

CSR

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HORNSBY QUARRY RESTORATION

Concept Plan

restoration by beneficial reuse of spoil

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January 2000



Summary

Having completed use of its Hornsby quarrying operation, CSR is now looking to clean fill the 120 metre deep site with tonnage from several proposed developments.

The following plan details an opportunity for a beneficial land management program to transform the Hornsby quarry site into part of a continuous green corridor from Berowra Creek to Hornsby CBD

This will be achieved via the adaptive reuse of tunnel spoil produced from the Parramatta Rail Link and other proposed projects such as the Lane Cove (M2 Gore Hill) Tunnel.

The proposed concept allows tunnel spoil to be delivered to the site by either the existing rail network or via roads outside the existing arterial road network.

Hornsby Quarry

The Hornsby Quarry is located west of the Hornsby CBD, as shown on **Figure 1**, and has been operated since the early 1900's. The quarry void covers approximately 5 hectares and is over 100 metres deep. The quarry void contains airspace of up to 4.7 million m³, with 3.3 million m³ required to fill the void to the free draining level at RL 90.

Due to declining rock quality, the quarry operation is nearing the end of its economic life. Investigations have concluded the preferable mechanism to restore the site is via filling the void.

Hornsby quarry was nominated within the Parramatta Rail Link EIS as a potential spoil disposal opportunity, as outlined in **Figure 2**.

Parramatta Rail Link

The Parramatta Rail Link is a major public transport initiative by the NSW Government to link Parramatta to Chatswood via Epping, as shown on **Figure 1**.

The majority of the new rail link will be provided underground via tunnels. The EIS detailing the project estimates that the tunnel and station excavation will generate approximately 3.3 million m³ of spoil, most of which will be sandstone.

Spoil will be required to be removed from various construction sites along the rail route at Camellia, Carlingford, Waterloo Road, Delhi Road and Chatswood.

Although the EIS identifies that the majority of spoil will be moved by road transport, potential exists for up to 40% of tunnel spoil to be moved via rail transport.

The preferred strategy for spoil generated by the project is the adaptive reuse of material and beneficial land management programs, as identified in the EIS. This is in preference to disposal of spoil as landfill.

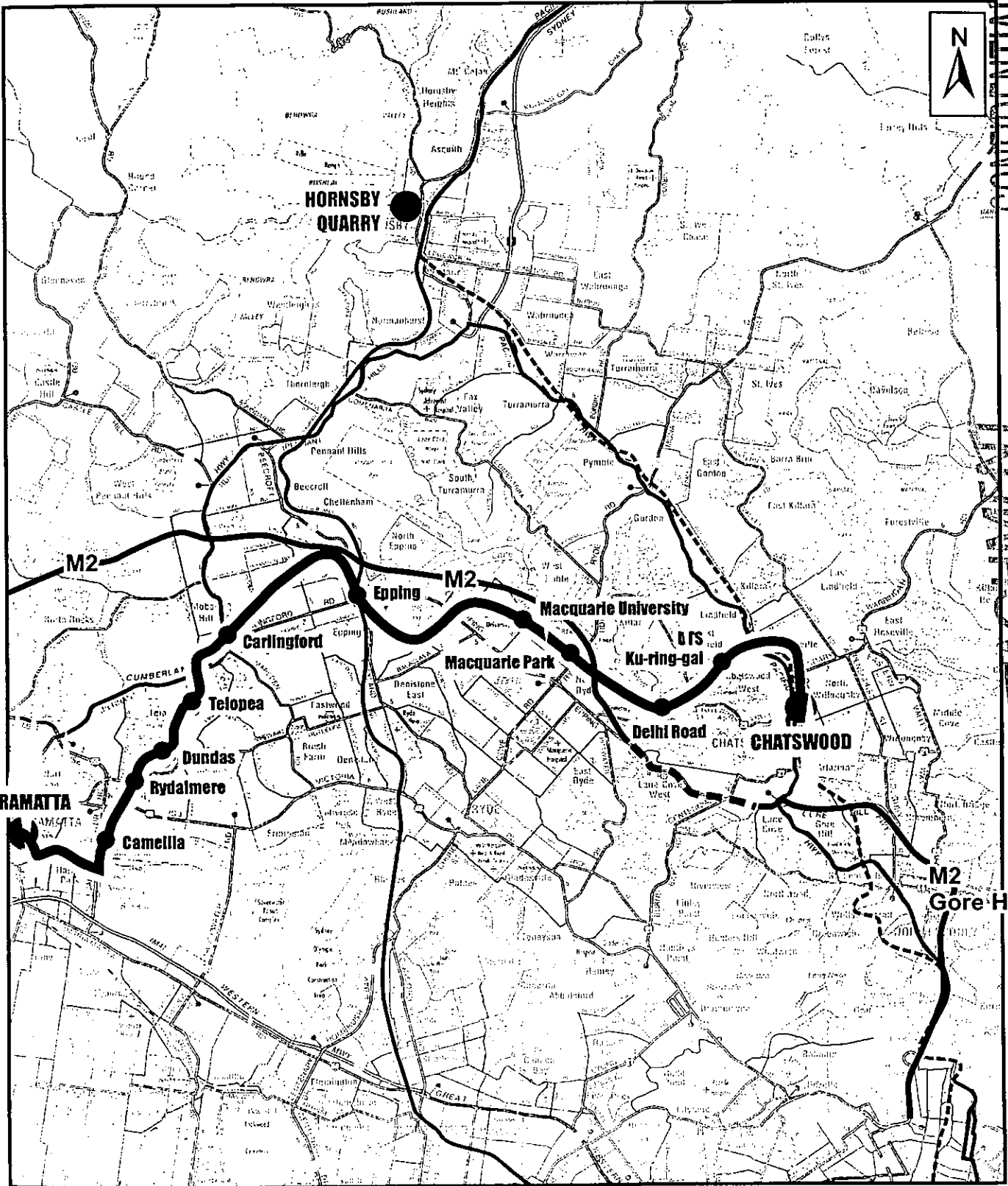
Spoil is expected to be generated over a 2.5 year period.

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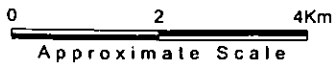
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REGIONAL LOCATION MAP

HORNSBY QUARRY RESTORATION



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- Parramatta Rail Link
- Proposed Gore Hill Tunnel
- Pacific Highway
- Pennant Hills Road
- Northern Railway Line
- North Shore Railway Line

Source : NRMA Ltd, 1993

Date : 17 January 2000

File Name : VA028901.CDR



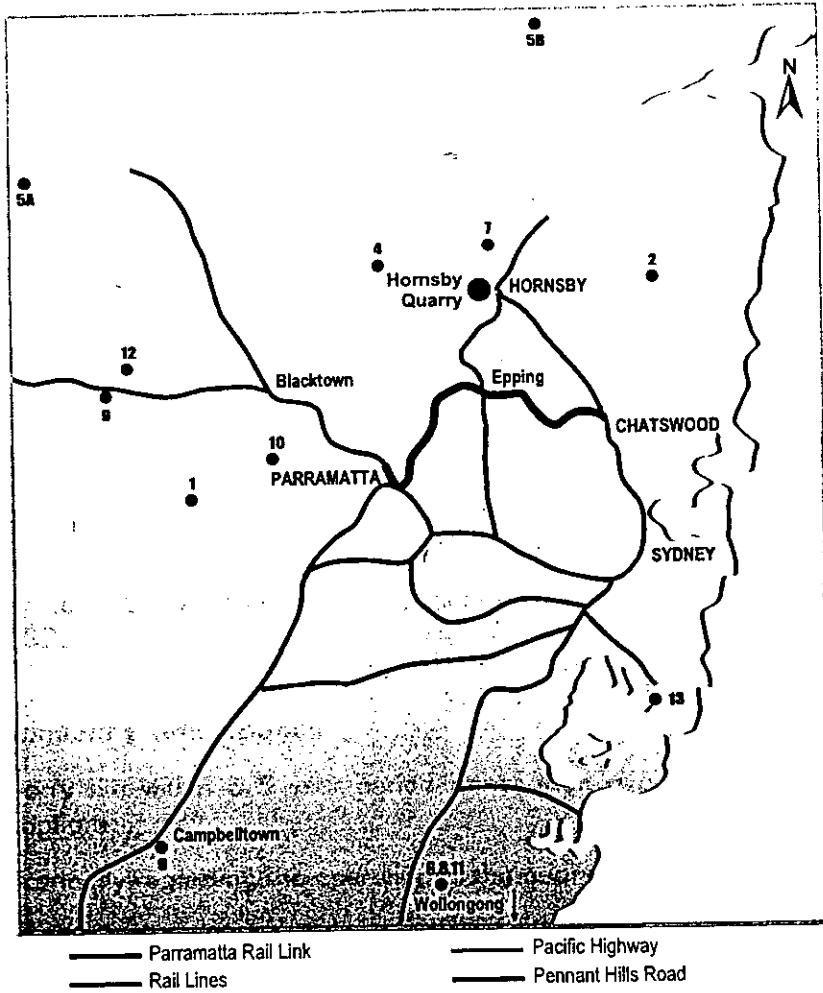
Figure 1

SPOIL DISPOSAL OPTIONS IDENTIFIED WITHIN EIS



HORNBSBY QUARRY RESTORATION

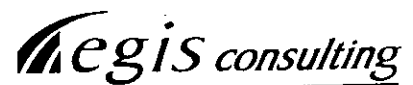
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Map Ref No	Company	Location	Concept	Capacity
1	Austral Bricks	Wallgrove Road, Horsley Park	Shale and sandstone for future uses	300,000m ³
2	Benedict Sand & Gravel	Narabang Way, Terry Hills	Reuse of sand, sandstone, shale	Not given
3	Brentwood Services Pty Ltd	Unavailable	Reuse of products in the building industry	Not given
4	CSR, Hornsby Quarry	Hornsby	Rehabilitation of Hornsby Quarry	3,300,000m ³
5a	Dixon Sands	Agnes Banks Sand Quarry	Rehabilitation of sites	20,000 tonnes
5b	Dixon Sands	Marita Quarry - Wisemans Ferry		
6	Dunmore Sand & Soil	Unavailable	Reuse to fill dredge pond	<1,000,000m ³
7	Hornsby Rural Fire Service	Hornsby	Use on fire trails	Not given
8	Huntley Heritage Environmental Management	Huntley & Avondale Collieries	Rehabilitation of collieries	5,500,000 tonnes
9	Lucas & Tait	Campbelltown	Spoil reuse	100,000m ³
10	NPWS	Prospect Canal Lands	Landscape and construct bike paths	150,000m ³
11	Port Kembla Port Authority	Port Kembla	Port development	5,000,000m ³
12	Pyrmont Raw Materials	St Marys	St Marys sandstone recycling project	Not given
13	Sydney Ports	Port Botany	Facilities at Port Botany	2,100,000m ³

Source : Table 11.4, Parramatta Rail Link EIS, ERM Kinhill, 1999



Australia

Benefits

Using excavated spoil to fill and restore the Hornsby Quarry provides the following benefits:

NSW State Government

- Closest large capacity void to the proposed Parramatta Rail Link.
- Cost efficient spoil disposal by rail.
- Convenient and well located to the majority of the spoil production sites along the Parramatta Rail route.
- Flexible transport modes to the site encourages use of rail for spoil transport as a more appropriate and sustainable transport mode.
- Rail access via either the main Northern Railway Line or the North Shore Railway Line.
- Road transport option has access off arterial road network via either Pennant Hills Road or the Pacific Highway.
- Restored Hornsby Quarry site creates a regional open space and green corridor from Berowra Creek to Hornsby CBD.

Hornsby Community and Council

- Restores quarry site within a 5 year period rather than a potential 30+ year period using other restoration options.
- Removes uncertainty regarding the operation of the quarry.
- Restores Hornsby Quarry site to an open space usage to complement the adjoining Council's Old Man Valley open space land.
- Creates a green corridor to the Hornsby CBD from the Berowra Creek bushland.
- Removes existing truck traffic from operation on local residential and CBD streets.
- Clean excavated spoil is preferable to other potential solid wastes.
- Least environmental impacts compared to other restoration options.

CSR

- Restores quarry in quickest time frame with least environmental impacts on local community compared to other potential restoration options.
- Ensures no associated traffic issues on local residential streets as opposed to alternate restoration options.
- Allows the quarry to be restored within a 5 year period as opposed to other potential restoration options which has 30+ year time frame.
- Facilitates transfer of the CSR lands for open space usage.



Concept Overview

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The Hornsby Quarry restoration concept consists of the following aspects, as detailed on **Figure 3** and **Figure 4**:

- **Spoil Transport** - Spoil would be transported to the site either by rail in rail wagons or by road in tipper trucks. Rail access is via the northern rail line to the rail siding north of Hornsby Station and road access is off George Street, which is the arterial access through the Hornsby CBD.
- **Spoil Dumping Station** - A transfer station would be established within the railway yard off George Street adjacent to the rail siding north of Hornsby Rail station. A dual dumping point would be established at the rail siding to enable bottom discharge from rail wagons and a road truck dumping point located adjacent to the rail line. The spoil would be conveyed to an inclined shaft located away from the rail siding to ensure no settlement occurs within the rail corridor as a result of the excavated shaft.
- **Spoil Transfer** - From the dumping point the spoil would travel by conveyor to the quarry void. The spoil would firstly be conveyed approximately 20 metres below the ground surface via a short conveyor down an inclined shaft. At the base of the inclined shaft the spoil would be transferred to a long conveyor and conveyed for approximately 350 metres within a 2.4 metre diameter tunnel. The spoil would then be conveyed for approximately 220 metres overland via a stacker for discharge into the void.
- **Spoil Placement** - The deposited spoil on the northern quarry working face will then be moved to the base of the quarry void for progressive placement within the quarry benches by a combination of bulldozers and off road haulage trucks. The spoil will be placed and compacted within the quarry benches in a series of lifts that will be progressively built upwards to fill the quarry void.
- **Site Restoration** - Once the free draining surface design levels are reached, the area will be restored and landscaped to produce a high quality open space to complement both the adjacent Hornsby Council Old Man Valley open space and the surrounding bushland.

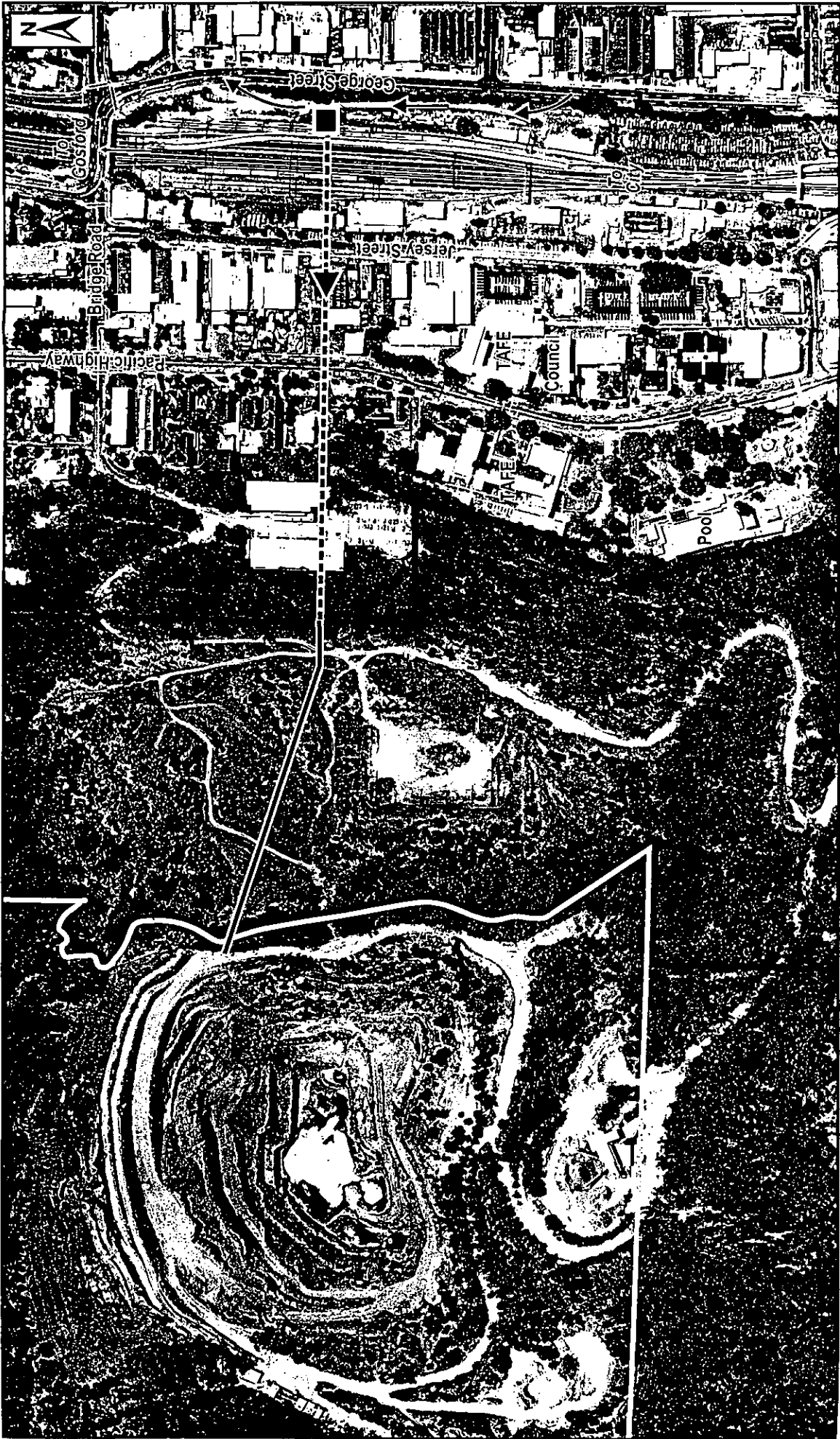
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The following access arrangements will need to be negotiated for the concept to be established:

- Access to the Hornsby rail yard for the transfer station.
- Use and modifications to the existing Hornsby rail siding.
- Land owners permission from Hornsby Council for the overland conveyor on Council land east of the quarry.

CONCEPT OVERVIEW

HORNSBY QUARRY RESTORATION

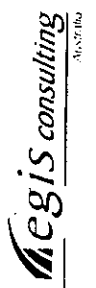


- CSR Property Boundary
- Rail/Truck Dumping Point
- Truck Access

- Possible Rail Siding
- Underground Conveyor
- Above Ground Conveyor
- Hornsby Shire Council Property Boundary

0 50 100m
Approximate Scale

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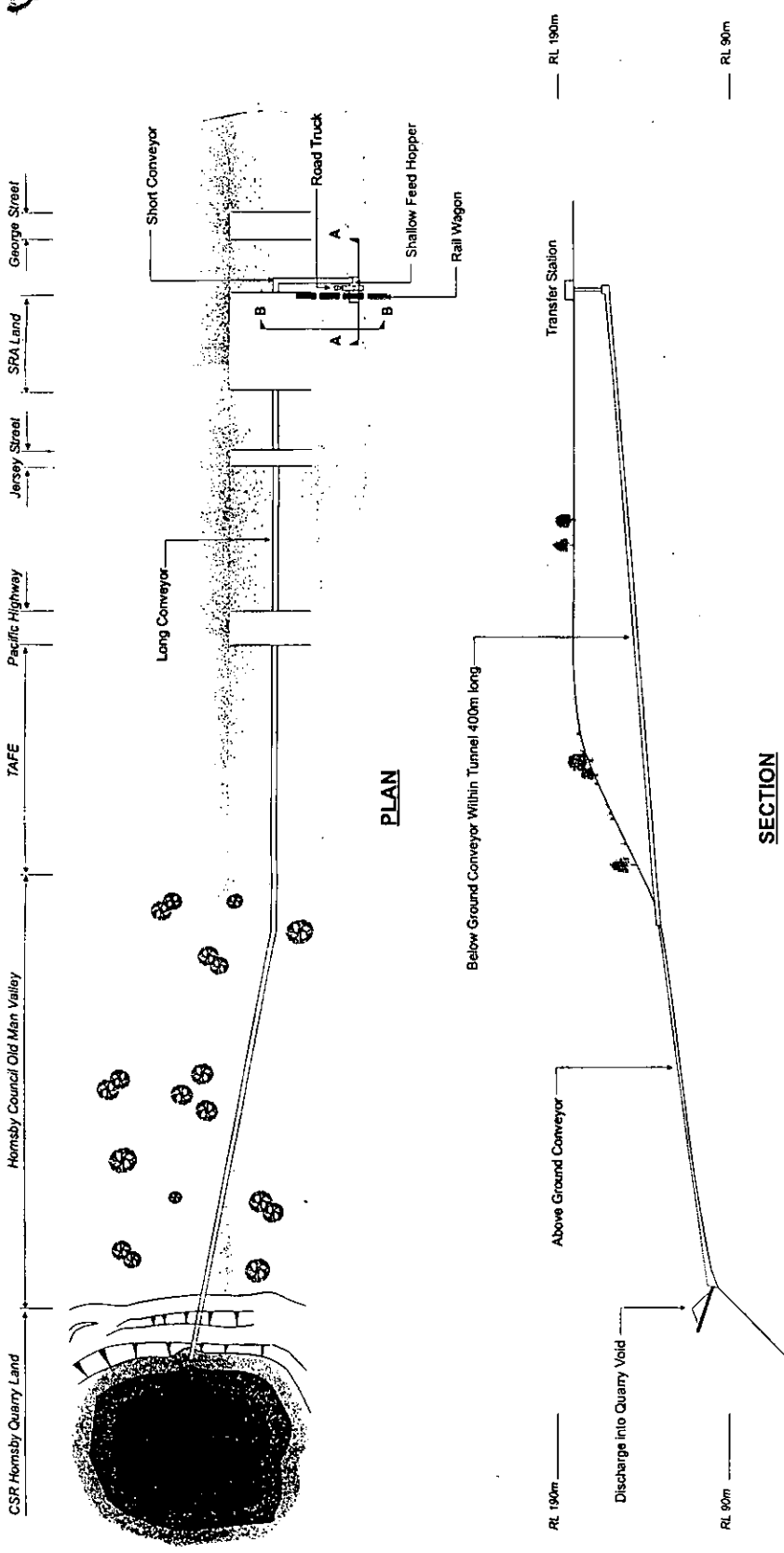


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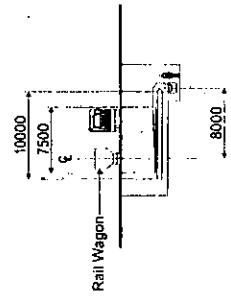
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Figure 3

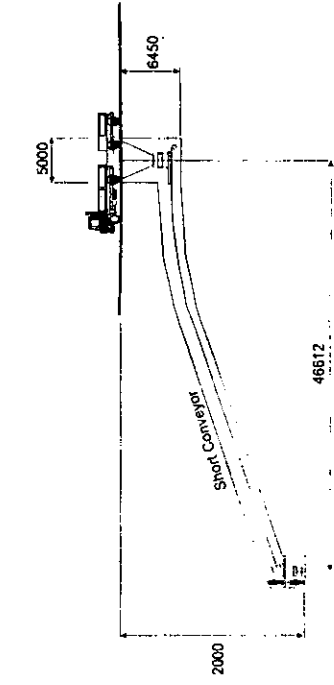
DETAILS OF CONVEYOR ROUTE AND TUNNEL
HORNSBY QUARRY RESTORATION



PLAN

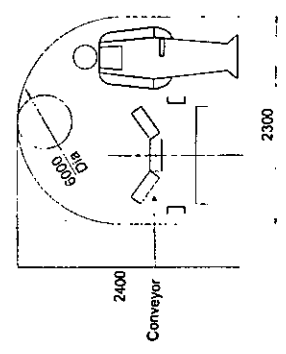


SECTION A-A



SECTION B-B

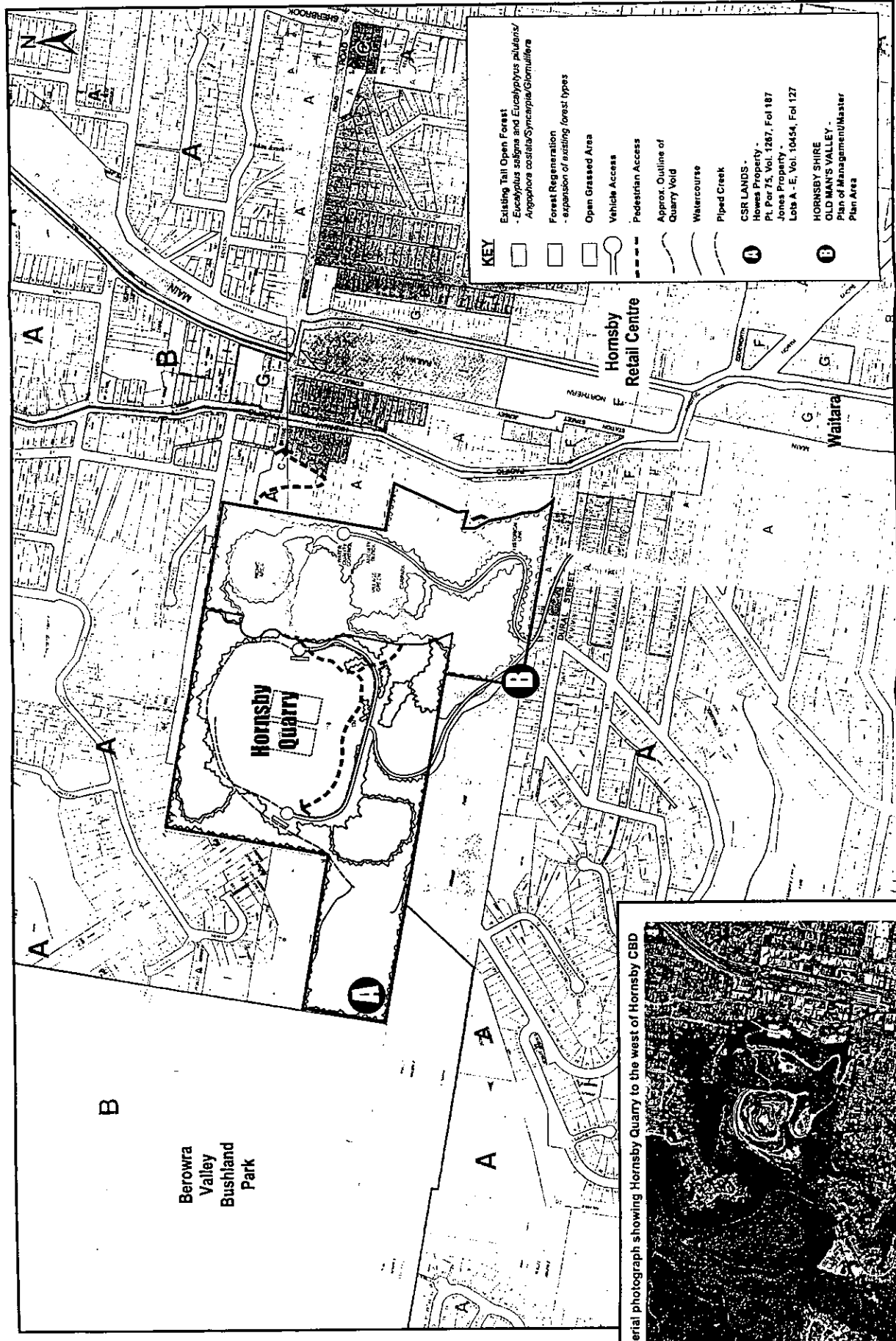
SECTION



TYPICAL SECTION THROUGH TUNNEL

0 50 100m
 Approximate Scale

FUTURE GREEN CORRIDOR TO HORNSBY CBD
HORNSBY QUARRY RESTORATION



Aerial photograph showing Hornsby Quarry to the west of Hornsby CBD

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Planning Mechanism

Most recent large infrastructure projects, such as the New Southern Railway, The Eastern Distributor and the Northside Storage Tunnel, have been assessed in accordance with Part 5 of the EP&A Act 1979 through the making of a State Environmental Planning Policy (SEPP).

SEPP's 43, 51 and 54 provide examples where the development was permissible without consent and the winning or obtaining of extractive materials (production of tunnel spoil) is incorporated within the SEPP.

The Parramatta Rail Link Project is also likely to be assessed under Part 5 through its own specific SEPP and/or special piece of legislation, that is likely to cover the generation of tunnel spoil.

To facilitate the construction of the Parramatta Rail Link it is recommended the SEPP for the project be expanded to cover the following spoil disposal option:

- The land area containing the spoil transfer station, conveyor access corridor and Hornsby Quarry void.

With spoil disposal permitted at the Hornsby Quarry via the Parramatta Rail SEPP, an environmental assessment would then be required under Part 5 of the EP&A Act 1979. A Review of Environmental Factors (REF) would be completed for consideration by the Minister for Urban Affairs and Planning, as the determining authority for the Parramatta Rail SEPP.

Concluding Statement

An opportunity exists to use the spoil generated from the Parramatta Rail Link Project to transform the Hornsby Quarry into a regional open space green corridor to the Hornsby CBD.

Restoration of the Hornsby Quarry using tunnel spoil will provide significant benefits to the Government and the Hornsby Council and Community. The concept is flexible to accept spoil by rail to reduce the transport challenges provided by the construction time frames.

The concept can be made possible by inclusion of the Hornsby Quarry as the primary spoil disposal option within the Parramatta Rail SEPP.

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