VOLUME 1:

STATEMENT OF ENVIRONMENTAL EFFECTS

Modification to the approved mining area at the Donaldson Open Cut Coal Mine, Beresfield.

Application under Section 96(2) of the Environmental Planning and Assessment Act 1979.

Prepared for

Donaldson Coal Pty Ltd

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10th November 2004

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Statement of Environmental Effects (SEE)

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

APPLICANT

Donaldson Coal Pty Ltd (Donaldson).

PROPOSAL

Modification to the existing Mining area

Donaldson Open Cut Coal Mine.

LOCATION

Lot 13 DP 755260 within the Cessnock City Council Area.

CONSENT AUTHORITY

Department of Infrastructure, Planning and Natural Resources (DIPNR).

SUMMARY

Purpose of this Document

Donaldson Open Cut Coal Mine is located near Beresfield, in the lower Hunter Valley. Development Consent N97/00147 for the Coal Mine was granted by the Minister for Urban Affairs and Planning on the 14th October 1999 for coal mining within the area covered by Mining Lease No. 1461. Construction at the project commenced on the 25th January 2001.

Donaldson Coal Pty Ltd (Donaldson) seeks to modify its existing consent to enable an increase in the current mining area within ML1461 by 7.2 hectares in the south eastern section. This will be achieved by extending eight (8) existing mining strips by a maximum of 100 metres each. The location of the mine and the proposed extension area is shown on **Figure 1.**

Modification to Development Consent N97/00147 is sought under Section 96(2) of the *Environmental Planning and Assessment Act 1979* (EP&A Act 1979). This Statement of Environmental Effects (SEE) assesses those matters relevant to the proposed modification as required by Section 79(c) of the EP&A Act 1979 and seeks to demonstrate that the proposed modification is not designated development as it will not significantly increase the environmental impacts of the total development compared with the existing development. It also seeks to demonstrate that the development as modified is substantially the same development as that for which consent was originally granted, thus permitting an application under Section 96(2).

The Approved Development

Construction commenced on the 25th January 2001, and Donaldson Coal mine has a current mine plan to extract 20,091,000 tonnes of ROM coal. Mining is undertaken using terrace/strip mining methods and coal is transported to the nearby Bloomfield Colliery where it is washed at the Coal Preparation Plant. Washed coal is then transported by rail to the port of Newcastle and to domestic power stations.

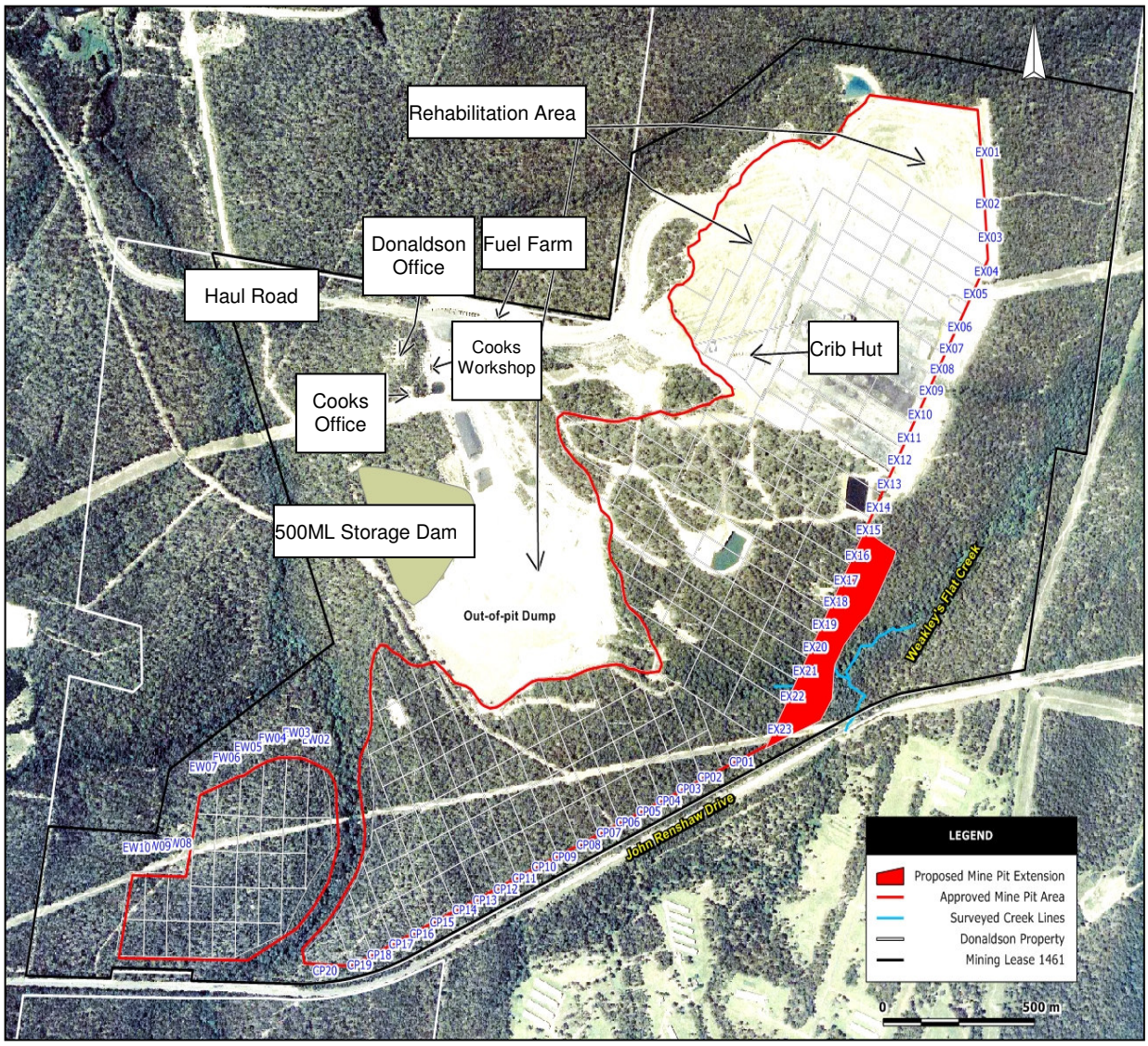
Large areas of bushland owned by Donaldson are undisturbed by mining and are managed to enhance the environmental value of the areas. The areas disturbed by mining are progressively rehabilitated through the restoration of the surface back to the pre-mining levels and revegetated to restore bushland vegetation communities.

Proposed Modification

The modification will involve the extension of mining strips sixteen (16) to twenty three (23) by a maximum of 130 m in a south easterly direction. The area disturbed by the extension is adjacent to the current high wall, and is approximately 7.2 hectares in area. The land is owned by Donaldson Coal Pty Ltd and is within the area covered by Mining Lease No. 1461. The extension of the mining strips will add approximately four (4) months to the life of the mine. The yearly coal extraction rate for Donaldson Coal mine will not be increased, and Donaldson Coal mine will still complete mining operations within the approved eleven (11) year mine life. Approximately 644,200 tonnes of ROM coal will be extracted from the extension area.

The area disturbed by the extension area represents an increase in the total disturbed mining area of approximately 2 ½ %. The extension will not involve the construction of any additional infrastructure, and will be mined in conjunction with the approved mine plan using the same mining methods as the approved Donaldson Coal mine.

The existing environmental management measures currently in place at the Donaldson Coal mine will be implemented to effectively control any environmental impacts associated with the extension. Donaldson Coal mines' environmental compliance record is evidence of the successful implementation of the environmental management measures to date.



Potential Impacts

This report, which includes Technical Appendices as Volume 2, documents the various studies that have been undertaken to examine potential impacts that may occur as a result of the proposed modification. Matters considered relevant to the proposed modification that have been assessed in detail include archaeology, flora and fauna, soil and land capability and hydrology, noise and blasting, air quality and visual amenity.

No Aboriginal heritage sites or artefacts have been found within the extension area. Notwithstanding this, in accordance with the requirements of the Aboriginal Sites Management Plan, the Mindaribba LALC will undertake further field surveys prior to all clearing and topsoil stripping operations in the extension area. There are no items of historic heritage located within the proposed extension area.

Disturbed soil will be managed in accordance with existing management plans and the rehabilitation methods implemented will restore the area to its current land capability upon the completion of mining. The proposal will therefore have minimal impact on soils and land capability.

Potential flora and fauna impacts have been addressed, and the proposed extension will not endanger any threatened flora or fauna species. The areas disturbed by the extension will be returned to bushland following mining, which will support the existing flora and fauna community types. In addition, the large areas of undisturbed bushland provide a significant offset against the short-term loss of the small area of bushland.

Noise modelling has established that the proposed extension will not cause any exceedences of the relevant noise criteria, and the existing noise management measures will be implemented to ensure that noise levels are maintained below the relevant limits. Blasting will also be managed at the mine to ensure that there is no change to the blasting impacts as a result of the extension.

Modelling of dust impacts predicted a negligible change in dust related impacts, and existing dust management measures will adequately control dust emissions from the site.

The proposal will not result in an increased rate of greenhouse gas emission, however, it will result in a small increase in the total greenhouse gas emission from Donaldson Coal mine over the eleven (11) life of the mine. Donaldson Coal mine already implements strategies that minimise the emissions from the mine, and the enhancement of managed bushland areas has increased the carbon sequestration of those areas.

The extension will result in a small increase in the groundwater and rainwater captured within the mining area, which will be managed by the existing water management infrastructure. The additional water capture by the mine does not cause any significant impact on any natural surface water or groundwater ecosystems.

The proposal will not change the visual landscape. There will be no significant impact on visual amenity in the area. There will be no impact upon transport routes or traffic generation by the mining of the extension area.

Donaldson Coal mine has positive socio-economic impacts through employment, purchasing of goods and services, and the payment of State government royalties, charges and taxes. The proposed extension will increase the life of the mine by about four (4) months, and the positive socio-economic impacts will continue for the extended life of the mine.

Environmental Management

Donaldson Coal mine has a comprehensive Environmental Management Strategy that will adequately cover all activities associated with the mining of the extension area. The Strategy incorporates eleven (11) plans of management that include appropriate control measures

and monitoring requirements for all the potential impacts discussed above. The Environmental Management Strategy and plans of management are discussed in Section 4.8.

Conclusion

This Statement of Environmental Effects has been prepared by Donaldson Coal Pty Ltd to assess those matters relevant to a proposed modification to Development Consent N97/00147 to permit an increase in the current mining area within ML1461 by 7.2 hectares in the south eastern section. Modification to the existing consent is sought under Section 96(2) of the *Environmental Planning and Assessment Act 1979* (EP&A Act 1979).

The proposed modification is not considered to constitute 'designated development' under Schedule 3 of the Environmental Planning and Assessment Regulations (EP&A Regulations 2000), as the proposed modification is not considered to significantly increase the environmental impacts of the total development compared with the existing development. An Environmental Impact Statement (EIS) is therefore not required. Matters to be considered by Schedule 3 Part 2 of the EP&A Regulations 2000 in the determination of whether or not the development is designated development are addressed in **Section 8.0.**

An application for modification to the existing consent may be considered under Section 96(2) of the *EP&A Act 1979* if the consent authority is satisfied that the development to which the consent as modified relates is substantially the same development as that for which consent was originally granted.

The proposed modification will not alter the area of land owned by Donaldson nor substantially alter the area of disturbance, which will only increase by 2½%, or 7.2 hectares, with the proposed extension area. The extension area is adjacent to the existing approved area of disturbance and requires no new environmental controls, as assessment of potential environmental impacts has determined these to be either minimal or nil. No additional environmental impacts to those considered in the EIS for the approved mine are predicted.

Existing environmental management strategies and monitoring will be applied to the proposed extension area. The approved mining, transport and processing methods and yearly coal extraction rate will not be altered. No new infrastructure is required, employment numbers will remain the same and mining will still be completed within the approved 11 years. Hours of operation will not be modified.

It is therefore considered that with the proposed modification, the development remains substantially the same development as that for which consent was originally granted, and that the proposed extension may be considered under Section 96(2) of the EP&A Act 1979.

If the coal in the proposed extension area is not recovered by Donaldson as part of its existing operation, the likelihood of the resource being extracted in the future is considered very low. The high cost associated with establishing a new mining operation for such a small amount of coal will mean that the coal resource will be effectively sterilised. By recovering the coal now as part of the current approval, it allows for operational efficiencies to be realised that would otherwise make the proposition uneconomical.

CONTENTS:

Volume 2: APPENDICES

ABBREVIATIONS

AEMR	Annual Environmental Management Report
ANZECC	Australian & New Zealand Environment & Conservation Council
BCM	Bank Cubic Metre
CCC	Cessnock City Council
COI	Commission of Inquiry
Cooks	Cooks Construction Pty Ltd ("mining contractor")
CPP	Coal Preparation Plant
DEC	Department of Environment & Conservation
DIPNR	Department of Infrastructure Planning & Natural Resources
DMR	Department of Mineral Resources
Donaldson	Donaldson Coal Pty Ltd ("the applicant").
DPI	Department of Primary Industries
DUAP	Department of Urban Affairs & Planning
EIA	Environmental Impact Assessment.
EIS	Environmental Impact Statement
ENCM	Environmental Noise Control Manual
EMS	Environmental Management System
EMPs	Environmental Management Plans
EP&A	Environmental Planning & Assessment Act (1979)
EPL	Environmental Protection Licence
GHG	Green House Gas
HVAS	High Volume Air Sampler
INP	Industrial Noise Policy
LALC	Local Aboriginal Lands Council
LGA	Local Government Area
MCC	Maitland City Council
MIC	Maximum Instantaneous Charge
MOP	Mining Operations Plan
NPWS	National Parks & Wildlife Service
ROM	Run of Mine Coal Stockpile
SEE	Statement of Environmental Effects
TSC Act	Threatened Species Conservation Act
TSP	Total Suspended Particulates

1.0 INTRODUCTION

1.1 Overview

Donaldson Open Cut Coal Mine is located approximately 23 km from the Port of Newcastle, north of John Renshaw Drive and immediately west of Weakleys Drive, as shown in **Figure 1.1.** Donaldson Coal mine commenced construction on the 25th January 2001 and approximately 6.7 million tonnes of ROM coal have been extracted since commencement. Donaldson Coal Pty Ltd (Donaldson) ("the Applicant") owns and manages the mine in accordance with the Development Consent (File No. N97/00147) granted on the 14th October 1999, and under Mining Lease ML1461. A copy of the Development Consent is attached as **Appendix A**. The existing Development Consent allows for the extraction of coal over an eleven (11) year period.

Donaldson seeks a modification to the current Development Consent to allow the extraction of an additional 644,200 tonnes of ROM coal from an area adjacent to the approved mining area. The additional coal will be recovered from a 7.2 hectare area within the existing mining lease area. The proposal involves the lengthening of 8 existing mining strips (Strips 16-23). The proposed extension area represents a 2½% increase in the footprint of the mine (7.2 ha of 294 ha). The proposal includes using the same terrace mining methods; equipment and infrastructure already in use at the approved mine. While there will be a slight increase in the total volume of coal recovered, the per annum coal extraction rate for the mine will not be increased.

This Statement of Environmental Effects (SEE) has been prepared to accompany an application to modify the current Development Consent under Section 96(2) of the *Environmental Planning and Assessment* (EP&A) *Act, 1979*. The SEE assesses those matters relevant to the proposed modification and seeks to demonstrate that the proposed modification does not significantly increase the environmental impacts of the total development, compared with the approved development, and that the development will remain substantially the same.

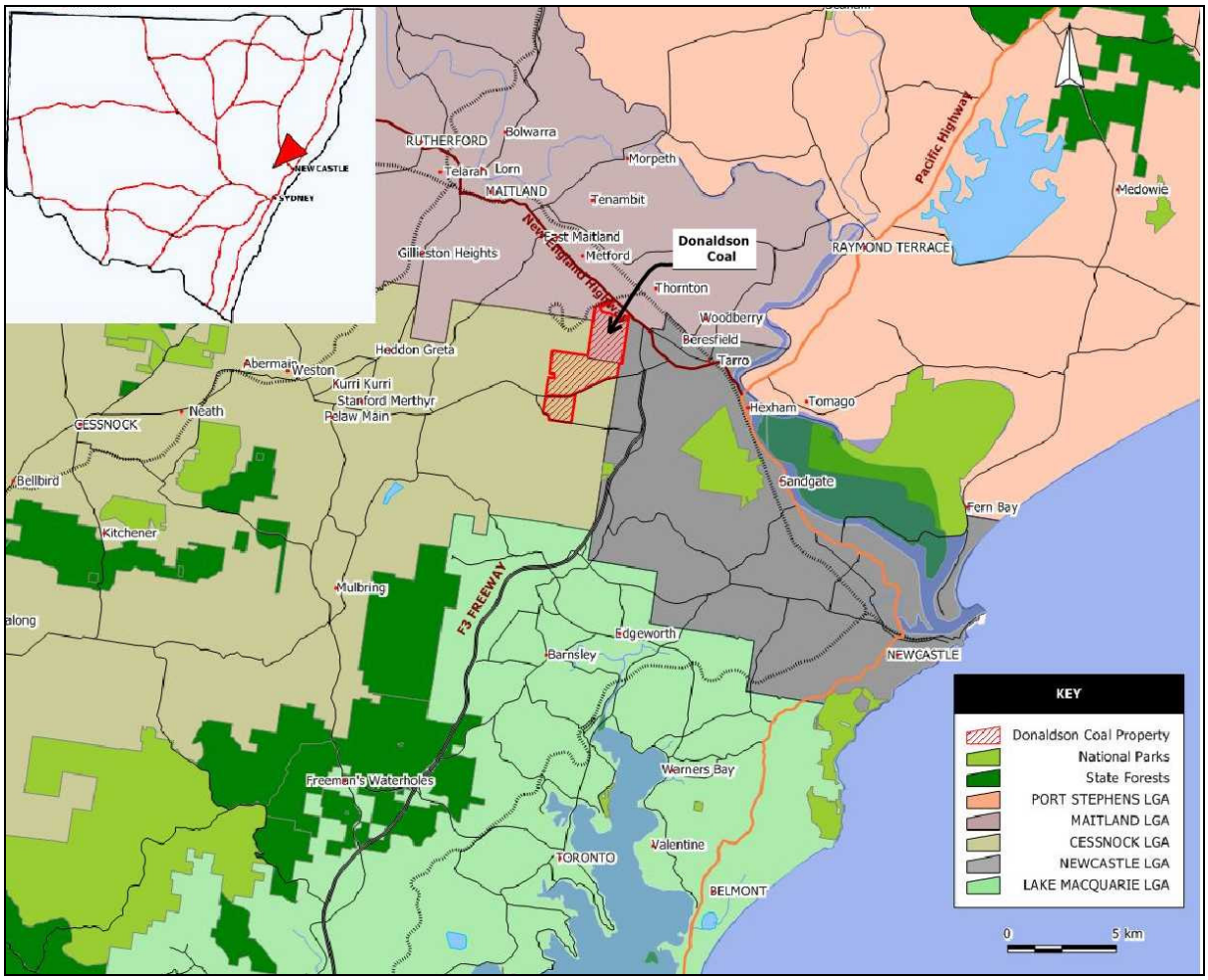


Figure 1.1: Location Map of Donaldson Open Cut Coal Mine also showing the local Government Areas.

1.2 Description of Current Approved Operation

Coal is extracted using terrace/strip mining methods in an open cut operation at a rate of up to 2.5 million tonnes per year. The coal resource occurs within the Permian Tomago Coal Measures, comprising of 6 coal seams, of which the upper four will be extracted and blended to produce a premium grade steam coal. The in situ coal resource contains about 43.8 million tonnes with a current mine plan to extract 20,091,000 tonnes of ROM coal. The anticipated total saleable steaming coal is 15,025,000 tonnes over the current life of the mine.

The mining lease area is 629.3 ha, and the total area to be disturbed by approved mining operations is about 294 ha. This disturbed area includes land that is part of the active mining area, is occupied by mining infrastructure, overburden emplacements, stockpiles, and land that is currently undergoing rehabilitation. About 500 ha within the Donaldson land holdings will not be disturbed by mining.

Raw coal is transported by truck to the established coal washing and loading facilities at the neighboring Bloomfield Colliery where it is washed under contract to produce export steam coal and blended raw coal products.

Washed coal (thermal coal) is transported by rail 23 km to the port of Newcastle and exported though Port Waratah Coal Services' loading facilities at Carrington and Kooragang. Coal for domestic consumption in the local Hunter power stations is also delivered by rail.

Details of the current approved operation are provided in **Section 4.0.**

1.3 Existing Mine Environmental Performance

Donaldson Coal mine is managed in accordance with the requirements of an Environmental Management System (EMS) based on a recognised international standard (ISO 14001). In accordance with the standard, Donaldson Coal mine has adopted an Environmental Policy, which details the commitment made by Donaldson to ensure that a high standard of environmental care is achieved. A range of environmental management plans are implemented under the EMS, which have enabled Donaldson to achieve a high performance of environmental management. The low numbers of community complaints, the results of the comprehensive environmental monitoring and measurement program and the findings of the Independent Environmental Compliance Audit (Feb 2003) are evidence of this sound environmental performance, which is discussed in greater detail in **Section 4.8**

1.4 Proposed Modification

Donaldson seeks to modify existing Development Consent N97/00147 to allow open cut coal extraction in an additional area adjacent to the existing mine high wall. The proposed site is on the south eastern edge of the approved mining area, and is remote from any residential areas (see **Figure 1.2**).

Mining in this extension area will allow an additional 644,200 tonnes of ROM coal to be extracted by Donaldson. The per annum coal and overburden extraction rates for the mine will not be increased. It is proposed that the coal will be mined from the same four coal seams that are currently being mined. The proposed extension area increases the footprint of the mine by approximately 7.2 ha, which is contained wholly within the current approved mining lease area.

Under the proposal the approved mining sequence will be unchanged other than the lengthening of 8 strips by up to 130m, and the area will be mined intermittently over a 2 to 3 year period. The coal will be mined using the same terrace/strip mining methods as the approved mine, and there will be no additional equipment or infrastructure required to extract the coal. The existing methods of environmental management for Donaldson Coal mine will be applied to the extension area to manage any potential environmental impacts. The proposed modification is described in detail in **Section 5.0.**

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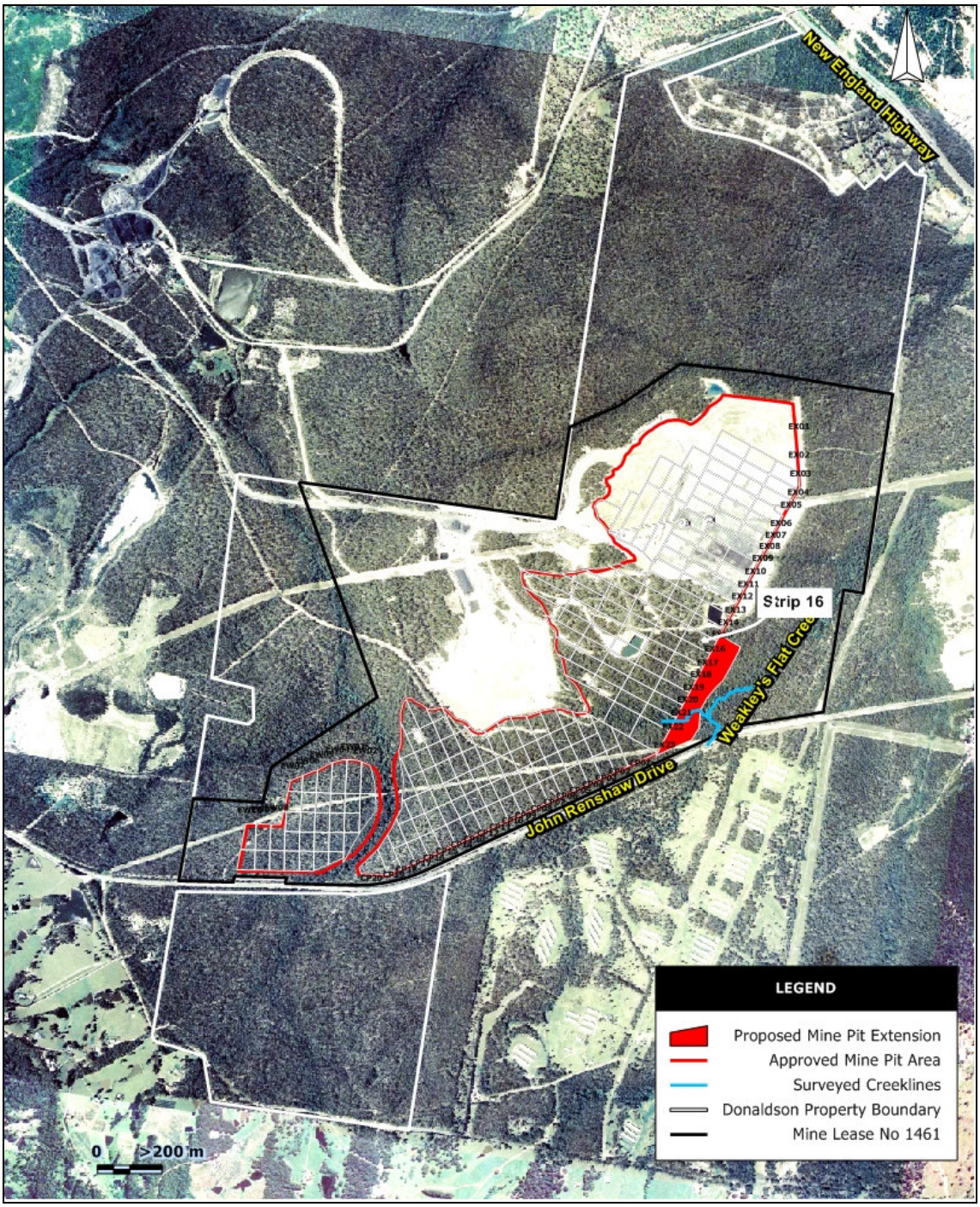

Figure 1.2: Extent of Approved Mine and Extension Area.

1.5 Approval Process

This Statement of Environmental Effects (SEE) has been prepared to accompany an application to modify the current Development Consent N97/00147 granted on the 14th October 1999 by the then Minister for Urban Affairs and Planning. Modification is sought under Section 96(2) of the *Environmental Planning and Assessment* (EP&A) *Act, 1979*.

Schedule 3 Part 2 of the Environmental Planning and Assessment Regulations (EP&A Regulations 2000) states that:

"Development involving alterations or additions to development (whether existing or approved) is not designated development if, in the opinion of the consent authority, the alterations or additions do not significantly increase the environmental impacts of the total development (that is the development together with the additions or alterations) compared with the existing or approved development."

If a development is not defined as 'designated development', an Environmental Impact Statement (EIS) is not required, and only matters relevant to the proposed modification need to be addressed.

This SEE seeks to demonstrate that the proposed modification does not significantly increase the environmental impacts of the total development, compared with the approved development. The factors to be taken into consideration under Schedule 3 Part 2 of the EP&A Regulations 2000 are addressed in **Section 8.0.** This SEE assesses those matters of relevance to the proposed modification as referred to in Section 79C(1) of the EP&A Act 1979.

Section 96(2) of the EP&A Act 1979 states that:

"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…"

Section 8.0 provides detail on how the proposed modified development will substantially be the same development for which consent was originally granted, and that the proposed extension may therefore be considered under Section 96(2) of the EP&A Act 1979. As the original Development Consent N97/00147 was approved by the Minister for Urban Affairs and Planning, this application to modify that Consent will be lodged with the Department of Infrastructure, Planning and Natural Resources (DIPNR) to be determined by the Minister.

The application process documented above has been confirmed as appropriate by DIPNR in a pre-application meeting with Donaldson on the 6th October 2004.

2.0 SITE DESCRIPTION

2.1 Site Features and Locality

The proposed extension area directly adjoins the south east of approved Donaldson active mine area (see **Figure 1.2 above**). To the immediate east of the extension area is the Weakleys Flat Creek, with John Renshaw Drive being to the south. The closest residential areas are scattered rural residential farms in the Black Hill area.

The proposed extension area is located within the catchment of Weakleys Flat Creek, which drains to Woodberry Swamp, and eventually to the Hunter River via Greenways Creek. The area consists of partially disturbed bushland. The area has an unnamed tributary of Weakleys Flat Creek passing through it., which has had its catchment largely lost through the construction of the existing out of pit emplacement area, a 500ML mine water storage dam and the workshop / office facilities.

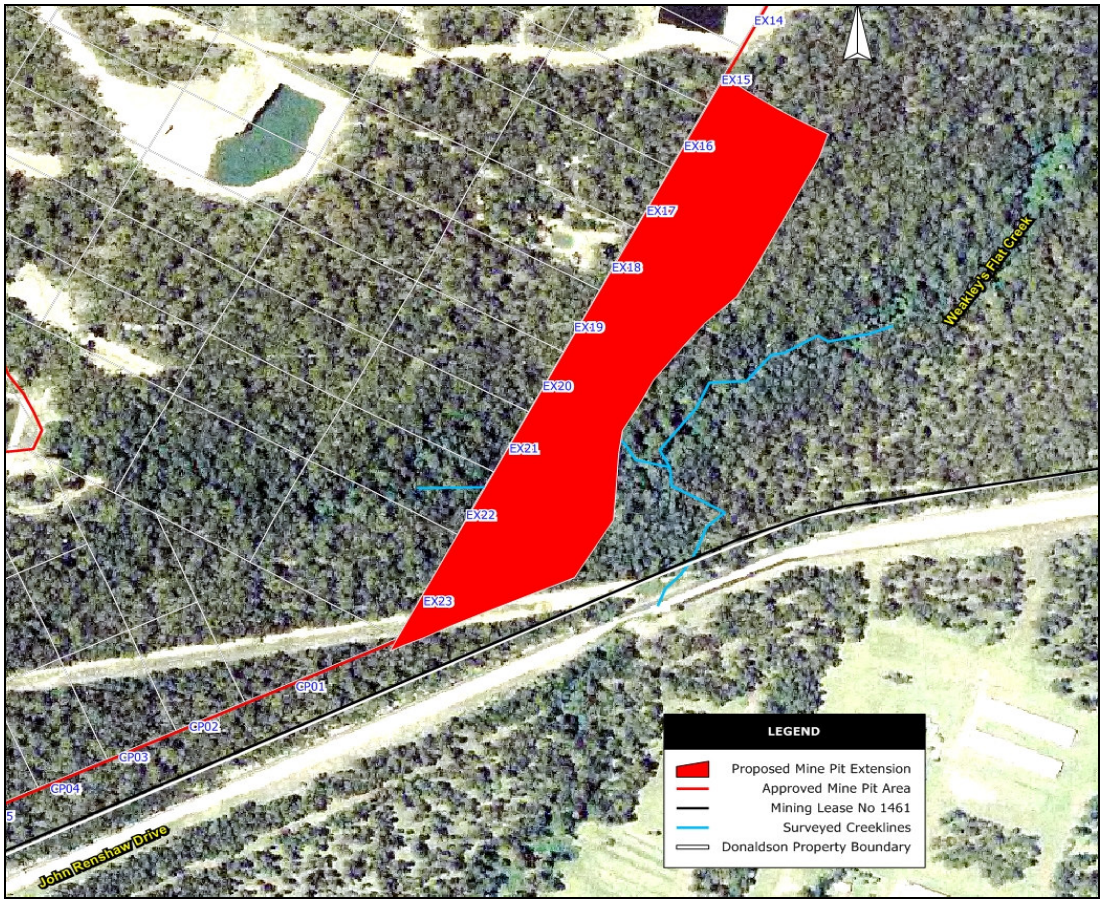

Figure 1.3: Location of the extension area.

2.2 Status of Land

The proposed extension area is contained within the parcel of land known as Lot 13 in DP 755260, which is wholly owned by Donaldson. It is fully contained within the Cessnock Local Government Area (LGA), and is Zoned 1(a) Rural 'A'.

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3.0 STAKEHOLDER CONSULTATION

3.1 Community Consultation Committee

Donaldson keeps the local community informed through regular meetings of the Donaldson Community Consultative Committee, which was established in accordance with the original Consent and is independently chaired by the Hon. Mr. Milton Morris AO. The committee has been very successful in maintaining productive communications between the local community and Donaldson, allowing community concerns to be raised with Donaldson and addressed in a constructive environment.

A Community Consultative Committee meeting was held on the 28th October 2004 where representatives from Donaldson discussed the proposed modification with the Committee. The community representatives on the Committee (who were present) raised no objections to the proposed changes and were supportive of the ongoing operations of the Coal Mine. In addition to this, the Hon. Mr. Milton Morris also spoke to members of the Committee who were unable to be at the meeting. The proposed extension also has their support. A copy of a letter received from Hon. Mr. Milton Morris is attached as **Appendix B**.

3.2 Mindaribba Local Aboriginal Land Council

The Mindaribba LALC is consulted on an ongoing basis, with representatives of the Mindaribba LALC being given the opportunity to undertake field surveys ahead of clearing and topsoil stripping activities since the commencement of the mine. This level of consultation will continue for the modification area.

A representative of the Mindaribba LALC was present on site on the 12th July 2004 during preliminary field investigations for the modification and no Aboriginal sites were identified. Additional pre-clearing checks will be undertaken to identify the presence of Aboriginal sites prior to the area being cleared. **Appendix C** provides Correspondence from Mindaribba LALC relating to the proposed modification.

3.3 Government

A pre-application meeting was held with DIPNR on the 6th October 2004 to discuss the proposed modification to Development Consent N97/00147. At this meeting DIPNR agreed with the proposed application process as documented in Section 1.5.

Meetings have also been held with the Department of Primary Industries (DPI) (formerly Department of Mineral Resources) to discuss the proposal and the requirements for changes to the Mining Operation Plan.

4.0 DESCRIPTION OF THE CURRENT APPROVED OPERATION

The following section provides an outline of current Donaldson operations approved by the original Development Consent.

4.1 Coal Resource

The Donaldson Coal mine is within the Newcastle Coalfields as defined by the Standing Committee of Coalfield Geology of NSW (1986), on the eastern limb of the north to north-east trending Four Mile Creek Anticline. At Donaldson Coal mine there is a general dip in the strata of four (4) degrees to the south to south-east.

The mineable coal resources at Donaldson Coal mine are located within the Permian Tomago Coal Measures, which crop out in the lease area. The Tomago Coal Measures are divided into three (3) formations, the Wallis Creek, Four Mile Creek and Dempsey Formation. At the Donaldson Coal mine all the mineable coal belongs to the Four Mile Creek Formation, and the coal seams present, in descending order, are:

- Beresfield;
- Upper Donaldson;
- Lower Donaldson;
- Big Ben;
- Buchanan; and
- Ashtonfield.

Donaldson Coal mine has approval to mine the top four (4) coal seams through open cut mining methods.

Cooks conduct the mining at Donaldson Coal mine under a long term contract with Donaldson. Coal is extracted at a rate of up to 2.5 million tonnes per year. The in situ coal resource contains about 22,163,00 tonnes (within current extraction area) with a current mine plan to extract 20,091,000 tonnes of ROM coal. The anticipated total saleable steaming coal is 15,025,000 tonnes over the current life of the mine.

Donaldson Coal mine commenced operation on the 25th January 2001. The mining activity has proceeded in accordance with the approved mine plans and is currently within Year 3 of the approved mine plan.

During the first twelve (12) months of the operation, the bulk of the overburden material was placed in an out of pit emplacement, 1.5 km south west of the active pit. This was undertaken to allow sufficient opening up of the pit to expose the various coal seams. Since March 2002, the majority of the overburden material has been placed in pit, backfilling the void once the coal has been mined out. Reshaping of the backfill to a landform commensurate to the existing topography commenced in September 2002. To date, a total of 43 hectares has been direct seeded with local tree & shrub provinces, with the principle goal of returning the backfill areas to bushland.

4.2 Mine Infrastructure and Facilities

Infrastructure constructed for the Donaldson Coal mine includes:

- An administration centre consisting of offices, lunchroom, car parking facilities and bathhouse;
- Internal haulage roads connecting the Northern Pit areas with the industrial site (workshops, etc) and external overburden emplacement areas and the industrial site with the rail loading facility and workshops;
- A permanent bulk fuel farm, contained by an earthen bund, that stores approximately 100,000L of diesel fuel at any one time;
- An access road connecting the industrial site with the existing private access road;
- A 100 ML mine water storage dam was constructed in 2003 and a 500 ML mine water storage dam was constructed in 2004;
- Noise control bunds; and
- Telecommunications, electricity and potable water.

Figure 4.1 below shows the location of the various infrastructure around the site.

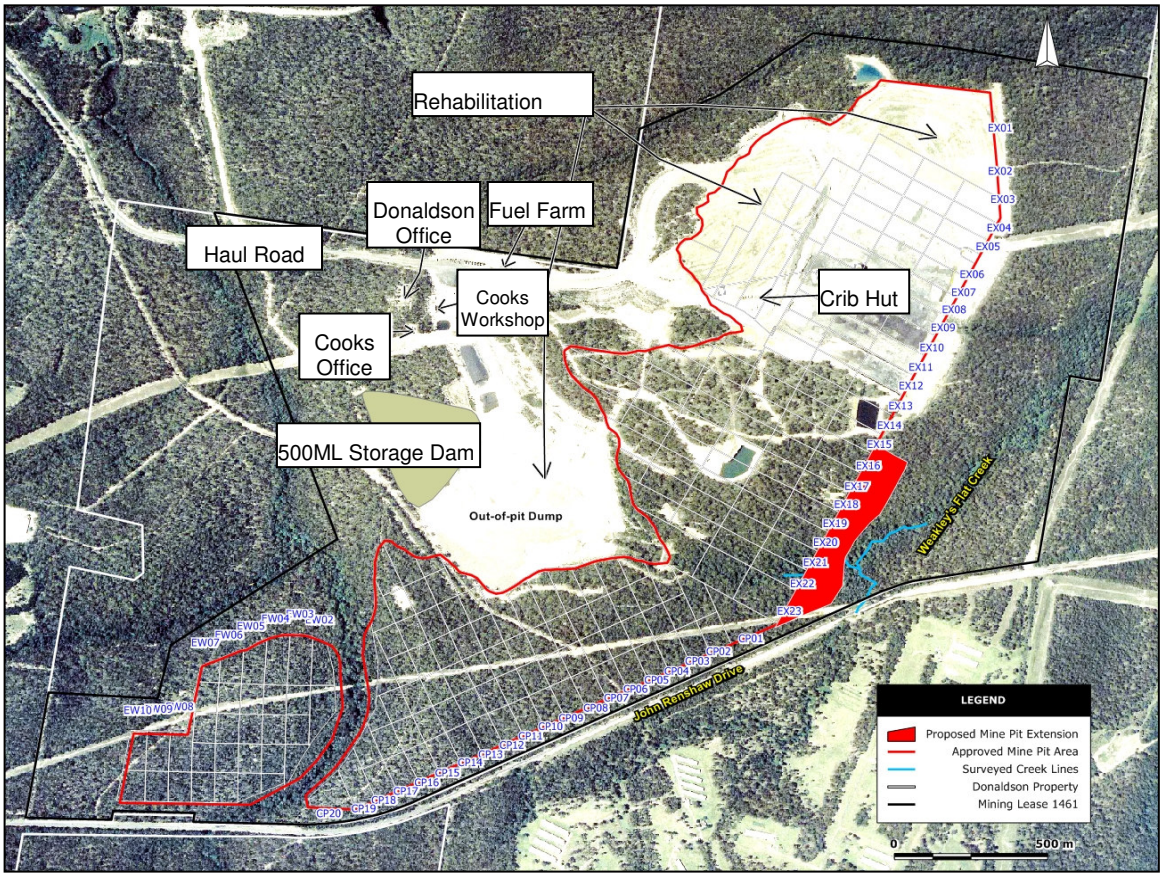


Figure 4.1: Location of Infrastructure around the site.

In addition, the existing approval also included the utilisation of existing infrastructure including the rail loop and spur line off the Great Northern Railway Line, a private access road off Four Mile Creek Road, the Bloomfield coal loader, the Bloomfield stock pile area and the short-term (two years) use of the Bloomfield Coal Preparation Plant to wash the coal from Donaldson Coal mine. Further to this, a strategic decision was made by Donaldson to continue using the Bloomfield's Coal Preparation Plant until at least the end of 2008. DIPNR were advised of this decision in accordance with the requirements of the current Development Consent.

4.3 Mining Method

The Development Consent approved the extraction of coal by truck and shovel in an open cut operation utilising terrace/strip mining methods. The following provides a description of the mining method used at Donaldson Coal Mine. This same method will be used for all operations within the proposed modification area.

4.3.1 Vegetation Clearing

Prior to clearing, the area to be disturbed is harvested for commercial timber. The remaining area is then cleared using a track dozer, and the cleared trees and shrubs are stockpiled in windrows before being buried in the backfill. Large hollow trees used for habitat reinstatement in rehabilitated areas.

4.3.2 Topsoil Stripping

Following vegetation clearing, all topsoil is stripped to the prescribed depths (nominated in the topsoil stripping plan) using a track dozer and front end loader. The topsoil is either stockpiled, to a maximum depth of three (3) metres, for later use, or it is immediately spread onto reshaped areas where available.

4.3.3 Overburden Removal

Following topsoil stripping, the overburden is drilled and blasted (as required). Holes are drilled in a designed pattern and then filled with an explosive charge. The detonation of each hole is delayed in a pre-designed sequence to ensure that each hole is fired individually in close succession. This delayed firing technique improves the efficiency of the blast and also reduces its environmental impacts. In some cases the overburden material is loosened by mechanical ripping.

Once the overburden is fragmented, an excavator is used to load the overburden material onto haul trucks for transport out of the active mining area to be placed in either the void as backfill or as was the case in the initial part of the project, to the out of pit emplacement.

4.3.4 Overburden Emplacement

During initial mining operations overburden was placed in an out-of-pit emplacement area and also used to establish the foundations for mine infrastructure (i.e. the workshop and hard stand areas). Once sufficient pit area was opened up, the overburden was progressively placed back in the previously mined pit area, and shaped to the planned final landform using an excavator and track dozer.

4.3.5 Coal Removal

Following overburden removal, an excavator or front end loader is used to load the coal material onto dump trucks for transport out of the active mining area.

4.3.6 Coal Transport and Preparation

Run of Mine (ROM) coal is transported by trucks from the active mining area along an internal haul road to Bloomfield's Coal Preparation Plant (CPP). The CPP is fed from a raw coal stockpile or directly from trucks through a hopper. From the hopper, vibrating feeders transport the raw coal to the crushing plant, and subsequently to the CPP for washing. Coal is washed at the CPP on the basis of ash content. Blending of both washed and unwashed coal occurs in order to produce a thermal coal product of suitable ash content. Conveyers then transfer blended coal product to a tower and a load out bin or stockpile.

4.3.7 Rail Transport

Following coal preparation, the product coal is transported by internal haulage road and overland conveyor to a rail loading facility at Bloomfield Colliery.

Coal is transported by rail 23 km to the port of Newcastle and exported through Port Waratah Coal Services' loading facilities at Carrington and Kooragang. Coal for consumption in domestic power stations is also transported by rail.

4.4 Rejects Management

All reject materials produced before and during the coal preparation process, including stone and unbreakable material, is transported to the reject bin and rejects stockpile for temporary storage, before being placed back in a designated waste emplacement area.

4.5 Progressive Rehabilitation

Land disturbed by mining is progressively rehabilitated in accordance with the current approvals and the Mining Operations Plan.

Rehabilitation has been very successful to date. At present, sixty-five (65) hectares of the site has been disturbed by mining, excluding haul roads, infrastructure areas and the out of pit dump. Of these 65 hectares, a total of 43 hectares, or 66%, has been revegetated and is undergoing progressive rehabilitation.

4.6 Workforce

There are currently one hundred (100) people directly employed at the Donaldson Coal mine. In addition to those directly employed by Donaldson and Cooks, there are a large number of additional full time sub-contractors employed at the mine in the areas of coal haulage, handling and washing, maintenance, cleaning and other specialist areas.

4.7 Hours of Operation

The approved hours of operation are as set by Condition 3 of the existing Development Consent, as shown in **Appendix A**. The operation to date has complied at all times with the approved work hours and will continue to do so.

4.8 Environmental Management

4.8.1 Environmental Management Systems (ISO 14001)

The commitments made in the EIS and Conditions 10, 11 & 12 of the current Development Consent required the preparation of an Environmental Management Strategy (EMS) to provide a strategic context for all environmental management relating to the mining operation. An EMS has been prepared in accordance with ISO14001, which is the accepted International Standard for EMSs and widely used in the mining industry. Donaldson is working with Cooks to integrate the EMS across the site. The EMS is built on the foundation of "Continuous Improvement" and is reviewed and improved on an annual basis.

4.8.2 Environmental Management Plans (EMPs)

The Development Consent also required the preparation of various environmental management plans as part of the EMS. The Environmental Management Plans required for the site, along with the relevant Development Consent conditions are:

- Noise Management Plan (Conditions 3, 13, 15, 16, 111, 113, 120 & 121);
- Blast Management Plan (Conditions 24, 25, 26, 27, 28 & 35);
- Air Quality Management Plan (Conditions 37, 38, 39, 40, 41, 42, 43, 44 & 45);
- Water Management Plan (Conditions 60, 61, 62, 63, 64 & 65);
- Erosion and Sediment Control Plan (Conditions 66 & 67);
- *Tetratheca juncea* Management Plan (Conditions 68 & 69);
- Bushland Conservation Area Management Plan (Conditions 70, 71, 72 & 74);
- Flora and Fauna Management Plan (Conditions 76, 77, 78 & 79);
- Aboriginal Sites Management Plan (Condition 84, 85 & 86);
- Waste Management Plan (Conditions 87, 88 & 89); and
- Landscaping Plan (Conditions 90, 91, 92, 93, 94 & 95).

The success of Donaldson Coal mine in implementing the management plans and associated management protocols is evidenced by the excellent environmental compliance record of the mine. An Independent Environmental Compliance Audit of the Development Consent found the mine to be in compliance with 124 of its 126 conditions. The 2 non-compliances were for administrational issues and mine management has implemented an action plan to ensure the future compliance with these conditions. The next audit is planned for February 2005.A brief description of

the key objectives of each of the Environmental Management Plans (EMP) is provided as follows.

(1) Noise Management Plan

The objectives of the Noise Management Plan (Richard Heggie, 2000) are to:

- Identify potential noise sources and their relative contribution to noise impacts from the development, including rail noise impacts;
- Specify appropriate intervals for noise monitoring to evaluate, assess and report the $LA_{10(15\ minute)}$ noise emission levels due to construction and normal operations of the mine under prevailing weather conditions, or as otherwise determined by the EPA;
- Outline methodologies to be used, including justification for monitoring intervals, weather conditions, seasonal variations, selecting locations, periods and times of measurements, the design of any noise modelling or other studies, including the means for determining the noise levels emitted by the development;
- Specify measures to be taken to document any higher level of impacts or patterns of temperature inversions, and detail actions to quantify and ameliorate enhanced impacts if they occur; and
- Provide details of noise amelioration measures, including measures to be used to reduce the impact of intermittent, low frequency and tonal noise (including truck reversing alarms) and reactive management responses for particular noise issues.

(2) Blast Management Plan

The objectives of the Blast Management Plan (Richard Heggie, 2001) are to:

- Provide detail of any proposed trial blasting, identify a monitoring programme, including locations and justification for selection of locations such as the Steggles Black Hill poultry operations (now ceased operation) and areas of old underground mine workings;
- Detail measures to ensure that airblast and vibration monitoring and control is generally carried out in accordance with the recommendations of Australian Standard AS-2187-1993 (or its latest version) and in terms of Australian and New Zealand Environment and Conservation Council (ANZECC) Guidelines;
- Detail methods to measure weather data as soon as practical prior to blasting and from that data predict whether noise levels are likely to be increased above the levels expected under prevailing meteorological conditions;
- Detail measures to be taken to minimise disruptions from blasting, including any road closures agreed in accordance with Condition 25, and management of impacts on local traffic and pedestrian movements;
- Specify procedures for ensuring that the occurrence of concurrent blasts with the adjoining coal mine operators is avoided; and

- Identify procedures for notifying landholders/occupiers within 2 km of the site of the general blasting program and for notifying landowners/occupiers within 500 m of blasting events (or any reduced area approved by the Director-General under Condition 25(5)) prior to blasting occurring.

(3) Air Quality Management Plan

The main objective of the Air Quality Management Plan (Holmes, 2000) is the minimisation of airborne dust generated from the mining operation. This objective is achieved through the implementation of the following measures:

- Maintain an adequate distance between the mine and the neighbouring residences;
- Minimise disturbance of land to only what is required by mining activities;
- Minimise the distance travelled by hauling overburden the shortest distance possible;
- Utilising mine water for dust suppression on roads, stockpiles and work areas; and
- Monitor real time weather conditions and alter or cease the offending operations when dust is becoming difficult to control.

(4) Water Management Plan

The Water Management Plan (Perrens, 2000) is based on the primary objective of minimising the impact of the mine operations on the surrounding environment, and the system is designed to operate as a zero discharge system. The Water Management Plan includes the following methods for controlling water from four distinct areas:

- Runoff from undisturbed and fully rehabilitated areas will be diverted into the existing natural drainage system. The water quality from these areas will be comparable to the naturally occurring water quality from the existing catchment area draining via Four Mile Creek, Weakleys Flat Creek and Scotch Dairy Creek;
- Runoff from disturbed areas such as shaped overburden dumps will be directed into sedimentation dams for treatment prior to discharge into the natural drainage system;
- Runoff and pit inflow from within the water management "controlled area" will be directed to mine water dams for re-use within the site. This water is expected to have elevated levels of salt from groundwater inflow to the pit, coal dust and sediment from the haul road and possible minor amounts of petroleum hydrocarbons from vehicles. This water will be directed to the mine water dams for re-use within the operating area; and
- Runoff from the contractor's hardstand area will initially be directed into a pollution control sump. This water will be treated to remove oil prior to being pumped into the mine water dams for re-use.

The Water Management Plan includes extensive monitoring of surface water quality, creek condition, water usage, groundwater quality and standing groundwater levels.

Domestic water is provided by pipeline from the Hunter Water Corporation supply system, and effluent is disposed of via pump-out from storage tanks.

(5) Erosion and Sediment Control Plan

The Erosion and Sediment Control Plan (Global, 2000) is based on the primary objective of minimising the impact of the mine operations on the surrounding environment, and in particular receiving waters such as Four Mile Creek, Weakleys Flat Creek and Scotch Dairy Creek. The Erosion and Sediment Control Plan includes the following control methods:

- *Minimal Disturbance:* The area to be cleared will be minimised to that necessary for mining activities, and the duration of disturbance is minimised through efficient programming of works;
- *Diversionary Works:* Diversion banks, bund walls, drains and culverts will be utilised throughout the site to minimise erosion, divert clean water around disturbed areas and re-direct dirty water into sediment dams. The diversionary works act to separate clean water from dirty water and minimise the extent of dirty water catchments. All these works are designed and constructed in accordance with best management practices. Roads will also be designed and constructed to ensure that drainage is not concentrated on roads;
- *Sediment Control:* Sediment control dams will be constructed to intercept sediment –laden runoff from dirty water catchments prior to discharge to the natural drainage system. Sediment filter fencing is to be constructed adjacent to waterways and drains to prevent sediment from dumps entering the creek. Sediment filter fencing and straw bales are to be used during the construction of haul roads to entrap sediment; and
- *Revegetation:* Disturbed areas will be revegetated as soon as practical following operations in that area to stabilise the soil surface. Revegetation is assisted by the collection and stockpiling of mulch (as appropriate) and topsoil from cleared areas. The topsoil and mulch is spread onto shaped landform areas prior to the direct seeding with a native seed collection. Temporary stockpiles will be sown with a cover crop, and steep batters will be hydro-seeded with exotic pasture species to provide effective groundcover to reduce erosion.

All proposed erosion and sediment control measures are to be implemented in advance of, or in conjunction with, operations causing disturbance.

(6) Tetratheca juncea Management Plan

The main aim of the *Tetratheca juncea* Management Plan (Gunninah, 2000) is to provide a comprehensive program for the *Tetratheca juncea* population in the southwest portion of the mine site throughout the mining activities on the site. The specific management measures to be implemented though the life of the project includes:

- maintenance of the existing *Tetratheca juncea* population, including:
  - the retention of potential pollinators and potential pollinator habitat;
  - the establishment of an appropriate fire regime;
  - protection of the population from indirect effects (such as weed invasions, native plant competition and possible pollution events); and
  - prevention of the potential spread of *Phytophthora*;
- control of soil disturbance in the vicinity of the population through prevention of direct or indirect mining impacts; and
- monitoring and the collection of relevant and useful data on the population.

(7) Bushland Conservation Area Management Plan

Donaldson Coal mine has identified a Bushland Conservation Area (BCA) that fulfills the requirements of the development consent, which are to compensate for the impact of the mine on biodiversity, provide compensatory habitat and management for the primary purpose of conservation. The identified BCA is 629.3 hectares in size and has a ratio of 2:1 in terms of compensatory area to the area directly impacted upon by mining and associated infrastructure.

The identified BCA is managed in accordance with the intent of the development consent conditions, and monitoring has been undertaken within the area under the Flora and Fauna Management Plan.

(8) Flora and Fauna Management Plan

The objectives of the Flora and Fauna Management Plan (Gunninah, 2000) are:

- to manage the impacts on native and threatened flora and fauna species and their habitats within the 'mine disturbance area' associated with the open-cut coal mine by the implementation of a range of relevant measures;
- to ensure that standard practise flora and fauna management measures are applied throughout the life of the Donaldson Project;
- to devise a program to monitor the impacts on flora and fauna adjacent to or downstream of the 'mine disturbance area' during mining operations and to determine the efficacy of the recommended management measures;
- to fulfil the requirements of the Conditions No.s 76, ,77, 78 and 79 of the Conditions of Consent for the Project and other requirements ; and
- to provide a *Mine Rehabilitation Plan* which describes the process and goals of rehabilitation activities, and which outlines the measures to be undertaken to enhance flora and fauna habitats during the rehabilitation of the mine disturbance area.

(9) Aboriginal Sites Management Plan

A separate Aboriginal Sites Management Plan is produced for each year of the mine operation so that the specific issues associated with each year of e operation can be addressed, and this also provides an opportunity to review the management techniques. The objectives and scope of the Aboriginal Sites Management Plan (Umwelt, 2004) are:

- to respond to the requirements of consent conditions which involve the establishment of:
  - protocols for consultation by Donaldson with the Aboriginal community and other stakeholders, and for recording consultation;
  - conservation/management objectives for the Year four (4) operation area;
  - protocols for monitoring in conservation areas and access generally;
  - strategies to achieve Year 4 conservation/management objectives; and
  - protocols for the development of long term management strategies.
- review the protocols and criteria for the induction of employees and operational area visitors in the identification, management and significance of Aboriginal cultural heritage;
- establish a timetable and the protocols for the revision of the Aboriginal Sites Management Plan prior to the end of Year four (4) mine operation; and
- foreshadow the process for ongoing revision of the Aboriginal Sites Management Plan.

(10) Waste Management Plan

The primary objective of the Waste Management Plan (Donaldson, 2000) is the management of all operational processes to minimise wastes and promote reuse and recycling principles so as to reduce the impacts upon the surrounding environment. The Waste Management Plan adopts the principles of the *Waste Minimisation and Management Act, 1995*, through implementation of the following waste management hierarchy:

- Avoidance;
- Reuse;
- Recycling & Reprocessing; and
- Disposal.

(11) Landscape Plan

The primary objective of the Landscape Plan (Global, 2000) is to reduce the visual impact of the mining operations through the implementation of landscaping at the Donaldson Coal mine. A key element of the Landscape Plan is the utilisation and management of existing remnant vegetation together with additional vegetation establishment to provide visual screening.

4.9 Environmental Performance

4.9.1 Monitoring & Measurement

Donaldson manages an environmental monitoring system including meteorological, noise, blasting, air quality, surface and groundwater, flora and fauna and Aboriginal Cultural heritage. A detailed summary of the Environmental Monitoring & Measurement can be found in the AEMR's produced for each year of mine operation. Copies of these reports are provided to DIPNR, DMR, DEC and the Maitland, Cessnock and Newcastle councils. In addition, these reports can be obtained from the Donaldson website at www.doncoal.com.au.

Figure 4.2 (over page) shows the location of the various monitoring sites around the mine.

(1) Meteorological Monitoring

The Development Consent requires the installation and maintenance of a continuously operating metrological weather station. An automatic weather station has been in operation at Donaldson Coal mine since December 1999. The station is a Unidata system with instrumentation installed to measure solar radiation, temperature, wind speed and direction and rainfall.

In May 2001 the system was upgraded to provide real time and meteorological data trending functions. This feature has allowed operation staff to make up-to-date informed decisions about the influence of metrological conditions on mining operations.

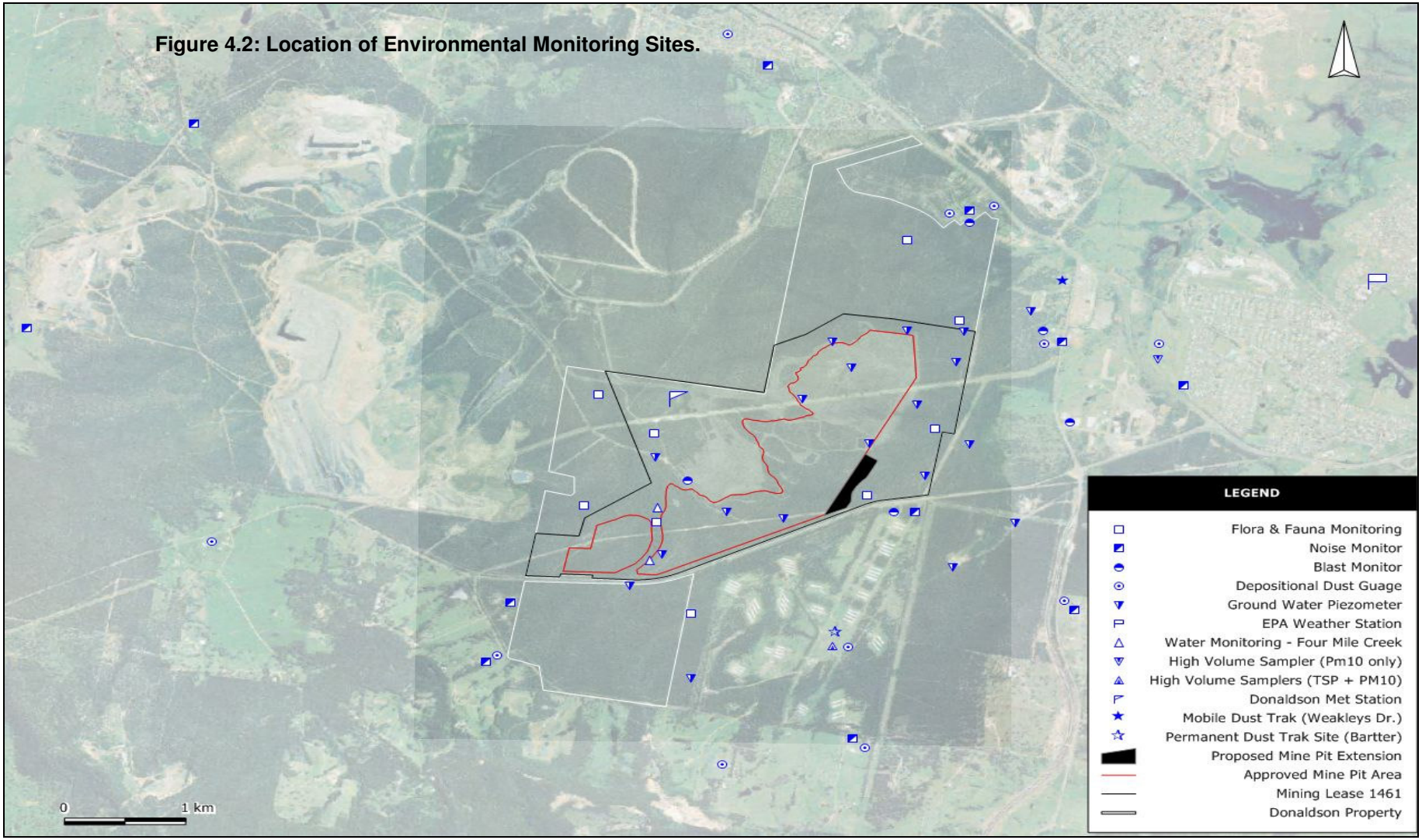
(2) Noise Monitoring

The Noise Management Plan identifies ten (10) key noise monitoring locations that are representative of the surrounding noise environment. Noise monitoring is undertaken at these locations to evaluate, assess and report the $LA_{10(15\ minute)}$ noise emission levels.

Different locations are used at different stages in the mine life. Routine quarterly noise surveys use four (4) continuous environmental noise loggers as well as operator attended noise surveys at the following locations:

- Ashtonfield;
- Avalon Estate (Thornton);
- Weakleys Drive (Beresfield); and
- Bartter Poultry Farms (Black Hill).

Figure 4.2: Location of Environmental Monitoring Sites.



(3) Blast Monitoring

As described in the Blast Management Plan, airblast and vibration monitoring is carried out in accordance with the recommendations of Australian Standard AS-2187-1993 and in terms of ANZECC Guidelines. On the 1st May 2001, five (5) permanent blast monitoring stations were installed and commissioned at the following locations:

- Fairfax Regional Printing Facility;
- Bartter Poultry Farm – Farm 6;
- Weakleys Drive, Beresfield;
- Avalon Estate, Thornton; and
- The Hunter Water Pipeline.

An additional monitoring station at the power lines is established as a trigger unit. When it records a blast it dials the other units to ensure that the relevant data is captured. The loggers are automatically downloaded at the end of each day.

(4) Air Quality Monitoring

The dust monitoring network includes High Volume Air Samplers (HVAS), continuous monitoring and dust deposition monitoring. HVAS are used at two locations to determine concentrations of PM_{10} and Total Suspended Particles (TSP). The HVAS operate on a six-day cycle in line with similar measurements made by DEC at other locations. The continuous monitoring network consists of two Dustrak monitors measuring PM_{10} at two sites and a GRIMM monitor which is used for one week each quarter to measure $PM_{2.5}$ and PM_{10} simultaneously. In addition to concentration measurements, monthly levels of dust deposition are also measured using eleven gauges. The instrumentation used at each monitoring location is shown in **Table 4.1**.

Table 4.1: Air quality monitoring conducted for Donaldson Coal mine

Monitoring Location	Instrumentation
Beresfield	HVAS (PM_{10})
Blackhill	HVAS (PM_{10}) HVAS (TSP) Dustrak (PM_{10}) Grimm (1 week per quarter) (PM_{10}, $PM_{2.5}$)
Weakleys Drive	Dustrak (PM_{10})
DG1 – DG11	Deposition Gauges

(5) Surface Water Monitoring

Surface water monitoring as described in the Water Management Plan has been ongoing since June 2000. Routine sampling and analysis is taken from six (6) permanent surface water monitoring locations, and grab samples are taken opportunistically from other sites such as sediment and storage dams. The six permanent sampling sites are:

- Four Mile Creek Upstream;
- Four Mile Creek Downstream;
- Scotch Diary Creek Upstream;
- Scotch Diary Creek Downstream;
- Weakleys Flat Creek Upstream; and
- Weakleys Flat Creek Downstream.

Samples collected from the six permanent sites are analysed for Electrical Conductivity, pH, Total Dissolved Solids, Total Suspended Solids and Sulphates on a monthly basis. A full suite analysis is also carried out on a quarterly basis and includes additional analysis for Calcium, Magnesium, Sodium, Potassium, Chloride, Fluoride, Arsenic, Aluminium, Barium, Cadmium, Cobalt, Copper, Chromium, Iron, Manganese, Lead, Zinc, Total Alkalinity, Nitrates and Phosphates. The industrial area sump is also tested for surfactants (detergents) and Total Petroleum Hydrocarbons. Rising Stage Samples (RSS) have also been installed upstream and downstream of the site that collect water quality samples during flow events.

In addition to the physical and chemical water quality testing, biological monitoring (macro invertebrates) is undertaken, and the condition of creek bed and banks is monitored though inspection, photography and surveys on a regular basis.

(6) Groundwater Monitoring

Groundwater monitoring has been ongoing since June 2000, and is described in the Water Management Plan. The groundwater monitoring system consists of:

- Twenty seven (27) groundwater piezometers (13 established pre-mining and 14 since operation commencement);
- Two groundwater piezometers along the eastern side of Four Mile Creek; and
- One regional groundwater bore on a neighbouring property.

The standing water levels of each of the monitoring wells is measured each month, and samples are collected and analysed for Electrical Conductivity, pH, Total Dissolved Solids, Total Suspended Solids and Sulphate. A full suite analysis is also carried out every six months and includes additional analysis for Calcium, Magnesium, Sodium, Potassium, Chloride, Fluoride, Arsenic, Aluminum, Barium,

Cadmium, Cobalt, Copper, Chromium, Iron, Manganese, Lead, Zinc, Total Alkalinity, Nitrates and Phosphates.

(7) Flora and Fauna Monitoring

The Flora and Fauna Management Plan includes monitoring within the undisturbed bushland area, the *Tetratheca juncea* Conservation Area and at locations downstream of the mine. The monitoring program involves the establishment of nine permanent 20 x 20 m quadrants, which are surveyed on a quarterly basis. The surveys include the collection of data relevant to flora and fauna, including the:

- condition and type of vegetation and fauna habitat;
- flora and fauna species list and percentage cover (or cover code) of each plant species within the quadrant, which includes the occurrence and cover of weed species ; and
- proximity of the quadrant to the mine site and other areas that may potentially affect the quality of the vegetation.

The *Tetratheca juncea* Management Plan includes additional monitoring within the *Tetratheca juncea* Conservation Area. The monitoring contained in the *Tetratheca juncea* Management Plan is focused on the collection of relevant and useful data on the *Tetratheca juncea* population. The following is a summary of the monitoring program and works that have been undertaken in the *Tetratheca juncea* Conservation Area:

- The overall monitoring and collection of data for the population is based on a 40 x 40 m grid, which has been established permanently across the entire population;
- One hundred individual plants have been permanently pegged and tagged. The coordinates of these plants have been referenced into the 40 x 40 m grid. The location of each of these plants was selected so that those individuals growing within the range of the micro-vegetative communities present in the *Tetratheca juncea* Conservation Area were represented. The size of these plants has been recorded;
- A detailed survey has been carried out to describe the over storey, shrubs to two metres high and groundcover vegetative communities present in the *Tetratheca juncea* Conservation Area;
- Ten 10 x 10 m monitoring quadrants have been pegged out throughout the population. Following completion of the vegetation survey these quadrants have been located so that each is in a different vegetative community in which *Tetratheca juncea* grows. The floristic content and abundance, using the modified Braun-Blanquet scale, of the vegetation within each of these quadrants has been described in detail; and
- A detailed plant count was planned for late 2002, however an extended dry period has meant that the flowering period has been significantly

reduced or non-existent, meaning that a count was not possible during the 2002-2003 AEMR reporting period.

The Mine Rehabilitation Plan contains the monitoring requirements for the rehabilitated mine areas. The monitoring program involves the establishment a series of 20 x 20 m quadrants within the rehabilitated areas and undisturbed bushland area to allow the comparison of floristic and structure of the communities. The quadrants are monitored regularly to assess:

- the physical stability of the rehabilitated area in terms of resistance to erosion and whether good drainage of the area has been achieve; and
- the biological diversity of the area, which may include but not be limited to, species richness, plant density, fauna re-colonisation, seed production and the re-establishment of nutrient cycling.

The Fauna Re-Colonisation Monitoring Program will establish a series of transects within the rehabilitated area, as well as the undisturbed bushland area with regular monitoring surveys of the transects collecting detailed information on:

- the presence and abundance on invertebrates;
- the presence of other vertebrate fauna, including birds, small mammals, arboreal mammals, amphibians and reptiles;
- the presence of predators by identification of scats and tracks;
- evidence of successful breeding amongst different invertebrate groups; and
- the presence of food and shelter resources.

Routine Flora & Fauna monitoring is undertaken throughout the year with a focus on seasonal variation and a comparison with the baseline survey. The following flora and fauna monitoring was undertaken:

- surveys of the foliage projective cover of each quadrant;
- surveys of height and basal area of trees within each quadrant;
- small mammal trapping within a radius of 300 metres centred on each quadrant;
- insectivorous bat call recording at each quadrant;
- owl call playback in the vicinity of each quadrant;
- spotlighting in the area around each quadrant to observe any nocturnal birds and mammals;
- general observations around the larger conservation area; and
- threatened species assessment.

The monitoring results are reported in an annual Flora and Fauna monitoring report, with a summary of the findings included in the AEMR each year.

(8) Aboriginal Cultural Heritage Monitoring

The Aboriginal Sites Management Plan (Umwelt, 2003) includes the requirement to monitor known Aboriginal sites to consider any potential impacts of activities associated with the Donaldson Coal mine. The first monitoring survey was undertaken in July 2001, and a number of datum points were identified to be used a reference for regular annual monitoring of the condition of the Aboriginal sites. The datum points have been chosen for references of environmental change within the mine lease boundary as they are considered to be representative of particular landforms and/or Aboriginal sites within the area. Annual monitoring surveys are undertaken that include:

- date of monitoring and names of those who participated;
- exposure and visibility data;
- the condition of the environment and any Aboriginal cultural heritage material;
- natural and/or human impact to the environment or Aboriginal cultural heritage material (if any);
- the condition of the markings and signs defining the boundary of the relevant areas of the areas (ie: those areas adjacent to the current mine operations and/or infrastructure construction); and
- concerns regarding management of the known sites (if any).

4.9.2 Environmental Compliance Performance

Through the successful implementation of the Environmental Management Plans, Donaldson Coal mine has achieved a high performance of environmental management. The low numbers of community complaints, results of environmental monitoring and the findings of the Independent Environmental Compliance Audit are evidence of this.

The current Development Consent requires that an Independent Environmental Compliance Audit of Donaldson Coal mine be undertaken at two (2) yearly intervals after the commencement of mining. The first audit was conducted in February 2003. The independent auditor concluded that there was compliance with the Development Consent on all but two (2) of the conditions, representing a 98.4% compliance rating. For the two (2) conditions in non-compliance, it was determined that there was no resulting environmental impact caused as they were conditions related to administrational issues. Further to this, mine management has implemented an action plan to ensure the future compliance with these conditions. The next audit is planned for February 2005.

Donaldson Coal mine provided six-monthly reports on all environmental monitoring required under the Development Consent for the initial years of the project (until

2004), now providing an AEMR on an annual basis for the life of the project. The AEMR reviews the performance of the mine against the Environmental Management Strategy (EMS) and the conditions of the Development Consent and other approvals. The AEMR is provided to all government agencies for review as well as the members of the Community Consultative Committee. A copy is also posted on the website for distribution to the wider community.

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5.0 THE PROPOSED MODIFICATION

5.1 Overview

Donaldson Coal Pty Ltd (Donaldson) proposes to modify their existing Development Consent by extending mining strips 16 to 23 to a point 40m from Weakleys Flat Creek, or to a maximum of 130m. The modification will increase the area of mine disturbance by approximately 7.2 hectares, representing a 2½% increase from the current approved mine plan. The area is wholly contained within the approved Mining Lease 1461 (ML1461). **Figure 5.1** shows the proposed location and layout of the modification.

All operations within the proposed extension area will utilise the same site preparation, mining, rehabilitation and monitoring methods employed at Donaldson, and will be included in all relevant Environmental Management Plans. The same four (4) coal seams that are currently being mined will continue to be extracted, being the Beresfield, Upper Donaldson, Lower Donaldson and Big Ben coal seams. The geology and quality of the coal in the extension area has been investigated and is similar to the rest of the mine area. Mining in this extension area will allow an additional 644,200 tonnes of ROM coal to be extracted, which will generate an additional 1,774,000 BCM of overburden material representing a strip ratio within the extension area of 2.76:1.

5.2 Mine Plan & Mine Sequence

The proposed modification will not increase the per annum coal extraction rate for Donaldson Coal mine. The extension area will be mined discontinuously over a two (2) to three (3) year period, resulting in the mine life being extended by four (4) months. Mining at Donaldson Coal mine will be completed within the approved eleven (11) year timeframe.

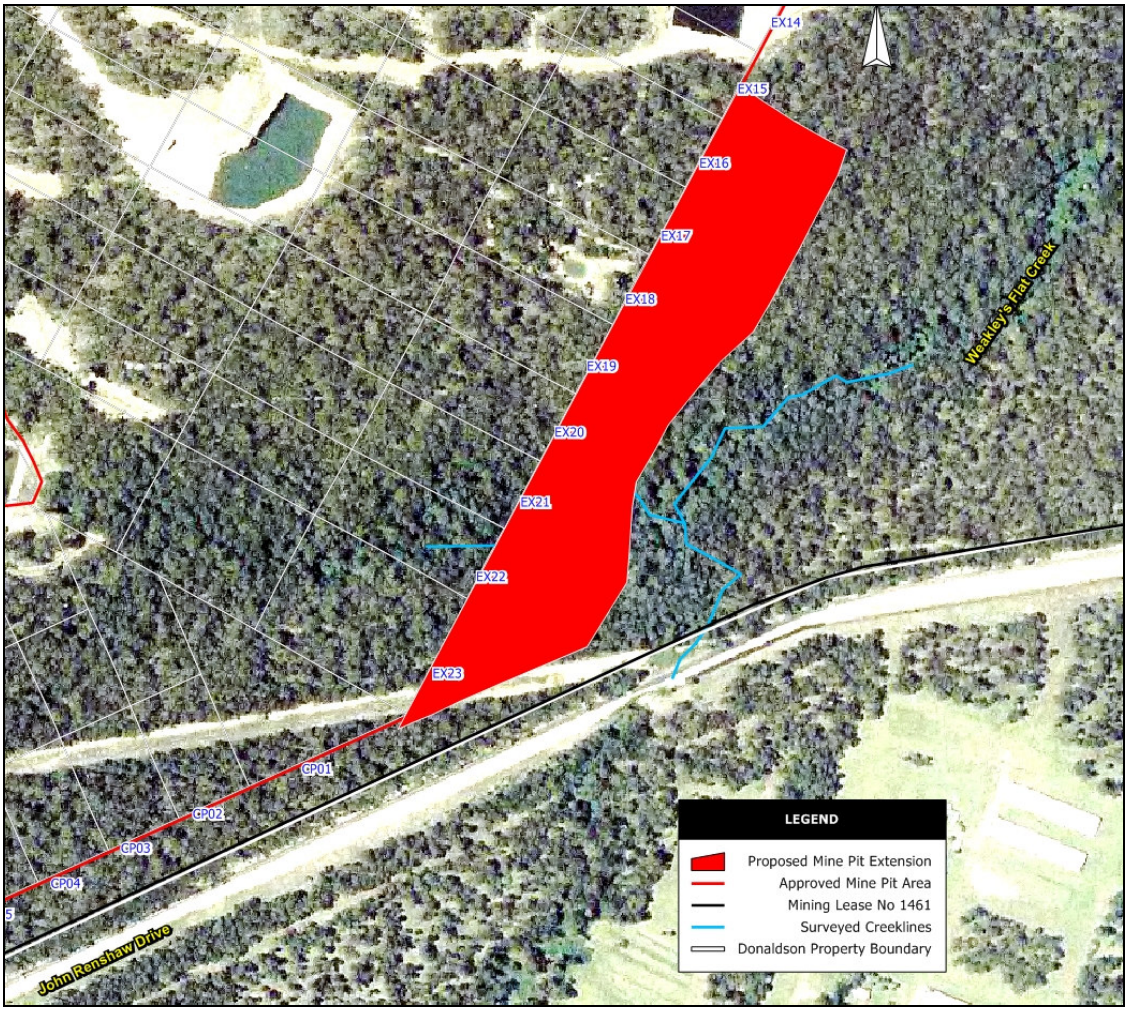


Figure 5.1: Proposed Location and Layout of the Extension.

Under the proposed mine plan, mining will occur sequentially through strips 16, 17, 18, 19, 20, 21, 22 and 23. It is proposed that mining of the first strip will occur in 2004 with the last strip in the extension area to occur in 2006.

The modified mine plans for the Years 2005, 2006 and 2007 of the Donaldson Coal mine are shown in **Figure 5.2, Figure 5.3 and Figure 5.4.** The subsequent years of mining beyond 2007 will conform to the existing mine plans for Donaldson Coal mine.

5.3 Mine Infrastructure

The proposed modification will not require any alteration to the existing mine infrastructure as described in **Section 4.2.**

5.4 Coal Processing

There will be no change to coal processing with all coal from the extension area being hauled to the Bloomfield Colliery in accordance with the current approval. Coal fines

and rejects will continue to be managed using the same methods and infrastructure as the approved mine described in **Section 4.5.**

5.5 Progressive Rehabilitation Method

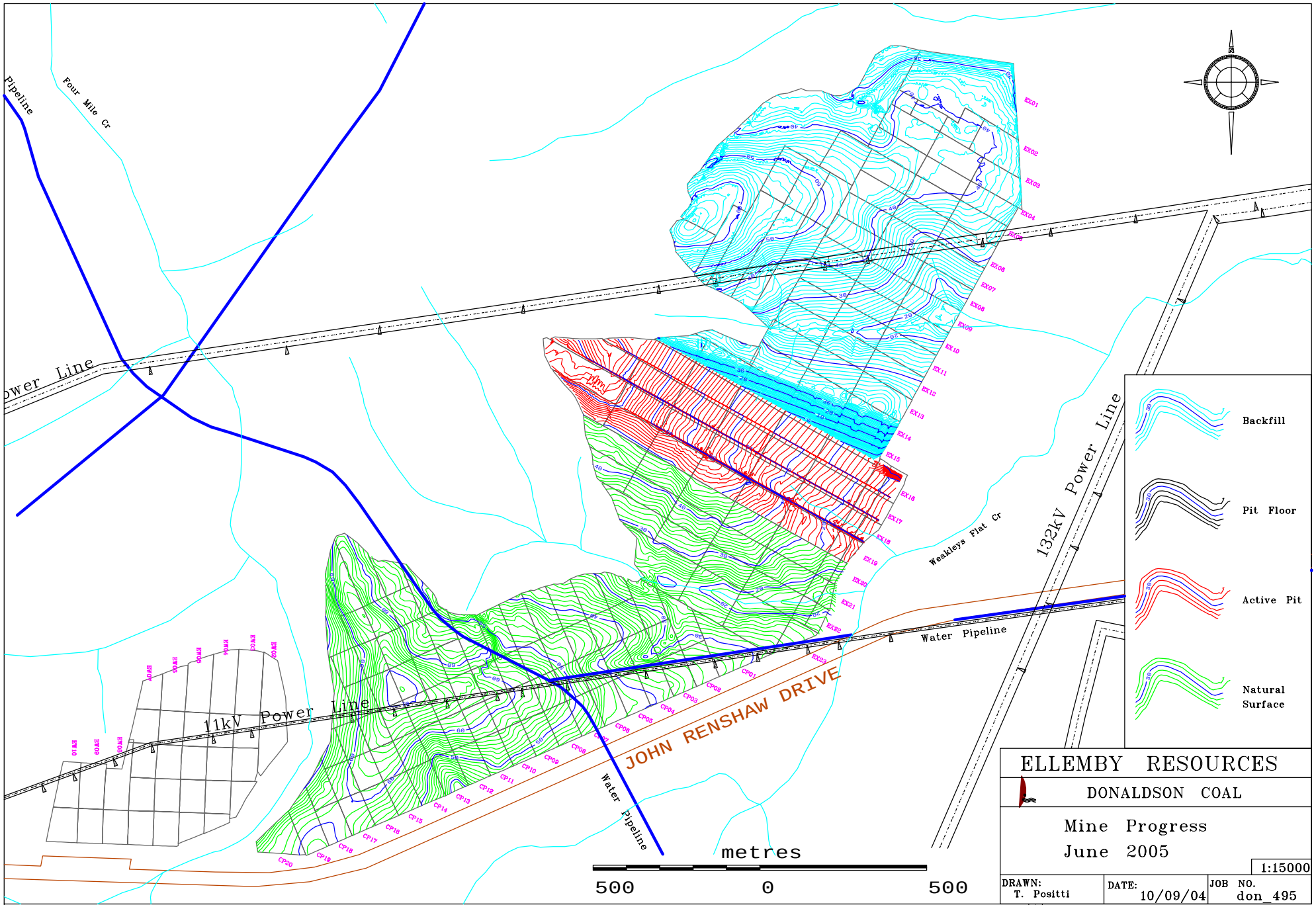
Progress rehabilitation will be undertaken in accordance with the current approvals using the same methods as described in **Section 4.6**.

5.6 Workforce

Under the proposal there will no changes to the existing workforce, however the term of employment will be extended by a further four (4) months as a result of the proposed mine modification.

5.7 Hours of Operation

There will be no changes to the current hours of operation. All mining activities will be undertaken within the same hours of operation described in **Section 4.7**.


Pipeline
Four Mile Cr
Power Line
132kV Power Line
11kV Power Line
Weakleys Flat Cr
Water Pipeline
Water Pipeline
JOHN RENSHAW DRIVE
Backfill
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DONALDSON COAL
Mine Progress
June 2005
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DATE: 10/09/04
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ELLEMBY RESOURCES

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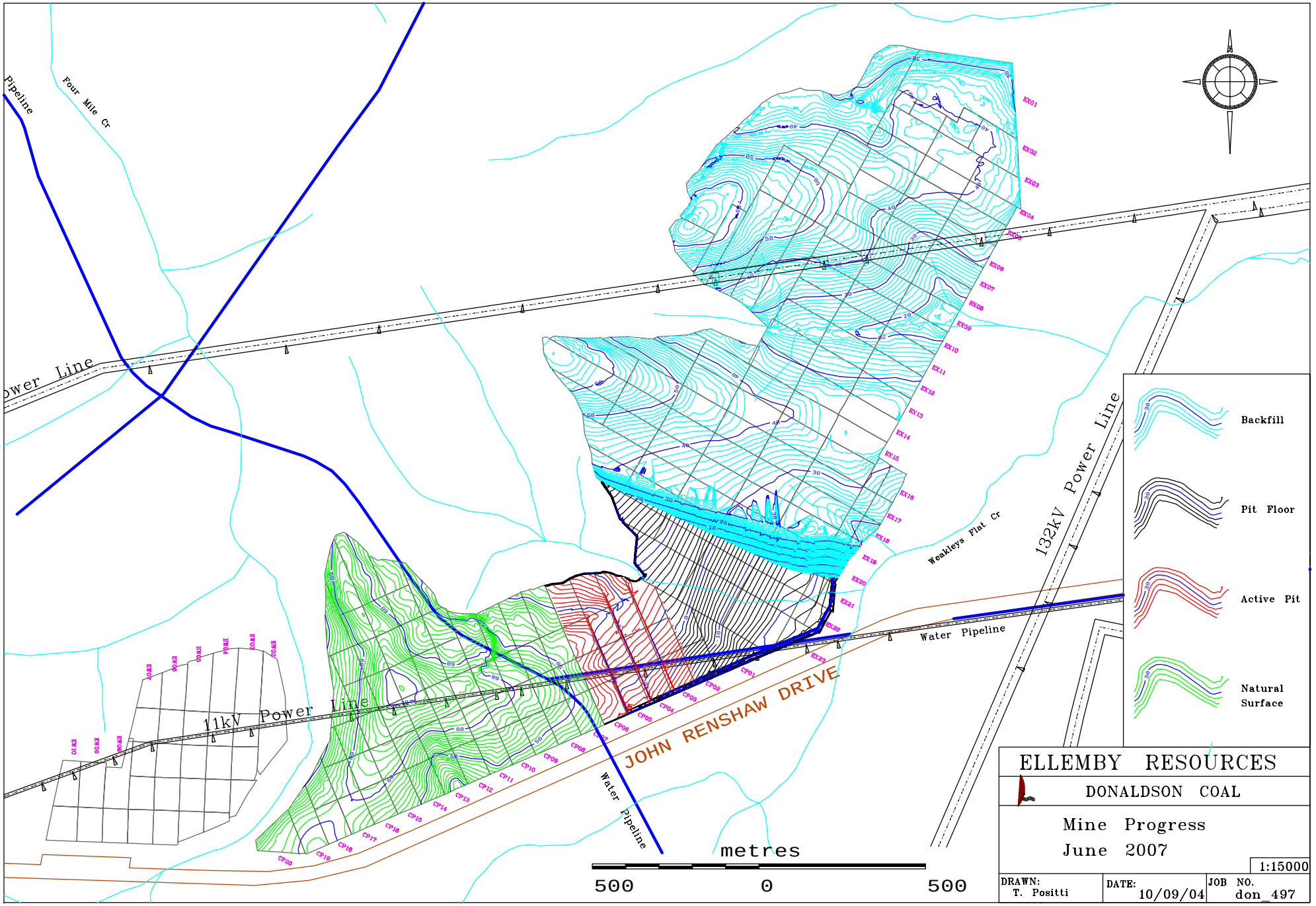
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Water Pipeline
Water Pipeline
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Backfill
Pit Floor
Active Pit
Natural Surface
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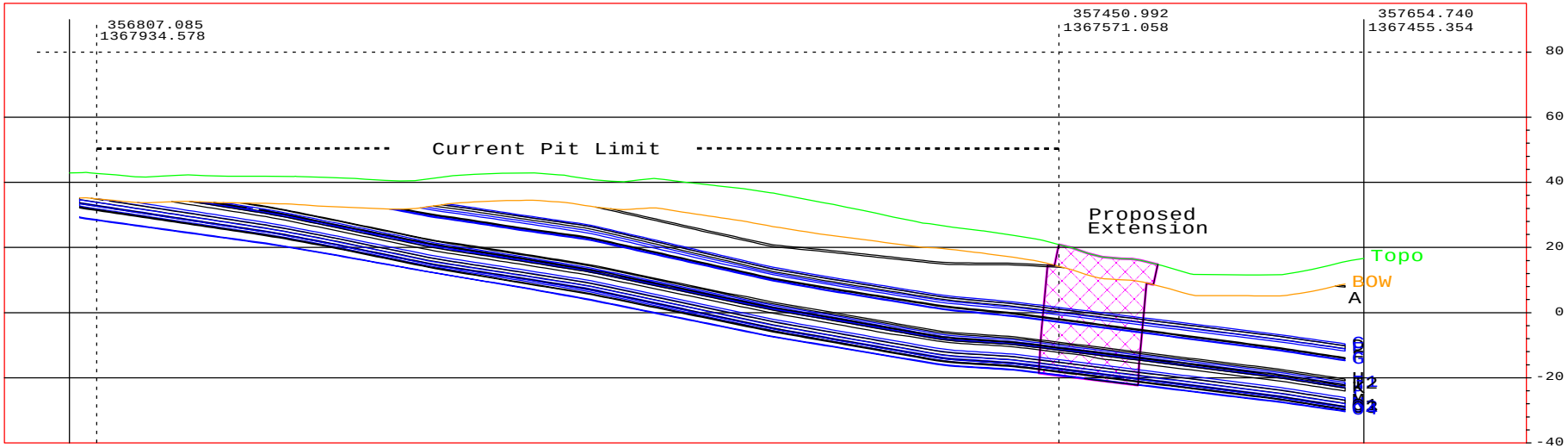

ELLEMBY RESOURCES		
DONALDSON COAL		
Donaldson EX20 Cross Section	Vertical Scale: 1:1,000 Horizontal Scale: 1:2,500	
DRAWN: T.Positti	DATE: 12/11/2004	JOB NO: don505

5.8 Environmental Management

The proposed extension will be managed in accordance with the controls contained within the existing eleven (11) environmental management plans (See **section 4.9.2**). Where necessary the Management Plans will be reviewed to incorporate any changes that will be required as a result of the modifications to the mine plan.

In addition the Environmental Management System (EMS) and its key elements will be reviewed to incorporate the extension.

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6.0 POTENTIAL IMPACTS AND MITIGATION

6.1 Soil and Land Capability

6.1.1 Soil Characteristics

A soil survey of the proposed extension area was undertaken by GSS Environmental (2004), with the broad objective of qualifying the reserves of suitable topdressing material within the proposed mine extension area to assist planning of future rehabilitation operations. The soil survey was undertaken to fulfill the requirements of DIPNR and DMR.

A copy of the soil survey is attached as **Appendix D**. The soil survey found that the entire study area contained a Yellow Duplex Soil Unit. A typical profile description of the Yellow Duplex Soil Unit observed within the proposed extension area is shown in **Table 6.1**.

Table 6.1: Yellow Duplex Soil Unit Profile

Layer	Depth (m)	Description
1	0 – 0.30	Brown (10 YR 4/3) loam exhibiting weak pedality. Primary peds are sub-angular blocky and are 20 – 50 mm in size. Secondary peds are 2 – 5 mm. A rough ped fabric is evident. There are many roots. A clear even boundary to;
2	0.30 – 0.50	Light yellowish brown (10 YR 6/4) sandy loam that is weakly structured. Sub-angular blocky primary peds are 20 – 50 mm in size. The soil has a sandy fabric. Cracks are 2 – 5 mm. There are many roots. A clear, even boundary to;
3	0.50 – 1.10	Yellowish red (5 YR 5/8) light clay exhibiting weak pedality. Primary peds are 100 – 200 mm and sub-angular blocky. Fabric is rough faced. Cracks are 2 - 5 mm. Few roots are evident. A clear, wavy boundary to;
4	1.10 – 1.50+	Yellowish red (5 YR 5/8) light clay exhibiting weak pedality. The layer is has 40% light grey (10 YR 7/2) mottles. Primary peds are 100 – 200 mm and sub-angular blocky. Fabric is rough faced. Cracks are 2 - 5 mm. Few roots are evident.

Structural and textural properties of soils within the study area are the most significant limiting factors for determination of topdressing suitability. The sub-surface horizons of the Yellow Duplex Soil have weak pedality and are fine textured (high clay content). The sub-soils are considered not suitable for stripping, stockpiling and re-spreading as a topdressing material for reshaped overburden.

6.1.2 Topsoil Management

Prior to mining, the topsoil will be stripped using a track dozer and front end loader. The topsoil will be immediately spread onto the reshaped areas (where available). Where this is not possible, the topsoil will be stockpiled to a maximum depth of three (3) metres for later use.

The recommended stripping depth range for the study area is 0.3 to 0.5m. In some areas the soil unit's A2 horizon is absent and should only be stripped at a depth of 0.3m. The combination of moderate (loamy) texture, structural stability and low salinity / sodicity levels of initial surface horizons indicates these materials will be suitable as topdressing media on post-mining landforms.

Erosion and sediment control measures will be implemented within the extension area to prevent soil erosion from disturbed areas, and to trap any sediment prior to discharging from the site. These measures are outlined in the existing Erosion and Sediment Control Plan, which is discussed in Section 5.8. The Erosion and Sediment Control Plan includes minimal disturbance, diversion works, sediment controls and revegetation to control soil erosion and sedimentation.

6.1.3 Land Capability

A land capability survey of the proposed extension area was undertaken in August 2004 (GSSE, 2004). A copy of the land capability survey is attached as **Appendix D**. The survey was conducted in accordance with the DIPNR rural land capability assessment system, which classifies land on the basis of an increasing soil erosion hazard and decreasing versatility of use. It recognises the following three (3) types of land uses:

- land suitable for cultivation;
- land suitable for grazing; and
- land not suitable for rural production.

These capability classifications identify the limitations to the use of the land as a result of the interaction between the physical resources and a specific land use. The principal limitation recognised by these capability classifications is the stability of the soil mantle (Soil Conservation Service, 1986).

The method of land capability assessment takes into account a range of factors including climate, soils, geology, geomorphology, soil erosion, topography and the effects of past land uses. The classification does not necessarily reflect the existing land use, rather it indicates the potential of the land for such uses as crop production, pasture improvement and grazing.

The majority of the proposed extension area has been classified as Class VI land. The area is not suitable for cultivation on a regular basis owing to considerable biophysical limitations such as relatively shallow light textured surface soils. The recommended soil conservation practices for this land classification includes pasture improvement, low stocking rates, fire prevention and vermin control. All land

within and immediately adjacent to Weakleys Flat Creek has been classified as Class VII land.

Whilst the land capability has identified the area as being potentially suitable for grazing, the area is presently bushland and it is unsuitable for grazing in its present condition. The post mining rehabilitation will restore the ground topography and soils to substantiality the pre-mining conditions and will include the revegetation of the area to bushland. Under these circumstances the post mining land capability will be substantiality the same as the current condition.

6.2 Flora and Fauna

6.2.1 Scope & Methods

As part of the existing Development Consent Conditions for the Donaldson Coal mine, the Flora & Fauna Management Plan (Gunninah 2000) required that periodic monitoring of flora and fauna be undertaken at locations in the undisturbed bushland area and other areas surrounding the mine site. One (1) of the nine (9) permanent monitoring sites is established immediately opposite the proposed area for the modification (Site Q5).

Mammal trapping, spotlighting, Anabat insectivorous bat call recording and owl call playback have been carried out in the area since September 2001, with the most recent survey being undertaken in May 2004. This comprehensive data has been used as the basis for the fauna assessment, supported by additional bird counts, spotlighting and general observations in the site.

The floristic composition of the site has been recorded during a series of systematic searches conducted throughout the entire area.

The search was divided into the three (3) main vegetative habitats in the area: northern side of the Weakley's Flat Creek tributary, southern side of the tributary; and, the riparian vegetation along the tributary. No species of threatened flora were found in these areas and no endangered ecological communities were present.

6.2.2 Floristic Composition and Description of potential habitat

The vegetation in the northern and southern sides of the Weakley's Flat Creek tributary was similar in overall content with the southern side being drier than the northern side. The overstorey was a co-dominant mix of *Corymbia maculata* (Spotted Gum), *Eucalyptus punctata* (Grey Gum), *Eucalytpus acmenoides* (White mahogany) with scattered *Eucalyptus pilularis* (Blackbutt). The riparian habitat along the tributary to Weakley's Flat Creek had emergent *Eucalyptus pilularis* with a mesic understorey of *Glochidion ferdinandi*, *Melicope micrococca* and *Cryptocaria microneura*. Lantana was dominant in the shrub layer of the edges of the drainage line with large areas totally covered with 2m tall masses of the weed.

A comprehensive list of all flora and species either found on the site, or having the potential to use the site can be found in the Flora & Fauna & Threatened Species Assessment (EcoBiological, 2004) attached as **Appendix E** to this report.

6.2.3 Threatened Species Assessment

A list of threatened flora and fauna reported from within a five (5) kilometre radius of the proposed extension was obtained from the NPWS database of the Atlas of NSW Wildlife. Based on information available concerning habitat requirements of these species, an assessment was made as to the likelihood of any of the reported threatened species occurring on the property or using the habitat of the property as a essential part of a foraging range.

The list of threatened species was used as a guide to the species possibly occurring on the property. However the survey was not limited to the threatened species reported on the database extract with searches being carried out for any species listed on Schedules 1 and 2 of the TSC Act that were considered as possibly occurring in the type of vegetative habitat present on the property. The potential for the involvement of any 'key threatening processes' was also assessed.

6.2.4 Flora

Table 6.2 below is a summary of the threatened flora that could potentially occur in the local area. The last date column in the table refers to the last date that the species was recorded in or near the area according to the NPWS Atlas database.

Table 6.2: Threatened Flora potentially occurring in the local area.

Family Name	Scientific Name	Legal Status	Last Date
Tremandraceae	*Tetratheca juncea*	Vunerable	31/12/1998

6.2.5 Fauna

Table 6.3 below is a summary of the threatened fauna that could potentially occur in the local area. The last date column in the table refers to the last date that the species was recorded in or near the area according to the NPWS Atlas database.

Table 6.3: Threatened Fauna potentially occurring in the local area.

Scientific Name	Common Name	Legal Status	Last Date
Litoria aurea	Green and Golden Bell Frog	Endangered	30/05/1984
Hamirostra melanosternon	Black-breasted Buzzard	Vunerable	30/09/1990
Lophoictinia isura	Square-tailed Kite	Vunerable	3/08/1993
Lathamus discolor	Swift Parrot	Endangered	24/07/2000
Ninox connivens	Barking Owl	Vunerable	11/09/2001

Ninox strenua	Powerful Owl	Vunerable	2/11/2001
Tyto novaehollandiae	Masked Owl	Vunerable	1/01/1998
Melithreptus gularis gularis	Black-chinned Honeyeater (eastern subsp.)	Vunerable	1/01/1998
Petaurus norfolcensis	Squirrel Glider	Vunerable	28/05/2003
Pteropus poliocephalus	Grey-headed Flying-fox	Vunerable	14/08/2000
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	Vunerable	27/09/1995
Mormopterus norfolkensis	Eastern Freetail-bat	Vunerable	24/07/2000
Chalinolobus dwyeri	Large-eared Pied Bat	Vunerable	28/02/1997
Falsistrellus tasmaniensis	Eastern False Pipistrelle	Vunerable	1/02/1998
Miniopterus australis	Little Bentwing-bat	Vunerable	14/08/2000
Miniopterus schreibersii oceanensis	Eastern Bent-wing Bat	Vunerable	18/03/1998
Myotis adversus	Large-footed Myotis	Vunerable	1/02/1998
Scoteanax rueppellii	Greater Broad-nosed Bat	Vunerable	1/02/1998

6.2.6 Eight (8) Part Tests

Section 5A of the EP&A Act (1979), as amended by the TSC Act 1995, provides for the application of an "eight-part test" in the consideration of the likely impact of any development on threatened species, populations or habitats. A review of the threatened species profiles shows that there were threatened species that could be found on the property under different conditions to those prevailing at the time of this investigation or could be found in similar habitat in the immediate region. **Table 6.4** below is a summary of the threatened species that were found to occur in the local area surrounding of the Donaldson Coal mine site.

Table 6.4: Threatened species found to occur in the local area

Species	Common Name
Ninox strenua	Powerful Owl
Melithreptus gularis gularis	Black-chinned Honeyeater (eastern subsp.)
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat
Mormopterus norfolkensis	Eastern Freetail-bat

Miniopterus australis	Little Bentwing-bat
Miniopterus schreibersii oceanensis	Eastern Bent-wing Bat
Myotis adversus	Large-footed Myotis
Scoteanax rueppellii	Greater Broad-nosed Bat

Detail on the eight (8) part test for those species likely to occur on the site has been described in the Flora & Fauna report compiled by EcoBiological (2004) as attached as **Appendix E**. In all cases it was concluded that the proposed extension could proceed without critically affecting any of the species listed in **Tables 6.2 and 6.3**.

6.2.7 Management Protocols

The Donaldson Coal mine will continue to implement the protocols embodied in the Flora and Fauna Management Plan (Gunninah 2000). They will be extended to the activities associated with the mine extension. In particular the pre-clearing protocols (s4.1) will be followed to ensure that there is no loss of hollow dwelling mammals during clearing.

6.3 Heritage

6.3.1 Aboriginal

The extension area was surveyed as part of the original assessment for the Donaldson Coal mine, and no sites or artefacts of Aboriginal heritage significance were identified in the area at that time. As such there is no requirement to apply for any Consent to Destroy permits under section 90 of the *National Parks & Wildlife Act (1974).*

In accordance with the requirements of the in the Aboriginal Sites Management Plan, the Mindaribba LALC will be required to undertake further field surveys prior to all clearing and topsoil stripping operations in the extension area. If any artefacts are discovered during this process Donaldson will consult with the Mindaribba LALC to prepare a s.90 application. The requirement for this process is contained within the Aboriginal Sites Management Plan.

Mindaribba LALC has continually been consulted through the EIA and operation of the mine. They have endorsed the annual Aboriginal Sites Management Plans prepared to date, and will continue to be involved with operations at Donaldson Coal mine. Correspondence from Mindaribba LALC in relation to the modification is attached as **Appendix C**

6.3.2 Historic

There are no items within the extension area or nearby that are listed as State significant heritage by the State Heritage Register. The mining of the proposed extension area will not have any impacts on sites or areas of heritage significance.

6.4 Noise

6.4.1 Noise Assessment Methodology – conversion to the Industrial Noise Policy

Currently, the Donaldson Coal mine noise Development Consent conditions are in accordance with the guidelines set out in the DEC Environmental Noise Control Manual (ENCM). The proposed extension of the mining area will trigger the requirement to alter the Development Consent to move in line with the Industrial Noise Policy (INP). INP based criteria used in this assessment were derived from baseline monitoring data compiled in October 2000, prior to the operation of Donaldson Coal mine.

A Noise and Blasting Impact Assessment for the proposed extension was undertaken by Richard Heggie & Associates (2004) in accordance with the INP, and a copy is attached as **Appendix F**.

6.4.2 Noise Receivers

The nearest residential noise receivers to the proposed extension are the residents on Weakleys Drive (Site A) and Phoenix Rd (Site C) on the eastern side of the F3 highway and Avalon Estate (site J) to the north. The poultry farm on the southern side of John Renshaw Drive (site K) has ceased operation and the property has recently been sold. There is a life of mine agreement that enforces a 500m buffer between the mine and any potential development on the old poultry farm site. This agreement is in place to exclude encroachment on the mine by development that is sensitive to noise. There are however three (3) occupied residences on the property (K1, K2 & K3) located outside of the 500m buffer at approximately 1.5km from the Donaldson mine.

The nearest noise receptors to the extension are shown on **Figure 6.1** and detailed below in **Table 6. 6.**

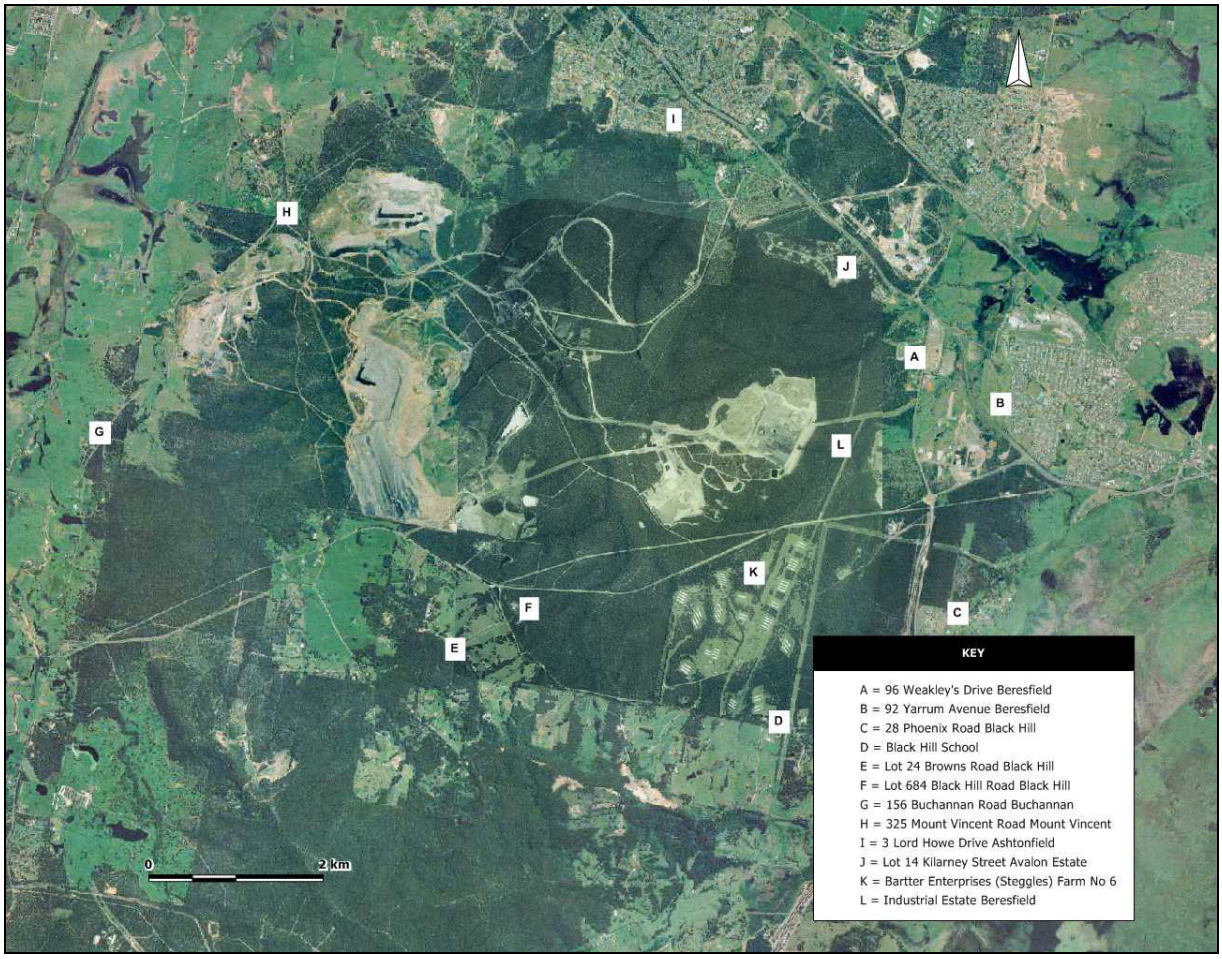


Figure 6.1: Location of Nearest Noise Receptors.

6.4.3 Existing Noise Environment

Ambient Background Noise Monitoring

Ambient noise surveys were conducted to characterise and quantify the existing acoustical environment in the area surrounding the approved Donaldson Coal mine and existing Bloomfield Coal Mine in October 2000 prior to the commencement of the Donaldson Coal mine operation. Monitoring was conducted at eleven (11) locations to represent the areas potentially affected by noise from the proposed Donaldson Coal mine. Eleven (11) unattended noise loggers were positioned at the nearest potentially affected residential areas (detailed in **Table 6.6** below). Details on the background noise monitoring program are contained within the Noise Impact Assessment attached as **Appendix F.**

Table 6.6 Ambient Noise Monitoring Locations

Noise Monitoring Location	Description
A	98 Weakleys Drive, Beresfield
B	92 Yarrum Ave, Beresfield
C	28 Phoenix Rd, Black Hill
D	Black Hill School
E	Lot 224 Browns Road
F	Lot 684 Black Hill Road
G	156 Buchanan Road
H	325 Mount Vincent Road
I	3 Lord Howe Drive, Ashtonfield
J	Lot 14 Killarney Street, Avalon Estate
K	Old poultry farm (unoccupied), Black Hill

6.4.4 INP Noise Criteria

The Donaldson Coal mine noise emission design goals have been set with reference to the INP. The intrusiveness and amenity criteria have been set from measurements at the nearest affected residences listed in **Table 6.6**, with adjustments to account for existing industrial noise contributions as necessary. The acoustical environment typifies that of urban, suburban and commercial environments. The methodology used to establish the noise emission goals as described in detail in **Appendix F** (Noise and Blasting Impact Assessment).

6.4.5 Noise Impact Assessment

A computer model was used to predict the noise emissions from the project site. The Environmental Noise Model (ENM) used has been produced in conjunction with DEC. A map giving all relevant topographic information was used to generate cross sections from source to receiver locations. The model used these cross sections, together with the noise source data, ground cover, shielding by barriers and/or adjacent buildings and atmospheric information to predict noise levels. Noise levels under calm atmospheric conditions and prevailing weather conditions were modeled.

The model was used to predict noise from mining operation in the proposed extension, with all the equipment operating simultaneously and assuming peak production. Equipment was situated in locations considered to be representative of a worst case scenario. Mobile noise sources (such as haul trucks) were modeled at worst case locations on each respective haulage routes and assumed to operate in repetitive cycles.

Noise emission levels predicted at the residential areas surrounding the site for the operation of the mine under calm and adverse conditions are presented in **Table 6.7**.

Table 6.7 – Predicted Noise Levels – Mining Operations, Calm & Prevailing Conditions

Receiver Location	Period	Predicted Noise Level $LA_{eq(15\ minute)}$ (dBA)			Noise Design Goal $LA_{eq(15\ minute)}$ (dBA)
		Calm Conditions	Prevailing W Wind	Prevailing SE Wind	
A,B Weakleys Drive Beresfield	Day	34 dBA	41 dBA	< 30 dBA	50 dBA
	Evening	34 dBA	41 dBA	< 30 dBA	48 dBA
	Night	< 30 dBA	35 dBA	< 30 dBA	41 dBA
C Phoenix Road Black Hill	Day	33 dBA	40 dBA	< 30 dBA	43 dBA
	Evening	33 dBA	40 dBA	< 30 dBA	44 dBA
	Night	31 dBA	40 dBA	< 30 dBA	41 dBA
D Black Hill School	Day	34 dBA	37 dBA	< 30 dBA	41 dBA
	Evening	34 dBA	36 dBA	< 30 dBA	40 dBA
	Night	32 dBA	36 dBA	< 30 dBA	36 dBA
E, F Browns Road Black Hill	Day	< 30 dBA	< 30 dBA	31 dBA	41 dBA
	Evening	< 30 dBA	< 30 dBA	31 dBA	40 dBA
	Night	< 30 dBA	< 30 dBA	31 dBA	36 dBA
G,H Buchanan, Louth Park	Day	< 30 dBA	< 30 dBA	< 30 dBA	43 dBA
	Evening	< 30 dBA	< 30 dBA	< 30 dBA	41 dBA
	Night	< 30 dBA	< 30 dBA	< 30 dBA	36 dBA
I Lord Howe Dr. Ashtonfield	Day	< 30 dBA	< 30 dBA	< 30 dBA	44 dBA
	Evening	< 30 dBA	< 30 dBA	< 30 dBA	46 dBA
	Night	< 30 dBA	< 30 dBA	< 30 dBA	38 dBA
J Kilarney Street Avalon Estate	Day	< 30 dBA	34 dBA	< 30 dBA	49 dBA
	Evening	< 30 dBA	34 dBA	< 30 dBA	47 dBA
	Night	< 30 dBA	33 dBA	< 30 dBA	40 dBA
K Old chicken farm (K 1-3)	Day	41 dBA	40 dBA	37 dBA	41 dBA
	Evening	**41 dBA**	**41 dBA**	37 dBA	40 dBA
	Night	36 dBA	**37 dBA**	33 dBA	36 dBA
L Beresfield Industrial Estate	When in use	46 dBA	54 dBA	35 dBA	70 dBA

Notes For Monday to Saturday, Daytime 7.0 am - 6.00pm; Evening 6.00pm - 10.00pm; Night-time 10.00pm - 7.00am.
On Sundays and Public Holidays, Daytime 8.00am - 6.00pm; Evening 6.00pm - 10.0 pm; Night-time 10.0 pm - 8.00am.
The LA90 represents the level exceeded for 90% of the interval period and is referred to as the average minimum or background noise level.
The LAeq index corresponds to the level of noise equivalent to the energy average of noise levels occurring over a measurement period.

Noise emissions from the mining operations within the extension, under calm weather conditions, are predicted to comply with project specific noise levels at all residential locations for all operating periods, except at the occupied residences on the old poultry farm site (K1, K2 & K3). These sites will meet marginal compliance

(<2dB(A) above the goal). This minor exceedence of 1 dB(A) that may occur during the evening and night time periods is unlikely to be noticeable by most people.

Monitoring the occurrence of these westerly winds and applying the current noise management measures included in the Noise Management Plan will assist in mitigating any potential noise impact from the proposed extension. These measures may include operation at more shielded locations or a reduction of the scale of certain activities. It is important to note that the equipment will typically be working within the mine and as such the amount of time spent working at 20RL or higher will be minimal. Operational controls will ensure that when work is required on the surface it will only be undertaken when the prevailing climatic conditions are favorable.

The LA_1(1minute) noise emission levels from the overburden fleet predicted at the residential areas surrounding the site under calm and prevailing conditions do not exceed the recommended sleep disturbance goals. The predicted levels are presented in **Table 6.8**.

Table 6.8 – Predicted Sleep Disturbance Noise Levels - Calm & Prevailing Conditions

Receiver Location	Period	Predicted Noise Level $LA_{eq(15\ minute)}$ (dBA)			Noise Design Goal $L_{A1(1\ minute)}$ (dBA)
		Calm Conditions	Prevailing W Wind	Prevailing SE Wind	
A Weakleys Drive Beresfield	Night 10:00 pm to 7:00 am	< 45 dBA	< 45 dBA	< 45 dBA	51 dBA
C Phoenix Road Black Hill	Night 10:00 pm to 7:00 am	< 45 dBA	< 45 dBA	< 45 dBA	50 dBA
D Black Hill School	Night 10:00 pm to 7:00 am	< 45 dBA	< 45 dBA	< 45 dBA	46 dBA
E Browns Road Black Hill	Night 10:00 pm to 7:00 am	< 45 dBA	< 45 dBA	< 45 dBA	46 dBA
I Lord Howe Dr. Ashtonfield	Night 10:00 pm to 7:00 am	< 45 dBA	< 45 dBA	< 45 dBA	48 dBA
J Kilarney Street Avalon Estate	Night 10:00 pm to 7:00 am	< 45 dBA	< 45 dBA	< 45 dBA	50 dBA

K Bartter Farm No.6	Night 10:00 pm to 7:00 am	< 45 dBA	46 dBA	< 45 dBA	50 dBA
Beresfield Industrial Estate	Night 10:00 pm to 7:00 am	N/A	N/A	N/A	N/A

6.5 Blasting Vibration and Airblast

A Noise and Blasting Impact Assessment for the extension was undertaken Richard Heggie & Associates (2004). A copy of their report is attached as **Appendix F**. The blast related outcomes of the assessment are presented as follows.

The impacts of blasting will not change as a result of this proposal. The frequency of blasting will remain the same at 2 to 3 blasts per week. All blasting at Donaldson Coal mine will continue to be carried out in accordance with the current Development Consent & DEC guidelines and in line with current practice.

In order to predict the levels of blast emissions (ground vibration and airblast) at the surrounding receivers from the blasting operations at Donaldson Coal mine, the measured ground vibration and airblast levels from recent blasting operations were used to develop blast emissions site laws. These site laws were then used to predict the impacts from blasting in the proposed extension of the mine.

6.5.1 Blasting Criteria

The DEC has set down guidelines for blasting based on human comfort levels. The guidelines have been adapted from the ANZECC Guidelines "*Technical Basis for Guidelines to Minimise Annoyance due to Blasting Overpressure and Ground Vibration*" and are as follows:

Airblast

The recommended maximum level for airblast is 115 dB Linear Peak. The level of 115 dB may be exceeded on up to 5% of the total number of blasts over a period of 12 months. However, the level should not exceed 120 dB Linear Peak at any time.

Ground Vibration

The recommended maximum level for ground vibration is 5 mm/s (peak particle velocity, ppv). It is recommended that a level of 2 mm/s be considered as a long term regulatory goal. The ppv 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.

In addition to these requirements, Donaldson Coal mine has site-specific ground vibration restrictions for the Hunter Water pipeline that crosses the mining lease near the proposed extension area as well as the Fairfax printing press. The limits are 10mm/s and 3mm/s respectively.

6.5.2 Blasting Assessment

The current measured blast emission data has been measured by Donaldson Coal mine at several locations surrounding the mine site. This data was used to develop prediction site laws for Donaldson Coal mine.

The level of airblast and ground vibration has been predicted using the developed site laws for Donaldson Coal mine assuming current blasting practice. The Maximum Instantaneous Charge (MIC) will vary, and be limited, depending on the location of the area being mined and its relation to the nearest affected receiver. Modelling indicates that an MIC of 160kg can be used in the north, reducing to an MIC of 70kg when blasting in the south..

It is intended that the site laws for Donaldson Coal mine will continually be refined and be used to design the MIC for each individual blast based on the environmental constraints at the nearest affected receiver. This is currently the case and will continue to be the practice for future mine development.

The predicted blast results presented in **Table 6.9** and **Table 6.10** show that airblast and ground vibration levels will meet the DEC guidelines for proposed blasting at all residential locations surrounding the development

Table 6.9 - Predicted Blasting Levels – MIC 70kg – Southern Extent of Mine Extension

Receiver Location	Predicted Blasting Level	
	Airblast (dB Linear)	Ground Vibration (mm/s)
A Weakleys Drive, Beresfield	107.9	0.3
C Phoenix Road, Black Hill	107.6	0.3
D Black Hill School	107.4	0.2
E Browns Road Black Hill	106.3	0.2
I Lord Howe Dr., Ashtonfield	104.4	0.1
J Kilarney Street, Avalon Estate	106.6	0.2
K Unoccupied House on old poultry farm	115.3	4.0
L Beresfield Industrial Estate	112.1	1.3

Table 6.10 - Predicted Blasting Levels – MIC 160kg – Northern Extent of Mine Extension

Receiver Location	Predicted Blasting Level	
	Airblast (dB Linear)	Ground Vibration (mm/s)
A Weakleys Drive, Beresfield	109.9	0.6
C Phoenix Road, Black Hill	108.7	0.4
D Black Hill School	108.1	0.3
E Browns Road Black Hill	107.2	0.2
I Lord Howe Dr., Ashtonfield	107.2	0.1
J Kilarney Street, Avalon Estate	108.4	0.3
K Unoccupied House on old poultry farm	115.0	3.6
L Beresfield Industrial Estate	115	3.6

6.5.3 Blast Management

The current controls included in the approved Blast Management Plan will be applied to the mine extension in order to monitor potential impacts from the extension of the current development. A series of blast monitors have been installed at six (6) locations surrounding the mine to measure ground vibration and airblast overpressure. These monitors will be continued to be used to ensure compliance with the data being recorded report any exceedence of blasting criteria via SMS to the Environmental Co-ordinator, and are reported in the AEMR.

6.6 Air Quality

An Air Quality Impact Assessment for the extension was undertaken by Holmes Air Sciences (2004). A copy of their report is attached as **Appendix G**. All air quality related outcomes of the assessment are presented as follows.

6.6.1 Air Quality Monitoring Results

For the Air Quality assessment an analysis of the existing monitoring data was undertaken so that predicted changes in air quality arising from the revised mine plan could be assessed. The most recent year of air quality monitoring data was reviewed (June 2003 to May 2004) and the site based meteorological data for the same period has used for the dispersion modeling. A copy of the data is contained within the Air Quality Assessment report attached as **Appendix G.**

6.6.2 Dust Emissions

Dust emissions arise from various activities at coal mines. Total annual dust emissions at the Donaldson Coal mine have been estimated by analysing all dust generating activities taking place on the mine. The operations and rate of activities have been combined with emission factors developed, both locally and by the US EPA, to estimate the amount of dust produced by each activity. For this Air Quality Assessment, dust emissions have been estimated for both the original Year 5 operations (reproduced from the EIS) and the proposed mine plan revisions. Emission factors used to estimate dust emissions for the proposed mine plan revisions have been taken from the EIS.

To assess the impacts of resultant dust emissions by including the modification to the mine, the dust emission inventories have been calculated for the mine during Year 5 under both the current and proposed scenario. Table **6.15** summarises the estimated annual dust emissions from the mine including the additional activities that will be associated with the extension area.

Table 6.15 - Summary of estimated dust emissions from Donaldson Coal mine in Year 5.

	Activity	Estimated TSP emission (kg)	
		EIS	With mine modification
Emissions associated with Approved Mining Activities	O/B Drilling (main pit)	1,174	987
	O/B blasting (main pit)	31,882	26,805
	Loading O/B (all pits)	249,489	249,489
	Transport O/B (from main pit)	201,532	169,441
	Dump O/B (from all pits)	128,477	128,477
	Shape O/B	133,883	133,883
	Wind erosion from mine (main pit)	50,855	50,855
	Wind erosion from waste dump	296,104	296,104
	Wind erosion from pre-strip (main pit)	7,050	7,050
	Graders on roads	1,742	1,742
	Loading coal to trucks (all pits)	57,121	57,121
	Transport coal to hopper (from approved main pit)	59,455	52,539
	Transport rejects	17,535	17,535
	Dumping ROM to hopper	27,690	27,690
	Loading clean coal to stockpile	54	54
	Wind erosion from ROM stockpile	476	476
	Loading coal to trucks	178	178
	Emissions from conveyer transfer points	3,824	3,824
Emissions associated with Proposed Extension Area Mining	O/B Drilling (extension area)	-	187
	O/B blasting (extension area)	-	5,077
	Transport O/B (from extension area)	-	19,288
	Wind erosion from mine (extension area)	-	35,250
	Wind erosion from pre-strip (extension area)	-	7,050
	Transport coal to hopper (from extension area)	-	16,218
	TOTAL	1,268,521	**1,307,320**

Notes: O/B: Overburden

The additional activities associated with the proposed extension area have been included in **Table 6.15**. For the purposes of the emission calculations, activity rates have been apportioned between the main Year 5 pit and extension area pits according to the ratio of overburden and coal quantities mined.

A slight increase (approximately 3%) in annual dust emissions has been calculated with the mine modification over original EIS estimates. The increase in the estimated

annual total TSP emission is primarily a result of the slightly increased haul distance from the extension area to stockpiles.

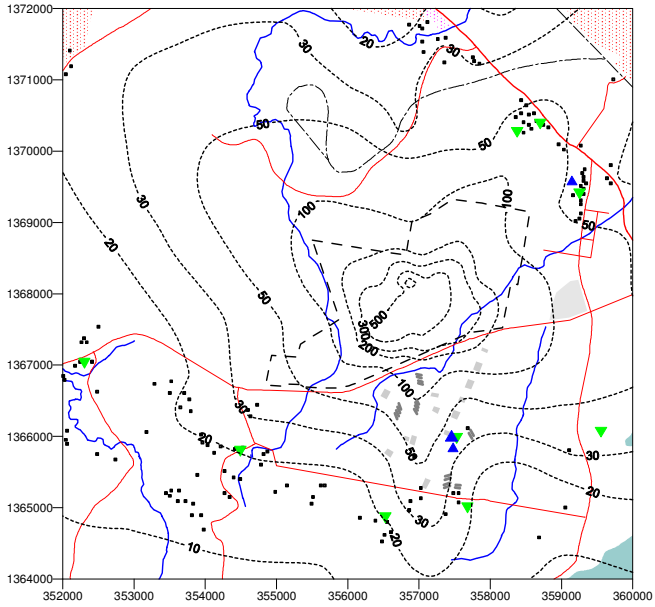
6.6.3 Assessment of Impact

The results from the dispersion modelling are presented as contour plots shown in **Figures 6.2, 6.3, 6.4** and **6.5**. The contour plots show the predicted ground-level dust concentration and deposition levels for the updated EIS scenario and for the mine extension scenario. The contour plots relate to Year five (5) mine plans and extraction rates, and show the following information:

- Predicted maximum 24-hour average PM_{10} concentrations due to Donaldson mining operations in Year 5 (Figure 6.2);
- Predicted annual average PM_{10} concentrations due to Donaldson mining operations in Year 5 (Figure.6.3);
- Predicted annual average TSP concentrations due to Donaldson mining operations in Year 5 (Figure 6.4); and
- Predicted annual average dust deposition due to Donaldson mining operations in Year 5 (Figure 6.5).

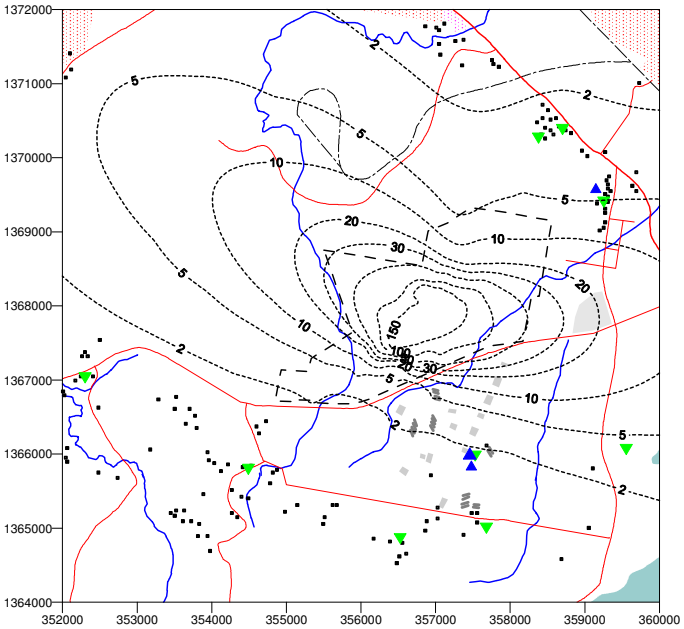
By comparing the model predictions for the updated EIS and the mine modification scenarios in the figures it can be seen that there is very little change to off-site dust concentrations and deposition levels as a result of the mine modification.

In addition to the dispersion model plots, the model predictions have been assessed for selected residences in the vicinity of the mine. The existing air quality has been reasonably well established from the air quality monitoring data previously undertaken. The objective of assessment at selected residences was to determine the change in air quality that may be expected due to the mine operating with the proposed mine plan revisions.

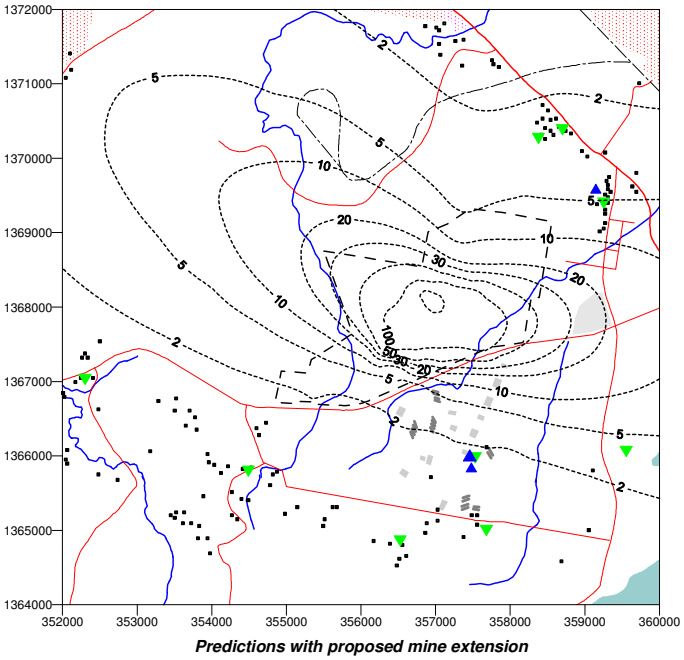


Predicted maximum 24-hour average PM_{10} concentrations due to Donaldson mining operations in Year 5 (µg/m^3)

Figure 6.2: Predicted maximum 24-hour average PM_{10} concentrations in Year 5



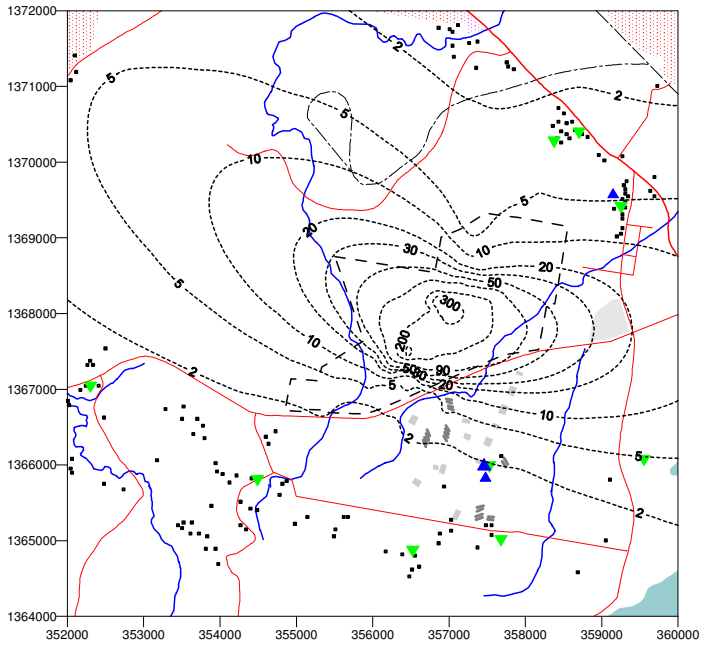
Updated EIS model predictions



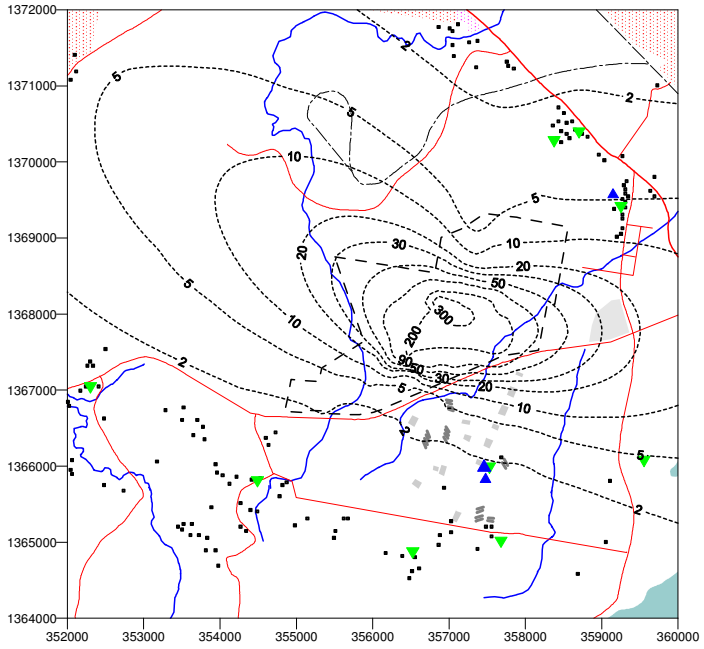
Predictions with proposed mine extension

Predicted annual average PM_{10} concentrations due to Donaldson mining operations in Year 5 ($\mu g/m^3$)

Figure 6.3: Predicted annual average PM_{10} concentrations in Year 5



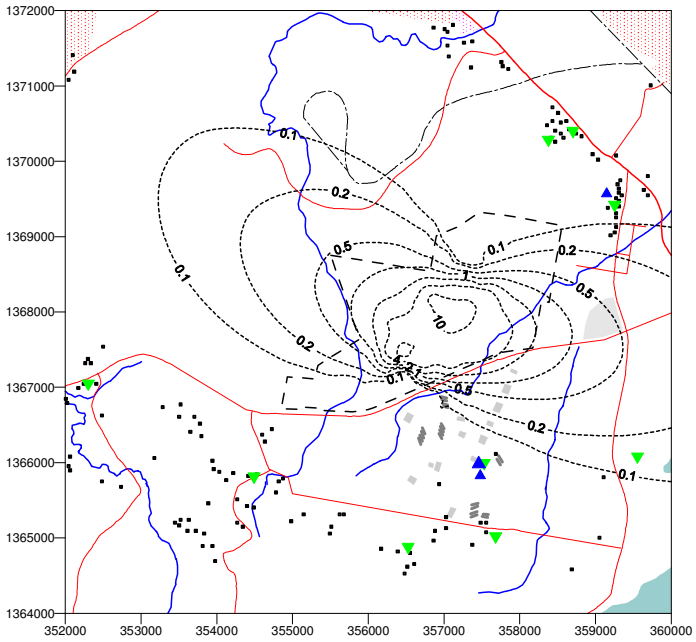
Updated EIS model predictions



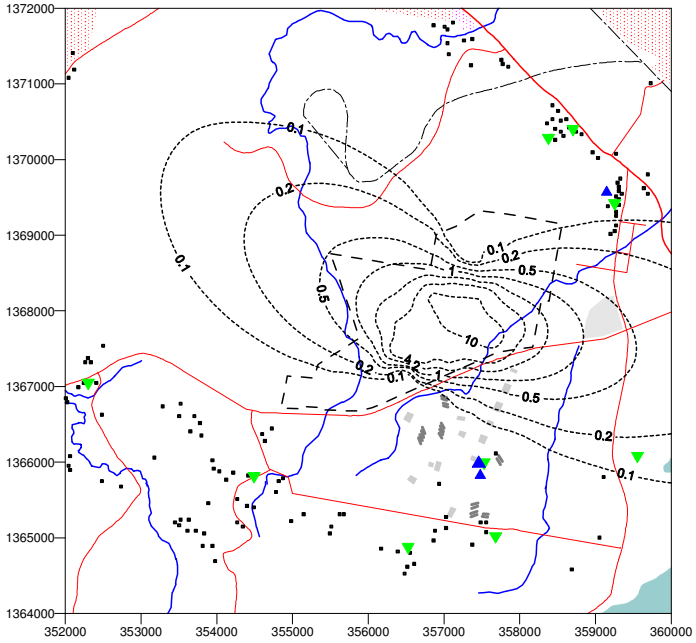
Predictions with proposed mine extension

Predicted annual average TSP concentrations due to Donaldson mining operations in Year 5 (µg/m^3)

Figure 6.4: Predicted annual average TSP concentrations in Year 5



Updated EIS model predictions

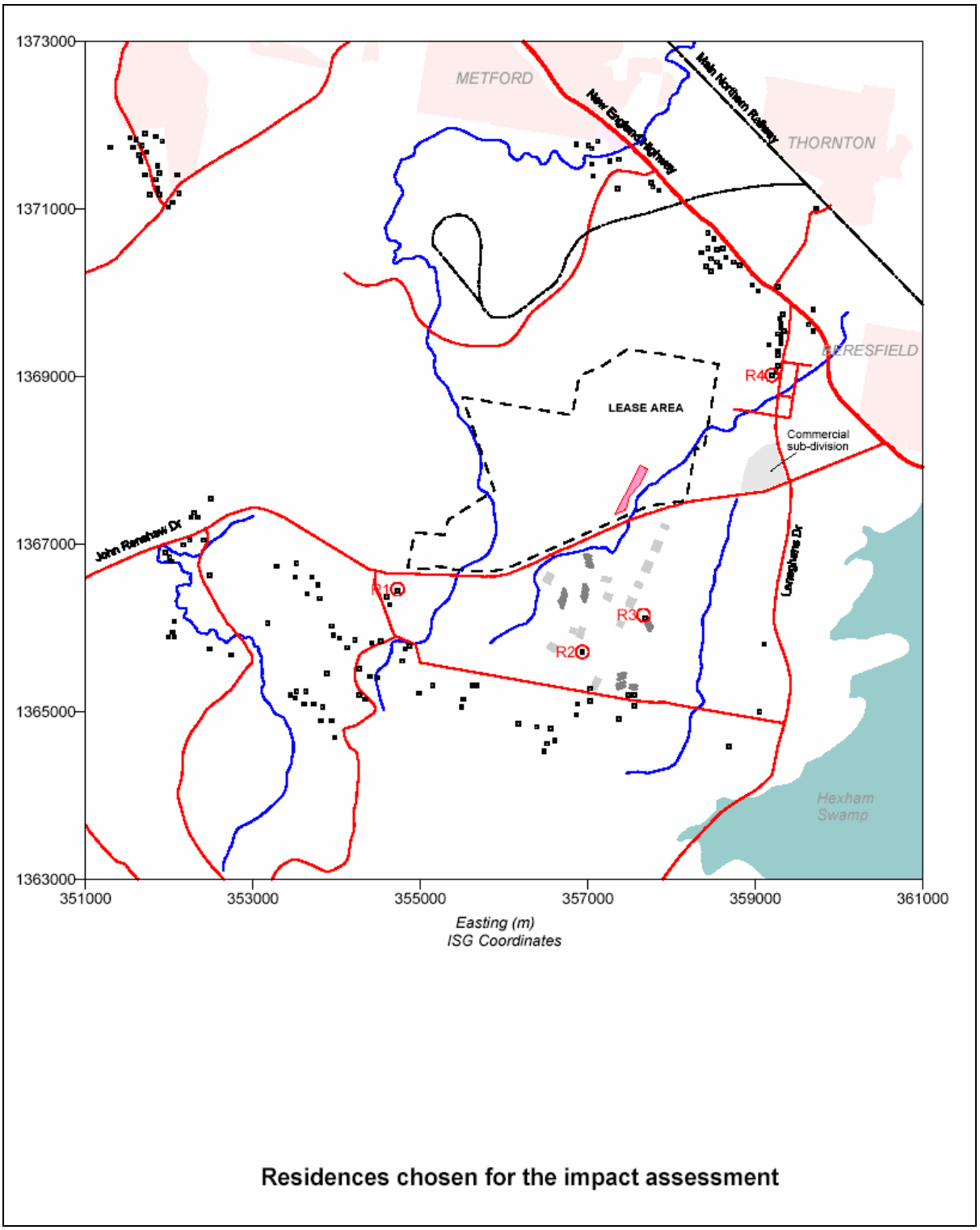


Predictions with proposed mine extension

Predicted annual average dust deposition due to Donaldson mining operations in Year 5 (g/m^2/month)

Figure 6.5: **Predicted annual average dust deposition in Year 5**

Table 6.16 below shows a summary of the Air Quality model predictions for four (4) residences around the extension area (see **Figure 6.6**). This information includes the established existing air quality levels, the model predictions for the EIS mine plan and the mine modification.



Residences chosen for the impact assessment

Table 6.16 - Analysis of dispersion model results at selected residences for Year 5.

Resident ID	Maximum 24-hour PM_{10} ($\mu g/m^3$)	Annual PM_{10} ($\mu g/m^3$)	Annual TSP ($\mu g/m^3$)	Annual dust deposition (g/m^2/month)
Relevant air quality goals				
-	**50**	**30**	**90**	**4.0**
Existing levels				
-	44	19	41	1.2
Predicted Contribution from Approved mine (Updated from EIS)				
R1	33.5	1.2	1.4	0.02
R2	53.4	1.3	1.3	0.01
R3	36.7	2.3	2.7	0.06
R4	49.3	8.1	8.9	0.13
Predicted Contribution from Revised mine (with extension)				
R1	31.5	1.2	1.3	0.02
R2	46.7	1.2	1.3	0.01
R3	34.1	2.1	2.3	0.05
R4	48.1	8.1	8.9	0.13
Predicted change at residence				
R1	-2.0	0.0	-0.1	0.00
R2	-6.7	-0.1	0.0	0.00
R3	-2.6	-0.2	-0.4	-0.01
R4	-1.2	0.0	0.0	0.01
Resulting predicted levels at residences during Donaldson Year 5 revised mine plan operations				
R1	42.0	19.0	40.9	1.2
R2	37.3	18.9	41.0	1.2
R3	41.4	18.8	40.6	1.2
R4	42.8	19.0	41.0	1.2

The analysis above compares the EIS mine plan predictions with the mine modification predictions at selected residences. The resultant change in dust concentration and deposition levels is shown for each residence and the change is added to the existing air quality level. It can be seen that, at all the selected residences, the change to dust concentrations and deposition levels is small. Also, there are no instances where the predicted resulting levels are above air quality goals.

The Air Quality Impact Assessment assessed the difference to air quality impacts predicted to arise from the proposed extension to mining operations at the

Donaldson Coal mine. Dispersion modelling has been used to compare scenarios with and without the proposed mine extension area to evaluate changes to air quality impacts. Some changes to the modelling approach since the Donaldson Coal mine EIS have been adopted for this assessment. Most notably, on-site meteorological data has been used instead of data from Beresfield which is considered to be more representative of the wind patterns in the study area, given the nature of the landuse.

It can be concluded from the assessment that there will be very little difference to off-site air quality impacts with the proposed extension to mining operations, and accordingly, dust will continue to be managed in accordance with the existing Air Quality Management Plan.

6.7 Greenhouse and Energy

6.7.1 Greenhouse Effect

Coal mining results in the emission of gases into the atmosphere that contribute to the 'greenhouse effect'. The term 'greenhouse effect' refers to a natural process that occurs within the earth's atmosphere to maintain the Earth's climate. Some gases such as water vapour, carbon dioxide, methane, nitrous oxide and ozone act to allow the sun's rays to enter the atmosphere and warm the planet. They also prevent heat from escaping, which in turn maintains the temperature on the earth. These gases are collectively referred to as Greenhouse Gases (GHG).

Various human activities result in the emission of GHG into the atmosphere. Extensive research carried out shows that the build up of these gases in the atmosphere in recent times has resulted in an enhanced greenhouse effect. This effect is predicted to have significant impacts on the climate, which in turn will result in significant environmental, social and economic costs for the global community.

6.7.2 Greenhouse Assessment Methodology

A Greenhouse Gas Emissions Assessment of the proposed extension was undertaken by URS (2004), and a copy is contained in **Appendix H**. In order to estimate the GHG emissions associated with the mine extension it is necessary to understand how these GHG would be generated by the modification. The coal mining operations at the Donaldson Coal mine were determined to include four (4) mechanisms that contribute to total GHG emissions:

- *Fugitive emissions.* Most coal seams contain methane (CH_4) trapped in small pockets within the coal. When coal is extracted in an open cut mine the trapped gas is allowed to escape into the atmosphere;
- *Mobile Combustion.* A range of plant and vehicles are used to extract and handle the coal at the mine. These machines burn petroleum products (diesel) as an energy source and the combustion of these materials emits GHG into the atmosphere;
- *Stationary Combustion.* The Donaldson Coal mine uses diesel generators to supply electricity for the office and staff facilities on the site. These diesel generators emit GHG into the atmosphere; and

- *Explosives.* The use of explosives in mining operations emits GHG.

The method of calculating the projected GHG emissions from the proposed mine modification is based on data from the existing mining operations and relevant industry emission factors. The total GHG emissions from the operational life of the existing mine have been calculated as a baseline comparison.

6.7.3 Greenhouse Gas Emissions

GHG emissions are unavoidable for coal mining, however the area of the mine modification represents an opportunity to extract a coal resource with comparably low greenhouse gas emissions. Mining the coal from the modification area does not increase the yearly emissions of GHG into the atmosphere from the Donaldson Coal mine, and has the following benefits when compared to a new mine proposal:

- Mining does not require construction of new infrastructure to support the mining;
- Mining does not require mobilisation and commissioning of new equipment to undertake the mining;
- Mining utilises efficient methods of blasting that have already been refined for Donaldson Coal mine; and
- Mining utilises efficient methods of revegetation that have already been refined for this mine.

The proposed modification will result in an increase in total energy consumption and GHG emissions at the Donaldson Coal mine. Energy consumption due to the mine modification is predicted to be 96,313 GJ, with the total energy consumption over the operational life of the current mine being estimated to be 2,621,475 GJ.

This will result in GHG emissions. The total GHG emissions that are predicted to result from the mine modification are set out below in **Table 6.17.**

Table 6.17- GHG Emissions from Extension

GHG Emission Mechanism	CO_{2e} Emission (tonne CO_{2e})
Mobile Combustion	6,380
Stationary Combustion	357
Explosives Use	34
Fugitive Emissions	29,256
TOTAL	**36,026**

GHG emissions from the existing mine have been predicted to be 981,756 t CO_{2e} over its eleven (11) year operational life. The extension therefore represents a 3.7 %

increase in total GHG emissions over the operational life of the mine. This increase is consistent with the expansion in operations at the mine.

Importantly, the fact that the proposed mine extension represents a minor lengthening of already approved mine area, and as there will be no changes to the mining method, the rate of energy consumed per tonne of coal extracted will be maintained at current levels. In addition, the proposed extension will make use of existing haulage roads, fill areas and other existing infrastructure. Haulage distances for the extracted coal will not be significantly increased, hence minimising extra fuel consumption.

6.7.4 Greenhouse Gas Management

GHG emissions, such as those from the extension, are partly offset by the following strategies that Donaldson Coal mine has in place:

- carbon sequestration through the rehabilitation and revegetation to bushland of the areas disturbed by mining;
- carbon sequestration through the *management* of undisturbed bushland areas around the mine;
- additional carbon sequestration through the *enhancement* of the undisturbed bushland areas. With the improved management of the undisturbed bushland areas, monitoring since 2001 has shown an increase of 15% in the foliage projective cover as well an increase in total timber volume of 4.46 cubic metres/ha. This represents an increase in the carbon sequestration potential for areas managed by Donaldson Coal mine; and
- minimisation of the consumption of fossil fuel and GHG emissions by the selection of equipment that is suitable to undertake the necessary mining tasks without being excessive, and regular maintenance and servicing to manufacturers specification or better.

6.8 Groundwater and Surface Water

A Groundwater Assessment of the proposed extension was undertaken by Peter Dundon & Associates (2004). A copy of their report is contained in **Appendix I**. The following information is a summary of the assessment.

6.8.1 Groundwater Inflows

Mining has already extended below the water table, and the pumped discharge of groundwater inflows has led to the lowering of groundwater levels within the coal measures. The impact on groundwater levels has extended beyond the area actually mined, although the impacts have been limited to the strata directly intersected by the mining excavation. Drawdown impacts have extended both east and west from the active mining areas

In the area of the proposed extension the groundwater levels have declined only slightly in the area (2 to 3 m at most), from pre-mining levels of +12 to 15 m AHD.

Monitoring of the control bore REGDPZ1, located well away from the influence of mining, has shown a steady decline in water levels virtually continuously since July

2001, under influence of the extended drought conditions. A total decline of more than two (2) m has been observed at REGDPZ1, which is totally attributable to the climatic conditions. It is likely that the small groundwater level declines that have been observed in the area of the proposed mine extension have likewise been due to the climatic conditions, and not due to mine dewatering.

As mining advances closer to the area of the proposed extension, dewatering is expected to cause a lowering of groundwater levels from the present approximately +10 to +13 m AHD to approximately –24 m AHD, which is the lowest point of the proposed excavation. As the coal is generally dipping towards the east-south east, this will be approximately four (4) to nine (9) m lower than what is planned under the current approved Mine Plan.

Initial groundwater modelling (Mackie Environmental Research, 1998) predicted that groundwater inflows during the period when mining will pass through the area of the proposed extension (ie between years 4 and 6) will be in the range 0.13 to 0.15 ML/d.

Using a simple analytical approach based on Darcy's Law, it is estimated that the impact of the proposed mine extension will be to temporarily increase groundwater inflow rates by less than 20%. The increase will be temporary, and will occur during the early stages of mining from the proposed extension blocks, until backfilling with overburden reaches this area. The period of increased inflow is expected to be approximately one (1) year, based on current mining and backfilling rates. The inflow rate will settle back as mining advances through the extension area, and to be followed by a slightly reduced rate of inflow following completion of mining from the extension area, due to the flow-on effects of dewatering to areas ahead of the active mining area.

The impact on total volumes to be pumped from the mine during the proposed mine life is calculated to be an additional ten (10) ML of groundwater inflow, or an increase of less than three (3) percent in total volume of inflow over the mine life. This water can easily be managed within the existing water management system which includes dewatering the pit to a large mine water storage where the water is used for dust suppression and other industrial uses (ie. vehicle wash) around the site.

The proposed mine extension is not expected to have any detectable impact on groundwater quality.

The existing surface water and groundwater monitoring network is considered adequate to monitor the impacts of the proposed mine extension. This includes quality monitoring of Weakleys Flat Creek both upstream and downstream of the mine, and water level and quality monitoring of nearby piezometers DPZ4 (shallow and deep piezometers), DPZ9 and DPZ10.

6.8.2 Groundwater Connectivity between the pit and Weakleys Flat Creek

The Groundwater Assessment has considered the possibility that the movement of the highwall closer to Weakleys Flat Creek may lead to a potential increase in hydraulic interconnection between the creek and the mine. Over the section of the mine proposed for extension, it has been estimated that the potential seepage rate

from the creek to the mine may increase from approximately 4.4 m^3/day under the current approved mine plan, to approximately 17.4 m^3/day under the proposed extension. This potential seepage rate will only apply under the most adverse of conditions, when the proposed extension had reached maximum depth and there was adequate stream flow in the creek.

The magnitude of potential through flow under both the current mine plan and the proposed pit extension is very small. There are no known stream flow records for this section of Weakleys Flat Creek, but approximate average flow rates can be calculated using typical runoff rates to the catchment.

The catchment of Weakleys Flat Creek above the proposed mine extension zone has an area of approximately 4.5 km^2. It largely comprises eucalypt forest, but about 25 % of the catchment is occupied by an area once used for poultry farms. It is likely that runoff in this type of catchment would be around 10 to 15 % of rainfall. Annual average rainfall in the project area is approximately 940 mm.

Using the above values, average runoff from the catchment would be between 1160 and 1740 m^3/day. Compared with these runoff rates, the potential loss rates due to seepage from the creek to the mine are very small, under both the current approved mine Plan and the proposed mine extension. The potential loss rate of 4.4 m^3/day under the current mine Plan represents less than 0.4 % of the probable average runoff. The potential loss rate of 17.4 m^3/day under the proposed mine extension plan represents less than 1.5 percent of the probable average runoff.

It is considered that the current monitoring program is adequate for the proposed mine extension. However, Donaldson will undertake 3-monthly inspections during the two-year period involved in the section of the mine proposed for extension. It will involve a visual inspection of the adjacent reach of Weakleys Flat Creek be undertaken to determine if any adverse impacts have occurred.

6.8.3 Natural Creek Systems and Surface Hydrology

The extension is contained entirely in the Weakleys Flat Creek Catchment which upstream of the Main Northern Railway is 1,086 ha, of which 332 ha is within the Mine Lease area (Perrens, 2000).

The proposed buffer between the edge of the highwall and the top of bank of Weakleys Flat Creek will vary from 40 metres to more than 150 metres. The construction of the noise attenuation barrier around the pit is also required leaving an undisturbed vegetated buffer of approximately forty (40) metres between the edge of all mining works and the top of bank of Weakleys Flat Creek which is considered to be sufficient to minimise any impact on the creek. It is noted that the draft Regulation to the Native Vegetation Act (2003) released on the 11th November 2004 states that the 40m buffer is to be reduced to 20m for creeks of this category. Further to this Donaldson has successfully mined within 50m of Scotch Diary without any impact on the riparian vegetation or creek system. Routine water quality monitoring, aquatic macro-invertebrate sampling and creek bank/bed assessments have demonstrated that the mine has not impacted on the creek. This demonstrated

ability to mine near a creek will enable minimal impact on Weakleys Flat Creek to occur.

On the Weakleys Flat Creek side of the earth noise attenuation barrier, sediment filter fencing will be installed adjacent to the fence to ensure that any dirty water flowing from the area is filtered prior to discharge to Weakleys Flat Creek.

Disturbance of the area subject to the extension will occur in 2005 progressively though to 2007. The area will be progressively rehabilitated to restore the natural drainage paths. During this period the catchment area flowing into Weakleys Flat Creek will be reduced. The extension area is approximately 7.2 hectares, which represents a gradual reduction over two (2) years in Weakleys Flat Creek catchment area upstream of the Main Northern Railway to a maximum of 0.7%. This temporary loss of catchment area is not anticipated to have any significant impact on Weakleys Flat Creek. Following mining, the extension area will be rehabilitated to a landform that restores the existing drainage paths toward Weakleys Flat Creek. Sediment dams will be constructed to treat any runoff flowing from the rehabilitated area prior to discharge to Weakleys Flat Creek, and these will be retained until the soil surface is stabilised.

Under the current mine plan, when mining through the area, clean water from the catchment will be diverted around the active mining area using suitably designed graded drains. This is to eliminate possible contamination and ensure surface flows are restricted as little as possible during the mining process.

As a result of current mine approvals, for the remaining life of the mine, the tributary will not function as a tributary to Weakleys Flat Creek as it will have no flows in it. On this basis, the extension of the mine pit through this tributary does present any impact to Weakleys Flat Creek, and as the tributary itself is already heavily impacted upon by the mine, the impact of the proposed mine extension is not significant. Following mining through this area, the tributary and its catchment area will be rehabilitated to restore the natural drainage through this tributary to Weakleys Flat Creek.

6.8.4 Water Management System

The existing water management system operatives in accordance with the Water Management Plan described in Section 4.8.3. The current water management system essential involves the diversion of clean water from undisturbed and rehabilitated areas to into the natural drainage system, treatment of runoff from disturbed areas prior to discharge, containment and re-use of all water from the "controlled area" (ie Pit, Overburden, Haul Road, Work Areas) and the treatment and re-use of water from the hardstand area.

The surface and groundwater management on site will continue to be implemented in accordance with the existing Water Management Plan. The extension area will capture groundwater inflow and rainfall that falls directly into the pit. This water entering the extension area will be fully contained within the pit and directed to an existing sump within the pit area. From the sump the captured water will be pumped to the mine water storage dam to be re-used primarily for dust suppression. The

location of the water storage dam is shown in **Figure 2.1**. The approved strategy ensures that there is zero discharge from the system up to the event of a sequence of wet years (based in historic record**)** that have a probability of 1 in 10 of occurrence during the mine life. The calculated maximum of total storage to achieve this target is 265 ML, which has been estimated using very conservative estimates of groundwater inflow and assuming no increase in water consumption. The actual storage capacity of mine water storage dam is 500 ML, which is 235 ML (87%) greater than the predicted maximum storage required for the approved mine. In the unlikely event that the water storage capacity is exceeded, water could be temporarily stored within the pit area and approval will be sought to discharge the water in accordance with an Environmental Protected Licence or other appropriate form of approval.

Addition pit runoff and groundwater inflow will be captured within the extension area, which will be contained within the existing "controlled area". Over the life of the mine the extraction area represents an increase in "controlled area" of less than three (3) percent which is likely to result in an additional capture of "controlled area" runoff by less than three (3) percent. The additional groundwater inflow has been conservatively estimated to be a maximum total of ten (10) ML, which is less than three (3) percent of the total volume of inflow over the mine life. The additional pit runoff and groundwater inflow captured by the extension area is relatively minimal in comparison the overall storage capacity of the existing water management system. The existing system has the excess capacity required to manage the small increases in water capture resulting from the extension area and still achieve the objective of zero discharge. In accordance with existing arrangements, any additional water capture could also be stored within the pit to ensure zero discharge.

6.8.5 Flooding

The extension area is not subject to flooding from the Hunter River, and is not located with flood prone land, subject to one–in-100 year flood events. This has been identified in the Draft Thornton-Killingworth Sub-Regional Conservation and Development Strategy, (Parsons Brinkerhoff, 2003). Subsequently, the development will not impact upon any declared floodplains of the Hunter River.

6.9 Visual Amenity

A Visual Impact assessment for the extension was undertaken by EcoBiological (2004). A copy of their report is attached as **Appendix J**. The results of this visual amenity assessment show that there will be no visual impact from the extension of the mine. The visual impact assessment specifically targeted the rural residential dwellings in the Black Hill area.

It was concluded that there will be no significant impact on visual amenity in the area resulting from the proposed mine extension. This result is entirely consistent with the fact that the proposed noise barrier walls will be closely surrounded on the sides away from the pit by vegetation from the ground to a maximum height of 25m (having an average height of 16m).

6.10 Planning Aspects

The original EIS prepared for Donaldson Coal mine (PPK Environment and Infrastructure 1998) identified the mine site as being within the Cessnock and Maitland Local Government Areas (LGAs). The boundary of the mine abutted Newcastle LGA, with parts of the buffer area extending into this LGA.

The proposed extension area is contained within Lot 13 DP 755260 in Cessnock LGA. The land is zoned 1(a) Rural 'A' under Cessnock Local Environmental Plan 1989 (LEP 1989). Land zoning, objectives of the zone and the LGA boundaries have not altered since the original EIS was prepared and therefore apply in the same way to the extension area as they did to the original mining area.

Hunter Regional Environmental Plan 1989 and the various State Environmental Planning Policies (SEPP's) described in the original EIS remain unchanged, with the exception of SEPP 46 – Protection and Management of Native Vegetation. This SEPP was repealed with the commencement of the *Native Vegetation Conservation Act 1997,* which in turn is proposed to be repealed shortly by the *Native Vegetation Act 2003*. The *Native Vegetation Act 2003* states that native vegetation must not be cleared except in accordance with a development consent granted in accordance with the Act. As the proposed extension does not require a new consent, this requirement does not apply. Other alterations to statutory approvals considered by the original EIS are:

Protection of the Environment Operations Act (1997)

Repeals the *Clean Air Act 1961*, *Clean Waters Act 1970*, *Environmental Offences and Penalties Act 1989*, *Noise Control Act 1975* and *Pollution Control Act 1970* discussed in the original EIS. The requirements of this Act are addressed by the current EPA Licence for Donaldson Coal mine.

Water Management Act (2000)

Repeals sections of the *Water Act 1912* and *Rivers and Foreshores Improvement Act 1948* as discussed in the original EIS. The *Water Management Act 2000* provides requirements for water management plans, water use approvals and aquifer interference approvals. Donaldson is required to comply with the existing Regional Water Management Plan and have water use approval for their current operations. No additional approvals are required for the proposed modification.

Threatened Species Conservation Amendment Act(2002)

The changes in terminology, methodology and other matters required by this Amendment to the *Threatened Species Conservation Act 1995* have been addressed in the flora and fauna assessment undertaken for the proposed modification, as detailed in Section 6.2.

National Parks and Wildlife Amendment Act (2001)

Alterations to licensing requirements have been addressed by the existing Donaldson Coal mine flora and fauna management plan.

Bushfire Prone Land – *Environmental Planning and Assessment Act (1979)*

Section 149 of the EP&A Act regarding bush fire prone land means that Donaldson should incorporate any bush fire requirements if land is identified as Bush Fire Prone by the Rural Fire authority.

No relevant zoning or zoning objectives have been changed since the existing development was approved. Relevant changes to State legislation since approval of the existing development have been identified and have either been addressed by current licences and approvals, or are deemed not relevant as the proposed modification does not require a new development consent. The proposed modification therefore complies with all relevant planning legislation and policy.

Donaldson currently operates under the following approvals:

- Mining Operation Plan (MOP) approved by the Department of Mineral Resources (DMR);
- Environmental Protection Licence (EPL) No. 11080 under the *Protection of the Environment and Operations Act, 1997*, granted by the Environment Protection Authority for the mining of coal.
- Mining Lease No. 1461 under the *Mining Act, 1992*, granted by the Minister for Mineral Resources on the 22nd December 1999 for the mining of coal.
- Water Works Licence No. 20SL060534 under the *Water Act, 1912*, granted by the Department of Land and Water Conservation on the 19th February 2001 for the clean water diversion of five (5) unnamed creeks.
- Bore Licence No. 20BL168123 under the *Water Act, 1912*, granted by the Department of Land and Water Conservation on the 12th November 2001 for the groundwater extraction as a result of the active mining area.
- Bore Licence No. 20BL168124 under the *Water Act, 1912*, granted by the Department of Land and Water Conservation on the 12th November 2002 for the groundwater monitoring bores.

6.11 Socio-Economic and Community

The potential impact on the social and economic environment of the surrounding communities was adequately addressed in the EIS (1996). The Donaldson Coal mine has positive socio-economic effects through the employment of staff, purchasing of goods and services, and the payment of State government royalties, charges and taxes. The proposed extension will increase the life of the Donaldson Coal mine by about four (4) months, and these positive socio-economic effects will be continued for the extended life of the mine.

6.12 Community Complaints

The current complaints management recording and reporting system is considered adequate under the proposal and will continue to be used as required. All complaints received by the mine are followed through by the Environmental Manager and reported to the CCC and also in the AEMR.

6.13 Post Mining Land Use

In accordance with the approved mining procedures, the post mining rehabilitation will restore the ground topography and soils to substantially the pre-mining conditions and will include the revegetation of the area as a native bushland. The potential post mining land uses will be substantially the same as the pre-mining land uses. The proposed extension is substantially the same development and does not introduce any new potential impacts on land use.

6.14 Potential Hazards

The existing procedures for fuel, chemical and fire management will continue to be implemented, and the mine modification will not introduce any new hazards to the site or surrounds.

Donaldson Coal mine have further reduced the hazard risk by not storing explosives detonators and boosters on site. The storage and handling of materials associated with explosives in accordance with appropriate legislation.

6.15 Transport

The proposal does not include any changes to any of the transport routes currently used or proposed by the existing Development Consent. The coal will continue to be transported over an internal private haul road by truck to Bloomfield Colliery, and from there by rail to the coal receivers. The size, and nature of the workforce will not change under this proposal so there will not be any additional impact on traffic movement to and from the site.

6.16 Wastes

There will be no new waste streams generated by the extraction within the extension area. Wastes such as vegetation and overburden will increase as a result of the extension. The current management protocols contained within the approved Waste Management Plan will continue to be implemented. Any other ancillary wastes such as oil/grease, batteries, building materials, sewerage, paper/cardboard, and domestic waste will also continue to be managed in accordance with the procedures outlined within the existing Waste Management Plan, which adopts the principles of the *Waste Minimisation and Management Act, 1995*.

7.0 MONITORING & REPORTING

Donaldson Coal mine will continue to undertake the extensive monitoring program that is contained within the various management plans described in **Section 4.9**. The monitoring results will continue to be reviewed in accordance with the various management plans, the Development Consent conditions and the Environmental Management System (EMS). Due to the minimal predicted impact for the proposed modification, the existing comprehensive environmental monitoring network is considered adequate.

All monitoring data will continue to be reported in the AMER and Annual Return for the Environmental Protection licence.

8.0 CONCLUSION

Donaldson Coal Pty Ltd seeks to modify its existing Development Consent N97/00147 for the Donaldson Coal Mine to enable an increase in the current mining area within ML1461 by 7.2 hectares in the south eastern section. This will be achieved by extending 8 existing mining strips by a maximum of 100 metres each. Total output volumes from the mine are not proposed to be increased by this extension, rather, four months will be added to the life of the mine. Approximately 644,200 tonnes of ROM coal will be extracted from the extension area.

This document has described the existing approved operation and the proposed modification and examined potential impacts. Having examined and documented this information, it can now be determined whether the proposal constitutes designated development or not, by directly addressing the considerations of Schedule 3 Part 2 of the EP&A Regulations 2000.

Schedule 3 Part 2 of the Regulations states that:

"Development involving alterations or additions to development (whether existing or approved) is not designated development if, in the opinion of the consent authority, the alterations or additions do not significantly increase the environmental impacts of the total development (that is the development together with the additions or alterations) compared with the existing or approved development."

Several factors are provided in Schedule 3 Part 2 that are to be taken into consideration when determining whether or not development is designated development. These are addressed as follows:

(a) the impact of the existing development having regard to factors including:

(i) previous environmental management performance, including compliance with the conditions of any consents, licences, leases or authorisations by a public authority and compliance with any relevant codes of practice, and

> Donaldson Coal mine has an excellent record of compliance with its consent conditions, as determined by its Independent Environmental Compliance Audit and low level of community complaints. Only two administration type consent conditions were found to be non-compliant, and these have since been addressed to prevent re-occurrence.

(ii) rehabilitation or restoration of any disturbed land, and

> Land disturbed by mining is progressively rehabilitated in accordance with the current approvals and the Mining Operations Plan. Rehabilitation has been very successful to date. At present, 65 hectares of the site has been disturbed by mining., excluding haul roads, infrastructure areas and the out of pit dump. Of this 65 hectares, a total of 43 hectares, or 66%, has been revegetated and is undergoing rehabilitation.

(iii) the number and nature of all past changes and their cumulative effects, and

> There have not been any previous applications for modifications or changes to the original consent.

(b) the likely impact of the proposed alterations or additions having regard to factors including:

(i) the scale, character or nature of the proposal in relation to the development, and

The area proposed to be disturbed by the extension represents an increase in the total disturbed mining area of approximately 2½%. The extension will not involve the construction of any additional infrastructure. The proposed extension will add four months to the life of the mine.

(ii) the existing vegetation, air, noise and water quality, scenic character and special features of the land on which the development is or is to be carried out and the surrounding locality, and

The existing environment is described in each of the Technical Studies prepared for this SEE. The land generally consists of degraded bushland.

(iii) the degree to which the potential environmental impacts can be predicted with adequate certainty, and

Potential environmental impacts have been predicted by detailed technical investigations, including predictive computer modelling. Recognised experts in each technical field have been selected to undertake these investigations. Predictions are assisted by monitoring data that has been collected since commencement of mining.

(iv) the capacity of the receiving environment to accommodate changes in environmental impacts, and

The technical studies conclude that adverse environmental impacts will be either negligible or very minimal.

(c) any proposals:

(i) to mitigate the environmental impacts and manage any residual risk, and

The existing Donaldson environmental management procedures that successfully manage impacts on the current mine site will be implemented for the extension area. These management procedures are updated annually and include comprehensive monitoring.

(ii) to facilitate compliance with relevant standards, codes of practice or guidelines published by the Department or other public authorities.

The existing mining operation already complies with all relevant standards and guidelines. Any new requirements or guidelines would be incorporated into the environmental management plans when updated. A community consultative committee meets to discuss the current mining operation and the proposed extension area would form part of their considerations.

Consideration of the above factors leads to the conclusion that the proposed modification does not constitute 'designated development' as the proposed modification is not considered to significantly increase the environmental impacts of the total development compared with the existing development. An Environmental Impact Statement (EIS) is therefore not required.

Donaldson Coal seeks to modify Development Consent N97/00147 under Section 96(2) of the EP&A Act 1979, which enables a consent authority to modify a consent if *"it is satisfied that the development to which the consent as modified relates is substantially the same development for which consent was originally granted and before that consent as originally granted was modified…"*

The proposed modification will not alter the area of land owned by Donaldson nor substantially alter the area of disturbance, which will only increase by 2½ %, or 7.2 hectares, with the proposed extension area. The extension area is adjacent to the existing approved area of disturbance and requires no new environmental controls, as assessment of potential environmental impacts has determined these to be either minimal or nil. Existing environmental management strategies and monitoring will be applied to the proposed extension area. The approved site preparation, mining, transport, processing and rehabilitation methods and yearly coal extraction rate will not be altered. The same coal seams that are currently being mined will continue to be extracted. No new infrastructure is required, employment numbers will remain the same and mining will still be completed within the approved eleven (11) years. Hours of operation will not be modified.

The above factors demonstrate that with the proposed modification, the development remains substantially the same development as that for which consent was originally granted, and that the proposed extension may be determined under Section 96(2) of the EP&A Act 1979.

This Statement of Environmental Effects has assessed those matters referred to in Section 79C of the EP&A Act 1979 as are considered relevant to the proposed modification. This SEE also provides the information required by Section 115 of the EP&A Regulation 2000, being items to be included in an application for modification of a development consent.

Relevant assessment matters are considered to include:

- Land capability
- Flora and fauna
- Archaeology
- Noise and blasting
- Air Quality and greenhouse gas emissions
- Groundwater and surface water hydrology
- Visual aspects;
- Socio-economic;
- Planning aspects;
- Rehabilitation;
- Hazards;
- Transport; and
- Waste Management.

Potential impact from each of the above issues has been investigated and is predicted to be either negligible or very minor. No adverse impact is predicted for land capability, flora and fauna, archaeology, blasting, visual environment, hazards, transport or waste management.

The Noise Impact Assessment was updated for this modification to address the Industrial Noise Policy, introduced since the completion of the original EIS. Slight exceedences during prevailing westerly winds in the evening and night-time at one residence are predicted, however the increase is modelled to be only 1dB(A). Nevertheless, evening and night-time

prevailing wind management measures will be implemented to minimise the potential for this minor exceedence.

The Air Quality Assessment predicts a slight increase of approximately 3% in annual dust emissions generated by the whole mine, however, levels continue to be within air quality goals. There is very little difference predicted to off-site air quality impacts. There will be a predicted 3.7% increase in total greenhouse gas emissions from the mine site over the life of the mine.

Groundwater inflow to the extension area from Weakleys Creek is predicted to be less than 3% of the total volume of inflow currently experienced in the mine. No detectable impact is predicted on groundwater quality generally, and no new monitoring locations are required.

No new monitoring locations or protocols are considered to be required as a result of the proposed extension. All operations within the extension area will be undertaken in accordance with the existing environmental management plans, with the exception of the Noise Management Plan which will be updated to include the Industrial Noise Policy goals.

Donaldson Coal mine has an excellent record of compliance with its consent conditions, as determined by its Independent Environmental Compliance Audit and low level of community complaints. The community consultative committee will continue to play an active part in mine consultation and the proposed extension area will form part of its considerations.

If the coal is not recovered as part of this existing development the likelihood of the resource being extracted in the future is considered very low. The cost associated with establishing a new mining operation for such a small amount of coal will mean that the coal resource will be effectively sterilised. Further, by recovering the coal now as part of the current approval, it allows for operational efficiencies to be realised that would otherwise make the proposition uneconomical. Additional coal royalties for the NSW State Government will arise from the proposed modification.

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