STATEMENT OF ENVIRONMENTAL EFFECTS

Stratford Coal Mine
Roseville West Pit Modification

STRATFORD COAL

ResourceStrategies

STRATFORD COAL MINE
ROSEVILLE WEST PIT MODIFICATION
STATEMENT OF ENVIRONMENTAL EFFECTS

OCTOBER 2006
Project No. GCL-06-06
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EXECUTIVE SUMMARY

ES1.0 BACKGROUND

The Stratford Coal Mine (SCM) is owned and operated by Stratford Coal Pty Ltd (SCPL) a subsidiary of Gloucester Coal Ltd and has been operating since 1995. SCPL also owns and operates the Bowens Road North Open Cut (BRNOC) which is located immediately to the north of the SCM (Figure ES-1) and commenced operation in 2003 under a separate consent.

Another Gloucester Coal Limited subsidiary, Duralie Coal Pty Ltd, owns and operates the Duralie Coal Mine (DCM), which is located some 20 kilometres to the south. The run-of-mine (ROM) coal produced at the DCM is railed to the SCM, where it is unloaded and processed.

ES2.0 REASON FOR THE ROSEVILLE WEST PIT MODIFICATION

This Statement of Environmental Effects (SEE) has been prepared by SCPL to support an application to modify the SCM Development Consent (the Roseville West Pit modification). The Roseville West Pit modification includes development of a small pit that is adjacent to and contiguous with the approved Roseville Pit Extension. Existing supporting infrastructure would remain unchanged.

ES3.0 DESCRIPTION OF THE ROSEVILLE WEST PIT MODIFICATION

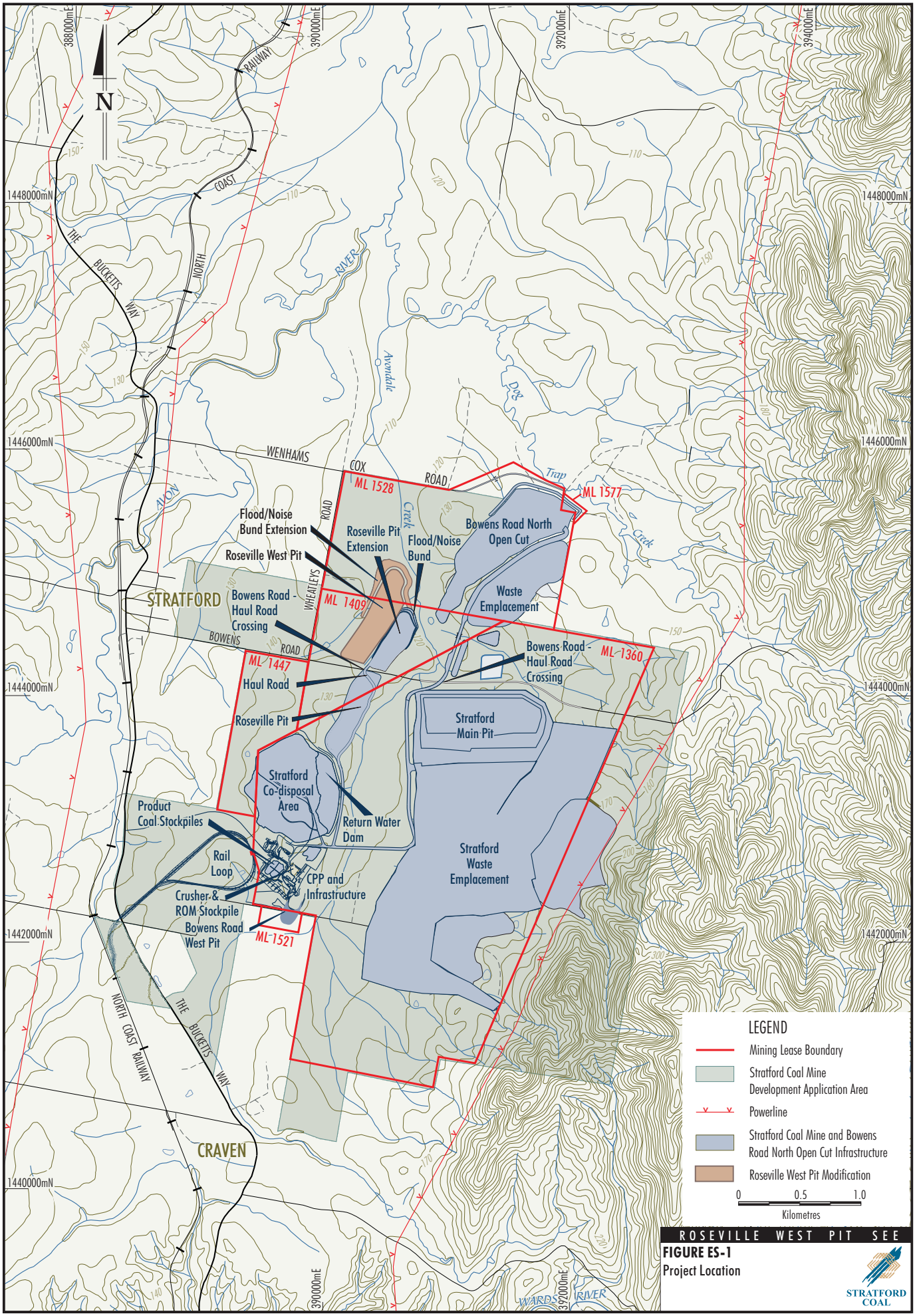
The Roseville West Pit modification includes a number of changes to SCM. These changes include:

- a small open pit (approximately 850 m long and 250 m wide) to access approximately 0.7 Mt of ROM coal in the Cloverdale Seam, immediately to the west of and contiguous with the existing Roseville Pit Extension;
- construction of associated flood and noise bunding on the north-western Roseville West Pit boundary, which will be a continuation of the existing Roseville Pit Extension bunding;
- backfilling of the Roseville Pit Extension with waste rock generated from the development as well as in-pit disposal within the Roseville West Pit;
- use of the SCM mobile fleet that currently operate the Roseville Pit Extension, with provision for additional fleet items to be used during initial waste rock (overburden) stripping; and
- mining between the hours of 7.00 am and 10.00 pm (as per the existing operation in the Roseville Pit Extension).

The Roseville West Pit modification is located on land owned by SCPL and within the original SCM Development Application area and current SCPL Mining Leases and to the immediate west of the approved Roseville Pit Extension (Figure ES-1).

The waste rock material from the Roseville West Pit would be utilised to backfill the Roseville Pit Extension and partially backfill the Roseville West Pit via in-pit dumping. No out-of-pit dumps are proposed.

The current ROM coal production rate of the Roseville Pit Extension (up to approximately 5,000 tonnes per week) would also apply to the Roseville West Pit.



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The overall ROM coal production rate at SCM with the Roseville West Pit modification and BRNOC would remain within the consented 2.1 Mtpa rate. Saleable coal production from the SCM (including DCM coal) would remain within the existing consented 2.3 Mtpa rate.

No significant changes to the existing SCM infrastructure are required for the Roseville West Pit. The existing crossing of Bowens Road associated with the Roseville Pit Extension (Figure ES-1) would be utilised. No changes to the CHPP or train loading infrastructure are required.

The SCM environmental management plans would be updated as required to reflect any changes to the water management measures and sediment and erosion control systems associated with the proposed modification. The general rehabilitation aims and concepts for the SCM would remain unchanged.

ES4.0 ENVIRONMENTAL REVIEW

Comprehensive surveys and assessments of the existing environment at the SCM and BRNOC have been undertaken in the last 10-20 years. These studies covered SCM and the BRNOC during the planning and environmental assessment stages and subsequent monitoring of the operations. The majority of these studies included the Roseville West Pit modification area.

In order to assess the Roseville West Pit modification, specialist reviews were commissioned by SCPL to determine whether it would alter the findings of the original environmental assessments. The environmental reviews have shown that:

- SCM/BRNOC operational noise complaints have varied significantly over the last four AEMR periods, with a peak of some 27 operational noise complaints received in the July 2004 to June 2005 period. The majority of these complaints related to night-time noise. In comparison, in the most recent period (July 2005 to June 2006) only four operational noise complaints were received.
- The operational noise impacts of the modified SCM would remain substantially the same, with the main driver for cumulative noise emissions being the approved BRNOC operation. The cumulative noise assessment identified three additional private residences in the noise management zone. However the cumulative noise emissions at these residences are predicted to only be marginally above the applicable intrusive criteria. Two of the residences were previously owned by SCPL and are subject to a private agreement between SCPL and the landowner. No additional residences have been identified as being in the noise affectation zone.
- The potential air quality emissions of SCM with the modification are expected to continue to comply with applicable dust deposition and suspended particulate criteria at the nearest private receptors.
- Continued implementation of SCPL's existing site water management procedures, erosion and sediment control measures and monitoring programmes would minimise the effect of the modification on surface water and groundwater resources.
- The modification is located in an area of cleared agricultural land and no threatened flora or fauna species, populations, ecological communities, or their habitats would be expected to be significantly affected by the proposed modification to the extent that the viability of a species, population, ecological community, or their habitats would be undermined.
- For privately owned residences which have views of the modification area, the potential visual impact of the proposed modification is predicted to be substantially the same, due to the distances involved and screening effects of existing vegetation and local topography.

- Waste rock from the Roseville West Pit would be deposited in the Roseville Pit Extension and therefore would not be hauled across Bowens Road as is currently undertaken for the Roseville Pit Extension. The number of truck crossings of Bowens Road would therefore be significantly reduced as only coal would regularly be hauled via the crossing.
- With the continued implementation of the existing environmental management measures and monitoring programmes, no significant additional effects on residents or existing environmental values are expected to result from the Roseville West Pit modification.

The environmental reviews conducted for the SEE indicate that the SCM incorporating the Roseville West Pit modification, would not result in a significant increase in environmental impacts when compared to the SCM (DA 23-98/99).

The continued application of the existing environmental management measures and monitoring programmes at the SCM would be expanded to include the Roseville West Pit modification.

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1 INTRODUCTION

1.1 GENERAL

This Statement of Environmental Effects (SEE) assesses a proposed modification to the existing Stratford Coal Mine (SCM) that is owned and operated by Stratford Coal Pty Ltd (SCPL), a subsidiary of Gloucester Coal Ltd (GCL).

SCM is located within the Gloucester Shire, approximately 90 kilometres (km) north of Newcastle, New South Wales (NSW) (Figures 1 and 2). GCL is a major landholder in the Stratford area (Figures 3A and 3B).

The proposal is known as the Roseville West Pit modification. The modification involves development of a small pit immediately adjacent to, and contiguous with, the existing Roseville Pit Extension (Figures 1 and 2). Existing supporting infrastructure at SCM would remain unchanged.

1.1.1 Background

Stratford Coal Mine Development History

The potential environmental impacts associated with the original development of the SCM were assessed in the *Stratford Coal Project Environmental Impact Statement* (the SCP EIS) (SCPL, 1994).

Development consent was granted for the mine by the Minister for Planning in December 1994 (DA 73/94). Construction of the SCM commenced in January 1995 and coal production began in June 1995. The SCM was originally an operation producing approximately 1.1 million tonnes per annum (Mtpa) of high quality coking and thermal coal over a 14 year mine life and included an open cut mine, rail loop, rail loading facilities, coal preparation plant (CPP) and associated facilities.

Since commencement of the operation, a number of alterations to the original SCM have been made, including the issue of a new Development Consent. A summary of these alterations is provided below:

- In 1996, an application to access the Roseville coal seam, increase the run-of-mine (ROM) coal mining rate from 1.8 Mtpa to 3.4 Mtpa and increase the saleable coal production rate from 1.1 Mtpa to 1.7 Mtpa was assessed via the *Proposal to Increase Saleable Coal Production to 1.7 Mtpa* (SCPL, 1996) and associated supporting information. The modification was approved by the Minister for Urban Affairs and Planning in July 1996.
- In 1998, a new development application was lodged to allow the SCM to accept Duralie Coal Mine ROM coal for processing through the SCM CPP and allow disposal of associated CPP rejects at SCM. This new DA was assessed by the *Proposed Modifications to Stratford Coal Mine Statement of Environmental Effects* (SCM Alterations SEE) (SCPL, 1998). The new DA was approved in February 1999 by the Minister for Urban Affairs and Planning (DA-23/98-99).
- In 2000, a modification to further increase saleable coal production was assessed via the *Stratford Coal Mine – Domestic Production Modification Statement of Environmental Effects* (SCPL, 2000). This modification increased saleable coal production to 2.3 Mtpa by increasing the ash content in the coal product, whilst maintaining the approved ROM mining rate at the SCM at 3.4 Mtpa. The modification to DA 73/94 was approved by the Minister for Urban Affairs and Planning in July 2000.

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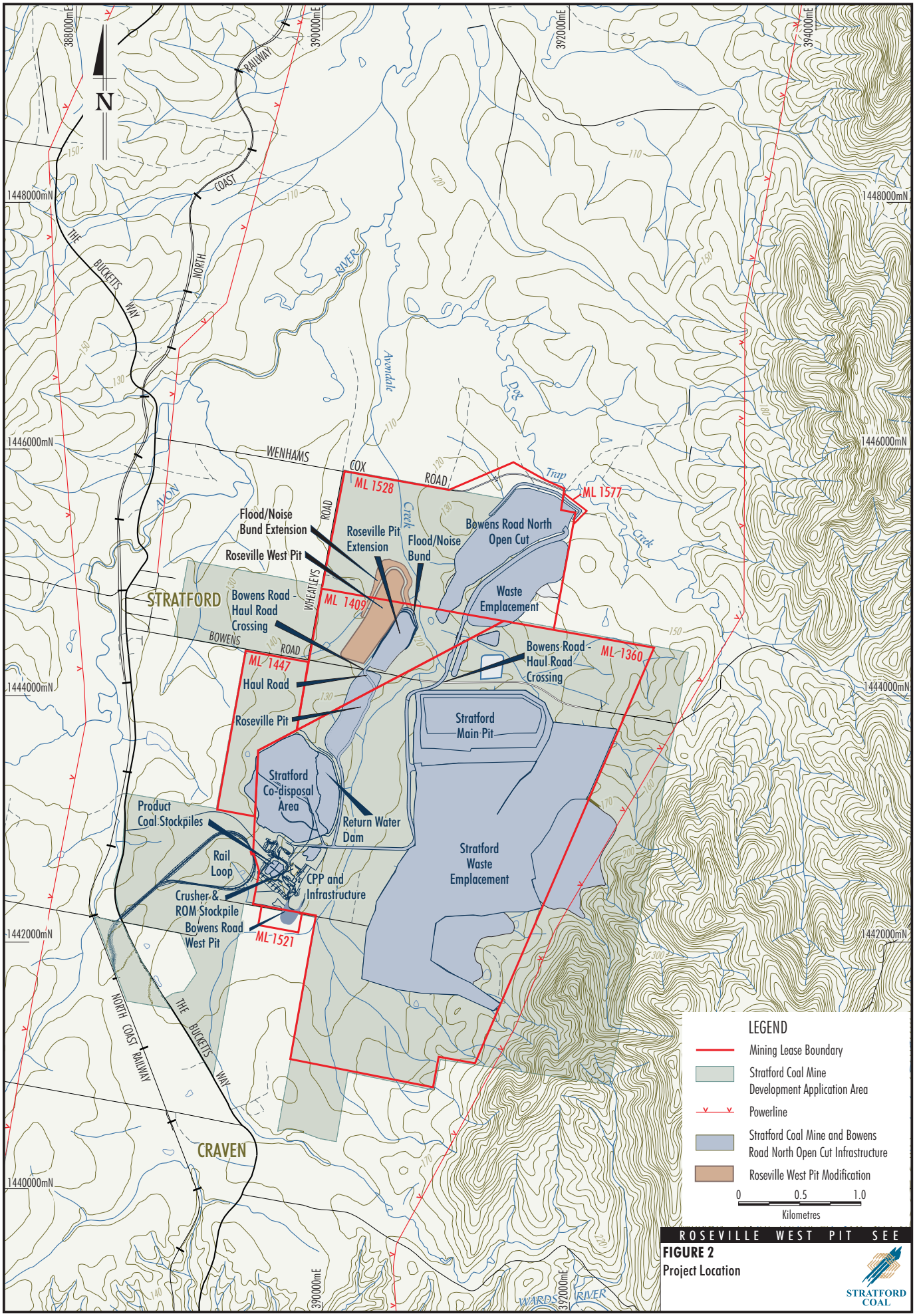

FIGURE 2
Project Location

STRATFORD COAL

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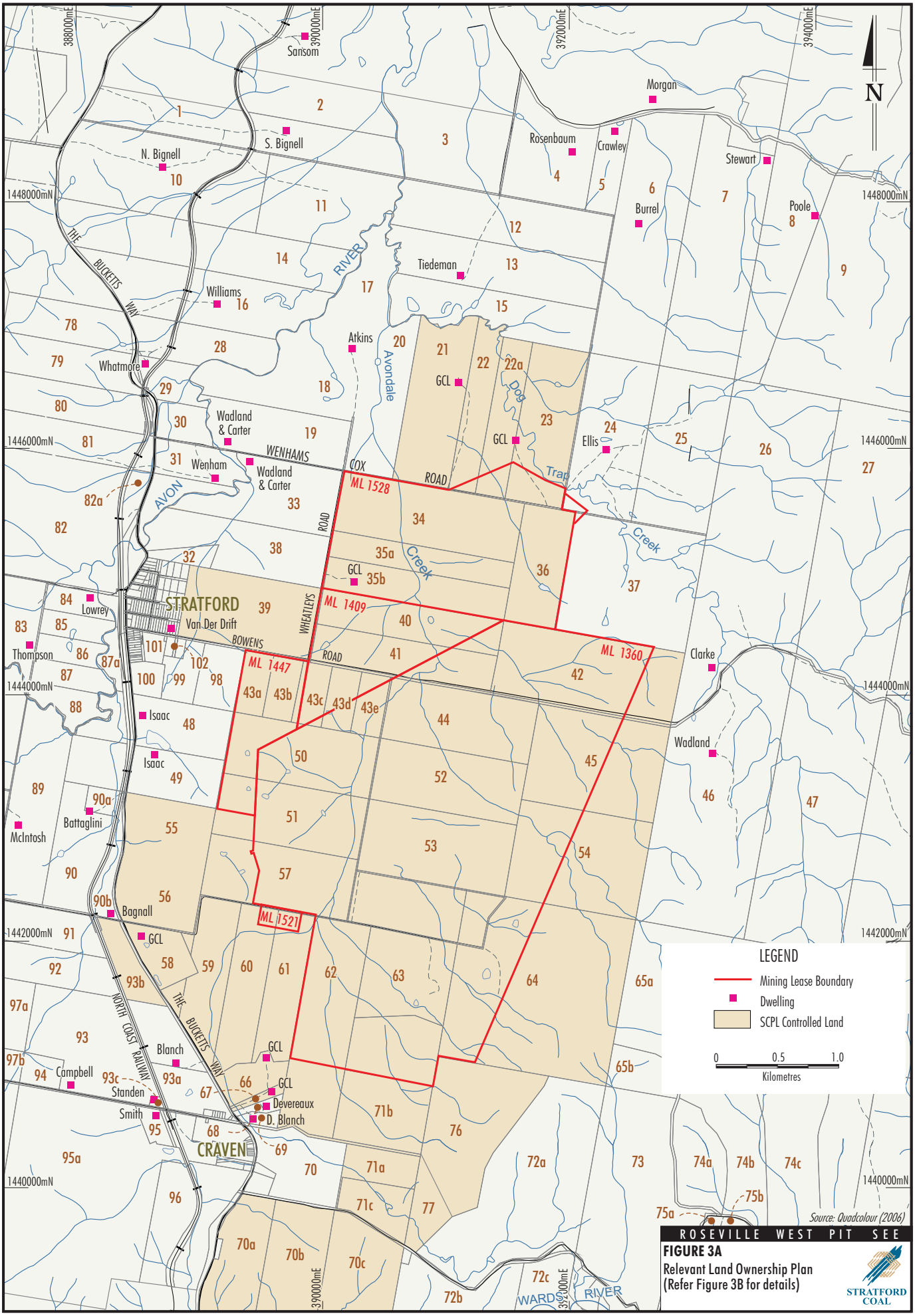


GCL-06-06 RWP SEE_003D

1. NE Bignell
2. Yarrawonga Pastoral Company Pty Ltd
3. Farley (Gloucester) Pty Ltd
4. DJ & DL Rosenbaum Pty Ltd
5. CD & TA Crawley
6. M Burrel
7. JE Woodford & MS Stewart (now Cobb)
8. SD Poole
9. AS Berecry
10. NE Bignell
11. NE Bignell
12. J Tiedeman
13. J Tiedeman
14. NJ Williams
15. J Tiedeman
16. NJ Williams
17. SJ & LM Atkins
18. SJ & LM Atkins
19. TW Wadland & YL Carter
20. SJ & LM Atkins
21. Gloucester Coal Limited
22. Gloucester Coal Limited
22a. Gloucester Coal Limited
23. Gloucester Coal Limited
24. SG Ellis & Sons Pty Ltd
25. SG Ellis & Sons Pty Ltd
26. RC & CA Clarke
27. WK Bowen
28. WK Bowen
29. Whatmore
30. FA Wenham
31. FA Wenham
32. KJ & ME Albert
33. TW Wadland & YL Carter
34. Gloucester Coal Limited
35a. Gloucester Coal Limited
35b. Gloucester Coal Limited
36. Gloucester Coal Limited
37. SG Ellis & Sons Pty Ltd
38. FA Wenham
39. Gloucester Coal Limited
40. Gloucester Coal Limited
41. Gloucester Coal Limited
42. Gloucester Coal Limited
43a. Gloucester Coal Limited
43b. Gloucester Coal Limited
43c. Gloucester Coal Limited
43d. Gloucester Coal Limited
43e. Gloucester Coal Limited
44. Gloucester Coal Limited
45. Gloucester Coal Limited
46. TW Wadland & YL Carter
47. RL Bagnall
48. AS Isaac
49. AS Isaac
50. Gloucester Coal Limited
51. Gloucester Coal Limited
52. Gloucester Coal Limited
53. Gloucester Coal Limited
54. Gloucester Coal Limited
55. Gloucester Coal Limited
Lease to BC & EA Bramley
56. Gloucester Coal Limited
Lease to BC & EA Bramley
57. Gloucester Coal Limited
Lease to BC & EA Bramley
58. Gloucester Coal Limited
59. Gloucester Coal Limited
Lease to BC & EA Bramley
60. Gloucester Coal Limited
61. Gloucester Coal Limited
62. Gloucester Coal Limited
63. Gloucester Coal Limited
64. Gloucester Coal Limited
65a. TW Wadland & YL Carter
65b TW Wadland & YL Carter
66. Gloucester Coal Limited
67. Gloucester Coal Limited
68. C Devereaux
69. DJ Blanch
70. HM Bastion
70a. Gloucester Coal Limited
70b. Gloucester Coal Limited
70c. Gloucester Coal Limited
71a. Gloucester Coal Limited
71b. Gloucester Coal Limited
71c. Gloucester Coal Limited
72a. SS Ellis
72b. SS Ellis
72c. C & C Bertolino
73. W Mantle
74a. MI Rounsley
74b. JA & DS Gartrell
74c. NJ Porter
75a. AJ & LM Hancock
75b. PB Harrison
76. Gloucester Coal Limited
77. Gloucester Coal Limited
78. WK Bowen
79. WK Bowen
80. FA Wenham
81. FA Wenham
82. GL Harris
82a. JH Pickett
83. M Thompson
84. KJ & R Lowrey
85. KJ & R Lowrey
86. KJ & R Lowrey
87. KJ & R Lowrey
87a. KJ & R Lowrey
88. AS Isaac
89. EAR & RK McIntosh
90. RK McIntosh
90a. WJ & JM Battaglini
90b. KB Bagnall
91. SH Morgan
92. SH Morgan
93. AR & AM Campbell
93a. LA Blanch
93b. Gloucester Coal Limited
Lease to BC & EA Bramley
93c. PA Standen
94. EA Yates
95. T Smith
95a. R Smith & SC Davern
96. R Smith & SC Davern
97a. LJ & IR Dillon
97b. GL & MF Wallace
98. Crown Land - Forestry Reserve
99. RV & LM Orlandi
100. Crown Land - Travelling Stock Reserve
101. Gloucester Shire Council
102. Crown Land - Reserve for Cemetery

Source: Quadcolour (2006)

ROSEVILLE WEST PIT SEE

FIGURE 3B

Relevant Land Ownership List

STRATFORD COAL

- In July 2003, DA 73/94 was relinquished and DA-23/98-99 was commenced. The processing of Duralie ROM coal at Stratford was commenced at this stage.
- In 2003, a modification of DA-23/98-99 to extend the approved Roseville Pit by some 600 metres (m) to access approximately 0.25 million tonnes (Mt) of additional ROM coal (Roseville Pit Extension) and to re-instate the 2.3 Mtpa saleable coal production rate (as per the 2000 modification to the DA 73/94 consent) was assessed via the *Stratford Coal Mine Modification Statement of Environmental Effects* (SCM 2003 SEE) (SCPL, 2003a). As a component of this assessment an operational noise assessment compliant with the NSW Industrial Noise Policy (NSW INP) (EPA, 2000) was conducted. The Roseville Pit Extension was approved under delegation by the Minister for Planning in January 2006.

SCM Interaction with Bowens Road North Open Cut Coal Mine

The Bowens Road North Open Cut Coal Mine (BRNOC) is located immediately to the north of the SCM and was assessed by the Bowens Road North Project Environmental Impact Statement (BRN EIS) (SCPL, 2001a). The BRNOC was approved by the Minister for Urban Affairs and Planning in July 2001 and operates under a separate Development Consent (DA 39-02-01). ROM coal from BRNOC is transported to the SCM CPP where it is blended with SCM coal and transported off-site for sale.

BRNOC is a daytime operation and coal mining, coal handling and stockpile operations are carried out between 7.00 am and 7.00 pm. BRNOC is consented to produce up to 0.9 Mt of ROM coal per annum. It is anticipated that the BRNOC will operate until 2011.

SCM Interaction with Duralie Coal Mine

Through its subsidiary company Duralie Coal Pty Ltd (DCPL), GCL also owns the Duralie Coal Mine (DCM) which is located some 20 km south of the SCM (Figure 1) and supplies ROM coal to the Stratford CPP.

The potential environmental impacts associated with the development of the DCM were assessed in the *Duralie Coal Environmental Impact Statement* (DCPL, 1996). The Duralie Coal Project included an open cut mine, rail loop, CPP and associated facilities. Following a Commission of Inquiry, the NSW Minister for Urban Affairs and Planning granted development consent for the mine in August 1997. In 1998, a new development application was lodged with the Department of Urban Affairs and Planning (DUAP) to allow DCM ROM coal to be railed to SCM for washing in the existing Stratford CPP. The environmental implications of the modification were assessed via the *Proposed Alterations to Duralie Coal Project Statement of Environmental Effects* (Duralie SEE) (DCPL, 1998). The alteration to DCM was approved in February 1999 by the Minister for Urban Affairs and Planning and a new consent was issued.

DCM commenced coal production in 2003. ROM coal mined at DCM is transported by rail to SCM on the North Coast Railway. DCM ROM coal is unloaded at the SCM and washed in the CPP. Product coal is then railed to market with that produced from SCM and the BRNOC.

1.1.2 Overview of the Proposed Modification

The Roseville West Pit modification comprises the following components (Figure 2):

- a small open pit (approximately 850 m long and 250 m wide) to access approximately 0.7 Mt of ROM coal, predominantly from the Cloverdale Seam, immediately to the west of and adjoining the existing Roseville Pit Extension;
- construction of associated flood and noise bunding on the north-western Roseville West Pit boundary, which will be a continuation of the existing Roseville Pit Extension bunding;
- backfilling of the Roseville Pit Extension with waste rock generated from the development as well as in-pit disposal within the Roseville West Pit;
- use of the SCM mobile fleet that currently operate the Roseville Pit Extension, with provision for additional fleet items to be used during initial waste rock (overburden) stripping; and
- mining between the hours of 7.00 am and 10.00 pm (as per the existing operation in the Roseville Pit Extension).

The Roseville West Pit modification is located on land owned by GCL (Figures 3A and 3B) and within the original SCM Development Application area and current SCPL Mining Leases (Figure 2).

Open Pit

The Roseville West Pit is a generally rectangular open pit located to the north of Bowens Road and to the immediate west of the approved Roseville Pit Extension (Figure 2). Additional ROM coal that can be accessed by developing the Roseville West Pit is estimated to be approximately 0.7 Mt.

Waste Rock Production

The Roseville West Pit modification would result in the production of an estimated 3.25 Mbcm of waste rock. The waste rock material would be utilised to backfill the Roseville Pit Extension and to partially backfill the Roseville West Pit via in-pit dumping. No out-of-pit dumps are proposed.

Coal Production

The current ROM coal production rate of the Roseville Pit Extension (up to approximately 5,000 tonnes (t) per week) would also apply to the Roseville West Pit.

The overall ROM coal production rate at SCM with the Roseville West Pit modification and BRNOC would remain within the consented 2.1 Mtpa rate. Saleable coal production from the SCM (including DCM coal) would remain within the existing consented 2.3 Mtpa rate.

Infrastructure

No significant changes to the existing SCM infrastructure are required for the Roseville West Pit. The existing level crossing of Bowens Road associated with the Roseville Pit Extension would be utilised when mining the Roseville West Pit. No changes to the CPP or train loading infrastructure are required.

Table 1 provides a comparative summary of the original, currently approved and modified Projects.

Table 1
Comparison of the Approved and Modified Projects

Project Feature	SCM as per 1999 Approval (DA 23-98/99)	Approved SCM Incorporating Roseville Pit Extension	Modified SCM with Roseville West Pit
Life of Mine ROM Coal	• 23.5 Mt.	• 23.55 Mt.	• Up to approximately 24.25 Mt.
Annual ROM Coal Production	• Up to 2.1 Mtpa.	• Unchanged.	• Unchanged.
Coal Processing	• Coal preparation plant (CPP) processing of up to 3.4 Mtpa of ROM coal (from both SCM and DCM).	• Unchanged.	• Unchanged.
Annual Saleable Coal Production	• Up to 1.7 Mtpa.	• Up to 2.3 Mtpa[1].	• Unchanged.
Open Cuts	• Stratford Main Pit and Roseville Pit.	• Extension of Roseville Pit.	• Addition of Roseville West Pit.
Waste Emplacement	• Combination of in-pit and out-of-pit waste emplacement.	• Unchanged – in-pit waste emplacement.	• Unchanged – in-pit waste emplacement.
Total Waste Mined	• 69 million bank cubic metres (Mbcm).	• 70 Mbcm.	• 73.25 Mbcm.
Mine Fleet	• Excavators, haul trucks, water trucks, dozers, graders, scrapers, drills. • Approximately 20 items.	• Unchanged. • Unchanged. Fleet now reduced due to cessation of mining in the Stratford Main Pit (Figure 2).	• Unchanged. • Unchanged. Fleet now reduced due to cessation of mining in the Stratford Main Pit (Figure 2).
General Infrastructure	• Access roads, electricity supply and distribution, rail loop, CPP, train loading and unloading infrastructure, ROM coal stockpiles, and coal handling equipment.	• Unchanged.	• Unchanged.
Workforce	• Up to 110 people.	• Unchanged.	• Unchanged.
Life of Mine	• 11 years.	• 14 years from grant of Mining lease.	• 17 Years from grant of Mining lease.
DCM Train Unloading Hours	• 7 am-10 pm.	• Unchanged.	• Unchanged.
Operating Hours	• Mine and CPP operating 24 hours per day 6 days per week. • Roseville Pit only mined between 7.00am and 10.00pm.	• Unchanged. • Roseville Pit Extension only mined between 7.00 am and 10.00 pm.	• Unchanged. • Roseville West Pit only mined between 7.00 am and 10.00 pm.
Water Supply	• Pit inflows and the on-site water management system.	• Unchanged – pit inflows managed within existing SCM water management system.	• Unchanged – pit inflows managed within existing SCM water management system.
Road Transport Requirements	• Road traffic associated with the workforce, consumables, visitors and general deliveries and maintenance vehicles.	• No increase in transport rates.	• No increase in transport rates.

As shown in Table 1, SCM with the Roseville West Pit modification is substantially the same development as SCM as approved under DA 23-98/99. An overview of the approved SCM operation is provided in Section 2. A description of the modification is provided in Section 3.

[1] This rate of production was originally approved in 2000, via the modification of the then operating SCM consent (DA 73/94). Subsequently this consent was relinquished, and DA 23-98/99 was acted upon, however, the limits on production under the 1999 consent also required modification to bring them into line with the approved production limits under DA 73/94 (as modified in 2000).

1.2 LEGISLATIVE FRAMEWORK

The original Development Application (DA) for the SCM was assessed under Part 4 of the *Environmental Planning and Assessment Act* (EP&A Act) *1979*. The SCM was approved by the Minister in December 1994, but as described in Section 1.1, a new consent was obtained following a new DA to allow rail unloading and CPP treatment of DCM ROM coal at SCM in 1999. Attachment 1 contains a copy of the current Development Consent for SCM (DA-23/98-99).

In August and September 2006, SCPL consulted with the Department of Planning (DoP) with regard to defining the process for seeking the necessary approvals for the Roseville West Pit modification. Based on this consultation, this SEE has been prepared under Section 96(2) of the EP&A Act (Attachment 2). Section 96(2) of the EP&A Act states:

> *A consent authority may, on application being made by the applicant or any other person entitled to act on a consent granted by the consent authority and subject to and in accordance with the regulations, modify the consent if:*
>
> *(a) it is satisfied that the development to which the consent as modified relates is substantially the same development as the development for which consent was originally granted and before that consent as originally granted was modified (if at all)..*

This SEE describes the Roseville West Pit modification and provides justification for the conclusion that the Modified Project is substantially the same as the Original Project (DA 23-98/99).

Local Environmental Plan

SCM is located in the Gloucester Local Government Area (LGA).

Gloucester Local Environment Plan (LEP)

Clause 9(1) of the Gloucester LEP relevantly provides:

> *Except as otherwise provided by this plan, the Council shall not grant consent to the carrying out of development on land to which this plan applies unless the Council is of the opinion that the carrying out of the development is consistent with the objectives of the zone with which the development is proposed to be carried out.*

The Roseville West Pit modification is located within an area zoned 1(a) (Rural Zone) in the Gloucester LEP under the EP&A Act. The objectives of Zone 1 (a) are as follows:

- *a) to encourage continued growth in the area's rural economic base,*
- *b) to protect and conserve agricultural land and to encourage continuing, viable and sustainable agriculture,*
- *c) to maintain the scenic amenity and landscape quality of the area,*
- *d) to promote the protection and preservation of natural ecological systems and processes,*
- *e) to provide proper and coordinated use and protection of rivers and water catchment areas,*
- *f) to promote provision of roads that are compatible with the nature and intensity of development and the character of the area,*
- *g) to allow mining where environmental and cultural impacts do not exceed acceptable limits and the land is satisfactorily rehabilitated after mining,*
- *h) to recognise and encourage agriculture as a significant contributor to the area,*
- *i) to encourage other forms of development, including tourism, that are compatible with agricultural activities and do not create undesirable environmental and cultural impacts.*

The proposed modification is consistent with the objectives of Zone 1(a), as in accordance with objective (g), the environmental review conducted for this SEE (Section 4) indicates that the potential environmental impacts of the mining development associated with the Roseville West Pit modification would be within acceptable limits and Section 5 describes the satisfactory rehabilitation of mine landforms at the cessation of the modification.

Under clause 11 of the Gloucester LEP "Mines" are permissible on lands zoned Zone 1(a) (Rural Zone) with development consent.

In addition, Clause 35 of the Gloucester LEP requires that development on flood liable land (land inundated by the 1% Annual Exceedance Probability (AEP) flood event or as otherwise defined in any Flood Management Plan adopted by Council) should not be consented unless the consenting authority is satisfied the development will not:

a) risk the safety of the community or any residents of the land, and

b) impede the flow of water or increase the effect of the flood on the locality, and

c) adversely affect the water table in the locality,

and unless the Council has had regard to its Floodplain Management Plan and the provisions of the Floodplain Management Manual prepared by the New South Wales Government.

The Roseville West Pit modification area is located within the floodplain of Avondale Creek, however Gloucester Shire Council (GSC) has indicated during consultation undertaken during the preparation of this SEE that the pit is not located with the GSC *Floodplain Management Plan* area.

The *Floodplain Development Manual* (DIPNR, 2005) supports the NSW Governments *Flood Prone Land Policy* in providing a framework for implementing the policy to meet its primary objective. The Floodplain Management Manual describes the primary objective of the policy is to:

"reduce the impact of flooding and flood liability on individual owners and occupiers of flood prone property, and to reduce private and public losses from floods, utilising ecologically positive methods wherever possible".

SCPL has demonstrated over the life of the SCM that it can operate its mining operations effectively in the floodplain of Avondale Creek. The land adjacent to the Roseville West Pit modification area is owned by SCPL.

The north-western boundary of the open cut would be bunded and the bund would be contiguous with the existing Roseville Pit Extension bunding, to minimise the potential for flood inflows into the open pit. The bunds and associated infrastructure would be set back a minimum of 40 m from Avondale Creek. The Roseville West Pit limit would be set back more than 80 m from the creek.

Gilbert and Associates Pty Ltd (Gilbert and Associates) have reviewed the water resources implications of the proposed modification and have concluded that the extension of the existing Roseville Pit Extension bunding is relatively minor and would not significantly alter the potential for impacts associated with flooding.

State Environmental Planning Policy No. 11 (Traffic Generating Developments)

State Environmental Planning Policy (SEPP) 11 requires the consent authority to refer a copy of relevant development applications to the Roads and Traffic Authority. The Roseville West Pit modification would not generate any significant change to the SCM traffic flows (Section 4.10).

State Environmental Planning Policy No. 33 (Hazardous and Offensive Development)

Clause 13 of SEPP 33 requires the consent authority, in considering a DA for a potentially hazardous or a potentially offensive industry, to take into account:

> *(c) in the case of development for the purpose of a potentially hazardous industry—a preliminary hazard analysis prepared by or on behalf of the applicant, and*
>
> *(d) any feasible alternatives to the carrying out of the development and the reasons for choosing the development the subject of the application (including any feasible alternatives for the location of the development and the reasons for choosing the location the subject of the application)…*

The SCM operates in accordance with the environmental management plans and management procedures (Section 2.10) required by the Development Consent (Attachment 1). These plans and procedures have been developed by SCM to minimise the environmental risks associated with operation of the mine.

The Roseville West Pit modification does not significantly alter the consequences or likelihood of a hazardous event occurring at the SCM, as the operational activities on-site would be generally unchanged. Notwithstanding, environmental management plans and procedures would be updated to include the Roseville West Pit modification where relevant (Section 4).

State Environmental Planning Policy No. 44 (Koala Habitat Protection)

SEPP 44 requires the consent authority for any DA in certain LGAs (including the Gloucester LGA) to consider whether land subject to a DA is "*potential Koala habitat*" or "*core Koala habitat*".

An assessment of potential and core Koala habitat was conducted in the BRN EIS. The assessment concluded that the land subject to the BRNOC DA did not have any preferred Koala forage trees in accordance with Schedule 2 of SEPP 44 and therefore it was concluded that the provisions of SEPP 44 did not apply to the BRNOC. The BRNOC flora assessment included the Roseville West Pit modification area (vegetation mapped as cleared agricultural land), and therefore the provisions of SEPP 44 are also not considered applicable to the Roseville West Pit modification.

State Environmental Planning Policy No. 45 (Permissibility of Mining)

The objective of SEPP 45 is to facilitate development for the purposes of mining within NSW. SEPP 45 only applies where mining is only permissible with development consent in the circumstances where the consent authority must be satisfied as to certain provisions or matters. SEPP 45 permits mining without such provisions having to be satisfied.

State Environmental Planning Policy No. 55 (Remediation of Land)

SEPP 55 aims to provide a State-wide planning approach to the remediation of contaminated land. Under SEPP 55, planning authorities are required to consider the potential for contamination to adversely affect the suitability of the site for its proposed use.

A consent authority must consider the following under clause 7(1):

(a) whether the land is contaminated, and

(b) if the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purpose for which the development is proposed to be carried out, and

(c) if the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land will be remediated before the land is used for that purpose.

Further under clause 7(2), before determining an application for consent to carry out development that would involve a change of use of land, the consent authority must consider a report specifying the findings of a preliminary investigation of the land concerned (carried out in accordance with the contaminated land planning guidelines).

Because the Roseville West Pit modification is within existing SCM Mining Leases (Figure 2) and the existing DA area, no change of landuse is proposed and no preliminary land contamination investigation is required.

Environment Protection and Biodiversity Conservation (EPBC) Act, 1999

The primary objective of the Commonwealth *Environment Protection and Biodiversity Conservation Act, 1999* (EPBC Act) is to provide for the protection of those aspects of the environment that are of *"national environmental significance"*. The EPBC Act establishes a scheme requiring environmental assessment and approval of proposals likely to impact significantly upon such matters, which in the Act are termed *"protected matters"*.

The EPBC Act specifies seven matters of national environmental significance. These are:

- World Heritage properties;
- National heritage places;
- Ramsar wetlands of international importance;
- listed threatened species and communities;
- migratory species protected under international agreements;
- nuclear actions; and
- the Commonwealth marine environment.

A proposal that is likely to have a significant impact on a matter of environmental significance is described in the EPBC Act as a *"controlled action"*. A person proposing to take an action that may be a controlled action is required by the EPBC Act to refer the proposal to the Commonwealth Minister for the Environment. The Minister then decides whether or not the action is a controlled action.

The proposed modification is not located on a World Heritage property, National Heritage Place or Ramsar wetland area. It is not a nuclear action, nor would it impact on the Commonwealth marine environment.

Eight Part Tests of Significance were conducted under Part 5A of the EP&A Act for a number of threatened species listed in the EPBC Act for the BRN EIS. The Eight Part Tests concluded that the BRNOC would not have a significant impact on any threatened flora or fauna species or communities listed under the Schedules of the EPBC Act.

The Roseville West Pit modification area is located within an area of cleared agricultural land. Previous flora and fauna surveys and assessments conducted in the modification area for the BRNOC (including consideration of species listed under the Schedules of the EPBC Act) did not identify any threatened species. The Roseville West Pit modification has therefore not been referred to the Commonwealth Minister for the Environment for consideration under the EPBC Act, as it is considered that no "*controlled action"* is proposed.

Other Approvals

In addition to the modified Development Consent which is required to be obtained from the Minister for Planning, the following other approvals may potentially be required as a result of activities associated with the proposed modification:

- A variation to the Environment Protection Licence (EPL) (No.5161) may be required from the Department of Environment and Conservation (DEC).
- A modification or addendum to the *Mining Operations Plan for Roseville Extension Open Cut as a satellite pit for the Stratford Coal Mine* (RPE MOP) (SCPL, 2006a) would be sought from the Director General of the Department of Primary Industries - Minerals and Petroleum (DPI-MP).
- DNR may elect to vary the current water license that covers the Roseville Pit Extension (under Section 116 of the *Water Act, 1912*) to address the additional open pit.

1.3 STRUCTURE OF THIS DOCUMENT

This SEE is structured as follows:

Section 1	Provides an overview of the Roseville West Pit modification, the legislative and approval requirements and the consultation undertaken in relation to the proposed modification.
Section 2	Provides a description of the existing SCM.
Section 3	Provides a description of the Roseville West Pit modification.
Section 4	Provides a review of the existing environment, assesses the proposed modification and describes how the existing SCPL environmental management systems and measures to manage and monitor any potential impacts.
Section 5	Outlines the rehabilitation strategies and environmental management and monitoring of the Roseville West Pit modification.
Section 6	Conclusion.
Section 7	References.

Attachment 1 and Appendices A to C provide supporting information as follows:

Attachment 1	Stratford Coal Mine - Development Consent Conditions
Appendix A	Roseville West Pit Modification Operating Noise and Blasting Impact Assessment
Appendix B	Air Quality Assessment – Roseville West Pit Modification
Appendix C	Roseville West Pit Modification – Water Management Assessment

1.4 CONSULTATION

SCPL has developed and implemented a consultation programme for the SCM. The key objectives of the programme are to:

- inform government and public stakeholders about the progress and nature of its mining operations;
- recognise and respond to local concerns or interests; and
- continue dialogue between SCPL and stakeholders that commenced during the development of the SCP EIS.

Consultation with the community has been conducted by SCPL since the mid 1990's. A summary of consultation activities conducted by SCPL for the Roseville West Pit modification is presented below.

1.4.1 Community Consultative Committee

A Community Consultative Committee (CCC) is in place and meets quarterly to discuss environmental management of the SCM and BRNOC and discuss future developments when relevant. The CCC includes representatives from the following organisations:

- GSC;
- SCPL (two representatives); and
- local landholders (five representatives including representatives of two community organisations).

The CCC is briefed regarding SCPL's longer term development plans for SCM and DCM and regional exploration activities.

1.4.2 State and Local Government Agencies

Consultation with the State and local government agencies about SCPL and DCPL development planning is ongoing. A DoP representative made a site visit to SCM in September 2005, where the environmental approval processes applicable to future development proposals was discussed.

Meetings and discussions with State and local government agencies included the following:

- DPI-MR representatives attended a site inspection and were provided an overview of SCPL's future development plans in November 2005.
- SCPL wrote to the DoP advising the department of the Roseville West Pit modification in August 2006 and the proposed timing for lodgement.
- Discussions were held with a range of representatives of state and local government agencies (ie. Department of Natural Resources [DNR], GSC, Department of Environment and Conservation [DEC], DPI-Minerals) in September 2006 to discuss their requirements in regard to the modification prior to finalisation of the SEE.

1.4.3 Summary of Issues Raised

Issues raised by regulators with respect to the Roseville West Pit modification included the following:

- The DNR requested advice with respect to management of the geotechnical stability of the Roseville West Pit highwall/endwall and its proximity to Avondale Creek (Section 4.6.1).
- The DPI-MP and DoP requested that SCPL commit to backfilling the Roseville West Pit to avoid having an additional post mining void at the cessation of the SCM and requested advice on the proposed post-mining landform/vegetation (Sections 3.5 and 5.1 respectively).
- DoP and GCL requested that potential noise and air quality impacts of the modification be assessed (Sections 4.3 and 4.4 and Appendices A and B).
- DoP and GCL requested that some consideration be given to the potential impacts of the extended operation of the western haul road crossing of Bowens Road (Section 4.10).
- DoP requested advice on past Aboriginal heritage surveys in the SCM/BRNOC area and the relationship of the Roseville West Pit modification area to the past surveys (Section 4.5.1).

In addition, concerns raised by local landholders with respect to previous modifications that are of relevance to the Roseville West Pit modification include consideration of potential noise/air quality and blasting impacts (Sections 4.3 and 4.4 and Appendices A and B), water resources (Section 4.6 and Appendix C) land values and ease of sale (Section 4.11), and traffic issues with Bowens Road (Section 4.10).

1.5 JUSTIFICATION OF THE PROPOSAL

The Roseville West Pit modification would provide a number of benefits. These benefits would include:

- continued employment of approximately 10-13 people who currently operate the Roseville Pit Extension; and
- recovery of approximately 0.7 Mt of additional ROM coal from the new pit that would generate export revenue and royalties to the State of NSW.

Sections 4 and 5 describe the potential environmental impacts of the proposed modification and discuss how the environmental management and monitoring programmes at the SCM would be applied to manage the proposed modification. These sections provide a review of the potential environmental impacts of the Roseville West Pit modification.

2 OVERVIEW OF THE STRATFORD COAL MINE

This Section provides a description of the existing SCM.

A development history of the SCM is provided in Section 1.1.1.

2.1 GEOLOGY

The SCM coal resources form part of the Gloucester Basin and lie within a north-south trending synclinal structure approximately 40 km long by 13 km wide. The basin is of Permian age and contains conglomerate, sandstone, siltstone, mudstone and coal. The coal measures occupy the valley floor while the hills on either side are composed of folded volcanics of Carboniferous age. The SCM lies within the central eastern flank of the Gloucester Basin (SCPL, 2001a).

Stratford Main Deposit (Completed)

The SCM main deposit formed a syncline plunging gently to the north with steeply dipping sides on both the eastern and western limbs. Complex faulting had occurred along the flanks of the deposit, particularly on the eastern side, where low angle thrust faults caused stacking of seams. The deposit widened to the north with the central, relatively flat part of the syncline about 1 km across where the northern extent of the deposit was defined by an east-west fault (SCPL, 2001a). Mining at the main deposit commenced in 1995 and was completed in mid 2003.

Roseville and Cloverdale Seams (Currently Being Mined in the Roseville Pit Extension)

A small reserve of Roseville seam coal occurs within the SCM development area. Mining of this seam in the Roseville Pit and Roseville Pit Extension has provided a source of high quality, low dilution raw coking coal for blending with CPP feed coal from the SCM main deposit and DCM. The Cloverdale seam is essentially a duplication of the Roseville seam slightly further west and is also mined in the Roseville Pit Extension. The coal is present in thin splits 0.2 to 2 m in thickness and both coal seams dip at approximately 45 degrees.

2.2 MINING

Mining at the SCM has been optimised during development of the main deposit where SCPL expertise in mining geologically complex seams was developed. A combination of selective mining using excavators and dozers and bulk mining using dozers is utilised at BRNOC and SCM.

The approved mining rate at the SCM is up to 2.1 Mtpa of ROM coal. The approved mobile mining fleet for the SCM is outlined in Table 2.

Table 2
Approved SCM Mobile Fleet

No. of Items	Fleet Item
1	Drills
2	Excavators – Coal
2	Excavators – Waste
6	Caterpillar 789 Rear Dump Truck
6	Caterpillar 785 Rear Dump Truck
2	Dozer In Pit/Dump
1	Dozer (Stockpiles)
1	Front End Loader
1	Grader
1	Water truck

After: Richard Heggie Associates Pty Ltd (1998)

As stated in the BRN EIS, the SCM mine fleet has been reduced significantly since the closure of mining operations in the SCM Main Pit in 2003.

Table 3 provides a summary of the SCM mobile fleet as at June/July 2006.

Table 3
Mobile Fleet as at June/July 2006

No. of Items	Fleet Item
1	Volvo A25D Articulated Dump Truck
1	Volvo 250D Articulated Dump Truck
5	Volvo A30D Articulated Dump Truck
1	Caterpillar 140H Grader
1	Caterpillar D250E Water Cart
1	Excavator - Komatsu PC450
1	Excavator – Komatsu PC300
1	Caterpillar D9N Track Dozer
1	Caterpillar 988 Front End Loader (ROM Pad)
1	Caterpillar D10 (ROM/Product Stockpiles)

After: Vipac (2006a; 2006b): SCPL, 2006

The Roseville Pit Extension produces up to approximately 5,000 t per week or 0.25 Mt per annum of ROM coal. The BRNOC produces up to 0.9 Mt of ROM coal per annum.

SCM fleet items operate both the Roseville Pit Extension and also periodically recover coal from the previous SCM reject co-disposal area (Figure 2) for re-processing of this previous waste material as thermal coal feed to the CPP.

As the Roseville Pit Extension seams are thin and steeply dipping, coal is mined selectively with the small excavator and truck fleet (Table 3). The haul trucks cross Bowens Road at the approved level crossing to the south of the Roseville Pit Extension (Figures 2 and 4).

ROSEVILLE WEST PIT SEE

FIGURE 4
Aerial Photograph
(August 2006)

STRATFORD COAL

GCL-06-06 RWP SEE_005E

2.3 MANAGEMENT OF WASTE ROCK

The minor quantities of waste rock generated by the Roseville Pit Extension (approximately 1.8 million bank cubic metres [Mbcm]) are hauled a short distance over Bowens Road to the Roseville Pit or will be used as backfill material in the Roseville Pit Extension.

As described in the SCP EIS, overburden and interburden (waste rock) samples that were collected from the SCM main deposit for testwork were geochemically relatively benign and the small volumes of materials that had some potential for acid generation (Avon 1 roof material) were relatively easily managed during ROM operations. Waste and water monitoring during the development of the SCM and BRNOC has not indicated any significant issues with the geochemistry of waste rock materials.

Similarly, geochemical assessment of mine waste rock to be encountered during the development of the BRNOC was undertaken for the BRN EIS to identify waste rock types and suitable handling strategies. Acid forming potential, multi-element scans and element solubility testwork results classified mine waste rock material at BRNOC as non-acid forming (NAF) and unlikely to generate environmentally harmful leachate when exposed to surface oxidation processes (SCPL, 2001a).

Construction of out-of-pit waste emplacements has entailed the progressive pre-stripping of the emplacement footprint and systematic development of each emplacement by dozer pushing and truck dumping, followed by progressive rehabilitation (Section 2.9). Extensive in-pit waste emplacements have also been utilised at both SCM and BRNOC to minimise the disturbance area required for out-of-pit emplacements.

2.4 HAUL ROAD CROSSING OF BOWEN'S ROAD

As a component of the Roseville Pit Extension, a second haul road crossing of Bowens Road (ie. in addition to the BRNOC crossing) was approved and constructed (Figure 2). The haul road crossing has been developed in consultation with the GSC and is subject to the Bowens Road Traffic Management Plan. The intersection is priority controlled with traffic on Bowens Road giving way to haul road traffic. This crossing would be used for the modification and would not require any alteration.

2.5 COAL HANDLING AND PREPARATION PLANT

The SCM CPP processes both SCM and DCM ROM coal to produce saleable thermal and coking coal for domestic and export markets.

The CPP is a two stage 475 tonnes per hour plant that comprises the following components:

- primary (coking coal) and secondary (thermal coal) circuits;
- coal breaking, coal crushing, dense medium cyclone, classification cyclone, Jameson cell, teetered bed separator and spiral separation equipment;
- conveyors, bins and associated monitoring and maintenance equipment;
- internal bypass systems that minimise the washing of thermal coals;
- a partially cladded CPP building; and
- a co-disposal system for reject disposal on-site in the SCM Main Pit void.

2.6 RAIL UNLOADING AND LOADING

Both rail unloading and rail loading conveyor systems are in place at the CPP to allow unloading of DCM ROM coal for treatment at the CPP and loading of blended BRNOC, DCM and SCM coals for transport to domestic or export markets.

2.7 WATER SUPPLY AND WATER MANAGEMENT

The SCM and BRNOC have an integrated water management strategy. The key components of the strategy are:

- separation of undisturbed area runoff from disturbed area runoff;
- collection and reuse of surface runoff from disturbed areas (including mining pre-strip areas, waste emplacements and haul roads);
- design of sediment dams to contain runoff generated from the 1 in 20 year, 72 hour rainfall event;
- capture and on-site containment of mine water, consisting of any groundwater inflows and/or surface water collection in the open cuts; and
- reuse of captured and contained mine water for dust suppression and CPP supply.

The main water supply storage for the CPP is the 500 million litre (ML) Return Water Dam, while the major on-site storages comprise the Stratford East Dam (2,850 ML) and SCM Main Pit (37,000 ML).

The SCM water management system operates under a surplus water balance, which means that over time there is a trend for increasing water storage on-site. The major water inflow to the site is rainfall-runoff generated from operational areas.

In 2001 SCPL applied to the EPA for a variation of EPL 5161 to permit the controlled release of contained waters from Stratford East Dam to Avondale Creek. The application under Section 58 of the *Protection of the Environment Operations Act, 1997* was approved as a trial in 2001 and when environmental conditions were suitable, water was released under the trial approval until 2003, when the SCM Main Pit void became available for excess water storage.

In 2006, SCPL applied to revise EPL 5161 to formalise the activity by removing the trial status. It is understood that the variation application is currently being considered by the DEC.

2.8 GENERAL INFRASTRUCTURE

The following summarises general infrastructure at the SCM:

- Access to SCM is via the existing mine access road located off The Bucketts Way (Figure 2).
- The SCM rail loop and associated infrastructure provides a mechanism for the rail transport of DCM ROM coal to SCM and for the transport of product coal from SCM to market.
- The SCM electricity supply and distribution system is fed by two 33 kilovolt (kV) distributor lines running along The Bucketts Way. A private substation provides an 11 kV supply to the SCM which is reticulated around the site at variable voltages according to requirements.
- Primary buildings include the CPP, administration, workshop, stores and ablution buildings.

- Heavy vehicle servicing, parking and washdown facilities are available.
- Explosives, such as initiating products and detonators, are stored and used at the SCM in accordance with existing safety and operational procedures and Australian Standard (AS) 2187: *Explosives – Storage, Transport and Use*.
- The SCM diesel storage tanks (220,000 L capacity) are operated in accordance with the requirements of AS 1940: *The Storage and Handling of Flammable and Combustible Liquids*.

2.9 REHABILITATION

As described in the SCM Alterations SEE, the primary objectives of the SCM rehabilitation programme are the minimisation of erosion and reinstatement of pre-mining land capability. Other objectives of rehabilitation are:

- the generation of a final rehabilitated landform which is consistent with general landforms in the area and which will blend in with the hills to the east;
- to provide a landform which is suitable for the primary final land uses of grazing, forestry and fauna habitat enhancement;
- to plan mining and overburden handling operations to minimise rehandling, reshaping and contouring;
- to minimise the amount of disturbed land awaiting rehabilitation; and
- to provide for the safe and environmentally acceptable disposal of CPP rejects.

The *Mining Operations Plan for Stratford Coal Mine* (SCPL, 2001b) and RPE MOP and relevant Annual Environmental Monitoring Reports (AEMRs) describe the ongoing rehabilitation programme. A summary of the key elements of the rehabilitation programme is provided below.

Stratford Coal Mine Waste Emplacement

The majority of the SCM waste emplacement is constructed with an overall outer batter slope of 1 vertical (V) in 6 horizontal (H), while selected areas of the emplacement and low mine landforms are contoured to a 1(V) in 4(H) outer batter slope. Following the development of drainage structures, the waste rock has been covered with 150 millimetres (mm) to 200 mm of topsoil cover. Following topsoil placement, site preparation works have involved either chisel ploughing or deep ripping along contour, depending on the vegetation type to be established.

The emplacement has been progressively revegetated with a pasture cover crop. Endemic woodland shrubs and trees have been planted on ridgelines and other selected areas with the objective of covering approximately 20% of the emplacement surface with native vegetation.

Rehabilitation of the SCM waste emplacement is well advanced as shown on Figure 4.

Co–disposal Area and Return Water Dam

The reject co-disposal area contains mixed fine and coarse rejects from the CPP. Reclaiming operations to recover thermal coal from the co-disposal area will remove a large proportion of the placed material and leave a low mounded landform for final rehabilitation. Rehabilitation concepts for the co-disposal area (post recovery of thermal coal) and the return water dam include reshaping the remaining *in-situ* material/embankment to final grade, capping with a layer of coarse reject material and topsoiling to a depth of approximately 200 mm. Revegetation would be with pastures or selected woodland species.

Roseville Void

The Roseville void was a mined out open cut that was used for the co-disposal of mine rejects and for temporary water storage. Following the cessation of use of the void for reject placement in 2003, the remaining void is being backfilled with mine waste rock from the approved Roseville Pit Extension (to an elevation of approximately 140 m relative level [RL]). The surface will then be topsoiled to a depth of approximately 200 mm and revegetated with native woodland and pastures.

Roseville Pit Extension Final Void

The Roseville Pit Extension final void will be backfilled with waste rock from one of the other satellite mining operations on-site (ie. the Roseville West Pit). Once the void is backfilled, the surface would be topsoiled to a depth of approximately 200 mm and revegetated with native woodland and pastures.

SCM Main Pit Final Void

The SCM Main Pit final void is approximately 90 m in depth and is used for water management and CPP reject disposal. Rehabilitation concepts for the final void include redirecting upstream drainage that is currently diverted around mine landforms, and runoff from the waste emplacement landform, into the void.

In accordance with Condition 4.8 of Schedule 2 of the SCM consent (Attachment 1), a Final Void Management Plan will be prepared in 2009 in consultation with the DPI, DNR and DoP.

Stratford East Dam

The Stratford East Dam would most likely be retained after mine closure and final use options would be the subject of consultation. It is anticipated that the dam would provide a significant water resource (eg. farm dam) post mining. One rehabilitation option would include the diversion of waters flowing from the dam spillway into the SCM Main Pit final void.

Infrastructure Areas

SCM infrastructure including the CPP area, buildings and electricity lines would be removed and the sites deep-ripped and seeded as required. Some concrete hardstands, site access roads and water management structures may be retained for alternate post mining uses.

Wildlife Corridor

A component of the SCM rehabilitation programme is the development of a wildlife corridor (ie. woodland) that will link three patches of remnant woodland in the north-east, north-west and south of the SCM Mining Leases (Figure 5). This corridor is being developed by a combination of exclusion of stock/regeneration and planting of endemic woodland species and the BRNOC rehabilitation programme also links into this corridor (Figure 5).

Section 5.8 of the SCP EIS states:

> *Loss of foraging habitat due to clearance prior to mining will be offset by the planting of currently cleared areas … to form corridors to link remnants on the Project Area not cleared during mining with larger areas of natural vegetation to the east of the Project area. ….*
>
> *These vegetated corridors are to be planted with suitable tree species currently occurring on the Project Area from seed materials collected from individuals on site. They are to be fenced to exclude stock to promote growth and to encourage development of an understorey. Where these corridors do not interfere with proposed activities they are to be established prior to or early in the Project life.*

Progress with the exclusion of stock and the planting of trees in parts of the wildlife corridor have been made, however, a large proportion of the wildlife corridor area remains within active operational areas (eg. Roseville Pit, Roseville Pit Extension and BRNOC).

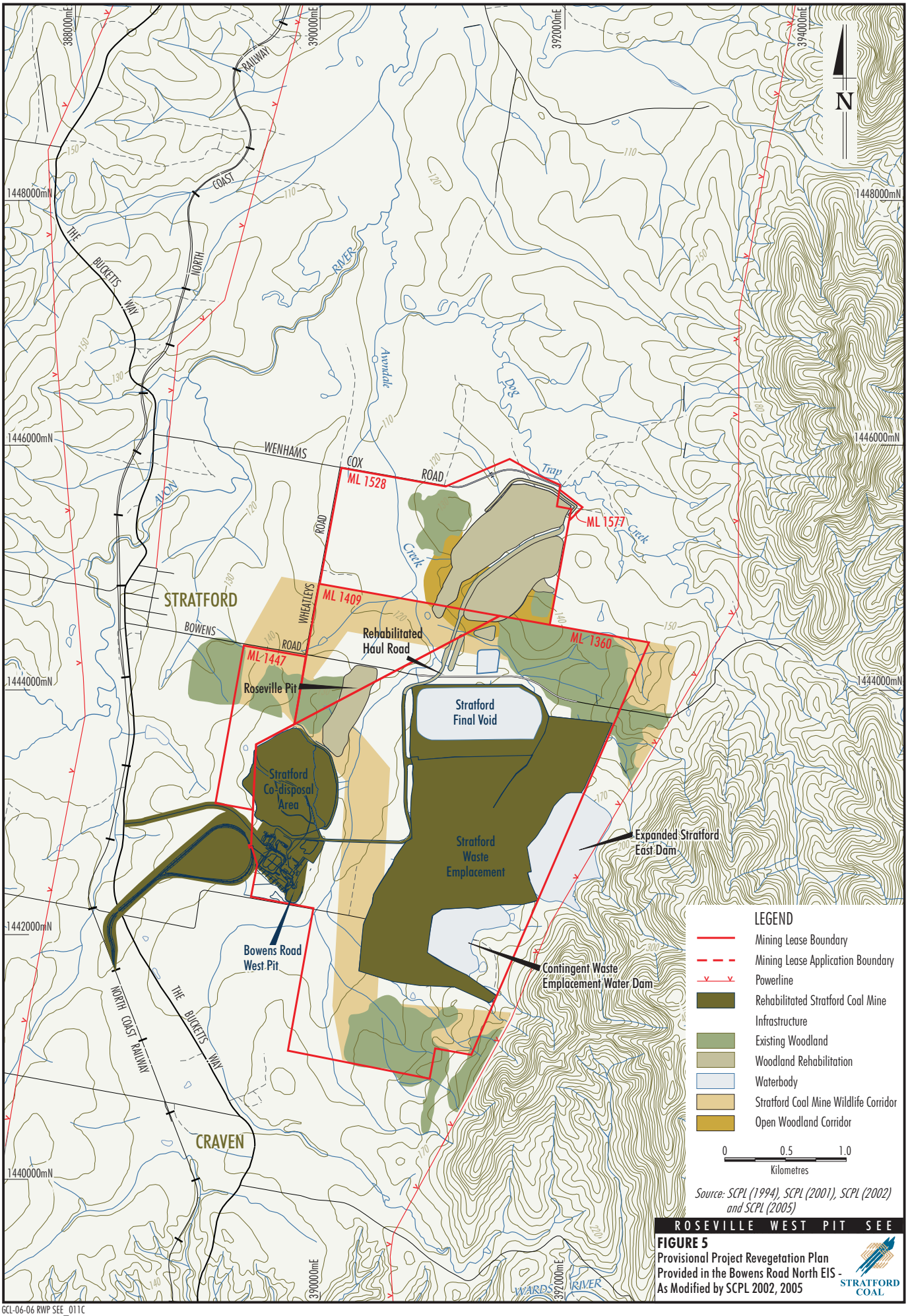
2.10 ENVIRONMENTAL MONITORING AND MANAGEMENT

SCPL's Environmental Policy states that:

> *It is the intention of SCPL to maximise the recovery of economic coal reserves and to continue to supply domestic and export markets with coking and energy coal whilst protecting the environment for future generations.*

SCPL's Environmental Policy principles are (SCPL, 2002a):

- *Environmental Management is the responsibility of management and all employees. For this reason, commitment to the environmental management program by all personnel is a high priority.*
- *Environmental performance will be assessed regularly and relevant information will be distributed to the local community through the Community Consultative Committee (CCC). Open communications will be encouraged.*
- *Areas disturbed by operations and the impact on the surrounding environment are to be minimised at all times.*
- *The best practical technologies for rehabilitation, water quality protection and coal handling are to be utilised to meet current and anticipated environmental standards.*
- *Appropriate standards of rehabilitation will be implemented to ensure minimal visual impact and achievement of stable landform, along with the preservation of fauna and flora and downstream water quality.*



ROSEVILLE WEST PIT SEE

FIGURE 5
Provisional Project Revegetation Plan
Provided in the Bowens Road North EIS -
As Modified by SCPL 2002, 2005

STRATFORD COAL

GCL-06-06 RWP SEE_011C

SCPL's Environmental Management Programme has the following objectives (SCPL, 2002a):

- *To ensure compliance with statutory requirements and with reasonable community expectations.*
- *To develop and maintain the most cost effective environmental management for the Stratford Mine.*
- *To provide all employees with the knowledge, skills and equipment necessary to meet their environmental obligations.*
- *To promote an awareness and concern for good environmental management amongst all employees.*
- *To provide a "feed-back loop" so that the results of environmental monitoring are used to assess, and where necessary improve, environmental performance.*

Environmental management at SCM and BRNOC has included the development and implementation of a range of environmental management plans, procedures and environmental monitoring programmes. As the BRNOC consent requires the integration of a number of environmental management aspects of SCM and BRNOC, the SCM operates under relevant BRNOC management plans where practicable (for example the BRNOC Dust Management Plan (DMP) is applied to general SCM operations).

Examples of relevant SCM and BRNOC environmental management plans, procedures and monitoring programmes include:

- BRNOC *Environmental Management Strategy* (SCPL, 2002a);
- RPE MOP (SCPL, 2006a);
- *Roseville Pit Compensatory Habitat Plan* (SCPL, 2006b);
- *Stratford Coal Mine Landscaping Plan* (AVH, 1995);
- *Roseville Pit Extension Site Water Management Plan* (SWMP) (SCPL, 2006c) comprising:
  - site water balance;
  - erosion and sediment control;
  - surface water monitoring programme; and
  - groundwater monitoring programme.
- *Noise Management at Stratford Coal Mine - Noise Consent and Management Plan* (draft) (NMP) (SCPL, 2006d);
- BRNOC *Flora and Fauna Management Plan* (FFMP) (SCPL, 2002b);
- BRNOC *Landscape and Revegetation Management Plan* (LRMP) (SCPL, 2001c);
- BRNOC *Land Management Plan* (LMP) (SCPL, 2001d);
- BRNOC *Soil Stripping Management Plan* (SSMP) (SCPL, 2002c);
- BRNOC DMP (SCPL, 2002d);
- BRNOC *Blasting/Vibration Management Plan* (BMP) (SCPL, 2003b);
- BRNOC *Lighting Management Plan* (SCPL, 2002e);
- *Stratford Coal Mine Spontaneous Combustion Management Plan* (SCMP) (SCPL 2004); and
- AEMRs.

2.11 COMPLAINTS RECORD

A summary of the SCPL complaints record from July 2002 to June 2006 is provided on Figure 6. Note these complaints relate to both the SCM and the BRNOC.

As shown on Figure 6, the number of complaints in 2005-2006 (19 complaints) fell sharply in comparison to the previous year (47 complaints).

As shown on Figure 6, the majority of complaints in the years 2002-2005 were about operational noise, rail noise and blasting. However, in 2005-2006, the number of noise and blasting related complaints fell sharply, with the highest number of complaints in this period being related to spontaneous combustion events that occurred in the SCM Main Pit. The spontaneous combustion has been managed in consultation with the DPI and in accordance with the SCMP (SCPL, 2004).

Due to the proximity of a small number of private residences to the rail loop and CPP, SCPL has implemented a range of noise mitigation measures to improve noise performance and address noise complaints from the community, these measures are described in Appendix A.

In addition, SCPL has recently acquired an additional property that adjoins the SCM rail loop and the Main Northern Railway.

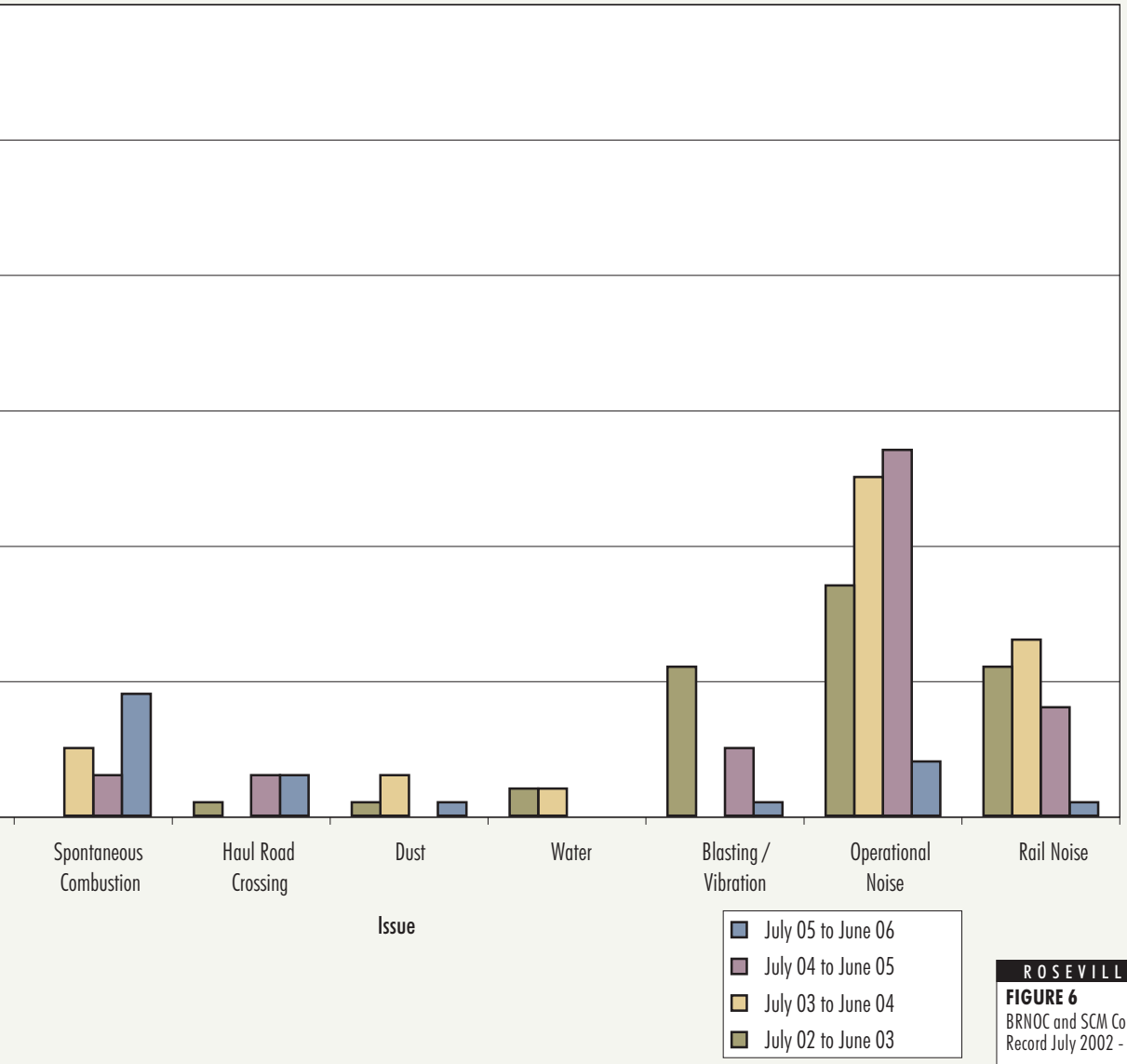
2.12 WORKFORCE

The combined workforce of the BRNOC and SCM operations (SCPL staff and contractors) is currently approximately 65 people. Approximately 10-13 of these people work at the Roseville Pit Extension.

2.13 INTERACTION WITH BOWENS ROAD NORTH OPEN CUT

The operation of BRNOC and SCM is integrated from an operational and environmental management perspective. Some of the consent conditions for the SCM (Attachment 1) require integration of environmental management and monitoring with BRNOC. While the two operations are effectively integrated, BRNOC continues to operate under a separate consent and EPL.

Where practicable, environmental management and monitoring of the two operations is integrated, as from an environmental management and community relations perspective the two mines are generally regarded as a single operation.



Source: SCPL (2006)

ROSEVILLE WEST PIT SEE

FIGURE 6
BRNOC and SCM Complaints
Record July 2002 - June 2006

STRATFORD COAL

3 DESCRIPTION OF THE PROPOSED ROSEVIILE WEST PIT MODIFICATION

3.1 CONSTRUCTION

No significant construction activities are required for the Roseville West Pit modification.

Initial development activities would comprise soil stripping and noise and flood bunding of the north-western boundary of the Roseville West Pit. These activities would be undertaken using small mobile fleet items. The existing Roseville Pit Extension haul road would also be extended as required to access the Roseville West Pit and provide a route for transport of waste rock into the Roseville Pit Extension.

Stripped topsoil would be stored in a bund approximately 3 m high, located to the south of the flood/noise bund on the western limit of the Roseville West Pit.

3.2 GEOLOGY

The Cloverdale seam is very similar to the Roseville Seam in that it is a steeply dipping seam of thin coking coal plies that generally range from 0.3 m to 1.5 m in thickness. The four lowermost coal plies of the Deards sequence would also outcrop in the western highwall of the new pit.

The geological features of the overburden, coal partings and coal in the Roseville West Pit are generally consistent with the coal seams that have been or are being mined at the Roseville Pit Extension.

3.3 MINING

Standard SCM open cut mining methods would be employed at the Roseville West Pit. The mining rate would average approximately 5,000 t of ROM coal per week. The life of the Roseville West Pit would be up to approximately 3 years.

Three phases of mining in the Roseville West Pit are anticipated:

- **Initial Development** - soil stripping and construction of flood/noise bunds over a period of approximately 3 months as appropriate;
- **Phase 1** - primary waste stripping to expose the coal seams; and
- **Phase 2** - coaling and partings removal using smaller earthmoving fleet.

The mine fleet utilised would vary according to operational requirements and equipment availability.

Table 4 outlines the provisional mobile equipment fleet that is anticipated to be used during development of the Roseville West Pit.

Table 4
Provisional Roseville Mobile Fleet

Fleet	Equipment Description
Proposed General Fleet For Both Phases	
Waste Rock/Partings Earthmoving Fleet	1 x 80 t Excavator (eg. Komatsu PC850)
	4x 40 t Haul Trucks (eg. Volvo A40D)
Coaling Earthmoving Fleet	1 x 45 t Excavator (eg. Komatsu PC450)
	4x 30 t Haul Trucks (eg. Volvo A30D)
Supporting Fleet	1 x Track Dozer (eg. Cat D9N)
	1 x Grader (eg. Cat 14H)
	1 x Water Cart (eg. Cat D250E, 25KL)
	1 x Drill (eg. Drilltech D240S)
Provisional Fleet - Potentially Used During Phase 1 Only	
Primary Waste Rock Earthmoving Fleet	1 x 125 t Excavator (eg. Komatsu PC1250)
	3 x 65 t Haul Trucks (eg. Cat 775)

Source: SCPL, 2006

For a period of approximately 6 months during the establishment of the Roseville West Pit, a primary waste rock excavator and haul truck fleet may operate concurrently with the other fleet to undertake the initial overburden stripping of the Roseville West Pit. On completion of the primary overburden stripping of the Roseville West Pit, this fleet would no longer be utilised on-site.

As is current practice, the coaling (45 t) excavator and associated A30D haul trucks (Table 4) would also be periodically utilised in the co-disposal dam area (Figure 2) recovering thermal coal feed material.

3.4 WASTE ROCK MANAGEMENT

Waste rock material from the Roseville West Pit would be utilised to backfill the Roseville Pit Extension to a final elevation of approximately 116 m RL in the north (level with the noise/flood bunds) and to natural ground level in the south, the Roseville West Pit would also be partially backfilled via in-pit dumping. No out-of-pit dumps are proposed.

The waste rock material generated at SCM to date has not shown a propensity to be acid forming. This is supported by the water quality records (Section 4.7).

Notwithstanding, SCPL would undertake confirmatory waste rock geochemical testwork during mining of the Roseville West Pit and if any significant volumes of potentially acid forming (PAF) material are identified, specific management measures such as encapsulation or disposal of the PAF material below the post mining groundwater table in the Roseville Pit Extension void would be implemented.

3.5 VOID MANAGEMENT

At the completion of the Roseville West Pit modification, a void would be located at the southern end of the pit. SCPL proposes to use this void for deposition of waste rock from future mining developments (subject to future environmental approvals). The Roseville West Pit void would therefore be backfilled and no long term final void or pit lake is proposed.

In the event that no future mining developments occur at SCM, the Roseville West Pit void would be backfilled with waste rock from BRNOC or one of the SCM/BRNOC out-of-pit dumps. Any such action would be subject to further consultation with the relevant authorities and obtaining relevant approvals.

Rehabilitation of the Roseville West Pit is discussed in Section 5.1.

3.6 COAL TRANSPORT

No changes to the existing number of coal trains or hours of loading are proposed for the Roseville West Pit modification, as no increase in the rate of saleable coal production is proposed.

3.7 SURFACE WATER MANAGEMENT

No significant changes to the surface water management at the SCM are proposed in support of the Roseville West Pit modification. However, the Water Management Plan would be updated to reflect the addition of the Roseville West Pit disturbance area. As per the Roseville Pit Extension, flood bunding would be constructed on the north-western boundaries of the Roseville West Pit to minimise the potential for flood inflows (1 in 100 year event) to the pit during mining.

A Water Resources Review of the Roseville West Pit modification is provided in Appendix C and Section 4.6.

3.8 SUPPORTING INFRASTRUCTURE

No significant supporting infrastructure would be required for the Roseville West Pit modification as the pit would simply be a duplication of the existing Roseville Pit Extension. The western haul road crossing of Bowens Road (currently servicing the Roseville Pit Extension) would also be utilised for the Roseville West Pit.

3.9 WORKFORCE

No changes to the existing SCM/BRNOC workforce would be required in support of the modification.

The Roseville West Pit would provide continued employment for the 10-13 people currently employed at the Roseville Pit Extension.

3.10 LIFE OF MINE

The life of the SCM is currently limited to 14 years from the date of Mining Lease approval (Condition 1.2, Schedule 2 – Attachment 1). Mining Lease 1360 was granted on 21 December 1994. The life of the mine under the current consent is therefore limited to 21 December 2008.

The Roseville West Pit is expected to operate for a period of approximately three years and a three year extension to the life of the mine is therefore a component of the Roseville West Pit modification.

4 ENVIRONMENTAL REVIEW

4.1 CLIMATE

Climatic data is gathered at regional Bureau of Meteorology weather stations and the SCM meteorological station.

Rainfall records from the SCM meteorological station and the regional Bureau of Meteorology stations at Gloucester (Station No. 60015), Craven (Station No. 60042) and Stroud (Station No. 61071) indicate an annual rainfall of approximately 990 mm (SCPL, 2001a).

Wind speed and direction is recorded continuously at the SCM meteorology station (Figure 7). Local winds are predominantly oriented to the north, north-east and south during all seasons due to the influence of the local topography, however, easterly winds are also common in autumn and winter. Wind speeds are generally light to moderate and tend to be strongest during the day.

A detailed description of the local climate is provided in the BRN EIS.

4.2 LAND RESOURCES

4.2.1 Landuse

SCM is located in a rural area characterised by cattle grazing for beef and dairy products on native and improved pastures. Additional landuses include rural residential, timber milling, the operations of the BRNOC and residential development in the villages of Stratford and Craven. The majority of the SCM area has been cleared as part of past landuse practices. The approved SCM, BRNOC and DCM located some 20 km to the south are the main mining developments in the area.

SCPL owns the land within the BRNOC and SCM Mining Leases and a significant area of buffer lands (Figures 3A and 3B).

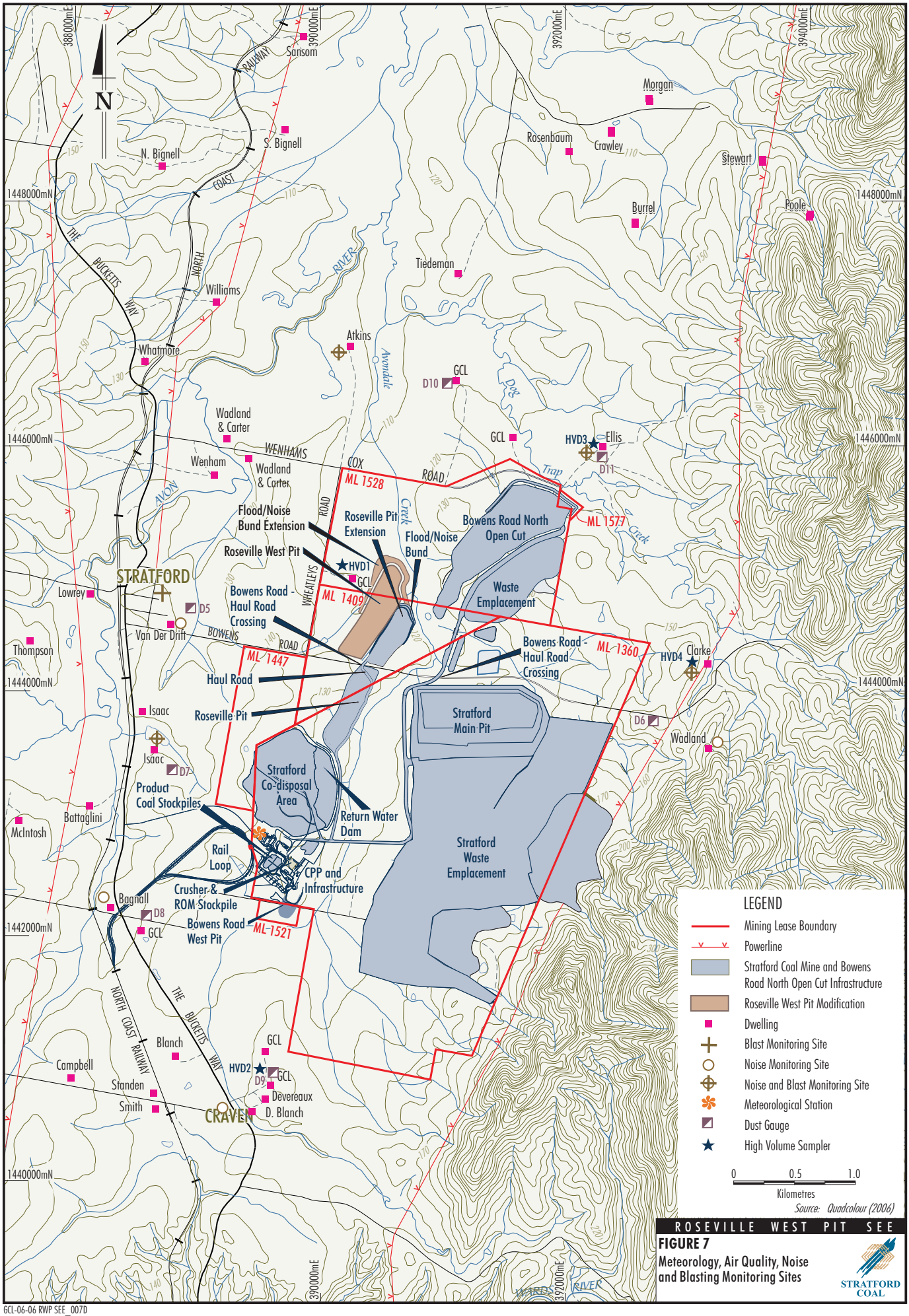
The land subject to the Roseville West Pit modification (approximately 20 hectares [ha]) is a roughly rectangular area located between the existing Roseville Pit Extension and Wheatleys Road (Figure 2). Due to its proximity to the existing mining operations, this area is currently limited in its agricultural use.

SCPL is a major landholder in the Stratford area (Figures 3A and 3B) and manages the majority of its landholdings for agricultural production. The Roseville West Pit modification would have no material effect on landuse in the Stratford area.

4.2.2 Soils

Soil assessments conducted for the SCP EIS in 1994 identified dark organic loam soils overlying dispersive orange yellow clay (Yellow Soloth soils) and dark pedal clays (Alluvial soils) within the Roseville West Pit area. In accordance with existing management practices, where soil resources are suitable for stripping and use in rehabilitation, soils would be stripped and directly placed on areas where progressive rehabilitation is being undertaken, or stockpiled for later use.

The SWMP incorporating erosion and sediment control measures would be updated to address the proposed modification. The Roseville West Pit modification would not significantly increase the potential impacts of the SCM on soil resources. Soil management would be conducted in accordance with the SWMP and BRNOC SSMP (SCPL, 2002c).



ROSEVILLE WEST PIT SEE

FIGURE 7

Meteorology, Air Quality, Noise and Blasting Monitoring Sites

STRATFORD COAL

GCL-06-06 RWP SEE_007D

4.2.3 Landforms

The landforms of the Gloucester valley are characterised by north-south oriented linear ridges with intervening undulating lowlands and floodplains. The ridges rise up to 600 m AHD, are moderately to steeply sloping and remain timbered, while the undulating lowlands generally range from 50 to 150 m AHD in elevation and are characterised by gentle slopes and generally cleared land.

The modification area is located in the eastern Gloucester valley immediately west of the existing Roseville Pit Extension. A number of components of the SCM and BRNOC contribute to local topography including:

- the SCM and BRNOC waste emplacements;
- the SCM Main Pit void;
- the BRNOC and Roseville Pit Extension operations;
- the backfilled Roseville void;
- the SCM co-disposal area and return water dam; and
- various water management structures and storages.

These structures are shown at approved full development on Figure 2.

The Roseville West Pit modification area is approximately 1.5 km east of Stratford and 250 m east of Wheatleys Road within Mining Lease 1409. Bowens Road forms the southern limit for the pit (Figure 2). Elevations within the Roseville West Pit modification area range from approximately 110 m AHD to approximately 120 m AHD.

The proposed Roseville West Pit would involve development of an additional open cut at SCM, however, this would effectively be a western duplication of the existing Roseville Pit Extension. The waste rock generated by the Roseville West Pit modification would be accommodated as backfill in the Roseville Pit Extension and in-pit waste emplacement in the Roseville West Pit.

The landform alterations proposed for the Roseville West Pit modification would not significantly increase the landform impacts of the approved SCM, given the scale of the approved mined area and the mine landforms at full development.

4.2.4 Visual Aspects

The Vale of Gloucester is listed as a landscape conservation area by the National Trust and a historic place under the Register of the National Estate, because of scenic and historical values. The scenic values of the area primarily relate to the lowlands being cleared while the surrounding volcanic ridges remain timbered and provide a picturesque backdrop to landuses within the valley.

The visual character in the immediate vicinity of the modification area is a combination of cleared grazing lands and the mine landforms associated with the SCM and BRNOC. The mine landforms (eg. the rehabilitated SCM waste emplacement which is some 55 m high at approximately 180 m AHD) and BRNOC waste emplacement are visible from The Bucketts Way and a number of other public vantage points to the south, north and west. Disjunct patches of remnant vegetation occur along creek lines, road verges and as isolated remnants within the gently undulating topography. Vegetation cover is heavier and almost continuous along the ridgeline that delineates the valley to the east of the SCM.

The Roseville Pit Extension is visible from Bowens Road and elevated land to the east of the SCM Main Pit, however, the Extension is not visible from many public vantage points.

The night-time character of the SCM area is influenced by the light emissions of the existing SCM CPP and evening mining operations in the Roseville Pit Extension. Both direct and indirect (light glow) views of mine lighting are available from public vantage points including The Bucketts Way and dwellings in the Stratford area.

Environmental Review

The potential visual impacts of the Roseville West Pit modification would be limited due to the following factors:

- the limited disturbance area, gently undulating topography and patches of intervening remnant vegetation limit the number of potential public viewpoints of the Roseville West Pit area;
- the maximum elevation of the Roseville Pit Extension backfill would be up to approximately 122 m RL at natural ground level in the south and 116 m RL in the north (ie. level with the flood/noise bund);
- a low ridgeline, remnant and regrowth vegetation to the east and northeast of Stratford Village would screen potential views from Stratford and other private residences to the west and northwest;
- the initial construction of flood/noise bunds to 116 m RL and rapid revegetation of these bunds would reduce the potential for views into the Roseville West Pit from public locations to the north;
- due to its proximity to the existing Roseville Pit Extension, from most public vantage points the Roseville West Pit will appear to be a continuation of the Pit Extension; and
- a limited number of residences at higher elevations to the east of the SCM may be able to see a minor increase in the disturbance area of the SCM, however, the SCM Main Pit would be in the foreground and the level of visual modification associated with the Roseville West Pit modification from this distance would be low.

In addition, close proximity views would be available of the new pit from the local road network (Bowens Road and Wheatleys Road). These roads are local (unsealed) roads that are used by a limited number of local landholders to access their properties and carry very little public traffic.

Mitigation Measures

The BRNOC Landscape and Revegetation Management Plan (SCPL, 2001c) provides landscaping strategies that would be implemented where relevant to reduce the visual impacts of the Roseville West Pit modification. Relevant strategies include:

- on-site and off-site vegetation screening, including planting adjacent to local roads;
- progressive revegetation of waste emplacements;
- demarcation and maintenance of existing vegetation in close proximity to the development works to prevent accidental disturbance; and
- training of mine staff to avoid unnecessary damage to vegetation beyond the specified development works perimeter.

In addition, the BRNOC Lighting Management Plan (SCPL, 2002e) provides measures to reduce potential lighting impacts that would be implemented where relevant to the evening operations in the Roseville West Pit, including:

- lighting of operational areas would be served by directional lighting only (ie. oriented to a specific working area);
- lighting would be screened (ie. shielded) where necessary to limit spillage to adjacent residences and to eliminate driver glare along local roads;
- haul trucks would operate with dipped headlights; and
- any lighting related complaints would be addressed.

4.3 OPERATIONAL NOISE AND BLASTING

4.3.1 Background

The noise emissions of the original SCM were assessed in the SCP EIS by Richard Heggie Associates (1994). The assessment was conducted in accordance with the requirements of the Environmental Noise Control Manual (EPA, 1994).

As a component of the BRN EIS, Richard Heggie Associates (2001) completed an assessment of the cumulative intrusive SCM and BRNOC daytime noise emissions.

As a component of the Roseville Pit Extension environmental assessment, Heggies Australia (2005) conducted the *Stratford Coal Mine Operating Noise Impact Assessment* in accordance with the requirements of the NSW INP (EPA, 2000).

The INP introduces additional noise assessment requirements under adverse (ie. noise enhancing) weather conditions. By comparison with the noise impact assessment procedure described by the Environmental Noise Control Manual (EPA, 1994), INP based assessments generally result in the identification of more restrictive noise management and noise affectation zones, even where there has been no change in the noise potential from the subject site.

The 2005 assessment included a number of iterations to examine additional reasonable and feasible noise controls which have been implemented to minimise identified night-time noise impacts (Appendix A).

Operational Noise

Noise monitoring is undertaken at locations surrounding the BRNOC and SCM developments (Figure 7).

A review of SCM/BRNOC routine noise monitoring results by Heggies Australia (2006) (Appendix A) indicated general compliance with applicable daytime noise level criteria at private residential locations under prevailing atmospheric conditions during monitoring conducted in September 2004, December 2004, March 2005 and June 2005.

Cumulative daytime noise monitoring in March and June 2006 conducted for BRNOC indicated general compliance with relevant daytime criteria at residential monitoring locations (Appendix A).

SCM/BRNOC operational noise complaints have varied significantly over the last four AEMR periods, with a peak of some 27 operational noise complaints received in the July 2004 to June 2005 period. The majority of these complaints related to night-time noise. In comparison, in the most recent period (July 2005 to June 2006) only four operational noise complaints were received (Figure 6).

Blasting

Blast monitoring is undertaken at five locations (*viz.* Ellis residence, Clarke residence, Atkins residence, Stratford village, and Isaac residence) (Figure 7).

Only a limited number of blasts have been undertaken in the Roseville Pit Extension. Blast monitoring to date indicates compliance with applicable airblast and blast vibration criteria at the nearest residences.

Eleven blasting complaints were received in the period July 2002 to June 2003 (Figure 6). Since that time blasting related complaints have been falling (Figure 6) with only one blasting related complaint recorded in the period July 2005 to June 2006.

4.3.2 Environmental Review

Operational Noise

An operational noise assessment compliant with the INP (EPA, 2000) has been completed by Heggies Australia (Appendix A). This assessment included revision of the earlier noise model to include additional private residences and to reflect the changes proposed for the Roseville West Pit modification.

The potential for machinery to emit noise is quantified as the sound power level (SWL). A comparative assessment of the overall mine site L_{eq} SWL for the mine fleet and on-site fixed equipment described in the SCM Alterations SEE and SCM incorporating the Roseville West Pit modification are provided below (Appendix A):

- SCM (DA-23/98-99) - SWL 136 dBA.
- SCM with Roseville Pit Extension - SWL 130 dBA.
- SCM with Roseville West Pit - SWL 130 dBA.

The comparison demonstrates that the SWL of the SCM incorporating the Roseville West Pit is very similar to the SCM with the Roseville Pit Extension as previously modelled in 2005. In addition, the comparison demonstrates the significant reduction in the SWL of the SCM mobile fleet when compared to the Project as approved in 1999.

Modelling was undertaken for two key periods comprising:

- Phase 1 - when pre-stripping of the overburden from the Roseville West Pit would be undertaken (possibly utilising additional primary waste equipment for a six month period) and coal mining is occurring in the Roseville Pit Extension; and
- Phase 2 - when coal mining is being undertaken in the Roseville West Pit and the primary waste fleet is no longer operating at the site.

Key findings of the operational noise assessment for SCM, incorporating the Roseville West Pit modification include (Appendix A):

- *The cumulative intrusive modelling of BRNOC and the SCM indicates no additional residences would be located in the noise affectation zone as a result of the proposed Roseville West Pit modification;*
- *The cumulative intrusive modelling of BRNOC and the SCM indicates three additional residences (16 Williams, 19 Wadland/Carter and 33 Wadland/Carter) would be located in the noise management zone. However all three are only marginally above Project specific criteria (between 1 dBA and 2 dBA), with the main source of noise at the residences being the approved BRNOC operation. Two of the properties (19 Wadland/Carter and 33 Wadland/Carter) were recently sold by SCPL and are subject to a private agreement between SCPL and the landholder.*

Predicted cumulative intrusive daytime noise contours (ie. both BRNOC and SCM incorporating the Roseville Pit Extension) are presented for Phase 1 and Phase 2 on Figures 8 and 9 respectively.

In addition, with respect to compliance with cumulative amenity criteria, Heggies Australia (Appendix A) concluded:

> *The cumulative amenity modelling of the RWP, BRNOC and SCM operations indicates that the project specific amenity criteria are complied with at all privately owned residences during the daytime when both mining operations are active.*

Blasting

Heggies Australia (Appendix A) assessed the potential blasting impacts of the Roseville West Pit modification at the nearest privately owned dwellings. The assessment concluded:

- **Structural Damage Assessment** - *The blast emission levels are predicted to be well below the building damage criteria of 15* [millimetres per second] *mm/s and 133 dB Linear at all private residences.*
- **Human Comfort Vibration Assessment** - *The vibration velocities are predicted to be below the 5 mm/s criterion at all private residences.*
- **Human Comfort Airblast Assessment** - *The airblast levels are predicted to be below the 115 dB Linear airblast criterion at all private residences.*

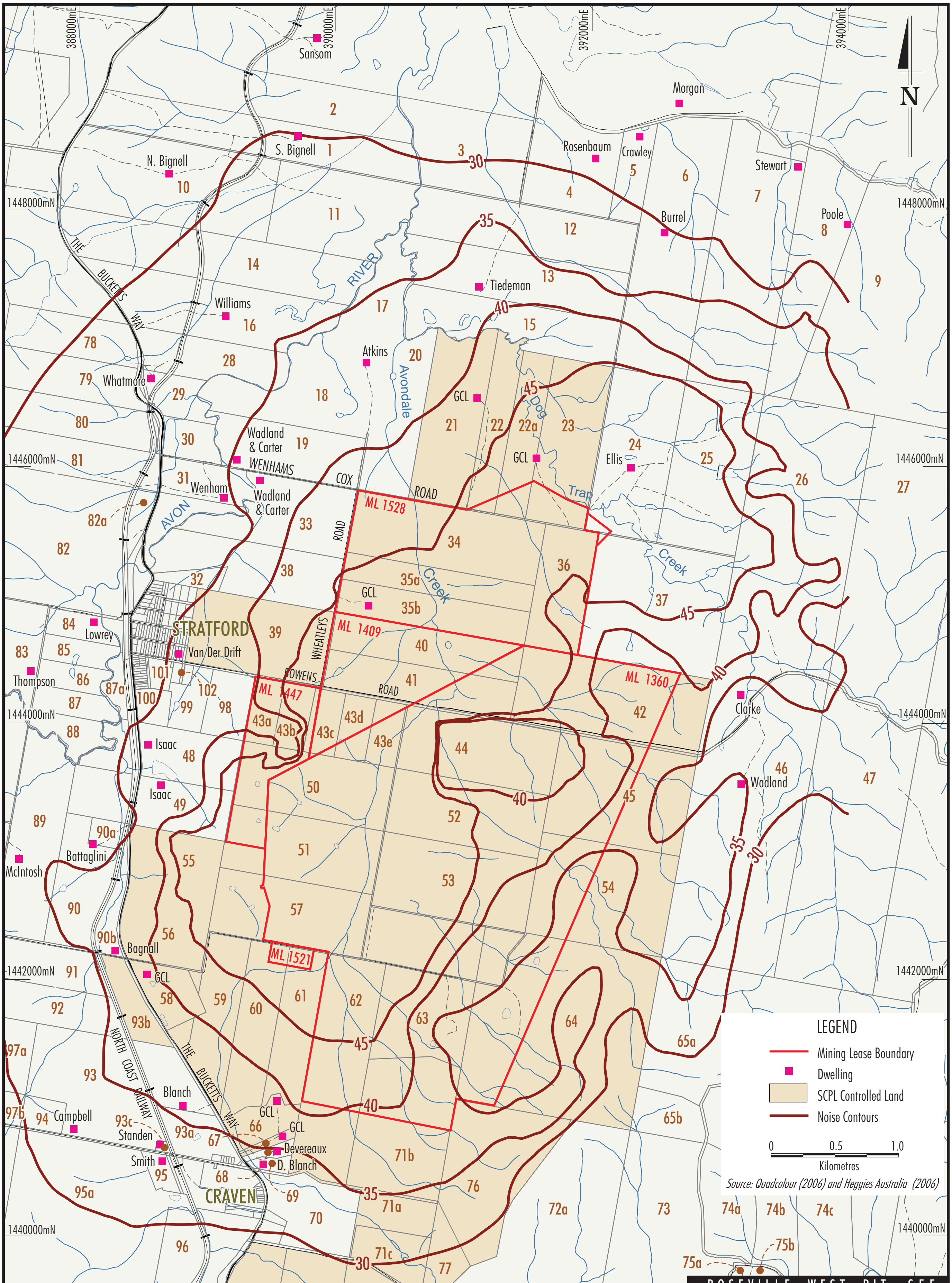
The frequency of blasting would be on average, once every two to three weeks. The general blasting design parameters and blast management measures in the Roseville Pit Extension would be retained.

Mitigation Measures

SCPL manages its SCM mining operations in accordance with the requirements of the NMP (draft) (SCPL, 2006d) and the BRNOC BMP (SCPL, 2003b).

The NMP describes measures to manage noise emissions from the SCM operation, including:

- proactive/predictive and reactive mitigation measures to limit noise emissions;
- long term strategies to address exceedances of applicable noise levels at private residences;
- complaints handling and on-site responsibilities; and
- quarterly noise monitoring and equipment plant noise surveys.



ROSEVILLE WEST PIT SEE

FIGURE 8

Cumulative BRNOC and SCM Intrusive Daytime LAeq (15 minute) Noise Contours - Phase 1

STRATFORD COAL

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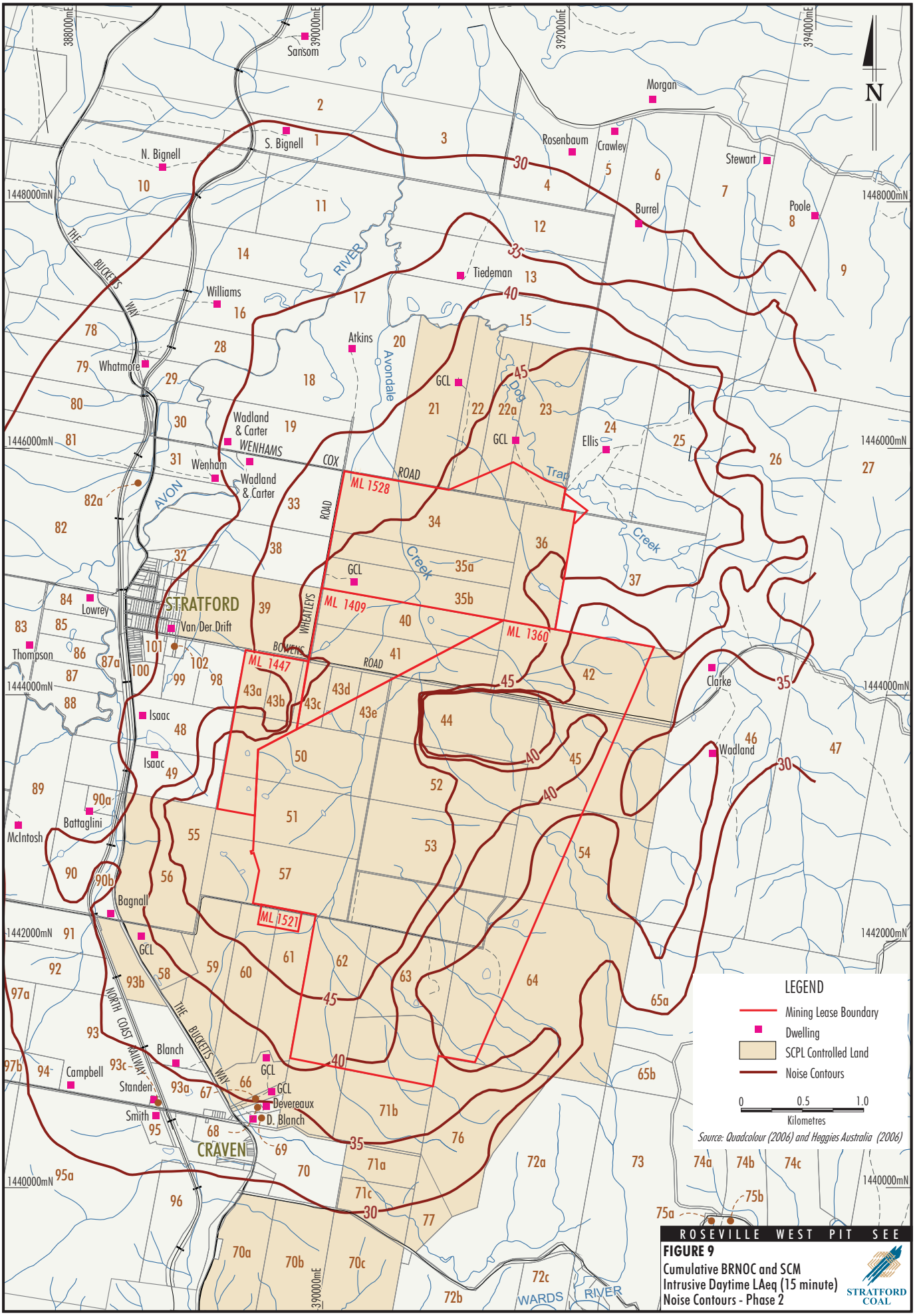

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The BRNOC BMP describes measures to manage potential blasting impacts of the operation, including:

- blast mitigation measures;
- monitoring requirements;
- blasting related road closures; and
- blast notification requirements.

These noise and blasting management and mitigation measures would continue to be applied at the operation, including the Roseville West Pit modification. The SCPL noise and blast monitoring programmes would be continued, with results reported in the AEMR.

The existing Development Consent (Attachment 1) provides a mechanism for landholders to request an independent investigation of noise levels at their residence (at the discretion of the DEC) if they consider that relevant criteria are being exceeded during normal mining operations (Attachment 1, Schedule 2, Condition 6).

If an exceedance is demonstrated by such an investigation, the Development Consent provides a mechanism for acquisition of the property, if a noise management solution or negotiated agreement cannot be reached and subsequent monitoring indicates the exceedance is continuing. This process is also outlined in the NMP.

4.4 AIR QUALITY

Background

Cumulative air quality modelling conducted for the BRNOC EIS (Holmes Air Sciences, 2001) indicated that with the implementation of appropriate dust control measures, the SCPL mining operations incorporating the BRNOC would comply with applicable air quality criteria at the nearest private residences.

Recent Air Quality Monitoring Results

SCPL maintains seven dust gauges and four high volume PM_{10} air samplers. The locations of these monitoring sites are shown on Figure 7.

Recent air quality monitoring results indicate that, as predicted by the BRN EIS cumulative air quality modelling, the SCPL mining operations are easily complying with applicable air quality criteria (dust deposition and suspended particulates) at the nearest private residences.

Table 5 provides a summary of applicable dust monitoring data.

Table 5
Average Dust Deposition
Insoluble Solids (g/m^2 month)

Year	Monitoring Site						
	D5	D6	D7	D8	D9	D10	D11
July 2000-June 2001	0.5	0.7	10.0*	1.9	1.4	1.1	-
July 2001-June 2002	0.5	0.8	0.6	3.3*	1.5	4.7*	-
July 2002-June 2003	1.6	0.8	1.2	1.5	2.1	5.2*	-
July 2003-June 2004	0.6	1.0	0.7	1.1	1.4	7.4*	1.2
July 2004-June 2005	0.6	0.7	0.6	0.7	0.7	1.7	1.0
July 2005-June 2006	0.6	0.7	1.4	0.6	0.6	0.4	1.2

* Samples heavily contaminated by bird droppings, insects or plant material

With the exception of years when samples from particular gauges were heavily contaminated by bird droppings or insect/plant material, average annual monthly dust deposition rates at the SCM monitoring points are generally below 2 grams per square metre per month (g/m^2/month).

The average PM_{10} results shown in Table 6 indicate SCPL is maintaining particulate levels well within the applicable DEC long term criteria of 30 micrograms per cubic metre (μg/m^3) at the monitored locations.

Table 6
Average PM_{10} Monitoring Results
July 2001 to June 2006

Year	Monitoring Site			
	Stratford	Craven	Ellis	Clarke
July 2001-June 2002	8.6	11.0	-	-
July 2002-June 2003	16.2	16.6	-	-
July 2003-June 2004	13.0	11.9	16.2	13.0
July 2004-June 2005	11.6	10.7	13.2	10.0
July 2005-June 2006	10.3	9.2	14.5	6.9

A small number of exceedances of the National Environment Protection Measure (NEPM) 24 hr 50 μg/m^3 PM_{10} criteria were observed in the period July 2001-June 2006, however, these exceedances were generally related to agricultural activities, fires or regional dust storm events, not SCPL mining operations. A more detailed description of dust and particulate concentration monitoring results is provided in Appendix B.

Complaints Record

In the last four years of complaint records (July 2002 to June 2006), only five dust-related complaints have been received by SCPL. The majority of these complaints related to the BRNOC operation and came from a landholder located very close to the BRNOC (Ellis). SCPL has a private agreement with this landholder.

Environmental Review

A review of the potential air quality impacts of the Roseville West Pit modification has been completed by Holmes Air Sciences (Appendix B). Holmes Air Sciences concluded:

> *"The current SCM operation is in compliance with applicable dust deposition and PM_{10} criteria. The Roseville West Pit modification would involve only very modest rates of waste rock and ROM coal production. Analysis indicates that the modification would not significantly increase the levels of particulate matter generated by the SCM when measured at surrounding compliance locations.*
>
> *Continued compliance with applicable air quality criteria can be monitored with the existing air quality monitoring network and in accordance with the approved BRNOC Dust Management Plan (SCPL, 2002). The BRNOC Dust Management Plan includes dust management and control measures and dust management protocols that are currently used by SCPL at the Roseville Pit Extension and BRNOC and these measures would be equally applicable to the Roseville West Pit modification."*

Mitigation Measures

Dust control measures employed at the SCM and BRNOC are detailed below.

Dust suppression water sprays operate at a number of locations in the CPP including the:

- ROM coal bin;
- crusher station;
- stamler feeder/breaker; and
- product coal stockpile.

The product coal stockpile sprays are located on the overhead conveyor system. A wind speed/direction device provides information to a computer located in the CPP control room that can automatically activate solenoid valves. Automated sprays at the ROM bin, crusher station and stamler feeder/breaker are activated when more than 50 tonnes per hour (t/hr) of material is on the conveyor belts.

General air quality management procedures used during mining operations include (SCPL, 2005):

- regular watering of in-service haul roads in dry weather;
- restricting topsoil stripping operations ahead of the mine pre-strip to keep the area of exposed ground to a minimum;
- generally restricting open areas that have the potential for dust generation;
- minimising truck overloading and spillage onto haul roads;
- fitting drills with dust suppression equipment;
- regular maintenance of hauls roads; and
- prompt rehabilitation of disturbed ground.

In addition, watering of disturbed areas is conducted at the end of the mining shift on Saturdays to minimise the potential for fugitive dust generation on Sundays when mining activities are generally not undertaken.

These dust control measures and management practices outlined in the BRNOC DMP (SCPL, 2002d) would also be applied to the Roseville West Pit modification.

4.5 HERITAGE

4.5.1 Aboriginal Heritage

The SCM area falls within the south-west section of the Birpai (or Biripi) Aboriginal people's traditional land (Tindale, 1974). The name 'Biripi' is broadly accepted by Elders and other representatives of the Aboriginal communities at Purfleet, Taree, Forster and Karuah as referring to the Aboriginal occupants of the Manning valley and the land north of Gloucester. The primary Aboriginal organisation that is responsible for providing advice about the management of Aboriginal heritage in the SCM area is the Forster Local Aboriginal Land Council (LALC).

Past Archaeological Surveys

A large area of land extending from Craven in the south to Dog Trap Creek in the north was surveyed prior to the development of the SCP EIS with surveys in November 1981, March 1982 and October 1984 and (Brayshaw, 1984). Further survey was then carried out for the SCM development area in 1994 as part of the SCP EIS. Five sites consisting of an open camp site, an open scatter site (four artefacts) and three isolated finds were located. None of these sites are located in close proximity to the Roseville West Pit.

In addition, a heritage survey of the BRNOC area was conducted by Heritage Search (2000). This survey only located one isolated artefact (in the central BRNOC area). Heritage Search also classified the majority of the BRNOC area as having low potential for the presence of subsurface archaeological material and test excavation was not recommended. The Forster LALC concurred with the Heritage Search assessment and advised that monitoring of topsoil stripping in the BRNOC development area was not necessary (Heritage Search, 2000).

An area to the north of the BRNOC along Dog Trap Creek was identified as having some potential for the presence of sub-surface artefacts, due to its topographical location. This area is well outside of the Roseville West Pit modification area.

DEC (formerly National Parks and Wildlife Service) Site Register

As a component of the archaeological assessment for the BRN EIS, a search of the Aboriginal Heritage Information System was conducted within a 20 km radius of the BRNOC area. Six Aboriginal sites had previously been recorded in the search area. The only site of relevance was an open camp site which had been recorded during the previous surveys for the SCM (Brayshaw, 1984). The remaining five listed sites were located well away from the SCPL mining operations.

Environmental Review

Previous surveys of the SCM and BRNOC areas have identified minimal evidence of previous Aboriginal occupation and no sites have been identified in the Roseville West Pit modification area by the previous surveys. In addition, the previous surveys and assessments and advice from the Forster LALC have not identified a requirement for further excavation testwork or on-site monitoring of topsoil stripping activities.

Notwithstanding, should any Aboriginal objects be uncovered during topsoil stripping operations, works in the immediate area of the find would cease and the DEC would be advised as required by the SCM Development Consent Schedule 2, Condition 3.2 (Attachment 1).

4.5.2 Non-Aboriginal Heritage

The following discussion on European history is summarised from the SCP EIS.

European settlement in the Stroud/Gloucester district commenced in the late 1920s as a component of the expansion of the Australian Agricultural Company (A.A. Co.) which ran sheep and cropping operations over a land grant area of 1,000 acres north from Port Stephens. By 1832 the township of Stroud was well developed and by 1850 was the centre of the A.A. Co. operations.

Whilst the A.A. Co. subsequently moved its sheep running operations elsewhere, the area continued to develop with the major industries being beef cattle, dairies and the milling of softwood and hardwood timbers.

The GSC and Stroud Shire Council (subsequently Great Lakes Shire) were established in 1906. The rapid development of coastal towns after the establishment of the Pacific Highway in 1952 and a lack of development within the area largely resulted in the preservation of the historical character of the townships of Gloucester and Stroud.

Early mining activity commenced in the 1850s, when a survey of the A.A. Co. holdings was undertaken and coal deposits were identified on Mammy Johnsons River between Stroud and Stratford. Sporadic commercial gold mining was also undertaken on the upper Karuah River from 1900 to 1931.

Heritage Investigations

Surveys conducted during the preparation of the SCP EIS concluded:

> *"There are no European heritage items located within the Project Area or adjacent. The closest items are located in Gloucester township, 15 km to the north of the Project Area."*

A non-Aboriginal heritage survey of the BRNOC area was undertaken in 2000 for the BRN EIS. No sites or artefacts of European heritage significance were identified. In addition, a search of the Register of the National Estate and State Heritage Inventory to determine if there are any ruins, cemeteries, archaeological deposits or structures found that no sites were recorded within the BRNOC area (Heritage Search, 2000).

Environmental Review

There are no known non-Aboriginal heritage sites in the Roseville West Pit modification area and it is considered highly unlikely that such sites would be uncovered during development of the open pit. The modification is therefore anticipated to have no impact on European heritage values.

4.6 WATER RESOURCES

Comprehensive assessments of the potential surface and groundwater impacts of SCM were conducted for the SCP EIS and SCM Alterations SEE. These assessments described the operational water management procedures for the life of the mine, assessed potential water quality impacts, examined drainage controls and management of CPP rejects and excess water.

Water management at the Roseville Pit Extension is undertaken in accordance with the Roseville Pit Extension Site Water Management Plan (SCPL, 2006c) which incorporates the following components:

- site water balance;
- erosion and sediment control;
- surface water monitoring programme; and
- groundwater monitoring programme.

4.6.1 Surface Water Resources

Regional Hydrology

The SCM and BRNOC are located approximately 3 km south-east of the Avon River. The Avon River has a catchment area of some 290 square kilometres (km^2) and is one of approximately 30 tributary rivers contributing to the greater Manning River system. The Manning River system drains some 8,000 km^2 and extends from the Great Dividing Range to the sea near Taree.

Local Hydrology

Local hydrology comprises a number of drainage lines and creeks flowing west and north-west towards the Avon River. Avondale Creek is a tributary of Dog Trap Creek and drains the SCM area, joining Dog Trap Creek approximately 1 km north of the BRNOC (Figure 2).

As the drainage lines within the SCM area have small catchments, they typically exhibit low to zero flow for extended periods during dry weather, while heavy rainfall events result in short duration, high flow events. Groundwater seepage provides minor contributions to flows in Dog Trap Creek and Avondale Creek during periods of elevated groundwater levels that follow extended rainfall events.

Surface water quality and flow monitoring in the vicinity of the SCM and BRNOC is described in the AEMR (SCPL, 2005).

Environmental Review

Surface water runoff from mine landforms and disturbed areas has the potential to contain sediments, dissolved solids or oil, grease and fuels (from mine vehicle spills). The potential surface water quality impacts associated with mining at the SCM were assessed in the SCP EIS.

Potential additional surface water impacts resulting from the Roseville West Pit modification would therefore be limited to an increase in the mine catchment area (i.e. approximately 20 ha) and a subsequent minor increase in mine water volumes to be handled. Gilbert and Associates (Appendix C) conducted a Water Resources Review which concluded:

> *"It is expected that the Roseville West Pit modification would have relatively little effect on the overall performance of the water management system or the predictions above which were made in the most recent review. This expectation is based on the following considerations:*
>
> *1. The additional catchment area that would need to be contained is estimated to be some 32 hectares which is some 7% of the existing area that contributes to the water management system containment area of the site.*

2. *Whilst there have been no predictions of the groundwater inflows to the Roseville West Pit, experience at the Roseville Pit and Roseville Pit Extension suggests that groundwater inflows are likely to be small and insignificant in terms of the overall site water balance. Groundwater inflows to the completed pits are also expected to reduce over time as the regional groundwater levels recover and the voids are either backfilled with mine waste or fill with water.*

3. *The large surplus containment capacity available in the Stratford Main void and the relatively short active life (3 years) of the Roseville West Pit modification."*

Additional water generated as a result of the Roseville West Pit would be managed in accordance with the SCM water management system. The SCM water management system has significant available capacity to contain any minor additional volumes of mine water produced in the modification area.

The SCM erosion and sediment controls would be extended to accommodate activities associated with the Roseville West Pit and these activities would be detailed in a revision of the SWMP. Where practicable, extension of noise/flood bunding would be undertaken such that the bund would serve as a sediment dam until the pit is developed. Silt fences would also be placed on the outer batters of the bund to control sediment migration until such time as the bunds have been stabilised/revegetated.

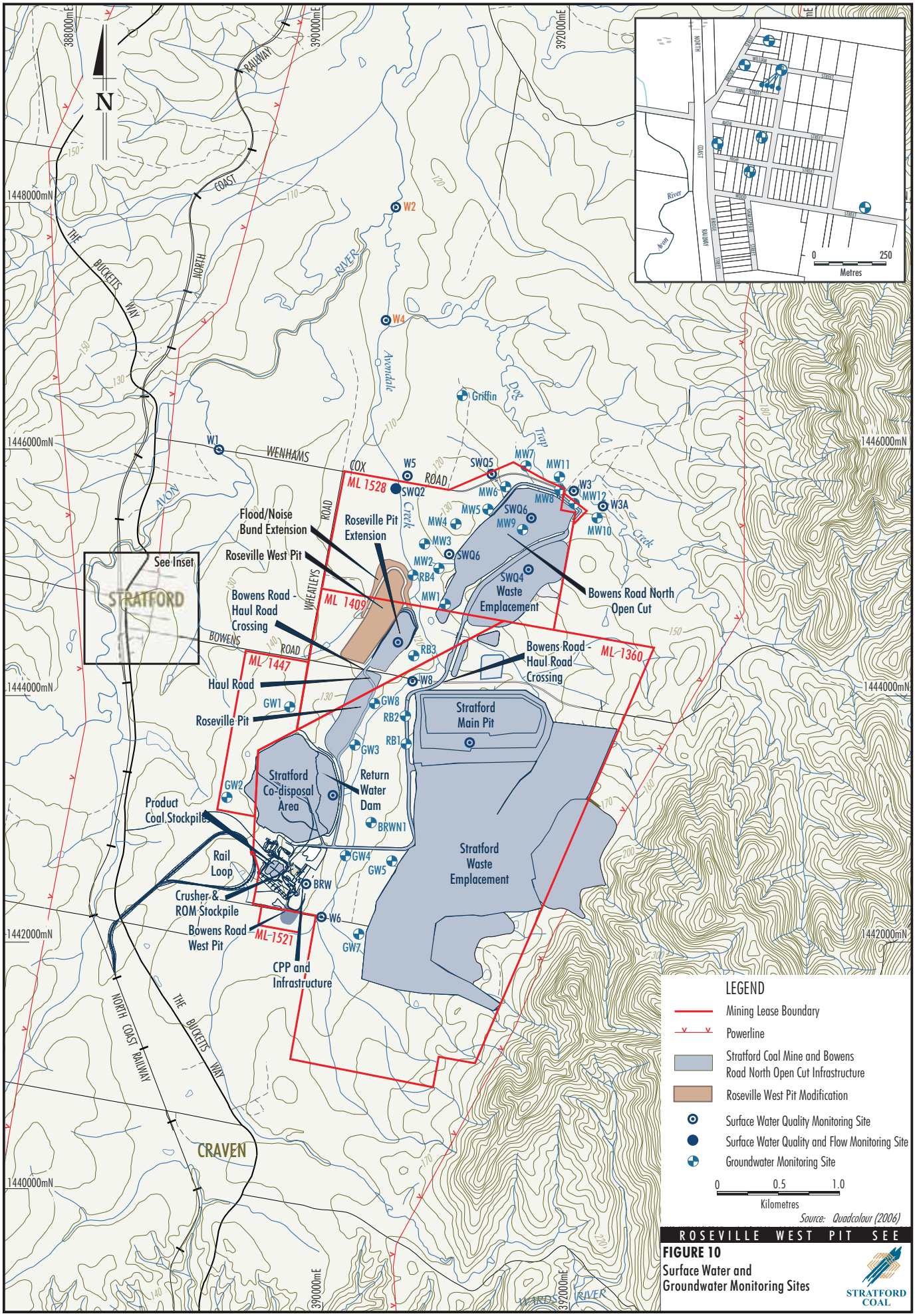
Gilbert and Associates (Appendix C) also considered the potential impacts of the modification on flood dynamics and concluded:

> *Extension of the existing flood bund around the Roseville West Pit could possibly increase flood levels upstream as a consequence of its location within the flood plain of Avondale Creek. The extension of the flood bund is however relatively minor and based on the pit plan provided, does not encroach further into the flood plain than the existing bund. In an assessment of the implications of the existing flood bund for the Roseville Pit Extension in relation to the requirements of the Gloucester Local Environmental Plan it was concluded that:*
>
> > *"…no lands will be affected by flood waters in this section of Avondale creek floodplain other than those owned by SCPL. This section of Avondale Creek is bounded on either side by the existing Stratford Coal Mine components. Therefore it is considered that there is no potential for impacts of flooding and flood liability on individual owners, occupiers and the public resulting from floods affected by this development."*
>
> *Extension of the flood bund for Roseville West Pit would not affect these conclusions.*

SCPL is well placed to undertake emergency works if required during a flood event, as it has significant earthmoving equipment available on-site. Surface water monitoring at the existing monitoring sites (Figure 10) would continue.

Because of recent geotechnical issues with the endwall at BRNOC, a concern was raised by the DNR during consultation for the SEE (Section 1.4.3) with respect to the management of pit stability where the Roseville West Pit is developed in proximity to Avondale Creek.

SCPL would limit the extent of the Roseville West Pit and associated works such that they would not encroach within 80 m of the banks of Avondale Creek. In addition, SCPL would commission a suitably qualified Geotechnical Engineer to conduct a review of the pit design and pit wall stability. This would include monitoring requirements if necessary.



ROSEVILLE WEST PIT SEE

FIGURE 10

Surface Water and
Groundwater Monitoring Sites

STRATFORD COAL

GCL-06-06 RWP SEE_008D

4.6.2 Groundwater Resources

Background

The main aquifers in the Gloucester Basin are associated with the coal seams which are intersected by faults that compartmentalise groundwater flow.

Golder Associates (Golder) undertook a groundwater investigation programme for the SCM in 1981 and 1982. Golder concluded that the groundwater flow in the SCM area was from the south-west to the north-west at a gradient of about 1 in 100 and that the groundwater table approached the ground surface at the swampy north-west corner of the SCM area. This was attributed to reduced permeability related to the east-west fault that forms the northern limit to the Stratford Main Pit.

Golder identified colluvium as the principal source of groundwater recharge. Analysis of groundwater quality during the Golder investigation indicated groundwaters in the area were generally saline, highly mineralised, hard waters with acidic to neutral pH values.

To assess the potential impacts of the BRNOC on local groundwater systems, an investigation of the hydrogeology was undertaken including an assessment of the potential cumulative impact of the BRNOC and SCM on groundwater systems using numerical modelling techniques by Australasian Groundwater and Environmental Consultants (AGE) (2001).

Groundwater at SCM and BRNOC occurs predominantly within coal seams and is recharged from overlying colluvium. The direction of groundwater flow is from the south-east to the north-west and the main groundwater discharge zones are Avondale and Dog Trap Creeks, Avondale Swamp and Avon River. A groundwater divide is located between the Stratford Main Pit and the BRNOC.

SCPL have conducted a monitoring programme of groundwater levels and quality within its Mining Leases and regional registered and unregistered bores since 1993/1994. The monitoring programme has indicated that the Stratford Main Pit, BRNOC and Roseville pit dewatering have not had any appreciable impact upon regional groundwater levels or quality.

Groundwater level and groundwater quality monitoring in the vicinity of SCM and BRNOC is described in the AEMR (SCPL, 2005).

Environmental Review

The potential impacts of mining on groundwater resources have been assessed as part of the SCP EIS and more recently in the SCM Alterations SEE and BRN EIS.

Potential groundwater impacts of the Roseville West Pit would include increased groundwater extraction associated with inflows in the Roseville West Pit and the potential for this extraction to drawdown local or regional aquifers. However, experience with mining at SCM to date indicates that the groundwater aquifers contained in the coal seams are generally confined and that drawdown effects are localised in nature. As described above, groundwater monitoring undertaken since 1994 indicates that development of the SCM, BRNOC and Roseville Pit has not led to any significant impacts on groundwater levels or quality.

As stated in Section 4.6.1, the Gilbert and Associates (Appendix C) Water Resources Review concluded that:

> *"…experience at the Roseville Pit and Roseville Pit Extension suggests that groundwater inflows are likely to be small and insignificant in terms of the overall site water balance. "*

The Roseville West Pit would be significantly shallower that the Stratford Main Pit and would be comparable in extent to, and immediately adjacent to, the Roseville Pit Extension. Local and regional groundwater levels and quality would continue to be monitored and reported in accordance with the existing monitoring programme.

In accordance with the recommendation of Gilbert and Associates (Appendix C), groundwater inflows at the Roseville West Pit would be monitored for use in future water balance reviews.

4.7 WASTE ROCK MANAGEMENT

Background

Several geochemical and geotechnical investigations of mine waste were conducted at Stratford prior to construction of the SCM (Woodward-Clyde, 1994; Dames and Moore, 1984; Golder Associates, 1981 and 1982). These investigations, along with operational experience gained at the mine indicate overburden materials at Stratford are generally benign due to low total sulphur content and an excess of neutralising capacity (Resource Strategies, 2001).

The rehabilitation design for the overburden emplacements at SCM involves contouring of the outer dump surfaces, removal of large rocks from the surface, topsoil spreading, addition of lime or gypsum (if required) and revegetation.

Waste rock management strategies at SCM have been effective and no significant acid mine drainage issues have been reported. Resource Strategies (2001) reported that the surface water monitoring results indicated surface waters in the open pit, draining from major mine landforms and in nearby off-lease watercourses record pH results within the background range (ie. neutral to slightly acidic).

A geochemical assessment of mine waste rock to be encountered during the development of the BRNOC was undertaken by Resource Strategies (2001). Samples were taken from six boreholes developed within the open cut extent and tested for the purpose of waste rock characterisation. Acid forming potential, multi-element scans and element solubility testwork results classified mine waste rock material as NAF and unlikely to generate environmentally harmful leachate when exposed to surface oxidation processes. The geochemical characteristics of the material at the BRNOC is consistent with the recorded behaviour of waste rock at the SCM.

Environmental Review

Further geochemical testwork would be undertaken during the early stages of the development of the Roseville West Pit to confirm that waste rock materials are NAF. In the unlikely event that PAF materials are identified they would be selectively handled and placed within the waste rock emplacements under a minimum 5 m thick cover of NAF mine waste or below the post-mining groundwater table (as backfill to the open cut) as per the SCM waste management strategy.

Mine waste rock would be deposited in the Roseville Pit Extension and within the northern portions of the Roseville West Pit. All of the mine waste generated by the modification would be placed as backfill within the open cuts and no out-of-pit dumps are proposed.

The overall batter slopes of the in-pit emplacements, where they are higher than the surrounding terrain would be 1 (Vertical) in 4 (Horizontal).

4.8 FLORA AND FAUNA

Flora and Fauna assessments of the Roseville West Pit modification area were included in the BRN EIS flora and fauna assessments (Dowling, 2001 and Mount King Ecological Surveys, 2001 respectively). In addition, Eight Part Tests of Significance were conducted for the BRN EIS by Dowling and Resource Strategies (2000) (flora) and Resource Strategies (2001) and Greg Richards and Associates (2001) (fauna).

Where these assessments are of relevance to the modification the findings are described below. The studies are presented in full in the BRN EIS.

4.8.1 Flora

The Stratford area is characterised by large areas of land that have been cleared of vegetation for agricultural purposes. Scattered trees and remnant dry sclerophyll woodland in various stages of disturbance are also present. An extensive area of remnant woodland occurs to the east of Mining Lease 1360 (Figure 4).

Four vegetation units were identified in the BRNOC survey area by Dowling (2001) (Figure 11). Of these four vegetation units, only cleared grazing land occurs within the Roseville West Pit modification area. This vegetation unit is described in the BRN EIS as follows:

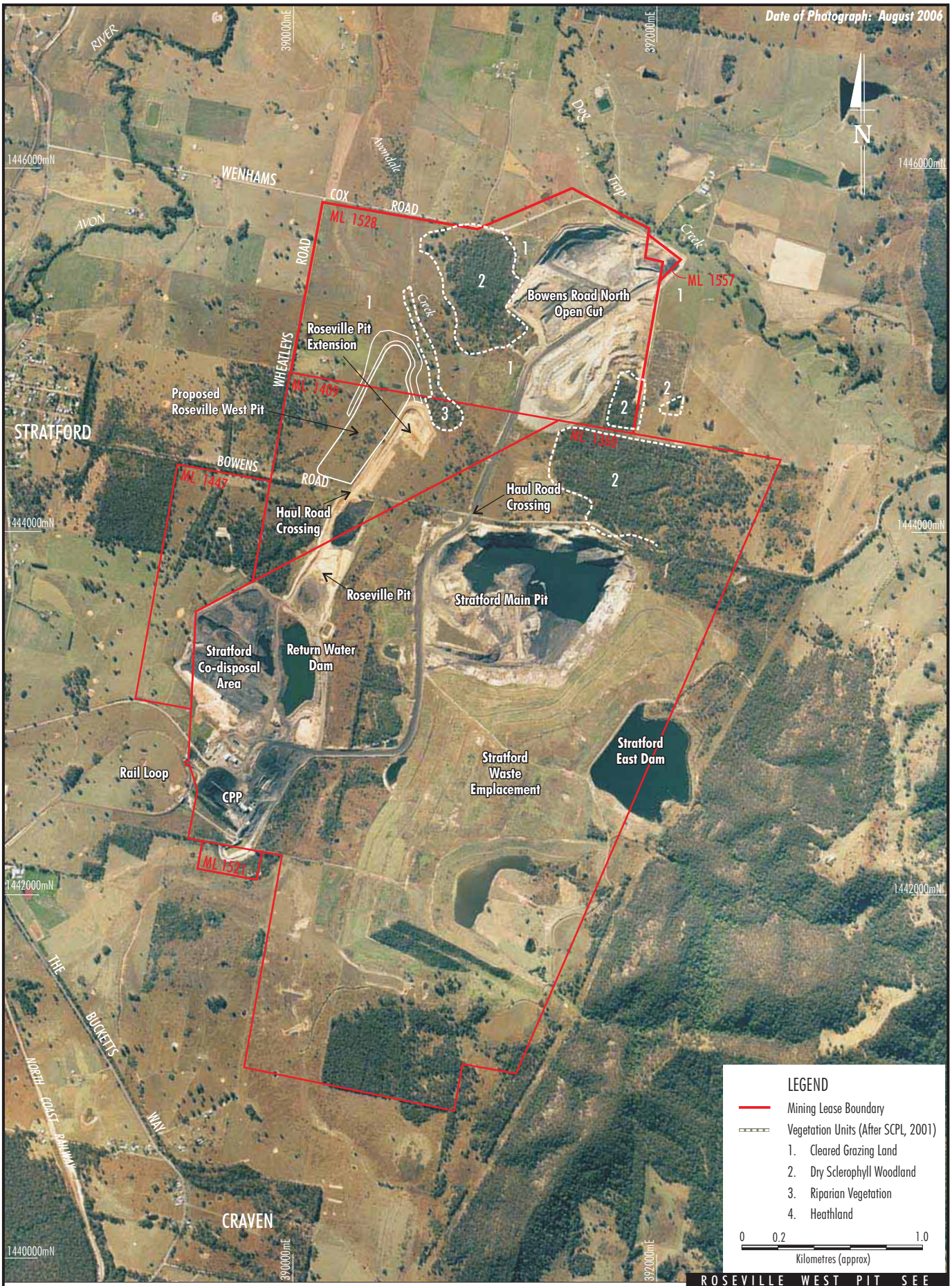
> *Cleared Grazing Land*
>
> *Approximately 80% of the MLA* [Mining Lease Application] *area has some degree of anthropogenic disturbance and is dominated by cleared grazing land. Isolated trees (mostly Eucalyptus eugenioides and E. creba) are scattered throughout this area.*
>
> *The cleared land consists predominantly of introduced grass species (eg. Andropogon virginicus, Axonopus affinis, Paspalum dilatatum, P. urvillei, Pennisetum clandestinum and Sporobolus indica var. major, with some native species including Imperata cylindrica var. major, Themeda australis, Entolasia marginata and E. stricta).*

A total of 103 plant species from 40 families were recorded during the Dowling (2001) survey of the BRNOC survey area, of which 18 species were introduced exotics. No flora species listed as threatened under the NSW *Threatened Species Conservation Act, 1995* (TSC Act) or the Commonwealth EPBC Act, 1999 were found within the BRNOC survey area and no species considered rare or threatened (Briggs and Leigh, 1996) were recorded.

For the BRNOC EIS, Eight Part Tests of Significance were undertaken for three threatened flora species (*E. glaucina, G. guthrieana* and *A. asthenes*) to assess the potential impacts of the development if the species were to occur within the area. It was concluded that, in the unlikely event that they occur, the BRNOC would not have a significant affect on threatened plant species, populations, ecological communities or habitats (SCPL, 2001a).

Environmental Review

As described above the Roseville West Pit modification area lies within an area that has been mapped by previous vegetation surveys as cleared grazing land with scattered isolated trees. Previous surveys of the BRNOC survey area did not identify any threatened flora species and threatened species assessments conducted for the BRN EIS did not identify the potential for any significant adverse impacts on flora.



ROSEVILLE WEST PIT SEE

FIGURE 11
Roseville West Pit -
Location Relative to
Mapped Vegetation Units

STRATFORD COAL

GCL-06-06 RWP SEE_006D

Given the area to be developed for the Roseville West Pit modification lies within an area of cleared grazing lands, no significant potential impacts on flora are expected from the development of the modification. Notwithstanding, SCPL would implement the Roseville West Pit modification consistently with the SCM Landscaping Plan (AVH, 1995), BRNOC LRMP (SCPL, 2001c), Roseville Pit Compensatory Habitat Plan (SCPL, 2006b), BRNOC FFMP, BRNOC LMP and SCM wildlife corridor where practicable.

The Roseville West Pit flood/noise bunding would extend into a portion of the proposed compensatory habitat area for the Roseville Pit Extension (as described in the Roseville Pit Compensatory Habitat Plan - SCPL, 2006b). An equivalent area would be established outside of the Roseville West Pit modification disturbance area (Section 5.1).

4.8.2 Fauna

The BRNOC area was surveyed and assessed for avifauna, mammals, reptiles and amphibians by Greg Richards and Associates (2001) and Mount King Ecological Surveys (2001). The BRN EIS considered the findings of these surveys and the results of previous fauna surveys and assessments undertaken for the SCP EIS and a number of other relevant reference sources.

A summary of the number of terrestrial vertebrate species identified within the BRNOC area is provided in Table 7.

Table 7
Terrestrial Vertebrate Fauna Species
Identified in the BRNOC Area

Fauna Type	Number of Species Identified
Mammals	17
Birds	55
Reptiles	3
Amphibians	11
Total	**81**

Source: Mount King Ecological Surveys (2001);
Greg Richards Associates Pty Ltd (2001)

One threatened bat species (Yellow-bellied Sheathtail Bat) was identified within the BRNOC area. No other fauna species listed as vulnerable, endangered or extinct under the TSC Act or Commonwealth EPBC Act, 1999 were recorded within the BRNOC area (SCPL, 2001a). A further five threatened fauna species, namely the Squirrel Glider, Glossy Black-Cockatoo, Large Bentwing Bat, Southern Myotis, and Greater Broad-nosed Bat had previously been recorded in the SCM area (SCPL, 2001a).

In accordance with the provisions of Section 5A of the EP&A Act, 8 Part Tests of Significance were completed for 26 threatened fauna species known or considered possible occurrences in the BRNOC area. The information presented in the 8 Part Tests and recommended fauna mitigation measures in the BRN EIS indicated that no threatened fauna species would be significantly affected by the BRNOC to the extent that local population viability would be undermined (SCPL, 2001a).

Environmental Review

Given the area to be developed for the Roseville West Pit modification lies within an area of cleared grazing lands, no significant potential impacts on fauna are expected from the development of the modification. Notwithstanding, SCPL would implement the Roseville West Pit modification consistently with the fauna management measures developed for the BRN EIS including:

- Rehabilitation of disturbed areas would include the planting of native tree and shrub species to re-create potential faunal habitats.
- Prior to ground disturbance works, mature trees and stags with hollows are to be identified, marked and retained wherever feasible. Where practicable, mature, hollow bearing trees within the proposed clearance zone would be utilised in the rehabilitation programme.
- In addition to revegetation of the backfilled waste emplacement areas, existing native habitat would, where possible, be preserved to maintain biodiversity and to facilitate the potential for linking these areas to rehabilitated mine landforms.

The clearance of any individual trees in the Roseville West Pit area would be undertaken in accordance with the flora and fauna management measures outlined in the BRNOC FFMP (SCPL, 2002b) including delineation of the clearance areas, conduct of pre-clearance surveys and the implementation of fauna management strategies if necessary.

4.9 HAZARD AND RISK

All hazardous material at the SCM are stored and used in accordance with the relevant material safety data sheets (MSDS). The MSDS register is updated when new materials or chemicals are brought to site. The mine contractor is responsible for the Dangerous Goods Licence for the Fuel Farm and Explosives Magazine. Detonators are stored on-site in the explosive magazine located to the north-west of the site. No bulk explosives are stored on-site.

Environmental and rehabilitation risk identification and environmental management controls were identified for the Roseville Pit Extension as a component of the RPE MOP (SCPL, 2006a).

Environmental Review

The Roseville West Pit modification would involve no significant increase in the average annual production of ROM coal and waste rock at the SCM site. The fuel, explosive and chemical storage facilities on-site would not require any modification and all materials would continue to be stored and used in accordance with the relevant MSDSs.

The Roseville West Pit and associated bunds and waste backfilling operations would not significantly alter the risk profile of the SCM. The existing management and mitigation measures at SCM would be applied to the Roseville West Pit modification where required to minimise the hazards and risks associated with the development.

Where required, environmental management plans would be updated to address the modification (Section 5.2.2).

4.10 TRANSPORT

Stratford is located approximately 40 km west of the Pacific Highway (Figure 1), the main coastal arterial road linking Brisbane and Sydney. The Bucketts Way (Trunk Road 90) comprises the principal road servicing the SCM/BRNOC area and runs approximately 40 km west from Nabiac on the Pacific Highway to Gloucester and then south to rejoin the Pacific Highway approximately 8 km south of Karuah (Figures 1 and 2).

The local minor road network in the SCM area comprises a grid of unsealed roads, running approximately east-west and north-south. Bowens Road has been diverted to the north of the Main Pit, and connects to Bucketts Way at Stratford village and runs some 6 km to the ridgeline in the east (Figure 2).

Wheatleys Road connects Wenhams Cox and Bowens Roads, running parallel and to the east of The Bucketts Way. The local minor road network primarily provides property access for local landholders and generally does not carry through traffic.

Two haul road crossings of Bowens Road are in place and serve the BRNOC operation (haulage of coal only) and Roseville Pit Extension (haulage of coal and waste rock). The eastern (BRNOC) crossing is unsealed and the western crossing (currently servicing the Roseville Pit Extension) has been recently sealed as a trial.

Seven complaints from local landholders have been received since July 2002 about the presence of mud on the BRNOC and Roseville Pit Extension haul road crossings during wet weather.

Environmental Review

No change to the general transport requirements of the SCM are proposed for the Roseville West Pit modification. The mining rate, ROM coal production rate and the saleable coal production rate would remain unchanged and heavy deliveries are therefore not expected to vary.

In addition, the light traffic associated with workforce movements to and from the mine would remain unchanged.

The development of the Roseville West Pit would extend the operation of the western haul road crossing of Bowens Road (currently serving the Roseville Pit Extension) for up to three years.

However, the operation of the crossing for the development of the Roseville West Pit would differ somewhat. Waste rock from the Roseville West Pit would be deposited in the Roseville Pit Extension and therefore would not be hauled across Bowens Road. The number of truck crossings of Bowens Road would therefore be significantly reduced as only coal would regularly be hauled via the crossing.

SCPL would continue to undertake regular road maintenance to minimise the presence of mud on the haul road crossings. The usage of these crossings would be minimised during wet weather (ie. by re-scheduling of ROM coal hauling) if practicable.

4.11 SOCIAL AND ECONOMIC ASPECTS

The SCM and BRN operations currently employ some 65 people, of which approximately ten to thirteen are employed at the Roseville Pit Extension. The Roseville West Pit modification would provide continued employment for these workers for a period of up to 3 years at the cessation of the Roseville Pit Extension.

The continued employment associated with the modification would result in continued expenditure on wages in the regional economy. The production of extra ROM coal would result in additional export revenue to SCPL and would contribute to the continued operation of SCM. In addition, the production of additional coal and associated revenue would result in the collection of additional royalties and taxes by the State of NSW and the Federal Government.

Community liaison during the development of Roseville West Pit modification would continue to be provided by the quarterly CCC meetings. The 24 hour complaints number would continue to operate to provide the local community with a method to register issues or complaints with respect to SCPL mining activities.

Local landholders have in the past expressed concerns that mining modifications could affect property values. However, assessment of the potential environmental impacts of the modification has indicated that the modified development would remain substantially the same as the approved SCM and the mining operations would not be significantly closer to private receptors.

5 REHABILITATION, ENVIRONMENTAL MONITORING AND MANAGEMENT

5.1 REHABILITATION

The rehabilitation of the Roseville West Pit modification would be integrated with SCM rehabilitation programme. The SCM rehabilitation objectives and management procedures are provided in Sections 2.9 and 2.10.

Waste rock generated from the Roseville West Pit modification would be utilised to backfill the Roseville Pit Extension. Once sufficient room is available, in-pit deposition of waste rock would also be undertaken in the Roseville West Pit.

At the cessation of mining at the modification, a small final void would remain in the Roseville West Pit. Consistent with the SCPL approach to the Roseville Pit Extension, prior to the cessation of the SCM operations SCPL would backfill the Roseville West Pit void to natural ground level. The backfill material would be available in the form of waste rock from one of the other satellite pits that are proposed for future development (subject to future approvals), or from the final stages of the development of the BRNOC.

Wildlife Corridor

As shown on Figure 12, the Roseville Pit Extension and Roseville West Pit are both located partially within the final SCM wildlife corridor. The rehabilitation of the Roseville Pit Extension will be facilitated by development of the Roseville West Pit by backfilling the Extension with waste rock. As both pits would be backfilled, the post mining landforms would be rehabilitated to be consistent with the SCM wildlife corridor.

Roseville Pit Extension Compensatory Habitat Plan Area

As described in Section 4.8.2, the Roseville West Pit bund would extend into the existing Roseville Pit Extension compensatory habitat area (SCPL, 2006b). Alternative compensatory habitat areas on Avondale Creek would be developed to maintain the same area of compensatory habitat.

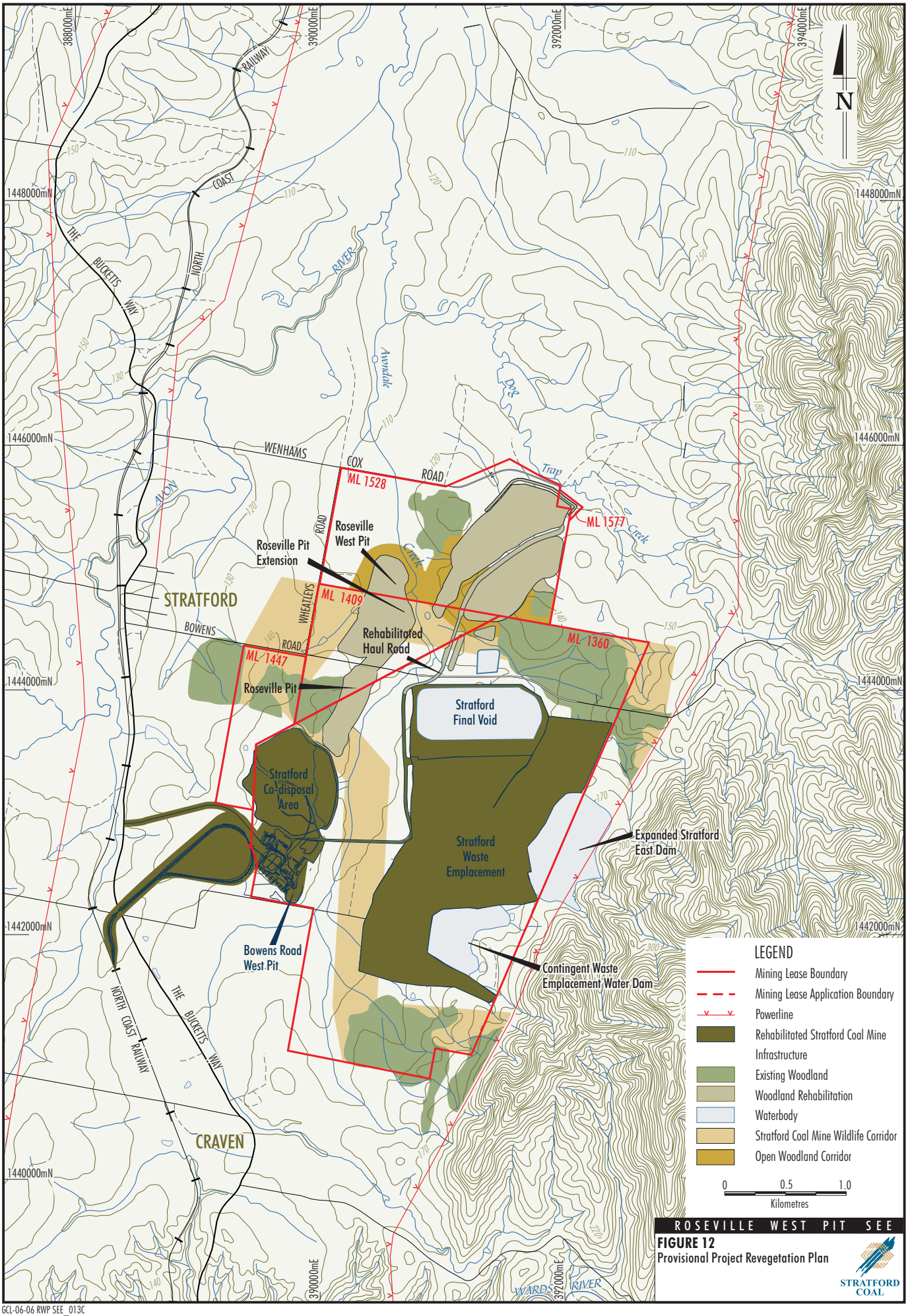
5.2 ENVIRONMENTAL MONITORING AND MANAGEMENT

5.2.1 Environmental Monitoring

The SCPL monitoring programme includes monitoring sites and monitoring frequencies for all major environmental parameters and already covers all issues or requirements relevant to the modification.

5.2.2 Environmental Management

Existing environmental management plans that would be updated to address the Roseville West Pit modification would include the MOP, SWMP (particularly the erosion and sediment control components). Environmental monitoring and management of SCM operations (including the modification) would continue to be reported in the AEMR.



ROSEVILLE WEST PIT SEE

FIGURE 12
Provisional Project Revegetation Plan

STRATFORD COAL

GCL-06-06 RWP SEE_013C

6 CONCLUSION

SCPL has lodged an application with DoP to modify the SCM Development Consent. The Roseville West Pit modification includes a number of changes to SCM. These changes include:

- a small satellite pit to the immediate west and adjoining the Roseville Pit Extension to access some 0.7 Mt of ROM coal;
- production of approximately 3.25 Mbcm of waste rock from the new pit and use of this material for backfilling the Roseville Pit Extension and in-pit emplacement in the Roseville West Pit; and
- providing continued employment for the employees who currently operate the Roseville Pit Extension.

Environmental reviews that have been conducted to evaluate the proposal have concluded the following:

- The operational noise impacts of the modified SCM would remain substantially the same, with the main driver for cumulative noise emissions being the approved BRNOC operation. The cumulative noise assessment identified three additional private residences in the noise management zone. However the cumulative noise emissions at these residences are predicted to only be marginally (1-2 dBA) above the applicable intrusive criteria. Two of the residences were previously owned by SCPL and are subject to a private agreement between SCPL and the landowner. No additional residences have been identified as being in the noise affectation zone.
- The potential air quality emissions of SCM with the modification are expected to continue to comply with applicable dust deposition and suspended particulate criteria at the nearest private receptors.
- Continued implementation of SCPL's existing site water management procedures, erosion and sediment control measures and monitoring programmes would minimise the effect of the modification on surface water and groundwater resources.
- The modification is located in an area of cleared agricultural land and no threatened flora or fauna species, populations, ecological communities, or their habitats would be expected to be significantly affected by the proposed modification to the extent that the viability of a species, population, ecological community, or their habitats would be undermined.
- For privately owned residences which have views of the modification area, the potential visual impact of the proposed modification is predicted to be substantially the same, due to the distances involved and screening effects of existing vegetation and local topography.
- With the continued implementation of the existing environmental management measures and monitoring programmes, no significant additional effects on residents or existing environmental values are expected to result from the Roseville West Pit modification.

The environmental reviews conducted for the SEE indicate that the SCM incorporating the Roseville West Pit modification, would not result in a significant increase in environmental impacts when compared to the SCM (DA 23-98/99).

The existing environmental management measures and monitoring programmes at the SCM would be expanded to include the Roseville West Pit modification.

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STATEMENT OF ENVIRONMENTAL EFFECTS

Stratford Coal Mine
Roseville West Pit Modification

ATTACHMENT

ATTACHMENT 1

STRATFORD COAL MINE
DEVELOPMENT CONSENT CONDITIONS

ENVIRONMENTAL PLANNING AND ASSESSMENT ACT, 1979

INTEGRATED STATE SIGNIFICANT DEVELOPMENT

DETERMINATION OF DEVELOPMENT APPLICATION PURSUANT TO SECTIONS 76(A)9 & 80

I, the Minister for Urban Affairs and Planning, pursuant to Sections 76(A)9 & 80 of the Environmental Planning and Assessment Act, 1979 ("the Act) determine the development application ("the application") referred to in Schedule 1 by granting consent to the application subject to the conditions set out in Schedule 2.

The reasons for the imposition of the conditions are to:

(i) minimise the adverse impact the development may cause through water and air pollution, noise and visual disturbance;

(ii) provide for environmental monitoring and reporting; and

(iii) set requirements for infrastructure provision.

Craig Knowles
Minister for Urban Affairs and Planning

Sydney, 5.2. 1999 File No. S98/01495

Schedule 1

Application made by:	Stratford Coal Pty Ltd (ACN 064 016 164) ("the Applicant").
To:	Gloucester Shire Council (DA 23-98/99)
In respect of:	Land described in Schedule "A"
For the following:	Construction of facilities for the unloading, loading, processing and washing of coal from the Duralie coal mine and emplacement of Duralie coal rejects within the Stratford mine site, and the continued operation of the Stratford coal mine ("the Development").
BCA Classification:	Class 10A (hoppers and conveyors)
NOTE:	1) To ascertain the date upon which the consent becomes effective, refer to section 83 of the Act. 2) To ascertain the date upon which the consent is liable to lapse, refer to section 95 of the Act. 3) Section 97 of the Act confers on an Applicant who is dissatisfied with the determination of a consent authority a right of appeal to the Land and Environment Court exercisable within 12 months after receipt of notice

SCHEDULE "A"

LAND TO BE DEVELOPED

Crown Grant Volume 13945 Folio 25 Lot 2 in DP 241780 Parish of Avon County of Gloucester

Block 70 of Avon Subdivision Parish of Avon County of Gloucester - Registered No. 108 Book 3445

Part Lot 69 Avon Subdivision Parish of Avon County of Gloucester - Registered No. 964 Book 3568

Lots 57, 58 and 59 of Avon Subdivision Parish of Avon County of Gloucester - Registered No. 458 Book 3569

Block 74 in Avon Subdivision Parish of Avon County of Gloucester - Registered No. 73 Book 3570

Lot 76 of Avon Subdivision Parish of Avon County of Gloucester - Registered No. 419 Book 3568

Lots 45, 56A, 56B and 56C of Avon Subdivision Parish of Avon County of Gloucester- Registered No. 420 Book 3568

Lot 41 of Avon Subdivision Parish of Avon County of Gloucester - Registered No. 418 Book 3568

Lot 1 in DP 241780 Volume 13784 Folio 164 Parish of Avon County of Gloucester

Part Lot 53 of Avon Subdivision Parish of Avon County of Gloucester - Registered No. 966 Book 3568

Lot 71 of Avon Subdivision Parish of Avon County of Gloucester - Registered No. 965 Book 3568

Lot 1 in DP531023 Certificate of Title Volume 15207 Folio 225 Parish of Avon County of Gloucester

Lots 54, 55, 56D, 56E, 72, 73 and 75 of Avon Subdivision Parish of Avon County of Gloucester - Registered No. 625 Book 3569

Lots 60 and 61 Parish of Avon County of Gloucester - Registered No. 208 book 3559

Part of Lots 52 and 53 of Avon Subdivision Parish of Avon County of Gloucester

1/194728 Lot 1 in DP 194827 Parish of Avon County of Gloucester

52/979859 Lot 52 in DP 979859 Parish of Avon County of Gloucester

Lot 64 in DP979859 Certificate of Title 64/979859 Parish of Avon County of Gloucester

Notice of Modification

Section 96(2) of the *Environmental Planning and Assessment Act 1979*

Under Section 96(2) of the *Environmental Planning and Assessment Act 1979*, I, the Acting Deputy Director-General, Office of Sustainable Assessments and Approvals, Department of Planning, modify the development consent referred to in Schedule 1, as set out in Schedule 2.

Yolande Stone
Acting Deputy Director-General
(as delegate for the Minister for Planning)

Sydney 2005

SCHEDULE 1

The development consent (DA No. 23-98/99) for the Stratford coal mine, which was granted by the Minister for Urban Affairs and Planning on 5 February 1999.

SCHEDULE 2

1. Replace “Schedule 2” of the Minister’s consent with the following text.

SCHEDULE 2

DEFINITIONS

AEMR	Annual Environmental Management Report
Applicant	Stratford Coal Pty Limited
Council	Gloucester Shire Council
DA	Development Application
Day	Day is defined as the period from 7am to 6pm on Monday to Saturday, and 8am to 6pm on Sundays and Public Holidays
Department	Department of Planning
DEC	Department of Environment and Conservation
DNR	Department of Natural Resources
DPI	Department of Primary Industries
Director-General	Director-General of the Department of Infrastructure Planning & Natural Resources, or delegate
DST	Daylight Standard Time
EIS	Environmental Impact Statement
EST	Eastern Standard Time
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 consent
Night	Night is defined as the period from 10pm to 7am on Monday to Saturday, and 10pm to 8am on Sundays and Public Holidays;
Privately-owned land	Land that is not owned by a public agency, a mining company or its subsidiary; or where relevant, land that is not covered by a private agreement between the Applicant and the land owner that specifically allows for variances to criteria for environmental performance in this consent.
Site	Land to which the DA applies
SEE	Statement of Environmental Effects

1. GENERAL

1.1 Obligation to Minimise Harm to the Environment

The Applicant 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 development.

1.2 Terms of Approval

(a) The Applicant shall carry out the development generally in accordance with the:
- DA 23-98/99;
- EIS titled *Stratford Coal Project*, dated September 1994, and prepared by Peter Ryan and Chris Ellis;
- SEE titled *Proposal to Increase Saleable Coal Production to 1.7 Mtpa,* and associated documents, dated April 1996, and prepared by Stratford Coal Pty Limited;
- SEE titled *Proposed Modifications to the Stratford Coal Mine*, dated August 1998, and prepared by Resource Strategies Pty Ltd;
- SEE titled *Stratford Coal Mine Modification,* dated July 2003, and prepared by Resource Strategies Pty Ltd, including the *Stratford Coal Mine Operating Noise Impact Assessment*, dated August 2005, prepared by Heggies Australia Pty Ltd; and
- conditions of this consent.

(b) If there is any inconsistency between the above, initially the conditions of consent, then the most recent document shall prevail to the extent of any inconsistency.

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

1.3 Period of Approval

This consent is limited to a period of 14 years from the date of the mining lease approval for the Statford coal mine.

1.4 Limits on Approval

(a) The Applicant shall not transport more than 2.3 million tones of coal a year from the Stratford coal mine (including coal from the Bowens Road North mining operations).

(b) The Applicant shall not carry out any development at the Roseville Pit to the north of Bowens Road at night.

1.5 Contributions to Council

The Applicant shall pay a community infrastructure contribution of $86,000 a year (payable quarterly and indexed to CPI Sydney [all groups] index from 1998) to the Council until the completion of mining activities.

2. MINE MANAGEMENT

2.1 Rejects from Duralie

The Applicant shall ensure that all rejects associated with the coal from the Duralie mine are managed to the satisfaction of the DPI.

2.3 Mining Operations, Waste Management and Rehabilitation

The Applicant shall:
- prepare a Mining Operations Plan for all mining operations on the site;
- dispose of coarse and fine rejects on the site; and
- rehabilitate the site,

to the satisfaction of the DPI.

3. LAND AND SITE ENVIRONMENTAL MANAGEMENT

3.1 Appointment of Environmental Officer

The Applicant shall appoint an Environmental Officer whose qualifications are acceptable to the DPI to oversee the environmental management, monitoring, auditing and reporting on the site.

3.2 Heritage Assessment and Management

The Applicant shall:
- protect Aboriginal artefact scatter No. 31.1.8;
- monitor topsoil removal; and if any Aboriginal objects are found or observed,
- immediately advise DEC and carry out any requirements DEC may have,

to the satisfaction of the DEC.

3.3 Flora and Fauna Assessment and Management

(a) The Applicant shall:
- implement the approved plan of management for the proposed Wildlife Corridor as proposed in the EIS (see condition 1.2);
- protect the remnant Squirrel Glider habitat ; and
- carry out flora and flora monitoring within the Wildlife Corridor,

to the satisfaction of the Director-General.

(b) The Applicant shall carry out a range of measures to improve the riparian vegetation in Avondale Creek to the north of the mine to the satisfaction of the Director-General to compensate for the removal of riparian vegetation associated with the extension of the Roseville Pit to the north of Bowens Road. By the end of May 2006, the Applicant shall prepare (and subsequently implement) a Compensatory Habitat Plan to the satisfaction of the Director-General. This plan must:
- describe the measures that would be implemented to improve the riparian vegetation in Avondale Creek; and
- describe how the performance of the measures would be monitored.

3.4 Visual Amenity & Landscaping

The Applicant shall:
- implement the approved Landscaping Plan for the site; and
- carry out any supplementary tree planting or visual enhancement works that are required by Council to maintain the visual amenity of the local area,

to the satisfaction of Council.

3.5 Bushfire and Other Fire Controls

The Applicant shall:
- provide adequate fire protection works on site, including one fully equipped fire fighting unit on stand-by (or alternative facilities specified by the Council); and
- undertake annual hazard reduction works in accordance with Council's Bushfire Management Plan,

to the satisfaction of Council.

4. WATER MANAGEMENT

4.1 Water Discharges

The Applicant shall only discharge water from the site in accordance with the provisions of a DEC Environment Protection Licence.

4.2 Site Water Balance

The Applicant shall:
- prepare a detailed site water balance for the development;
- measure:
  - water use on site; and
  - water transfers across the site;
- review the site water balance for the development annually; and
- report the results of this review in the AEMR,

to the satisfaction of the Director-General.

4.3 Erosion and Sediment Control

The Applicant shall implement a range of standard erosion and sediment controls on the site to the satisfaction of the Director-General, in general accordance with the requirements of the Department of Housing's *Managing Urban Stormwater: Soils and Construction* manual.

4.4 Surface Water Monitoring

The Applicant shall regularly monitor:
- the volume and quality of water discharged from the site;
- surface water quality upstream and downstream of the development in Avondale Swamp, Avondale Creek, Dogtrap Creek and the Avon River; and
- report the results of this monitoring in the AEMR,

to the satisfaction of the Director-General.

4.5 Ground Water Monitoring

The Applicant shall regularly monitor:
- the volume of ground water seeping into the open cut mine workings;
- regional groundwater levels and quality in the vicinity of the site; and
- report the results of this monitoring in the AEMR,

to the satisfaction of the Director-General.

4.6 Setback From Avondale Creek

The Applicant shall ensure that all the development associated with the Roseville Pit to the north of Bowens Road is located at least 40 metres from the bank of Avondale Creek, or as otherwise agreed by the Director-General.

4.7 Water Management Plan

By the end of May 2006, the Applicant shall prepare (and subsequently implement) a Water Management Plan for the Stratford coal mine, including the Bowens Road North operations, in consultation with the DNR, and to the satisfaction of the Director-General. This plan must include:
- a site water balance;
- an Erosion and Sediment Control Plan;
- a Surface Water Monitoring Program;
- a Ground Water Monitoring Program; and
- a Surface and Ground Water Response Plan, to address any potential adverse impacts associated with the development such as the reduction or loss of groundwater in bores in the vicinity of the mine.

4.8 Final Void Management Plan

By the end of September 2009, unless otherwise directed by the Director-General, the Applicant shall prepare (and subsequently implement) a Final Void Management Plan for the site, in consultation with the DPI and DNR, and to the satisfaction of the Director-General. This plan must:
- investigate options for the future use of the final void; and
- 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 over time.

5. AIR QUALITY, BLAST, NOISE AND LIGHT MANAGEMENT

5.1 Acquisition Upon Request

(a) Upon receiving a written request for acquisition from the landowner listed in Table 1, the Applicant shall acquire the land in accordance with the procedures in condition 6.3 of this consent.

90b - Bagnall	49 - Isaac (s)	68 - Devereaux
58 - Bramley	48 - Isaac (n)	90a - Battaglini
69 - D Blanch	93a - Blanch	24 - Ellis

Table 1: Land subject to acquisition upon request

Note: For more information on the numbering and identification of properties used in this consent, see Appendix 2.

(b) By the end of May 2006, the Applicant shall notify the owners of the land listed in Table 1 that they have voluntary acquisition rights.

5.2 Noise and Dust Limits in the Acquisition Zone

While the land listed in Table 1 is privately-owned, the Applicant shall ensure that the noise generated by the development does not exceed the noise limits in Table 2, and the dust emissions generated by the development do not cause additional exceedances of the air quality impact assessment criteria in Tables 7, 8, and 9 at any residence on the land.

Day $L_{Aeq(15\ minute)}$	Evening $L_{Aeq(15\ minute)}$	Night $L_{Aeq(15\ minute)}$	Land Number
41	41	47	58 - Bramley
37	37	45	90b - Bagnall
37	36	43	93a - Blanch
37	36	42	48 – Isaac (north) 49 – Isaac (south) 68 – Devereaux 69 – D Blanch 90a – Battaglini 93a - Blanch

Table 2: Noise limits for land in the acquisition zone

Notes:

- *If the Applicant has a written agreement with any landowner of the land listed in Table 1, and a copy of this agreement has been forwarded to the Department and the DEC, then the Applicant may exceed the noise limits in Table 2 or the air quality impact assessment criteria in Tables 7, 8, and 9 in accordance with the negotiated noise agreement.*
- *See notes in condition 5.3 for more detail on how to interpret these limits.*

5.3 Noise Limits

The Applicant shall ensure that the noise generated by the development does not exceed the noise limits set out in Table 3.

Day $L_{Aeq(15\ minute)}$	Evening $L_{Aeq(15\ minute)}$	Night $L_{Aeq(15\ minute)}$	Land Number
37	35	40	Craven Village
37	35	40	93c – Standen 93 - Campbell
37	35	39	95 – Smith 89 - McIntosh
37	35	35	18 – Atkins 13 – Teidman 46 - Wadland
35	35	35	All other privately-owned land excluding the land in Table 1

Table3: Noise limits

Notes:

- *If the Applicant 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 Applicant may exceed the noise limits in Table 2 in accordance with the negotiated noise agreement.*
- *Noise from the development 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 development 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.*
- *Noise from the development 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 development is impractical, the DEC may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy).*
- *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.*

5.4 Noise Acquisition Criteria

If the noise generated by the development exceeds the criteria in Table 4 at any privately-owned land, the Applicant shall, upon receiving a written request for acquisition from the landowner, acquire the land in accordance with the procedures in condition 6.3 of this consent.

Day $L_{Aeq(15\ minute)}$	Evening $L_{Aeq(15\ minute)}$	Night $L_{Aeq(15\ minute)}$	***Land***
42	*41*	*40*	Craven Village 93c – Standen 93 – Campbell 95 – Smith 89 – McIntosh 18 – Atkins 13 – Teidman 46 - Wadland
40	*41*	*40*	*All other privately-owned land excluding the land in Table 1*

Table 4: Land acquisition criteria dB(A)

Note: Noise generated by the development is to be measured in accordance with the notes presented below Table 3.

Additional Noise Mitigation Measures

5.5 Upon receiving a written request from:

- a landowner of the land listed in Table 1; or
- the owner of any residence where noise monitoring shows the noise generated by the development is greater than, or equal to, $L_{Aeq(15\ minute)}$ 38 dB(A) at night,

the Applicant 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 Applicant 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.

5.6 Noise Monitoring

By the end of May 2006, the Applicant shall prepare (and subsequently implement) a Noise Monitoring Program for the Stratford coal mine, including the Bowens Road North operations, to the satisfaction of the Director-General. This program shall include a noise monitoring protocol for evaluating compliance with the noise limits and acquisition criteria in this consent.

5.7 Noise - Continuous Improvement

The Applicant shall:

- investigate ways to reduce the noise generated by the development, including maximum noise levels which may result in sleep disturbance;
- investigate ways to transport as much coal as possible during the day and evening;
- implement all reasonable and feasible noise mitigation measures on the site; and
- report on these investigations and the implementation of any new noise mitigation measures on site in the AEMR,

to the satisfaction of the Director-General.

5.7 Airblast Overpressure Criteria

The Applicant shall ensure that the airblast overpressure level from blasting at the development does not exceed the criteria in Table 4 at any residence on privately owned land or noise sensitive location as defined in the DEC's *Industrial Noise Policy*.

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

Table 5: Airblast overpressure impact assessment criteria

5.8 Ground Vibration Impact Assessment Criteria

The Applicant shall ensure that the ground vibration level from blasting at the development does not exceed the criteria in Table 5 at any residence on privately owned land or noise sensitive location as defined in the DEC's *Industrial Noise Policy*.

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

Table 6: Ground vibration impact assessment criteria

5.9 Blasting Hours

The Applicant shall only carry out blasting at the development between 9 am and 5 pm (EST) and 9 am and 6 pm (DST) Monday to Saturday inclusive. No blasting is allowed on Sundays, public holidays, or at any other time without the written approval of the DEC.

5.10 Blasting - Operating Conditions

(a) The Applicant shall ensure that all blasting at the site is carried out in accordance with best practice to:
- ensure the safety of people, property, and livestock; and
- minimise the dust and fume emissions from blasting, particularly during adverse meteorological conditions,

to the satisfaction of the Director-General.

(b) If established by an expert , whose appointment has been approved by the Director-General, that blasting at the site causes damage to property or structures, the Applicant shall rectify the damage in consultation with the landowner, and to the satisfaction of the Director-General. The Applicant is to pay any costs associated with the appointment and assessment undertaken by the appointed expert.

5.11 Blast Monitoring

Prior to carrying out any blasting in the Roseville Pit to the north of Bowens Road, the Applicant shall prepare (and subsequently implement) a Blast Monitoring Program for the Stratford coal mine, including the Bowens Road North operations, to the satisfaction of the Director-General.

5.12 Air Impact Assessment Criteria

The Applicant shall ensure that the dust emissions generated by the development do not cause additional exceedances of the air quality impact assessment criteria listed in Tables 7, 8, and 9 at any residence on any privately owned land, excluding the land listed in Table 1.

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: Long-term Impact Assessment Criteria for Particulate Matter

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

Table 8: Short-term impact assessment criterion for particulate matter

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

Table 9: Long-term impact assessment criteria for deposited dust

Note: Deposited dust is assessed as insoluble solids as defined by Standards Australia, 2003, AS 3580.10.1-2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulates - Deposited Matter - Gravimetric Method.

5.13 Air Quality - Operating Conditions

The Applicant shall:

- ensure any visible air pollution generated by the development is assessed regularly, and that mining operations are relocated, modified, and/or stopped as required to minimise air quality impacts on privately owned land and public roads, such as Bowens Road and Bucketts Way; and
- implement all reasonable and feasible measures to minimise the off-site odour and fume emissions generated by any blasting or spontaneous combustion at the development,

to the satisfaction of the Director-General.

5.14 Air Quality Monitoring

By the end of May 2006, the Applicant shall prepare (and subsequently implement) a detailed Air Quality Monitoring Program for the Stratford coal mine, including the Bowens Road North operations to the satisfaction of the Director-General. This program shall include a protocol for evaluating compliance with the air quality impact assessment criteria in Tables 7, 8 and 9.

5.15 Lighting Emissions

The Applicant shall:

- take all feasible and reasonable measures to mitigate off-site lighting impacts from the development; and
- ensure that all external lighting associated with the development complies with *Australian Standard AS4282 (INT) 1995 – Control of Obtrusive Effects of Outdoor Lighting*,

to the satisfaction of the Director-General.

6. ADDITIONAL PROCEDURES FOR AIR QUALITY AND NOISE MANAGEMENT

6.1 Notification of Landowners

If the results of the air quality and/or noise monitoring required in this consent identify that the air pollution and/or noise generated by the development is greater than any of the air quality and/or noise criteria in section 5 of this consent, excluding the landowners in Table 1, then the Applicant shall notify the Director-General and the affected landowners accordingly, and provide quarterly monitoring results to each of these parties until the results show that the development is complying with the air quality and/or noise criteria in section 5 of this consent.

6.2 Independent Review

(a) If a landowner considers the development to be exceeding the air quality and/or noise criteria in section 5 of this consent, excluding the landowners in Table 1, then he/she may ask the Applicant in writing for an independent review of the air pollution and/or noise impacts of the development on his/her land.

If the Director-General is satisfied that an independent review is warranted, the Applicant shall within 3 months of the Director-General advising that an independent review is warranted:

- consult with the landowner to determine his/her concerns;
- 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 development is complying with the relevant air quality and/or noise criteria in section 5 of this consent; and
- give the Director-General and landowner a copy of the independent review.

(b) If the independent review determines that the development is complying with the relevant air quality and/or noise criteria in section 5 of this consent, then the Applicant may discontinue the independent review with the approval of the Director-General.

(c) If the independent review determines that the development is not complying with the relevant air quality and/or noise criteria in section 5 of this consent, then the Applicant shall:

- take all reasonable and feasible measures, in consultation with the landowner, to ensure that the development complies with the relevant air quality and/or noise criteria; and
- conduct further air quality and/or noise monitoring to determine whether these measures ensure compliance; or
- secure a written agreement with the landowner to allow exceedances of the air quality and/or noise criteria in section 5 of this consent,

to the satisfaction of the Director-General.

If the additional monitoring referred to above subsequently determines that the development is complying with the relevant air quality and/or noise criteria in section 5 of this consent, then the Applicant may discontinue the independent review with the approval of the Director-General.

If the measures referred to in above do not achieve compliance with the noise land acquisition criteria in section 5 of this consent, and the Applicant cannot secure a written agreement with the landowner to allow these exceedances within 3 months, then the Applicant shall, upon receiving a written request from the landowner, acquire the landowner's land in accordance with the procedures in condition 6.3 of this consent.

(d) If the landowner disputes the results of the independent review, either the Applicant or the landowner may refer the matter to the Director-General for resolution.

6.3 Land Acquisition

(a) Within 3 months of receiving a written request from a landowner with acquisition rights, the Applicant shall make a binding written offer to the landowner based on:

- 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 development the subject of the DA, 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;
- the reasonable costs associated with:
  - relocating within the Gloucester 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
- reasonable compensation for any disturbance caused by the land acquisition process.

However, if at the end of this period, the Applicant 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.

If either party disputes the independent valuer's determination, then the independent valuer should refer the matter back to the Director-General.

Upon receiving such a referral, the Director-General shall appoint a panel comprising the:
(i) appointed independent valuer;
(ii) Director-General and/or nominee/s; and
(iii) President of the Law Society of NSW or nominee,
to consider submissions from both parties, including meeting with the parties individually if requested, and to determine a fair and reasonable acquisition price for the land, and/or the terms upon which the land is to be acquired.

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

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

(b) The Applicant shall bear the costs of any valuation or survey assessment requested by the independent valuer, panel, or the Director-General and the costs of determination referred above.

(c) If the Applicant and landowner agree that only part of the land shall be acquired, then the Applicant 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.

7. TRANSPORT AND UTILITIES

7.1 Rail Transport

(a) The Applicant shall only transport coal from the site by rail.

(b) The Applicant shall only receive and unload coal from the Duralie mine between 7am and 10pm.

7.2 Monitoring of Coal Transport

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

7.3 Crossing of Bowens Road

(a) The Applicant shall construct, maintain, and operate the proposed crossing of Bowens Road to the satisfaction of Council.

(b) Prior to constructing the proposed crossing, the Applicant shall prepare (and subsequently implement) a Traffic Management Plan for the proposed crossing to the satisfaction of Council. This plan must describe the measures that would be implemented to:
- maintain the proposed crossing in a safe and serviceable condition during all weather conditions; and
- operate the proposed crossing safely to ensure there is no danger to other road users.

(c) By the end of 2008, unless otherwise agreed to by the Director-General, the Applicant shall close the proposed crossing of Bowens Road, and rehabilitate the road and adjoining land to the satisfaction of Council.

8. MONITORING, AUDITING, AND REPORTING

8.1 Environmental Management Strategy

(a) By the end of May 2006, the Applicant shall prepare (and subsequently implement) an Environmental Management Strategy for the Stratford coal mine, including the Bowens Road North operations, to the satisfaction of the Director-General. This strategy must:

- provide the strategic context for the environmental management of the development at the mine;
- describe the procedures that would be implemented to:
  - keep the local community and relevant agencies informed about the operations at the mine;
  - receive, handle, respond to, and record complaints;
  - resolve any disputes that may arise during the course of the development;
  - respond to any non-compliance; and
  - respond to emergencies; and
- describe the role, responsibility, authority, and accountability of all key personnel involved in the environmental management of the development with contact details.

(b) Within 3 months of the completion of each Independent Environmental Audit required in this consent, the Applicant shall review, and if necessary revise, the Environmental Management Strategy to the satisfaction of the Director-General.

8.2 Environmental Monitoring Program

(a) By the end of May 2006, the Applicant shall prepare (and subsequently implement) an Environmental Monitoring Program for the Stratford coal mine, including the Bowens Road North operations, to the satisfaction of the Director-General. This program must consolidate the various monitoring requirements in this consent into a single document.

(b) Within 3 months of the completion of the Independent Environmental Audit required in this consent, the Applicant shall review, and if necessary revise, the Environmental Monitoring Program to the satisfaction of the Director-General.

8.3 Annual Reporting

Each year, the Applicant shall prepare an AEMR to the satisfaction of the Director-General. This report must:

- identify the standards and performance measures that apply to the development;
- include a summary of the complaints received during the past year, and compare this to the complaints received in the previous 5 years;
- include a summary of the monitoring results on the development during the past year;
- include an analysis of these monitoring results against the relevant:
  - limits/criteria in this consent;
  - monitoring results from previous years; and
  - relevant predictions in the EIS and SEEs for the document;
- identify any trends in the monitoring over the life of the development;
- identify and discuss any non-compliance during the previous year; and
- describe what actions were, or are being, taken to ensure compliance.

8.4 Independent Environmental Audit

(a) By the end of 2006, and every three years thereafter, unless the Director-General directs otherwise, the Applicant shall commission and pay the full cost of an Independent Environmental Audit of the development. This audit must:

- be conducted by a suitably qualified, experienced, and independent person whose appointment has been endorsed by the Director-General;
- be consistent with *ISO 19011:2002 – Guidelines for Quality and/or Environmental Systems Auditing*, or equivalent updated versions of these guidelines;
- assess the environmental performance of the development, and its effects on the surrounding environment;
- assess whether the development is complying with the relevant standards, performance measures, and statutory requirements;
- review the adequacy of the Applicant's Environmental Management Strategy and Environmental Monitoring Program; and
- if necessary, recommend measures or actions to improve the environmental performance of the development, and/or the environmental management strategy or monitoring systems.

(b) Within 3 months of commissioning this audit, the Applicant shall submit a copy of the audit report to the Director-General, with a response to any of the recommendations contained in the audit report.

8.5 Community Consultative Committee

(a) The Applicant shall ensure that there is a Community Consultative Committee to oversee the environmental performance of the development. This committee shall:

- be comprised of:
  - 2 representatives from the Applicant, including the person responsible for environmental management at the mine;
  - at least 1 representative from Council; and
  - at least 5 representatives from the local community, including 2 representatives from community groups,

  whose appointment has been approved by the Director-General in consultation with the Council;
- be chaired by the representative from Council;
- meet at least four times a year, or as determined by the Director-General; and
- review and provide advice on the environmental performance of the development, including any management plans, monitoring results, audit reports, or complaints.

(b) The Applicant shall, at its own expense:

- ensure that 2 of its representatives attend the Committee's meetings;
- provide the Committee with regular information on the environmental performance and management of the development;
- provide meeting facilities for the Committee;
- arrange site inspections for the Committee, if necessary;
- take minutes of the Committee's meetings;
- make these minutes available on the Applicant's website within 14 days of the Committee meeting, or as agreed to by the Committee;
- respond to any advice or recommendations the Committee may have in relation to the environmental management or performance of the development;
- forward a copy of the minutes of each Committee meeting, and any responses to the Committee's recommendations to the Director-General within a month of the Committee meeting; and
- reimburse the Council and representatives from the local community for all reasonable expenses incurred in attending the Committee's meetings.

8.6 Access to Information

(a) Within 1 month of the approval of any management plan or monitoring program required under this consent (or any subsequent revision of these management plans or monitoring programs), the completion of the independent audits required under this consent, or the completion of the AEMR, the Applicant shall:

- provide a copy of the relevant document/s to the Council, relevant agencies and the CCC; and
- ensure that a copy of the relevant documents is made publicly available at the mine,

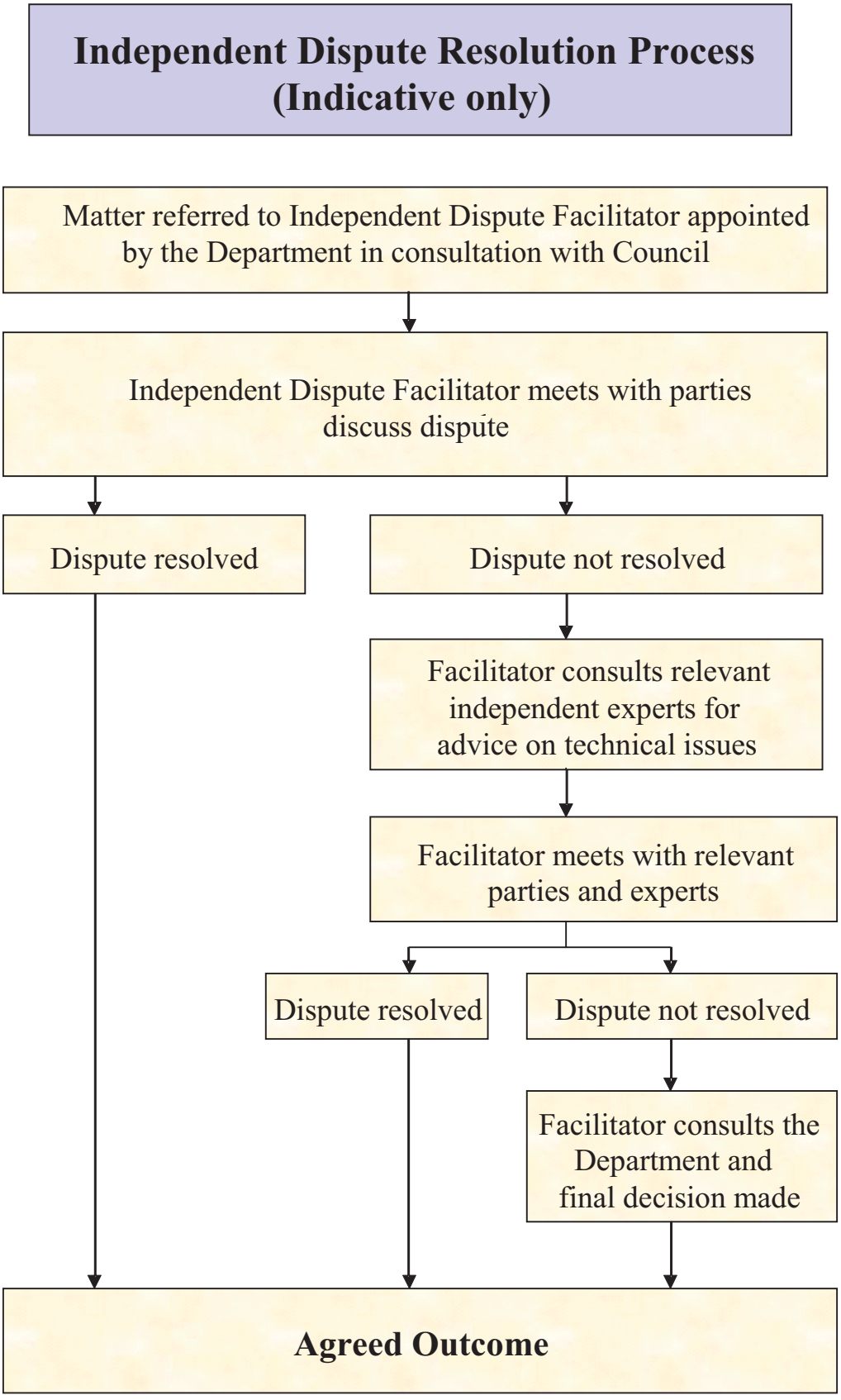
to the satisfaction of the Director-General.

(b) During the life of the development, the Applicant shall:

- make the results of the monitoring required under this consent publicly available at the Council and the mine; and
- update these results on a regular basis (at least every 4 months),

to the satisfaction of the Director-General.

APPENDIX 1
INDEPENDENT DISPUTE RESOLUTION PROCESS



STATEMENT OF ENVIRONMENTAL EFFECTS

Stratford Coal Mine
Roseville West Pit Modification

APPENDICES

APPENDIX A
ROSEVILLE WEST PIT MODIFICATION OPERATING NOISE AND BLASTING IMPACT ASSESSMENT

HEGGIES
AUSTRALIA

REPORT 10-3140-R2

Stratford Coal Mine
Roseville West Pit Modification
Operating Noise and Blasting Impact Assessment

PREPARED FOR

Stratford Coal Pty Ltd
PO Box 168
GLOUCESTER NSW 2422

4 OCTOBER 2006

Stratford Coal Mine

Roseville West Pit Modification

Operating Noise and Blasting

Impact Assessment

PREPARED BY:

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DOCUMENT CONTROL

Reference	Status	Date	Prepared	Checked	Authorised
10-3140-R2	Revision 0	4 October 2006	Mark Blake	Glenn Thomas	Glenn Thomas

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1 INTRODUCTION

1.1 Overview

In December 1994 Stratford Coal Pty Ltd (SCPL) was granted approval to develop the Stratford Coal Mine (SCM) - an open-cut mine utilising drill and blast, truck and shovel extractive methods with on-site processing. A summary of the SCM approvals history is provided in the Roseville West Pit Modification Statement of Environmental Effects main text. The mine is situated between the townships of Stratford and Craven, New South Wales (NSW), with consent to operate for a period of 14 years.

The approved SCM includes:

- An open cut coal mine based on the Stratford Main Deposit (the SCM Main Pit operations were completed in August 2003).
- A coal preparation plant (CPP) and run-of-mine (ROM) and product coal stockpiles.
- A rail loop to facilitate transport of product coal to Newcastle.
- ROM coal production at a rate of up to 3.4 million tonnes per annum (Mtpa), comprising 2.1 Mtpa from SCM and an additional 1.3 Mtpa from the Duralie Coal Mine.
- Unloading, loading, processing and washing of coal from the Duralie Coal Mine.
- Emplacement of CPP rejects, including those generated by the processing of Duralie Coal Mine ROM coal, within the SCM site.
- Mining of up to 500,000 tonnes (t) of ROM coal from the Roseville Seam between the hours of 7.00 am and 10.00 pm.

In 2001, the Bowens Road North Open Cut (BRNOC) coal mine was granted development consent with operations commencing in early 2003. The cumulative daytime and evening mine operating noise, rail transportation noise and blasting emissions associated with the simultaneous operation of the BRNOC and the SCM were presented in the BRNOC Environmental Impact Statement (EIS).

SCPL proposes to develop the Roseville West Pit to access the Cloverdale Seam, located immediately to the west of and adjoining the Roseville Pit Extension (RPE). The Roseville West Pit (RWP) would be developed over a period of approximately 3 years and would not operate during the night-time (ie would operate only between 0700 hours and 2200 hours).

1.2 Approval Requirements

Approved Stratford Coal Mine and Roseville Pit Extension

The SCM incorporates the existing RPE and SCPL has consent to operate (with respect to noise and vibration emissions) in accordance with the following approval requirements:

- Environment Protection Licence (EPL) No 5161 anniversary date 30 June, review date 24 April 2006 (relevant sections attached as **Appendix A1**).
- Development Consent (DA 23-98/99) dated 5 February 1999 and Amendment (MOD 71-7-2003) dated 18 January 2006 (relevant sections attached as **Appendix A2**).

Approved Bowens Road North Open Cut

SCPL has consent to operate the BRNOC (with respect to noise and vibration emissions) in accordance with the following approval requirements:

- EPL No 11745 anniversary date 16 December, review date not later than 29 March 2011 (relevant sections attached as **Appendix A3**).
- Development Consent (DA 39-02-01) dated 25 July 2001 and Amendment (39-02-01-MOD-2) dated 17 November 2004 (relevant sections attached as **Appendix A4**).

Proposed Roseville West Pit

The approved SCM includes extraction of approximately 0.25 million tonnes (Mt) per annum of ROM coal from the RPE, operating between 0700 hours and 2200 hours. SCPL propose to develop the Roseville West Pit to recover approximately 0.7 Mt of ROM coal from the Cloverdale Seam over approximately 3 years commencing in 2007. The provisional schedules of development for the SCM/RWP and BRNOC are presented in **Table 1**.

Table 1 Provisional SCM/RWP and BRNOC Development Schedules

Year End	Bowens Road North Open-Cut		Stratford Coal Mine		
	Year of Operation	Stage	Year of Operation		
			Stratford Main Deposit	Roseville Pit Extension	Roseville West Pit
June 2001	0	Stage 1	7	-	-
June 2002	1		8	-	-
June 2003	2		9	-	-
June 2004	3	Stage 2	Closed	-	-
June 2005	4		-	-	-
June 2006	5		-	0	-
June 2007	6		-	1	0
June 2008	7		-	Closed	1
June 2009	8		-	-	2
June 2010	9		-	-	3
June 2011	10		-	-	Closed
June 2012	Closed		-	-	-

The approved SCM and BRNOC and proposed RWP hours of operation are presented in **Table 2**.

Table 2 Approved SCM and BRNOC and Proposed RWP Hours of Operation

Phase	Approved BRNOC	Approved SCM	Proposed RWP
Mine construction and operation	0700 hrs to 1900 hrs 7 Days per week	24 Hours 7 Days per week	0700 hrs to 2200 hrs 7 Days per week
Coal handling, processing and stockpiling	0700 hrs to 1900 hrs 7 Days per week	24 Hours 7 Days per week	As per SCM
On site train loading	0700 hrs to 2200 hrs[1] 7 Days per week	0700 hrs to 2200 hrs[1] 7 Days per week	As per SCM
Off site rail transportation	0700 hrs to 2200 hrs[1] 7 Days per week	0700 hrs to 2200 hrs[1] 7 Days per week	As per SCM
Blasting	0900 hrs to 1700 hrs Monday to Saturday	0900 hrs to 1700 hrs Monday to Saturday	As per SCM

Note 1: Unless loading outside these hours is determined to be unavoidable by the Rail Access Corporation, National Rail and/or FreightCorp.

Proposed Roseville West Pit Equipment

The potential for machinery to emit noise is quantified as the sound power level (SWL) expressed in dBA re 1 pW. At the receptor, the received noise is quantified as the sound pressure level (SPL) expressed in dBA re 1 μPa.

The Industrial Noise Policy's (INP's) energy equivalent (L_{eq}) assessment parameters has introduced greater mathematical rigour to the prediction of received noise levels as it enables the use of L_{eq} sound power powers as noise model inputs. In general terms, any variation in mine site L_{eq} SWL will produce a similar variation in the $L_{eq(15minute)}$ sound pressure level at the receiver.

Comparative plant and equipment fleets are presented in **Table 3** together with the overall mine site L_{eq} sound power levels (SWLs) from the SCM as approved in 1999 (DA 23-98/99), the approved SCM/RPE Modification (2005 - MOD 71-7-2003) and the proposed SCM with Roseville West Pit modification (during Phase 1 - when the maximum fleet would be operating).

As shown below, the overall mine site L_{eq} SWL from the proposed Modification (130 dBA) is the same as the approved SCM/RPE Modification (130 dBA) and significantly lower by comparison with the SCM as approved in 1999 (DA 23-98/99) (136 dBA). Phase 2 of the Roseville West Pit modification would have less equipment and a lower SWL again.

Table 3 Approved SCM and Proposed RWP Modification Equipment Fleet

Equipment Description	SCM (July 1999 Approval)		SCM/RPE Modification (January 2006 Approval)		SCM and Proposed RWP Modification (Phase 1)	
	No of Items	SWL (dB re 1 pW)	No of Items	SWL (dB re 1 pW)	No of Items	SWL (dB re 1 pW)[1]
Drills	1	116	1	116	1	119
Excavators (Coal)	2	115	-	-	1	106
Excavators (Waste)	2	120	1	117	2	116
789 Haul Trucks	6	132	2	126	-	-
785 Haul Trucks	6	131	-	-	-	-
775 Haul Trucks	-	-	-	-	3	122
A40D Haul Trucks	-	-	-	-	4	120
A30D Haul Trucks	-	-	-	-	4	116
Dozers (Inpit)	1	114	-	-	-	-
Dozers (Dump)	1	119	1	121	1	120
Dozers (Stockpile)	1	120	1	120	1	120
Loaders (ROM)	1	117	1	117	1	117
Graders	1	115	1	115	1	112
Coal Preparation Plant	1	122	1	122	1	122
Rail Loading/Unloading	1	121	1	121	1	121
Total	**24**	**136**	**10**	**130**	**21**	**130**

Note 1: Where available, the SWL of the equipment measured during the June 2006 Mobile Plant Emissions Survey have been used in the RWP modification assessment.

1.3 Noise Impact Assessment Procedure

The NSW Department of Environment and Conservation (DEC) has regulatory responsibility for the control of noise from "scheduled premises" under the *Protection of the Environment Operations Act 1997*. In implementing the NSW Industrial Noise Policy (INP) 2000, the DEC has two (2) broad objectives:

- Controlling intrusive noise impacts in the short term.
- Maintaining noise level amenity for particular land uses over the medium to longer term.

On-Site Operating Noise

The INP provides non-mandatory procedures for setting acceptable $L_{Aeq(15minute)}$ intrusive and $L_{Aeq(Period)}$ amenity noise levels for various localities and guidelines for assessing noise impacts from on-site noise sources.

The assessment of sleep disturbance from on-site operations is consistent with the DEC's "*Sleep Disturbance Criteria Guideline*" dated 22 June 2004 where $L_{A1(60second)}$ noise level from any specific noise source (ideally) should not exceed the background noise level by more than 15 dBA. Sleep disturbance criteria are not of relevance to the RWP modification as the RWP mining operation would not be undertaken at night.

Cumulative Mine Noise Emissions

The INP also provides non-mandatory cumulative noise assessment guidelines to address existing and successive industrial development by setting acceptable (and maximum) cumulative $L_{Aeq(Period)}$ amenity levels for all industrial (ie non-transport related) noise in an area.

The INP does not set acceptable cumulative $L_{Aeq(15minute)}$ intrusive criteria for all industrial noise sources in an area, but rather seeks to control cumulative noise via its amenity criteria. Notwithstanding, to be consistent with the previous BRNOC and RPE noise assessments, an assessment of cumulative intrusive daytime noise impacts from both BRNOC and SCM incorporating the RWP modification was undertaken. Consideration of applicable amenity criteria is also provided.

2 PROJECT OVERVIEW

2.1 Noise Sensitive Receivers

The SCM site and surrounding area are illustrated on the Land Tenure map attached as **Appendix B1**. **Appendix B2** presents the Landholder Key. The nearest potentially affected residential and rural dwellings beyond the Mine Lease boundary are presented in **Table 4** including property numbers, landholder names, dwelling locations and coordinates.

Table 4 Nearest Potentially Affected Residential and Rural Dwellings

Locality	Property Number/ Landholder	Description	ENM Dwelling Coordinates[1]		
			East (m)	North (m)	Elevation (m)
Stratford/ Craven Residential	90b Bagnall[2,3]	The Bucketts Way, Craven	8278	12300	125
	49 Isaac (south)[2]	The Bucketts Way, Stratford	8680	13520	130
	48 Isaac (north)[2]	The Bucketts Way, Stratford	8550	13850	130
	Craven Village	The Bucketts Way, Craven	9276	10578	130
	69 Blanch[2]	The Bucketts Way, Craven	9450	10575	140
	68 Devereaux[2]	The Bucketts Way, Craven	9575	10700	145
	93a Blanch[2]	The Bucketts Way, Craven	8800	11050	133
	93c Standen	Off Woods Road, Craven	8675	10665	138
	95 Smith	Off Woods Road, Craven	8700	10625	138
	Stratford Village	The Bucketts Way, Stratford	8650	14775	130
	90a Battaglini[2]	Off The Bucketts Way, Stratford	8100	13150	130
	84 Lowrey	Off The Bucketts Way, Stratford	8100	14800	120
Stratford/ Craven Rural	24 Ellis[2,3]	Off Wenhams Cox Road, Stratford	12250	16000	130
	18 Atkins	Wheatleys Road, Stratford	10284	16560	110
	89 McIntosh	Off Upper Avon Road, Stratford	7500	12950	145
	46 Wadland[3]	Off Bowens Road, Stratford	13258	13328	252
	13 Tiedeman	Off Fairbairns Lane, Stratford	11150	17450	120
	16 Williams	Off the Bucketts Way, Stratford	9100	17140	130
	93 Campbell	Woods Road, Craven	7925	10850	152
	83 Thompson	Off The Bucketts Way, Stratford	7600	14400	140
	29 Whatmore	Off The Bucketts Way, Stratford	8575	16700	130
	10 Bignell	Off The Bucketts Way, Stratford	8750	18300	130
	6 Burrel	Off Fairbairns Lane, Stratford	12575	17925	125
	26 Clarke	Off Bowens Road, Stratford	13175	14250	150
	19 Wadland	Off Wenhams Cox Road	9159	15990	120
	31 Wenham	Off Wenhams Cox Road	9032	15718	120
	33 Wadland	Off Wenhams Cox Road	9302	15856	120

Note 1: To convert to ISG coordinates add 380,000 mE and add 1,430,000 mN.

Note 2: Properties identified in the SCM Development Consent as being in the Noise Affectation Zone.

Note 3: Properties identified in the BRNOC Development Consent as being in the Noise Affectation Zone.

2.2 Roseville West Pit Mine Layout

As shown on the Layout Plan attached as **Appendix C**, the Roseville West Pit would include:

- Development of the Roseville West Pit to the north of Bowens Road, extending north approximately 850 metres (m), and immediately to the west of and adjoining the existing RPE, extending operations west approximately 250 m;
- Mining of approximately 0.7 Mt of ROM coal in the new pit;
- Use of mine waste rock from the Roseville West Pit for rehabilitation of the existing RPE;
- Use of the remaining mine waste rock for backfilling the Roseville West Pit;
- As per the existing RPE, the noise/flood bund would be extended around the north-western limit of the Roseville West Pit to control noise emissions from mobile plant and to prevent the entry of floodwaters; and
- Use of the SCM mobile fleet that currently operate the RPE.

2.3 Roseville West Pit Development Phases

The Roseville West Pit would involve the following phases:

Initial Establishment - The initial establishment phase would include topsoil stripping as well as noise and flood bund extensions carried out over a 3 month period - utilising relatively modest excavation equipment (eg 30t excavator, two or three 40t trucks, CAT D6 Dozer).

Phase 1 - Primary Waste Stripping - For primary waste stripping of the RWP, SCPL may have the option of utilising medium sized mobile equipment in parallel with the smaller mobile equipment waste and coal fleets working the RPE. If the medium sized equipment (eg Cat 775 trucks) is utilised, it would only be for the initial period of waste stripping.

Phase 2 - Waste and Coaling - The final phase of coal and partings removal would be completed with smaller mobile equipment following the bulk waste stripping operation.

BRNOC operations will be carried out simultaneously with all three phases of the RWP. The maximum cumulative noise period of the RWP would occur during primary waste stripping, when the medium sized equipment may be utilised at the RWP and the equipment would be operating at higher elevation. As for the approved operations, the nearest dwellings are approximately 1.5 kilometres (km) to the west of the RWP in Stratford Village.

When the primary waste stripping is complete, relatively smaller mobile equipment would be used at the RWP at comparatively lower elevation. The medium sized primary waste stripping fleet would cease to operate on the Project site.

Co-Disposal Coaling - The coal fleet would be used to transport material from the co-disposal dam to the CPP for reprocessing. The co-disposal coaling would occur in campaigns of between 3 and 7 days duration per month.

3 ACOUSTICAL AND METEOROLOGICAL ENVIRONMENT

3.1 Ambient Noise Environment

Rating Background Level (RBL) for RWP Assessment

To be consistent with the RPE noise assessment, for the purposes of assessing the potential noise impacts from the cumulative SCM/RWP and BRNOC operation, the ambient noise level data has been distilled into two general localities, namely:

- Stratford and Craven Residential - including all dwellings within Stratford and Craven villages as well as dwellings located between the villages adjacent to the road and rail transportation corridor.
- Stratford and Craven Rural - including all dwellings beyond the Stratford and Craven villages and the transportation corridors.

On the basis of the two localities and the measured noise levels presented in RPE Noise Assessment the mean ambient noise levels are summarised and presented in **Table 5**.

Table 5 Ambient Noise Environment for Assessment Purposes

Locality	Rating Background Level			$L_{Aeq(period)}$ All Noise Sources			$L_{Aeq(period)}$ Industrial Noise Only		
	Daytime	Evening	Night	Daytime	Evening	Night	Daytime	Evening	Night
Stratford/Craven Village Residential[1]	32	31	30	50	48	45	<44	<39	<34
Unadjusted Stratford/Craven Rural [2]	30	38	33	49	55	47	<44	<39	<34
Adjusted Stratford/Craven Rural[3]	30	31	30	49	48	44	<44	<39	<34

Note 1: Derived from locations Van Der Drift, Isaac (south) and D Blanch.

Note 2: Derived from locations Atkins, Williams, Ellis and Morgan.

Note 3: Adjusted to remove the seasonal effects of insect noise.

The ambient noise levels adopted for assessment purposes are generally representative of the pre-mine noise environment, with RBLs ranging from 30 dBA to 32 dBA during the daytime, evening and night-time with insignificant industrial noise contributions.

2004-2005 Noise Monitoring Summary

As reported in recent SCPL Annual Environmental Management Reports (AEMRs), routine noise monitoring conducted in September 2004, December 2004, March 2005 and June 2005 concluded that the SCM operation was generally compliant with the DEC noise level criteria at all residential monitoring locations during daytime periods under calm atmospheric conditions. Note, the RPE was not in operation until early 2006.

SCM and BRNOC March 2006 Noise Monitoring Summary

SCM routine noise monitoring conducted in March 2006 concluded that mine noise levels during the night-time period were at times up to 38 dBA at the dwelling 49 Isaac (south) (consent affectation zone) under prevailing atmospheric conditions. Note, there were no SCM operator-attended noise surveys conducted during the daytime and evening periods when the RPE was operating.

BRNOC routine noise monitoring conducted in March 2006 concluded that cumulative mine noise levels during the daytime period were at times up to 39 dBA at the dwelling 24 Ellis (consent affectation zone) under prevailing atmospheric conditions. At all other residential monitoring locations the cumulative SCM and BRNOC operations were generally compliant with daytime DEC noise level criteria and Consent noise limits.

SCM and BRNOC June 2006 Noise Monitoring Summary

SCM routine noise monitoring conducted in June 2006 concluded that mine noise levels during the night-time period were at times up to 38 dBA at the dwelling 49 Isaac (south) (consent affectation zone), 47 dBA at the dwelling 90b Bagnall (consent affectation zone) and 41 dBA at Craven Village under prevailing atmospheric conditions. Note, there were no SCM operator-attended noise surveys conducted during the daytime and evening periods when the RPE was operating.

BRNOC routine noise monitoring conducted in June 2006 concluded that cumulative mine noise levels during the daytime period were at times up to 41 dBA at the dwelling 24 Ellis (consent affectation zone) under prevailing atmospheric conditions. At all other residential monitoring locations the cumulative SCM and BRNOC operation was generally compliant with daytime DEC noise level criteria and Consent noise limits.

3.2 Meteorological Environment

Project Meteorological Conditions

The INP Section 5.3, Wind Effects, states:

> *"Wind effects need to be assessed where wind is a feature of the area. Wind is considered to be a feature where source to receiver wind speeds (at 10 m height) of 3 m/s or below occur for 30 percent of the time or more in any assessment period in any season."*

A review of the last 12 months of weather data from the on-site Stratford meteorological station indicated that there a number of occasions where the data was compromised due to technical issues with the station. Accordingly, the same weather data as that set used in the RPE Noise Assessment will be used in this assessment.

The prevailing winds less than (or equal to) 3 metres per second (m/s) with a frequency of occurrence greater than (or equal to) 30% and considered to be relevant to the site in accordance with the INP are presented in **Table 6**, where the prevailing conditions used in noise modelling are underlined.

Table 6 Prevailing Wind Conditions in Accordance with NSW INP (2000)

Season	Winds ± 45° ≤3 m/s with Frequency of Occurrence ≥30%	
	Daytime	Evening
Annual	Nil	Nil
Summer	Nil	Nil
Autumn	Nil	Nil
Winter	Nil	Nil
Spring	Nil	Nil

Night-time operation is not proposed for the RWP, consequently, the occurrence of prevailing night-time conditions, including temperature inversions, has not been assessed.

Environmental Noise Model (ENM) Meteorology

The ENM noise modelling meteorological parameters presented in **Table 7** are based on the default inversion and wind speeds presented in the INP Section 5 Meteorological Conditions and are consistent with those used in the RPE assessment.

Table 7 Calm and Noise Enhancing Meteorological Modelling Parameters

Period	Meteorological Parameter	Air Temp	Relative Humidity	Wind Velocity	Temperature Gradient
Daytime	Calm	18°C	60%	0 m/s	0°C/100 m
Evening	Calm	14°C	75%	0 m/s	0°C/100 m

4 MINE NOISE ASSESSMENT METHODOLOGY

4.1 On-site Noise Assessment Criteria

Operation

The INP prescribes detailed calculation routines for establishing "Project specific" $L_{Aeq(15minute)}$ intrusive noise criteria and $L_{Aeq(period)}$ amenity noise criteria for a development at noise sensitive receivers.

In addition, "vacant land" is defined as a lot which is permitted to have (but does not yet have) a dwelling. Current Department of Planning (DoP) policy does not consider vacant land to be noise affected in the absence of a dwelling. In the event that the land owner establishes a dwelling, only then will it be considered as a noise sensitive receiver. Notwithstanding our current understanding of this policy an analysis of potential noise impacts on Vacant Land is presented in **Appendix E**.

Assessment Criteria

The INP-based intrusive and amenity noise assessment criteria at the two general assessment localities are presented in **Table 8**. These criteria are nominated for the purposes of assessing potential noise impacts from the Project. Note, the $L_{Aeq(15minute)}$ intrusive criteria are the controlling noise limits at all noise sensitive receivers. Amenity criteria are applicable to the cumulative noise emissions of more than one industrial source. As the BRNOC and SCM operations have separate consents and EPLs, they can be regarded as being two separate industrial noise sources. Assessment against amenity criteria has been undertaken as well as assessment against the project specific intrusive criteria.

Table 8 INP Project Specific Noise Assessment Criteria

Locality	Receiver Type	Project Specific Noise Assessment Criteria					
		Intrusive $L_{Aeq(15minute)}$			Amenity $L_{Aeq(period)}$ [1]		
		Day	Evening	Night-time	Day	Evening	Night-time
Stratford/Craven	Residential	37	36	35	50	45	40
Stratford/Craven	Rural	35	36	35	50	45	40

Note 1: Daytime 0700 hours to 1900 hours, Evening 1900 hours to 2200 hours, Night-time 2200 hours to 0700 hours.

The INP states that these criteria have been selected to protect at least 90% of the population living in the vicinity of industrial noise sources from the adverse effects of noise for at least 90% of the time. Provided the criteria in the INP are achieved, it is unlikely that most people would consider the resultant noise levels excessive.

In those cases where the INP Project specific noise assessment criteria are not achieved, it does not automatically follow that all people exposed to the noise would find the noise unacceptable. In subjective terms, exceedances of the INP Project specific noise assessment criteria can be generally described as follows:

- Negligible noise level increase <1 dBA
  (Not noticeable by all people)
- Marginal noise level increase 1 dBA to 2 dBA
  (Not noticeable by most people)
- Moderate noise level increase 3 dBA to 5 dBA
  (Not noticeable by some people but may be noticeable by others)

- Appreciable noise level increase >5 dBA
  (Noticeable by most people)

In view of the foregoing, **Table 9** presents the methodology for assessing noise levels which may exceed the INP Project specific noise assessment criteria.

Table 9 Project Noise Impact Assessment Methodology

Assessment Criteria	Project Specific Criteria	Noise Management Zone		Noise Affectation Zone
		Marginal	Moderate	
Intrusive LAeq(15minute)	Rating background level plus 5 dBA	1 dBA to 2 dBA above Project specific criteria	3 dBA to 5 dBA above Project specific criteria	> 5 dBA above Project specific criteria
Amenity LAeq(period)	INP based on existing industrial level			

For the purposes of assessing the potential noise impacts, the management and affectation criteria are further defined as follows:

Noise Management Zone

Depending on the degree of exceedance of the Project specific criteria, noise impacts in the noise management zone could range from negligible to moderate (in terms of the perceived noise level increase). For noise sensitive receivers assessed as occurring within this zone, it is recommended that management procedures be implemented including:

- Noise monitoring on-site and within the community.
- Prompt response to any community issues of concern.
- Refinement of on-site noise mitigation measures and mine operating procedures where practicable.
- Discussions with relevant land owners to assess concerns.
- Consideration of acoustical mitigation at receivers where substantiated by monitoring results.
- Consideration of negotiated agreements with land owners.

Noise Affectation Zone

Exposure to noise levels corresponding to this zone may be considered unacceptable by some land owners, particularly at night-time. For noise sensitive receivers assessed as occurring within this zone, it is recommended that SCPL explore the following:

- Discussions with relevant land owners to assess concerns and define responses.
- Implementation of acoustical mitigation at receivers.
- Negotiated agreements with land owners.

4.2 Mine Noise Mitigation Measures

Over a considerable period of time, an appreciable level of effort has been applied by the proponent to identify and implement practical and economically feasible on site noise controls, particularly to minimise the impact of existing noise emissions from the SCM.

An extract from the Roseville Pit Extension Statement of Environmental Effects (SEE) (July 2003) summaries the noise mitigation measures as follows:

"Noise mitigation measures that are currently in place at the SCM include (HWE, 2002):

- *where possible restriction of dumping at night (10.00 pm to 7.00 am) to the lower, more protected levels of the in-pit dump;*
- *completion of a reversing alarm study that resulted in:*
  - *setting of reversing sirens on mobile plant at minimum levels consistent with mine safety regulations;*
  - *setting of start-up alarms on CPP conveyors at minimum levels consistent with mine safety regulations;*
- *modification of dumping operations such that trucks with tray body exhausts lower their trays before moving off when tipping on the waste dump at night;*
- *modification of operations such that the ROM loader reverses away from nearby residences to minimise directional noise emissions (e.g. reversing beeper, engine noise);*
- *construction of acoustic barriers (i.e. noise bunds) along the northern side of the main haul road, the western side of the western haul road the western side of the Roseville haul road to control noise emissions from mobile plant. Noise bunds were also constructed on the western side of the southern external dump access ramp and the northern side of the eastern external dump access ramp;*
- *implementation of building modifications at the Standen residence (Figure 4); and*
- *reduction of the duration of noise emissions associated with the pushing of product coal through the acquisition of a larger dozer which requires comparatively less time on the product coal stockpiles.*

The above mitigation measures would be employed where applicable during the development of the Roseville Pit extension."

Mining operations within the Roseville West Pit would be conducted between the hours of 700 hours and 2200 hours (ie not during the night).

In addition to the above, building modifications have also been carried out on the Isaac (south) dwelling.

Mitigation Measures - RPE INP Assessment Requirements

A number of iterative steps were undertaken in the RPE assessment to ascertain the existing noise emissions and assess the feasibility and practicability of implementing additional noise management and mitigation measures to reduce SCM noise emissions as part of the RPE Noise Assessment, involving:

- Preliminary noise modelling to identify areas of noise management and affectation.
- Further modelling with various noise management and mitigation measures to assess their relative effectiveness.
- Consideration of various combinations of noise management and mitigation measures to minimise the potential noise affectation zone.
- Adoption by SCPL of a range of noise management and mitigation measures that appreciably reduce night-time noise emissions associated with the CPP and train loading.

Additional feasible noise controls were proposed by SCPL at the time of the RPE Noise Assessment include:

- The CAT 992 ROM coal stockpile front-end loader - replaced by smaller CAT 988 front-end loader.

- ROM coal stockpiles (or equivalent bunding) to be maintained during the night-time at a height of 5 m in the vicinity of the ROM coal hopper between the FEL and receptors to the south-southeast.
- Secondary Crushing Station to be cladded (or equivalent noise mitigation) to achieve a 10 dBA noise reduction from this source.
- The existing visual/noise bund located west of the CHPP area would have the barrier height raised by 2 m to 3 m along its length.
- The product coal stockpile dozer would be treated (or equivalent noise mitigation) to achieve a minimum 3 dBA noise reduction.

All of the above noise mitigation measures have been included in the current RWP noise assessment, plus the following additional noise mitigation measures:

- Construction of an RL116m noise/flood bund extending around the north-western limit of the Roseville West Pit to control noise emissions from mobile plant; and
- Relocation of the coal haulage route to the eastern side of the old Roseville Pit (now waste emplacement dump) which increases the distance to Stratford Village residences.

4.3 Mine Noise Modelling Procedure

The validated SCM/RPE and BRNOC computer model (refer to RPE Noise Assessment for validation details) was modified to incorporate the significant noise sources associated with the proposed RWP operation. The surrounding terrain and nearby potentially affected residential dwellings were also included in the model.

In addition, the model was calibrated using recent on-site noise monitoring of sound power levels of on-site equipment.

The SCM/RWP and BRNOC computer model was prepared using RTA Software's Environmental Noise Model (ENM for Windows, Version 3.06), a commercial software system developed in conjunction with the (then) NSW EPA. The acoustical algorithms utilised by this software have been endorsed by the Australian and New Zealand Environment Council and all State Environmental Authorities throughout Australia as representing one of the most appropriate predictive methodologies currently available.

For the purposes of assessing the noise impacts in accordance with INP requirements, the following mine operating scenarios were considered:

Phase 1 - Primary Waste Stripping - Cumulative SCM/RWP and BRNOC Operations

RWP primary waste stripping operation and RPE waste and coaling, SCM CHPP, coal handling and train loading facility together with BRNOC coal mining operations (day only). The RPE coal fleet would alternate operations between the RPE pit and the co-disposal area.

Phase 2 - Waste and Coaling - Cumulative SCM/RWP and BRNOC Operations

RWP waste and coaling operation and SCM CHPP, coal handling and train loading facility together with BRNOC coal mining operations (day only). The RWP coal fleet would alternate operations between the RWP pit and the co-disposal area.

Modelling of mining operations included all existing and proposed plant items operating concurrently to simulate the overall maximum energy equivalent (ie $L_{Aeq(15minute)}$ intrusive noise level. The model includes coal loading operations and train movement on the rail loop. A large proportion of the mobile equipment is operated in repeatable routines and a relatively smaller proportion of the emissions emanate from continuous fixed plant items.

The L_{Aeq} SWLs given for each item of mobile equipment do not include noise emissions which emanate from alarms. In the event that alarm noise is considered to be a source of disturbance, the alarm noise level should be checked against the appropriate Australian Standard and/or requirements and the necessary mitigating action taken to achieve an acceptable noise reduction without compromising safety standards.

5 MINE NOISE IMPACT ASSESSMENT

5.1 Phase 1 - Primary Waste Stripping

The cumulative SCM/RWP and BRNOC day-time $L_{Aeq(15minute)}$ intrusive noise emissions to the nearest dwellings are presented in **Table 10** together with the project specific assessment criteria**.**

Table 10 Phase 1 – Cumulative Daytime $L_{Aeq(15minute)}$ Intrusive Noise Emissions

Locality	Land Owner	Intrusive noise level Calm Weather[4]		Project Specific Intrusive Criteria
		RPE Coaling	Co-Disposal Coaling	
Stratford/ Craven Residential	90b Bagnall[5]	37	37	37
	49 Isaac (south)[5]	38[1]	38[1]	37
	48 Isaac (north)[5]	37	37	37
	Craven Village[6]	34	35	37
	69 Blanch[5]	35	35	37
	68 Devereaux[5]	36	36	37
	93a Blanch[5]	36	36	37
	93c Standen[6]	33	35	37
	95 Smith[6]	33	35	37
	Stratford Village[6]	36	36	37
	90a Battaglini[5]	35	36	37
	84 Lowrey	32	32	37
Stratford/ Craven Rural	24 Ellis[5]	52[3]	52[3]	35
	18 Atkins[6]	39[2]	39[2]	35
	89 McIntosh[6]	36[1]	36[1]	35
	46 Wadland[5]	40[2]	40[2]	35
	13 Tiedeman[6]	39[2]	39[2]	35
	16 Williams	36[1]	36[1]	35
	93 Campbell[6]	33	33	35
	83 Thompson[6]	33	33	35
	29 Whatmore	35	35	35
	10 Bignell	32	32	35
	6 Burrel	31	31	35
	26 Clarke	31	31	35
	19 Wadland/Carter	36[1]	36[1]	35
	31 Wenham	35	35	35
	33 Wadland/Carter	37[1]	37[1]	35

Note 1: Marginal Noise Management Zone 1 dBA to 2 dBA above Project specific criteria.

Note 2: Moderate Noise Management Zone 3 dBA to 5 dBA above Project specific criteria.

Note 3: Noise Affectation Zone >5 dBA above Project specific criteria.

Note 4: Day-time 18°C air temperature and 60% relative humidity.

Note 5: Properties identified in the BRNOC and/or SCM Consent as being in the Noise Affectation Zone.

Note 6: Properties identified in the BRNOC and/or SCM 2005 INP Noise Assessment as being in the Noise Management Zone.

The SCM/RWP evening $L_{Aeq(15minute)}$ intrusive noise emissions to the nearest dwellings are presented in **Table 11** together with the project specific assessment criteria.

Table 11 Phase 1 - Evening $L_{Aeq(15minute)}$ Intrusive Noise Emissions

Locality	Land Owner	Intrusive noise level Calm Weather[4]		Project Specific Intrusive Criteria
		RPE Coaling	Co-Disposal Coaling	
Stratford/ Craven Residential	90b Bagnall[5]	36	36	36
	49 Isaac (south)[5]	35	35	36
	48 Isaac (north)[5]	34	34	36
	Craven Village[6]	33	33	36
	69 Blanch[5]	32	32	36
	68 Devereaux[5]	35	35	36
	93a Blanch[5]	35	35	36
	93c Standen[6]	33	33	36
	95 Smith[6]	32	32	36
	Stratford Village[6]	30	31	36
	90a Battaglini[5]	33	33	36
	84 Lowrey	28	28	36
Stratford/ Craven Rural	24 Ellis[5]	30	31	36
	18 Atkins[6]	32	32	36
	89 McIntosh[6]	34	34	36
	46 Wadland[5]	32	33	36
	13 Tiedeman[6]	27	27	36
	16 Williams	27	27	36
	93 Campbell[6]	30	30	36
	83 Thompson[6]	30	30	36
	29 Whatmore	27	27	36
	10 Bignell	22	22	36
	6 Burrel	21	21	36
	26 Clarke	19	19	36
	19 Wadland/Carter	29	30	36
	31 Wenham	30	30	36
	33 Wadland/Carter	30	30	36

Note 1: Marginal Noise Management Zone 1 dBA to 2 dBA above Project specific criteria.

Note 2: Moderate Noise Management Zone 3 dBA to 5 dBA above Project specific criteria.

Note 3: Noise Affectation Zone >5 dBA above Project specific criteria.

Note 4: Evening 14ºC air temperature and 75% relative humidity.

Note 5: Properties identified in the BRNOC and/or SCM Consent as being in the Noise Affectation Zone.

Note 6: Properties identified in the BRNOC and/or SCM 2005 INP Noise Assessment as being in the Noise Management Zone.

Phase 1 - Day-time Noise Contours

The day-time $L_{Aeq(15minute)}$ intrusive noise contours during calm weather for Phase 1 operations are presented as **Appendix D1**. Note, the calculation of the noise contours involves numerical interpolation of a noise level array with a graphical accuracy of up to approximately ±2 dBA. This means that in some cases the contour locations presented in **Appendix D1** will differ from the values presented in **Table 10**, particularly where topographic effects are prominent.

5.2 Phase 2 - Waste and Coaling

The cumulative SCM/RWP and BRNOC day-time $L_{Aeq(15minute)}$ intrusive noise emissions to the nearest dwellings are presented in **Table 12** together with the project specific assessment criteria**.**

Table 12 Phase 2 – Cumulative Daytime $L_{Aeq(15minute)}$ Intrusive Noise Emissions

Locality	Land Owner	Intrusive noise level Calm Weather[4]		Project Specific Intrusive Criteria
		RWP Coaling	Co-Disposal Coaling	
Stratford/ Craven Residential	90b Bagnall[5]	37	37	37
	49 Isaac (south)[5]	37	38[1]	37
	48 Isaac (north)[5]	36	36	37
	Craven Village[6]	34	34	37
	69 Blanch[5]	34	35	37
	68 Devereaux[5]	36	36	37
	93a Blanch[5]	36	36	37
	93c Standen[6]	35	35	37
	95 Smith[6]	34	34	37
	Stratford Village[6]	35	35	37
	90a Battaglini[5]	35	35	37
	84 Lowrey	31	32	37
Stratford/ Craven Rural	24 Ellis[5]	52[3]	52[3]	35
	18 Atkins[6]	39[2]	39[2]	35
	89 McIntosh[6]	35	35	35
	46 Wadland[5]	39[2]	39[2]	35
	13 Tiedeman[6]	39[2]	39[2]	35
	16 Williams	35	35	35
	93 Campbell[6]	33	33	35
	83 Thompson[6]	33	33	35
	29 Whatmore	34	34	35
	10 Bignell	32	32	35
	6 Burrel	30	30	35
	26 Clarke	31	31	35
	19 Wadland/Carter	35	35	35
	31 Wenham	35	35	35
	33 Wadland/Carter	36[1]	36[1]	35

Note 1: Marginal Noise Management Zone 1 dBA to 2 dBA above Project specific criteria.

Note 2: Moderate Noise Management Zone 3 dBA to 5 dBA above Project specific criteria.

Note 3: Noise Affectation Zone >5 dBA above Project specific criteria.

Note 4: Day-time 18°C air temperature and 60% relative humidity.

Note 5: Properties identified in the BRNOC and/or SCM Consent as being in the Noise Affectation Zone.

Note 6: Properties identified in the BRNOC and/or SCM 2005 INP Noise Assessment as being in the Noise Management Zone.

The SCM/RWP evening $L_{Aeq(15minute)}$ intrusive noise emissions to the nearest dwellings are presented in **Table 13** together with the project specific assessment criteria**.**

Table 13 Phase 2 - Evening $L_{Aeq(15minute)}$ Intrusive Noise Emissions

Locality	Land Owner	Intrusive noise level Calm Weather[4]		Project Specific Intrusive Criteria
		RWP Coaling	Co-Disposal Coaling	
Stratford/ Craven Residential	90b Bagnall[5]	36	36	36
	49 Isaac (south)[5]	34	35	36
	48 Isaac (north)[5]	34	34	36
	Craven Village[6]	33	33	36
	69 Blanch[5]	31	31	36
	68 Devereaux[5]	34	35	36
	93a Blanch[5]	35	35	36
	93c Standen[6]	33	33	36
	95 Smith[6]	33	33	36
	Stratford Village[6]	30	30	36
	90a Battaglini[5]	32	32	36
	84 Lowrey	28	29	36
Stratford/ Craven Rural	24 Ellis[5]	29	30	36
	18 Atkins[6]	31	31	36
	89 McIntosh[6]	34	34	36
	46 Wadland[5]	32	32	36
	13 Tiedeman[6]	26	26	36
	16 Williams	27	27	36
	93 Campbell[6]	30	30	36
	83 Thompson[6]	29	29	36
	29 Whatmore	26	26	36
	10 Bignell	22	23	36
	6 Burrel	19	19	36
	26 Clarke	18	19	36
	19 Wadland/Carter	28	29	36
	31 Wenham	29	29	36
	33 Wadland/Carter	29	30	36

Note 1: Marginal Noise Management Zone 1 dBA to 2 dBA above Project specific criteria.

Note 2: Moderate Noise Management Zone 3 dBA to 5 dBA above Project specific criteria.

Note 3: Noise Affectation Zone >5 dBA above Project specific criteria.

Note 4: Evening 14ºC air temperature and 75% relative humidity.

Note 5: Properties identified in the BRNOC and/or SCM Consent as being in the Noise Affectation Zone.

Note 6: Properties identified in the BRNOC and/or SCM 2005 INP Noise Assessment as being in the Noise Management Zone.

Phase 2 - Day-time Noise Contours

The day-time $L_{Aeq(15minute)}$ intrusive noise contours during calm weather for Phase 2 operations are presented as **Appendix D2**. Note, the calculation of the noise contours involves numerical interpolation of a noise level array with a graphical accuracy of up to approximately ±2 dBA. This means that in some cases the contour locations presented in **Appendix D2** will differ from the values presented in **Table 12**, particularly where topographic effects are prominent.

5.3 Cumulative Noise Impact Summary at Nearest Privately Owned Dwellings - INP Amenity Criteria Assessment

The cumulative SCM/RWP and BRNOC daytime $L_{Aeq(daytime)}$ amenity noise emissions to the nearest dwellings are presented in **Table 14** together with the project specific INP cumulative $L_{Aeq(daytime)}$ amenity assessment criteria.

Table 14 Cumulative Daytime $L_{Aeq(daytime)}$ Amenity Noise Emissions

Locality	Land Owner	Cumulative Amenity Noise Emission		Project Specific Amenity Criteria
		Phase 1	Phase 2	
Stratford/ Craven Residential	90b Bagnall	34	34	50
	49 Isaac (south)	35	34	50
	48 Isaac (north)	34	33	50
	Craven Village	31	31	50
	69 Blanch	32	31	50
	68 Devereaux	33	33	50
	93a Blanch	33	33	50
	93c Standen	32	32	50
	95 Smith	22	22	50
	Stratford Village	33	32	50
	90a Battaglini	32	32	50
	84 Lowrey	29	28	50
Stratford/ Craven Rural	24 Ellis	49	49	50
	18 Atkins	36	36	50
	89 McIntosh	33	33	50
	46 Wadland	37	36	50
	13 Tiedeman	36	36	50
	16 Williams	33	32	50
	93 Campbell	30	30	50
	83 Thompson	30	30	50
	29 Whatmore	32	31	50
	10 Bignell	29	29	50
	6 Burrel	28	27	50
	26 Clarke	28	28	50
	19 Wadland/Carter	33	32	50
	31 Wenham	32	32	50
	33 Wadland/Carter	34	33	50

6 BLASTING IMPACT ASSESSMENT

6.1 Assessment Criteria

Structural Damage Vibration Criteria

In terms of the most recent relevant vibration damage criteria, Australian Standard (AS) 2187: Part 2-2006 "*Explosives - Storage and Use - Part 2: Use of Explosives*" recommends the frequency dependent guideline values and assessment methods given in BS 7385 Part 2-1993 as they "are applicable to Australian conditions".

British Standard 7385: Part 2-1993 "*Evaluation and measurement for vibration in buildings Part 2*" provides criteria against which the likelihood of building damage from ground vibration can been assessed.

The standard sets guide values for building vibration based on the lowest vibration levels above which damage has been credibly demonstrated. These levels are judged to give a minimum risk of vibration-induced damage, where minimal risk for a named effect is usually taken as a 95% probability of no effect.

Sources of vibration that are considered in the standard include demolition, blasting (carried out during mineral extraction or construction excavation), piling, ground treatments (eg compaction), construction equipment, rock excavation, tunnelling, road and rail traffic and industrial machinery.

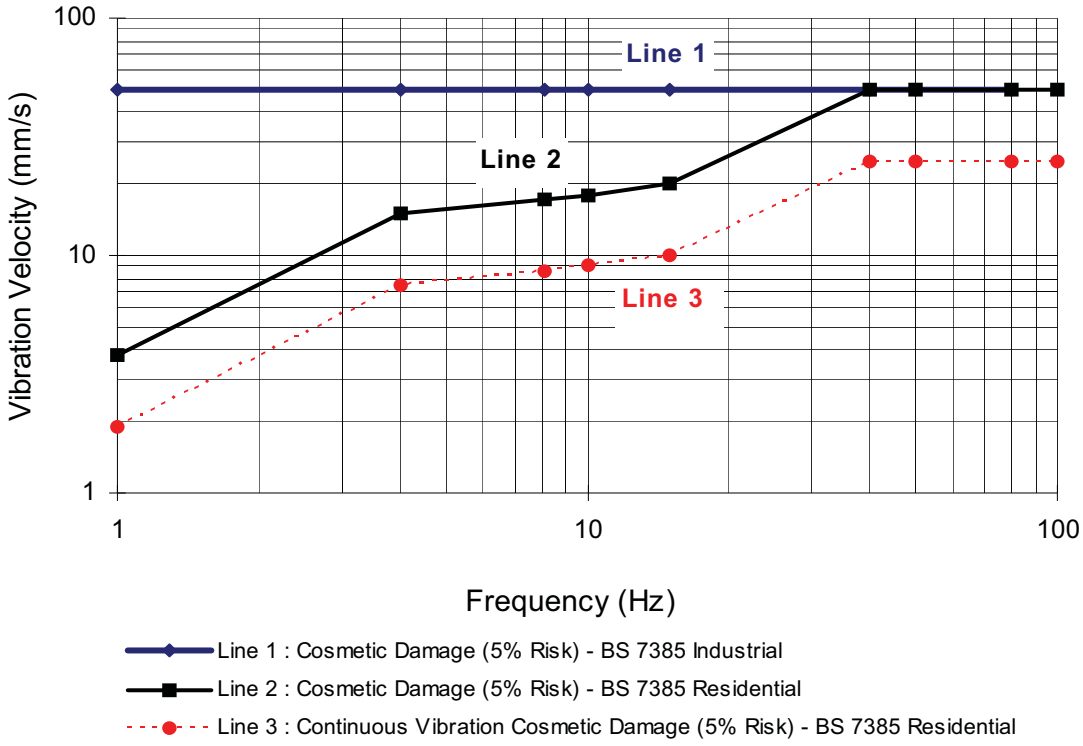
The recommended limits (guide values) for transient vibration to ensure minimal risk of cosmetic damage to residential and industrial buildings are presented numerically in **Table 15** and graphically in **Table 16**.

Table 15 Transient Vibration Guide Values - Minimal Risk of Cosmetic Damage

Line	Type of Building	Peak Component Particle Velocity in Frequency Range of Predominant Pulse	
		4 Hz to 15 Hz	15 Hz and Above
1	Reinforced or framed structures Industrial and heavy commercial buildings	50 mm/s at 4 Hz and above	
2	Unreinforced or light framed structures Residential or light commercial type buildings	15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz	20 mm/s at 15 Hz increasing to 50 mm/s at 40 Hz and above

The standard states that the guide values in **Table 15** relate predominantly to transient vibration which does not give rise to resonant responses in structures and low-rise buildings.

Table 16 Graph of Transient Vibration Guide Values for Cosmetic Damage



It is noteworthy that extra to the guide values nominated in **Table 15**, the standard states that:

> *"Some data suggests that the probability of damage tends towards zero at 12.5 mm/s peak component particle velocity. This is not inconsistent with an extensive review of the case history information available in the UK."*

Also that:

> *"A building of historical value should not (unless it is structurally unsound) be assumed to be more sensitive."*

Structural Damage Airblast Criteria

Based largely on work carried out by the US Bureau of Mines, the US Office of Surface Mining has presented the following regulatory limits for airblast from blasting (depending on the low frequency limit of the measuring system) presented in **Table 17**.

Table 17 Structural Damage Airblast Criteria

Low Frequency Limit	Peak Airblast Level Limit
2 Hz or lower	132 dB Linear
6 Hz or lower	130 dB Linear

These levels are generally consistent with the level of 133 dB Linear nominated in AS 2187.2-2006.

Human Comfort Vibration and Airblast Daytime Criteria

The ground vibration and airblast levels which cause concern or discomfort to residents are generally lower than the relevant building damage limits.

The NSW DEC advocates the use of the ANZECC guidelines for assessing potential residential disturbance arising from blast emissions. The ANZECC guidelines for control of blasting impact at residences are as follows:

- The recommended maximum level for airblast is 115 dB Linear.
- The level of 115 dB Linear may be exceeded on up to 5% of the total number of blasts over a period of 12 months. The level should not exceed 120 dB Linear at any time.
- The recommended maximum for ground vibration is 5 millimetres per second (mm/s), Peak Vector Sum (PVS) vibration velocity.
- The PVS level of 5 mm/s may be exceeded on up to 5% of the total number of blasts over a period of 12 months. The level should not exceed 10 mm/s at any time.
- Blasting should generally only be permitted during the hours of 9.00 am to 5.00 pm Monday to Saturday. Blasting should not take place on Sundays and public holidays.
- Blasting should generally take place no more than once per day.

6.2 RPE Blast Monitoring Results

The blast monitoring results for the limited number of blasts undertaken at the RPE to date indicates compliance with the applicable blast vibration and airblast criteria at the nearest privately owned residences.

The available blast monitoring data was insufficient to develop a site specific ground vibration and airblast site law for the blasting conducted at the RPE.

6.3 Proposed RWP Open Cut Overburden Blasting

Blasting Practices

It is estimated an average of one blast every three weeks would be required. However, the actual number of blasts in any week would be dependent on mine production.

Assessment of the potential impacts of ground-borne vibration and airblast emissions arising from the overburden blasting has been based on the blast design parameters presented in **Table 18.**

Table 18 Provisional Overburden Blast Design Parameters

Parameter	Typical Ranges
Bench Height	16 m
Stemming	4 m
Hole Diameter	150 mm
Number of Holes	Typically between 200 and 400 holes
Holes per Delay	Typically 1 hole
Explosive Type	ANFO (Powergel Nova 3560)
Maximum Instantaneous Charge	MIC 459 kg

Predicted Blast Emission Levels

By adopting the suggested design, the levels of blast vibration and airblast were predicted using the relevant vibration and airblast formula presented in AS 2187.2 (2006).

The relevant formulae are as follows:

PVS = $1{,}140\ (R/Q^{1/2})^{-1.60}$

SPL = $164.2 - 24(\log_{10}R - \log_{10}Q)$

where,

PVS = Peak Vector Sum vibration velocity (mm/s)
SPL = Peak airblast noise level (dB Linear)
R = Distance between charge and receiver (m)
Q = Charge mass per delay (kg)

The standard formulae have been used to predict ground vibration and airblast emissions at a selection of the nearest potentially affected residences as presented in **Table 19.**

Table 19 Predicted Overburden Blast Emissions

Landowner	PVS Vibration (mm/s)	Peak Linear Airblast (dB re 20µPa)
49 Isaac (south)	1.0 mm/s	108 dBL
48 Isaac (north)	1.0 mm/s	108 dBL
Craven Village	0.3 mm/s	99 dBL
Stratford Village	1.2 mm/s	109 dBL
84 Lowrey	0.7 mm/s	105 dBL
24 Ellis	0.7 mm/s	106 dBL
18 Atkins	1.2 mm/s	108 dBL
19 Wadland/Carter	1.2 mm/s	109 dBL
31 Wenham	1.3 mm/s	109 dBL
33 Wadland/Carter	1.5 mm/s	110 dBL

Blast Emissions Assessment

The following assessments are derived from the predicted (maximum) levels of blast emissions presented in **Table 19** and the assessment criteria.

Structural Damage Criteria

- The emission levels are predicted to be below the damage criterion of 15 mm/s and 133 dB Linear at all private residences.

Human Comfort Vibration Criteria

- The PVS vibration velocities are predicted to be below the 5 mm/s criterion at all private residences.

Human Comfort Airblast Criteria

- The airblast levels are predicted to be below the 115 dB Linear criterion at all private residences.

7 SUMMARY OF FINDINGS AND RECOMMENDATIONS

7.1 Operating Noise Impact Assessment

Operating Noise Impact Assessment Criteria

The INP-based intrusive and amenity noise assessment criteria at the two general assessment localities are reproduced in **Table 20**. These criteria are nominated for the purposes of assessing potential noise impacts from the Project. Note, the $L_{Aeq(15minute)}$ intrusive criteria are the controlling noise limits at all noise sensitive receivers.

Table 20 INP Project Specific Noise Assessment Criteria

Locality	Receiver Type	Project Specific Noise Assessment Criteria					
		Intrusive $L_{Aeq(15minute)}$			Amenity $L_{Aeq(period)}$ [1]		
		Day	Evening	Night-time	Day	Evening	Night-time
Stratford/Craven	Residential	37	36	35	50	45	40
Stratford/Craven	Rural	35	36	35	50	45	40

Note 1: Daytime 0700 hours to 1900 hours, Evening 1900 hours to 2200 hours, Night-time 2200 hours to 0700 hours.

Table 21 presents the methodology for assessing noise levels which may exceed the INP Project specific noise assessment criteria.

Table 21 Project Noise Impact Assessment Methodology

Assessment Criteria	Project Specific Criteria	Noise Management Zone		Noise Affectation Zone
		Marginal	Moderate	
Intrusive $L_{Aeq(15minute)}$	Rating background level plus 5 dBA	1 dBA to 2 dBA above Project specific criteria	3 dBA to 5 dBA above Project specific criteria	> 5 dBA above Project specific criteria
Amenity $L_{Aeq(period)}$	INP based on existing industrial level			

Note 1: Daytime 0700 hours to 1900 hours, Evening 1900 hours to 2200 hours, Night-time 2200 hours to 0700 hours.

Intrusive Noise Impact Summary at Nearest Privately Owned Dwellings

Based on the day-time and evening $L_{Aeq(15minute)}$ intrusive noise emissions, **Table 22** presents a summary of all known privately owned dwellings where the project specific criteria are anticipated to be exceeded. Note these emissions are conservatively based on the cumulative intrusive emissions of BRNOC and SCM (incorporating the proposed RWP). An assessment of private vacant land is presented in **Appendix E**.

Table 22 Privately Owned Dwellings within Noise Management and Affectation Zones

Locality	Period[1]	Noise Management Zone		Noise Affectation Zone
		1 dBA to 2 dBA above Criteria	3 dBA to 5 dBA above Criteria	>5 dBA above Criteria
Stratford Craven Residential	Day-time	49 Isaac (south)[3]	Nil	Nil
	Evening	Nil	Nil	Nil
Stratford Craven Rural	Day-time	89 McIntosh[2] 16 Williams 19 Wadland/Carter[4,5] 33 Wadland/Carter[4,5]	18 Atkins[2] 46 Wadland[3] 13 Tiedeman[2]	24 Ellis[3,5]
	Evening	Nil	Nil	Nil

Note 1: Meteorological conditions in accordance with **Table 7**.

Note 2: Properties identified in the BRNOC and/or SCM 2005 INP Noise Assessment as being in the Noise Management Zone.

Note 3: Properties identified in the BRNOC and/or SCM Consent as being in the Noise Affectation Zone.

Note 4: Property recently sold by SCPL to private landholder.

Note 5: Private agreement exists between the landholder and SCPL.

Comments

Table 22 indicates:

- The cumulative intrusive modelling of BRNOC and the SCM indicates no additional residences would be located in the noise affectation zone as a result of the proposed Roseville West Pit modification; and
- The cumulative intrusive modelling of BRNOC and the SCM indicates three additional residences (16 Williams, 19 Wadland/Carter and 33 Wadland/Carter) would be located in the noise management zone. However all three are only marginally above Project specific criteria (between 1 dBA and 2 dBA), with the main source of noise at the residences being the approved BRNOC operation. Two of the properties (19 Wadland/Carter and 33 Wadland/Carter) were recently sold by SCPL and are subject to a private agreement between SCPL and the landholder.

Cumulative Noise Impact Summary at Nearest Privately Owned Dwellings INP Amenity Criteria Assessment

The cumulative amenity modelling of the RWP, BRNOC and SCM operations indicates that the project specific amenity criteria are met at all privately owned residences during the daytime when both mining operations are active.

Procedure for General Terms of Approval

It is recommended noise limits for General Terms of Approval (GTA) be determined on a land owner by land owner basis according to the following procedure:

- Where the predicted noise emission is less than (or equal to) the project specific criteria then the project specific criteria is the GTA noise limit;
- Where the predicted noise emission is within the noise management zone then the highest predicted noise level is applied as the achievable GTA noise limit; and
- Where the predicted noise emission is within the noise affectation zone then the upper limiting level applying to the noise management zone is the GTA noise limit.

7.2 Blast Emission Impact Assessment

Assessment Methodology

Potential blast emission impacts of the RWP have been assessed against the structural damage criteria presented in AS 2187.2-2006 and the human comfort criteria advocated by the NSW DEC (or the ANZECC).

Structural Damage Assessment

The blast emission levels are predicted to be well below the building damage criteria of 15 mm/s and 133 dB Linear at all private residences.

Human Comfort Vibration Assessment

The vibration velocities are predicted to be below the 5 mm/s criterion at all private residences.

Human Comfort Airblast Assessment

The airblast levels are predicted to be below the 115 dB Linear airblast criterion at all private residences.

L6 NOISE LIMITS

L6.1 Noise Limits

L6.1.1 Noise from the premises must not exceed:

Land Holder	Daytime (7.00 am to 7.00 pm	Evening (7.00 pm to 10.00 pm)
	Stage 1: Cumulative Bowens Road North and Stratford $L_{Aeq(15minute)}$	**Stage 1: Cumulative Bowens Road North and Stratford $L_{Aeq(15minute)}$**
McIntosh	39	39
Atkins	38	35
Tiedeman	38	37
Campbell	37	37
Thompson	36	36
Williams	35	35
Bowen	35	35
Clarke	35	35
Bignell	35	35
Morgan	35	35
Isaac (South)	41	41
Isaac (North)	40	40
Craven Village	40	40
Grono/DBlanch	40	40
Blanch	40	40
Standen/Mulliett	39	39
Stratford Village	38	36
Van Der Drift	38	38
Battaglini	38	38
Lowrey	36	36
All Other Craven Village Residential Properties	40	40
All Other Stratford Village Residential Properties	38	36
All Other Stratford/ Craven Rural Properties	35	35

L6.1.2 Noise from the premises is to be measured or computed at the most noise-affected point at the property boundary of the receptors listed in L6.1, or a distance within 30 metres of the residence where the boundary is more than 30 metres from the residence of the most affected receiver to determine compliance with this condition.

Noise Measurement:

For the purpose of noise measures required for this condition, the LAeq noise level must be measured or computed for the required period (ie, 15 minutes or full day, evening or night) using "FAST" response on the sound level meter.

For the purpose of the noise limits for this condition, 5 dB (A) must be added to the measured level if the noise is substantially tonal, impulsive, intermittent or low frequency in nature. Where two or more of these characteristics are present the maximum addition to the measured noise level is limited to 10 dB(A).

L6.1.3 The noise emission limits identified in this licence apply under all meteorological conditions except:

a. during rain and wind speeds (at 10 m height) greater than 3m/s; and

b. under “non-significant weather conditions".

Note: Field meteorological indicators for non-significant weather conditions are described in the NSW Industrial Noise Policy, Chapter 5 and Appendix E in relation to wind and temperature inversions.

L6.2 The overpressure level from blasting operations carried out in or on the premises must not:

a. exceed 115 dB(L) for more than 5% of the total number of blasts carried out on the premises within the 12 months annual reporting period; and

b. exceed 120 dB(L) at any time

at any residence or noise sensitive location (such as a school or hospital) that is not owned by the licensee or subject of a private agreement between the owner of the residence or noise sensitive location and the licensee as to an alternative overpressure level.

L6.3 The ground vibration peak particle velocity from blasting operations carried out in or on the premises must not:

a. exceed 5 mm/second for more than 5% of the total number of blasts carried out on the premises within the 12 months annual reporting period; and

b. exceed 10 mm/second at any time

at any residence or noise sensitive location (such as a school or hospital) that is not owned by the licensee or subject of a private agreement between the owner of the residence or noise sensitive location and the licensee as to an alternative ground vibration level.

5.1 AIR QUALITY, BLAST, NOISE AND LIGHT MANAGEMENT

5.1 Acquisition Upon Request

a. Upon receiving a written request for acquisition from the landowner listed in Table 1, the Applicant shall acquire the land in accordance with the procedures in Condition 6.3 of this consent.

90 b – Bagnall	49 Isaac (s)	68 – Devereaux
58 – Bramley	48 – Isaac (n)	90a – Battaglini
69 – D Blanch	93a – Blanch	24 - Ellis

Table 1: Land subject to acquisition upon request

Note: For more information on the numbering and identification of properties used in this consent, see Appendix 2.

b. By the end of May 2006, the Applicant shall notify the owners of the land listed in Table 1 that they have voluntary acquisition rights.

5.2 Noise and Dust Limits in the Acquisition Zone

While the land listed in Table 1 is privately-owned, the Applicant shall ensure that the noise generated by the development does not exceed the noise limits in Table 2, and the dust emissions generated by the development do not cause additional exceedances of the air quality impact assessment criteria in Tables 7, 8, and 9 at any residence on the land.

Day $L_{Aeq(15minute)}$	**Evening** $L_{Aeq(15minute)}$	**Night** $L_{Aeq(15minute)}$	**Land Number**
41	41	47	58 Bramley
37	37	45	90 b – Bagnall
37	36	43	93 a – Blanch
37	36	42	48 – Isaac (north) 49 – Isaac (south) 68 – Devereaux 69 – D Blanch 90 a – Battaglini 93 a - Blanch

Table 2: Noise limits for land in the acquisition zone

Notes: If the Applicant has a written agreement with any landowner of the land listed in Table 1, and a copy of this agreement has been forwarded to the Department and the DEC, then the Applicant may exceed the noise limits in Table 2 or the air quality impact assessment criteria in Tables 7, 8, and 9 in accordance with the negotiated noise agreement.

• See notes in condition 5.3 for more detail on how to interpret these limits.

5.3 Noise Limits

The Applicant shall ensure that the noise generated by the development does not exceed the noise limits set out in Table 3.

Day $L_{Aeq(15minute)}$	Evening $L_{Aeq(15minute)}$	Night $L_{Aeq(15minute)}$	Land Number
37	35	40	Craven Village
37	35	40	93 c – Standen 93 – Campbell
37	35	39	95 – Smith 89 – McIntosh
37	35	35	18 – Atkins 13 – Teidman 46 – Wadland
35	35	35	All other privately-owned land excluding the land in Table 1

Table 3: Noise limits

Notes:

- If the Applicant 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 Applicant may exceed the noise limits in Table 2 in accordance with the negotiated noise agreement.
- Noise from the development 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 LAeq(15 minute) noise limits in the above table.
- Where it can be demonstrated that direct measurement of noise from the development 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.
- Noise from the development is to be measured at 1 metre from the dwelling façade to determine compliance with the LA1(1 minute) noise limits in the above table. Where it can be demonstrated that direct measurement of noise from the development is impractical, the DEC may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy).
- 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 3°C/100m, and wind speeds of up to 2 m/s at 10 metres above ground level.

5.4 Noise Acquisition Criteria

If the noise generated by the development exceeds the criteria in Table 4 at any privately-owned land, the Applicant shall, upon receiving a written request for acquisition from the landowner, acquire the land in accordance with the procedures in Condition 6.3 of this consent.

Day $L_{Aeq(15minute)}$	**Evening** $L_{Aeq(15minute)}$	**Night** $L_{Aeq(15minute)}$	**Land Number**
42	41	40	Craven Village 93 c – Standen 93 – Campbell 95 – Smith 89 – McIntosh 18 – Atkins 13 – Teidman 46 – Wadland
40	41	40	All other privately-owned land excluding the land in Table 1

Table 4: Land acquisition criteria dB(A)

Note: Noise generated by the development is to be measured in accordance with the notes presented below in Table 3.

Additional Noise Mitigation Measures

5.5 Upon receiving a written request from:

- a landowner of the land listed in Table 1; or
- the owner of any residence where noise monitoring shows the noise generated by the development is greater than, or equal to, $L_{Aeq(15\ minute)}$ 38 dB(A) at night.

The Applicant 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 Applicant 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.

5.6 Noise Monitoring

By the end of May 2006, the Applicant shall prepare (and subsequently implement) a Noise Monitoring Program for the Stratford coal mine, including the Bowens Road North operations, to the satisfaction of the Director-General. This program shall include a noise monitoring protocol for evaluating compliance with the noise limits and acquisition criteria in this consent.

5.7 Noise - Continuous Improvement

The Applicant shall:

- investigate ways to reduce the noise generated by the development, including maximum noise levels which may result in sleep disturbance;
- investigate ways to transport as much coal as possible during the day and evening;
- implement all reasonable and feasible noise mitigation measures on the site; and
- report on these investigations and the implementation of any new noise mitigation measures on site in the AEMR,

to the satisfaction of the Director-General.

5.7 Airblast Overpressure Criteria

The Applicant shall ensure that the airblast overpressure level from blasting at the development does not exceed the criteria in Table 4 at any residence on privately owned land or noise sensitive location as defined in the DEC's *Industrial Noise Policy*.

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

Table 5: Airblast overpressure impact assessment criteria

5.8 Ground Vibration Impact Assessment Criteria

The Applicant shall ensure that the ground vibration level from blasting at the development does not exceed the criteria in Table 5 at any residence on privately owned land or noise sensitive location as defined in the DEC's *Industrial Noise Policy*.

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

Table 6: Ground vibration impact assessment criteria

5.9 Blasting Hours

The Applicant shall only carry out blasting at the development between 9.00 am and 5.00 pm (EST) and 9.00 am and 6.00 pm (DST) Monday to Saturday inclusive. No blasting is allowed on Sundays, public holidays, or at any other time without the written approval of the DEC.

5.10 Blasting - Operating Conditions

(a) The Applicant shall ensure that all blasting at the site is carried out in accordance with best practice to:

- ensure the safety of people, property, and livestock; and
- minimise the dust and fume emissions from blasting, particularly during adverse meteorological conditions,

to the satisfaction of the Director-General.

(b) If established by an expert , whose appointment has been approved by the Director-General, that blasting at the site causes damage to property or structures, the Applicant shall rectify the damage in consultation with the landowner, and to the satisfaction of the Director-General. The Applicant is to pay any costs associated with the appointment and assessment undertaken by the appointed expert.

5.11 Blast Monitoring

Prior to carrying out any blasting in the Roseville Pit to the north of Bowens Road, the Applicant shall prepare (and subsequently implement) a Blast Monitoring Program for the Stratford coal mine, including the Bowens Road North operations, to the satisfaction of the Director-General.

L6 NOISE LIMITS

L6.1 Noise from the premises must not exceed:

Land Holder	Daytime (7.00 am to 7.00 pm)		Evening (7.00 pm to 10.00 pm)	
	Stage 1: Cumulative Bowens Road North/Stratford LAeq(15minute)	**Stage 2: Bowens Road** LAeq(15minute)	**Stage 1: Cumulative Bowens Road North/Stratford** LAeq(15minute)	**Stage 2: Bowens Road** LAeq(15minute)
McIntosh	39	37	39	37
Atkins	38	38	35	35
Tiedeman	38	35	35	35
Campbell	37	35	37	35
Thompson	36	35	36	35
Williams	35	35	35	35
Bowen	35	35	35	35
Clarke	35	35	35	35
Bignell	35	35	35	35
Morgan	35	35	35	35
Isaac (South)	41	37	41	36
Isaac (North)	40	36	40	36
Cravel Village	40	37	40	36
Grono/D Blanch	40	38	40	37
Blanch	40	38	40	38
Standen/Mulliett	39	36	39	36
Stratford Village	38	36	36	36
Van Der Drift	38	36	38	36
Battaglini	38	36	38	36
Lowrey	36	36	36	36
All Other Craven Village Residential Properties	40	37	40	36
All Other Stratford Village Residential Properties	38	35	36	36
All Other Stratford/Craven Rural Properties	35	35	35	35

L6.2 Noise from the premises is to be measured or computed at the most noise-affected point at the property boundary of the receptors listed in L6.1, or a distance within 30 metres of the residence where the boundary is more than 30 metres from the residence of the most affected receiver to determine compliance with this condition.

Noise Measurement:

For the purpose of noise measures required for this condition, the LAeq noise level must be measured or computed for the required period (ie, 15 minutes or full day, evening or night) using "FAST" response on the sound level meter.

For the purpose of the noise limits for this condition, 5 dB(A) must be added to the measured level if the noise is substantially tonal, impulsive, intermittent or low frequency in nature. Where two or more of these characteristics are present the maximum addition to the measured noise level is limited to 10dB(A).

L6.3 The noise emission limits identified in this licence apply under all meteorological conditions except:

(a) during rain and wind speeds (at 10m height) greater than 3m/s; and

(b) under "non-significant weather conditions".

Note: Field meteorological indicators for non-significant weather conditions are described in the NSW

Industrial Noise Policy, Chapter 5 and Appendix E in relation to wind and temperature inversions.

L7 Blasting

L7.1 Blasting in or on the premises must only be carried out between 9:00 hours and 17:00 hours, Monday to Saturday. Blasting in or on the premises must not take place on Sundays or Public Holidays without the prior approval of the EPA.

L7.2 The hours of operation for blasting operations specified in this condition may be varied if the EPA, having regard to the effect that the proposed variation would have on the amenity of residents in the locality, gives written consent to the variation.

L7.3 The overpressure level from blasting operations carried out in or on the premises must not:

(a) exceed 115 dB(L) for more than 5% of the total number of blasts carried out on the premises within the 12 months annual reporting period; and

(b) exceed 120 dB(L) at any time

at any residence or noise sensitive location (such as a school or hospital) that is not owned by the licensee or subject of a private agreement between the owner of the residence or noise sensitive location and the licensee as to an alternative overpressure level.

L7.4 The ground vibration peak particle velocity from blasting operations carried out in or on the premises must not:

(a) exceed 5mm/second for more than 5% of the total number of blasts carried out on the premises within the 12 months annual reporting period; and

(b) exceed 10mm/second at any time

at any residence or noise sensitive location (such as a school or hospital) that is not owned by the licensee or subject of a private agreement between the owner of the residence or noise sensitive location and the licensee as to an alternative ground vibration level.

6.3 Blast Management and Monitoring

Overpressure

a) [29]The overpressure level from blasting operations on the premises must not:

(i) Exceed 115 dB (Linear Peak) for more than 5% of the total number of blasts over a period of 12 months; and

(ii) Exceed 120dB (Linear Peak) at any time,

The airblast overpressure values stated above apply when the measurements are performed with equipment having a lower cut-off frequency of 2Hz or less. If the instrumentation has a higher cut off frequency then a correction of 5 dB should be added to the measured value. Equipment with a lower cut-off frequency exceeding 10 Hz should not be used for the purpose of measuring airblast overpressure.

Ground vibration (ppv)

b) [30]Ground vibration peak particle velocity from the blasting operations at noise sensitive receivers must not:

(i) Exceed 5 mm/s for more than 5% of the total number of blasts over a period of 12 months; and

(ii) Exceed 10 mm/s at any time, when measured at any point within one (1) metre of any affected residence or other noise sensitive location such as a school or hospital.

Time of blasting

c) [31]Blasting operations on the premises may only take place between 9.00 am and 5.00 pm

Mondays to Saturdays inclusive.

d) [32]The hours of operation for blasting operations specified in this condition may be varied if the EPA, having regard to the effect that the proposed variation would have on the amenity of the residents in the locality, gives written consent to the variation.

Frequency of blasting

e) [33]Blasting at the premises is limited to one (1) blast each day on which blasting is permitted unless under extenuating circumstances as determined by the Mine Manager. In such cases when an additional blast is deemed necessary the EPA shall be notified in writing within twenty four hours of the additional blast occurring.

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[29] EPA General Terms of Approval
[30] EPA General Terms of Approval
[31] EPA General Terms of Approval
[32] EPA General Terms of Approval
[33] EPA General Terms of Approval

Blasting/Vibration Management Plan

f) The Applicant shall prepare and implement a Blasting/Vibration Management Plan to the satisfaction of the Director-General, prior to the commencement of any blasting. The Plan must include, but not be limited to, the following matters:

(i) compliance standards;

(ii) mitigation measures;

(iii) remedial action

(iv) monitoring methods and program;

(v) monitoring program for flyrock distribution;

(vi) measures to be undertaken to demonstrate that the Bowens Road North mine is achieving best practice in minimising air blast overpressure, ground vibration levels, fumes and odours from blasting activities. This shall include specific reference to best practice measures employed to meet the blasting criteria under subclauses 6.3(a) and 6.3(b) at the Ellis, Atkins and Clarke residences;

(vii) measures to protect underground utilities (eg rising mains, subsurface telecommunication and electric cables) and livestock on non-mine owned land;

(viii) measures to consider the blasting activities from the Stratford mine. This shall include details of the proposed measures to ensure that cumulative blast related impacts are managed;

(ix) procedures for the notification of occupiers of buildings and residents prior to detonation of each blast;

(x) measures to ensure no damage by flyrock to people, property, livestock and powerlines; and

(xi) details of the inter-relationship of this plan with the blasting requirements of the development consent for Stratford Coal Mine.

g) The applicant shall, as a minimum, advise occupiers of buildings and residents within two (2) kilometres of blasting locations of future blasting events on at least a monthly basis, and of any changes to the proposed blast schedules.

h) Upon written request of the owner of any dwellings located within two (2) kilometres of the blasting locations, the Applicant shall arrange at its own costs, for the inspection by a technically qualified person agreed to by both parties, to record the material condition of any structure on such property within 14 days of receipt of the request. The Applicant shall supply a copy of any inspection report, certified by the person who undertook the inspection, to the relevant property owner within fourteen (14) days of receipt of the report.

i) The Applicant shall, in consultation with GSC and RTA, prepare a Road Closure Management Plan to the satisfaction of the Director-General prior to the commencement of any blasting within 500 metres of any public road (including but not limited to Wenhams Cox Road and Bowens Road). The Plan shall include, but not be limited to, the following matters:

(i) Details of the proposed safety management measures during the period of the road closure and blast;

(ii) Details of the procedures for closing the relevant road and the period which the road will be closed during blasting activities;

(iii) Methods for ensuring the safety of road users and the general public during the blast period;

(iv) Strategies for informing road users and the local community of the proposed road closure;

(v) Details for the procedures for permitting the passage of emergency vehicles during the road closure. This shall also include details of the proposed methods for sufficiently notifying emergency service providers of the proposed times and period of the road closures;

(i) Methods for clearing the road of any debris resulting from a blast; and

(ii) Details of the disruptions that are likely to occur during the closure period.

(j) The Applicant shall incur the costs for any damage to any public road resulting from any blast related activities. The repairs shall be undertaken to a standard acceptable to GSC and/or the RTA as relevant.

Blast Monitoring

(k) The applicant must monitor ground vibration and overpressure of all blasts.

(l) [34]Ground vibration or the overpressure must be measured at all noise sensitive sites (eg residences, hospital, schools, etc), selected in consultation with the EPA.

6.4 Noise Control

6.4.1 Noise Criteria

Noise Management Zone

(a) At dwellings where the noise criteria in Table 4 below are demonstrated to be exceeded, or are exceeded during mining operations, the Applicant shall undertake management measures as outlined in condition 6.4.1 (e) and the Noise Management Plan.

Table 4 Intrusive $L_{Aeq(15minute)}$ Noise Criteria for Stages 1 and 2 of the Bowens Road North Project

Location	Intrusive Criteria $L_{Aeq(15minute)}$ dB(A)[4]	
	Day[1]	Evening[1]
Stratford/Craven residential[2]	36	36
Stratford/Craven rural[3]	35	35

Note 1: Day period is 7.00 am to 7.00 pm Evening period is 7.00 pm to 10.00 pm.

Note 2: Stratford/Craven residential area includes but is not limited to:

- Stratford and Craven villages; and
- Properties of Isaac (South), Isaac (North), Grono/D Blanch, Blanch, Standen/Mulliett, Van Der Drift, Battaglini, Lowrey as described in the EIS.

Note 3: Stratford/Craven rural area includes but is not limited to properties owned by McIntosh, Tiedeman, Williams, Campbell, Thompson, Bowen, Bignell, Morgan, and Clarke as described in the EIS.

Note 4: The noise limits apply for winds up to three (3) metres per second and/or Pasquill Stability Classes of A, B, C, D, E, and F.

[34] EPA General Terms of Approval

Noise Acquisition Zone

(b) The acquisition zone for intrusive noise in Stages 1 and 2 of the Bowens Road North Project is defined by predicted or demonstrated exceedence of the noise levels at any non-mine owned dwellings of the dB(A) LAeq(15 minute) noise levels shown in Table 5 below.

Table 5 Intrusive LAeq(15minute) Noise Acquisition Criteria for Stages 1 and 2 of the Bowens Road North Project

Location	Intrusive Noise Acquisition Criteria LAeq(15minute) dB(A)[4]	
	Day[1]	Evening[1]
Stratford/Craven residential[2]	> 41	> 41
Stratford/Craven rural[3]	> 40	> 40

Note 1: Day period is 7.00 am to 7.00 pm Evening period is 7.00 pm to 10.00 pm.

Note 2: Stratford/Craven residential area includes but is not limited to:

- Stratford and Craven villages; and
- Properties of Isaac (South), Isaac (North), Grono/D Blanch, Blanch, Standen/Mulliett, Van Der Drift, Battaglini, Lowrey as described in the EIS.

Note 3: Stratford/Craven rural area includes but is not limited to properties owned by McIntosh, Tiedeman, Williams, Campbell, Thompson, Bowen, Bignell, Morgan, and Clarke as described in the EIS.

Note 4: The noise limits apply for winds up to three (3) metres per second and/or Pasquill Stability Classes of A, B, C, D, E, and F.

(c) The properties in Table 6 below are predicted to experience noise levels greater than the intrusive acquisition criteria identified in Table 5 above, and shall be acquired by the Applicant if requested by the landowner in accordance with Condition 11.1.

Table 6 Dwellings Predicted to be Within the Intrusive Noise Acquisition Zone Property Number (as stated in the EIS)

Property Number (as stated in the EIS)	Property Owner
46	Wadland (Stratford/Craven rural)
24	Ellis (Stratford/Craven rural)
90 b	Bagnall (Stratford/Craven residential)

(d) Subclause (c) shall only apply whilst the Stratford Coal Mine is in operation. The provisions of subclauses (a), (b), and (e) – (n) shall continue to apply to the properties listed in Table 6 after cessation of operations at the Stratford Coal Mine.

(e) In the event that a landowner of a non-mine owned property considers that noise from the project once operational is in excess of:

- the noise levels depicted in Tables 4 or 5 above; or
- the noise levels depicted in Table 5 over more than 25% of his/her vacant land,

and the Director-General is satisfied that an investigation is required, the Applicant shall upon the receipt of a written request:

i) consult with the landowner or occupant affected to determine his/her concerns;

ii) make arrangements for, and bear the costs of, appropriate independent noise investigations in accordance with the noise management plan, and to the satisfaction of the Director-General, to quantify the impact and determine the source of the effect and:

- during Stage 1, the cumulative contribution of Stratford Coal Mine and Bowens Road North Coal Mine to the effect; or
- during Stage 2, the contribution of Bowens Roads North Coal Mine to the effect.

iii) take steps in accordance with a noise reduction plan prepared as part of the noise management plan, if exceedences are demonstrated to result from:

- the cumulative contribution of Stratford Coal Mine and Bowens Road North Coal Mine during Stage 1; or
- the contribution of Bowens Road North Coal Mine during Stage 2.

This shall include:

1) introduction of additional controls, either on noise emission from individual sources on the0site or one site operations or modify operations, to ensure that the criteria in Table 4 above are achieved, as far as possible; or

2) with the agreement of the landowner, and in the case of cumulative impacts the other relevant mining operations, undertaking of noise control at the dwelling to achieve acceptable internal noise levels due to Bowens Road North Coal Mine alone or due to all mining activities, as relevant; or

3) entering into an agreement with the landowner, and in the case of cumulative impacts the other relevant mining operations in the area and the landowner, to provide such other forms of benefit or amelioration of the impacts of noise as may be agreed between the parties, as providing acceptable compensation for the noise levels experienced;

iv) conducting follow up investigation(s) to the satisfaction of the Director-General, where necessary.

(f) If the independent noise investigation(s) in sub-clause (e) above confirms that noise criteria in Table 5 are being exceeded by:

- The cumulative contribution of Stratford Coal Mine and Bowens Road North Coal Mine during Stage 1; or
- The contribution of Bowens Road North Coal Mine during Stage 2,

And the measures in condition 6.4.4(e) (iii) do not reduce the noise levels below the criteria in Table 5, the Applicant shall, at the written request of the landowner, acquire the relevant property. Acquisition shall be in accordance with the procedures set out in Condition 11.1.

(g) If continued complaints and noise investigations confirm that noise criteria in Table 4 are being exceeded, but are less than the noise levels in Table 5, the Applicant shall continue to negotiate with the landowner, and other mines in the vicinity where relevant, until a resolution to the satisfaction of the Director-General is reached.

(h) If a landowner disputes any noise mitigation or other measures proposed by the Applicant in accordance with sub-clause (3) above, the matter shall be referred by either the Applicant or landowner to the Director-General in consultation with GSC. If the matter cannot be resolved within 21 days, the matter shall be referred to the Independent Dispute Resolution

(i) Further independent investigations shall cease if the Director-General is satisfied that the relevant criteria in Tables 4 and 5 are not being exceeded and are unlikely to be exceeded in the future.

(j) The Applicant shall, after commencement of mine construction and operations, and thereafter quarterly unless otherwise directed by the Director-General, undertake monitoring of affected residences to verify noise predictions, including management and acquisition zones. Any alterations to predictions, management and acquisition zones, shall be provided to the affected resident(s) and to the CCC together with necessary action in accordance with this Condition.

(k) [35]EPA Applicable Noise Limits for EPA licence purposes (refer to Schedule C).

(l) [36]For the purpose of noise measurement for subclause (k) above, noise from the premises must be measured 30 metres from the residence (rural situations), where the boundary is more than 30 metres from the residence, to determine compliance with this condition over a period of 15 minutes using "FAST" response on the sound level meter.

(m) [37]The $L_{Aeq(15minute)}$ noise emission limits identified in subclause (k) above, apply for winds up to three (3) metres per second and/or Pasquill Stability Classes of A, B, C, D, E, and F.

(n) The Applicant shall implement appropriate mitigation measures to ensure noise impacts of operations (eg maintenance works) within the Bowens Road North Project area, carried on between 10.00 pm and 7.00 am, do not exceed 35 dBA at receivers, under meteorological conditions of winds up to three (3) metres per second and/or Pasquill Stability Classes of A, B, C, D, E, and F.

6.4.2 Noise Mitigation Measures

(a) [38]The Applicant shall establish earth barriers of a height of six metres along the northern and western perimeters of Bowens Road North Coal Mine.

(b) [39]Additional earth barriers may be required by the EPA should unacceptable noise impacts occur on sensitive receptors.

6.4.3 Noise Management Plan

(a) The Applicant shall, prior to commencement of mining construction or operations, prepare and implement a Noise Management Plan (incorporating construction and operational noise), to the satisfaction of the Director-General. The EPA and GSC should also be consulted prior to the finalisation of the Management Plan. The Plan shall:

(i) include details of the methods to be used for the continuous monitoring of noise to evaluate, assess and report the $L_{Aeq(15minute)}$ and L_{Aeq} (period) noise emission levels due to the normal operations of the Bowens Road North Coal Mine;

[35] EPA General Terms of Approval
[36] EPA General Terms of Approval
[37] EPA General Terms of Approval
[38] EPA General Terms of Approval
[39] EPA General Terms of Approval

(ii) provide details regarding operating configuration; determining survey intervals; weather conditions and seasonal variations; selecting variations, locations, periods and times of measurements;

(iii) detail management measures where the target criteria in Table 4 of this consent are predicted to be exceeded, or are exceeded during mining operations. These measures should include but not be limited to:

- noise monitoring on site and within the community, notwithstanding the requirements for noise compliance reports for Stages 1 and 2 of the Bowens Road North project. The selection of representative monitoring locations within the community must be carried out in consultation with the Director-General;
- prompt response to any community issues of concern;
- refinement of on site noise mitigation measures and mine operating procedures where practical;
- discussions with relevant property holders to assess concerns;
- consideration of acoustical mitigation at receivers; and
- consideration of negotiated agreements with property owners.

(iv) specify the procedures for a noise monitoring program for the purpose of undertaking independent noise investigations;

(v) outline the procedure to notify property owners and occupiers likely to be affected by noise from the operations;

(vi) establish a protocol for handling noise complaints that include recording, reporting and acting on complaints, particularly where complaints are received and it is demonstrated noise levels are in excess of the criteria contained in this consent;

(vii) record appropriate mechanisms for community consultation;

(viii) outline proactive/predictive and reactive mitigation measures to be employed on the site to limit noise emissions;

(ix) identify longer term strategies directed towards mitigating noise levels that exceed the noise target levels in Table 4;

(x) outline measures to reduce the impact of intermittent, low frequency and tonal noise (including truck reversing alarms);

(xi) survey and investigate noise reduction measures from plant and equipment annually, subject to noise monitoring results and/or complaints received, and report in the AEMR at the conclusion of the first 12 months of operations and set targets for noise reduction taking into consideration valid noise complaints in the previous year; and

(xii) Include details of the inter-relationship of this plan with the Noise Management Plan for Stratford Coal Mine.

(b) The Applicant shall also:

(i) make copies of the Noise Management Plan available to the EPA, GSC and CCC within fourteen days of approval, or as otherwise agreed to be the Director-General; and

(ii) include a summary of noise monitoring results in the AEMR.

6.4.4 Noise Monitoring

(a) [40]The level of noise emitted from the premises must be monitored for 72 hours every three (3) months at locations agreed to in consultation with the EPA. The monitoring must determine $L_{Aeq(9hour)}$ $L_{Aeq(15minute)}$ $L_{A10(15minute)}$ $L_{A90(15minute)}$ and $L_{A1(1minute)}$ levels and include an assessment of the impact of operational noise on adjoining residents.

6.4.5 Mobile Equipment

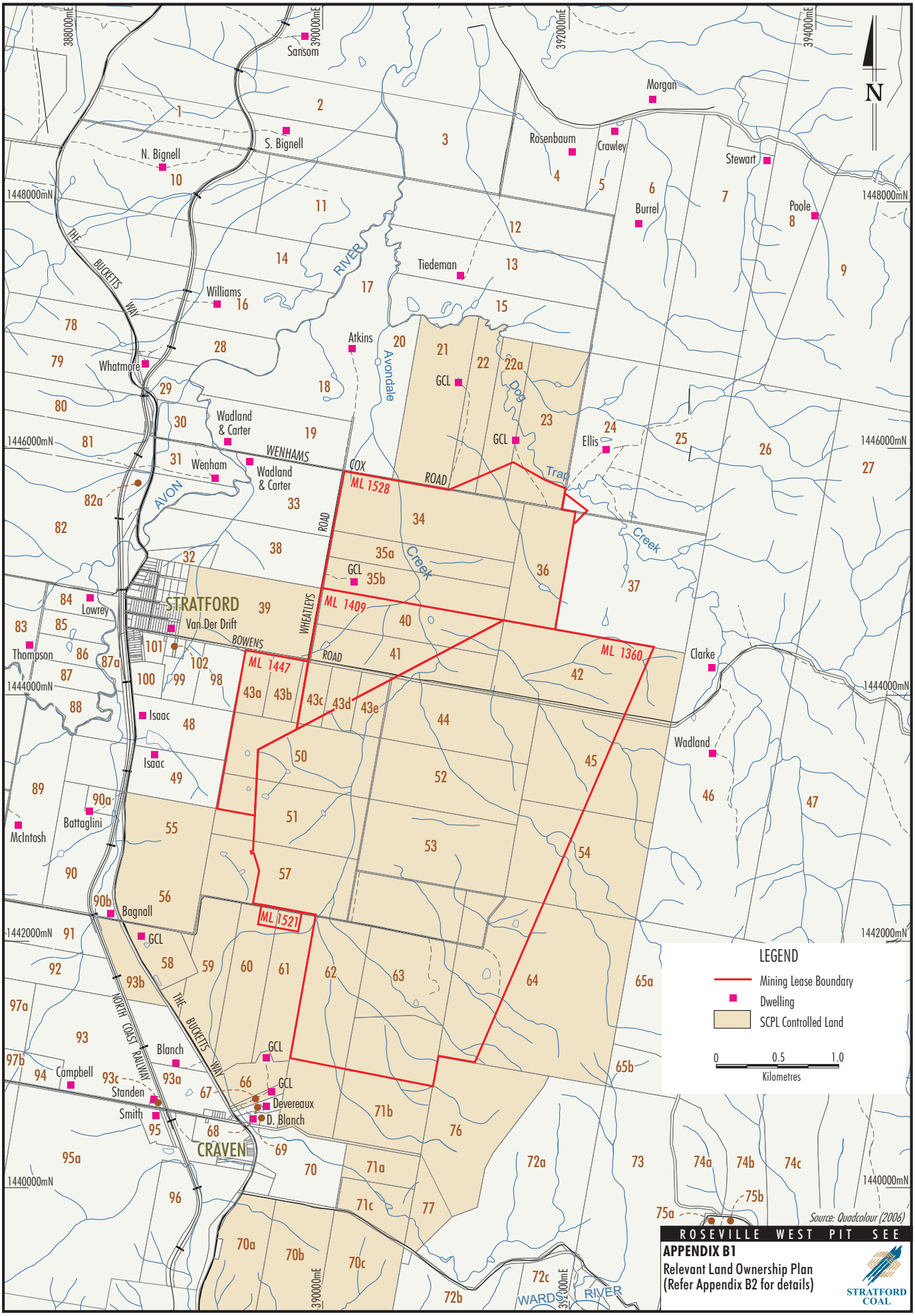
(a) [41]Low noise mobile equipment and fixed plant shall be used wherever practical and economically achievable, including:

(c) [42]Where reversing alarm noise results in community disturbance, all relevant alarm noise levels shall be checked against the appropriate DMR requirements and all appropriate mitigation actions shall be implemented having regard to safety standards.

6.4.6 Noise Compliance

(a) [43]A noise compliance assessment must be submitted to the EPA within three (3) months of the commencement of the Bowens Road North Open Cut Coal mine and a further noise compliance assessment report shall be submitted to the EPA after the commencement of Stage 2 of Bowens Road Open Cut Coal mine.

[40] EPA General Terms of Approval
[41] EPA General Terms of Approval
[42] EPA General Terms of Approval
[43] EPA General Terms of Approval



GCL-06-06 RWP SEE Noise_001B

1. NE Bignell
2. Yarrawonga Pastoral Company Pty Ltd
3. Farley (Gloucester) Pty Ltd
4. DJ & DL Rosenbaum Pty Ltd
5. CD & TA Crawley
6. M Burrel
7. JE Woodford & MS Stewart (now Cobb)
8. SD Poole
9. AS Berecry
10. NE Bignell
11. NE Bignell
12. J Tiedeman
13. J Tiedeman
14. NJ Williams
15. J Tiedeman
16. NJ Williams
17. SJ & LM Atkins
18. SJ & LM Atkins
19. TW Wadland & YL Carter
20. SJ & LM Atkins
21. Gloucester Coal Limited
22. Gloucester Coal Limited
22a. Gloucester Coal Limited
23. Gloucester Coal Limited
24. SG Ellis & Sons Pty Ltd
25. SG Ellis & Sons Pty Ltd
26. RC & CA Clarke
27. WK Bowen
28. WK Bowen
29. Whatmore
30. FA Wenham
31. FA Wenham
32. KJ & ME Albert
33. TW Wadland & YL Carter
34. Gloucester Coal Limited
35a. Gloucester Coal Limited
35b. Gloucester Coal Limited
36. Gloucester Coal Limited
37. SG Ellis & Sons Pty Ltd
38. FA Wenham
39. Gloucester Coal Limited
40. Gloucester Coal Limited
41. Gloucester Coal Limited
42. Gloucester Coal Limited
43a. Gloucester Coal Limited
43b. Gloucester Coal Limited
43c. Gloucester Coal Limited
43d. Gloucester Coal Limited
43e. Gloucester Coal Limited
44. Gloucester Coal Limited
45. Gloucester Coal Limited
46. TW Wadland & YL Carter
47. RL Bagnall
48. AS Isaac
49. AS Isaac
50. Gloucester Coal Limited
51. Gloucester Coal Limited
52. Gloucester Coal Limited
53. Gloucester Coal Limited
54. Gloucester Coal Limited
55. Gloucester Coal Limited
Lease to BC & EA Bramley
56. Gloucester Coal Limited
Lease to BC & EA Bramley
57. Gloucester Coal Limited
Lease to BC & EA Bramley
58. Gloucester Coal Limited
59. Gloucester Coal Limited
Lease to BC & EA Bramley
60. Gloucester Coal Limited
61. Gloucester Coal Limited
62. Gloucester Coal Limited
63. Gloucester Coal Limited
64. Gloucester Coal Limited
65a. TW Wadland & YL Carter
65b TW Wadland & YL Carter
66. Gloucester Coal Limited
67. Gloucester Coal Limited
68. C Devereaux
69. DJ Blanch
70. HM Bastion
70a. Gloucester Coal Limited
70b. Gloucester Coal Limited
70c. Gloucester Coal Limited
71a. Gloucester Coal Limited
71b. Gloucester Coal Limited
71c. Gloucester Coal Limited
72a. SS Ellis
72b. SS Ellis
72c. C & C Bertolino
73. W Mantle
74a. MI Rounsley
74b. JA & DS Gartrell
74c. NJ Porter
75a. AJ & LM Hancock
75b. PB Harrison
76. Gloucester Coal Limited
77. Gloucester Coal Limited
78. WK Bowen
79. WK Bowen
80. FA Wenham
81. FA Wenham
82. GL Harris
82a. JH Pickett
83. M Thompson
84. KJ & R Lowrey
85. KJ & R Lowrey
86. KJ & R Lowrey
87. KJ & R Lowrey
87a. KJ & R Lowrey
88. AS Isaac
89. EAR & RK McIntosh
90. RK McIntosh
90a. WJ & JM Battaglini
90b. KB Bagnall
91. SH Morgan
92. SH Morgan
93. AR & AM Campbell
93a. LA Blanch
93b. Gloucester Coal Limited
Lease to BC & EA Bramley
93c. PA Standen
94. EA Yates
95. T Smith
95a. R Smith & SC Davern
96. R Smith & SC Davern
97a. LJ & IR Dillon
97b. GL & MF Wallace
98. Crown Land - Forestry Reserve
99. RV & LM Orlandi
100. Crown Land - Travelling Stock Reserve
101. Gloucester Shire Council
102. Crown Land - Reserve for Cemetery

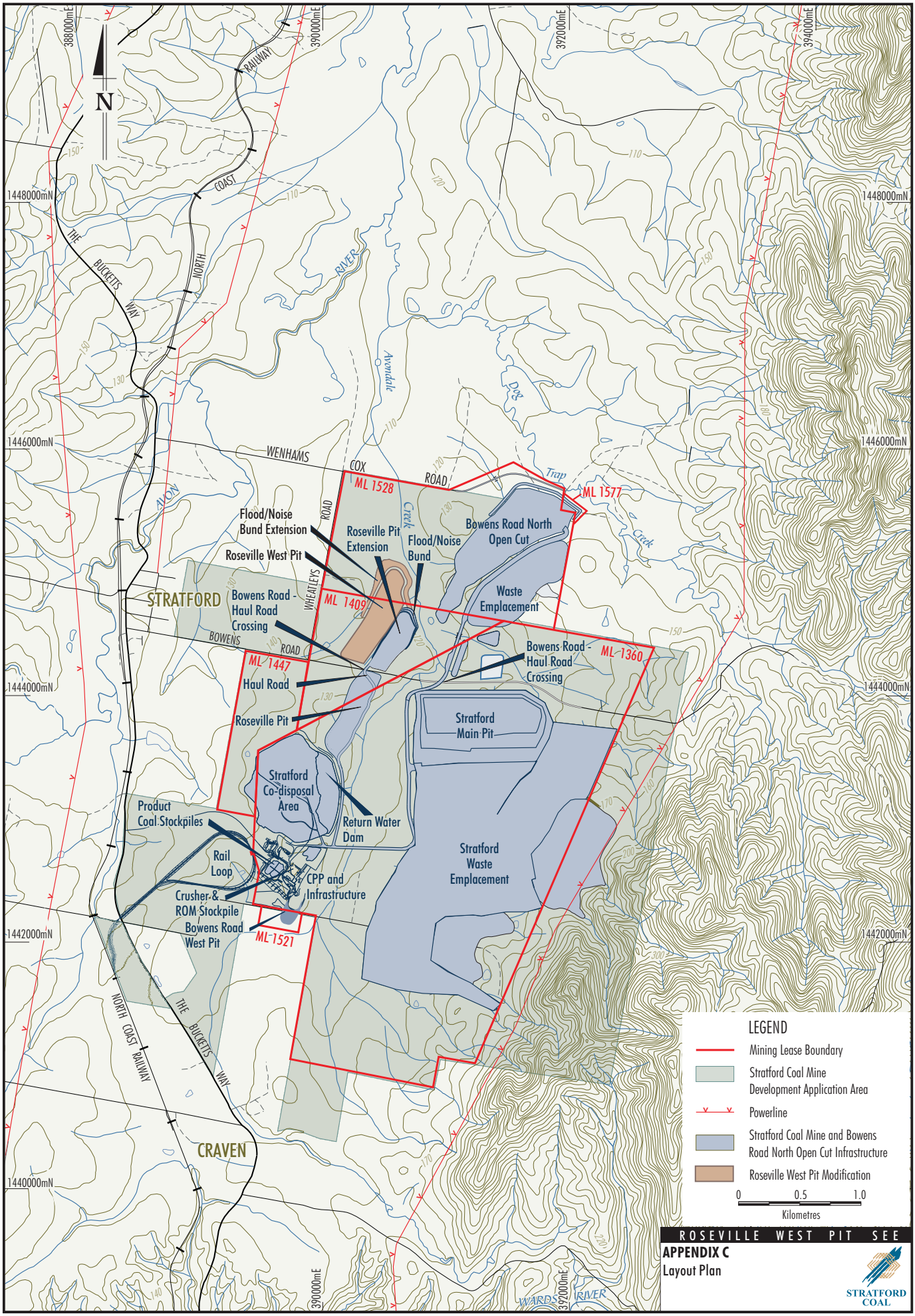
Source: Quadcolour (2006)

ROSEVILLE WEST PIT SEE

APPENDIX B2

Relevant Land Ownership List

STRATFORD COAL



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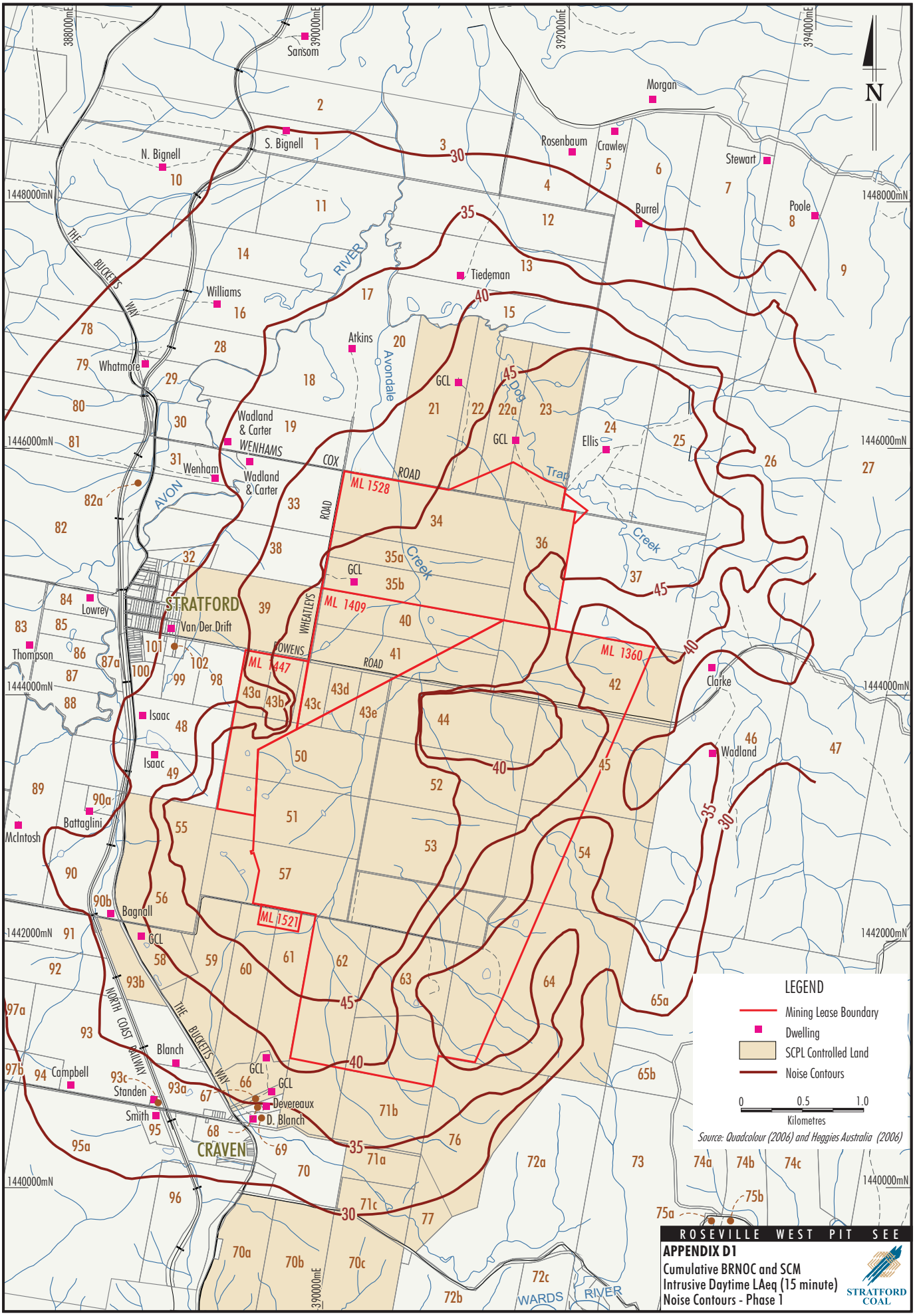
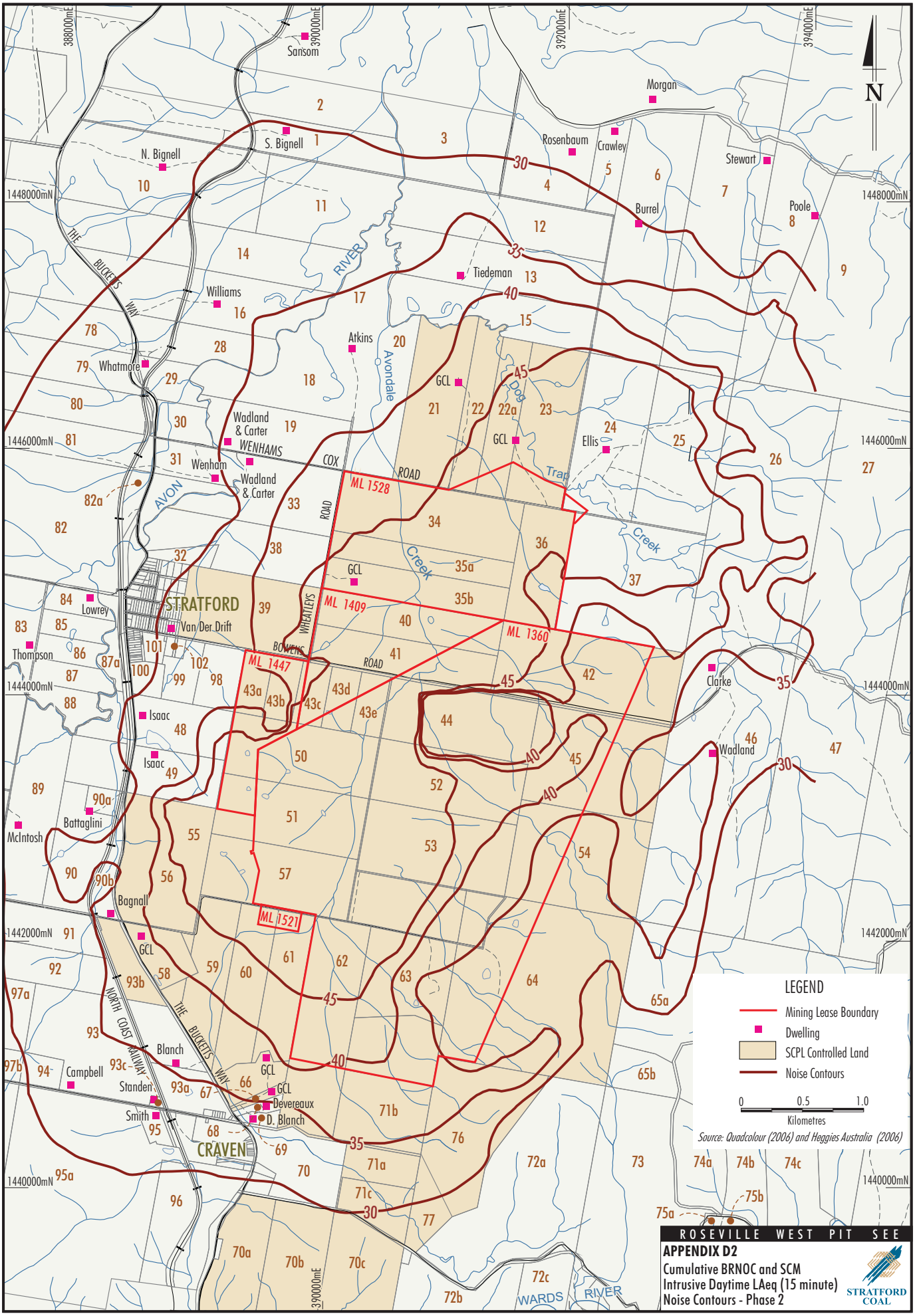


GCL-06-06 RWP SEE Noise_004C



GCL-06-06 RWP SEE Noise_005C

Noise Impact Summary on Private Vacant Land

The DoP does not consider vacant land to be noise affected in the absence of a dwelling. For indicative purposes however, based on the cumulative intrusive noise contours attached as **Appendices D1** and **D2**, **Table E1** resents a summary of private land owners where the project specific criteria are estimated to be exceeded on over 25% of the vacant land area. Note, the land owner's current entitlement to construct a dwelling is unknown.

Table E1 Private Vacant Land within Noise Management and Affectation Zones (>25% Land Area)

1 dBA to 5 dBA above Project Specific Criteria	>5 dBA above Project Specific Criteria
12 Bignell	37 Ellis & Sons
13 Tiedeman	25 Ellis & Sons
14 Williams	26 Clarke
17 Atkins	15 Tiedeman
28 Bowen	20 Atkins
32 Albert	38 Wenham
87a Lowery	
87 Lowery	
88 Lowery	
99 Orlandi	
90 McIntosh	
91 Morgan	
92 Morgan	
76 Wolfenden	

APPENDIX B

AIR QUALITY ASSESSMENT – ROSEVILLE WEST PIT MODIFICATION

Suite 2B 14 Glen Street,
Eastwood, NSW 2122
Phone 61-2-9874-8644
Fax 61-2-9874-8904
E-mail : has@holmair.com.au
ACN 003-741-035
ABN 79-003-741-035

4 October 2006

Chief Operating Officer
Stratford Coal Pty Ltd
Level 9 Citadel Towers
(Tower B), 799 Pacific Highway
CHATSWOOD NSW 2067

Attention: Graham Colliss

Dear Graham,

Air Quality Assessment – Roseville West Pit Modification

Introduction

Following review of the description of the Roseville West Pit modification, this letter provides an analysis of the proposal to determine the potential effect that the proposed changes will have on air quality in the vicinity of the Stratford Coal Mine (SCM).

Roseville West Pit includes modifications to the SCM to add a small satellite pit adjacent to the existing Roseville Pit Extension to provide a continued source of run-of-mine (ROM) coal at up to 0.25 million tonnes per annum (Mtpa).

This air quality assessment includes the following:

1. A review of the history of the proposal and the air quality assessments undertaken to date;
2. Desktop review of the findings of earlier air quality assessments and recent monitoring data; and
3. Assessment of the extent to which impacts on air quality will change as a result of the proposed modifications to the SCM.

Summary

An assessment of the potential impacts of the Roseville West Pit modification has been completed, including a review of the Bowens Road North Environmental Impact Statement (SCPL, 2001) (the BRN EIS) cumulative air quality predictions

and consideration of the recent air quality performance of the SCM, including the operating Bowens Road North Open Cut (BRNOC) and Roseville Pit Extension.

The current SCM operation is in compliance with applicable dust deposition and PM_{10} criteria. The Roseville West Pit modification would involve only very modest rates of waste rock and ROM coal production. Analysis indicates that the modification would not significantly increase the levels of particulate matter generated by the SCM when measured at surrounding compliance locations.

Continued compliance with applicable air quality criteria can be monitored with the existing air quality monitoring network and in accordance with the approved BRNOC Dust Management Plan (SCPL, 2002). The BRNOC Dust Management Plan includes dust management and control measures and dust management protocols that are currently used by SCPL at the Roseville Pit Extension and BRNOC and these measures would be equally applicable to the Roseville West Pit modification.

Background information – history of the proposal

The potential environmental impacts associated with the original development of SCM were assessed in the Stratford Coal Project Environmental Impact Statement (the SCP EIS) (SCPL, 1994).

Development consent was granted for the mine by the Minister for Planning in December 1994. Construction of the SCM commenced in January 1995 and coal production began in June 1995. The SCM was originally an operation producing approximately 1.1 Mtpa of high quality coking and thermal coal over a 14 year mine life and included an open cut mine, rail loop, rail loading facilities, coal preparation plant (CPP) and associated facilities.

Since commencement of the operation, a number of alterations to the original SCM have been made, including issue of a new Development Consent. A summary of these alterations is provided in the main text of the Roseville West Pit Modification Statement of Environmental Effects.

To provide a continued source of coking coal to replace the Roseville Pit Extension, SCPL plan to develop the Roseville West Pit.

The modification is located on land owned by SCPL and within the existing Development Application area and Mining Leases (MLs). The proposed mining rate of 0.25 Mtpa is equivalent to that being undertaken in the existing Roseville Pit Extension.

Review of earlier assessments

The air quality effects of the cumulative operation of the SCM and BRNOC were assessed in the BRN EIS by Holmes Air Sciences (2001).

The assessment covered two stages of operations:

- Stage 1 – comprising Year 2 operation of the BRNOC and concurrent operation of the SCM Main Pit; and

- Stage 2 – comprising operation of the BRNOC (Year 5) after the Stratford Main Pit operations ceased.

The assessment concluded that no residences were predicted to experience dust deposition or concentration levels above the NSW Environmental Protection Authority (EPA) (now Department of Environment and Conservation [DEC]) assessment criteria for dust deposition or particulate concentrations.

The potential for short term exceedances of the 24-hour National Environment Protection Measure (NEPM) PM_{10} standard of 50 micrograms per cubic metre ($\mu g/m^3$) at the Bagnall, Bramley, Isaac, Van Der Drift, McIntosh, Battaglini, Wadland, Ellis and Clarke residences were identified, however, with the implementation of an air quality management plan it was predicted that compliance with the NEPM short term standard could be achieved.

In addition, the assessment concluded that cumulative air quality emissions of the SCPL operations would fall significantly when the operations in the SCM Main Pit ceased (as occurred in 2003).

Description of the Modification

The Roseville West Pit modification comprises the following components (Figure 1):

- a small open pit (approximately 850 metres (m) long and 250 m wide) to access approximately 0.7 million tonnes (Mt) of ROM coal, immediately to the west of and adjoining the existing Roseville Pit Extension;
- construction of associated flood and noise bunding on the north-western Roseville West Pit boundary, which will be a continuation of the existing Roseville Pit Extension bunding;
- backfilling of the Roseville Pit Extension with waste rock generated from the development as well as in-pit disposal within the Roseville West Pit;
- use of the SCM mobile fleet that currently operate the Roseville Pit Extension; and
- mining in the Roseville West Pit between 7.00 am and 10.00 pm only (ie. no night-time operation).

The Roseville West Pit modification is located on land owned by Stratford Joint Venture and within the original SCM Development Application area and current SCPL MLs.

There are no significant construction activities required for the modification as no new infrastructure is required. The existing western haul road crossing of Bowens Road would be utilised for the modification. No significant changes are proposed to the existing mining methods or operational procedures that are employed in the Roseville Pit Extension.

Comparison of the distance from the approved Roseville Pit Extension and the Roseville West Pit modification to the nearest residences (Figures 1 and 2) indicates that the modification would result in the mining activities only being a few hundred metres closer to potential private receptors.

Recent Monitoring data

Dust deposition is monitored at seven locations surrounding the SCPL MLs (Figure 2). Dust monitoring results for all seven monitor locations are generally at or below 2 grams per square metre per month (g/m^2/month) (from all sources), which indicates compliance with the applicable dust deposition criteria as predicted by the BRN EIS assessment.

PM_{10} concentrations are currently monitored by SCM at four locations including the Ellis Residence, Clarke Residence, Craven and Wheatleys Road, to the northeast of Stratford village (Figure 2). The Ellis and Clarke residence PM_{10} monitors were installed in 2003 whilst the Craven and Wheatleys Road monitors were installed in 2001.

A measurement of the 24-hour average PM_{10} concentration is made every sixth day. The results from July 2001 to June 2006 have been reviewed (refer Table 1 - attached to this letter).

The monitoring results indicate that the highest 24-hour concentration was measured at the Ellis and Clarke residences, which both recorded a 24-hour average PM_{10} concentration of 120 $\mu g/m^3$ on 29 October 2003. The concentration at the Craven and Wheatleys Road monitors were 86 and 81 $\mu g/m^3$ respectively on the same day. SCPL file notes indicate that a regional dust storm occurred on this day.

Annual average PM_{10} concentrations for the most recent 12 months of available data (July 2005 to June 2006) at the four sites were 10.3, 9.2, 14.5 and 6.9 $\mu g/m^3$ at Wheatleys Road, Craven, Ellis Residence and Clarke Residence respectively. These results include the effects of dust emissions from mining that took place over the period as well as background levels.

The results suggest that background PM_{10} levels, in the absence of mining, would be unlikely to exceed an annual average concentration of 10 $\mu g/m^3$. The results also indicate that current mining operations have caused only very small increases in the annual average PM_{10} concentrations at even the closest monitoring site (Ellis Residence).

The monitoring data suggests that the SCM and BRNOC are complying with the short- and long-term assessment criteria for PM_{10}.

Assessment of the Potential Impacts of the Modification

The Roseville West Pit extension comprises a small open cut pit that would effectively be a duplication of the Roseville Pit Extension that is currently operating.

The original BRNOC cumulative assessment and recent monitoring results indicate that the SCM, incorporating Roseville West Pit, would comply with the current annual average PM_{10} assessment criteria of 30 $\mu g/m^3$ and applicable dust deposition criteria.

The most recent 12-months of available PM_{10} monitoring data shows that the mine does not appear to have any difficulty with maintaining 24-hour average

PM_{10} levels at or below 50 μg/m³ (all sources) at the four monitors. Two exceedances of the 50 μg/m³ limit were recorded (71 μg/m³ at Wheatleys Road on 25th August 2005 and 100 μg/m³ at the Ellis Residence on 29th December 2005) in this monitoring period. SCPL has reported that both of these exceedances related to adjoining agricultural landuses (burning timber and ploughing an adjacent paddock).

Conclusions

A review of the previous analysis and recent monitoring data indicate that the SCM operation incorporating the BRNOC and the Roseville Pit Extension are complying with applicable air quality assessment criteria and are predicted to continue to do so.

Since the current modification proposal is minor in scale and comprises an effective replacement for the Roseville Pit Extension which will cease operation in 2007, it is concluded that the modified proposal would also comply with contemporary assessment criteria and would not significantly increase the cumulative air quality emissions of BRNOC and the SCM.

This can be confirmed by the continuation of the SCM PM_{10} monitoring programme in accordance with the approved BRNOC Dust Management Plan (SCPL, 2002).

* * * *

Please feel free to contact me should you need to discuss any of the above.

Yours faithfully,
Holmes Air Sciences

N.E. Holmes.

Nigel Holmes PhD
Atmospheric Physicist

References:

SCPL (1994)
"Stratford Coal Project – Environmental Impact Statement" Prepared by Woodward Clyde.

SCPL (2001)
"Bowens Road North Project EIS". Prepared by Resource Strategies.

SCPL (2002)
"Bowens Road North Open Cut Coal Mine Dust Management Plan".

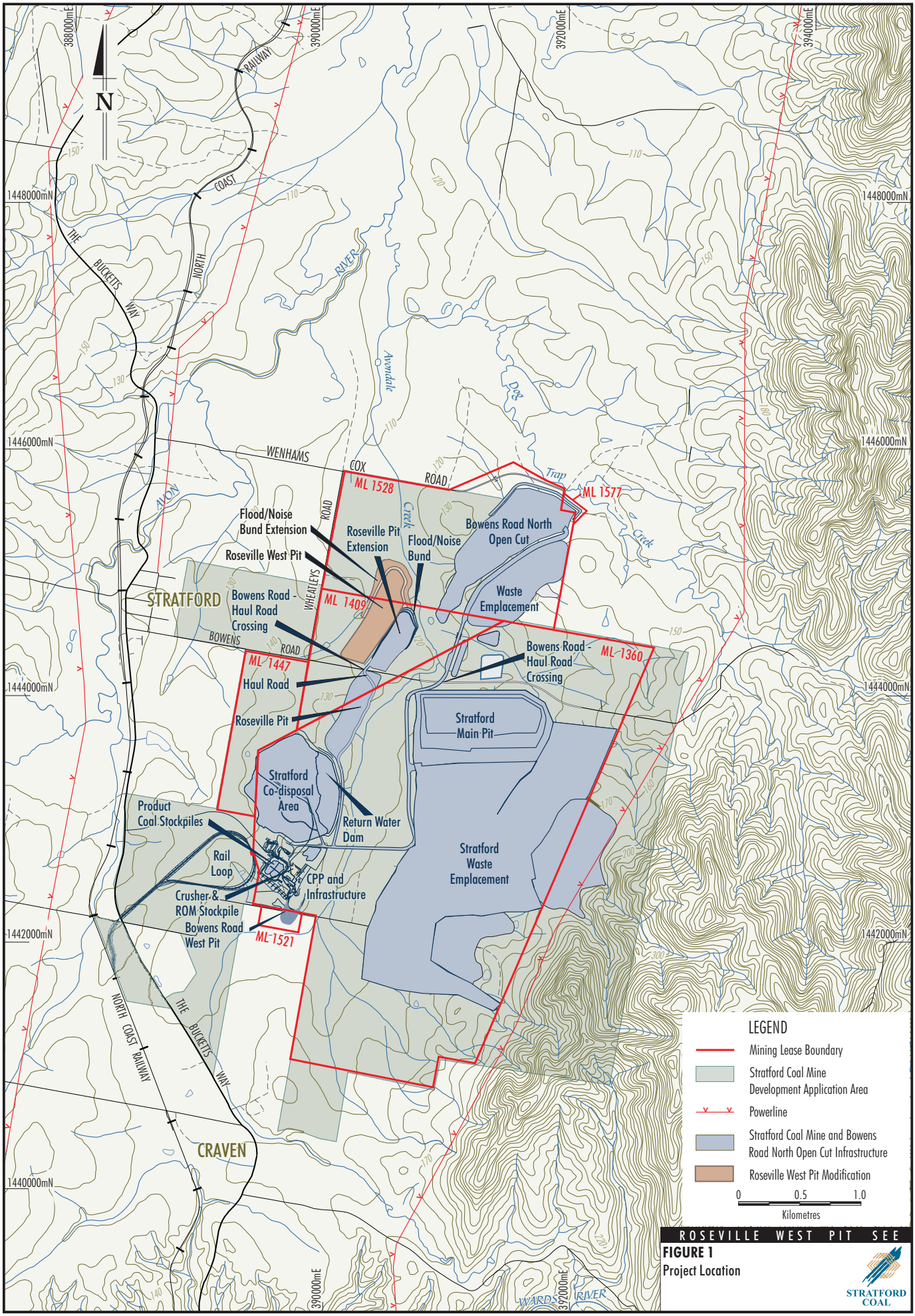
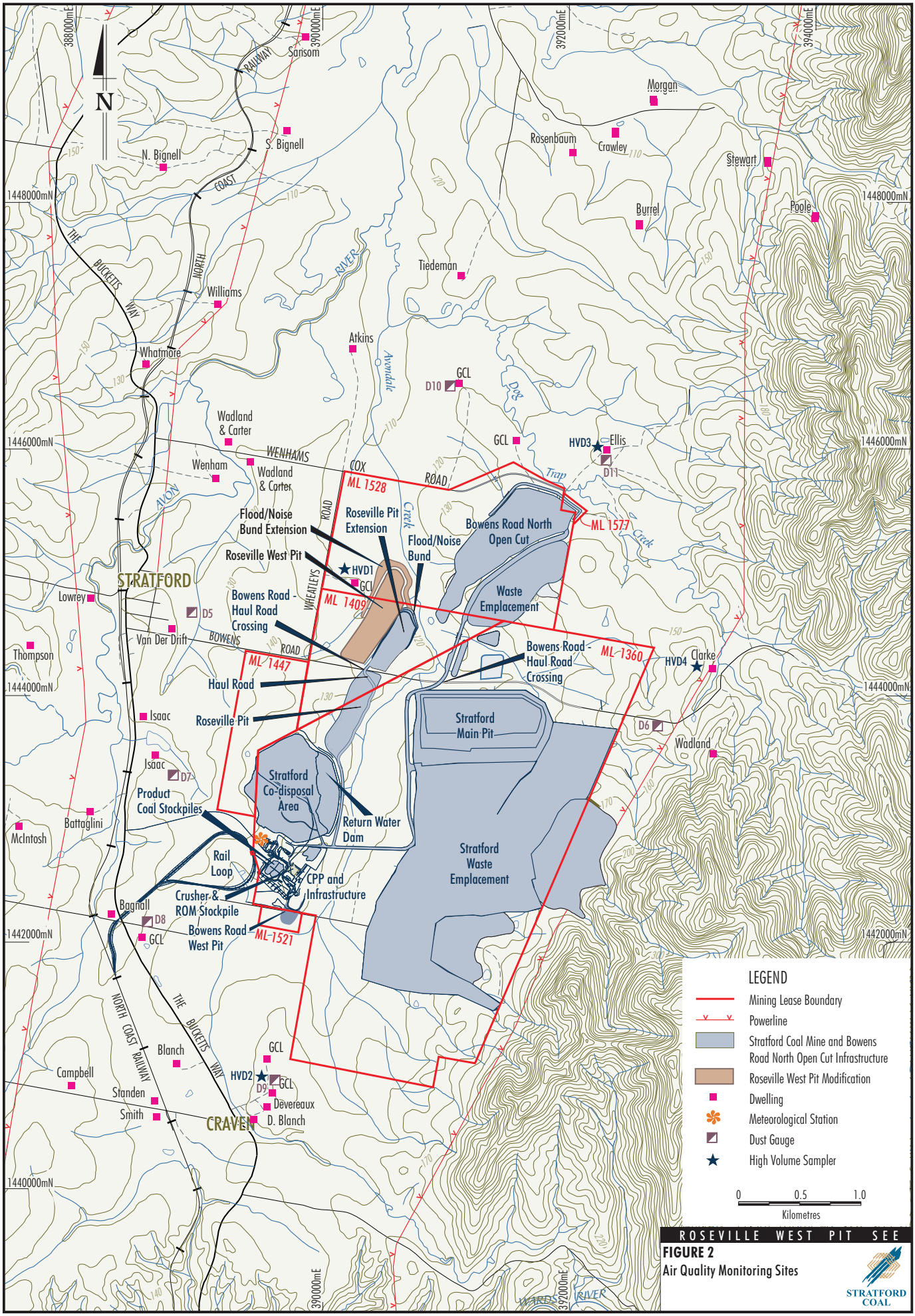


FIGURE 1
Project Location

STRATFORD COAL

GCL-06-06 RWP SEE AQ_001C



ROSEVILLE WEST PIT SEE

FIGURE 2

Air Quality Monitoring Sites

STRATFORD COAL

GCL-06-06 RWP SEE AQ_002B

Table 1. Monitoring results (24-hour average PM_{10} concentrations) - $\mu g/m^3$

Date	Wheatleys Road	Craven	Ellis Residence	Clarke Residence
5-Jul-01	1	1	N/A	N/A
11-Jul-01	2	8	N/A	N/A
17-Jul-01	N/A	27	N/A	N/A
23-Jul-01	2	1	N/A	N/A
29-Jul-01	26	5	N/A	N/A
4-Aug-01	1	11	N/A	N/A
10-Aug-01	<1	16	N/A	N/A
16-Aug-01	1	10	N/A	N/A
22-Aug-01	1	7	N/A	N/A
28-Aug-01	1	2	N/A	N/A
3-Sep-01	4	6	N/A	N/A
9-Sep-01	7	11	N/A	N/A
15-Sep-01	5	7	N/A	N/A
21-Sep-01	34	30	N/A	N/A
27-Sep-01	6	5	N/A	N/A
3-Oct-01	6	9	N/A	N/A
9-Oct-01	8	8	N/A	N/A
15-Oct-01	6	7	N/A	N/A
21-Oct-01	6	10	N/A	N/A
27-Oct-01	4	5	N/A	N/A
2-Nov-01	23	24	N/A	N/A
8-Nov-01	4	5	N/A	N/A
14-Nov-01	7	12	N/A	N/A
20-Nov-01	2	3	N/A	N/A
26-Nov-01	6	10	N/A	N/A
2-Dec-01	14	18	N/A	N/A
8-Dec-01	8	6	N/A	N/A
14-Dec-01	13	16	N/A	N/A
20-Dec-01	17	21	N/A	N/A
26-Dec-01	26	32	N/A	N/A
1-Jan-02	14	**55**	N/A	N/A
7-Jan-02	27	30	N/A	N/A
13-Jan-02	30	29	N/A	N/A
19-Jan-02	8	15	N/A	N/A
25-Jan-02	7	6	N/A	N/A
31-Jan-02	3	5	N/A	N/A
6-Feb-02	9	9	N/A	N/A
12-Feb-02	11	8	N/A	N/A
18-Feb-02	10	11	N/A	N/A
24-Feb-02	6	6	N/A	N/A
2-Mar-02	13	10	N/A	N/A
8-Mar-02	12	16	N/A	N/A
14-Mar-02	5	5	N/A	N/A
20-Mar-02	32	38	N/A	N/A
26-Mar-02	5	4	N/A	N/A
1-Apr-02	1	1	N/A	N/A
7-Apr-02	4	2	N/A	N/A
13-Apr-02	6	9	N/A	N/A
19-Apr-02	4	13	N/A	N/A
25-Apr-02	2	9	N/A	N/A
1-May-02	0	0	N/A	N/A
7-May-02	5	10	N/A	N/A
13-May-02	6	4	N/A	N/A

Table 1 (Cont.). Monitoring results (24-hour average PM_{10} concentrations) - $\mu g/m^3$

Date	Wheatleys Road	Craven	Ellis Residence	Clarke Residence
19-May-02	12	9	N/A	N/A
25-May-02	2	2	N/A	N/A
31-May-02	8	5	N/A	N/A
6-Jun-02	<1	5	N/A	N/A
12-Jun-02	<1	14	N/A	N/A
18-Jun-02	2	2	N/A	N/A
24-Jun-02	4	5	N/A	N/A
30-Jun-02	4	4	N/A	N/A
Average	**8.6**	**11**	**N/A**	**N/A**
6-Jul-02	<1	<1	N/A	N/A
12-Jul-02	<1	2	N/A	N/A
18-Jul-02	10	13	N/A	N/A
24-Jul-02	<1	14	N/A	N/A
30-Jul-02	4	5	N/A	N/A
5-Aug-02	4	5	N/A	N/A
11-Aug-02	8	11	N/A	N/A
17-Aug-02	5	9	N/A	N/A
23-Aug-02	3	3	N/A	N/A
29-Aug-02	<1	5	N/A	N/A
4-Sep-02	9	10	N/A	N/A
10-Sep-02	20	10	N/A	N/A
16-Sep-02	14	17	N/A	N/A
22-Sep-02	13	22	N/A	N/A
28-Sep-02	<1	18	N/A	N/A
4-Oct-02	32	43	N/A	N/A
10-Oct-02	21	22	N/A	N/A
16-Oct-02	15	20	N/A	N/A
22-Oct-02	31	24	N/A	N/A
28-Oct-02	24	11	N/A	N/A
3-Nov-02	28	34	N/A	N/A
9-Nov-02	**50**	**70**	N/A	N/A
15-Nov-02	15	13	N/A	N/A
21-Nov-02	6	5	N/A	N/A
27-Nov-02	**55**	**59**	N/A	N/A
3-Dec-02	14	26	N/A	N/A
9-Dec-02	38	41	N/A	N/A
15-Dec-02	18	21	N/A	N/A
21-Dec-02	10	12	N/A	N/A
27-Dec-02	4	6	N/A	N/A
2-Jan-03	13	13	N/A	N/A
8-Jan-03	26	26	N/A	N/A
14-Jan-03	14	13	N/A	N/A
20-Jan-03	26	35	N/A	N/A
26-Jan-03	20	26	N/A	N/A
1-Feb-03	32	31	N/A	N/A
7-Feb-03	13	15	22	N/A
13-Feb-03	20	25	30	N/A
19-Feb-03	18	18	24	N/A
25-Feb-03	N/A	10	13	N/A
28-Feb-03	15	N/A	N/A	N/A
3-Mar-03	18	17	19	20
9-Mar-03	9	10	10	11

Table 1 (Cont.). Monitoring results (24-hour average PM_{10} concentrations) - $\mu g/m^3$

Date	Wheatleys Road	Craven	Ellis Residence	Clarke Residence
15-Mar-03	11	9	12	11
21-Mar-03	27	29	27	31
27-Mar-03	8	9	8	10
2-Apr-03	8	9	9	10
9-Apr-03	23.9	30.8	37.9	27
14-Apr-03	8.7	9.3	8.7	8.1
20-Apr-03	6.6	6	7.2	7
26-Apr-03	6	4.8	5.7	7.3
1-May-03	<1	4	4	4
7-May-03	<1	4	5	1
13-May-03	<1	<1	<1	<1
20-May-03	6	2	2	4
26-May-03	<1	<1	<1	<1
1-Jun-03	<1	1	1	2
4-Jun-03	2	N/A	N/A	N/A
7-Jun-03	N/A	3	5	5
13-Jun-03	N/A	4	<1	2
19-Jun-03	N/A	7	1	7
20-Jun-03	7	N/A	N/A	N/A
25-Jun-03	7	7	8	3
Average	**16.2**	**16.6**	**N/A**	**N/A**
1-Jul-03	1	2	3	<1
7-Jul-03	<1	4	4	1
13-Jul-03	1	3	2	2
19-Jul-03	5	7	6	4
25-Jul-03	2	<1	<1	1
31-Jul-03	1	<1	6	7
6-Aug-03	11	7	29	12
12-Aug-03	3	4	7	22
18-Aug-03	1	4	1	2
24-Aug-03	3	4	4	4
30-Aug-03	13	14	18	7
5-Sep-03	23	16	25	13
11-Sep-03	19	23	26	23
17-Sep-03	7	4	5	7
23-Sep-03	26	15	**57**	**62**
29-Sep-03	17	20	31	21
5-Oct-03	<1	19	5	4
11-Oct-03	11	10	22	10
17-Oct-03	10	10	12	9
23-Oct-03	9	9	18	7
29-Oct-03	**81**	**86**	**120**	**120**
4-Nov-03	8	13	10	9
10-Nov-03	5	7	9	6
16-Nov-03	21	18	33	22
22-Nov-03	1	1	1	1
28-Nov-03	8	7	15	8
4-Dec-03	8	9	9	9
10-Dec-03	11	10	12	10
16-Dec-03	13	10	16	12
22-Dec-03	18	17	22	23
28-Dec-03	9	8	11	14

Table 1 (Cont.). Monitoring results (24-hour average PM_{10} concentrations) - $\mu g/m^3$

Date	Wheatleys Road	Craven	Ellis Residence	Clarke Residence
3-Jan-04	17	17	19	17
9-Jan-04	24	24	30	24
15-Jan-04	21	19	26	18
21-Jan-04	22	21	24	21
27-Jan-04	5	15	18	16
2-Feb-04	22	19	15	14
8-Feb-04	24	18	14	15
14-Feb-04	14	10	11	9
20-Feb-04	24	18	24	17
26-Feb-04	6	4	6	NS
3-Mar-04	6	3	12	5
9-Mar-04	28	13	5	7
15-Mar-04	11	14	11	9
21-Mar-04	6	6	11	5
28-Mar-04	18	6	24	15
2-Apr-04	13	13	24	15
8-Apr-04	7	7	8	6
14-Apr-04	5	5	8	3
20-Apr-04	14	6	13	9
26-Apr-04	10	10	12	7
2-May-04	2	2	4	3
8-May-04	22	16	19	20
14-May-04	20	17	19	18
20-May-04	2	15	15	11
26-May-04	2	3	5	2
1-Jun-04	<1	5	10	2
7-Jun-04	<1	4	4	2
13-Jun-04	<1	1	2	<1
19-Jun-04	<1	<1	<1	<1
25-Jun-04	<1	8	10	1
Average	**13.0**	**11.9**	**16.2**	**13.3**
1-Jul-04	1	10	17	9
7-Jul-04	<1	9	9	4
13-Jul-04	<1	2	3	<1
19-Jul-04	1	2	3	2
25-Jul-04	5	8	6	5
31-Jul-04	6	6	7	6
6-Aug-04	4	3	7	3
12-Aug-04	10	10	19	8
18-Aug-04	2	2	3	2
24-Aug-04	8	11	23	10
30-Aug-04	14	21	18	21
5-Sep-04	9	10	11	10
11-Sep-04	9	9	9	9
17-Sep-04	12	12	18	12
23-Sep-04	25	22	25	22
29-Sep-04	24	25	26	25
5-Oct-04	14	5	12	23
11-Oct-04	18	15	21	14
17-Oct-04	4	8	7	7
23-Oct-04	9	6	8	6
29-Oct-04	6	4	16	4

Table 1 (Cont.). Monitoring results (24-hour average PM_{10} concentrations) - $\mu g/m^3$

Date	Wheatleys Road	Craven	Ellis Residence	Clarke Residence
4-Nov-04	18	20	19	14
10-Nov-04	8	7	9	5
16-Nov-04	15	13	18	13
22-Nov-04	9	16	8	7
28-Nov-04	9	17	12	5
4-Dec-04	8	9	10	7
10-Dec-04	6	5	6	6
16-Dec-04	12	12	16	12
22-Dec-04	19	16	22	16
28-Dec-04	9	10	11	11
3-Jan-05	21	19	20	20
9-Jan-05	6	6	15	6
15-Jan-05	13	12	19	13
21-Jan-05	29	25	28	<1
27-Jan-05	3	5	5	4
2-Feb-05	19	16	8	8
8-Feb-05	19	23	21	19
14-Feb-05	19	15	25	19
20-Feb-05	15	13	14	13
26-Feb-05	44	36	45	36
4-Mar-05	21	17	5	4
10-Mar-05	20	20	30	22
16-Mar-05	20	21	27	20
22-Mar-05	5	4	10	6
28-Mar-05	14	12	17	6
3-Apr-05	11	14	14	15
9-Apr-05	<1	6	6	6
15-Apr-05	4	7	13	8
21-Apr-05	<1	5	10	6
27-Apr-05	nr	11	12	10
3-May-05	16	5	5	6
9-May-05	5	4	8	5
16-May-05	N/A	8	10	7
22-May-05	N/A	3	4	7
28-May-05	N/A	4	8	8
3-Jun-05	1	3	6	3
9-Jun-05	10	9	10	5
14-Jun-05	1	3	3	1
20-Jun-05	3	1	3	1
26-Jun-05	1	1	4	<1
Average	**11.6**	**10.7**	**13.2**	**10.0**
2-Jul-05	2	3	2	2
8-Jul-05	2	5	6	3
14-Jul-05	1	2	4	<1
20-Jul-05	6	5	4	3
26-Jul-05	6	3	2	1
1-Aug-05	6	8	10	5
7-Aug-05	4	6	8	1
13-Aug-05	9	13	14	4
19-Aug-05	28	19	19	17
25-Aug-05	**71**	10	20	5
31-Aug-05	25	13	33	15

Table 1 (Cont.). Monitoring results (24-hour average PM_{10} concentrations) - $\mu g/m^3$

Date	Wheatleys Road	Craven	Ellis Residence	Clarke Residence
6-Sep-05	3	2	7	2
12-Sep-05	2	1	5	4
18-Sep-05	5	7	10	5
24-Sep-05	27	23	16	21
30-Sep-05	9	9	27	8
6-Oct-05	28	26	46	23
12-Oct-05	16	15	20	12
18-Oct-05	9	9	8	7
24-Oct-05	8	9	9	6
30-Oct-05	9	9	8	7
5-Nov-05	5	5	6	5
11-Nov-05	16	16	28	15
17-Nov-05	9	8	16	7
23-Nov-05	11	9	17	6
29-Nov-05	5	5	5	3
5-Dec-05	21	14	21	12
11-Dec-05	22	16	22	11
17-Dec-05	10	12	14	9
23-Dec-05	23	18	30	12
29-Dec-05	20	22	**100**	17
4-Jan-06	28	28	29	14
10-Jan-06	5	5	5	4
16-Jan-06	5	6	7	3
22-Jan-06	4	7	7	4
28-Jan-06	7	8	9	5
3-Feb-06	8	9	14	7
9-Feb-06	17	20	19	15
15-Feb-06	9	10	10	8
21-Feb-06	7	6	8	4
27-Feb-06	5	5	6	3
5-Mar-06	5	5	7	3
11-Mar-06	14	14	22	10
17-Mar-06	4	14	25	10
23-Mar-06	3	3	9	2
29-Mar-06	1	12	4	<1
4-Apr-06	5	13	14	5
10-Apr-06	10	11	19	6
16-Apr-06	5	5	9	4
22-Apr-06	9	4	19	9
28-Apr-06	7	7	11	6
4-May-06	11	10	22	6
10-May-06	13	8	17	5
16-May-06	2	2	8	2
22-May-06	6	7	12	7
28-May-06	1	2	3	1
3-Jun-06	2	3	8	4
9-Jun-06	2	2	8	3
15-Jun-06	8	3	5	5
21-Jun-06	4	6	5	3
27-Jun-06	5	6	6	3
Average	**10.3**	**9.2**	**14.5**	**6.9**

APPENDIX C

ROSEVILLE WEST PIT MODIFICATION – WATER MANAGEMENT ASSESSMENT

Gilbert and Associates Pty Ltd

4 October 2006

Chief Operating Officer
Stratford Coal Pty Ltd
PO BOX 168
GLOUCESTER NSW 2422

Attention Mr Graham Colliss

Dear Graham,

Re: Roseville West Pit Modification – Water Management Assessment

Our assessment of the above project is outlined below.

Introduction and Background

Stratford Coal Pty Ltd (SCPL) operates the Stratford Coal open cut mine in the Gloucester Valley on the central coast of New South Wales (NSW). Coal mining at Stratford commenced with the Main Pit in 1995. Several smaller pits have also been developed including the Roseville Pit and Roseville Pit Extension, and the Bowen's Road West Pit and the Bowen's Road North Open Cut. The Bowen's Road North Open Cut and Roseville Pit Extension are currently the only active mining operations on site (with some minor recovery of thermal coal feed material periodically occurring in the co-disposal dam area). As part of its future operations SCPL propose to develop another subsidiary pit adjacent to the current Roseville Pit Extension. The new pit would be known as the Roseville West Pit.

As part of the environmental assessment for the Roseville West Pit modification, Gilbert and Associates Pty Ltd were engaged to assess the hydrological and water management aspects of the proposal within the context of the approved, ongoing mining and coal preparation activities of the site.

Project Overview

The Roseville West Pit modification (refer Figure 1) would comprise the following key components:

- a small (850 metres (m) long by 250 m) wide pit which would provide access for mining of some 0. 7 million tonnes (Mt) of coal;

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ABN: 62 085 419 852

- a flood bund around the eastern and northern limits of the pit - comprising an extension of the existing flood and noise bund around the Roseville and Roseville Extension pit;
- a minor upslope diversion (on the western side of the proposed pit area) to divert undisturbed runoff around the mine area and into Avondale Creek;
- use of mine waste rock to fully backfill the Roseville Pit Extension;
- extension of the haul road servicing the Roseville Pit extension to enable haulage of coal to the Stratford Coal Preparation Plant (CPP); and
- mining in the Roseville West Pit between 7.00 am and 10.00 pm only (ie. no night-time operation).

Catchment Runoff Management

The proposed Roseville West Pit is located on the western side of Avondale Creek and immediately west of Roseville Pit Extension. The pit would intercept a small first order stream which drains a small catchment area extending to the low ridge west of the pit area. It is proposed to construct a diversion bund and clean water drain to divert flows in this stream around the ultimate limits of the pit and into Avondale Creek. The diversion bund and drain would be sized to pass at least a peak 1 in 10 year average recurrence interval peak flow and would be designed to be stable under design flow conditions. Depending on peak design velocities, the invert of the diversion drain would either be grassed or lined with a suitable revetment system capable of resisting the expected design flow conditions.

Water Balance of the Site Water Management System

Background

The water management system at Stratford is based on the following principles:

1. Runoff from undisturbed and rehabilitated areas is diverted around areas disturbed by mining activity.
2. Mine and process water on site is collected and re-used in the CPP and for haul road watering.

Water generated from the Bowens Road North Open Cut, the Roseville void, the Roseville Pit Extension, the Stratford waste emplacement area, run-of mine (ROM) and product stockpiles, CPP, contractors workshop, hardstand areas, rejects disposal areas and mine water storage dams is contained in two main storages: the Stratford Main Pit and the Return Water Dam – refer Figure 1. The Stratford East Dam (previously used for storage of excess mine water, while mining of the Stratford Main Pit occurred) is no longer used. The Roseville void has been substantially filled with reject from the CPP and is currently being rehabilitated. The Return Water Dam is a balancing storage for CPP water supply. The former (filled) above ground rejects co-disposal area also drains to the Return Water Dam. Fine rejects are disposed of by pumping to the mined-out Stratford Main Pit. Water recovered from the Stratford Main Pit is pumped to the Return Water Dam and is currently the main source of water for the CPP.

The water management system at Stratford has operated under a surplus water balance, which means that over time there has been a trend for more water to report to site storages from the mine workings and associated project site catchments than is required to support processing and mining activities. The major water inflows to the site are rainfall-runoff generated from operational areas and (lesser) groundwater inflows to the mine and former mine workings.

Implications of Proposed Roseville West Pit Modification for the Stratford Water Management System

Inflows to the Roseville West Pit modification would potentially comprise both groundwater and incident rainfall and runoff from the portion of the pit catchment that remains undiverted. These waters would be recovered by pumping to the Return Water Dam or the Stratford Main Pit void, thereby adding water to the water management system. The net effect on the overall balance of the Stratford water management system is likely to be a small acceleration in the filling rate of the Stratford Main Pit. In time, it is proposed that runoff currently collected from the Roseville and Roseville Extended pits would be allowed to flow off site via Avondale Creek once the Roseville and Roseville Extended pits have been backfilled and successfully rehabilitated. This would have the effect of reducing the rate that the Stratford Main Pit fills.

A daily water balance simulation model of the Stratford water management system has been developed which enables its operation over time to be compared with model predictions and for forward predictions of its future operations to be made. Reviews are undertaken on an annual basis. The most recent review was undertaken and reported in April 2006.

The results of the most recent water balance review[1] (which exclude any effects of the Roseville West operation), indicate that:

- on-going Bowens Road North Open Cut mining operations should not compromise the design criteria set for Stratford water management of full containment in 90% of climatic sequences simulated (ie. zero spill in the 1 in 10 wet sequence);
- spill risk for both the Bowens Road North Open Cut and Stratford Main Pits was less than 1% (ie. no spill simulated in 102, 5-year climatic sequences);
- the maximum volume simulated in the Bowens Road North Open Cut was some 124 million litres (ML), compared to a calculated capacity to spill level of over 5,000 ML (based on December 2005 survey data); and
- the maximum modelled water volume held in the Stratford Main Pit was some 12,000 ML, compared to a minimum estimated pit capacity (at the end of 5 further years of rejects disposal) of approximately 31,000 ML.

The model indicates a general gradual increase in water stored in the Stratford Main Pit with time.

It is expected that the Roseville West Pit modification would have relatively little effect on the overall performance of the water management system or the predictions above which were made in the most recent review. This expectation is based on the following considerations:

1. The additional catchment area that would need to be contained is estimated to be some[2] 32 hectares which is some 7% of the existing area that contributes to the water management system containment area of the site.
2. Whilst there have been no predictions of the groundwater inflows to the Roseville West Pit, experience at the Roseville Pit and Roseville Pit Extension suggests that groundwater inflows are likely to be small[3] and insignificant in terms of the overall site water balance. Groundwater inflows to the completed pits are also expected to reduce over time as the regional groundwater levels recover and the voids are either backfilled with mine waste or fill with water.
3. The large surplus containment capacity available in the Stratford Main void and the relatively short active life (3 years) of the Roseville West Pit modification.

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1 "Bowens Road North Mine 2005 Water Management Review and Remaining Mine Life Water Balance Prediction", Gilbert and Associates Pty Ltd April 2006.

2 Based on mine pit and bund layout provided.

3 Reported inflows to Roseville (including rainfall and groundwater inflows) for the period December 2004 to July 2005 averaged some 0.2 ML/day.

Flooding

Extension of the existing flood bund around the Roseville West Pit could possibly increase flood levels upstream as a consequence of its location within the flood plain of Avondale Creek. The extension of the flood bund is however relatively minor and based on the pit plan provided, does not encroach further into the flood plain than the existing bund. In an assessment of the implications of the existing flood bund for the Roseville Pit Extension[4] in relation to the requirements of the Gloucester Local Environmental Plan it was concluded that:

> *"...no lands will be affected by flood waters in this section of Avondale creek floodplain other than those owned by SCPL. This section of Avondale Creek is bounded on either side by the existing Stratford Coal Mine components. Therefore it is considered that there is no potential for impacts of flooding and flood liability on individual owners, occupiers and the public resulting from floods affected by this development."*

Extension of the flood bund for Roseville West Pit would not affect these conclusions.

Recommendations

Whilst the proposed Roseville West Pit would be a relatively small and short lived modification, it is recommended that its effects on the water balance and water management system at Stratford be reviewed as part of the next over site water balance assessment. In support of this it is recommended that mine dewatering volumes from the operation be recorded on a weekly basis over the mine life as part of the overall site water monitoring programme.

It is also recommended that an erosion and sediment control plan be developed and implemented during mining phase to cover initial mine development (clearing, stripping and initial development prior to formation of sufficiently large excavation to contain runoff from the mine area), and the bund and haul road extension works.

Please contact the undersigned on (07) 33672388 should you have any queries.

Yours sincerely

Lindsay Gilbert
Director

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4 Letter from Stratford Coal Mine to Department of Infrastructure, Planning and Natural Resources re Stratford Coal Mine – Gloucester Local Environmental Plan, dated 4 March 2005.

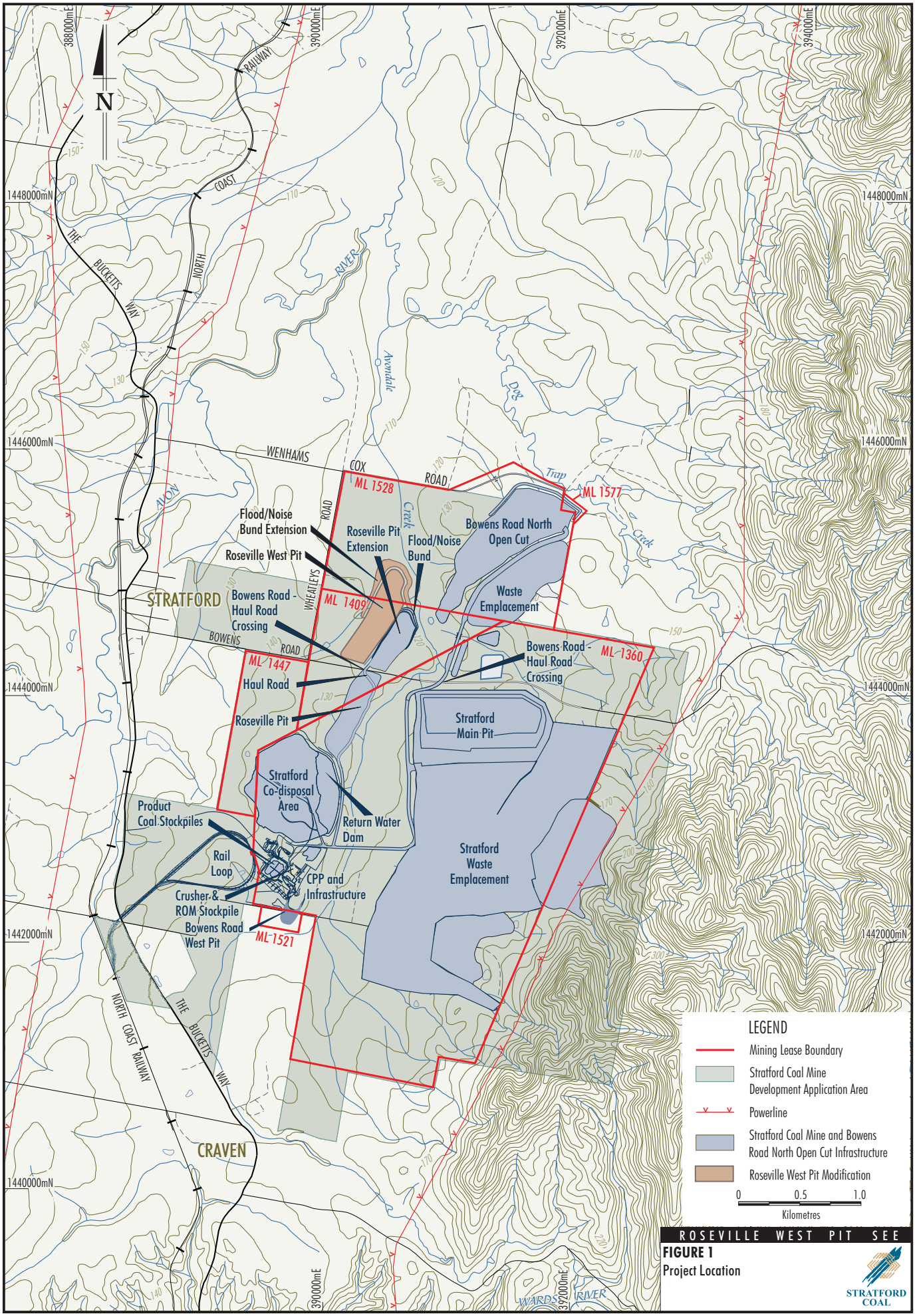

FIGURE 1
Project Location

STRATFORD COAL

GCL-06-06 RWP SEE WATER_001C