



## GLOBAL SOIL SYSTEMS

Environmental and Land Management Consultants

Windaf Pty Limited ACN 059 448 323 and Windaf Pty Limited ACN 059 448 823  
trade as GLOBAL SOIL SYSTEMS

# LANDSCAPE PLAN FOR DONALDSON COAL MINE

Prepared for:

Donaldson Projects Pty Ltd

Prepared by:

M W Burns BSc (For-Hons 1), M Res Sc

*Principal*

*Global Soil Systems*

PO Box 675

Maitland NSW 2320

9th February 2000



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## 1.0 INTRODUCTION

This Landscape Plan has been prepared pursuant to conditions relating to the Donaldson Coal Mine. The Plan specifically addresses issues relating to Visual Amenity and Landscaping Requirements as defined in Conditions 90 to 95 of the relevant ministerial approval relating to *"the construction and operation of an open cut coal mine, including a coal preparation plant"*. The applicant is Donaldson Projects Pty Ltd.

This report outlines landscaping measures which will be progressively implemented by the mine to ameliorate visual impact. The Landscape Plan has been designed to expand and provide more detail on issues raised in the original Environmental Impact Statement (EIS) and related reports and amendments such as the *"Supplementary Report on Visual Impacts and Land Use Planning Issues"* prepared by Mike George Planning Pty Ltd in September 1998.

The contents of this report are also consistent with information contained in other reports currently being prepared in response to the ministerial consent conditions for the mine. These include the Rehabilitation Plan, the Flora and Fauna Management Plan and the Erosion and Sediment Control Plan. All plans and reports will be consistent with the Environmental Management Strategy (EMS) for the mine.

A key element of the Landscape Plan will be the utilisation and management of existing remnant native vegetation together with additional tree planting/seeding to achieve landscape objectives. Unlike many mine sites in the Hunter Valley the mine is fortunate in having extensive native forest cover over much of the site. Remnant forest will be utilised to full landscape effect. Previous reports have assumed the canopy height to be 15m. This is very conservative. Recent assessment of average canopy height as part of this plan has conservatively calculated the average height of the canopy over much of the site at 20m+. Where this occurs the screening ability of native forest is greater than that allowed for in the mine approval process. The two main areas requiring additional tree planting/seeding are the bund along John Renshaw Drive (extending north), and possible tree planting (upon request) by landowners located mainly in the Black Hill area, whose visual amenity may be affected by the mine.



## 2.0 RELEVANT CONSENT CONDITIONS

The Plan addresses the following conditions in accordance with the Development Consent for the project issued by the Department of Urban Affairs and Planning (DUAP) on 14<sup>th</sup> October 1999.

### VISUAL AMENITY

#### Landscaping

- 90 *The Applicant shall provide a minimum of 50 metres between the outer edge of the bund wall and the edge of John Renshaw Drive. The 50 metres may include landscaping within the road verge if agreed by Cessnock Council.*
- 91 *The Applicant shall, within three months of the date of this Consent, or within such further period as Councils may require, submit for the Council's approval a detailed Landscaping Plan covering all land within the proposed mining area (including the haul road and transmission line easements) and road reserve along the frontage to John Renshaw Drive. The Applicant shall engage a suitably qualified person to assist in the landscaping plan.*
- 92 *The Landscaping Plan shall be consistent with the Environmental Management Strategy and include:*
- (i) provision for the establishment of trees and shrubs and the construction of mounding or bunding along the planned highwall and any other areas identified as necessary by the Councils for the maintenance of satisfactory visual amenity and the re-establishment of flora and fauna habitats and corridors;*
  - (ii) appropriate erosion control and sediment control practices for earthworks associated with the landscaping;*





- (iii) *details of the visual appearance of all buildings, structures, facilities or works (including paint colours and specifications). Buildings and structures shall be designed and constructed so as to present a neat and orderly appearance and to blend as far as possible with the surrounding landscape; and*
- (iv) *details, specifications and staged work programs to be undertaken, including a maintenance program of all landscape works, building materials and cladding.*
- 93 *The Applicant shall implement the approved Plan in accordance with Councils' requirements and make copies available to the Community Consultative Committee within 14 days of approval by Councils*
- 94 *The Applicant shall plant screening vegetation on properties at higher elevation and with views across the mine site in the Black Hill area if requested in writing by the landowner, within three months of that request. The species, density and location of the plantings shall be determined in consultation with the landowner.*
- 95 *The Applicant shall lodge a landscaping bond with Cessnock Council to a maximum of \$10,000 at any one time, for landscaping during the life of mine. This bond does not affect rehabilitation works covered by the Mining Act.*



### 3.0 BACKGROUND TO THE LANDSCAPE PLAN

The original EIS prepared for the project was subsequently supported by a number of supplementary reports. Of particular relevance was the Visual Impact Report by Mike George Planning Pty Ltd as described in Section 1.

The following extract is taken from Section 1 (Introduction), Page 1 of this report and provides useful background to this Landscape Plan.

*In relation to visual impact, the assessment in the EIS tended to exaggerate the potential effect of the proposal in that it did not adequately reflect the modifying effect of existing trees, or the effect of rehabilitation of disturbed areas. In addition, the mine plan has been amended with the effect of lowering the height of the spoil dumps. A series of additional computer simulations have been prepared which more accurately represent the extent of mine workings likely to be seen from various points around the site at various times in the life of the project. (Author's note: These are contained in the Mike George Planning Report)*

*This analysis shows that while the project will have a visual impact, this will generally be confined to more distant viewing points, and the effect will be limited in direction.....*

The following extract is taken from Section 2.1 (Visual Impact) page 3 of the above quoted report.

*The exhibited EIS for the proposal contained a standard visual impact analysis in which areas likely to be exposed to mine workings were identified, and photomontages prepared intended to illustrate the apparent likely visual impact of the proposal. The photomontages were based on computer generated perspective, which guided a rendered perspective of the apparent view. Comments on this approach are included below.*

*The assessment generally concluded that the mine workings would be visible from a number of points, but that given the distance involved; the retention of existing vegetation as a screen; the rehabilitation program, and the limited duration of mine works, this impact was minor and not of a degree to warrant refusal of the proposal.....*



#### 4.0 PROPOSED LANDSCAPING WORKS

The following measures will be implemented in order to ameliorate visual impact:-

##### 4.1 Condition 90 – The Bund

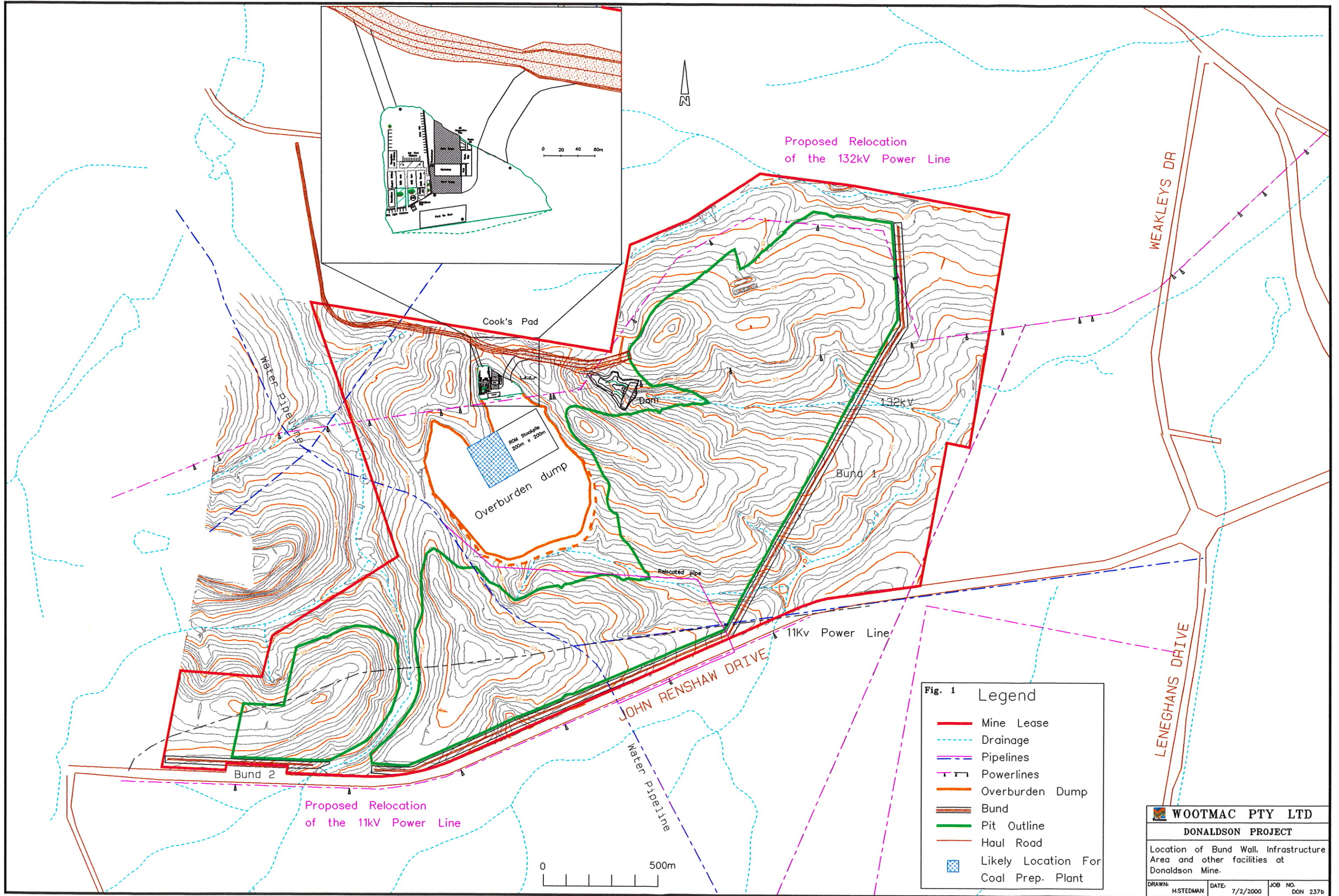
*90 The Applicant shall provide a minimum of 50 metres of landscaping between the outer edge of the bund wall and the edge of John Renshaw Drive. The 50 metres may include landscaping within the road verge if agreed by Cessnock Council.*

##### The Bund

The bund represents the most significant landscaping feature on the site. The proposed location of the bund along John Renshaw Drive (and extending northwards along the edge of the mine high wall) is shown in Figure 1. A conceptual cross-sectional profile of the bund and bushland buffer strip is shown in Figure 2. Scheduling of bund construction will be in accordance with expansion of the mine as shown in Figure 3. The following relevant points are noted.

- The bund adjacent to John Renshaw Drive will be 4 metres high as shown in Figure 2. The gradient of the outside batter of the bund will be reduced to 30° (see plan) to facilitate revegetation. The bund design (as shown in Figure 2) was submitted to the Commission of Enquiry for the mine. An acoustic barrier up to 4 metres high will be placed on top of the bund. The colour of this structure will be consistent with the colour scheme for other mine structures described later in this report.
- The bund will be prepared and tree seeded immediately after construction. The tree seed mix will include locally occurring native trees and shrubs identified in the EIS flora survey and as described in Section 6.3.5 of the Donaldson Coal Mine EIS. The tree seed mix used on the bunds will be the same as for general mine rehabilitation and will generally be as follows in Table 1.
- The bund adjacent to the eastern highwall of the pit will be of earthen construction up to 8 metres high without an acoustic barrier on the top.





Proposed Relocation  
of the 132kV Power Line

Proposed Relocation  
of the 11kV Power Line

**Fig. 1 Legend**

- Mine Lease
- - - Drainage
- - - Pipelines
- - - Powerlines
- Overburden Dump
- Bund
- Pit Outline
- Haul Road
- - - Water Pipeline
- Likely Location For Coal Prep. Plant

WEAKLEYS DR

LENEGHANS DRIVE

JOHN RENSHAW DRIVE

<b>WOOTMAC PTY LTD</b>		
<b>DONALDSON PROJECT</b>		
Location of Bund Wall, Infrastructure Area and other facilities at Donaldson Mine.		
DRAWN:	DATE:	JOB NO.
H-STEDMAN	7/2/2000	DON 237b

0 20 40 60m

0 500m





John Renshaw Drive



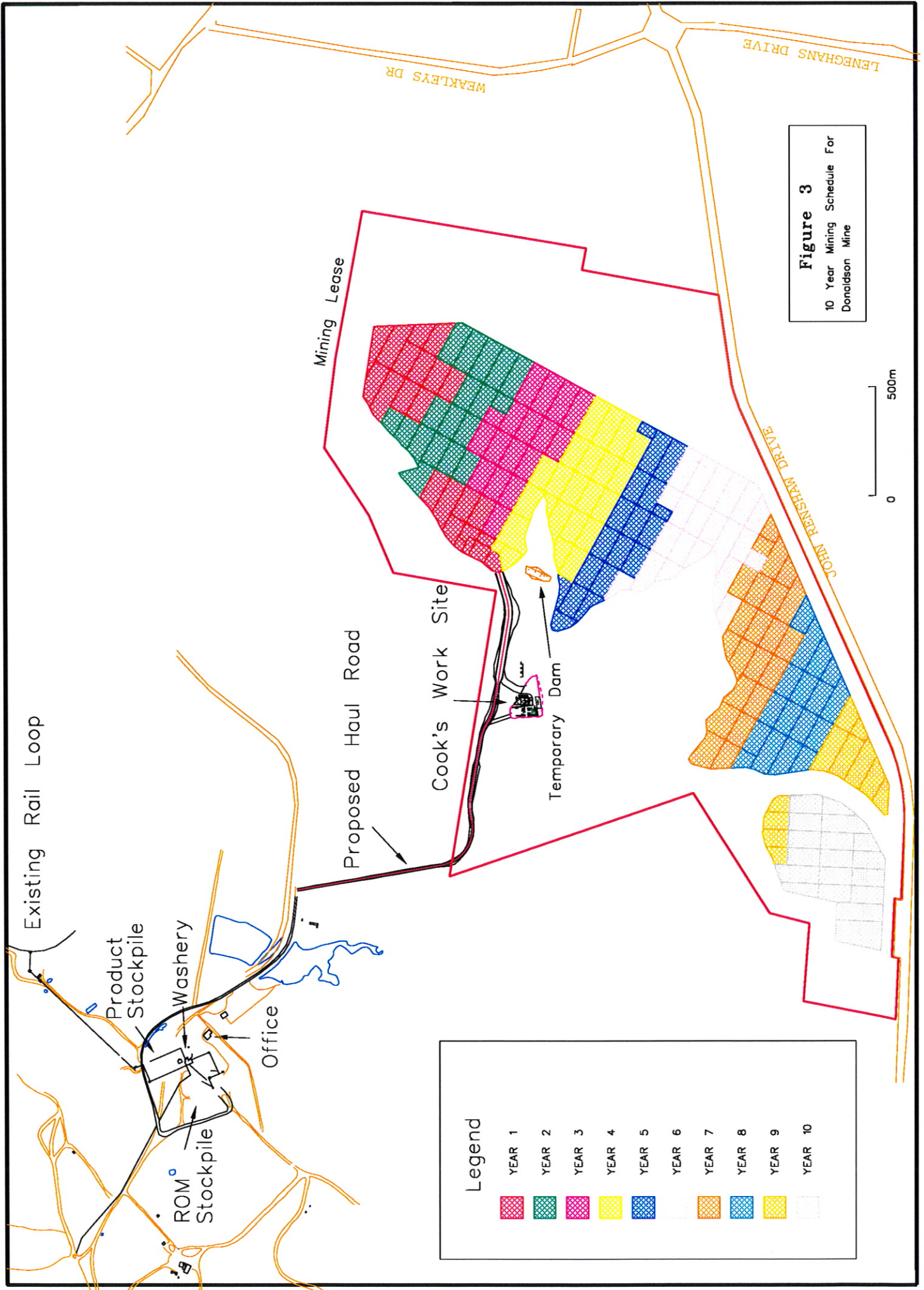
Highwall



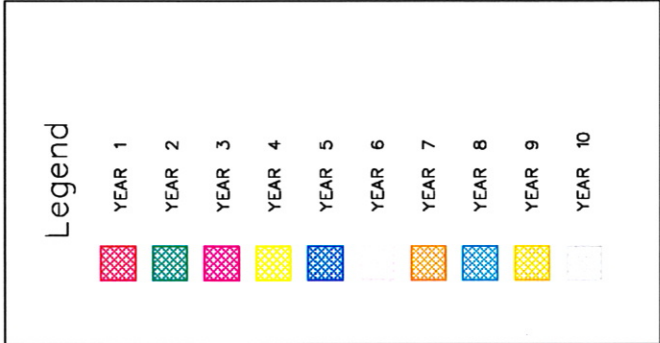
### Donaldson Bund

Conceptual cross section between  
John Renshaw Drive and  
Screening Bund - Donaldson Mine





**Figure 3**  
10 Year Mining Schedule For Donaldson Mine



**Table 1: Proposed Re-vegetation Species List**

Category	Species Name	Common Name
Groundcover	<i>Imperata cylindrica</i>	Blady Grass
	<i>Themeda australis</i>	Kangaroo Grass
Low Trees and Shrubs	<i>Acacia ulicifolia</i>	Prickly Moses
	<i>Acacia linifolia</i>	Wattle
Large Trees	<i>Allocasuarina torulosa</i>	Forest Oak
	<i>Eucalyptus paniculata</i>	Grey Ironbark
	<i>Corymbia maculata</i>	Spotted Gum
	<i>Eucalyptus acmeniode</i>	White Mahogany
	<i>Corymbia gummifera</i>	Red Bloodwood
	<i>Eucalyptus punctata</i>	Grey Gum
	<i>Eucalyptus crebra</i>	Narrow-leaved Red Ironbark
	<i>Eucalyptus fibrosa</i>	Broad-leaved Ironbark

An application rate of 6kg of native seed per hectare will be applied in conjunction with fertiliser (Granulock 15 at 100kg/ha). Some variation of this specification may occur depending on surrounding vegetation.

Plant species to be used for re-vegetation have been selected on the basis of:

- wherever possible, having been previously collected at the site and present in the seedbank. (Note: a seed collection program is currently being planned for the mine site);
- an ability to adapt successfully to site and weather conditions;
- an ability to provide good groundcover in order to reduce erosion and soil dispersal potential.
- Annual tree growth rates of between 1 and 2 metres have been experienced on similar sites sown with tree seed in the Lower Hunter Valley. A photograph of six month old trees resulting from tree seeding at the nearby Bloomfield Mine is shown in Plate 1.





Plate 1 - An example of six month old trees resulting from tree seeding at nearby Bloomfield Mine

## The Remnant Forest Strip between Bund and John Renshaw Drive

A conceptual cross sectional representation of this strip is shown in Figure 2. A recent photograph from John Renshaw Drive showing the density and screening effectiveness of the natural vegetation, is shown below in Plate 2.



Plate 2 - View of typical natural tree screen buffer from John Renshaw Drive. Note the visibility of person 20m in from edge of forest.





The following points are noted in relation to the existing native vegetation.

- Natural vegetation within the strip currently consists of understorey shrubs and overstorey *eucalyptus*.
- The density of shrubs is thicker on the road edge due to enhanced light. Shrub density is lower further in under the canopy. On average it is difficult to see a person located 20m in from the edge of the forest due to the density of trees and shrubs.
- Due to existing competition from trees and shrubs, it is not practical to supplementary plant this strip. Planted (or seeded) trees and shrubs will only grow well in open spaces where sufficient light and reduced competition exist. Supplementary planting within the native forest would be unsuccessful and is not necessary due to the density of the natural forest.
- It is proposed to thicken the existing natural vegetation buffer as much as possible by natural means. This will be largely achieved by protecting this strip from fire and allowing the understorey to thicken and mature to its full potential. This natural thickening process is very apparent in most forest areas around Cessnock and Maitland where fire has been excluded for more than 3 years. The understorey shown in Plate 2 will thicken further as fire is excluded for extended periods. Regular fires have been common in the past in this area. This thickening will greatly assist visual screening. Behind this strip will be the densely tree seeded bund. Tree/shrub densities of 10,000 to 20,000 stems/ha are not uncommon on mine sites in the Hunter Valley (see Plate 1). These densities can be expected on the bund. Fire protection measures will be implemented for all areas (including the bund) for the life of the mine. The combined screening effect of the two will be more than sufficient to meet screening objectives.



## 4.2 Condition 91 – General Landscaping

91 *The Applicant shall, within the date of this Consent, or within such further period as Councils may require, submit for the Councils' approval a detailed Landscaping Plan covering all land within the proposed mining area (including the haul road and transmission line easements) and road reserve along the frontage to John Renshaw Drive. The Applicant shall engage a suitably qualified person to assist in the landscaping plan.*

### Assessment of Visual Impact

Landscaping details for the proposed bund have been described in Section 4.1 (Condition 90) of this report. Other areas requiring consideration include the mine infrastructure area as shown in the insert on Figure 1 and in Figure 1(a), the haul road, and the rediverted transmission line and water pipeline also shown in Figure 1. In addition rehabilitation of mined areas, while not a requirement of the Landscape Plan, is discussed below in order to provide a complete picture of the overall revegetation program.

These elements were introduced into a model (*Visual Impact Report, Mike George Planning Pty Ltd 1998*) which was run to illustrate the visual impact of the mine at progressive stages in its life (one, three, five and nine years and seven years for the Black Hill Road views) from the same viewpoints used in the original EIS. The results are illustrated on a series of graphics accompanying the above report. Figure 3 shows the annual progress of mining and site disturbance at yearly intervals over the life of the mine (10 years).

The results for each of these earlier assessments can be summarized as follows and are relevant in so far as the need for ameliorative landscape works and the design of such works.

### Rehabilitation of Active Mining Area

These areas will have some visual impact which will be modified by the following.



- The significant distance between the mine workings and the viewing sites;
- The screening effect of existing vegetation that is retained. The assumption of a 15 metre canopy is conservative. Foreground vegetation and landforms will generally reduce the visual impact of the mine;
- The limited elevation in which any workings will be exposed, and the relatively short period before planting/sowing as part of the rehabilitation program takes effect. As mentioned for the bund, average growth rates between 1 and 2 metres per annum can be expected for trees/shrubs sown onto the rehabilitated area. Figure 3 indicates the relatively small areas that will be exposed in any given year. Rehabilitation (tree seeding to return forest) will immediately follow final recontouring. Any areas visible above the natural tree line will have a dense tree cover after 12 months of 1 to 2 metres in height.
- The limited duration of the mine workings.
- The absence of any significant exposure of mine workings to regional roads.

In summary, changes to the Mine Plan were made during the approval process to reduce the visual impact of the mine. Progressive rehabilitation will ensure any disturbance will be quickly reforested as described.

### Mine Infrastructure

The mine infrastructure area will be located on RL 55 on the overburden dump as shown in Figures 1 and 1(a). The site contains the work shop, bath house and main office as well as a small car park. The entire mine infrastructure area will be screened by surrounding ridges and natural forest. Buildings and structures will not be visible outside of the mine lease and will be painted in a colour similar to Dulux colourbond *Rivergum* (sample attached in Appendix 1) to blend in with the natural bushland. Examples of the relatively low heights of infrastructure facilities are as follows:-

- maximum height of coal stock pile is 5 metres;
- maximum conceptual design height of other buildings is 10.2 metres.

Plans of the relevant infrastructure buildings are shown in Appendix 2.



## Coal Preparation Plant

Initially all coal to be washed from the Donaldson mine will be processed at the existing Bloomfield wash plant. This will enable the washing characteristics of the Donaldson Coal to be tested and fully defined. The arrangement for this is outlined in Condition 104 of the Donaldson consent which reads:-

*“Upon commencement of coal extraction, the applicant shall initially make use of the coal preparation plant (CPP) at the adjoining Bloomfield coal mine for up to two years from commencement of mining or such other period as directed by the Director General. This will allow the Applicant to :-*

- 1. trial the washing of Donaldson coal to assist in the determination of its washing characteristics; and*
- 2. commence the earliest possible coal extraction at Donaldson, and hence hasten project completion.*

Once the trial wash is completed the washplant for the Donaldson mine will be designed. Prior to construction a detailed landscaping plan, specific to the CPP will be submitted to council.

The location of the plant will be as shown on the plan titled Donaldson Infrastructure unless a more suitable location is determined once the design is finalised.

## Access Road

The main access leading to Four Mile Creek Road (as shown in Figure 1) will not be visible from any outside location. Clearing of vegetation during access road construction will be kept to a minimum. No additional revegetation works are proposed as the access road will be screened by natural forest.

## Powerline Relocation

The main powerline will be relocated in year 2 as shown on Figure 1. Much of the relocated powerline will be located on rehabilitated mine areas. To the east of the mine, clearing will be undertaken according to recent powerline clearing guidelines as shown in Appendix 3.



The main features of these more sensitive environmental guidelines include:

- scalloped edges that come in closer where stanchions are located;
- vegetation in gullies not cleared;
- old habitat trees lopped, ring barked and left as habitat trees.

To the west of the mine the powerline will be located adjacent and parallel to the haul road and within the cleared easement of the haul road. No additional disturbance will be required.

In summary, the alignment will be screened by natural forest and the emerging trees on the rehabilitated area.

### Watermain Relocation

Relocation of a section of the watermain is proposed in year 4 of the mines operation as shown in Figure 1. The relocated pipeline will be buried underground with a 4m road easement above. All clearing will be kept to a minimum.

### Qualifications of Author of Landscape Plan

This plan has been prepared by Mark Burns, Director of Global Soil Systems, whose curriculum vitae is attached in Appendix 4.

## 4.3 Condition 92 - Linking the Landscape Plan and the EMS

92 *The Landscaping Plant shall be consistent with the Environmental Management Strategy and include:*

- (i) *provision for the establishment of trees and shrubs and the construction of mounding or bunding along the planned highwall and any other areas identified as necessary by the Councils for the maintenance of satisfactory visual amenity and the re-establishment of flora and fauna habitats and corridors;*
- (ii) *appropriate erosion control and sediment control practices for earthworks associated with the landscaping;*



- (iii) details of the visual appearance of all buildings, structures, facilities or works (including paint colours and specifications). Buildings and structures shall be designed and constructed so as to present a neat and orderly appearance and to blend as far as possible with the surrounding landscape; and*
- (iv) details, specifications and staged work programs to be undertaken, including a maintenance program of all landscape works, building materials and cladding.*

In response to the above conditions the following points are noted:

## General

- The Environmental Management Strategy (EMS) is currently being prepared. The Landscape Plan will form a component of, and be consistent with, all aspects of the EMS.
- The provision of bunding and tree establishment along the edge of the planned highwall and in other areas has been discussed in previous sections of this report.

## Erosion and Sediment Control

- The principle area of disturbance resulting from the specific establishment of landscape works is the area affected by construction of the bund along the edge of the highwall as described above. A detailed erosion and sediment control plan is being developed for the mine (in response to Conditions 66 and 67). This plan will encompass the requirements of all landscaping works as well as other disturbance activities. The following general erosion control guidelines will be adhered to:
  - (i) minimal removal of vegetation;
  - (ii) construction of diversion and/or cut off drains around disturbed areas;
  - (iii) diversion of runoff water from disturbed areas to appropriate sediment ponds;
  - (iv) strategic location of sediment ponds;



- (v) the use of silt fencing and straw bales downhill of any disturbance where collection of runoff has not been allowed for in appropriate sediment ponds, etc. (Mostly temporary structures.);
- (vi) the rapid establishment of stabilising grasses on areas not to be reafforested or trafficked.

## Visual Appearance of Buildings, etc.

- The conceptual design of infrastructure buildings is shown in Appendix 2.
- As previously highlighted infrastructure will not be generally visible from areas outside the lease. Specific buildings and structures to be constructed include the workshop, administration offices and bath house.

## Details, Specifications and Staged Work Program

### Vegetation Establishment

The specification for revegetation of the bund along John Renshaw Drive is shown in Section 4.1 of this report.

Any screening undertaken on other properties at the request of the landowners will be established using planted tubestock. Relevant tree screen area on these properties will be deep ripped and planted with tubestock (with two slow release fertilizer pills). Each tree will be protected by a bio-degradable plastic hare guard. Weeds will be controlled through the initial placement of a 300mm square weedmat. The species, density and location of the plantings will be determined in conjunction with the landowner.

Other visual screening will be provided by naturally occurring vegetation.

### Vegetation Maintenance

Once tree seeded, the bund along the high wall will require negligible maintenance. If areas of trees fail to establish on the bund they will be reseeded. Direct tree seeding has a high success rate if undertaken





correctly. It has very low maintenance and produces a naturally evolving forest system that requires minimal input.

For planted trees, careful spraying of weeds around each tree will be undertaken using Glyphosate at 3 monthly intervals for the first 12 months after planting. Trees will be initially watered as required to ensure maximum survival. Any dead trees will be replaced after six months and again at 12 months.

#### Building Maintenance

All buildings will be painted a colour similar to Dulux colour bond *Rivergum* (see sample in Appendix 1). The condition of painted structures will be assessed annually and repainted as required.

#### 4.4 Condition 93 – Council Requirements

*93 The Applicant shall implement the approved Plan in accordance with Councils' requirements and make copies available to the Community Consultative Committee within 14 days of approval by Councils.*

Donaldson Projects Pty Ltd will comply with the above condition.

#### 4.5 Condition 94 – Screening of Affected Properties

*94 The Applicant shall plant screening vegetation on properties at higher elevation and with views across the mine site in the Black Hill area if requested in writing by the landowner, within three months of that request. The species, density and location of the plantings shall be determined in consultation with the landowner.*

Donaldson Projects Pty Ltd will respond rapidly in a positive manner to such requests and implement works accordingly. The species, density and location of plantings will be determined in consultation with the land owner.





4.6 Condition 95 – Landscape Bond

95 *The Applicant shall lodge a landscaping bond with Cessnock Council to a maximum of \$10,000 at any one time, for landscaping during the life of mine. This bond does not affect rehabilitation works covered by the Mining Act.*

Donaldson Projects Pty Ltd will lodge the above landscape bond with Cessnock Council.



## 5.0 SUMMARY

The need for specific landscape works for screening purposes has been identified for the bund along John Renshaw Drive and (upon request) for affected properties. Rehabilitation of mined areas involving the re-establishment of native forest cover, will occur immediately after reshaping and topsoiling of mined areas. Mine infrastructure will be located to minimise visual impact and will generally be screened by remnant native forest. The mine will respond positively to any concerns expressed by Council and/or the Community Consultative Committee.



## GLOBAL SOIL SYSTEMS

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### *Appendix 1*

*Colour of Infrastructure Buildings  
Dulux Colourbond "Rivergum"*



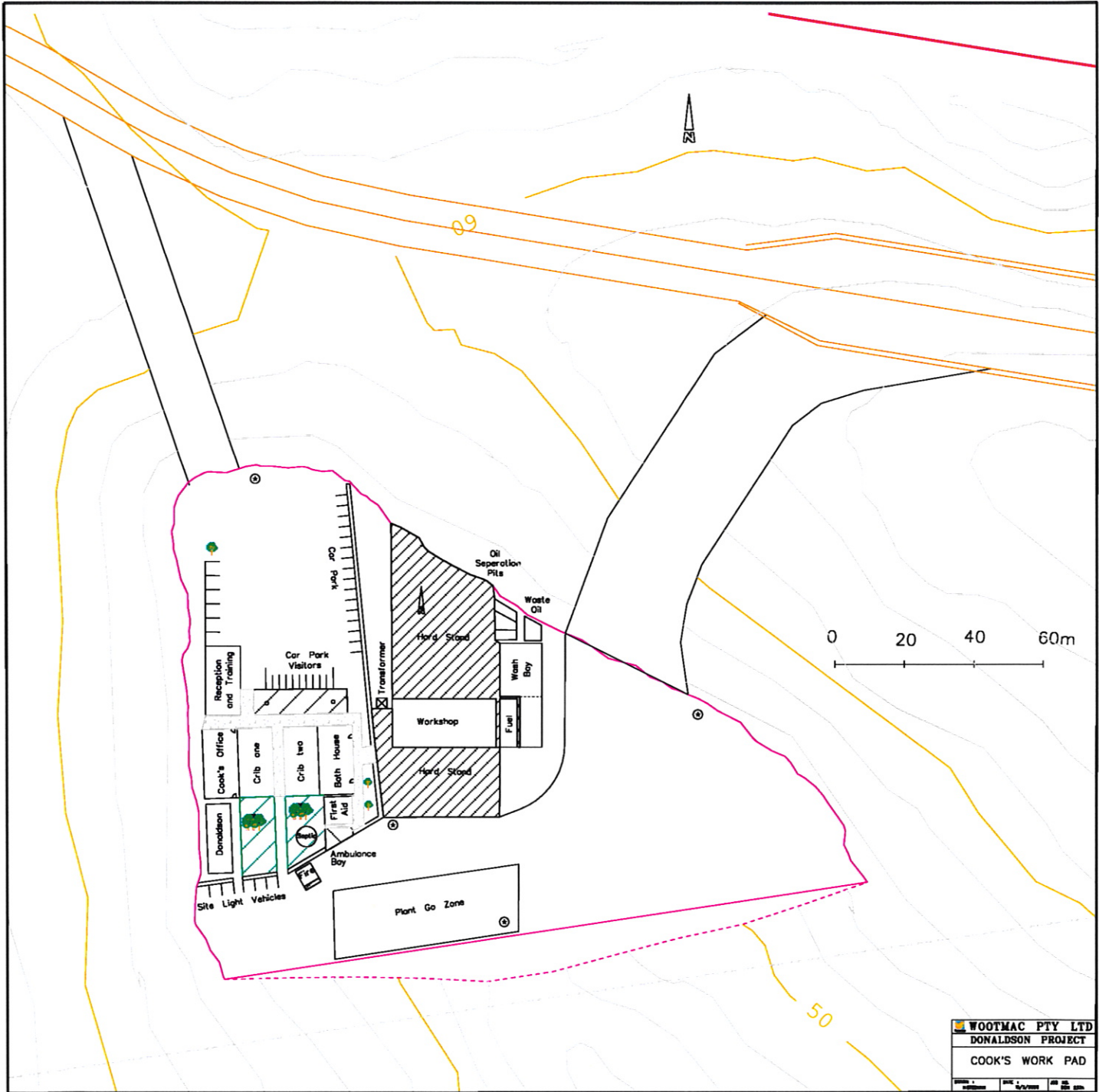
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## *Appendix 2*

### *Details of Mine Infrastructure Buildings*




**WOOTMAC PTY LTD**  
 DONALDSON PROJECT  
 COOK'S WORK PAD  
DATE: 1/1/2010    DRAWN: J. WOOD    CHECKED: J. WOOD    SCALE: AS SHOWN



# Memo

**To:** Sam Reich  
**From:** Tony Gunter  
**CC:**  
**Date:** 14/02/00  
**Re:** Proposed Facilities at Donaldson Project

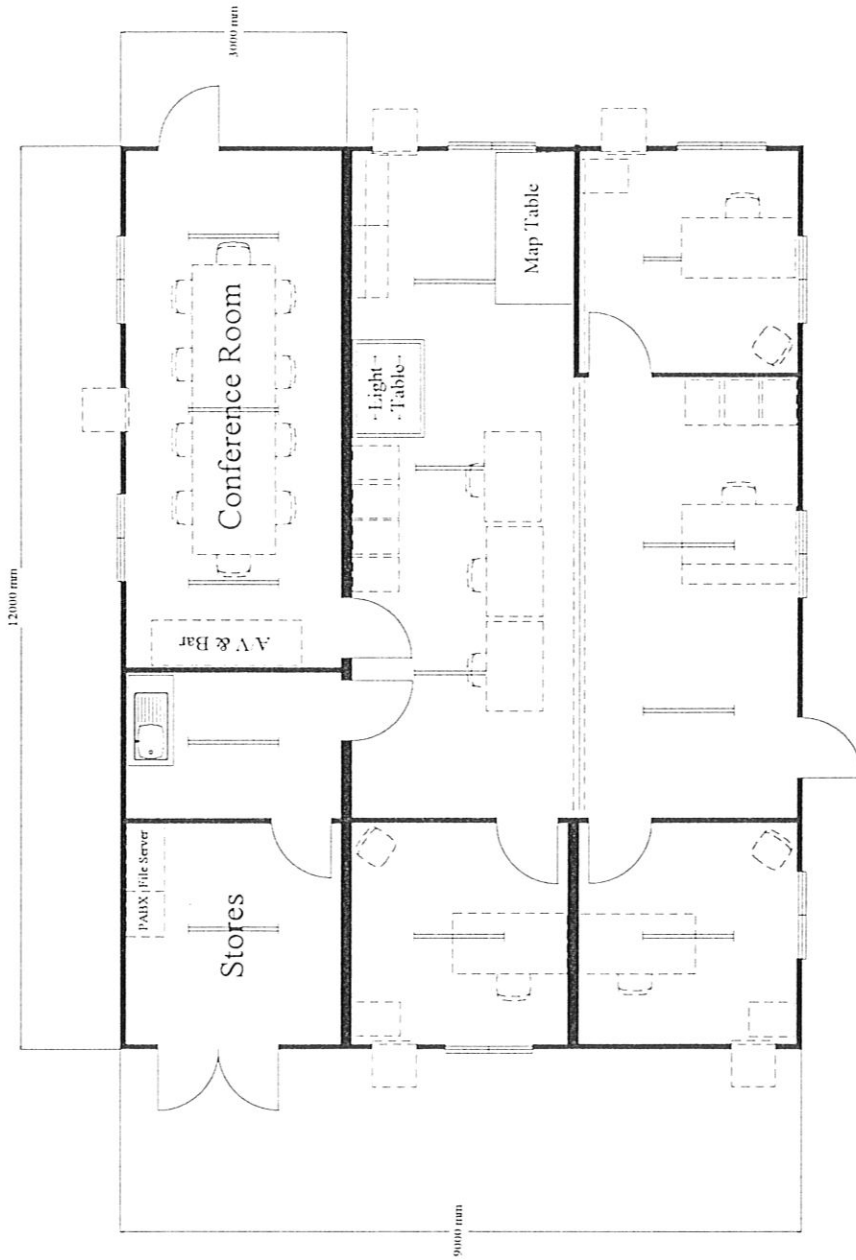
Listed below are the dimensions and brief spec of the proposed facilities at the Donaldson Project.

Description	Size	Comment
Donaldson Office	12 x 9 x 4 mtr	X 2 offices, x1 reception area
Cook's Office	14 x 6 x 4 mtr	X2 offices, common area, kitchen
Crib 1.	14 x 4 x 4 mtr	Kitchen sink
Crib 2.	14 x 4 x 4 mtr	Kitchen sink
Bath House	14 x 4 x 4 mtr	Layout to be confirmed
First Aid	6 x 4 x 4 mtr	X 1 sink, x 1 WC
Training & Meeting Room	12 x 4 x 4 mtr	Open - x 1 Reception
Fire Shed	4 x 4 x 6 mtr	
Workshop	30 x 13,500 x 10,200 mtr	Attached Sketch
Transformer Compound	4 x 4 x 4 mtr	
Fuel Farm & Washbay, Separation Pits & Waste Oil Tanks (combined)	30 x 15 x 6 mtr	

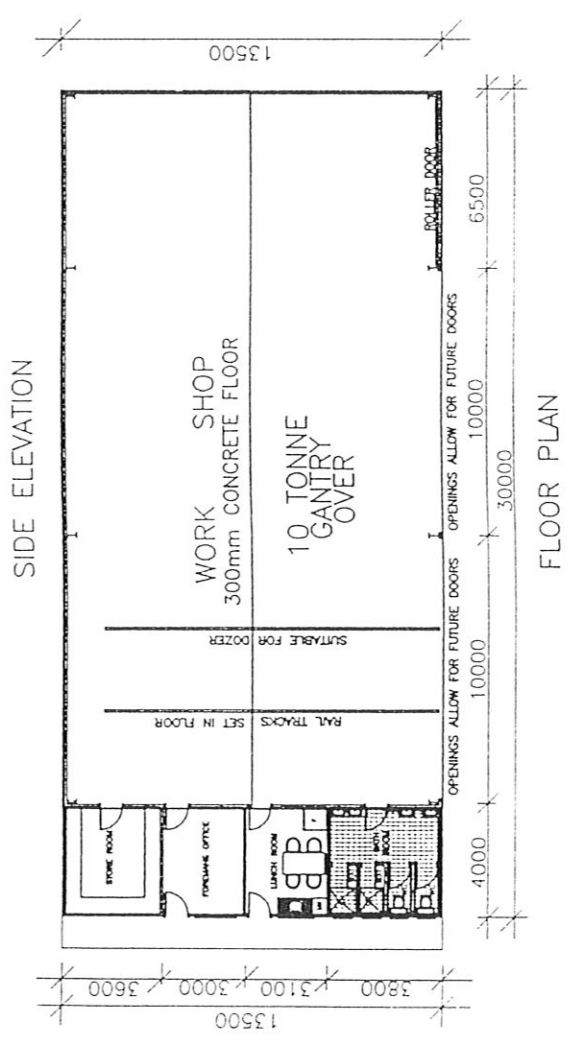
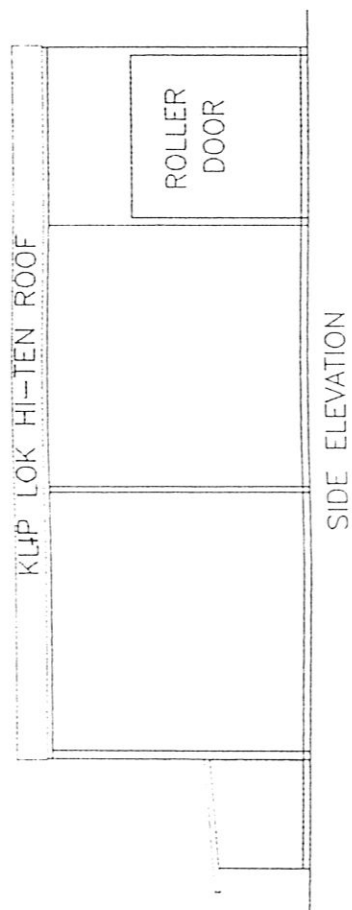
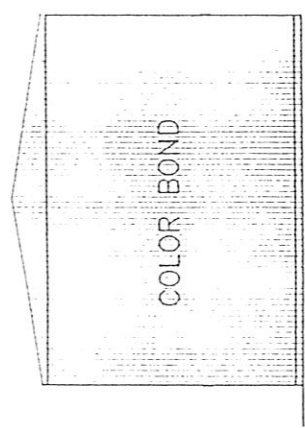
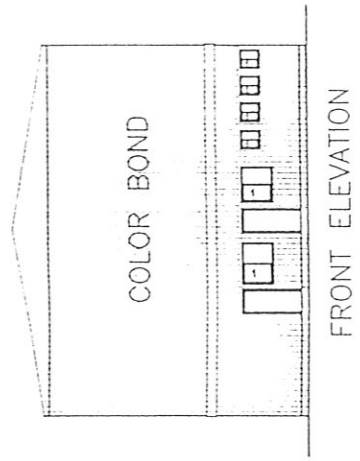
Please Note \* All facilities are to be Green, White, Brown in Colour.

Regards, Tony

# DONALDSON PROJECT OFFICE



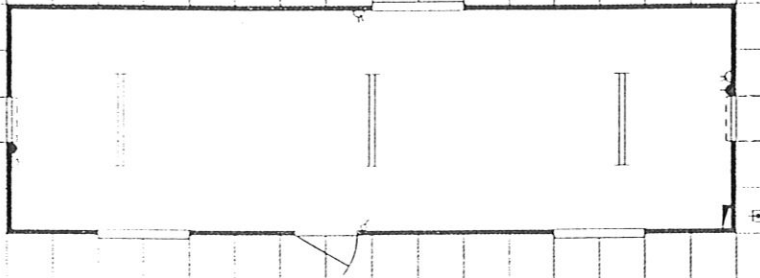
PRELIMINARY DRAWING ONLY  
DO NOT USE FOR CONSTRUCTION  
FOR PURPOSE





## MULTIPURPOSE

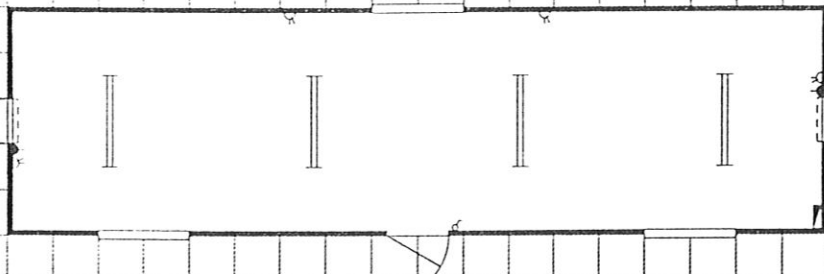
**MP – 9630 Multipurpose**  
9.6 x 3.0 m.



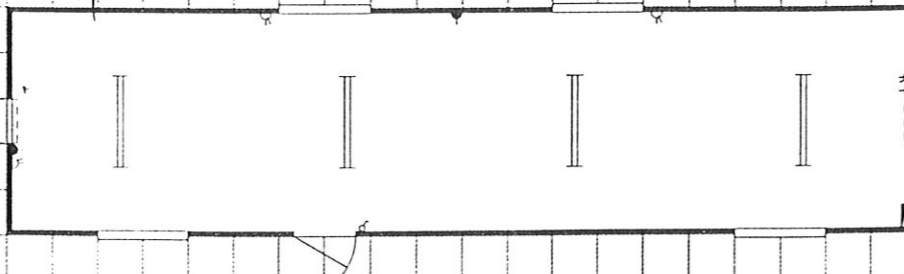
### Legend

- 2 x 36 watt fluoro
- ⊕ Point of entry
- ▭ Circuit breaker board
- Wall exhaust fan
- ⊗ Ceiling exhaust fan
- Ceiling light
- ⊙ Well glass light
- ▽ Wall light
- ⊖ Single 10 amp G.P.O.
- ⊖ Double 10 amp G.P.O.
- ▲ A/C G.P.O.
- ⊗ Light switch
- ⊕ Floor waste
- Water inlet

**MP – 1030 Multipurpose**  
10.8 x 3.0 m



**MP – 1230 Multipurpose**  
12.0 x 3.0 m



# Training + Meeting  
Example Only

The above designs are standard floor plans available from James Hardie Building Systems.

James Hardie Building Systems can meet any stage of your project's requirements with a Service and Support Programme that includes:

- building design, layout, furniture and equipment
- manufacture and transportation
- site preparation, installation and services

Please check with a James Hardie Building Systems Branch Office for confirmation of current issue, as these layouts are subject to change. Also check local building and industry regulations.

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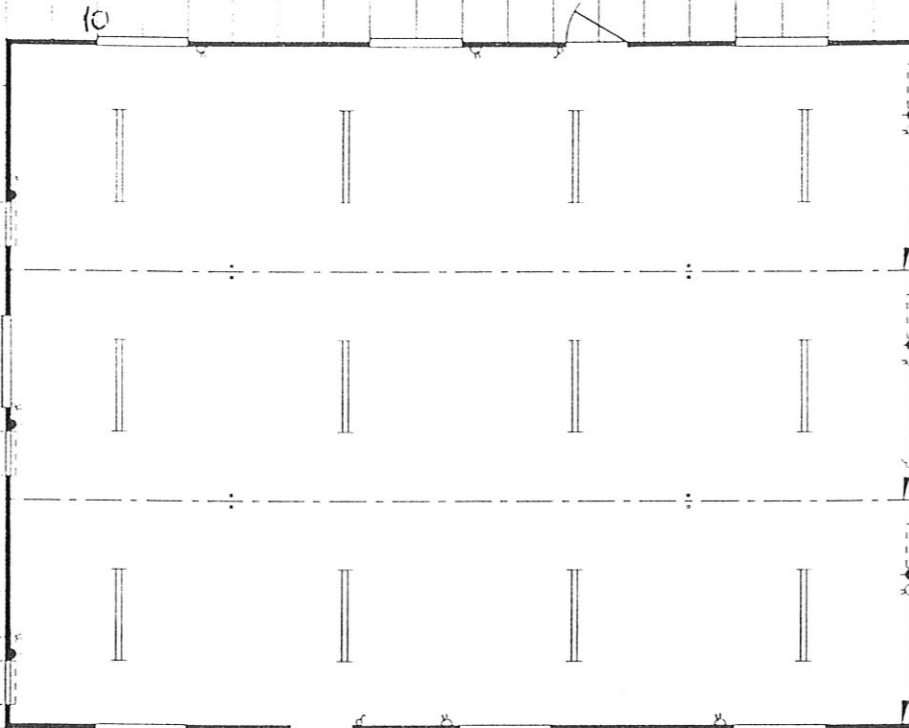
**James Hardie Building Systems**

## MULTIPURPOSE

MP - 1290 Multipurpose  
12.0 x 9.0 m

### Legend

- 2 x 36 watt fluoro
- ◻ Point of entry
- ▭ Circuit breaker board
- ⊖ Wall exhaust fan
- ⊗ Ceiling exhaust fan
- Ceiling light
- ⊙ Well glass light
- ▽ Wall light
- ⊕ Single 10 amp G.P.O.
- ⊕ Double 10 amp G.P.O.
- ▲ A/C G.P.O.
- ⊙ Light switch
- ⊕ Floor waste
- ▶ Water inlet



# Cooks Crib ①

# Crib ② Bathhouse.

(Example Only)

The above designs are standard floor plans available from James Hardie Building Systems.

James Hardie Building Systems can meet any stage of your project's requirements with a Service and Support Programme that includes:

- building design, layout, furniture and equipment
- manufacture and transportation
- site preparation, installation and services

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# GLOBAL SOIL SYSTEMS

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## *Appendix 3*

### *Proposed Powerline Clearing Guidelines*

**Donaldson Coal Mine  
Beresfield**

**General Powerline Vegetation Management**

**January 2000**

**1 INTRODUCTION**

During the operation of the Donaldson open-cut coal mine, it will be necessary to relocate the main powerline. The relocation of the powerline will require the disturbance of vegetation and/or fauna habitat for the installation of tower structures/power poles and to provide safety clearances for the electric power lines.

**2 MANAGEMENT**

**2.1 Vegetation Management**

The current trend in the management of vegetation during powerline construction and operation is to minimise vegetation clearance. The measures provided below are general measures which apply to the powerline construction and operation industry, and are not specific to the Donaldson site. Only measures which are relevant to the site will be applied. General powerline vegetation management includes:

- tree-logging (rather than removal) where only the parts of the tree potentially causing a safety issue will be removed. This is particularly feasible when the trees are close to the towers/poles or in gullies where the line can span vegetation with higher clearances;
- scalloped clearing to be conducted in the vicinity of towers/poles and potentially off ridge tops to minimise vegetation clearing at these areas;
- the use of helicopter stringing throughout the line where appropriate, to remove the need to clear a 2m wide area down the centreline, particularly relevant for areas identified as sensitive;
- retention and spanning of sensitive vegetation by adjusting tower/pole locations and/or heights. This is particularly relevant for areas of riparian vegetation;
- native vegetation cover will be maintained and structures located in open land wherever possible, with consideration being given to land use constraints;
- retention of riparian vegetation at rivers and streams and gully vegetation;
- selection of drum and winch sites to minimise clearing of vegetation;
- access tracks will follow existing tracks or previously disturbed areas;
- temporary access tracks located in sensitive areas will be rehabilitated following completion of construction;
- native vegetation which is removed for construction purposes should be retained on site or may be mulched on site to be used for rehabilitation purposes depending on the local circumstances; and
- a qualified arborist should be available during any clearing activities in areas of potential sensitivity or areas requiring particular vegetation management

**2.2 Controlled Felling of Trees**

Hollow-bearing trees can provide habitat for various fauna species, such as arboreal mammals, owls and microchiropteran bats. In the instance where a hollow-bearing tree

has to be felled during powerline construction, the tree is assumed to provide habitat for fauna.

To minimise the risk of harm to any animal that may inhabit the tree, it is possible to control fell the tree. The main aim of this procedure is to protect individual animals and is an attempt to ameliorate potential impacts on individual animals.

Further details regarding the controlled felling of trees is available, if required.

### 2.3 Fauna Species Protection Management

The main management measure which can be implemented during powerline construction which minimises the potential impacts on fauna species, is to undertake a pre-clearing survey.

A pre-clearing survey should be conducted in areas which may be affected by construction activities, including stockpiles, truck access and parking and general construction activities such as tower/pole placement. A pre-clearing survey should be undertaken by a qualified biologist.

A pre-clearing survey includes fauna habitat checks of hollow logs and leaf litter on the ground, rocky ledges and ridges, dead stumps, hollow-bearing trees, caves, old car bodies or general rubbish (provides habitat for reptiles and amphibians) and habitat rock.

If significant rocky ledges, caves or habitat rock is located during the pre-clearing surveys further information is available regarding their management. Again the basic premise is to avoid them where possible or minimise the potential for disturbance.

### 2.4 Hollow-bearing Tree Management

Many fauna species such as nocturnal birds, flying mammals (ie fruit-bats and microchiropteran bats), non-flying mammals (ie possums and gliders) use hollow-bearing trees as habitat resources for roosting purposes. It is the primary aim of this project to retain hollow-bearing trees. In some instances entire trees or limbs will require removal for safety reasons.

It is noted that the main purpose of the fauna management part of the hollow-bearing tree protocol is to protect individual animals from an animal welfare point of view.

Hollow-bearing management measures include:

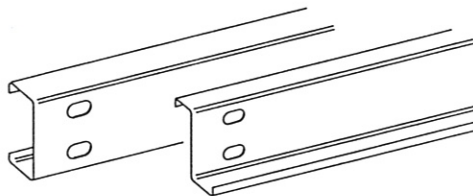
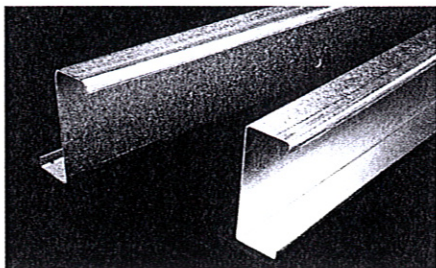
- consultation with a qualified biologist prior to hollow-bearing tree modification or removal regarding the potential for fauna species to occur and the management of the tree. The biologist should be on-site during the modification or removal of hollow-bearing trees.
- retain hollow-bearing trees, by avoidance (raising tower/pole heights or moving their position) where this is practicable;
- where not possible, prior to lopping or felling a hollow-bearing tree, a pre-clearing check is required, immediately prior to clearing (ie within a week before clearing activity), to ascertain whether any animals are actually using the limbs as habitat. This should be a visual inspection by the qualified biologist or an appropriately trained individual;
- where full retention is not possible, lopping and ring-barking of the tree will be considered as this will retain the hollows though the tree is no longer living;
- where ring-barking is not an option, the management approach is to lop only those limbs which must be removed and retain the rest of the tree;
- where the limbs which are to be removed contain hollows they should be removed carefully (by lopping) and relocated to another tree of the same species (where practicable) in the vicinity and secured onto a supporting limb or, as the less favourable alternative, place it on the ground as a hollow log;

- where a hollow-bearing tree must be removed entirely it is suggested that the qualified biologist be consulted regarding the seasonal constraints associated with removal of specific hollow-bearing trees and will provide site and circumstance specific solutions. In some instances it may be appropriate to remove the hollow-bearing tree weeks or months in advance or be removed immediately prior to stringing of the transmission line. The hollow-bearing limbs should be removed carefully and either secured onto similar trees or placed on the ground; and
- a qualified biologist (in tree management and fauna handling) and arborist (with relevant experience in the management of native tree species) will be available to provide expert advice.
- ground crew will be provided with training regarding the importance of hollow-bearing trees and how to implement the management approach outlined above.

An additional management measure which will further ensure the minimisation of potential impacts is the training and induction of construction staff regarding the correct management of natural resources such as vegetation and hollow-bearing trees.



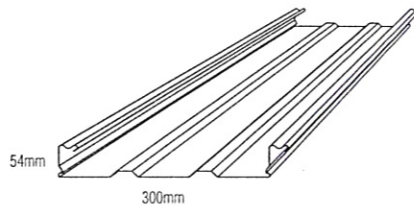
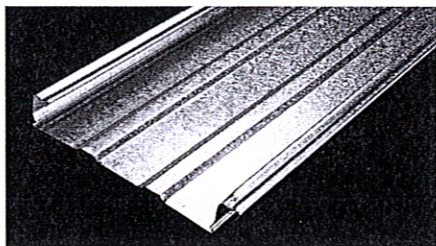
# Structural Products



Punched and Unpunched available

## STRAMIT® C & Z PURLINS

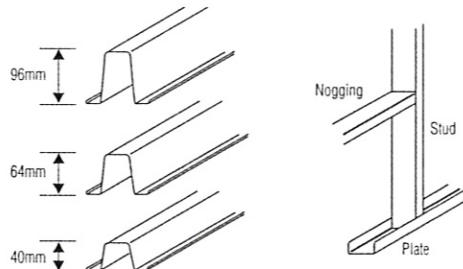
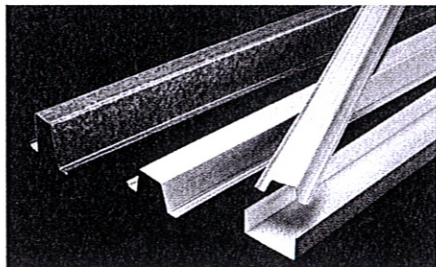
Stramit offers a huge range of purlins, including 100, 150, 200, 250, 300 and 350 series in both C and Z profiles for use as roof purlins or wall girts, all cut to length. Heavy duty Z350 Galvaspan® coating ensures long-term protection. Stramit also offers a snap-in purlin bridging system for quick installation.



## STRAMIT CONDECK HP®

Permanent metal formwork for suspended concrete slabs. *Stramit Condeck HP*® steel decking is supplied to site cut-to-length for speedy installation. Saves on formwork and provides a ready-finished ceiling.

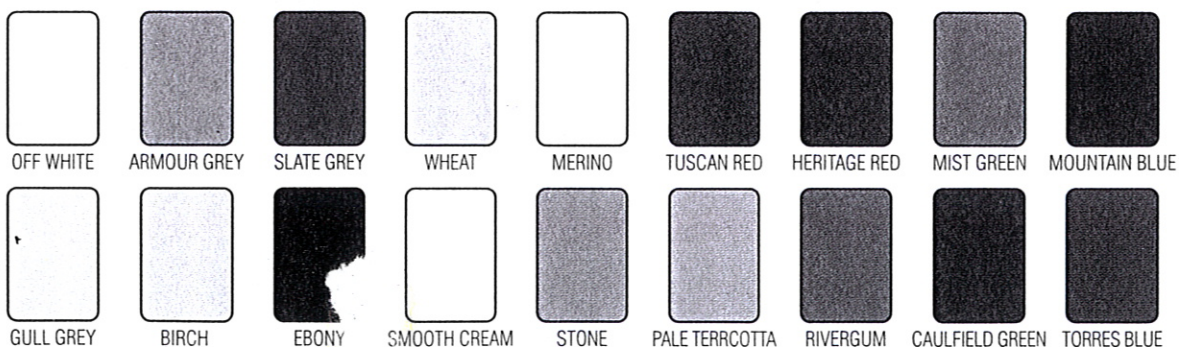
• Edgeform available in various sizes up to 8.0m long.



## STRAMIT® LIGHTWEIGHT STRUCTURAL SECTIONS

Stramit manufactures a range of Top Hats, Roof Battens, Ceiling Battens and Stud Sections for domestic roofing, garages, sheds, partitioning, etc.

# Standard Colour Range



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*Standard  
Decor  
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## GLOBAL SOIL SYSTEMS

Environmental and Land Management Consultants  
Windaf Pty Limited ACN 059 448 323 and Windaf Pty Limited ACN 059 448 823  
trade as GLOBAL SOIL SYSTEMS

### *Appendix 4*

*Curriculum Vitae for Mark Burns*  
*– Author of Donaldson Landscape Plan*





## GLOBAL SOIL SYSTEMS

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trade as GLOBAL SOIL SYSTEMS

Mark W. Burns  
Director, Global Soil Systems

### Experience

Over the past 20 years Mark Burns has had extensive experience in mine rehabilitation, environment consulting, forestry, landscaping, nursery management, plant propagation, mine rehabilitation, project management and forestry research. He has managed multi-consultant, multi-discipline project teams for the preparation of resource based environmental impact statements and a wide range of other environmental studies. He is a former District Forester for the then Forestry Commission of NSW based in Muswellbrook and has been extensively involved in the design and implementation of numerous broadacre disturbed/mined land rehabilitation projects in New South Wales, Queensland and overseas. He is experienced in undertaking reforestation research programmes for hostile sites and managed a major NERDDC research project for the NSW Coal Association and Commonwealth Government which examined physical and chemical factors affecting tree establishment on mined land. He has developed innovative direct tree seeding techniques for the reforestation of mines areas.

### Contact Details

Global Soil Systems  
Tel: (02) 4934 3500  
Mobile: (0417) 288 903  
Fax: (02) 4934 8955  
Email: global@hunterlink.net.au  
Home: (02) 4930 1783  
Address: P O Box 675  
Maitland NSW  
Australia 2320

### Education

Bachelor of Science (Forestry-Hons 1), Australian National University, 1974. Master of Resources Science, University of New England, 1988.



## Recent Representative Projects

- Gladstone Port Authority, Reafforestation of disturbed port areas using direct seeding techniques. Reafforestation research.
- Newhope Colliery, Landform and revegetation research.
- Peabody Resources, Numerous large scale tree screen and mine rehabilitation projects. Revegetation design.
- Powercoal, Borehole rehabilitation, preparation of code of Environmental Practice, bushland regeneration (numerous sites over long time period).
- Port Corp Qld, Landscaping, erosion control, Reafforestation using direct seeding techniques. Specialist reafforestation techniques.
- Coal Mines EISs, Bengalla, Wambo and others. General supervision, specialist input.
- Ash Dam Revegetation, Mount Piper, Gladstone. (Revegetation research).
- Southern Pacific Petroleum, Reafforestation research over seven (7) years.
- United Colliery, Ravensworth Feedlot and others, Landscape design and implementation.
- John Holland Construction, Large scale bushland regeneration and landscaping, Rouse Hill.
- PWD, Assessment of likely effect of contaminants on future landscaping.
- MIM, Oaky Creek, Landform design and rehabilitation research. Broadacre reafforestation.



- BHP, Mt Owen Mine, Seed collection, reforestation research, forest reinstatement (over 100,000 trees planted). Direct seeding trial - numerous other activities.

## Recent Representative Project cont.

- Muswellbrook Council, Assessment of tree plantations for Effluent Disposal.
- Hong Kong, Urban landscaping and rehabilitation.
- China Coal Mine Rehabilitation, Research and education. Broadacre reforestation of disturbed area contract project management.
- State Rail Authority Batter Stabilisation Project (Mount Thorley).
- BHP Rod and Bar, Revegetation. Direct tree seeding

## Work History

April 1997 - present

DIRECTOR OF GLOBAL SOIL SYSTEMS

Numerous clients and experience in following the areas:

- Mine Planning and Rehabilitation.
- Revegetation.
- Environmental Management.
- Soil Surveys.
- Erosion and Sediment Control Plans.
- Landscape Plans.
- Water Management.



Work History cont.  
1993 - April 1997

**DIRECTOR/REGIONAL MANAGER (NEWCASTLE OFFICE)  
HLA-ENVIROSCIENCES PTY LIMITED**

Co-ordinate all consulting activities associated with HLA-Envirosciences' Newcastle Region.

- Ongoing design and implementation of reforestation and landscape projects in NSW and Queensland.
- Reforestation research particularly involving direct seeding techniques.
- Numerous other activities including most duties outlined below under Manager, Mine Environment.
- Regulate all consulting and laboratory services in the Newcastle Region.
- Rehabilitation design work in Hong Kong. Lectures and reforestation trials in China.

1990-1993

**MANAGER, MINE ENVIRONMENT,  
ENVIROSCIENCES PTY LIMITED**

As Manager of this section of the Company responsibilities included:

- Supervised and undertook a wide range of environmental studies for the mining industry and other clients. Recently completed EIS's include:
  - Bengalla Open Cut Coal Mine - An EIS for Peabody Resources Pty Limited for a large 7 million tonne per annum (Mtpa) open cut coal mine.



- Extension to Warkworth Open Cut Mine - EIS for a 2-3 Mtpa extension to a large existing coal mine.
- Cumnock Open Cut Coal Mine - An EIS for Cumnock Holdings Pty Limited for several open cut coal mines in the Upper Hunter Valley.

## Work History cont.

- Undertook and supervised a range of environmental studies and investigations for local councils, government and private industry. Studies have included sewerage effluent and sludge disposal studies, co-ordination of flora and fauna studies, supervise archaeology, soil conservation, groundwater studies etc.
- Design and implement softworks components of landscape projects.
- Design and implement large scale revegetation programmes on mines and other disturbed sites with particular emphasis on reforestation .  
Examples include:
  - Reforestation projects at Peabody Resources - Ravensworth Mine, Hebden Mine, Wambo Mining - Wambo Mine, Coal and Allied - Mt Thorley Washery, CRA (Novacoal) - Howick Mine, MIM - Oaky Creek Mine (Queensland), Gladstone Port Authority Southern Pacific Petroleum (Gladstone) and many others.
- Tree seed collection, treatment and application. Considerable experience exists in the reforestation of disturbed sites using direct seeding techniques.
- Rehabilitation contractor. Extensive hands-on involvement in mine rehabilitation.
- Soil and spoil characterisation as a pre-requisite to revegetation.



- Supervise a team of 6-8 professionals involved in a diverse range of environmental studies together with an extensive array of external sub-consultants, contractors and casual employees.
- Marketing, promotion and a range of administrative functions associated with position of manager.
- Directly accountable for the preparation of budgets and achievement of revenue and expenditure projections.

## Work History cont.

- Integrate the activities of the Mining Environment Section with Envirosiences laboratories and other professional Company staff.
- Expert Court witness as specialist consultant (forestry/mine rehabilitation). Appearance on behalf of clients in various Commissions of Inquiries and Land and Environment Court.

1989-1990

## SENIOR CONSULTANT - RESOURCE PLANNING PTY LIMITED

- Preparation of rehabilitation plans for mining operations and other disturbed land.
- Forest reinstatement programmes.
- Land assessment duties including flora, forest fire and erosion investigations.
- Contract rehabilitation and particularly reforestation of large recontoured mine sites and farms. Specialist in direct seeding native tree species onto disturbed and often hostile sites.
- Preparation of Environmental Impact Statements for rural and extractive industries.



- Conducted numerous reforestation research programmes predominantly for major mining companies in New South Wales and Queensland.
- Nursery propagation of tree seedlings for use in mine rehabilitation.

## Work History cont. 1983-1989

### DISTRICT FORESTER - FORESTRY COMMISSION (MUSWELLBROOK)

- Research project supervisor for a three year National Energy Research Development and Demonstration Council (NERDDC) research grant. The research component examined direct seeding of Australian native tree species onto open-cut mine spoil. The project included an extensive research programme (both glasshouse pot trials and field experiments). Practical techniques were developed and are now being used on a routine, large scale basis. Masters Degree undertaken in conjunction with this programme.
- Manager of large amenity tree nursery for 6 years. Work included day to day management (including plant propagation nursery hygiene and seed collection), rationalisation of nursery operations, marketing and improving production levels and profitability of a nursery producing 350,000 trees per annum. Supervision of 8 to 13 staff. Profitability of nursery improved dramatically during this period.



- Advise on landscape design implementation.
- Establishment of contract tree planting programmes on numerous open cut coal mines. Implemented numerous direct seeding reforestation programmes on recontoured mine and quarry sites.
- Farm inspection and advice service relating to large scale farm tree establishment in low rainfall and poor soil areas in the Hunter Valley. Development of cost efficient and effective site preparation, planting and tree protection and maintenance techniques and equipment. Undertook numerous tree establishment seminars and field days for rural landholders and other Government departments.
- Acted on committees as Departmental representative to provide advice to the general public on rehabilitation and tree planting aspects.

## Work History Cont.

- Member of Total Catchment Management Committee for the Hunter Valley.
- Appeared as expert forestry witness in several court cases.
- Wrote regular weekly garden and "Tree of the Week" columns for local newspapers.

' 1980-1983

## FORESTRY OFFICER - Tsuen Wan Landscape Core Team - HONG KONG NEW TERRITORY DEVELOPMENT DEPARTMENT

Employed as a Forestry Officer under contract to the New Territories Development Department (Hong Kong Government) at Tsuen Wan New Town as part of a multi-discipline landscape core team. Duties included:

- Preparation of broadacre reforestation and hydroseeding (grass) specifications, which are now





incorporated in engineering manuals and used by multi-disciplinary landscape teams.

- Landscape design and implementation following major reclamation and engineering projects.
- Preparation (from scratch) of supporting contract documentation.
- Design, implementation and supervision of large reforestation projects including development of supporting contract documents and supervision of the tender process. Reforestation projects involved identification of large disturbed sites suitable for reforestation and liaison with consulting engineers at all stages of the work. Hands on involvement at all levels. Many difficult sites reforested. Planted over 0.5 million trees.
- Design and implementation of urban forestry/landscape programmes. Extensive involvement in urban and social forestry in the new territories. Worked closely with local Chinese field staff.

## Work History Cont.

- Responsible for trialing new hydroseeding techniques (from the United Kingdom) and erosion control matting (from Australia). Developed innovative hydroseeding (grass) specifications for use in large scale engineering contracts. Development of slope stabilisation techniques suitable for high intensity rainfall regions. Day to day supervision of same.
- Advised geotechnical engineers on revegetation techniques.

## 1975-1980

### FORESTER - FORESTRY COMMISSION (CESSNOCK)

- Supervision of logging and mining timber harvesting in a wide range of native forest types. Responsible for implementation of environmentally acceptable timber production programmes in native forests.



- Road design and construction in steep terrain. Supervised the construction of several major forest roads including Broken Back and Bangalow Roads.
- Recreation development and supervision in heavily visited State Forests within the Hunter Valley and Watagan areas. Conducted visitor surveys and co-ordinated maintenance and new development programmes.
- Forest protection including fire fighting and erosion control in coastal and inland state forests. Supervised the suppression of over 100 (some campaign) fires in State Forests.
- Forest hazard reduction using control burning in winter months.
- Supervised field crews (6-12 men).
- Co-ordinated establishment of large forestry plantations.
- Acted as Departmental representative on a range of committees including the Hunter Valley Conservation Trust and Catchment Protection Committees.

## Work History Cont.

- Provided tree establishment advice to landholders involving frequent farm inspections and advice on tree species election, site preparation, fencing, tree planting and tree maintenance. Assisted farmers with applications for government grants. Involvement in social and urban forestry.
- Preparation of timber harvesting plans and environmental reviews. Evaluation of timer reserves.

1970-1974

FORESTRY COMMISSION CADET - UNIVERSITY OF NSW AND AUSTRALIAN NATIONAL UNIVERSITY

Registration and Professional Forester - Australia  
(Member Institute of Foresters of Australia)



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Member of Hunter Environmental Institute