

Prepared For:

**BLOOMFIELD COLLIERIES PTY LIMITED**

**ENVIRONMENTAL  
IMPACT STATEMENT  
FOR  
PROPOSED MODIFICATION OF  
MINING OPERATIONS -  
RIXS CREEK COAL MINE  
  
SUPPLEMENTARY DOCUMENT FOR  
ALTERNATIVE MINE PLAN**

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*An EIS describing the proposed expansion of Rixs Creek open cut mine was placed on public exhibition until 15 February 1995. Submissions raised in response to this exhibition indicated that the EIS was inadequate in describing the alternative mine plan included in the EIS at the request of the Department of Mineral Resources. This alternative mine plan has less environmental impacts and lower coal recovery than the original mine plan. This supplementary document has been provided to explain additional details of the alternative plan and to more clearly identify its associated impacts.*

*Bloomfield Collieries is submitting this supplementary document to allow further exhibition of the proposal and the assessment of the alternative mine plan.*

*This document should be read in conjunction with the EIS formally on display until 15 February 1995.*



## EXECUTIVE SUMMARY

*Bloomfield Collieries Pty Limited have been operating the Rixs Creek Open Cut Coal mine, near Singleton, since development consent was granted in October 1989. The mine currently has approval to produce up to 1.5 Million tonnes per annum (Mtpa) of run-of-mine (ROM) coal. The coal produced on site is of steaming and coking quality and is sold to export markets.*

*The Company is proposing to increase its production to 2.5 Mtpa of ROM coal, amounting to an average saleable production rate of 1.5 Mtpa. There will be a maximum total movement of 15 million bank cubic metres of mined materials in any one year. In order to achieve this increase in production an alternative conceptual mine plan has been generated and additional equipment will be installed on the site. The Company is also seeking to have restrictions on operating times and surface exemptions currently in place removed. It is estimated that the proposed expansion will generate additional revenue for the regional economy in the order of \$64 million per year.*

*Mining is currently taking place in two pits on the northern and southern sides of the New England Highway. These areas are interlinked by means of a bridge, recently constructed over the highway. Mining is carried out using scrapers, loaders and trucks. The raw coal is washed on site. Coarse reject is trucked to overburden dumps and buried and fine reject is transported by pipeline to a tailings dam. Product coal is trucked internally to the Rixs Creek- Camberwell Joint Venture rail loop for transport to Newcastle.*

*There will be no significant changes to the supporting infrastructure that currently exists on site. The coal preparation plant, rail loading facilities, offices and workshops have sufficient capacity to cater for the proposed expansion. When the mine reaches the maximum planned production an overland conveyor may be installed to transport product coal from the washery to the rail loop.*

*The alternative mine plan involves the extraction of coal from three pits, namely: Pit 1 - north of the New England Highway, Pit 2 - south of the Highway and east of Rixs Creek and Pit 3 - south of the Highway and west of Rixs Creek. Pits 1 and 2 are a continuation of the existing workings which will be enlarged to accommodate the new mine plan. Pit 3 will be worked when Pit 2 is completed. This alternative mine plan reduces the depth of the proposed pits compared to the original mine plan by reducing reserve recovery. It entails less out-of-pit overburden dumping, smaller final voids and a reduced requirement to stop traffic on the New England Highway as a result of blasting.*

*The principle potential environmental impacts from the adoption of the alternative mining plan and increased production are considered likely to affect noise and visual amenity, traffic stoppages due to blasting, air quality and water quality.*

*Computer modelling has been undertaken to determine both noise and dust impacts arising from the expanded mine. Contours generated indicate that noise impacts are more*



*significant than those of dust. Specific modelling has been undertaken for noise impacts on the alternative mine plan. Air quality impacts associated with the original mine plan have been adopted as a "worst case". Given the limitations on the accuracy of predictive models the Company is proposing that any requirement to purchase affected land be based on the affectation being determined by monitoring of the mining operation rather than reliance on a modelled "area of affectation".*

*The Company proposes the continuation of the Environmental Committee to be constituted by Singleton Council with members drawn from interested government authorities, and the local community to monitor the mine's performance on a yearly basis. The Company also proposes the formation of an Affectation Assessment Panel to determine whether properties are affected.*

*At present the New England Highway is protected from mining by means of a 100 m barrier in which no mining can take place. In addition the Company may not blast within 500 m of the Highway while it is open for traffic. Both of these operating conditions will be maintained throughout the planned expansion. Based on reserve calculations it is anticipated that traffic would need to be stopped once every fourteen days for the alternate plan, over the life of the mine. Delays due to blasting are currently in the order of 10 to 15 minutes. It is however, anticipated that utilising best available technology it is be possible to reduce the stoppage time to 5 minutes.*

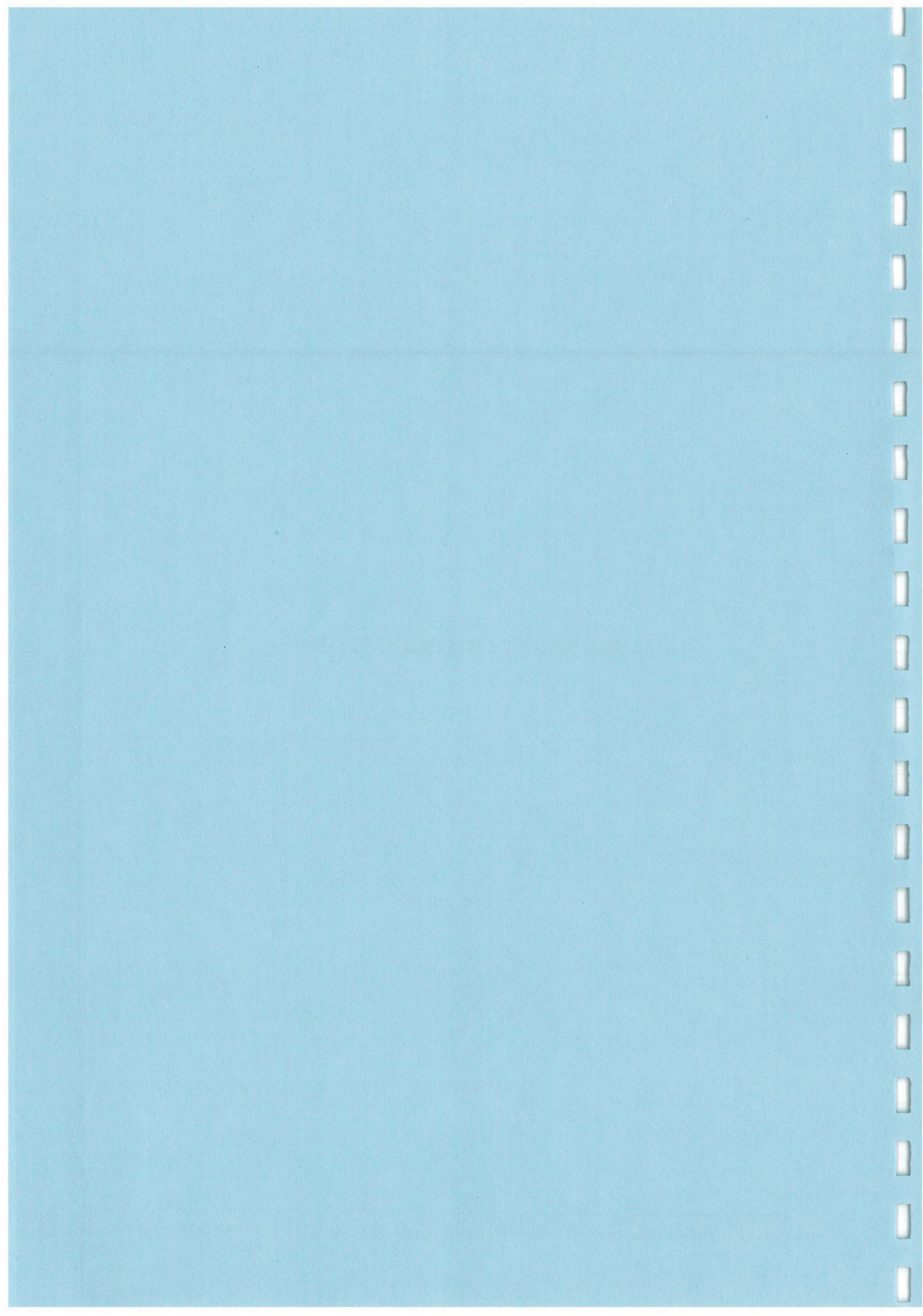
*The visual impact of the expanded mine as a result of the alternative mine plan has also been the subject of computer modelling. This plan significantly reduces the visual impacts associated with the development. The mining operations will not be visible from the residential areas of Singleton or Singleton Heights. Residents along Maison Dieu Road will see initial pit development but this will be later shielded by revegetated dumps. The most extensive views of the mine will be obtained for travellers along the New England Highway. However, extensive bunding and tree planting will be undertaken wherever necessary to shield views into the site, especially within the 100 m highway reserve barrier.*

*Rixs Creek currently have an extensive and effective water management system in place at the mine, providing for the total reuse of all minewater under normal rainfall conditions. Demands for water at the mine exceed supply from runoff and pumpout of the pits, and the balance for the system is provided by the pumpout of water from old underground workings on an as needed basis. Water balance calculations for the mine indicate that Rixs Creek will exceed existing storage of water in wetter than average years, balance supply and demand in average years and draw upon storage in dry years. Although the mine holds an EPA water discharge licence there has been no need to utilise this since early 1991 at a stage when the water management system was not completed. Since that time the mine has operated under nil discharge conditions. Future allowance for a possible staged discharge system will be undertaken in accordance with the requirements of the relevant government authorities.*



## **SECTION 1 : INTRODUCTION**







## SECTION 1 : INTRODUCTION

### 1.1 THE PROPOSAL

**Note:** This section has been amended to emphasise the alternative mine plan, however, it should be noted that the alternative plan occurs within the boundaries of the original mine plan with the only difference being that the alternative plan involves a shallower pit over a smaller area, thus reducing the size and areal extent of out-of-pit dumps and resulting in smaller final voids.

Bloomfield Collieries Pty Limited are proposing to expand their current open cut mining operation at Rixs Creek near Singleton (refer to **Figure 1 - original EIS**). This expansion in coal mining activities will encompass an increase in both the volume of production and the areal extent of the mine.

The present open cut is restricted to a production rate of 1.5 million tonnes per annum (Mtpa) of run-of-mine (ROM) coal. The Company is seeking an approval that will allow it to produce 2.5 Mtpa of ROM coal amounting to an average saleable production rate of 1.5 Mtpa. In order to achieve this production rate an alternative conceptual mining plan has been developed for the site that involves a maximum total movement of mined materials of 15 million bank cubic metres per year, including overburden, interburden and coal (refer to **Figure 28**). Typical timed mining schedules of quantities of overburden and coal that will be moved on an annual basis are set out in **Table 1.1**. This alternative mine plan is the subject of this supplementary document to accompany the original EIS.

Development consent for the Rixs Creek Coal Mine was initially granted by the Minister for Planning on 19 October, 1989 and Coal Lease 352 was issued on 20 October, 1989. The mine continues to operate in 1994 in accordance with the Development Consent and the Lease. Consent conditions and lease requirements place restrictions on the recovery of the coal resources within the Coal Lease and on the efficiency of the operations.

Coal Lease 352 occupies an area of approximately 1,818 ha of land, of which 786 ha is

## 1.2

prohibited from open cut mining by a surface exception to a depth of 20 m (refer to **Figure 2 - original EIS**). Following a directive from the Minister of Mineral Resources (refer **Appendix 1- original EIS**) Rixs Creek have applied for development consent pursuant to an application for a lease that will remove this surface exception. The intention of the present application is to obtain consent to mine by open cut methods, and without surface exception, in the whole of the area encompassed by Coal Lease 352. The applicant will be satisfied with a consent framed to limit the impacts of the mining to be no greater than those of the alternate mine plan.

The present open cut is restricted to a production rate of 1.5 million tonnes per annum (Mtpa) of run-of-mine (ROM) coal. The Company is seeking an approval that will allow it to produce approximately 2.5 Mtpa of ROM coal amounting to an average saleable production rate of 1.5 Mtpa. In order to achieve this production rate an alternative conceptual mining plan has been developed for the site that involves a maximum total movement of mined materials of 15 million bank cubic metres per year, including overburden, interburden and coal. **Table 1.1** shows annual total movement of mined materials corresponding to the planned output.

The alternative mine plan has been designed to provide the Company with a greater flexibility. To this end the Company also proposes to install additional equipment and to have restrictions on operating times currently in place removed (refer to **Appendix 3- original EIS**).

The production limit is conveniently expressed as a maximum total material movement as the same equipment is used for waste and coal.

Mining is currently carried out on the site using scrapers, loaders and trucks. The raw coal is washed in the site's coal preparation plant. Coarse reject is trucked to overburden dumps and buried and fine reject is transported by pipeline to a tailings dam. Product coal is trucked to the Rixs Creek - Camberwell Joint Venture rail loop for transport to Newcastle. All coal produced on the site is sold to export markets.





NOTE: PLAN SHOWS LIMITS OF BASE OF PIT - NOT SURFACE DISTURBANCE

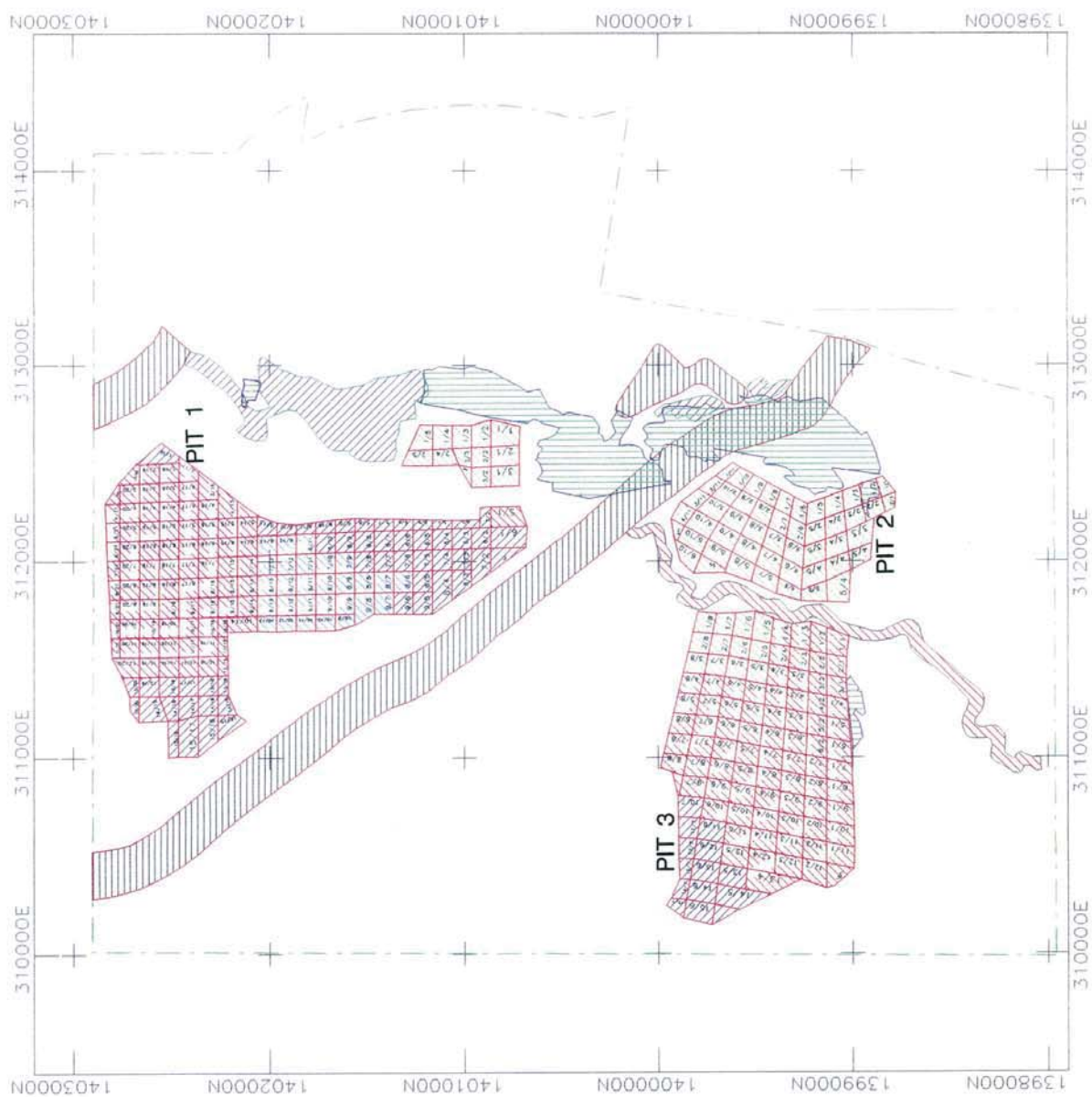






TABLE 1.1  
SUMMARY OF SCHEDULED VOLUMES BY PIT AND COMBINED TOTALS

Year	Pit 1			Pit 2			Pit 3			Total			
	Waste (kbcm)	ROM Coal (kt)	ROM Ratio (bcm/t)	Waste (kbcm)	ROM Coal (kt)	ROM Ratio (bcm/t)	Waste (kbcm)	ROM Coal (kt)	ROM Ratio (bcm/t)	Waste (kbcm)	ROM Coal (kt)	ROM Ratio (bcm/t)	Total Material (kbcm)
1	6116	875.5	6.99	7478.8	1090.6	6.86				13595.6	1966.1	6.92	15000
2	6335.9	1023.3	6.19	7134.1	1110.9	6.42				13470	2134.2	6.31	15000
3	8541.6	1513.6	5.64	4586.9	1106.5	4.15				13128.5	2620.1	5.01	15000
4	7736.8	1434.1	5.39	5445.6	1110.5	4.9				13182.4	2544.6	5.18	15000
5	6525.6	1399.1	4.66	353.2	686.5	0.51	5901.6	1021.7	5.78	12780.4	3107.3	4.11	15000
6	6254.4	1337.8	4.68				4097.7	1038	3.95	10352.1	2375.8	4.36	12048
7	6029.6	1341.2	4.5				5568.2	999.2	5.57	11597.8	2340.4	4.96	13269
8	5328.3	1338.8	3.98				6309	1057.1	5.97	11637.3	2395.9	4.86	13448
9	4401.2	1340.4	3.28				5050.3	1032.7	4.89	9451.5	2373.1	3.98	11147
10	4374.3	1366.8	3.2				3643.8	1071.7	3.4	8018.1	2438.5	3.29	9760
11	5256.6	1015.5	5.18				8266.6	1051.7	7.86	13523.2	2067.2	6.54	15000
12	5071.5	1336.6	3.79				3448.1	1055.8	3.27	8519.6	2392.4	3.56	10229
13	6607.9	1353.6	4.88				4267.3	1080.8	3.95	10875.2	2434.2	4.47	12614
14	6966.9	1340.6	5.2				5917.2	1083.3	5.46	12884.1	2423.9	5.32	14615
15	7775.6	1331.7	5.84				4155.3	1057.6	3.93	11930.9	2389.3	5	13637
16	5987	1120	5.35				7449.5	1068.6	6.97	13436.5	2188.6	6.14	15000
17	6800	1052	6.46				6666.7	1094.1	6.09	13466.7	2146.9	6.27	14980
18	7548.7	1163.8	6.49				5889.6	1022.2	5.76	13438.3	2186	6.15	15000
19	8586	1293.6	6.64				4789.3	980.7	4.88	13375.3	2274.3	5.88	15000
20	13616	1763.4	7.72							13616	1763.4	7.72	14875
Total	135861	25742	5.28	24999	51.5	4.9	81420	15715	5.18	242280	46562	5.2	275539

Note: Total Movement (kbcm) = Waste (kbcm) + ROM Coal (kt) ÷ 1.4  
1 bcm coal weighs 1.4 tonnes

#### 1.4

The mine infrastructure including the coal preparation plant, rail loading facilities, offices and workshops have been established in accordance with the development consent conditions of 1989 and provide sufficient facilities for the maximum capacity of the proposed operation (refer **Appendix 3- original EIS**). There are no proposed changes to the raw coal handling and preparation facilities on the site. The washing plant has sufficient capacity to cater for the proposed expansion. When the mine reaches maximum production an overland conveyor may be installed to transport product coal from the washery to the rail loop eliminating internal road transport of product coal. If the total capacity of the site's coal preparation plant and coal handling facilities are not absorbed, the Company may seek to wash and load other Company's coal on the Rixs Creek site, subject to all relevant approvals.

Experience gained since the Rixs Creek coal mine commenced has demonstrated that the predictions of dust and noise emissions made prior to operation of the mine were conservative. Environmental monitoring at the mine has been continuous and intensive since before operations commenced on the site. This has provided detailed measurements that have illustrated that for noise and dust in particular, the modelled "area of affectation" defined for the mine is larger than is required to meet the legislative criteria adopted (refer to **Appendix 5 - original EIS**). Similarly, Camberwell Open Cut, located immediately north of Rixs Creek, has accumulated similar monitoring experience that reflect much lower impacts than those predicted by modelling.

For this study therefore, actual monitoring results from both the Rixs Creek and Camberwell operations have been superimposed on predictive models for the proposed expansion in order to gain a more realistic interpretation of potential noise and dust impacts. The Camberwell operation is considered suitable for this purpose given its proximity to Rixs Creek which enables a meaningful comparison of weather, topography and types of materials being moved. Additionally the current Camberwell operation is equivalent to the proposed Rixs Creek expansion in terms of areal extent, production rate and types of equipment utilised.

Rixs Creek are, therefore, proposing that any condition of development consent requiring the Company to purchase affected land be based on the affectation determined by monitoring of



the mining operation being in excess of the limits used to set the current "area of affectation". It is proposed that the predicted area of affectation as defined in the 1989 development consent no longer apply. The existing rights, however, under the 1989 consent of the nominated land owners who have not yet exercised their acquisition rights will be maintained (refer to Appendix 10 - original EIS).

In summary the main components of the adoption of the alternative mine plan and proposed expansion at Rixs Creek (as were proposed for the original mine plan) include:

- the mining capacity being increased to 15 million bank cubic metres of material per year resulting in a production rate of approximately 1.5 Mtpa of saleable coal;
- removal of restrictions of operating times to allow mining 24 hours per day, 7 days per week, up to 365 days per year;
- additional equipment levels including a dragline;
- increases in manning levels on-site of approximately 46 to 50 personnel; and
- removal of surface restrictions in the whole of the area encompassed by Coal Lease 352 and consent to mine to the limits of impact as defined by the alternative mine plan.

## **1.2 PROFILE OF BLOOMFIELD COLLIERIES**

Refer to original EIS for this information.

## **1.3 BACKGROUND**

Refer to original EIS for this information.

## 1.4 NEIGHBOURING COAL MINES AND EXPLORATION AREAS

Refer to original EIS for this information.

## 1.5 APPROVALS HELD AND TO BE OBTAINED

Refer to original EIS for this information.

## 1.6 JUSTIFICATION FOR THE DEVELOPMENT

Refer to original EIS for the justification of expanding mining operations at Rixs Creek.

The adoption of the alternative mine plan and the applicant's change in focus has arisen as a result of submissions received in response to the public display period of the original EIS. Of particular concern was a comment from the Department of Mineral Resources contained in their letter of 15 February, 1995 . The letter (attached as **Appendix 3**) says in conclusion:

*"The mine development preferred and proposed by Bloomfield Collieries Limited in this EIS maximises resource recovery but falls short of achieving this Department's requirements for definitive mine planning, responsible mine development and progressive rehabilitation. This position was advised to the Company on 25 August 1994 and to the Department of Planning on 31 August 1994 in response to the draft EIS.*

*The alternative mine plan, which is shown in the EIS is conceptually supported by the Department and has the potential to mitigate against those impacts of concern to the Department. However, the EIS does not identify nor address environmental impacts of this alternative mine plan".*

Given this position taken by the Department of Mineral Resources, Bloomfield has written to the Minister for Planning and the Minister for Housing, to inform the Minister that they would not pursue the original mine plan, nor would they appeal any decision that may be made in restricting mining activities to the alternative mine plan (letter attached as **Appendix 3**). It was further pointed out in this letter that the total saleable output from the mine will be reduced by about 24 million tonnes of coal which will be sterilised by the adoption of the alternative



mine plan.

This supplementary document has therefore been prepared to support an amended application which focuses on the alternative mine plan. Features of this alternative mining plan include:

- mine plan layout and scheduling to recover 30 Mt of product coal;
- lower overburden to coal ratios;
- volume of out of pit dumping is reduced;
- there is less necessity to close the New England Highway for blasting;
- the final void of Pit 3 will be self draining;
- the final voids will be smaller.

The pit layout of the alternative mine plan as shown in **Figure 28** is based upon the same three pits as in the original mine plan. The mine scheduling has been calculated on the same rate of nominal material movement of 15 million bcm per year. The mine has been designed on the basis to minimise slope and dump heights. This was done in order to reduce visual impact, to speed the rate of rehabilitation of out-of-pit dumping and to reduce the effect of noise from dumping operations. In pit dumping will be commenced as soon as practicable to minimise both haul distances and the size of the final void.

## **1.7 LIAISON WITH GOVERNMENT AND COMMUNITY ORGANISATIONS**

Refer to original EIS for this information.

Subsequent to the public exhibition of the original EIS, the Company has had ongoing discussions with the Department of Planning, Department of Mineral Resources, CaLM and Singleton Council.

## **1.8    FORMAT OF THE IMPACT STATEMENT**

Refer to original EIS for this information. This supplementary document follows the same format and utilises the same section headings to that of the original.

## **1.9    STUDY TEAM**

Refer to the original EIS for this information.



## **SECTION 2 : EXISTING ENVIRONMENT**







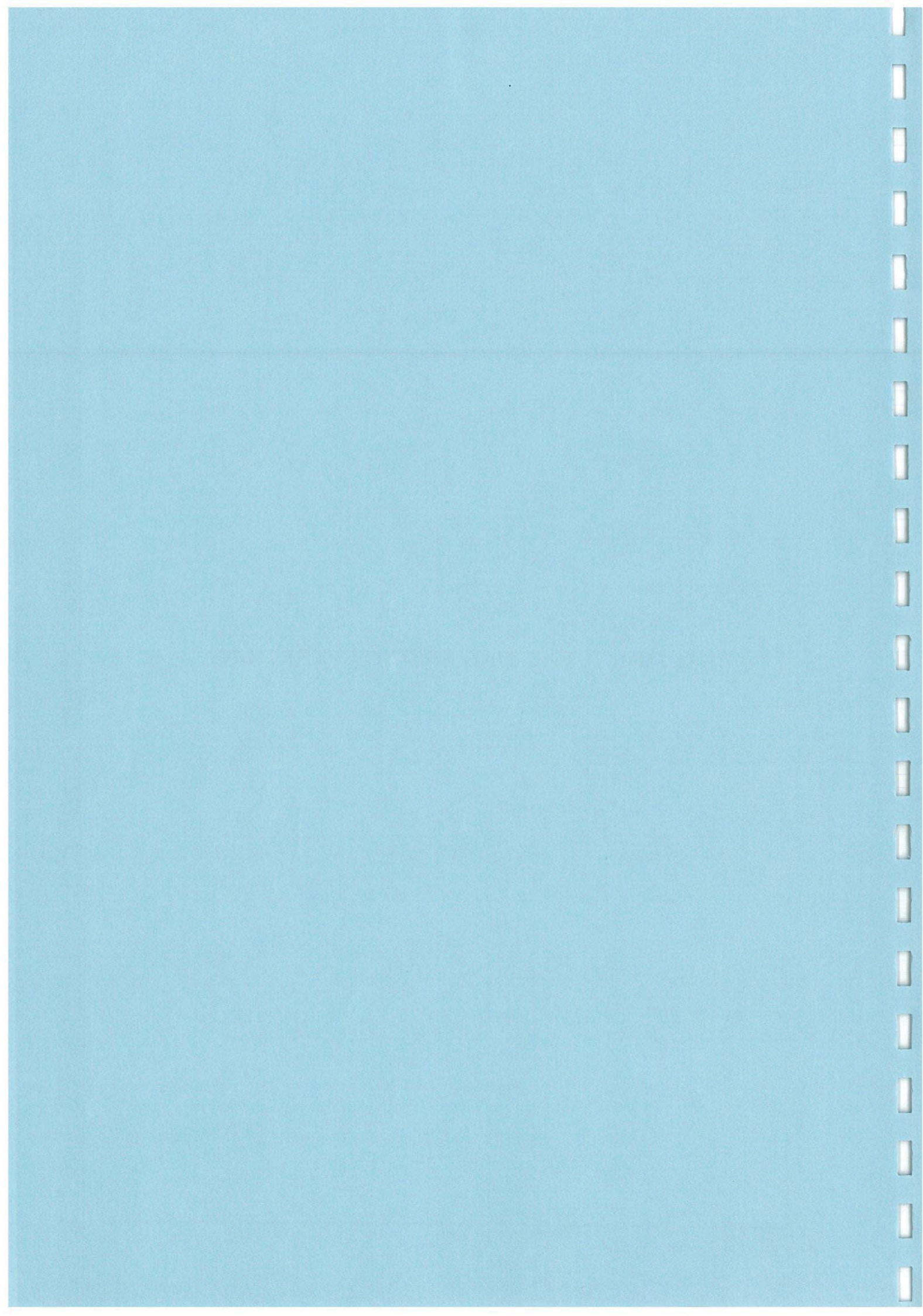
**SECTION 2 : EXISTING ENVIRONMENT**

The Existing Environment section of the original EIS describes, in detail, the physical, biological, social and cultural environment of the entire Rixs Creek lease area. This whole section is therefore considered adequate for the purposes of assessing both mine plans. For information on any sub-heading within this section please refer to the original EIS.



### **SECTION 3 : EXISTING MINING OPERATIONS**





### SECTION 3 : EXISTING MINING OPERATIONS

The Existing Mining Operations section of the original EIS describes, in detail, the current open cut mining operations at Rixs Creek as well as the coal handling, preparation and transportation of product coal. Current water management, rehabilitation status and environmental monitoring programmes are also covered. This whole section is therefore considered adequate for the purposes of assessing both mine plans. For information on any subheading within this section please refer to the original EIS.

#### 3.1 PRESENT MINING OPERATIONS

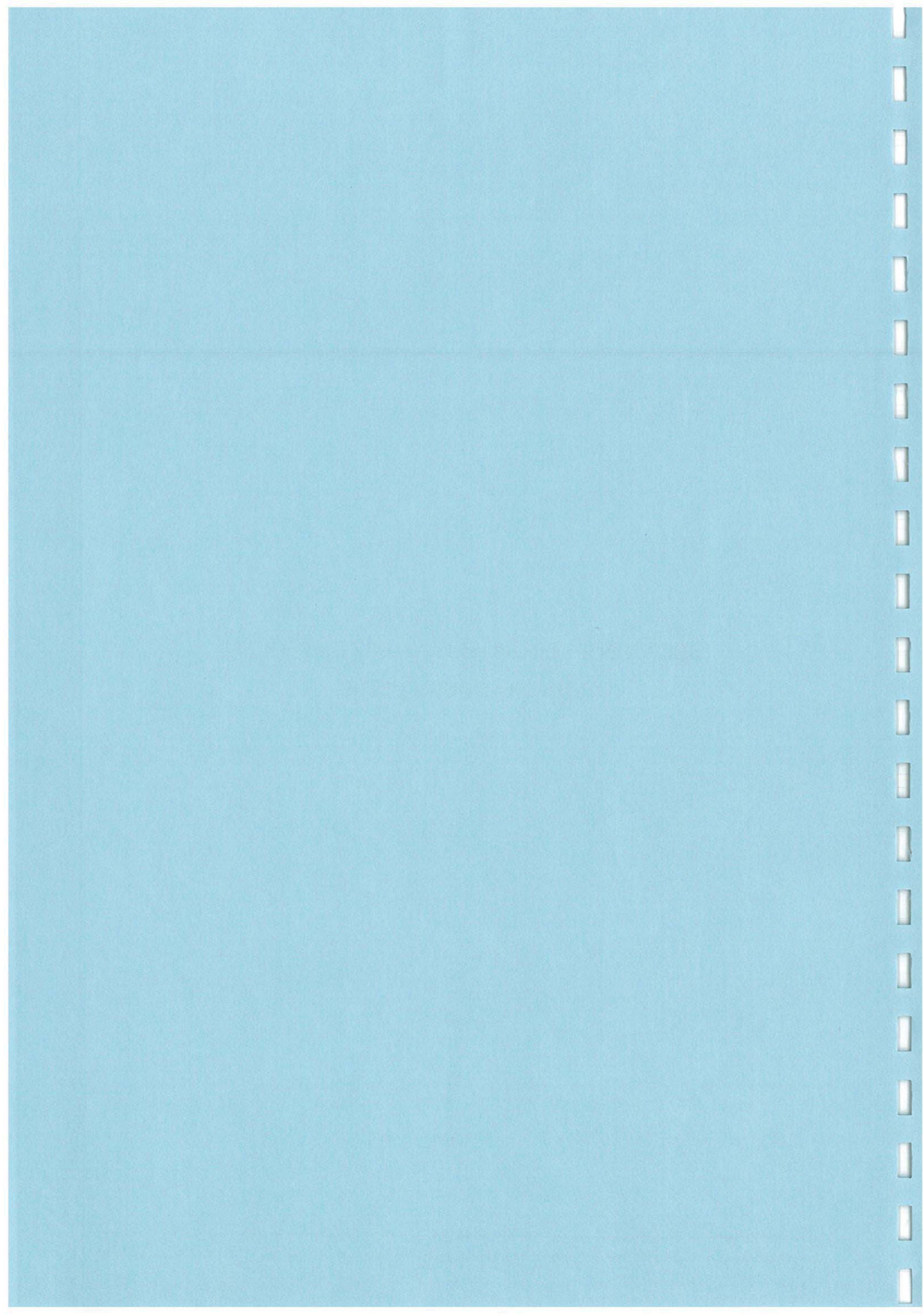
Mining on the Lease is currently taking place on both the northern and southern sides of the New England Highway. The simultaneous operation of two pits is consistent with the existing development consent of 1989 and current approved plans. The alternative mine plan encompasses a continuation of this current practice.





## **SECTION 4 : PROPOSED AMENDMENTS TO MINING OPERATIONS**







## 4.1

### SECTION 4 : PROPOSED AMENDMENTS TO MINING OPERATIONS

#### 4.1 GEOLOGY AND COAL RESOURCES

##### 4.1.1 Geology

Refer to original EIS for this information.

##### 4.1.2 Coal Reserves and Resources

The total in-situ reserves in the alternative mine plan total approximately 46 Mt. Total product coal within this mine plan has been estimated to be in the order of 30 Mt. **Table 4.1** identifies overburden, in-situ and product coal volumes for the alternate mine plan on a pit by pit basis.

The DMR sought justification for not mining underneath Rixs Creek. The overburden ratio for the coal that is left under Rixs Creek, south of the Highway is high at 9.2:1. In addition, despite the fact that the original mine plan in the earlier EIS for Rixs Creek included mining of the coal under the creek, the development consent of 1989 put the barriers in place either side of the creek. No attempt has been made to plan the mine to conflict with this condition of the original consent. Agreements currently in place with downstream water users assume this condition and are included in **Appendix 1**.

TABLE 4.1 RIXS CREEK COAL RESERVES						
Pit Number	Total Overburden ('000 bcm)	In-situ Coal ('000 tonnes)	Product Coal ('000 tonnes)	Total Coal Thickness (m)	Insitu Coal Ratio (bcm/t)	Product Coal Ratio (bcm/t)
1	135860	25742	16732	24	5.28	8.12
2	24998	5105	3318	9	4.9	7.54
3	81420	15715	10215	22	5.18	7.97
Total	242279	46562	30266	28	5.2	8
Source: Select Mining Services Pty Limited Note: refer to Figure 28 for pit location and layout						

### 4.1.3 Coal Quality

Refer to original EIS for this information.

## 4.2 CHEMICAL CHARACTERISTICS OF OVERBURDEN

Refer to original EIS for this information.

## 4.3 PROPOSED MINE PLAN

### 4.3.1 Introduction

**Note:** This section has been amended to emphasise the alternative mine plan, however, it should be noted that the alternative plan occurs within the boundaries of the original mine plan with the only difference being that the alternative plan involves a shallower pit over a smaller area, thus reducing the size and areal extent of out-of-pit dumps and the size of the final voids.

An alternative conceptual mine plan has been developed for Rixs Creek. This plan indicates that mining will take place in three pits: Pit 1 - north of the New England Highway, Pit 2 - south of the New England Highway and east of Rixs Creek, and Pit 3 - south of the New England Highway and to the west of Rixs Creek (refer **Figure 28**). Coal from the southern mining areas (Pits 2 and 3) will be transported across the New England Highway over the existing bridge. For Pit 3, Rixs Creek will be crossed using a culvert of a design approved by Department of Water Resources to link this pit with the coal haulage route for Pit 2..

The mine will be equipped and have personnel to move a total volume of mined material of 15 million bank cubic metres per year. This will contain approximately 2.5 Mt of ROM coal.

The current infrastructure at Rixs Creek Open Cut is capable of processing 2.5 Mt of ROM



## 4.3

coal when working hours are increased up to 24 hours a day, 365 days per year. In practice the operation will generally be worked Monday to Friday with some additional make-up provided by weekend overtime.

### 4.3.2 Constraints to Open Cut Mining

Refer to original EIS for this information.

### 4.3.3 Equipment and Proposed Mining Method

Refer to original EIS for this information. The alternative mine plan will be worked using similar equipment and scheduling to that of the original plan. At present mining is carried out on site using scrapers loaders and trucks. The proposed expansion of operations will result in the introduction of either a medium sized dragline with the use of a medium shovel/truck prestrip or alternatively a large shovel/truck operation employing two small draglines.

The equipment list that is provided in the EIS is definitive in the sense that all the types that may be used are listed. It is not definitive in the sense that a particular suite of equipment will constantly be used.

For the prediction of impacts of the mine, the worst case for each set of equipment that could attain the proposed maximum output is used. It is proposed the mine be limited to a total material movement of 15 M bank cubic metres per year. Combinations of the listed equipment that could achieve this output, have been used for impact assessment or prediction and the worst case chosen.

### *Mine Scheduling*

The alternative mine plan (Figure 28) shows the envisaged sequence of operations. For scheduling purposes three mining areas have been designated. Neither the New England

#### 4.4

Highway nor Rixs Creek south of the highway will be disturbed by mining.

Appropriate working levels have been defined based on the reserves in each pit. These working levels have been used to create a mining sequence through each pit where each bench is advanced along each operating strip. These benches have been scheduled to be excavated more or less simultaneously to create a "staircase" effect along the strips. Each "step" has a length of 300 m and will be fully mined before mining commences on the next step on the bench below. In each pit there is always at least two sets of advancing faces to provide maximum flexibility for blending and equipment working positions. This approach maximises the available coal at any time, minimises the waste removed in advance and maximises the available in-pit dump room.

With the alternative mine plan two pits will be operated at all times until the last year of the operation. Pits 1 and 2 will be mined simultaneously. When Pit 2 is exhausted, production will commence from Pit 3.

#### *Mining Activities*

The mining methods utilised for the alternative mine plan will be the same as those described in the original EIS.

#### **4.4 PROPOSED COAL HANDLING AND PREPARATION**

Refer to original EIS for this information.

#### **4.5 PROPOSED REJECT HANDLING AND DISPOSAL**

Refer to original EIS for this information.



#### 4.6 TRANSPORTATION OF PRODUCT COAL

Refer to original EIS for this information.

#### 4.7 PROPOSED WATER MANAGEMENT

##### 4.7.1 Introduction

Refer to original EIS for this information.

##### 4.7.2 Diversion of Uncontaminated Water Catchments

Refer to original EIS for this information.

##### 4.7.3 Contaminated Water Management

Refer to original EIS for this information.

There has been a concern expressed about the stormwater management of dumps and the likely contamination, from erosion, of water flows in Rixs Creek and Deadman's Gully (refer to **Figure A**). The situation of likely contamination applies in the current mining operation with respect to Rixs Creek, to the north of the New England Highway. Uncontaminated water flows from upstream of the mine operations and adjacent to it, are currently directed by drainage constructed around the mine so that the water flows into Rixs Creek. Within all the mine operations, contaminated water is contained and used within the mine.

There is an agreement with the water users on Rixs Creek, south of the Highway, concerning the water quality and quantity allowed to flow (refer to **Appendix 1**). This agreement requires Rixs Creek to notify downstream users prior to release of water under EPA licence conditions and flushing with clean water thereafter.

## 4.6

Rixs Creek will be protected from the intrusion of the toe of spoil dumps. This was not clear on the small scale plans in the original EIS but the 20 m barrier and adequate drainage control along the toe of the spoil piles will be preserved to protect Rixs Creek.

### 4.7.4 Rehabilitation Area Runoff

Refer to original EIS for this information.

### 4.7.5 Potable Water

Refer to original EIS for this information.

### 4.7.6 Water Balance

In response to some queries regarding the rainfall and runoff co-efficient figures utilised in the original EIS the water balance has been recalculated for the alternative mine plan and is provided in this section.

The rainfall figures used in the Water Balance calculations presented in the EIS were taken from previous reports prepared for the mine namely: Statement of Environmental Effects for the Rail Loading Facilities (Sinclair Knight and Document to Support the Clean Coal Stockpile and Rail Loadout Bin (1992)). The source of the figures was not referenced in the EIS but should have been. The adoption of these figures led to an overestimate of 90 percentile rainfall and an underestimate of 10 percentile. This is not considered significant and is of little consequence for the water management strategy to be used for the proposed mine. However, for the satisfaction of CALM, and to provide additional information on the alternative mine plan, the water balance has been recalculated utilising percentile rainfall figures from Bureau of Meteorology data for Singleton. Data is for Singleton Post Office, values are based on the time interval 1891 to 1969 from 85 years of records.









#### 4.7

These figures are:

10 percentile dry year	-	441 mm
50 percentile average year	-	695 mm
90 percentile wet year	-	949 mm

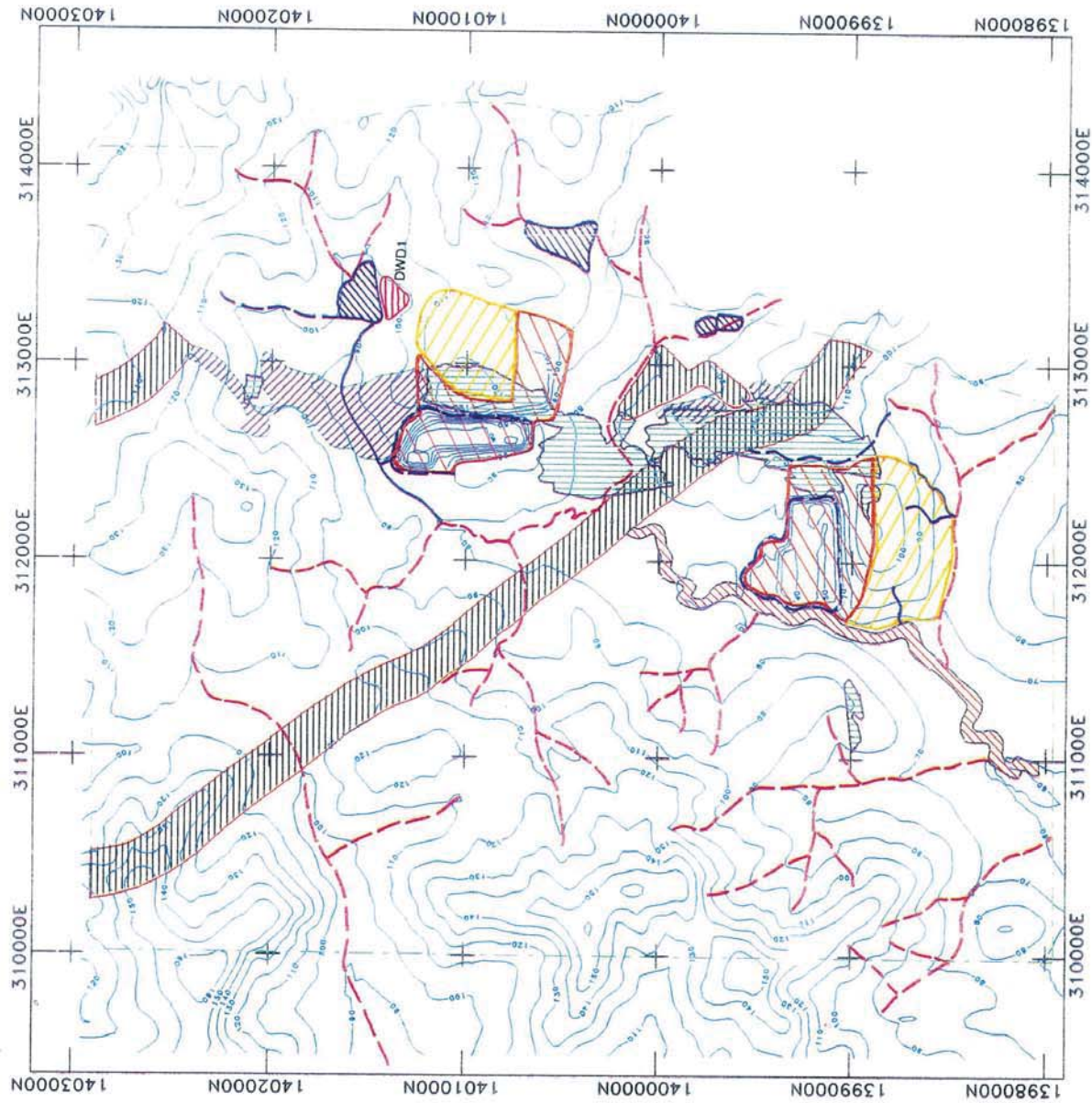
The results of these recalculations are given in **Table 4.2**.

The figures in **Table 4.2** are for the alternative mine plan with the pit areas calculated from **Figures 29 - 32**. The smaller pit areas in this plan compared to the original plan result in lower annual runoff figures. These calculations have been made assuming that runoff from active mining pits and adjacent backfill spoil areas at angle of repose contribute to pit water. Areas reshaped to final contours are rehabilitated or undergoing rehabilitation. Runoff from these surfaces is directed to sediment basins/structures where revegetation is not fully established or has become part of the clean water runoff catchment where rehabilitation is complete.

With the alternative mine plan total pit water make is reduced because pit catchments are less. Whilst the result of less pit water is less water supply and a greater negative water balance, it should be noted that the rehabilitation areas would yield a greater quantity of water of better quality. This water could be harvested, if required, to the benefit of the water balance.







- LEGEND:
- EXISTING DRAINAGE LINES
  - PROPOSED DRAINAGE LINES
  - PROPOSED CONTOUR DRAIN
  - ACTIVE MINING AND DUMPING AREA
  - REHABILITATED AREA
  - CLEAN WATER DAM
  - DIRTY WATER DAM

LEGEND

- Underground Workings
- Barriers - Highway, Railway & Coke Ovens
- Open Cut Workings
- Rixs Creek Barrier
- Lease Boundary

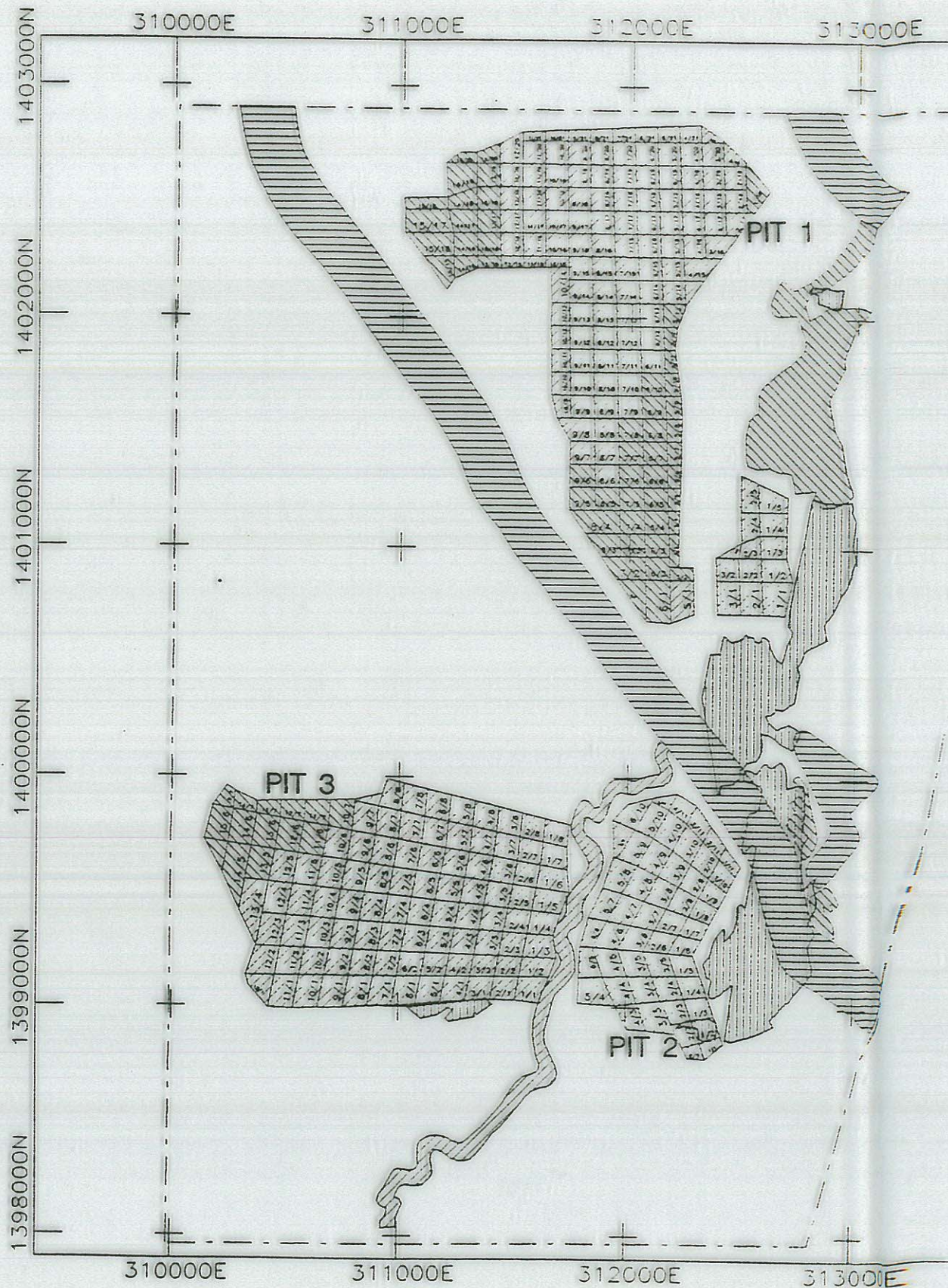
NOTE: NOT TO SCALE - FOR DIAGRAMMATIC PURPOSES ONLY



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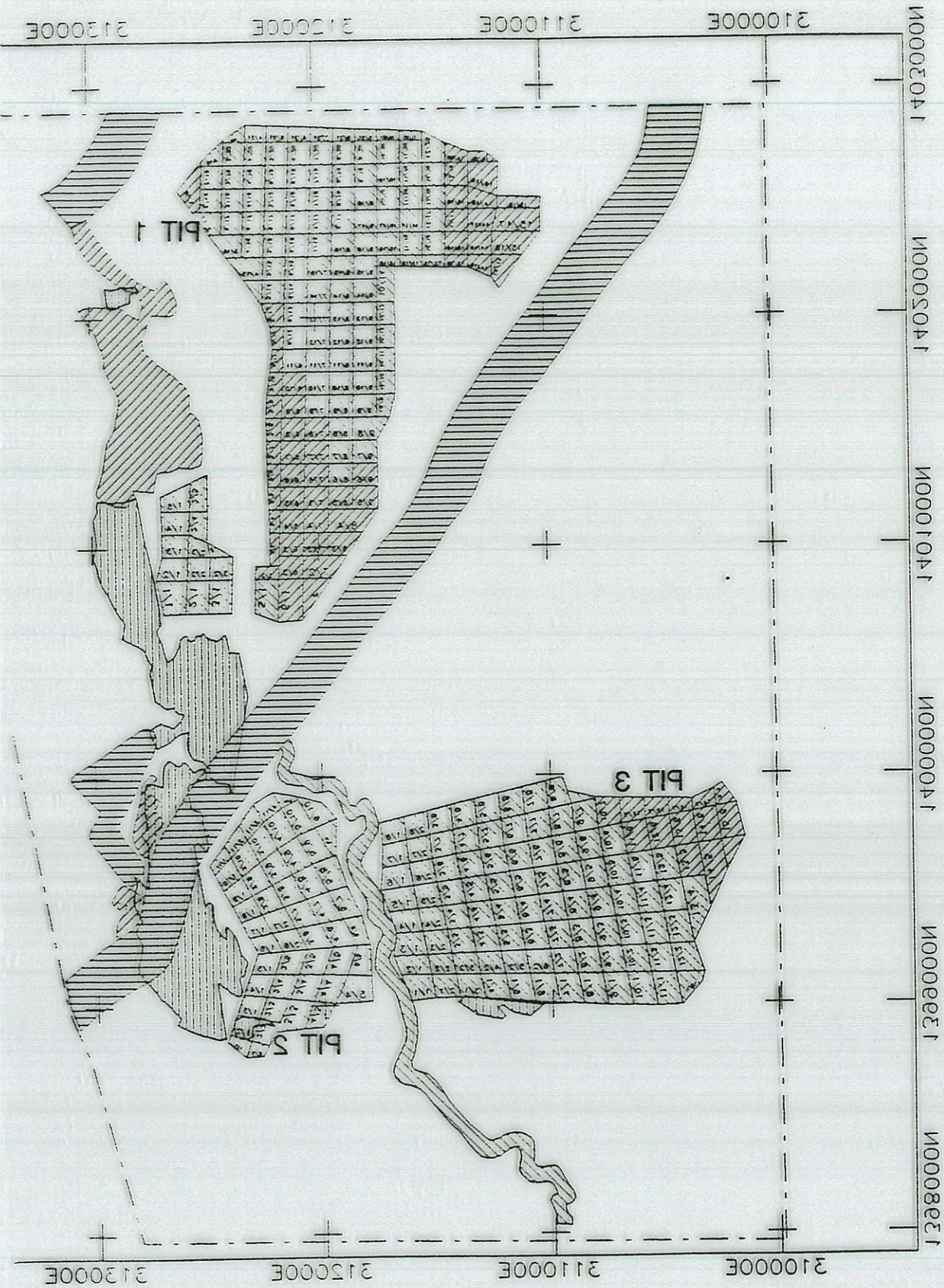
NOTE: PLAN SHOWS LIMITS OF BASE OF PIT - NOT SURFACE DISTURBANCE



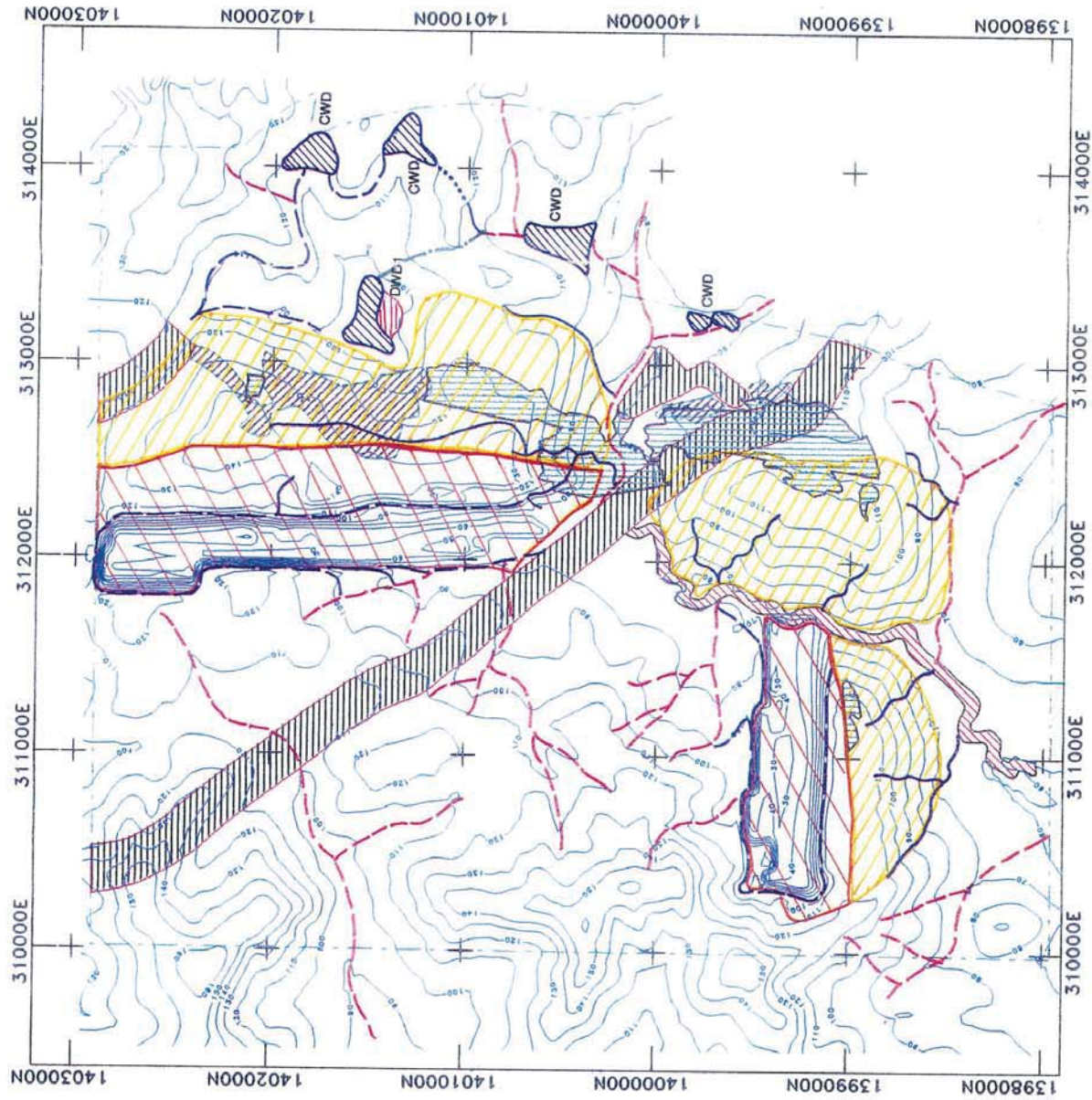
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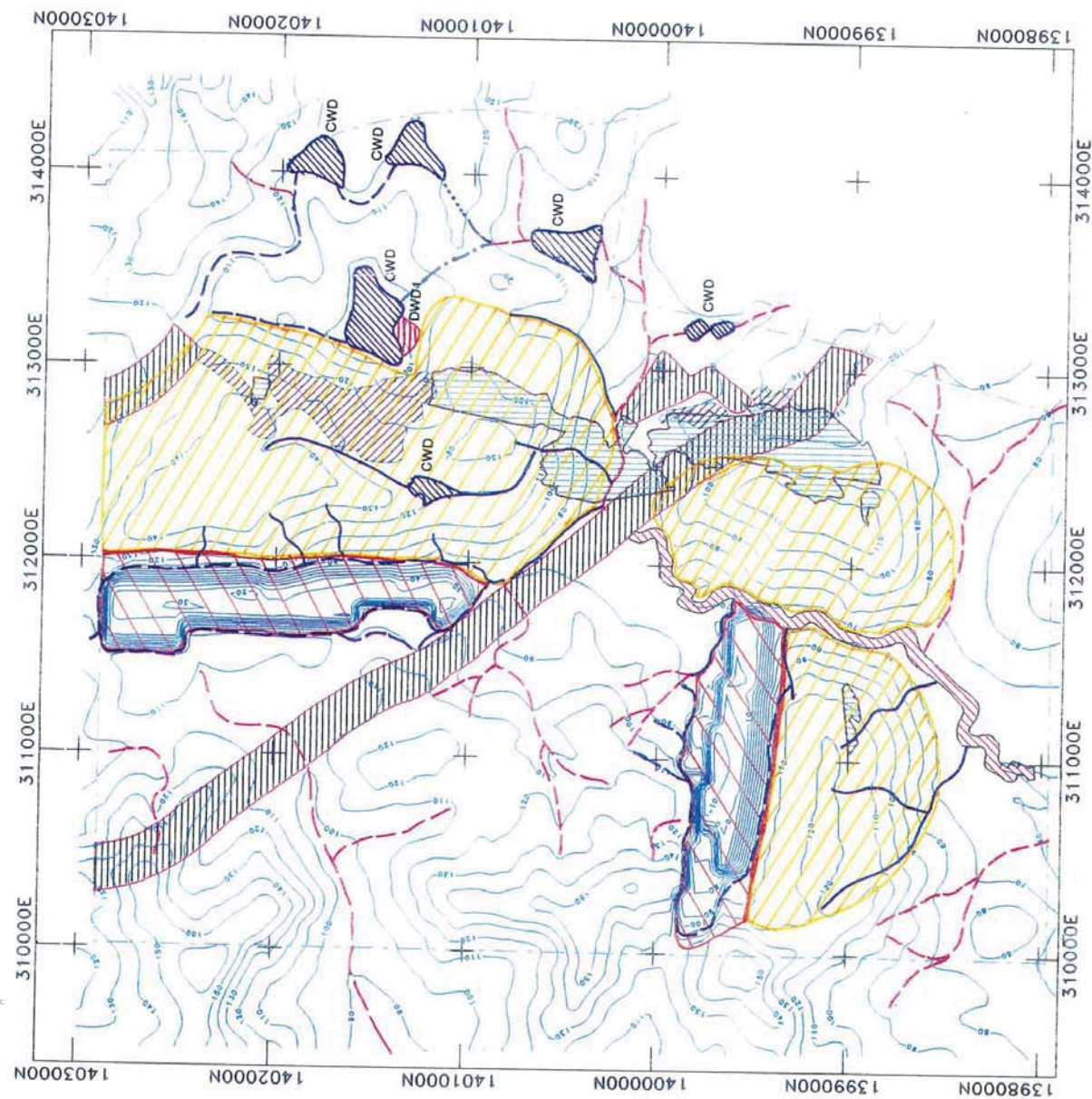
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LANDFORM AT END OF YEAR 8 -  
ALTERNATIVE MINE PLAN

FIG. 30







- LEGEND
- EXISTING DRAINAGE LINES
  - PROPOSED DRAINAGE LINES
  - PROPOSED CONTOUR DRAIN
  - PROPOSED DRAINAGE CHANNEL
  - PROPOSED PUMP LINE
  - ACTIVE MINING AND DUMPING AREA
  - REHABILITATED AREA

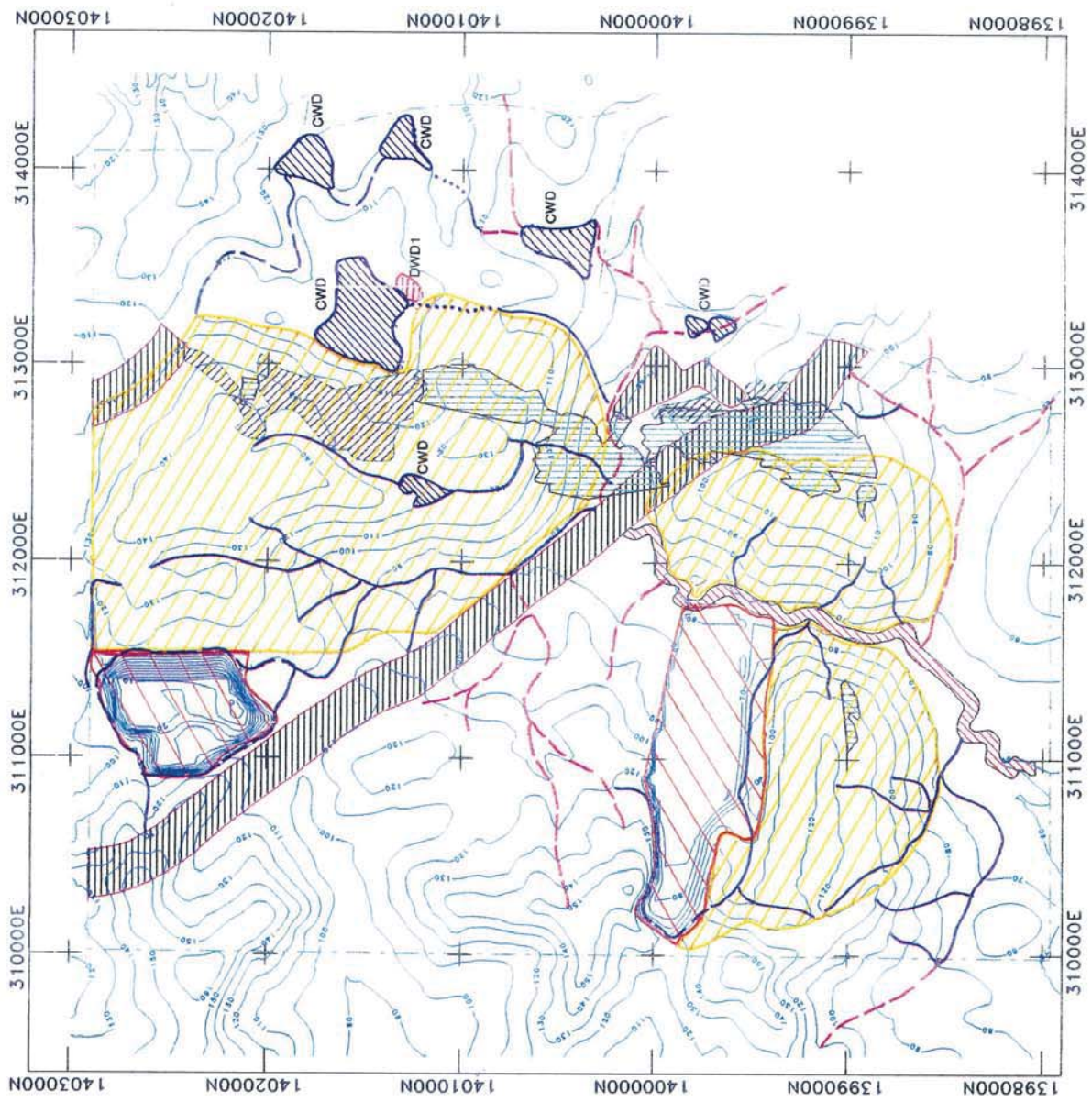
# LEGEND

- Underground Workings
- Barriers - Highway, Railway & Coke Ovens
- Open Cut Workings
- Rixs Creek Barrier
- Lease Boundary
- CLEAN WATER DAM
- DIRTY WATER DAM

NOTE: NOT TO SCALE - FOR DIAGRAMMATIC PURPOSES ONLY







- LEGEND:
- EXISTING DRAINAGE LINES
  - PROPOSED DRAINAGE LINES
  - PROPOSED CONTOUR DRAIN
  - PROPOSED DRAINAGE CHANNEL
  - PROPOSED PUMP LINE
  - UNSHAPED MINING AND DUMPING AREA
  - REHABILITATED AREA

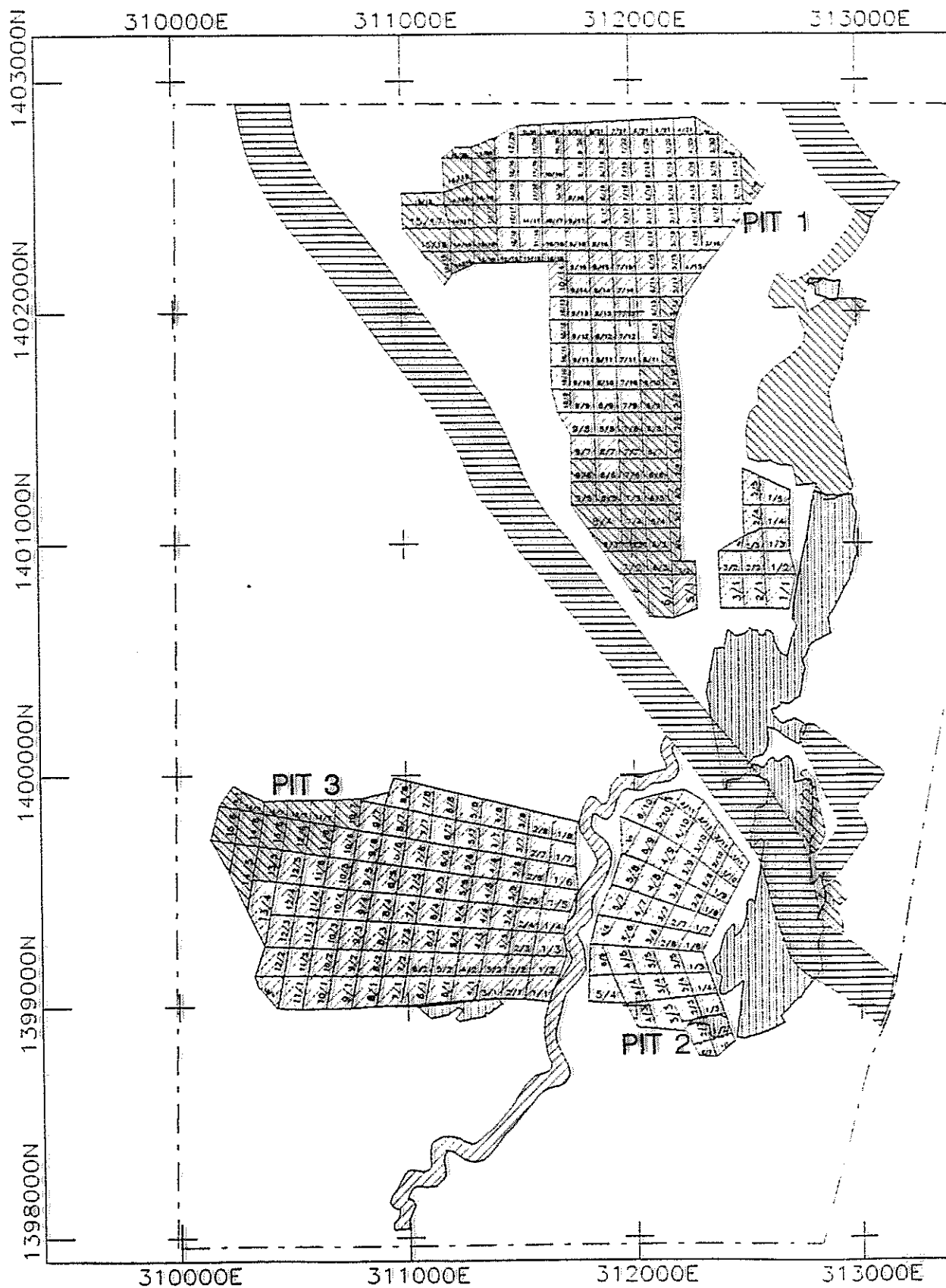
LEGEND

- Underground Workings
- Barriers - Highway, Railway & Coke Ovens
- Open Cut Workings
- Rixs Creek Barrier
- Lease Boundary
- CLEAN WATER DAM
- DIRTY WATER DAM

NOTE: NOT TO SCALE - FOR DIAGRAMMATIC PURPOSES ONLY







NOTE: PLAN SHOWS LIMITS OF BASE OF PIT - NOT SURFACE DISTURBANCE



ENVIROSCIENCES PTY LIMITED

PROJECT No. F1127



NOTE: PLAN SHOWS LIMITS OF BASE OF PIT - NOT SURFACE DISTANCE

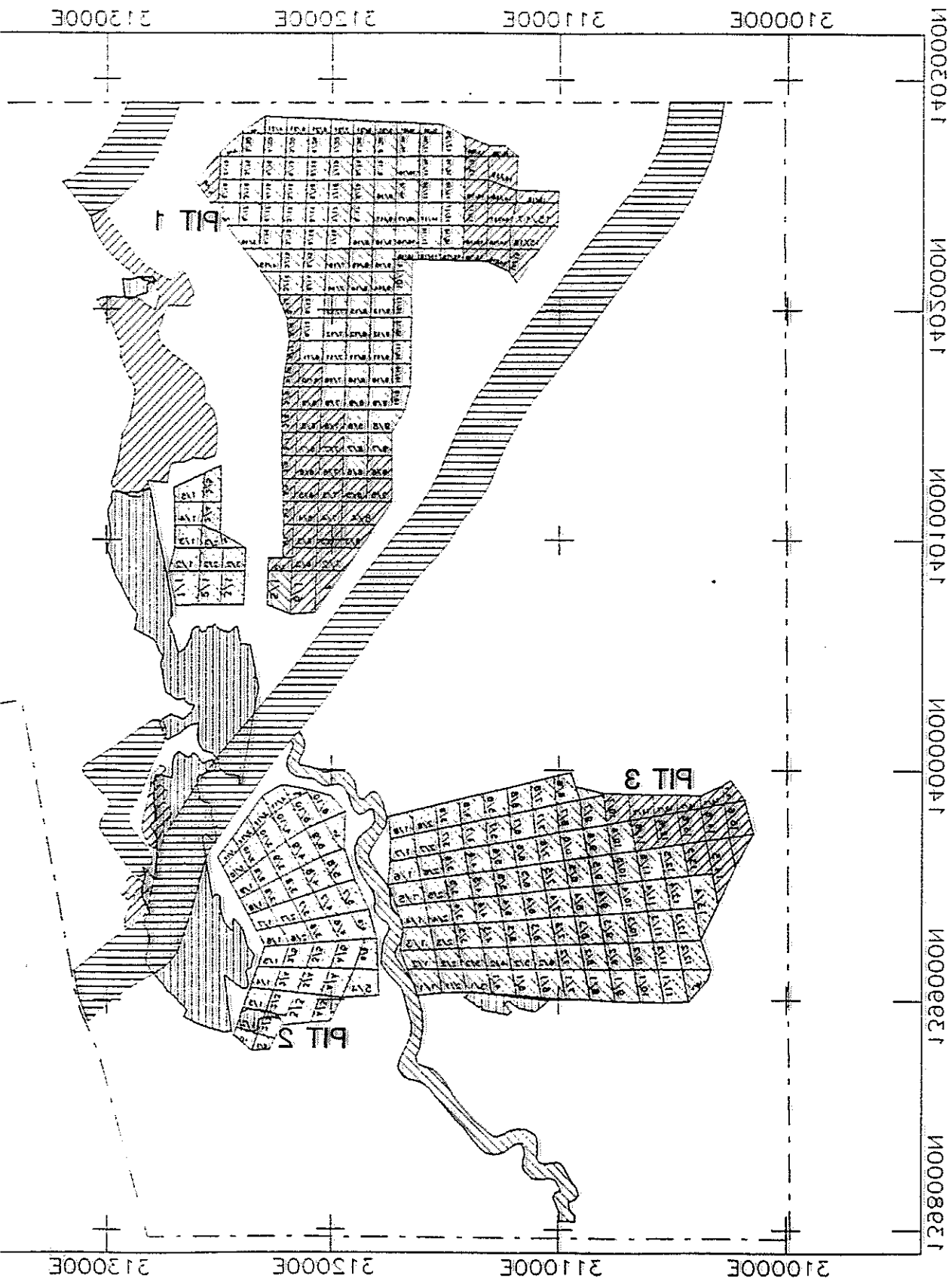




Table 4.3 indicates the areas disturbed and rehabilitated that have been used to calculate the water balance.

TABLE 4.3 ACTIVE MINING AND REHABILITATION AREAS		
YEAR	ACTIVE MINING AREA INCLUDING PIT AND ADJACENT STEEP SPOIL (Ha)	RESHAPED AREA REVEGETATED OR BEING REVEGETATED (Ha)
Year 1	54	74
Year 8	164	227
Year 15	146	349
Final	121	487

### *Runoff Co-efficients*

Co-efficient of runoff, C value, used in the water balance is 0.07 for annual runoff from a catchment. This has been calculated using formula

$$Q = \frac{CPA}{100} \text{ ML}$$

where Q is annual runoff yield in megalitres (ML)

C is co-efficient of runoff

P is precipitation using 10, 50, 90 percentiles

A is catchment area reporting to pits, so includes pit, backfilled spoil and reshaped spoil within the catchment.

As stated in the EIS:

" *Runoff is a complex component of the water balance equation and varies according to such factors as antecedent moisture content, infiltration rate, slope, rainfall intensity, and time of concentration of the catchment. Hydrological studies at the Soil Conservation Service Scone Research centre analysed 17 years of rainfall and runoff records. Annual runoff co-efficients of approximately 3 per cent were reported by Junor (1977). Rowley (1981) adopted runoff co-efficients of 5 to 10 per cent in the water management model for Drayton Mine where storages have been adequate to ensure nil discharge. Thus a runoff co-efficient of 0.07 has been applied for the calculation of catchment yields.* "

The adoption of runoff co-efficients is arguable and the adoption of the figure chosen is based

on published data.

*Co-efficient of runoff during peak storms.*

CaLM also proposed that higher values of co-efficients of runoff for calculating peak rates should be adopted. This is quite correct when considering peak runoff events in short duration, higher intensity storms. Rixs Creek would use these higher values of C (0.5 - 0.7) in the design of water management structures themselves for such dimensions as freeboard, channel and spillway width.

There is a comment on page 4.15 (original EIS) that dirty water dams are designed to contain a 1 in 10 year, 1 hour storm event as has been required in the past by EPA. Dimensions of the structures themselves are commonly built to 1 in 20 year standards, with freeboard providing to a 1 in 50 year standard or better. This situation will be maintained.

*Proposed Water Management*

Whilst fine detail was perhaps absent from the original EIS, it is noted that Rixs Creek has committed to follow the principles established in its existing mining practice. The Soil Conservation Service has commented that the current situation is sound. Especially important points are:

- segregation of contaminated/uncontaminated waters
- use of most contaminated water first.

Thus water balance figures are elevated by clean water catchment dams which would overflow and freshen streams in wetter years, but would provide backup water supply in years when groundwater and runoff into pit fall short.

#### 4.8 PROPOSED RELOCATION OF MIDDLE FALBROOK ROAD

Refer to original EIS for this information.



#### **4.9 WORKFORCE AND PROPOSED WORKING HOURS**

Refer to original EIS for this information.

#### **4.10 PROPOSED REHABILITATION**

##### **4.10.1 Introduction**

Refer to original EIS for this information.

##### **4.10.2 General Rehabilitation Procedures**

Refer to original EIS for this information. The same general procedures will be utilised for the rehabilitation of the site. **Figures 29, 30, 31 and 32** (landform plans) have been amended with additional colour coding to represent the planned rehabilitation schedule for the alternative mine plan. These plans now show the extent of disturbed area, including the mining pit itself, and the rehabilitated area for years 1, 8, 15 and at the completion of mining.

**Figures B and C** have been included in this document to indicate schematically the proposed rehabilitation plan and a section through the proposed dumps respectively.

#### **4.11 EXTENSIONS TO ENVIRONMENTAL MONITORING PROGRAMMES**

Refer to original EIS for this information.

Consultation with the EPA indicate that two (2) additional dust deposition monitoring points are necessary and these will be installed as required.





## **SECTION 5 : IMPACT OF THE PROPOSAL ON THE ENVIRONMENT**

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## SECTION 5 : IMPACT OF THE PROPOSAL ON THE ENVIRONMENT

### 5.1 IMPACT ON TOPOGRAPHY, SOILS AND LAND CAPABILITY

**Note:** This section has been amended to emphasise the alternative mine plan, however, it should be noted that the alternative plan occurs within the boundaries of the original mine plan with the only difference being that the alternative plan involves a shallower pit over a smaller area, thus reducing the size and areal extent of out-of-pit dumps and the size of the final voids.

#### 5.1.1 Impact on Topography

The extraction of the coal resource by open cut methods will modify the existing topography within the mining area. Detailed features and character of the pre-mining environment will be incorporated into the post-mining landscape as closely as possible. All rehabilitated surfaces will be designed with maximum slopes of 10 degrees.

**Figure 32** illustrates the final rehabilitation contours for the alternate mine plan. Elevations for the site would be up to 40 m higher in places than that of the pre-mining topography. Swelling of mined overburden and interburden, which has been estimated to have a bulkage rate of approximately 25 per cent will contribute to this increase in elevation.

The alternate mine plan necessitates out-of-pit dumping of a total of 27,430,000 m<sup>3</sup>. The proposed locations for this are shown in **Figure 33** and would occupy a total area of approximately 217 ha. As the alternate mine plan is designed to recover shallower coal the requirement to dump out-of-pit has been reduced by approximately 60 per cent compared to the original mine plan.

**Figure 25a (original EIS)** illustrates sections through the proposed landforms. This figure indicates the progressive development of the dumps including drainage and erosion control measures. **Figures B and C** show a schematic representation of the proposed rehabilitation

## 5.2

of these dumps. Figure D illustrates cross sectional views of the original topography, the pits and the completed dumps at intervals along the New England Highway.

The landforms for the alternate mine plan have been designed to minimise slope and dump heights. The final landform for the alternate mine plan contains two voids instead of three and these are significantly reduced in size (refer to Table 5.1). In the alternate mine plan the final void in Pit 2 would be filled with waste material from Pit 3. In Pit 1 the depth of the final void has been substantially reduced compared with the original mine plan. In Pit 3 the final void has been designed to be self draining at a 1 per cent slope to the east.

TABLE 5.1 DEPTH AND VOLUME OF FINAL VOIDS						
Void	Maximum Depth (m)			Volume (Mm <sup>3</sup> )		
	Alternative Mine Plan	Original (Maximum) Plan	Ratio (%)	Alternative Mine Plan	Original (Maximum) Plan	Ratio (%)
Pit 1	110	155	71	49.95	51.9	96
Pit 3 north	-	200	-	-	36.62	-
Pit 3 south	-	160	-	-	36.56	-
Total	70	200	35	24.96	73.18	34
Note Pit 3 as shown contains two voids in the original mine plan. Table provides a total calculation for the tow voids.						

The issue of the end use of mining voids is one that is presently under review by the Department of Mineral Resources.

A working party has been formed consisting of representatives from the Department of Mineral Resources and Industry. A number of possible uses are being examined and due to the proximity of Rixs Creek Mine to the community of Singleton all possibilities exist. The end uses could include sanitary landfill (waste/garbage disposal) passive and/or active waterways and possible tunnel entry points for further mining by underground methods.

The mining method proposed allows for the instigation of a combination of end uses of the

### 5.3

voids to achieve maximum benefit to the local community. Consequently after making safe the highwalls the most likely end uses are sanitary landfill and water storage depending on the resultant hydrology and water qualities.

#### 5.1.2 Soils

Whilst open cut mining destroys the original soil profile, rehabilitation measures are employed to compensate and are aimed at creating a profile capable of establishing and sustaining vegetation cover so that pre-mining land capability is either returned or improved.

Topsoil stripping will be undertaken using dozers and scrapers. Where possible topsoil will be directly placed onto reshaped overburden to avoid stockpiling and rehandling and to thus minimise soil structural damage. Short-term stockpiles will be placed adjacent to open cut working areas. Stockpile locations will be determined to minimise rehandling distances to the rehabilitated areas and to ensure that the stockpiles will not require relocation. It is envisaged that when long term topsoil stockpiles are required, where possible, these stockpiles will be formed at depths not exceeding 2 m to maintain biological viability. The stockpiles will be revegetated according to Soil Conservation Service recommendations.

The total area to be disturbed with the alternate mine plan is approximately 450 ha. Therefore, 450,000 m<sup>3</sup> of topsoil is required to topdress the area at a depth of 0.10 m. Some 560,000 m<sup>3</sup> of topsoil will be generated from the proposed open cut stripping area. Allowing for a 10 per cent handling loss, some 504,000 m<sup>3</sup> will be available.

Topdressed areas will be revegetated promptly to minimise erosional losses.

The rehabilitated area at Rixs Creek will have a covering of topsoil sufficient in quality and depth to allow revegetation and stabilisation and the eventual development of pedological differentiation with depth.

Prior to mining commencing on new areas of the lease, more detailed soil surveys will be



[illegible]

### 5.1.3 Saline Seepage

#### 5.1.4 Land Capability and Land Use

Post mining rural land capability classification will be at least equal to pre-mining capability.

The area of land in the various land capability classes that will be subject to disturbance as a result of the alternative mine plan is shown in **Table 5.2**.

Rural Land Capability Classes	Disturbed Area	
	ha	%
Class IV	225	50.6
Class V	170	38.2
Class VI	50	11.2

The proposed operation will take place on predominantly Class IV and Class V lands. Accordingly, Class IV land will dominate the post-mining landform.

Land in the proposed mining area is currently agricultural utilised solely for grazing. Following completion of mining all land will be restored to at least its pre-mining agricultural

## 5.5

productive capacity and returned to Classes IV to VI grazing land.

### 5.2 IMPACT ON HYDROLOGY

Refer to original EIS for this information.

In response to the original EIS there was concern expressed about the quantity and quality of water that would, in episodic events, flow in the unnamed stream locally known as Deadman's Gully and which is very useful to downstream water users (refer to **Figure A**).

An assessment of the watershed of Deadman's Gully indicates that south of the New England Highway, the alternative mine will not intrude significantly into the catchment or watershed. The catchment area that lies within the lease, to the south of the Highway occupies an area of approximately 225 ha. Of this, mining within Pit 3 will disturb approximately 45 ha or 20 per cent of the total catchment area within this part of the lease. A small portion of the total watershed is north of the New England Highway and will be traversed entirely by the mine. The final landform plan (**Figure 32**) indicates that following completion of mining, water from this area will be directed to Rixs Creek. It could just as easily be directed to Deadman's Gully. However the proportion of the watershed that is effected is only a very small proportion of the total watershed.

### 5.3 IMPACT ON AIR QUALITY

Refer to original EIS for this information. Impacts on dust have been assessed as a worst case scenario, which assumes the original mine plan. These impacts could then be considered as significantly conservative for the alternative mine plan.

### 5.4 NOISE AND BLASTING IMPACT

The original EIS, in **Appendix 6**, contains a specific assessment of the noise impacts associated with the alternative mine plan. Please refer to this section for detailed information

on this issue.

Some additional work has been undertaken, at the request of the EPA, in order to determine the impact of the operation under inversion conditions combined with a north- northwest wind for the alternative mine plan. The results of this additional noise modelling are presented in **Figures E, F, G and H**. These are considered to represent the worst case situations and show that with a north-northwest wind at 4.5 m/sec together with a temperature inversion in Year 8 of the alternative mine plan, Singleton Heights would experience noise levels of between 41 and 45 dB(A) during daytime.

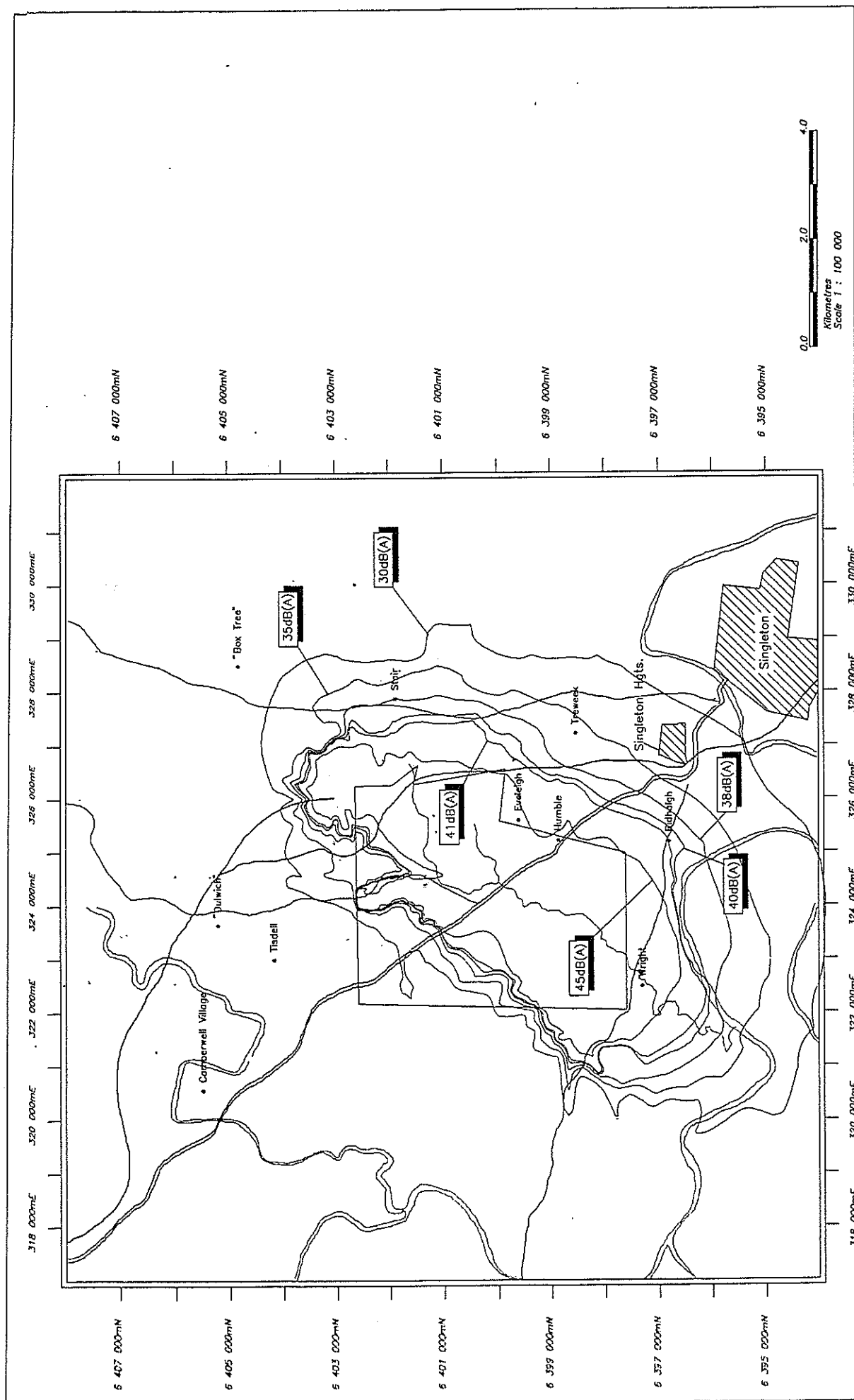
Daytime and night time mining operations are different for the proposed mine extension. To limit potential noise and visual impacts, night time mining operations (including spoils dumping) will be altered in accordance with prevailing meteorological conditions. Daytime mining operations are not as restricted, in particular, spoils dumping can occur in relatively exposed locations. Daytime mining operations commence at 6.30 am. Considering that inversion conditions can exist until 9.00 a.m. and beyond (although this is not common), received noise levels from daytime mining operations have been modelled to represent worst case conditions.

Inversion conditions and easterly air movements, as modelled for Year 22 operations, are considered most unlikely as cold air drainage during an inversion results in northwesterly air movement. This scenario has, however, been modelled as the closest receptors during this period of the mine development lie in this direction.

A northwesterly air movement of 4.5 m/sec and inversion conditions are not considered common.

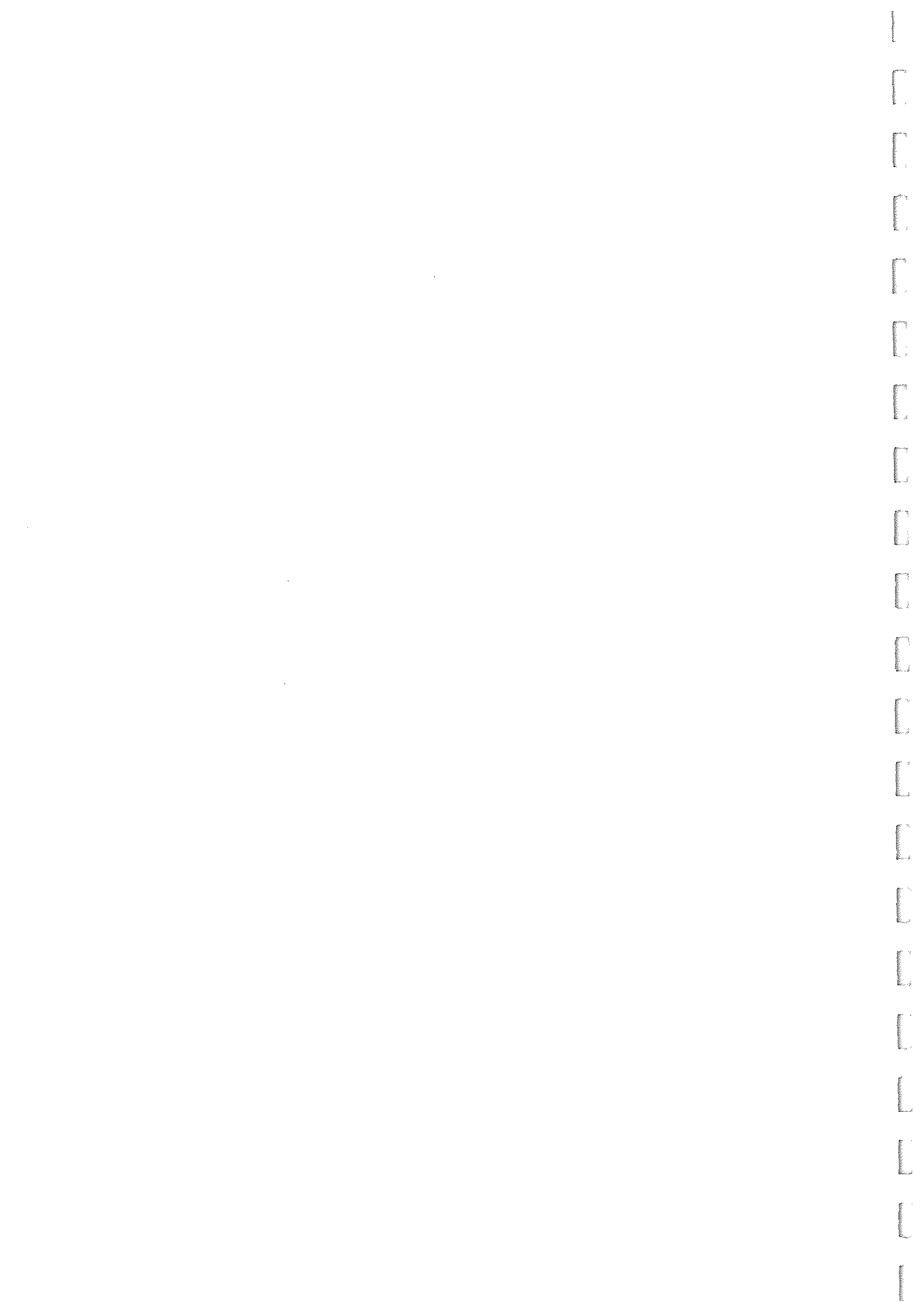
Various government bodies have suggested that more noise monitors are required to more certainly establish noise affectation. Noise monitoring will be undertaken in accordance with relevant authorities requirements and EPA licence conditions.

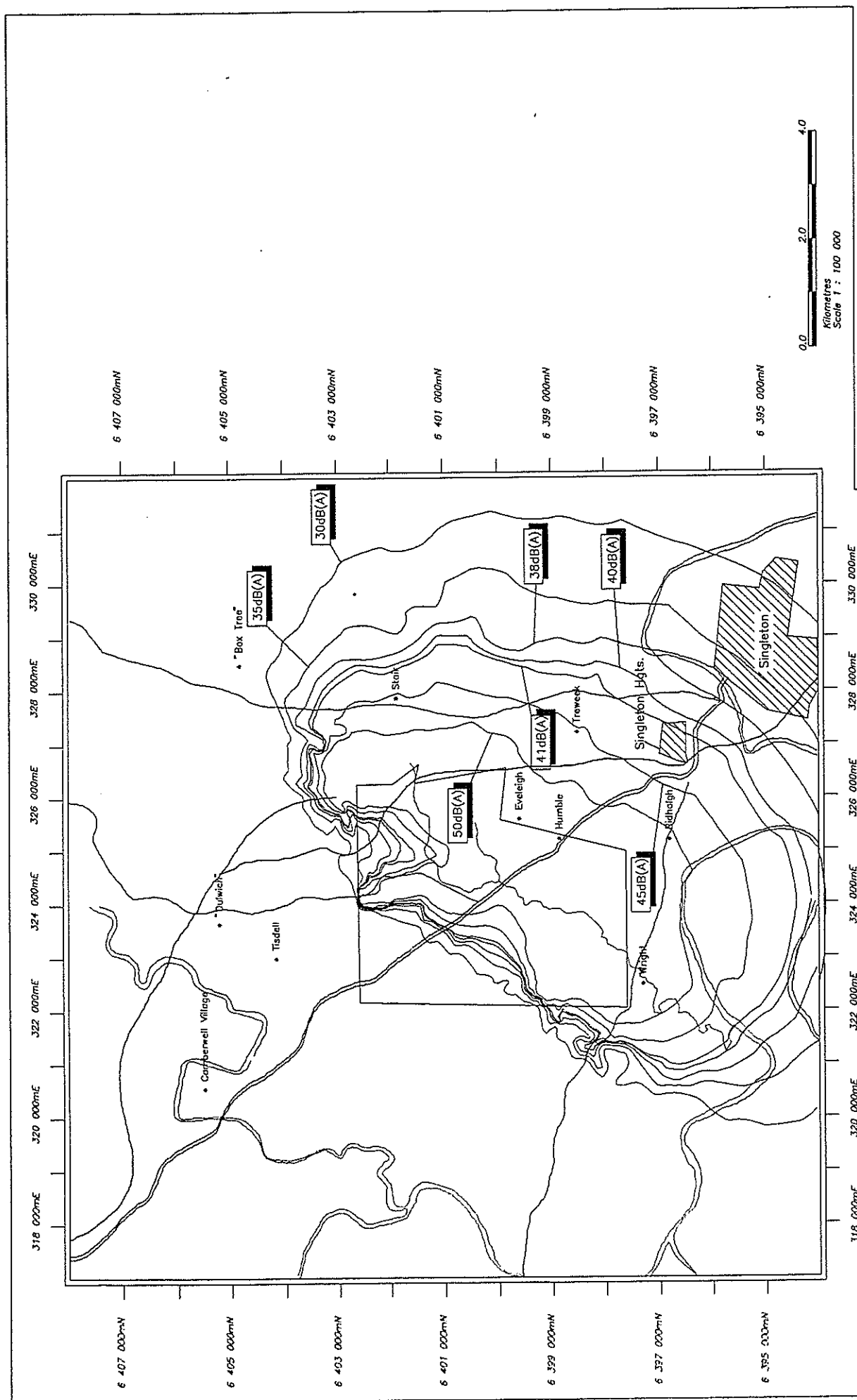




Noise Contours - Reduced Pit Plan  
Shovel, Yr 8 (Pit 2/3, Daytime)  
1.0 m/s NW Wind + Temp. Inversion

**FIGURE E** March 1995



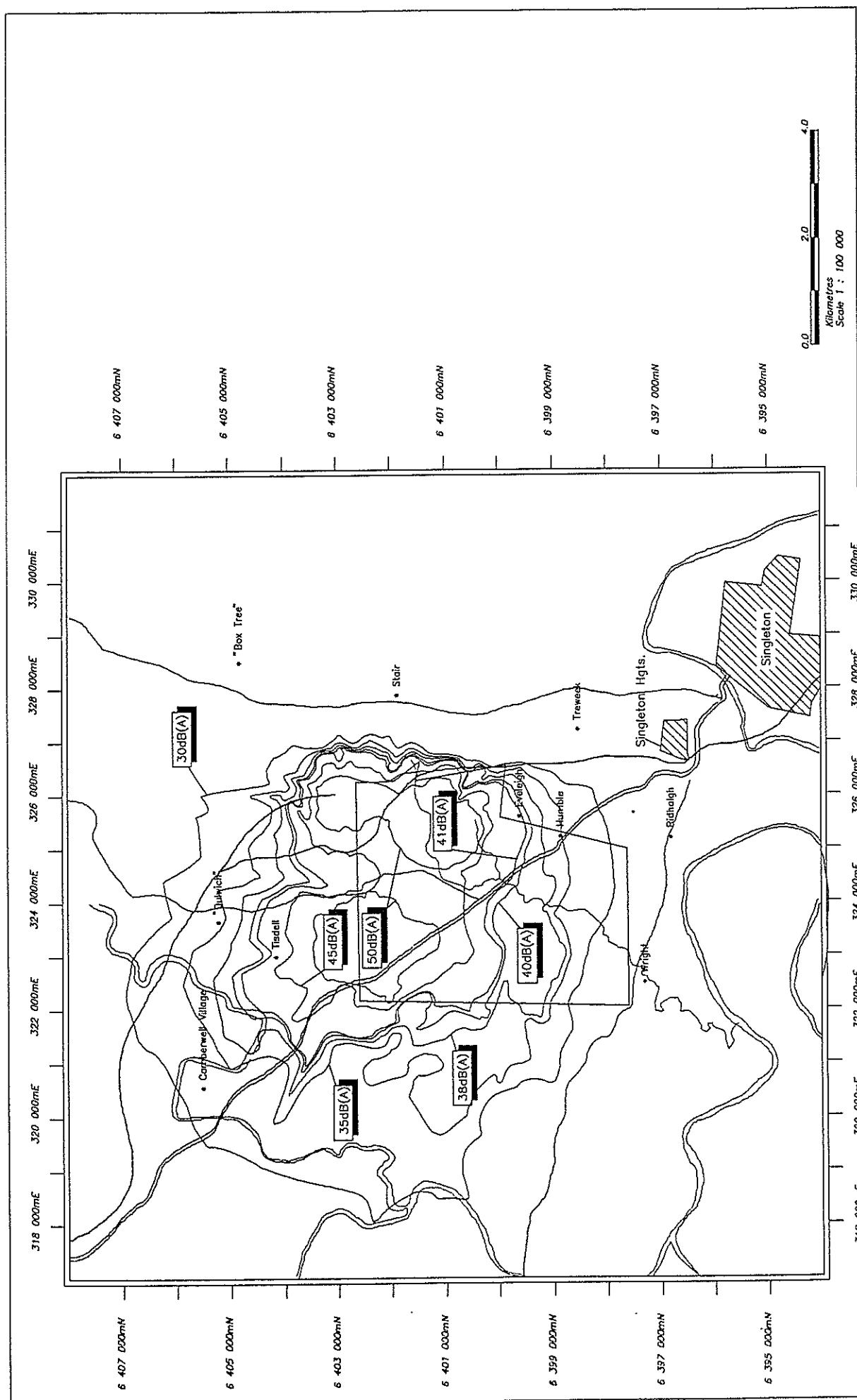


Noise Contours – Reduced Pit Plan  
Shovel, Yr 8 (Pit 2/3, Daytime)  
4.5 m/s NW Wind + Temp. Inversion

**FIGURE F** March 1995



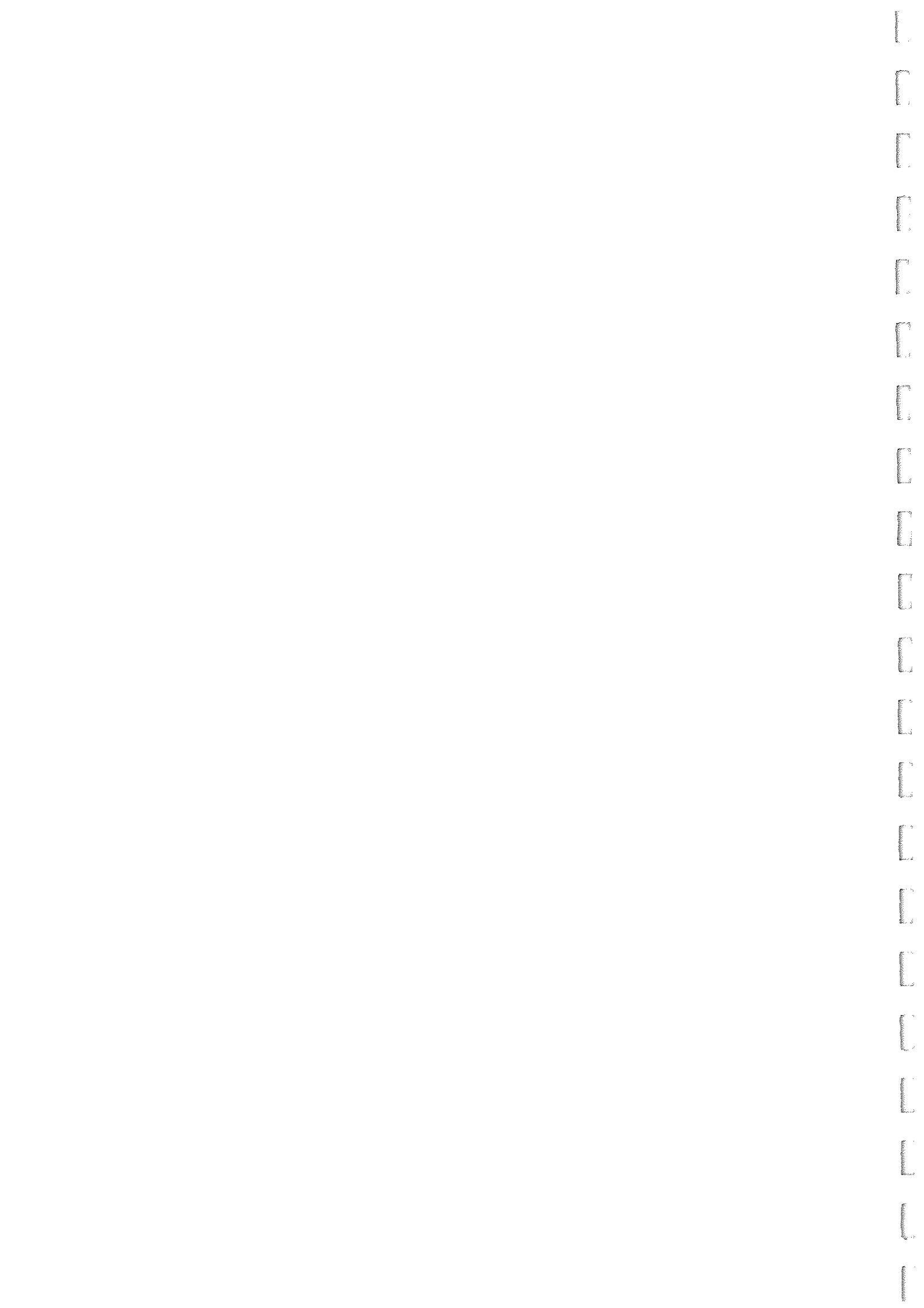




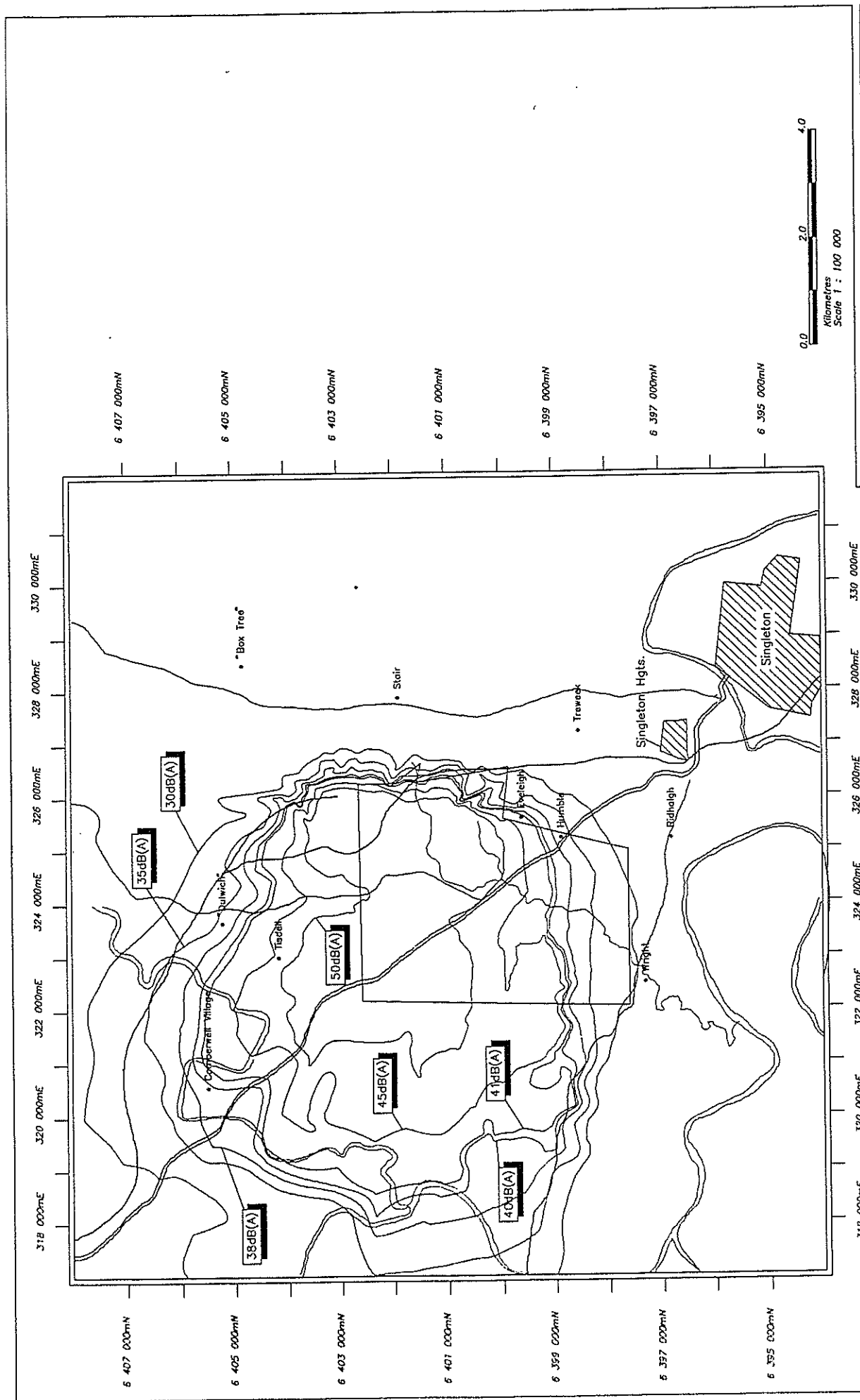
Noise Contours – Reduced Pit Plan  
Shovel, Yr 22 (Pit 1, Daytime)  
1.0 m/s E Wind + Temp. Inversion

**FIGURE G**

March 1995







Noise Contours - Reduced Pit Plan  
Shovel, Yr 22 (Pit 1, Daytime)  
4.5 m/s E Wind + Temp. Inversion

**FIGURE H** March 1995



## 5.7

Concern was also raised over the derived planning levels presented in the original EIS. An explanation of this is provided below as it is equally relevant to the alternative mine plan.

Noise planning goals for the proposed Rixs Creek open cut coal mine extension, as shown in Table 4.2 of Appendix 6 to the original EIS, were derived as follows. Planning levels were calculated in accordance with NSW EPA procedures as detailed in their publication - Environmental Noise Control Manual.

These calculated planning levels were then compared with Rixs Creek's development consent and EPA licence noise conditions (both of which are the same). A set of planning levels were derived using either the highest calculated or existing level.

The measured background levels and calculated planning levels are shown in the following Table 5.3.

TABLE 5.3 BACKGROUND AND PLANNING NOISE LEVELS				
Area	Measured Background		Planning Level	
	Day	Night	Day	Night
Rural	32	33	37 (32 + 5)	30 (35 - 5)
Residential	37	35	42 (37 + 5)	30

Development consent condition limits for the existing mine (with regard to noise) are as follows:

- (iii) *The Applicant shall comply with the L10 daytime noise level design goals set out below using "worst case" conditions for the following areas, as follows:*
- |                                  |   |                 |
|----------------------------------|---|-----------------|
| <i>Bridgeman Road</i>            | : | <i>38 dB(A)</i> |
| <i>Singleton Heights - South</i> | : | <i>40 dB(A)</i> |
| <i>Singleton Heights - North</i> | : | <i>40 dB(A)</i> |



## 5.8

- (iv) *The Applicant shall comply with the L10 daytime noise level design goals set out below using neutral meteorological conditions as defined by the Commission for the following area in the absence of any bund to mitigate the effects of noise.:*

*Maison Dieu Road : 38 dB(A)*

The EPA licence ( Number 003391) specifies environmental conditions for Rixs Creek Mine. The noise conditions are (in part):

*The level of noise emanating from operation of the plants or processes (LA10T) measured for at least 15 minutes in or on the above premises shall not exceed the following sound pressure level, at the nearest residences at the following locations:*

*38 dB(A) Bridgeman Road*  
*40 dB(A) Singleton Heights*  
*38 dB(A) Maison Dieu Road*

Other noise conditions in the licence relate to monitoring and reporting requirements.

Combining the calculated and statutory noise limits Table 5.4 presents the planning noise levels derived.

TABLE 5.4 DERIVED PLANNING LEVELS		
Area	Planning Level dB(A)	
	Day	Night
Rural	38	38
Residential	42	40

## 5.5 VISUAL IMPACT

A specific assessment of the visual impact of the alternative mine plan is included in **Appendix 11** of the original EIS. Please refer to this document for detailed information.

Concern has been raised regarding the visual impact of the proposed mining operation to travellers along the New England Highway. To better illustrate the effect of the alternative mine plan, cross sections have been prepared on natural scale, showing the slopes observed from the Highway where the dumps approach the road. The dump faces, facing the Highway, will be progressively rehabilitated, but there will always be a working face that is not yet rehabilitated. It will be an objective of the mining operation to rehabilitate as soon as possible after the final dump form is achieved. Where exposed faces of dumps can be of long standing, rehabilitation with vegetation is intended even though more material will subsequently be dumped.

**Figure D** illustrates these cross sections for the alternative mine plan and indicates the attenuation due to tree screening as a result of their location in the near field of vision. Direct line of site will therefore be blocked and the wide line of site will be diverted above the workings due to the relativity of the height of persons within vehicles and the height and extent of the tree stands.

## 5.6 IMPACT ON FLORA AND FAUNA

Refer to original EIS for this information

The boundaries of the alternative mine plan occur totally within those of the original plan being somewhat reduced in size. The impacts on flora and fauna can therefore be considered to be adequately addressed.

## 5.7 IMPACT ON LAND OWNERSHIP

Refer to original EIS for this information

## 5.8 TRANSPORTATION IMPACTS

The issue of prime concern re transportation was the closure of the New England Highway as a result of blasting. Section 6.4 presented an assessment of this issue which has been reproduced here.

An assessment of the frequency of blasting within 500 m of the New England Highway has been undertaken for the alternative mine plan. Table 5.5 (Table 6.1 - original EIS) shows the results of this analysis.

For the reduced pit there will be, on average, one blast within 500 m of the highway every 14 days over the life of the mine.

Following discussions with the RTA a management plan has been construed that will cover all aspects associated with traffic stoppages on the highway. It is included as Appendix 2. The RTA have agreed to traffic stoppages at an average frequency of once per week.

The alternative mine plan also considers a deviation of two sections of the New England Highway as shown in Figure 34 (original EIS). This deviation would consist of a two lane sealed road. Traffic would be directed along the deviation for the period needed to blast rather than being subject to road closure.



**TABLE 5.5**  
**NUMBER OF BLASTS WITHIN 500 M HIGHWAY ZONE**  
**ALTERNATIVE MINE PLAN**

Year	Pit 1		Pit 2		Total		
	No. of Long Blasts	No. of Short Blasts	No. of Long Blasts	No. of Short Blasts	No. of Long Blasts	No. of Short Blasts	Total No. of Blasts
1		3	4	7	4	10	14
2	11	13	9	20	20	33	53
3	1		7	26	8	26	34
4			10	15	10	15	25
5				7		7	7
6							
7		30				30	30
8		36				36	36
9		21				21	21
10	2	45			2	45	47
11	1	19			1	19	20
12	4	6			4	6	10
13	4	23			4	23	27
14	6	27			6	27	33
15	7	19			7	19	26
16	6	13			6	13	19
17	9	28			9	28	37
18	4	8			4	8	12
19	7	6			7	6	13
20	22	20			22	20	42
<b>Total</b>	<b>84</b>	<b>317</b>	<b>30</b>	<b>75</b>	<b>114</b>	<b>392</b>	<b>506</b>
Source: Select Mining Services Note: - Long Blasts = 300 m - Short Blasts = 100 m							

## **5.9 SOCIAL AND ECONOMIC IMPACT**

Refer to original EIS for this information. The alternative mine plan will generate the same numbers of employees.

## **5.10 IMPACT ON HERITAGE**

Refer to original EIS for this information.

## **5.11 ENERGY STATEMENT**

Refer to original EIS for this information.

## **SECTION 6 : ALTERNATIVES TO THE DEVELOPMENT**



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## SECTION 6 : ALTERNATIVES TO THE DEVELOPMENT

### 6.1 ALTERNATIVES TO THE DEVELOPMENT PROPOSAL

Refer to original EIS for this information

Concern has been raised that the consequences of not proceeding with the development were not considered in detail. However, there is little detail for consideration as the mine would simply close within 4 years if no new development consent is granted (refer to original EIS - Section 6.2.1).





**APPENDIX 1**  
**AGREEMENT WITH DOWNSTREAM WATER USERS**

1. Introduction

2. Background

3. Methodology

4. Results

5. Discussion

6. Conclusion

7. References

8. Appendix

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**DOWNSTREAM WATER USERS AGREEMENT**

**THIS LICENCE CONSTITUTES AGREEMENT WITH DOWNSTREAM WATER  
USERS IN ACCORDANCE WITH CONDITION 21 OF THE LICENSE**





**LICENSE under section 12 of the Water Act, 1912****Nº 48955**

Date issued

**5 DEC 1990**

name and  
address of  
licensee

**RIXS CREEK COLLIERY  
P O BOX 4  
EAST MAITLAND 2323**

**DETAILS OF LICENSED WORKS**

river or lake	RIXS CREEK	STONEQUARRY GULLY	UNNAMED WATERCOURSE
location	84	4 & 19	83
catchment	AUCKLAND	DARLINGTON	AUCKLAND
county	DURHAM		
purpose description	DIVERSION PIPE TO DELIVER WATER AT A RATE NOT EXCEEDING 50 LITRES PER SECOND	THREE EARTHEN BYWASH DAMS & PUMPING PLANT TO DELIVER WATER AT A RATE NOT EXCEEDING 35 LITRES PER SECOND	THREE EARTHEN BYWASH DAMS & SAID PUMPING PLANT
purpose	CONSERVATION & SUPPLY OF WATER FOR INDUSTRIAL (COAL MINING) PURPOSES		

**DETAILS OF LAND TO BE IRRIGATED**

rtion					
ish					
unity					
Area to be irrigated		Period for which License issued	5 Years	Fee	\$ 155.00

(PAI

The work described hereon, and referred to in the application and plans deposited by or on behalf of the abovenamed licensee, is hereby declared to be a licensed work under the Water Act, 1912.

This license is subject to the terms, limitations and conditions set out on the attached Condition Statement. By direction of the Department of Water Resources.

For

Manager

*J. Brown*

## DEPARTMENT OF WATER RESOURCES

CONDITION STATEMENT REFERRED TO ON LICENSE 89/M78  
ISSUED UNDER PART II OF THE WATER ACT, 1912

1. The holder of the license shall within three months of being called upon by the Department of Water Resources to do so, install to the satisfaction of the Department in respect of location, form, type and construction, an appliance or appliances for the measurement of the quantity of water diverted or taken by means of the licensed work, such appliance or appliances to consist of either a measuring weir or weirs with automatic recorder or meter or meters of the Dethridge type, or such other class of meter or means of measurement as may be approved by the Department, and shall continuously maintain such appliance or appliances in good working order and condition, and shall record the measurement of all water diverted or taken by means of the licensed work and shall whenever required by the Department supply particulars of such measurements to the Department. Whenever called upon to do so, a test certificate furnished either by the manufacturer concerned or by some person or authority duly qualified shall be supplied by the holder of the License as to the accuracy of the appliance or appliances installed.
2. Drainage waters, both surface and sub-surface, shall be disposed of in a manner approved by the Department of Water Resources.
3. Works used for the purpose of conveying, distributing or storing water taken by means of the licensed work shall not be constructed or installed so as to obstruct the free passage of flood-waters flowing in, to or from a river.
4. The level of the crest of the bywash of the dam No. 1 shall not be higher than R.L.86.0 A.H.D.
5. A pipe with a diameter of not less than 50mm fitted with a stop valve or other control device, shall be constructed through Dam No. 1 to the satisfaction of the Department of Water Resources. The level of the invert of the said pipe shall be fixed at not higher than R.L.83.3 A.H.D, or alternatively, the licensee shall provide a 50mm diameter pipe siphon or other approved device for passing flows through the storage of the dam.
6. The level of the crest of the bywash of Dam No. 2 shall be fixed at not higher than R.L.83.0 A.H.D.
7. A pipe with a diameter of not less than 50mm fitted with a stop valve or other control device, shall be constructed through Dam No. 2 to the satisfaction of the Department of Water Resources. The level of the invert of the said pipe shall be fixed at not higher than R.L.80.3 A.H.D, or alternatively, the licensee shall provide a 50mm diameter pipe siphon or other approved device for passing flows through the storage of the dam.

8. The level of the crest of the bywash of Dam No. 3 shall be fixed at not higher than R.L.79.0 A.H.D.
9. A pipe with a diameter of not less than 100mm fitted with a stop valve or other control device, shall be constructed through Dam No. 3 to the satisfaction of the Department of Water Resources. The level of the invert of the said pipe shall be fixed at not higher than R.L.78.3 A.H.D.
10. The level of the crest of the bywash of Dam No. 4 shall be fixed at not higher than R.L.107.5 A.H.D.
11. A pipe with a diameter of not less than 50mm fitted with a stop valve or other control device, shall be constructed through Dam No. 4 to the satisfaction of the Department of Water Resources. The level of the invert of the said pipe shall be fixed at not higher than R.L.101.8 A.H.D, or alternatively, the licensee shall provide a 50mm diameter pipe siphon or other approved device for passing flows through the storage of the dam.
12. The level of the crest of the bywash of Dam No. 5 shall be fixed at not higher than R.L.89.0 A.H.D.
13. A pipe with a diameter of not less than 50mm fitted with a stop valve or other control device, shall be constructed through Dam No. 5 to the satisfaction of the Department of Water Resources. The level of the invert of the said pipe shall be fixed at not higher than R.L.84.3 A.H.D, or alternatively, the licensee shall provide a 50mm diameter pipe siphon or other approved device for passing flows through the storage of the dam.
14. The level of the crest of the bywash of Dam No. 6 shall be fixed at not higher than R.L.100.0 A.H.D.
15. A pipe with a diameter of not less than 50mm fitted with a stop valve or other control device, shall be constructed through Dam No. 6 to the satisfaction of the Department of Water Resources. The level of the invert of the said pipe shall be fixed at not higher than R.L.94.3 A.H.D, or alternatively, the licensee shall provide a 50mm diameter pipe siphon or other approved device for passing flows through the storage of the dam.
16. When a flow is entering the storage of any of the dams the pipe referred to in condition (9) shall be so operated as to maintain a flow in Stonequarry Gully downstream of Dam No. 3 equivalent to the flow entering the storage of the dams for the time being or the capacity of the said pipe, whichever is the lesser.

17. The location of the dam as shown on a plan retained in the office of the Department of Water Resources shall not be altered.
18. The level of the invert of the 300mm diameter diversion pipe at its point of offtake shall be fixed at not lower than 50mm above the bed of Rixs Creek.
19. The licensee shall install in the diversion pipe, near its point of offtake, a stop valve or other control device to the satisfaction of the Department of Water Resources.
20. The works shall be constructed and maintained in such manner as will ensure its safety and as will preclude the possibility of damage being occasioned by them, or resulting from them, to any public or private interest.
21. The holder of this licence shall regularly inform the downstream users of water from Rixs Creek of the quantity and quality of water discharged from the mine premises into Rixs Creek to enable them to obtain water satisfactory for their purposes when it is available under the terms of this licence.



**APPENDIX 2**  
**MANAGEMENT PLAN FOR NEW ENGLAND HIGHWAY**



## MANAGEMENT PLAN

### TRAFFIC INTERRUPTIONS ON NEW ENGLAND HIGHWAY RIXS CREEK COAL MINE

1. The agreement appended to this management plan from the Roads and Traffic Authority ("Authority") to Bloomfield Collieries Pty Limited ("Bloomfield") set out in the letter of 5 April, 1994 including Attachment A, (ref. 88/M.4014 Bloom.doc) will remain in force. It is noted that the document refers to the State Pollution Control Commission which has now become the Environment Protection Authority (EPA).
2. Bloomfield will maintain records of interruptions, with a record of each interruption including the following:
  - (i) Date of interruption.
  - (ii) Time of commencement of interruption.
  - (iii) Time of re opening of the Highway.
  - (iv) Time of blast initiation.
  - (v) Number of vehicles delayed in each direction.
  - (vi) Whether any fly rock was observed in the blast.
  - (vii) Whether any material had to be cleared from the Highway.
  - (viii) Whether there was any failed shot, or any unusual delay in the blasting procedure or initiation.
  - (ix) A statement that RTA procedures were followed.
  - (x) A description of and reasons for any departure from RTA procedures.

A report of each highway interruption will be sent promptly to the Singleton office.

3. A quarterly summary of the reports of each

interruption will be sent to the RTA Newcastle.

4. Summaries of all reports of interruptions will be included in regular reports required by the Development Consent to the Department of Planning, Singleton Council and the Community Consultation Committee.
5. Planning for blasts that may cause traffic interruption will be co-ordinated with the RTA Singleton and Singleton police, to take into account any other planned interruptions in the locality or unusual traffic movements.
6. Planning for interruptions in the traffic due to blasts will include the avoiding of any peak traffic such as changes of shift in mines, power stations and the like and school bus times.
7. Signposts, to be approved by the RTA, will be erected and maintained by Bloomfield to advise travellers on the New England Highway about one week in advance of the forecast day and approximate time of traffic interruptions due to blasting.
8. Bloomfield will use its best endeavours to reduce the time delay and traffic interruptions by
  - (a) Initiating blasting in periods of minimum traffic and choosing by observation, at the time of the blast, gaps in the highway traffic.
  - (b) Taking advantage of emerging explosive technology that will allow a shorter traffic delay.
  - (c) Construing safe working arrangements approved by the Department of Mineral Resources that will permit shorter traffic delays by the more rapid restoration of traffic after blast initiation.
9. All Bloomfield personnel involved in traffic control during Highway closures shall be trained and accredited in the Authority's traffic control procedures.
10. The agreement to the closure of the Highway for



blasting purposes by Rix's Creek Coal Mine will be subject to review every two years and continued satisfactory performance by the mine in minimising the delay to Highway traffic.

11. Traffic interruptions due to blasting will not occur more frequently than on average once per week outside peak hours.

Our reference:

88/M.4014  
BLOOM.DOC  
GB\6030

Your reference:

Further enquiries:

Mr J W Booth  
(049) 272 212

Roads and Traffic  
Authority  
Newcastle Zone



59 Darby Street  
Locked Bag 30  
Newcastle  
New South Wales 2300  
Telephone (049) 27 2200  
Facsimile (049) 29 3818  
DX 7813 Newcastle

Bloomfield Collieries Pty Ltd  
PO Box 4  
East Maitland NSW 2323

4-16

Attention: Mr Garry Bailey  
Mine Manager

SH9 NEW ENGLAND HIGHWAY. SHIRE OF SINGLETON RIX'S CREEK COAL MINE  
BLASTING - INTERMITTENT TRAFFIC STOPPAGES.

Dear Sir

I refer to your letter dated 21 March 1994 concerning an extension to the agreement between the Roads and Traffic Authority and Bloomfield Collieries for intermittent stoppages of traffic on the New England Highway while blasting is taking place.

The Authority raises no objection to the proposals subject to the company giving written confirmation of acceptance of the following conditions previously concurred in:

1. Bloomfield Collieries shall comply with all relevant laws, ordinances and regulations relating to its blasting operations.
2. Bloomfield Collieries shall indemnify and keep indemnified the Authority for the cost of all repairs to the New England Highway, or any approved deviation to the Highway, as a result of its blasting and shall indemnify the Authority for all claims whatsoever from road users who suffer damage or personal injury as a result of or in any way connected with such blasting.
3. Any consent given by the Authority to the stoppage of traffic during periods of blasting shall in no way be taken to constitute an approval or authorisation by the Authority to such blasting or any representation that blasting carried out by Bloomfield Collieries is carried out in accordance with all relevant laws, ordinances and regulations.

4. Bloomfield Collieries shall provide the names of six people who it proposes should act as flagman to direct traffic during traffic stoppages. Their approval as a flagman by the Authority shall be subject to satisfactory completion of an appropriate training course with the Authority. Arrangements for attendance at the training course with the Authority's Personnel Manager (Contact Mr Ron Bruce - 049 272292). Payment for this course will be on a cost recovery basis and estimates will be available on application.

In addition to the above the company should also give a written undertaking to comply with the procedural aspects of the traffic stoppages as detailed in Attachment 'A'.

Approval to the necessary traffic stoppages is contingent upon the above and will be approved for a weekly traffic stoppage for a period up until 31 March 1996.

Unfortunately, I am unable to provide a greater extension than two years to cover the full potential of the mine's productive life due to changes which may occur to legislative or other requirements beyond that period. Therefore, any additional blasting times or extensions to the approval period will require a fresh proposal from the company.

Yours faithfully



J.W. Booth

Road Maintenance & Traffic Manager

1-5 APR 1994



## ATTACHMENT 'A'

Procedural details of traffic stoppages by Bloomfield Collieries Pty Ltd at Rix's Creek Coal Mine.

1. The Maintenance Engineer, Singleton, (currently Mr Chris Osman - Phone: 065 - 721 222; Fax: 065 - 711 330) of the Roads and Traffic Authority should be given one week's advance notice of blasting operations with confirmation on the day the blast is to occur.
2. Rix's Creek Coal Mine shall, at its own expense, provide all signs, appliances and personnel necessary to undertake the traffic stoppages.
3. Permanent and lockable signs of the fold down type should be erected on the New England Highway at the eastern and western extremities of the blasting area. These are to be opened 15 minutes before and after blasting and should read:- The exact location of these signs must be to the satisfaction of the Authority's engineer in Singleton who can be contacted on the number above.

### BLOOMFIELD COLLIERIES PTY LTD DELAYS DUE TO BLASTING APPROXIMATELY 10 MINUTES

4. Temporary warning signs should be erected on the highway 1000m from the blast site and should read "Flagmen Ahead. Prepare to Stop".
5. Flagmen should be equipped with safety clothing and STOP/GO signs in accordance with the Australian Standard.
6. Flagmen should be equipped with hand held radios and be under the direct control of a responsible supervisor who in turn is in direct contact with the shot-firer. Sentries should be positioned on highway access points within the closure range.
7. Suitable plant should be on stand-by in the event of the highway being blocked by blasted material.
8. The supervisor in direct communication with the shotfirer will instruct the flagmen by radio when traffic is to stop. When the last traffic has cleared the no traffic zone the flagmen will advise by radio that the highway is clear and the shot will be initiated. The shotfirer will advise by radio as soon as the blast is safe and the flagmen will release traffic.
9. The blast should occur between 9.00am and 3.00pm the interval approved in the mines licence issued by the State Pollution Control Commission.



**APPENDIX 3**  
**RELEVANT CORRESPONDENCE**







# Bloomfield Collieries Pty. Limited

FOUR MILE CREEK ROAD, EAST MAITLAND, N.S.W. 2323  
ACN 000 108 972

P.O. BOX 4  
EAST MAITLAND  
N.S.W. 2323

PHONE (0491) 33 2077  
33 2805  
33 2808

FACSIMILE (0491) 33 8940

CABLES & TELEGRAMS  
BLOOMCOLL  
MAITLAND

23 March 1995

The Director  
Department of Planning  
175 Liverpool Street  
SYDNEY NSW 2000

Dear Sir

RE: RIXS CREEK COAL MINE EXTENSION  
SEPP 34, DA 49/94

For the purposes of Development Application No. 49/94, under State Environmental Planning Policy No. 34, for the extension of the Rixs Creek Coal Mine an Environmental Impact Statement prepared by Envirosciences Pty Limited was exhibited until 15 February, 1995.

Submissions from Government agencies and the public were received. We have addressed ourselves to the issues raised in all these submissions, by either indicating where they are satisfactorily explained in the Environmental Impact Statement, or by providing supplementary information.

Of particular concern was the comment from the Department of Mineral Resources contained in their letter of 15 February, 1995 (Reference C94/2077).

The letter, attached hereto as Appendix A, says in conclusion:

"The mine development preferred and proposed by Bloomfield Collieries Limited in this EIS maximises potential resource recovery but falls short of achieving this Department's requirements for definitive mine planning, responsible mine development and progressive rehabilitation. This position was advised to the Company on 25 August, 1994 and to the Department of Planning on 31 August, 1994 in response to a draft EIS.

The alternative mine plan, which is shown in the EIS, is conceptually supported by the Department and has the potential to mitigate against those impacts of concern to the Department. However, the EIS does not identify nor address environmental impacts of this alternative mine plan."

Given this position taken by the Department of Mineral Resources, the applicant wrote on 22 February, 1995 to the Minister for Planning and the Minister for Housing to inform the Minister that "we shall not pursue the "large mine" plan". It was further stated, that "the company has decided that it would not appeal any decision you may make restricting mining activities to the "small mine" plan". It was further pointed out in the letter that the total salable output from the mine will be reduced by about 24 million tonnes of coal which will be sterilised by the adoption of the alternative mine plan.

The Minister for Mines was informed of this position in a letter on 23 February, 1995 with a copy of the letter to the Minister for Planning.

A meeting was held in the offices of Singleton Council on 9 March, 1995 under the chairmanship of Mr Stephen Brown, Senior Planner and attended by the Department of Planning, Department of Mineral Resources, Department of Conservation and Lands Management, Singleton Council and Bloomfield Collieries. Mr John Hawke, Manager, Coal and Petroleum Administration Branch, confirmed, at the meeting, that sterilisation and loss of approximately 24 million tonnes of coal in Coal Lease 352 by the adoption of the alternative mine plan is not of any concern to his department.

On 22 March, 1995 at our meeting in Sydney, set out in our letter of 23 March, 1995 (reference 4\16\918-95\214 addressed to Mr Sam Haddad) doubt was raised as to whether the Environmental Impact Study as exhibited, is sufficient for the purposes of the Environmental Planning and Assessment Act. This doubt arises from the expectation that, in the light of the above, a development consent which may be granted to satisfy Development Application 49/94 will permit the mining of the resources in Coal Lease 352 by means of open cut mining to an extent similar to that shown in the alternative mine plan, but not in the principal mine plan.

The questions raised are:

- (i) whether the development application focusing on the alternative mine plan is substantially the same as the original application and



- (ii) whether the Environmental Impact Statement has so adequately deal with the alternative mine plan that members of the public, wishing to comment, would be able to sufficiently perceive the scope and impact of the development.

Bloomfield Collieries position is that the Environmental Impact Statement satisfies both these questions in the affirmative.

Bloomfield Collieries representatives at the meeting of 22 March, 1995 proposed that development consent could conveniently take account of, and control the development of the mine to satisfy the concern expressed by the Department of Mineral Resources. The consent may be so framed that the impacts of any mine plan that will be approved under the conditions of Coal Lease 352 and the lease granted in satisfaction of Coal Lease Application No. 17 (Singleton), will be no greater than those identified for the alternative mine plan shown in the Environmental Impact Statement. These impacts include the emission of dust and noise, out-of-pit overburden dump height and topography, the magnitude of final mining voids and the frequency of highway interruptions due to blasting.

We have instructed Envirosiences Pty Limited to prepare a document suitable for public exhibition to support an amended application which will focus on the alternative mine plan in the description of the project and identify the impacts of the mine plan either by referring to the Environmental Impact Statement where they are adequately identified therein and with any additional material as may be required.

Encompassed in the document, in its treatment of the alternative mine plan, will be sufficient detail to elucidate the issues and impacts that arise from comments on the Environmental Impact Statement from Government agencies and in public submissions.

Yours faithfully

P J MURRAY  
DEVELOPMENT CONSULTANT

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/ NO. 3000000924 P. 2



New South Wales  
Department of Mineral Resources

Your Ref: N90/00356  
Our Ref: C94/2077

Mr V Thompson  
Assessments & Major Hazards Branch  
Department of Planning  
GPO Box 3927  
SYDNEY NSW 2001

Dear Mr Thompson

PROPOSED MODIFICATION OF MINING OPERATIONS  
AT RIXS CREEK COAL MINE

I refer to your request which accompanied the EIS for the above development, seeking the Department's comments on the proposal, as outlined in the EIS by 15 February 1995.

The EIS has now been assessed by technical officers within the Department. The scale of mining proposed is significantly greater than currently undertaken. Production will increase from 800,000 tonnes ROM per year (using scrapers, loaders, trucks) to 2.5 million tonnes ROM (using draglines and shovel and trucks).

The EIS does not adequately identify coal resources, the mining methods or the environmental impacts likely. Impacts of noise, blasting, dust, water management and topography changes appear to be understated and poorly identified. Details of the specific issues with which the Department has concerns, is attached to this letter as a separate summary report. The previous EIS for a smaller operation at this mine was prepared with far more rigor and far more environmental study than this EIS.

The scale of mining proposed would result in unprecedented areas of active pit and out of pit emplacement disturbance, in close proximity to Singleton township and the National Highway. In effect the National Highway would pass through the middle of an active pit for 29 years, which would pose risks and interruptions to the public and significant impact upon visual amenity.

The mine development preferred and proposed by Bloomfield Collieries Limited in this EIS maximises potential resource recovery but falls short of achieving this Department's requirements for definitive mine planning, responsible mine development and progressive rehabilitation. This position was advised to the Company on 25 August 1994 and to the Department of Planning on 31 August 1994, in response to a draft EIS.



Fax from : 61 49 623740  
-FEB. '95 (THU) 09:52 PJ MURRAY ASSOCIATE

16/02/95 09:54 Pg: 5  
TEL: 61 49 623740 P.005

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- 2 -

The alternative mine plan, which is shown in the EIS, is conceptually supported by the Department and has the potential to mitigate against those impacts of concern to the Department. However, the EIS does not identify nor address environmental impacts of this alternative mine plan.

Yours sincerely

*A. Galligan* 15.2.95

A Galligan  
Director Coal

TECHNICAL ASSESSMENT OF EIS FOR PROPOSED MODIFICATIONS OF MINING OPERATIONS  
AT RIXS CREEK MINE  
BY THE DEPARTMENT OF MINERAL RESOURCES

1. RESOURCE UTILISATION

1 Mining of the western area of the South-west pit will include extraction of coal from an area of known structural complexity. The EIS does not address specifically the mining of this area.

2 Overburden dumping is proposed on the subcrop of the Hebden seam. Mining of the Hebden seam was proposed in the original EIS. At present, the seam has not been mined to subcrop, but is still considered a resource. Without justification the emplacement of overburden on opencut coal resources can not be supported.

3 The original EIS proposed mining of opencut coal resources under Rixs Creek to the south of the Highway. The current EIS states that coal resources under that part of Rixs Creek south of the Highway are not economical due to high overburden to coal ratios (9,2:1). Detailed justification is required before this new proposal not to mine this area is accepted.

2. MINE PLANNING AND REHABILITATION

It is stated in Section 1.1 that the mine plan is not definitive - as to mining method and mining schedule. The Department maintains that the mine plan presented for environmental impact assessment must be sufficiently definitive to allow an appropriate level of public review for planning approvals. The EIS is deficient in regard to plans and illustration of sequential mining and progressive rehabilitation.

Notwithstanding inadequate presentation, the Department advises that the extent of active pit and out of pit emplacement (358ha) is such that the rate of progressive rehabilitation and reinstatement of land capability would be unsatisfactory. Drainage and erosion control would not adequately mitigate against potential impacts of land degradation from these landform configurations.

<u>Pit</u>	<u>Out of Pit Emplacement</u>		<u>Final Void</u>
	<u>RL</u>	<u>m above existing</u>	<u>a depth</u>
1	210m	110m	155m
2	140m	60m	200m
3	145m	60m	160m



Note: current approvals for Rixs Creek allows for a relatively subdued topography of 25m above existing contours and no final void.

The use of three such huge final voids for sanitary landfill post mining is considered unrealistic. The Department seeks the reduction in size of out of pit emplacement and maximizing in pit emplacement, thereby minimising the number and size of final voids. The alternative mine plan is conceptually supported in achieving these objectives.

### 3. BLASTING

Section 5-4.4 which addresses blast impacts is deficient in identifying predicted levels of blasting at surrounding residences. There is no commitment to assessment, control and monitoring of blast related impact at residences.

The Department's Coal Mining Inspectorate and Engineering Branch have identified a 500m hazard zone around a mine blast initiation. Public access within the 500m zone is to be restricted and traffic control is required for all such blast initiations. The impacts of blast initiated delays to public traffic on the (National) New England Highway are significant as a consequence of the proposed mine plan. The EIS has "averaged" the frequency of such blasts within the restricted zone over the mine life - one every 9 days. Table 5.2 identifies maximum frequency during years 3 and 4 of mine life - 79 blasts per year, which is equivalent to approximately one every 4 days. It is probable that the frequency of stoppages may be greater over weekly/monthly mining campaigns close to the Highway.

The length of delay is stated as 15 minutes maximum. The Department's experience is that this is conservatively low, and assumes an optimum blast initiation. However, should fly rock (from a low percentage of misfired initiations) fall on the Highway, then traffic must remain stopped until the pavement is cleared, with delays of up to 30 minutes.

The EIS does not identify current and predicted traffic counts on the New England Highway, and therefore has not addressed quantitative impacts on traffic movements due to stoppages.

The Department submits that potential disruption of these frequencies to traffic on the National Highway is a major impact upon public utility. Traffic control thereby poses further risk to the public. The alternative mine plan identifies some scope for traffic diversion to reduce the impact and frequency of blast initiated stoppages.

### 4. WASHERY REJECT DISPOSAL

The Section 4.5 provides an inadequate assessment of proposed reject handling and disposal.



Disposal of coarse reject within the advancing spoil emplacement is a standard practice with minimal environmental control requirements.

Disposal of fine (tailings) reject is proposed in surface dams. Available capacity is stated to be 10 years within the current emplacement area. The EIS does not identify nor quantify long term fine reject disposal. The location of any out of pit tailings emplacement poses potential environmental impact that must be addressed in this development application.

#### 5. NOISE

The impact of operational noise modelled for the proposed mine development indicates an area of affectation (of environmental amenity) involving some 18 non-company owned residences. These residences occur to the south (along Maison Dieu Road) and north west on rural residential properties. The area of affectation increases under adverse meteorological conditions (NW prevailing wind, inversion) to a further 6 residences in the south. (Viz Figures 32 and 34 of Appendix 6). Assumptions used in the noise model warrant further scrutiny. In particular;

- the "worst case" for RDT haulage assumes truck location at the RL of the shovel in pit (instead of perhaps out of pit haulage to emplacements at higher RL's),
- the "worst case" for spoil dumping at night time assumes dumping on the pit side of emplacements at an RL at natural ground surface. It takes little to imagine alternate scenarios, which would increase noise levels under expected operational activity.

The impacts of noise on residences is significant for this development due to the scale of operations and the mine layout proposed.

#### 6. DUST

The impact statements made concerning prediction of dust generation for the proposed mine development warrant further scrutiny.

1.0 Section 1.1 states that monitoring of the existing Rixs Creek mining operation show the "area of affectation" defined for the mine is larger than realised dust levels.

This may however be due to the fact that Rixs Creek mining rate anticipated at 1.5mtpa ROM has not occurred. The maximum rate to date has been 800,000 mtpa ROM. Also the mine plan has been varied, with the epicenter of activity moving to the north and west and away from residences.

2.0 Monitoring data used from the adjacent Camberwell mine has been used to validate/predict dust generation rates from the proposed Rixs Creek extension development.

This may be valid for topographic and meteorological conditions but Camberwell mine's equipment fleet is fundamentally different, from that proposed at Rixs Creek, in that no draglines are used. Also the discussion in Appendix 5 casts some doubt as to the validity of dust monitoring gauge locations at Camberwell.

3.0 Impact assessment has been undertaken using the dust dispersion model DUST GLC. This is a model developed in 1984 which has subsequently been validated at other mines in the Hunter Valley. However, modified dust emission factors have been applied to the model (see sections 6 and 7 Appendix 5) for this EIS; -Wind erosion factor has been reduced from EPA's 0.4mg/ha/h to the USEPA's 0.097mg/ha/h, which applies for graded and seeded land. Dust emission factor for transport sources has been reduced from 2kg/VKT, used in previous assessments, to 1kg/VKT for this assessment. Arguments for use of these amendments are unconvincing and untested. These amendments to dust emission factors result in significantly reduced dust predictions, relative to previous mining development assessments.

#### 7. ENVIRONMENTAL MONITORING

Section 4.11 states in effect that the existing monitoring network is adequate to monitor the effect of the proposed mine expansion, and that no changes to this network are proposed.

The Department submits that such a proposal for environmental monitoring for the extension to mining portions is inadequate. Environmental monitoring for noise, blast and air impacts is required to be extended to residential areas in the new zones of affectation.





CLEAN WATER  
DIVERTED AWAY  
FROM CUT AREA

NATURAL TOPOGRAPHY

ACTIVE OPEN CUT AREA  
INCLUDING PRESTRIPPING

ACTIVE UNSHAPED SPOIL  
DUMPING AREA

DIRTY WATER  
DIVERTED FOR  
CONTAINMENT

RESHAPED OVERBURDEN

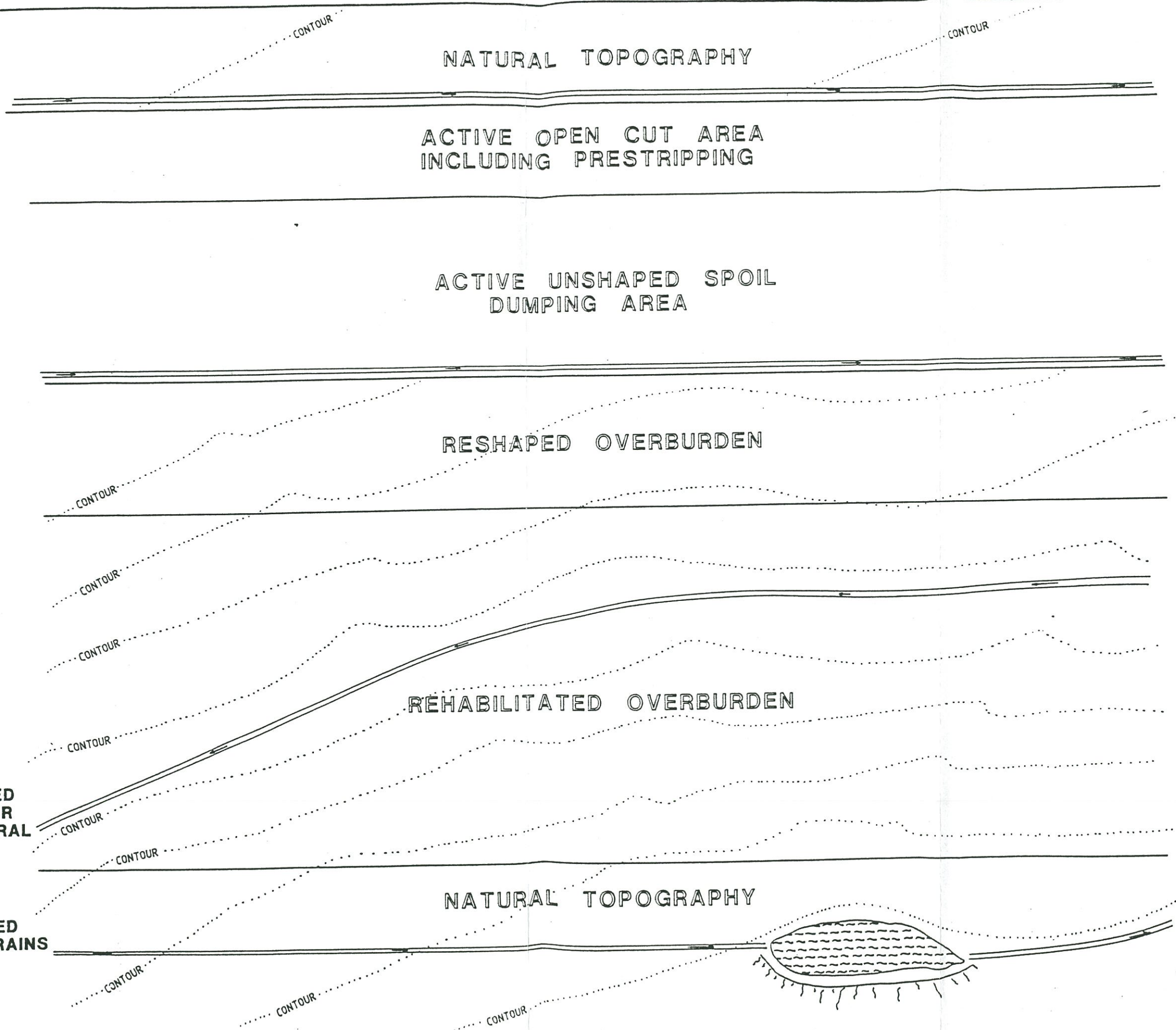
REHABILITATED OVERBURDEN

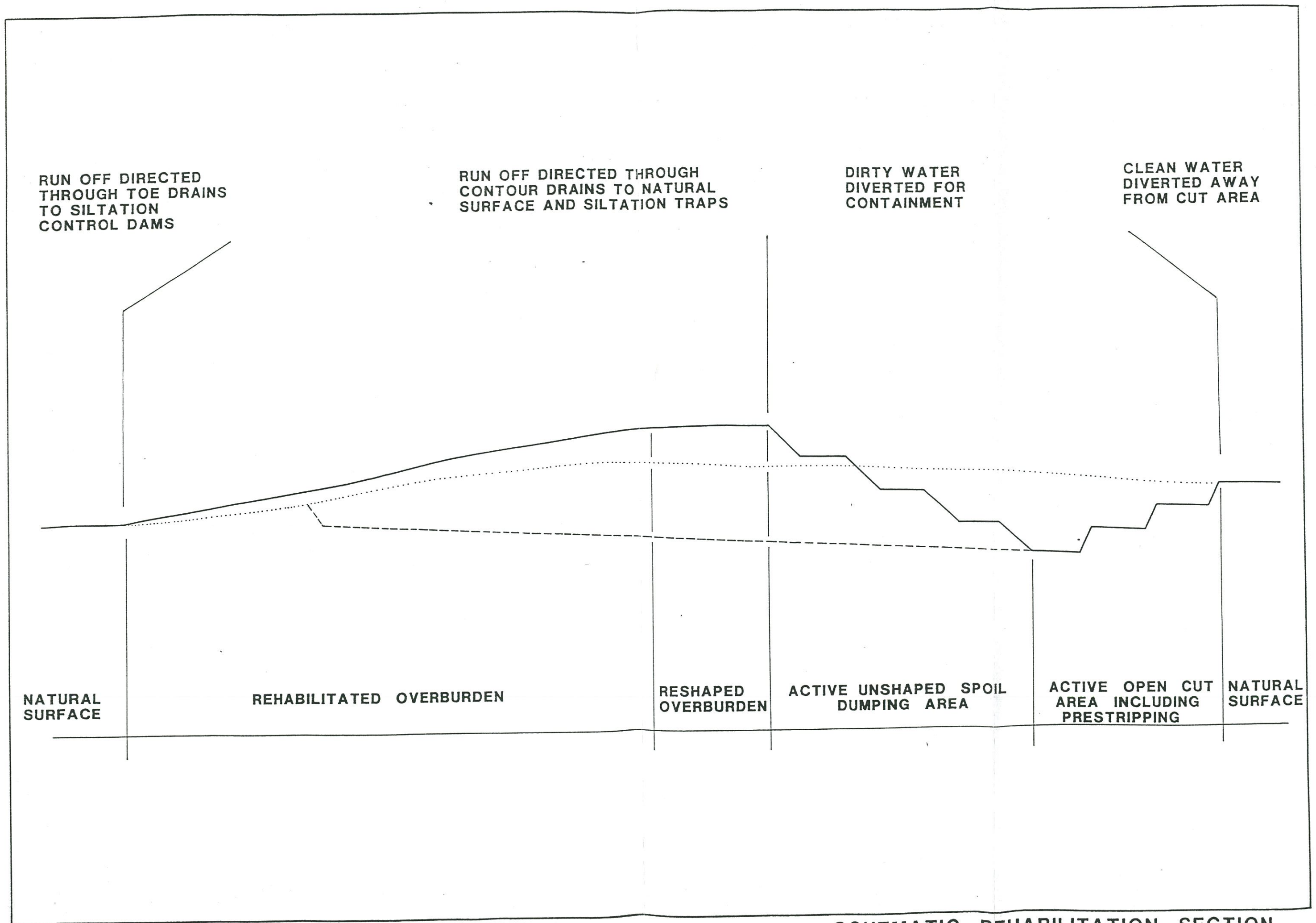
RUN OFF DIRECTED  
THROUGH CONTOUR  
DRAINS TO NATURAL  
SURFACE AND  
SILTATION TRAPS

RUN OFF DIRECTED  
THROUGH TOE DRAINS  
TO SILTATION  
CONTROL DAMS

NATURAL TOPOGRAPHY

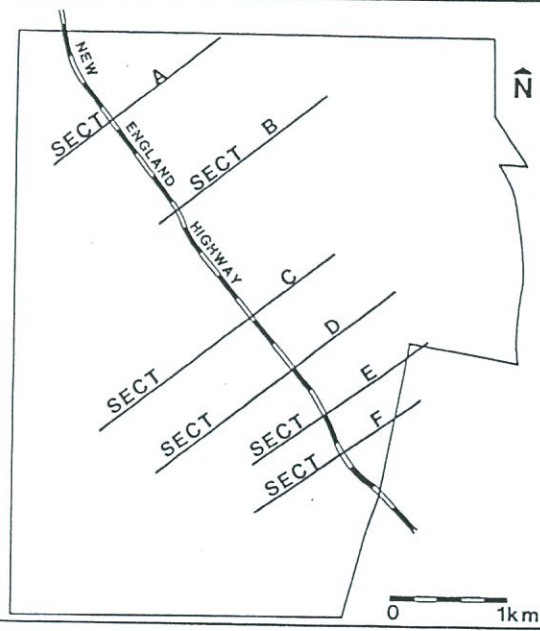
SCHEMATIC REHABILITATION PLAN  
FIGURE E



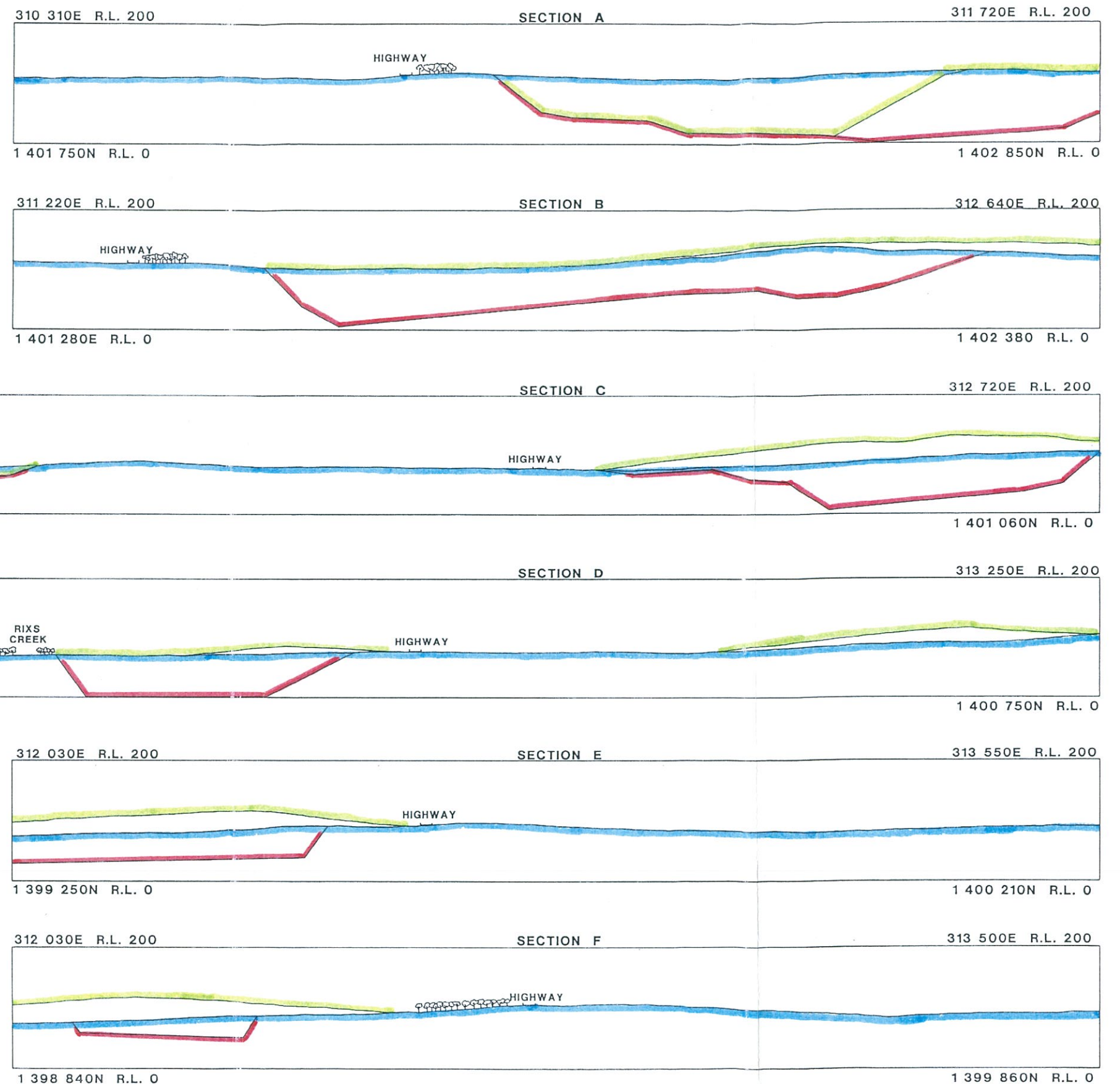


**SCHEMATIC REHABILITATION SECTION**  
**FIGURE C**





# SECTION LOCATIONS



## LEGEND

- ORIGINAL TOPOGRAPHY
- BASE OF EXCAVATION
- FINAL LANDFORM



BLOOMFIELD COLLIERIES PTY LTD  
ALTERNATE MINE PLAN SECTIONS.

FIGURE D