
- The intersection from the Ulan-Wollar Road into the Project access road should be designed to accommodate Project operational phase related traffic with consideration of the following:
    - Geometry and linemarking as per RTA type 'AUR' Right Turn Treatment for vehicles traveling west on the Ulan-Wollar Road and turning right into the Project access road.

  - The determination of an appropriate pavement design life and corresponding intersection design in consideration of potential future road realignments (i.e. the re-alignment of the Ulan-Wollar Road approved as part of the Project) and in consultation with the MWRC and the RTA.

- Provide street lighting at the Ulan Road and Ulan-Wollar Road intersection and the Ulan-Wollar Road and Project access intersection in accordance with AS 1158 to Country Energy and RTA requirements. The determination of an appropriate design life and corresponding lighting design should be developed in consideration of potential future road realignments (i.e. the re-alignment of the Ulan-Wollar Road approved as part of the Project) and in consultation with the MWRC and the RTA.
- A Traffic Management Plan should be prepared for any works required on the Ulan-Wollar Road and works associated with the Ulan/Ulan-Wollar Road intersection in accordance with AS 1742.3-2002 “Manual of Uniform Traffic Control Devices” and the RTA publication “Traffic Control at Work Sites”.

In addition, WCPL should consult with the MWRC , Ulan Coal Mines and the Moolarben Coal Project (should it be approved) to develop a strategy with respect to road safety and road surface performance on local roads with a focus on Ulan Road and Ulan-Wollar Road.

# 5.0 REFERENCES

ARRB Transport Research (1999) "Pavement Materials in Road Building – Guidelines for Making Better use of Local Materials".

ARRB Transport Research (2000) "Unsealed Road Manual – Guidelines to Good Practice".

AUSTROADS (1987) "A Guide to the Visual Assessment of Pavement Conditions".

AUSTROADS (1988) "Guide to Traffic Engineering Practice".

AUSTROADS (1992) "Pavement Design – A Guide to the Structural Design of Road Pavements".

AUSTROADS (2003) "Rural Road Design Guide, A Guide to the Geometric Design of Rural Roads".

Department of Mineral Resources (DMR) (1978) "Interim Guide to Signs and Markings".

J Wyndham Prince Pty Ltd (2006) "Route Assessment Study".

Kinhill Pty Ltd (Kinhill) (1998) "Mining Lease Application No. 80 – Development Application and Environmental Impact Statement". Report prepared for Ulan Coal Mines Limited.

Kinhill Stearns Engineers Pty Ltd (Kinhill Stearns) (1983) "Ulan Coal Mines Stage 2 – Colliery Development and Expansion Environmental Impact Statement". Report prepared for Ulan Coal Mines Pty Limited.

Martin and Associates (2005) "Wilpinjong Coal Project – Community Infrastructure Assessment". Report prepared for Wilpinjong Coal Pty Limited.

Moolarben Coal Mines Pty Limited (2006) "Moolarben Coal Project Environmental Assessment Report".

Roads and Traffic Authority (RTA) (1992) "Road Environment Safety Guidelines".

Roads and Traffic Authority (RTA) (1994) "Traffic Engineering Manual".

Roads and Traffic Authority (RTA) (1999) "Road Design Guide".

Roads and Traffic Authority (RTA) (2002) Guide to Traffic Generating Developments, Version 2.2, October 2002.

Sinclair Knight Merz (SKM) (2006) "Traffic Impact, Road Safety and Railway Level Crossing Assessment". Appendix 15 of the Moolarben Coal Project Environmental Assessment Report.

Traffix (2005) “Appendix K Wilpinjong Coal Project Road Transport Assessment”. Appendix K of Wilpinjong Coal Project Environmental Impact Statement.

Wilpinjong Coal Pty Limited (2005) “Wilpinjong Coal Project Environmental Impact Statement”.

# ATTACHMENT 1

# RTA STANDARD INTERSECTION TYPES

### 4.8.5 Right Turn Treatments - Rural Conditions

There are three fundamental types of right turn treatments for rural areas:

- ***Type BAR*** shoulder widening (minimum treatment),
- ***Type AUR*** pavement widening without a right turn bay,
- ***Type CHR*** pavement widening with a right turn bay.

Generally these treatments are applied to two lane two - way rural roads.

#### 4.8.5.1 Type "BAR" (BAsic Right Turn) - minimum treatment

This is the minimum treatment for right turn movements from a through road to side roads and local access points. It is detailed in **Figure 4.8.23.**

This treatment provides sufficient trafficable width for a heavy vehicle (19.0m long) to pass on the left of a single unit stationary vehicle "turning right". This is achieved by widening the shoulder to provide a minimum width sufficient to allow the vehicles to pass. Substantial speed reduction (half of design speed) is a feature of this layout. It is preferred that this widening is not sealed.

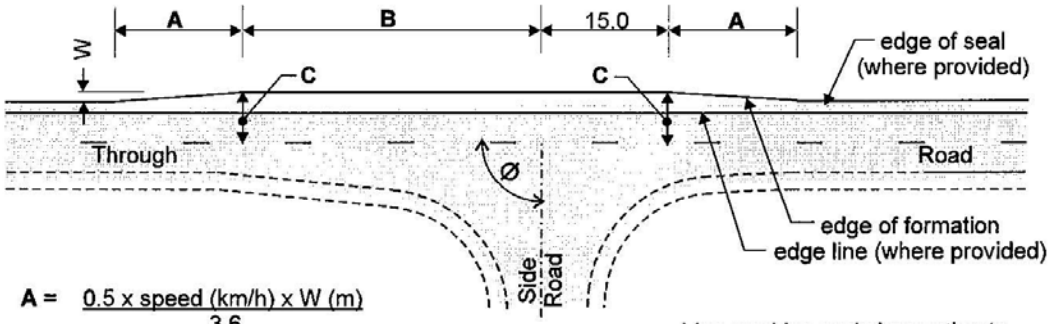
On a terminating intersection leg no special provision is made for right hand turns.

This layout can be used on both sealed and unsealed roads.

Where the pavement is sealed, line marking should be in accordance with the **"Signs and Markings" Manual.**

Signposting should be in accordance with the **"Signs and Markings" Manual**.

*It is preferred that the widened **shoulder is NOT sealed**; where the shoulder must be sealed, a Type AUR layout should be used.*




$$A = \frac{0.5 \times \text{speed (km/h)} \times W \text{ (m)}}{3.6}$$

B =

| Ø | 70° | 90° | 110° |
|---|---|---|---|
| Length(m) | 40 | 35 | 30 |

Line marking and signposting to be in accordance with **"Signs and Markings" Manual**

**C** = on straight - 6.0m min.
on curve - 2 x (3.0 + corresponding widening for curve radius)m min.
refer Section 2 - **Table 2.2.2**

**W** = formation widening (if required)

*Also see additional notes on **Figure 4.5.2***

***Figure 4.8.23 - Type "BAR" Right Turn Treatment on the Through Road***

### 4.8.5.2 *Type "AUR" (AUxiliary lane Right turn)- pavement widening with an unprotected turn.*

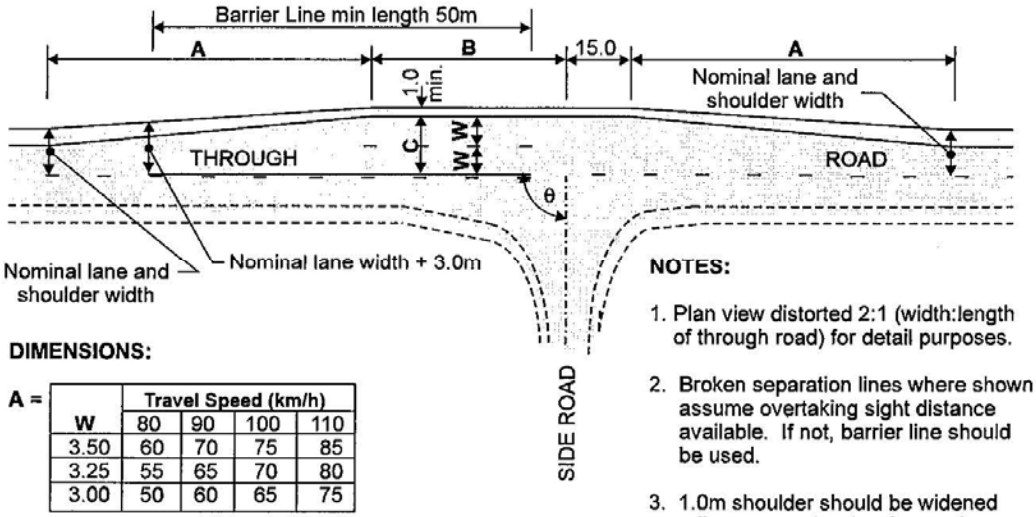
This treatment provides a widened section of sealed pavement equivalent in width to the adjacent through lane. The adjoining shoulder should be a minimum of 1.0m wide. Details are provided in **Figure 4.8.24**. The sealed area is sufficient for a heavy vehicle (19.0m long) to deviate from its through path and pass on the left of a single unit heavy vehicle.

***The storage length should not be increased.*** If additional storage is required then Type "CHR" treatment should be used.

A particular advantage of Type "AUR" treatment is that it does not restrict overtaking for opposing through vehicles (where overtaking sight distance is available).

Linemarking should be as shown in **Figure 4.8.24**.

Signposting should be in accordance with **"Signs and Markings" Manual**.




**NOTES:**

1. Plan view distorted 2:1 (width:length of through road) for detail purposes.
2. Broken separation lines where shown assume overtaking sight distance available. If not, barrier line should be used.
3. 1.0m shoulder should be widened adjacent to safety barrier or when catering for bicycles
4. Layout to be linemarked as shown. **Do not use continuity lines**

**DIMENSIONS:**

**A =**

| W | Travel Speed (km/h) 80 | 90 | 100 | 110 |
|---|---|---|---|---|
| 3.50 | 60 | 70 | 75 | 85 |
| 3.25 | 55 | 65 | 70 | 80 |
| 3.00 | 50 | 60 | 65 | 75 |

Dimension **A** based on formula:

$$\frac{0.8 \times \text{travel speed(km/h)} \times \text{Lane Width(W)}}{3.6}$$

**B =**

| θ | 70° | 90° | 110° |
|---|---|---|---|
| Length(m) | 40 | 35 | 30 |

**C =** on straight - 2 x **W** (nominal lane width).
on curve - 2 x **W** (nominal lane width) + corresponding widening for curve radius; refer Section 2 - **Table 2.2.2**
*(See additional notes on **Figure 4.5.3**)*

***Figure 4.8.24 - Type "AUR" Right Turn Treatment***

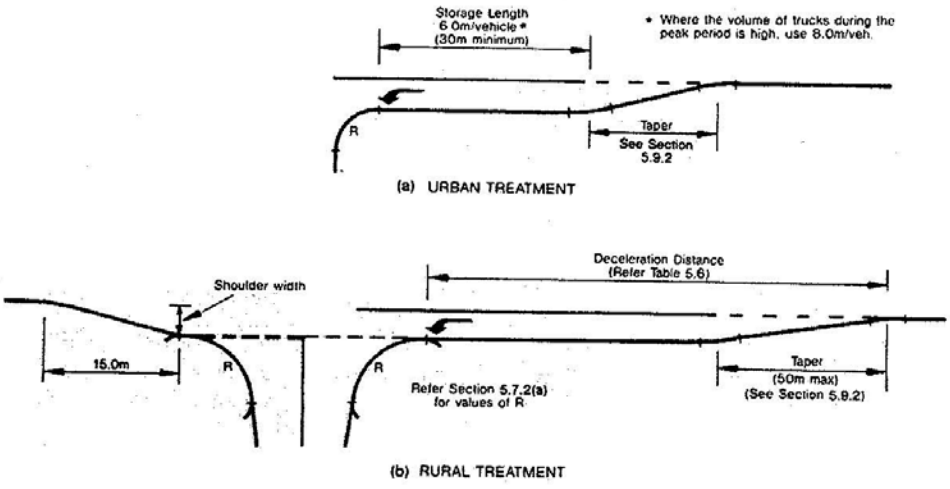



*FIGURE 5.17 Left Turn Lanes*

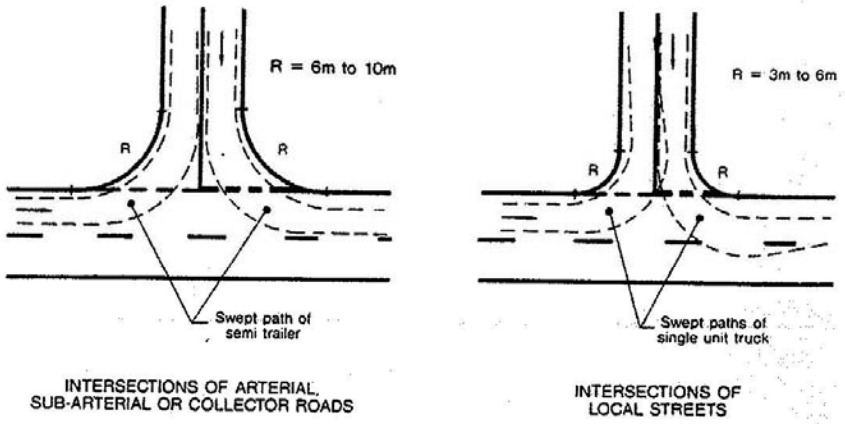



*FIGURE 5.15 Simple Left-Turn Treatments in Urban Areas*

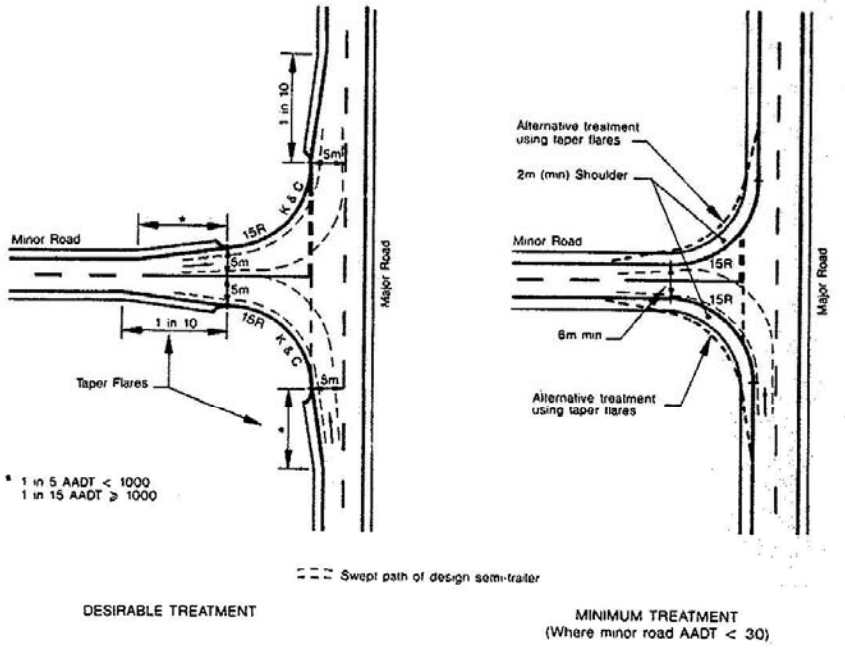
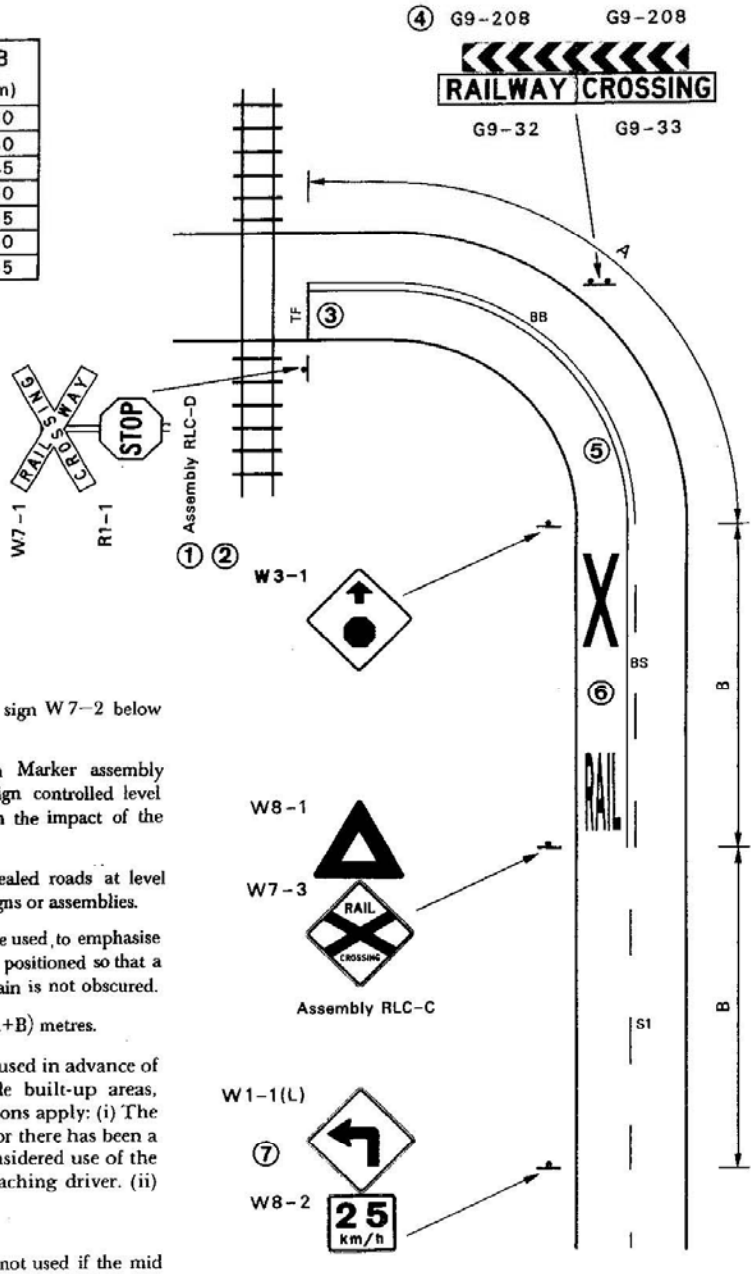



*FIGURE 5.16 Simple Left-Turn Treatments in Rural Areas*

# ATTACHMENT 2

# RTA AND AUSTRALIAN STANDARD SIGNS & MARKINGS

| $V_{85}$ (km/h) | A (m) | B (m) |
|---|---|---|
| 50 | 60-80 | 30 |
| 60 | 80-100 | 40 |
| 70 | 100-120 | 45 |
| 80 | 120-140 | 50 |
| 90 | 140-170 | 55 |
| 100 | 170-210 | 60 |
| 110 | 210-260 | 65 |




NOTES

① If more than one track, add Tracks sign W7–2 below W7–1.

② The Railway Crossing and Width Marker assembly (RLC–L) is not used for Stop sign controlled level crossings as it would detract from the impact of the R1–1 Stop sign.

③ Stop lines TF are required on sealed roads at level crossings controlled by regulatory signs or assemblies.

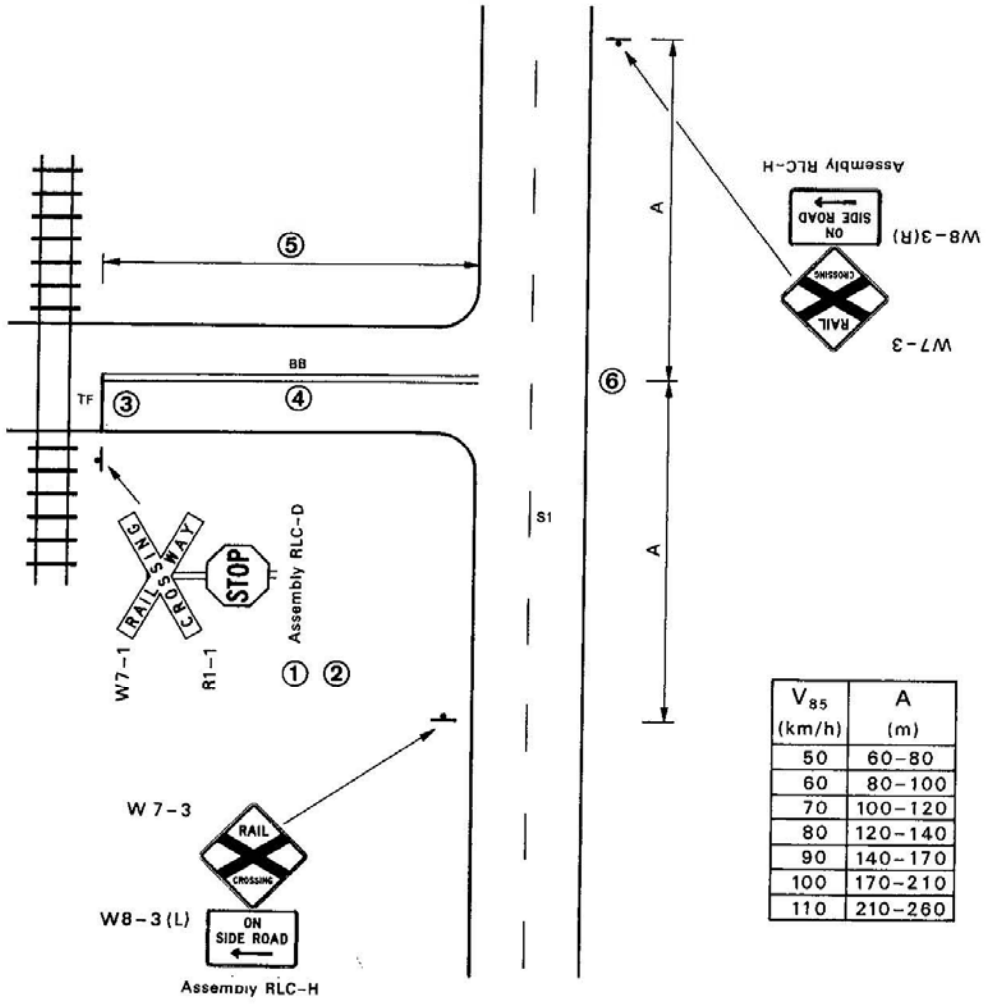
④ Hazard Markers G9–208, may be used to emphasise the alignment. The signs should be positioned so that a driver's view of an approaching train is not obscured.

⑤ The min. length of barrier line is (A+B) metres.

⑥ RAIL X pavement markings are used in advance of level crossings, generally outside built-up areas, where the undermentioned conditions apply: (i) The visibility of the crossing is poor or there has been a bad accident history and it is considered use of the marking would assist the approaching driver. (ii) The AADT exceeds 250.

⑦ The Advisory Speed sign W8–2 is not used if the mid point of the curve is nearer to the stop line than the larger value of (A–B) metres, calculated from the tabulation.

## LEVEL CROSSING CONTROLLED BY STOP SIGNS PRECEDED BY A SHARP CURVE




| $V_{85}$ (km/h) | A (m) |
|---|---|
| 50 | 60–80 |
| 60 | 80–100 |
| 70 | 100–120 |
| 80 | 120–140 |
| 90 | 140–170 |
| 100 | 170–210 |
| 110 | 210–260 |

NOTES

① If more than one track, add Tracks sign W 7–2 below W 7–1.

② The Railway Crossing and Width Marker assembly (RLC–L) is not used for Stop sign controlled level crossings as it would detract from the impact of the R 1–1 Stop sign.

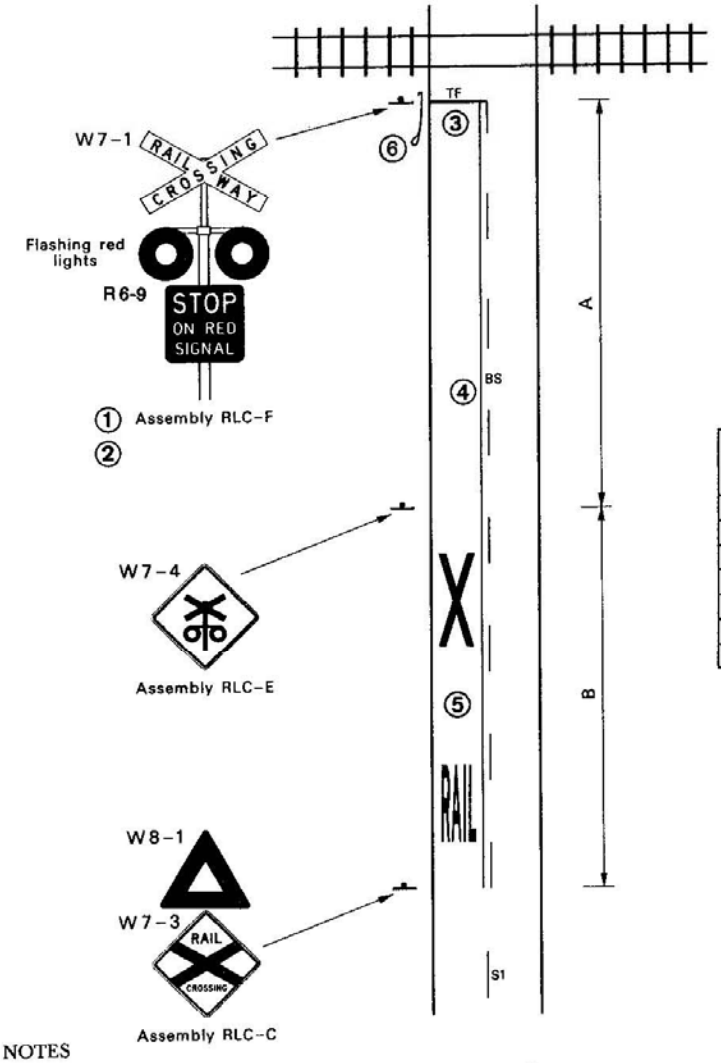
③ Stop lines TF are required on sealed roads at level crossings controlled by regulatory signs or assemblies.

④ The barrier line BB extends from the level crossing to the through road.

⑤ This distance is less than that required to allow satisfactory display of the assembly RLC–C on the side road.

⑥ The treatment of guide signs and the need for Side Road Junction signs W 2–4 in advance of the assembly RLC–H is given on page 4.5–5.

## LEVEL CROSSING CONTROLLED BY STOP SIGNS ON A SIDE ROAD




| $V_{85}$ (km/h) | A (m) | B (m) |
|---|---|---|
| 50 | 60–80 | 30 |
| 60 | 80–100 | 40 |
| 70 | 100–120 | 45 |
| 80 | 120–140 | 50 |
| 90 | 140–170 | 55 |
| 100 | 170–210 | 60 |
| 110 | 210–260 | 65 |

NOTES

① If more than one track, add Tracks sign W7–2 below W7–1.

② The Railway Crossing and Width Marker assembly (RLC–L) may be used where the position sign alone is considered inadequate. For example, there may be a need to emphasise the position of the crossing by the display of larger panels or the restricted width by Width Markers. Before the signs are erected, the Road Authority's representative must check with the Rail Authority's Signal and Telegraph Engineer so that damage to underground plant can be avoided. The presence of and need to maintain drains must also be taken into account.

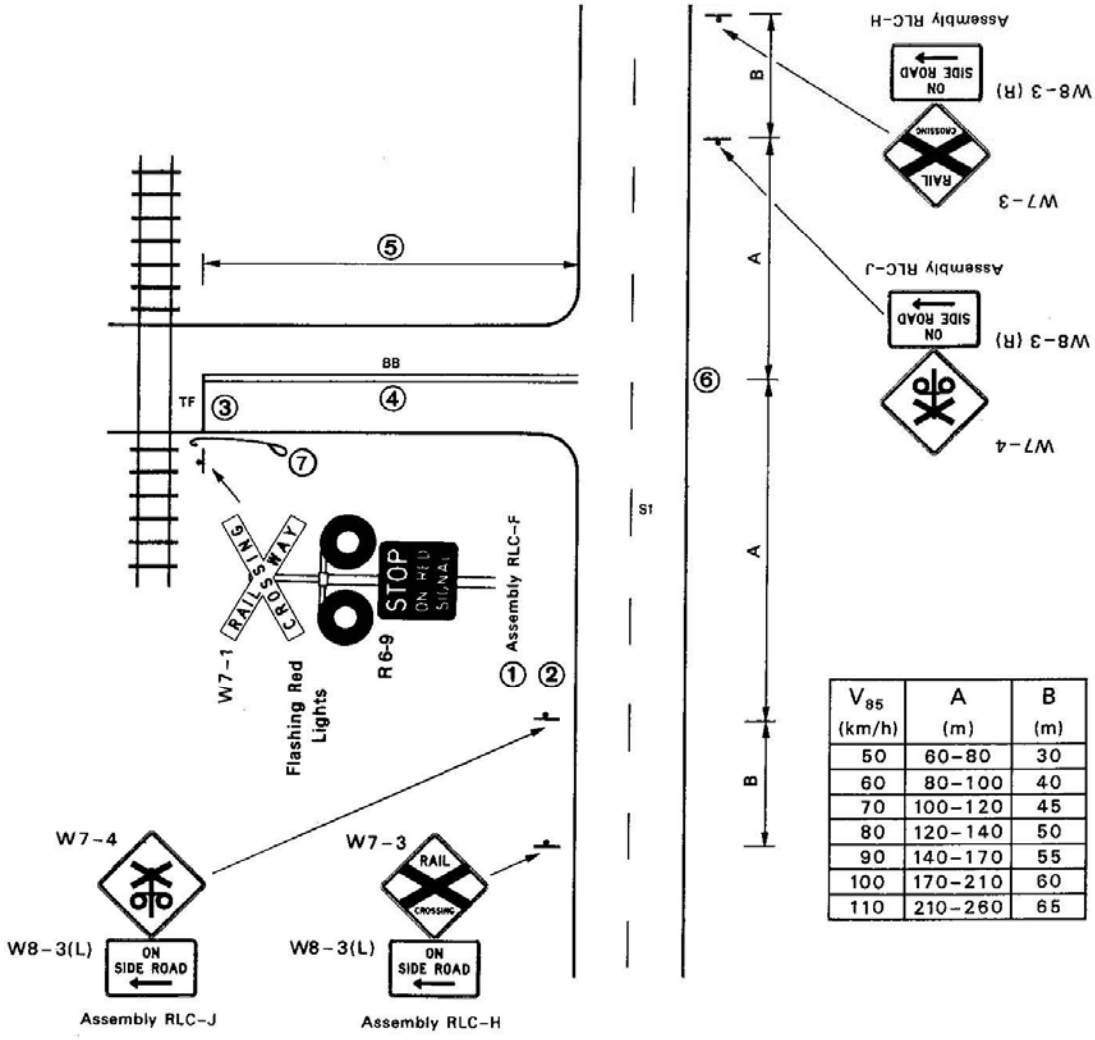
③ Stop lines TF are required on sealed roads at level crossings controlled by regulatory signs or assemblies.

④ The min. length of barrier line is (A+B) metres.

⑤ RAIL X pavement markings are used in advance of level crossings, generally outside built-up areas, where the undermentioned conditions apply: (i) The visibility of the crossing is poor or there has been a bad accident history and it is considered use of the marking would assist the approaching driver. (ii) The AADT exceeds 250.

⑥ For detail of guardrail, see DMR standard drawing No. SD 6322.

## LEVEL CROSSING CONTROLLED BY FLASHING LIGHTS




| $V_{85}$ (km/h) | A (m) | B (m) |
|---|---|---|
| 50 | 60–80 | 30 |
| 60 | 80–100 | 40 |
| 70 | 100–120 | 45 |
| 80 | 120–140 | 50 |
| 90 | 140–170 | 55 |
| 100 | 170–210 | 60 |
| 110 | 210–260 | 65 |

NOTES

① If more than one track, add Tracks sign W7–2 below W7–1.

② The Railway Crossing and Width Marker assembly (RLC–L) may be used where the position sign alone is considered inadequate. For example, there may be a need to emphasise the position of the crossing by the display of larger panels or the restricted width by Width Markers. Before the signs are erected, the Road Authority's representative must check with the Rail Authority's Signal and Telegraph Engineer so that damage to underground plant can be avoided. The presence of and need to maintain drains must also be taken into account.

③ Stop lines TF are required on sealed roads at level crossings controlled by regulatory signs or assemblies.

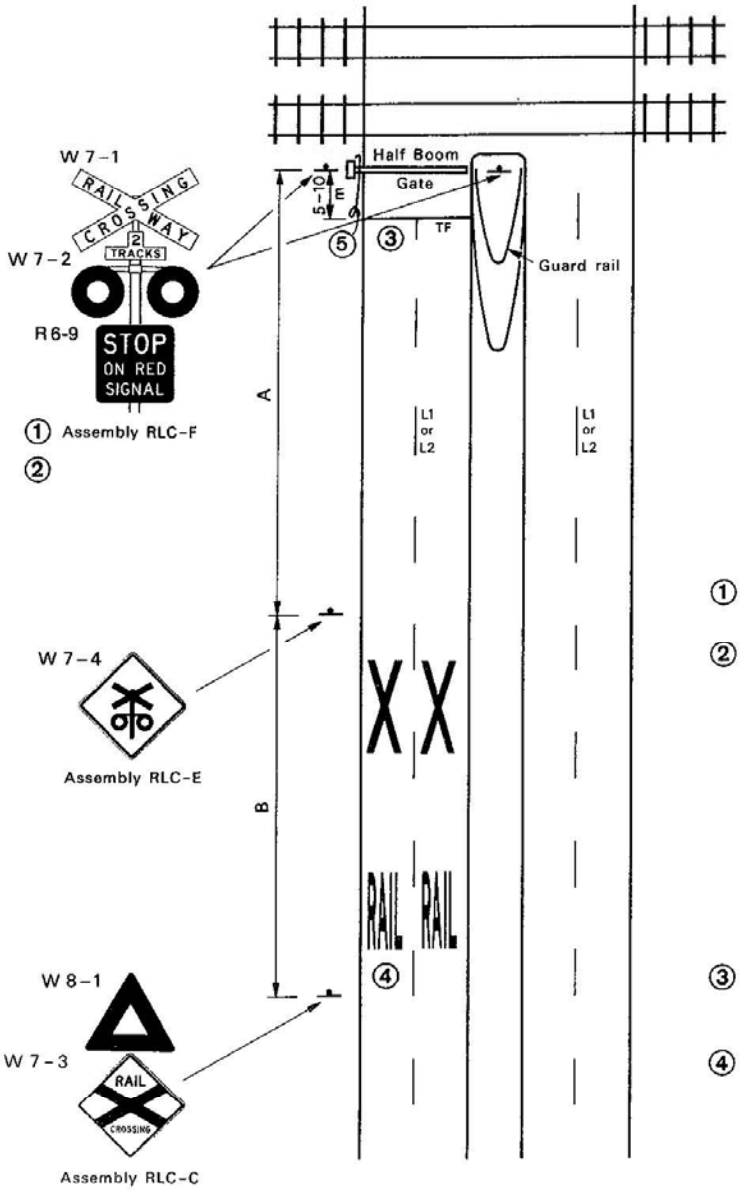
④ The barrier line BB extends from the level crossing to the through road.

⑤ This distance is less than that required to allow satisfactory display of the assembly RLC–C on the side road.

⑥ The treatment of guide signs and the need for Side Road Junction signs W2–4 in advance of the assembly RLC–H is given on page 4.5–5.

⑦ For detail of guardrail, see DMR standard drawing No. SD 6322.

## LEVEL CROSSING CONTROLLED BY FLASHING LIGHTS ON A SIDE ROAD




| $V_{85}$ (km/h) | A (m) | B (m) |
|---|---|---|
| 50 | 60–80 | 30 |
| 60 | 80–100 | 40 |
| 70 | 100–120 | 45 |
| 80 | 120–140 | 50 |
| 90 | 140–170 | 55 |
| 100 | 170–210 | 60 |
| 110 | 210–260 | 65 |

NOTES

① If more than one track, add Tracks sign W7–2 below W7–1.

② The Railway Crossing and Width Marker assembly (RLC–L) may be used where the position sign alone is considered inadequate. For example, there may be a need to emphasise the position of the crossing by the display of larger panels or the restricted width by Width Markers. Before the signs are erected, the Road Authority's representative must check with the Rail Authority's Signal and Telegraph Engineer so that damage to underground plant can be avoided. The presence of and need to maintain drains must also be taken into account.

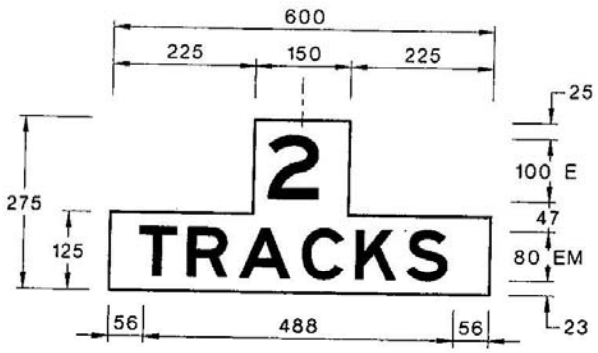
③ Stop lines TF are required on sealed roads at level crossings controlled by regulatory signs or assemblies.

④ RAIL X pavement markings are used in advance of level crossings, generally outside built-up areas, where the undermentioned conditions apply: (i) The visibility of crossing is poor or there has been a bad accident history and it is considered use of the marking would assist the approaching driver. (ii) The AADT exceeds 250.

⑤ For detail of guardrail, see DMR standard drawing No. SD 6322.

## LEVEL CROSSING CONTROLLED BY FLASHING LIGHTS AND HALF BOOM GATE

## W7-2




| Sign sizes, mm |
|---|
| **W7-2A(Illust.)** 600 width |
| **W7-2B** 800 width |

*Black letters and numeral on white retroreflective ground*

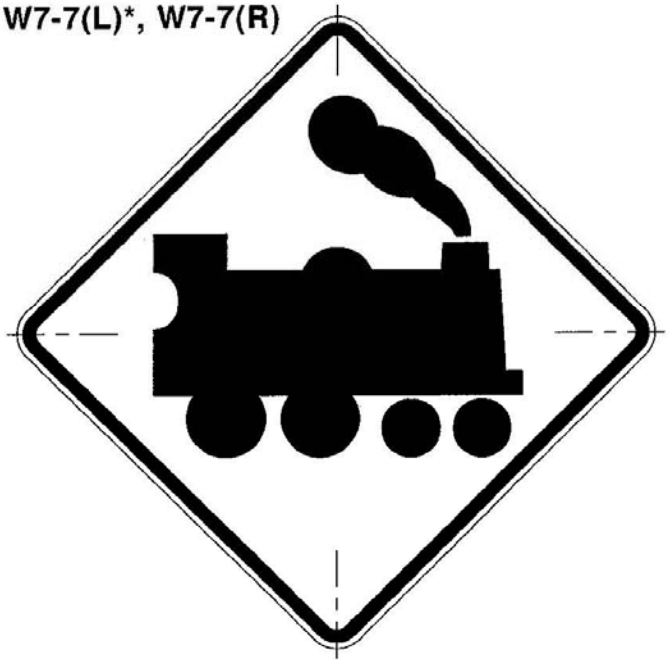
NOTE: Sign No. W7-3 RAIL CROSSING has been deleted.

## W7-4

| Sign sizes, mm |
|---|
| **W7-4B** 750 × 750 |
| **W7-4C** 900 × 900 |
| **W7-4D** 1200 × 1200 |

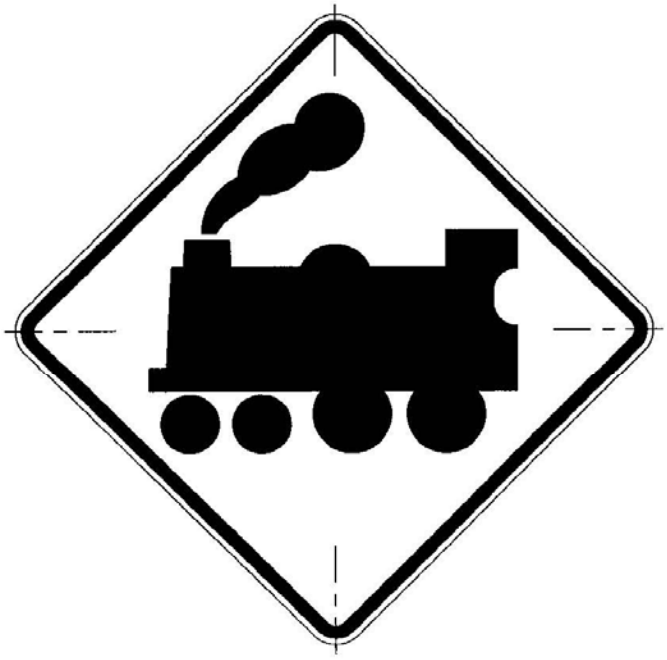
*Black symbol and border on yellow retroreflective ground*

## W7-7(L)*, W7-7(R)



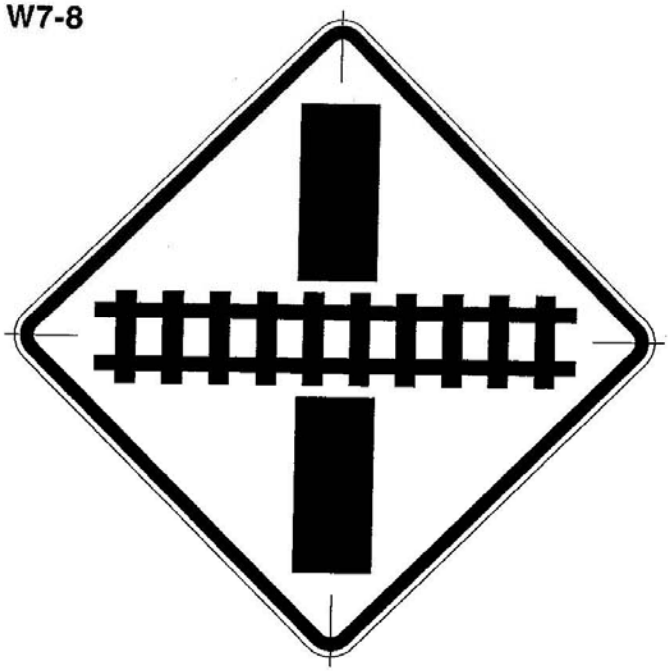
| Sign sizes, mm |
|---|
| W7-7A(L,R) 600 × 600 |
| W7-7B(L,R) 750 × 750 |
| W7-7C(L,R) 900 × 900 |
| W7-7D(L,R) 1200 × 1200 |

* In the (L) version of this sign, the symbol points to the right.



*Black symbol and border on yellow retroreflective ground*

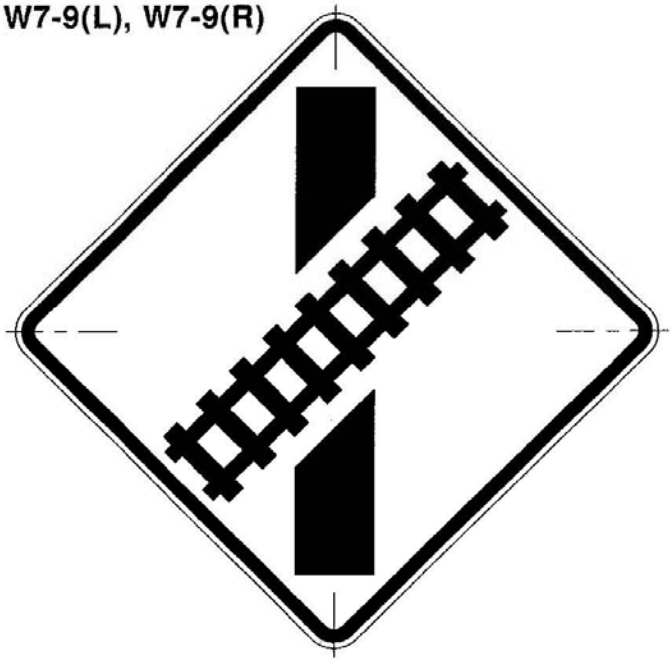
**W7-8**



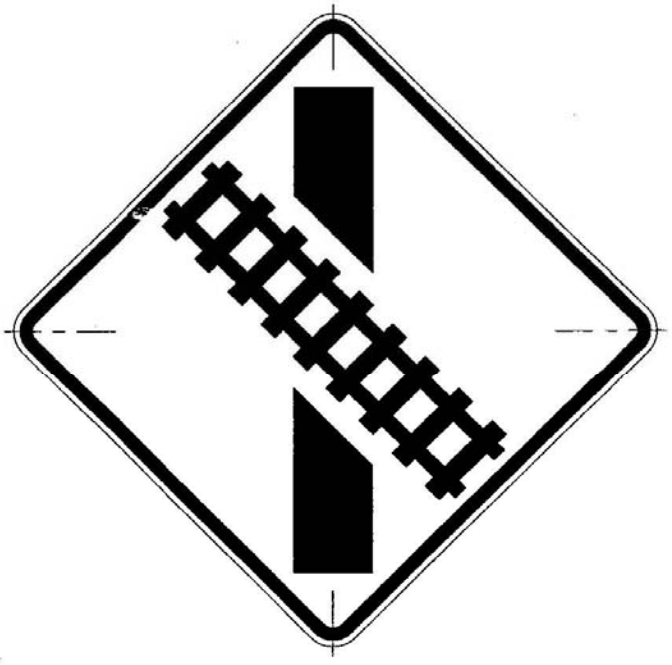
| Sign sizes, mm |
|---|
| **W7-8A** 600 × 600 |
| **W7-8B** 750 × 750 |
| **W7-8C** 900 × 900 |
| **W7-8D** 1200 × 1200 |

*Black symbol and border on yellow retroreflective ground*

## W7-9(L), W7-9(R)

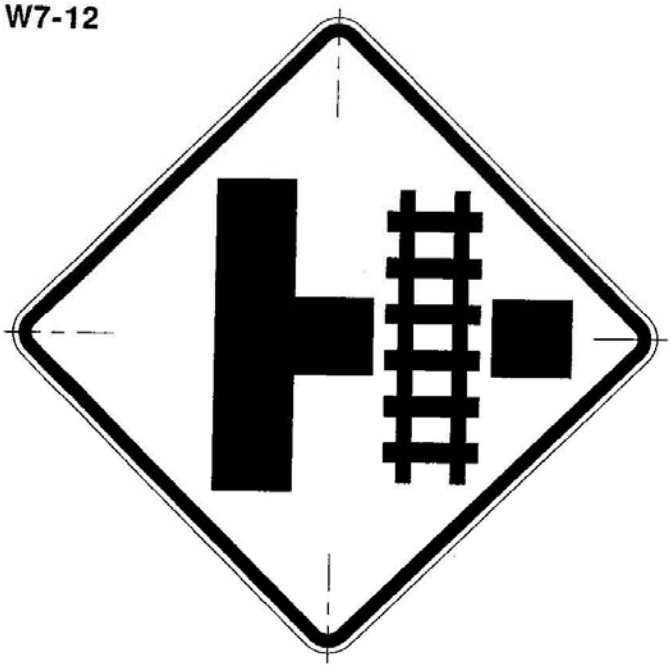


| Sign sizes, mm |
|---|
| **W7-9A(L,R)** 600 × 600 |
| **W7-9B(L,R)** 750 × 750 |
| **W7-9C(L,R)** 900 × 900 |
| **W7-9D(L,R)** 1200 × 1200 |



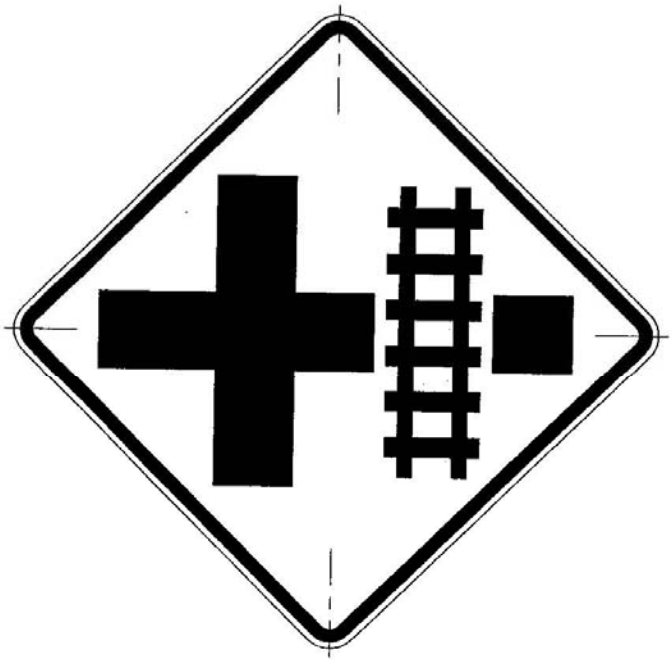
*Black symbol and border on yellow retroreflective ground*

**W7-12**



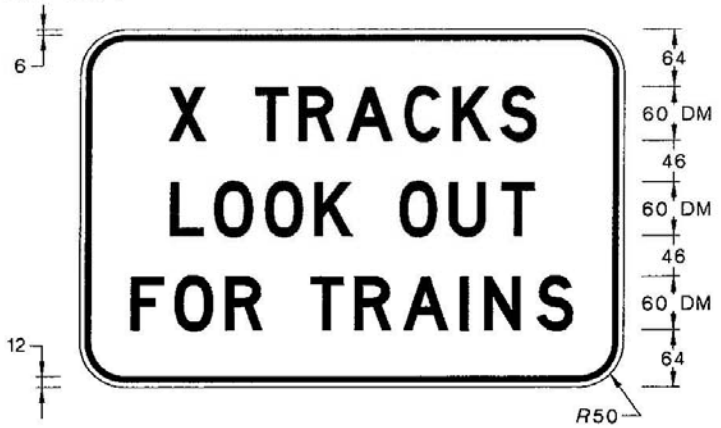
| Sign sizes, mm |
|---|
| **W7-12A** 600 × 600 |
| **W7-12B** 750 × 750 |
| **W7-12C** 900 × 900 |
| **W7-12D** 1200 × 1200 |

**W7-13**



| Sign sizes, mm |
|---|
| **W7-13A** 600 × 600 |
| **W7-13B** 750 × 750 |
| **W7-13C** 900 × 900 |
| **W7-13D** 1200 × 1200 |

**W7-14-1**



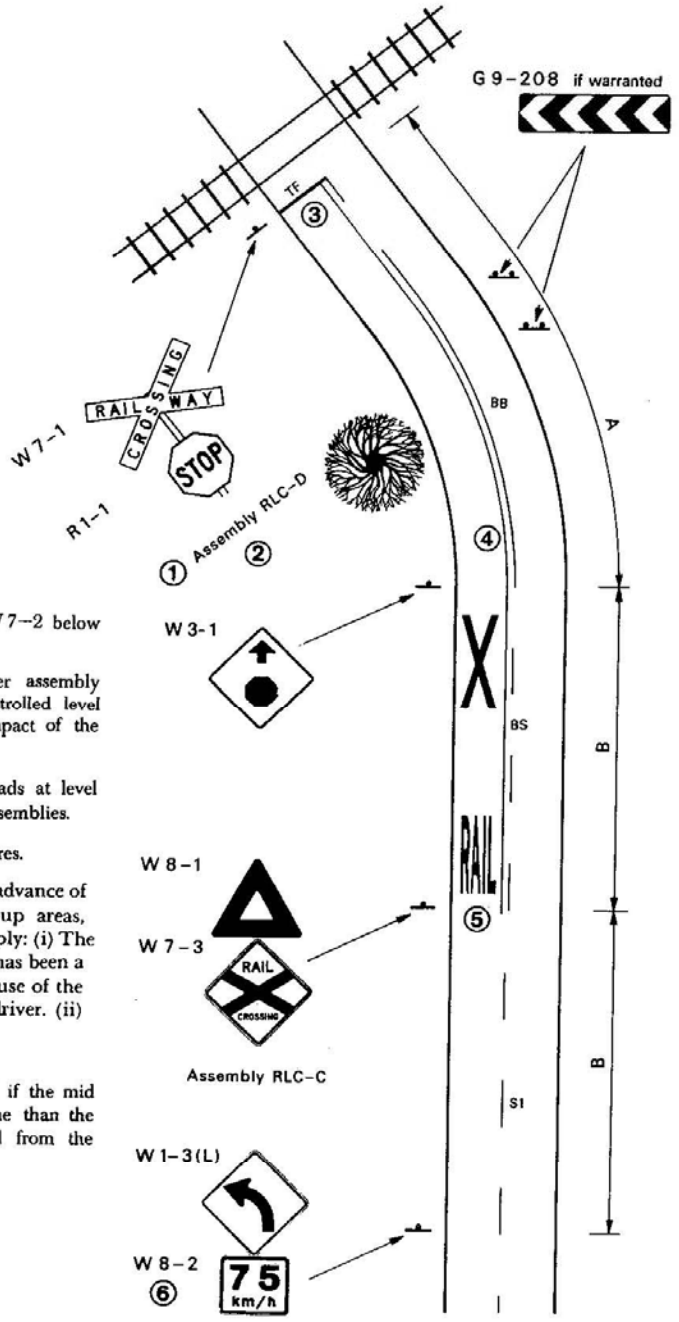

| Sign sizes, mm |
|---|
| **W7-14-1A** 600 × 400 |
| **W7-14-2A** 600 × 400 |
| **W7-14-3A** 600 × 500 |

*Black letters and border on white retroreflective ground*

**W7-14-2**


**W7-14-3**

| $V_{85}$ (km/h) | A (m) | B (m) |
|---|---|---|
| 50 | 60–80 | 30 |
| 60 | 80–100 | 40 |
| 70 | 100–120 | 45 |
| 80 | 120–140 | 50 |
| 90 | 140–170 | 55 |
| 100 | 170–210 | 60 |
| 110 | 210–260 | 65 |




NOTES

① If more than one track, add Tracks sign W7–2 below W7–1.

② The Railway Crossing and Width Marker assembly (RLC–I.) is not used for Stop sign controlled level crossings as it would detract from the impact of the R1–1 Stop sign.

③ Stop lines TF are required on sealed roads at level crossings controlled by regulatory signs or assemblies.

④ The min. length of barrier line is (A+B) metres.

⑤ RAIL X pavement markings are used in advance of level crossings, generally outside built-up areas, where the undermentioned conditions apply: (i) The visibility of the crossing is poor or there has been a bad accident history and it is considered use of the marking would assist the approaching driver. (ii) The AADT exceeds 250.

⑥ The Advisory Speed sign W8–2 is not used if the mid point of the curve is nearer to the stop line than the larger value of (A–B) metres, calculated from the tabulation

LEVEL CROSSING CONTROLLED BY
STOP SIGNS PRECEDED BY A CURVE

# APPENDIX C

# TRAFFIC NOISE IMPACT ASSESSMENT

HEGGIES

24 April 2007

30-1313 Traffic Noise Assessment 20070424

Wilpinjong Coal Pty Ltd
c/- Resource Strategies Pty Ltd
Level 2, 11 Lang Parade
MILTON QLD 4064

**Attention: Mr Keith Downham**

Dear Keith

## Wilpinjong Coal Project
## Operational Phase Access Route Modification
## Traffic Noise Impact Assessment

Please find enclosed a copy of our Traffic Noise Impact Assessment.

The enclosed assessment has been undertaken to assess potential impacts associated with modifying the currently approved access route for the majority of operational phase traffic generated by the Wilpinjong Coal Project.

Regards

GLENN THOMAS

MEMBER FIRM OF THE ASSOCIATION OF AUSTRALIAN ACOUSTICAL CONSULTANTS

HEGGIES PTY LTD
ABN 29 001 584 612
2 Lincoln Street Lane Cove NSW 2066 Australia
PO Box 176 Lane Cove NSW 1595 Australia
Telephone 61 2 9427 8100 Facsimile 61 2 9427 8200
Email sydney@heggies.com Website www.heggies.com

# TRAFFIC NOISE IMPACT ASSESSMENT

## 1 Introduction

Wilpinjong Coal Pty Ltd (WCPL) has approval to develop the Wilpinjong Coal Project (the Project) in accordance with the Department of Planning (DoP) Project Approval 05-0021 dated 1 February 2006. The Project is located approximately 40 km north-east of Mudgee in New South Wales (NSW).

The Project Environmental Impact Statement (EIS) (WCPL, 2005) anticipated the Ulan Road and the Wollar Road as the primary mine access route connecting the Project with the township of Mudgee. Transport noise associated with this route was assessed as part of the *Construction, Operation and Transportation Noise and Blasting Impact Assessment* undertaken by Heggies Pty Ltd as presented in Appendix D, Volume 2 of the Project EIS (WCPL, 2005). The EIS studies assessed Project related road traffic noise along the Wollar Road in accordance with the DEC's "*Environmental Criteria for Road Traffic Noise*" policy (ECRTN) dated May 1999.

## 2 Proposed Operational Phase Access Route Modification

WCPL now propose utilising the Ulan Road and the Ulan-Wollar Road as the primary access route from the Project to Mudgee for operational phase traffic (Figure 1). An assessment of on-site operating noise emissions in accordance with the NSW Industrial Noise Policy (INP) is not required due the proposed access route modification.

## 3 Traffic Noise Assessment Criteria

Based on the ECRTN the Ulan Road is classified as a collector road and the Ulan-Wollar Road is classified as a local road. The guideline noise assessment criteria are presented in **Table 1**.

**Table 1 EPA Guideline Noise Assessment Criteria for Road Traffic**

| Road | Policy | Daytime LAeq(1hour) | Night-time LAeq(1hour) |
|---|---|---|---|
| Ulan Road (Collector Road) | Landuse developments with the potential to create additional traffic on collector road | 60 dBA | 55 dBA |
| Ulan-Wollar Road (Local Road) | Landuse developments with the potential to create additional traffic on local road | 55 dBA | 50 dBA |

Note: Where the nominated criteria are already exceeded, traffic associated with the proposed modification should generally not lead to an increase in the existing noise traffic levels by more than 2 dBA.

## 4 Existing and Project related Traffic

Existing traffic flows have been determined along the Ulan Road and Ulan-Wollar Road network namely (**Figure 1**):

- Section A - Ulan Road between Wollar Road and Cooks Gap
- Section B - Ulan Road between Cooks Gap and Ulan-Wollar Road
- Section C - Ulan-Wollar Road

To determine the existing and cumulative noise levels along Sections A, B and C the night-time and daytime (morning and afternoon) changes in peak hourly vehicle movements as a result of the proposed modification are presented in **Attachment A**.

It should be noted that for the purpose of this assessment, we have conservatively assumed that all traffic associated with major shift changes at the Project, the Ulan Coal Mines and the Moolarben Coal Project would be travelling on the road during the periods 6.00am to 7.00am and 6.00pm to 7.00pm. We have also assumed, for the purpose of this assessment that the peak hour traffic volumes for non-mine related traffic would also occur during the periods 6.00am to 7.00am and 6.00pm to 7.00pm.

# 5 Traffic Noise Impact Assessment

Based on the traffic noise prediction methodology presented in EIS Volume 2 Appendix D Section 7.3, the estimated peak hourly night-time and daytime (afternoon only) noise levels are presented in **Table 2**. The prediction methodology is highly conservative and takes into account vehicle volume, speed, type, passby duration and facade reflection and assumes no intervening barriers or topography with all receivers having a full angle of view to the road.

**Table 2 Ulan Road and Ulan-Wollar Road Estimated Peak $L_{Aeq(1hour)}$ Noise Levels**

| Distance from Road | Existing Traffic[1] | | Project Modification | | Cumulative Traffic | |
|---|---|---|---|---|---|---|
| | Night-time | Daytime | Night-time | Daytime | Night-time | Daytime |
| **Section A - Ulan Road between Wollar Road and Cooks Gap** | | | | | | |
| 100 m | 54 dBA | 55 dBA | 46 dBA | 48 dBA | 56 dBA | 55 dBA |
| 50 m | 59 dBA | 59 dBA | 51 dBA | 53 dBA | 60 dBA | 60 dBA |
| 25 m | 63 dBA | 63 dBA | 55 dBA | 57 dBA | 64 dBA | 64 dBA |
| **Section B - Ulan Road between Cooks Gap and Ulan-Wollar Road** | | | | | | |
| 100 m | 54 dBA | 53 dBA | 46 dBA | 48 dBA | 55 dBA | 54 dBA |
| 50 m | 59 dBA | 57 dBA | 51 dBA | 53 dBA | 59 dBA | 59 dBA |
| 25 m | 63 dBA | 61 dBA | 55 dBA | 57 dBA | 63 dBA | 63 dBA |
| **Section C - Ulan-Wollar Road** | | | | | | |
| 100 m | 40 dBA | 41 dBA | 46 dBA | 48 dBA | 47 dBA | 49 dBA |
| 50 m | 44 dBA | 45 dBA | 51 dBA | 53 dBA | 52 dBA | 53 dBA |
| 25 m | 48 dBA | 49 dBA | 55 dBA | 57 dBA | 56 dBA | 58 dBA |

[1] Includes existing traffic flows, potential traffic generated by the proposed Moolarben Coal Mine, approved Wilpinjong Coal Project traffic flows and approved Ulan Coal Mines Traffic flows.

Section A - Ulan Road: Peak hour night-time traffic noise levels increase by up to 2 dBA and meet the 55 dBA $L_{Aeq}$(1hour) criterion at 104 m (and greater) from the road. Peak hour daytime traffic noise levels increase by up to 1 dBA and meet the 60 dBA $L_{Aeq}$(1hour) criterion at 44 m (and greater).

Section B - Ulan Road: Peak hour night-time traffic noise levels increase by up to 1 dBA and meet the 55 dBA $L_{Aeq}$(1hour) criterion at 94 m (and greater) from the road. Peak hour daytime traffic noise levels increase by up to 2 dBA and meet the 60 dBA $L_{Aeq}$(1hour) criterion at 36 m (and greater).

Section C - Ulan-Wollar Road: Peak hour night-time traffic noise levels increase by up to 8 dBA and meet the 50 LAeq(1hour) criterion at 60 m (and greater) from the road. Peak hour daytime traffic noise levels increase by up to 9 dBA and meet the 55 dBA $L_{Aeq}$(1hour) criterion at 36 m (and greater).

Based on the foregoing conservative noise predictions the number of dwellings at which the daytime and night-time traffic criteria may already be exceeded are presented in **Table 3** together with any additional dwelling due to the Project Modification. Note, the traffic noise increases along the Ulan Road (Sections A and B) due to the Project Modification are no more than 2 dBA and are therefore considered acceptable.

In addition to the above, the modification would not require any additional traffic movements between Mudgee and the Project. Rather, it would result in the majority of operational phase traffic travelling on the same route as currently utilised for Project construction traffic (i.e. Ulan Road and Ulan-Wollar Road) rather than Ulan Road and Wollar Road (Figure 1) and would remove potential operational traffic noise impacts from the Wollar Road.

**Table 3 Conservative Number of Dwellings Where Traffic Noise Criteria May be Exceeded**

| Access Route Section | Number of Dwellings at which the Criteria is Exceeded | | Additional Number of Dwellings at which the Criteria is Exceeded due to the Modification |
|---|---|---|---|
| | Existing Traffic Volume[1] | New Traffic Volume with Modification | |
| **Section A - Ulan Road - Between Wollar Road and Cooks Gap** | | | |
| Daytime 60 $L_{Aeq(1\ hour)}$ | 3 | 3 | 0 |
| Night-time 55 $L_{Aeq(1\ hour)}$ | 17 | 19 | 2 |
| **Section B - Ulan Road - Between Cooks Gap and Ulan-Wollar Road** | | | |
| Daytime 60 $L_{Aeq(1\ hour)}$ | 1 | 1 | 0 |
| Night-time 55 $L_{Aeq(1\ hour)}$ | 7 | 8 | 1 |
| **Section C - Ulan-Wollar Road - Between Ulan Road and the Wilpinjong Coal Project** | | | |
| Daytime 55 $L_{Aeq(1\ hour)}$ | 1 | 1 | 0 |
| Night-time 50 $L_{Aeq(1\ hour)}$ | 1 | 1 | 0 |

*Source: Kinhill Stearns (1983); Kinhill (1998); Martin and Associates (2005); traffic counts along Ulan-Wollar Road in October 2005; WCPL (2005); Moolarben Coal Mines Pty Ltd (2006).*

[1] Includes existing flows, potential traffic generated by the proposed Moolarben Coal Mine, approved Wilpinjong Coal Project traffic flows and approved Ulan Coal Mines Traffic flows.

# 6 Conclusion

Based on conservative traffic noise predictions along Ulan Road and Ulan-Wollar Road the traffic noise impacts arising from the Project Modification are considered acceptable.

No additional dwellings along the Ulan Road exceed the daytime criteria due to the Project Modification. Moreover, only three additional dwellings along the Ulan Road may exceed the night-time criteria due to the Project Modification but the increase above the baseline traffic noise is no more than 2 dBA.

Existing traffic noise levels along the Ulan-Wollar Road are lower than Ulan Road and Project related traffic is likely to increase noise levels by up to 9 dBA during the daytime peak hour and 8 dBA during the night-time peak hour. There are currently five private dwellings and one owned by Ulan Coal Mines located proximal to the Ulan-Wollar Road. Cumulative traffic noise levels are predicted to meet the daytime and night-time criteria at all five privately owned dwellings. Baseline traffic noise levels are predicted to already exceed the criteria at the Ulan Coal owned dwelling as it is only approximately 10 m from the road.

### Ulan Road and Ulan-Wollar Road - Estimated Daily Traffic Movements[2]

| Location | Section | Existing Traffic[1] | Project Modification | | | Cumulative Traffic | % Change Traffic |
|---|---|---|---|---|---|---|---|
| | | | Workforce/ Visitors | Deliveries/ Trucks | Total Traffic | | |
| Ulan Road | A | 1,861 | 180 | 12 | 192 | 2,053 | +10 % |
| | B | 1,330 | 180 | 12 | 192 | 1,522 | +14 % |
| Ulan-Wollar Road | C | 74 | 180 | 12 | 192 | 266 | +259 % |

*Source: Wilpinjong Coal Project EIS (WCPL, 2005); traffic counts along Ulan-Wollar Road in October 2005; Moolarben Environmental Assessment Report (Moolarben Coal Mines Pty Ltd, 2006), Kinhill Stearns, 1983; Martin and Associates, 2005; and Kinhill, 1998.*

Note 1: Includes baseline flows, potential traffic generated by the proposed Moolarben Coal Mine, approved Wilpinjong Coal Project traffic flows and approved Ulan Coal Mines Traffic flows.

Note 2: Values provided are the daily average of total traffic counts in both directions from Monday to Sunday.

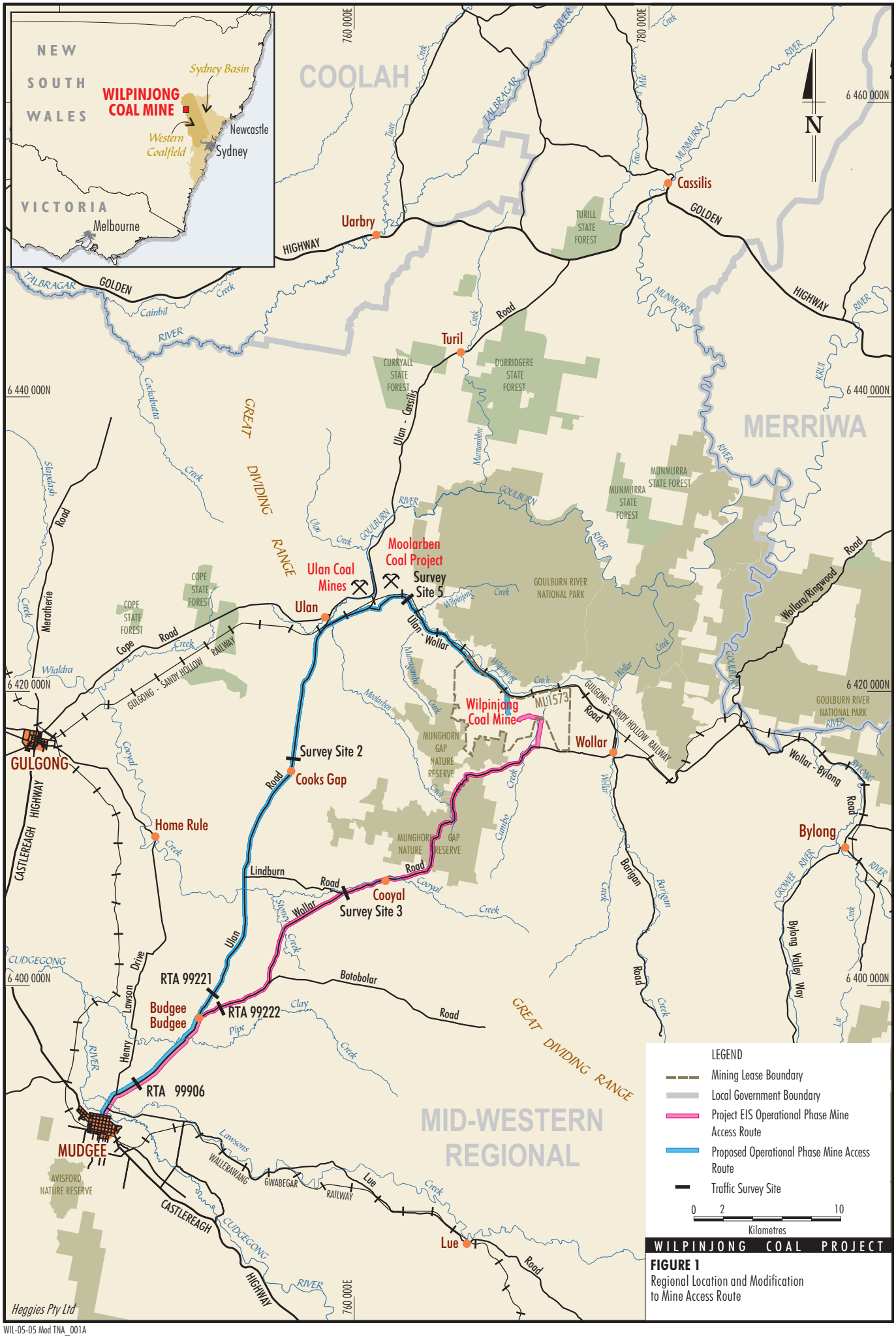
### Ulan Road (MR 214) and Ulan-Wollar Road - Estimated Peak Hourly Traffic Movements[1]

| Peak Period | Existing Traffic[2] | | Project Modification | | Cumulative Traffic | |
|---|---|---|---|---|---|---|
| | Light | Heavy | Light | Heavy | Light | Heavy |
| **Section A - Ulan Road between Wollar Road and Cooks Gap** | | | | | | |
| Night-time 6.00 am - 7.00 am | 354 | 11 | 51 | 1 | 405 | 12 |
| Daytime (Morning) 7.00 am - 8.00 am | 307 | 11 | 40 | 1 | 347 | 12 |
| Daytime (Afternoon) 6.00 pm - 7.00 pm | 278 | 12 | 80 | 2 | 358 | 14 |
| **Section B - Ulan Road between Cooks Gap and Ulan Wollar Road** | | | | | | |
| Night-time 6.00 am - 7.00 am | 304 | 8 | 51 | 1 | 355 | 9 |
| Daytime (Morning) 7.00 am - 8.00 am | 257 | 9 | 40 | 1 | 297 | 10 |
| Daytime (Afternoon) 6.00 pm - 7.00 pm | 202 | 8 | 80 | 2 | 282 | 10 |
| **Section C - Ulan-Wollar Road** | | | | | | |
| Night-time 6.00 am - 7.00 am | 6 | 1 | 51 | 1 | 57 | 2 |
| Daytime (Morning) 7.00 am - 8.00 am | 6 | 1 | 40 | 1 | 46 | 2 |
| Daytime (Afternoon) 6.00 pm - 7.00 pm | 10 | 1 | 80 | 2 | 90 | 3 |

*Source: Wilpinjong Coal Project EIS (WCPL, 2005); traffic counts along Ulan-Wollar Road in October 2005; Moolarben Environmental Assessment Report (Moolarben Coal Mines Pty Ltd, 2006), Kinhill Stearns, 1983; Martin and Associates, 2005; and Kinhill, 1998.*

Note 1: Values provided are the peak hour total traffic counts in both directions from Monday to Sunday.

Note 2: Includes existing traffic flows, potential traffic generated by the proposed Moolarben Coal Mine, approved Wilpinjong Coal Project traffic flows and approved Ulan Coal Mines Traffic flows.




WIL-05-05 Mod TNA_001A