

Part 2

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RECLAMATION MANAGEMENT PLAN
OAKLEIGH EXTRACTION SITE EIL 44 & 1322

Work Plan Approved
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28 SEP 1998
Signed pursuant to
Instrument of
Delegation dated
1-7-1996

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RECLAMATION MANAGEMENT PLAN
OAKLEIGH EXTRACTION SITE EIL 44 & 1322

August 1994

A report outlining Primary Objectives and Implementation Guidelines for the Rehabilitation of an existing extraction site.

PIONEER CONCRETE (VIC.) PTY. LTD.

RECLAMATION MANAGEMENT PLAN

Site: Pioneer Extraction Site
Centre Road, Oakleigh, Victoria

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Site: Pioneer Extraction Site
Centre Road, Oakleigh, Victoria

1. INTRODUCTION

1.1 Purpose

This Reclamation Management Plan (RMP) is prepared as part of the working proposal for EIL 44/3 and 1322/1.

This report sets down the Primary Objectives and basic Guidelines for implementation of the reclamation works at Pioneer's Oakleigh Site.

2. RECLAMATION FRAMEWORK

2.1 Location

The subject site, of about 20.44 hectares, is located within a gently undulating area. Access is via a bitumen road off Centre Road, Oakleigh.

2.2 Background

The site operates under Extractive Industry Licences Nos. 44 and 1322 and a planning permit issued by the City of Oakleigh. Also this site operates under a Section 173 Agreement with the City of Oakleigh which states that sand extraction is to cease on October 1993 and that processing and rehabilitation are to continue on the site to 2014.

The RMP seeks to achieve the results described below.

2.3 Present Appearance

The quarry is located in the sandy dunes of the Oakleigh area. Generally the excavation has been below ground level and some boundaries have been modified by the addition of bund walls to shield the operation from surrounding land uses. These are located on the Huntingdale Road side of the operation and more recently on the north and east of the site on reclaimed areas.

The site comprises a plant area, a stockpile area and water dams plus a worked out hole on the western side of the site. These plant and stockpile areas will continue in operation for the term of the Section 173 agreement, namely 2014.

Extraction has now ceased reclamation as outlined below will occur over time on this site.

3. RECLAMATION OBJECTIVES

3.1 Background

The site has undergone progressive reclamation with large amounts of work being done over the time the site has been in operation. The south-east corner near Centre Road has been filled by Council and excised from the licence. It is currently used as a park. The north-eastern corner likewise has been filled and this area was used as a stockpile area. The area north and east of the plant has also been capped.

In the 1990-1991 period further works were undertaken under the supervision of Carol Frank Mas and Associates. The works involved draining the eastern water dam in early 1994, establishing a wider buffer zone on the eastern boundary, establishment of mounds in the capped north eastern area and boundary mounds on the north and north-western sides of the site. The operating drawings for these works are:

- Drawing 1533/2 - existing conditions 1990
- Drawing 1533/2 - existing conditions 1991
- Drawing 1533/3 - proposed works

The proposed works 1533/3 have been completed.

3.2 Primary Objectives

Over the years much knowledge and experience has been gained in matters related to environmental rehabilitation, thus the Primary Objectives for the Rehabilitation of Pioneer's Oakleigh Quarry are:

- to achieve the scenic blending of the quarry into the surrounding landform.
- to closely recreate similar vegetation communities to those occurring in the surrounding area and to restore the land to a state that can be developed to uses consistent with those existing around the site.

3.3 Proposed Landscape Within the Site

The proposed landscape within the site will be that of gently undulating landscape. This landscape will be similar to the landscape already established on the north part of the site as indicated on plan 1533/3. The eastern and western sides of the quarry will be filled by material supplied by the City of Oakleigh as agreed under a Section 173 agreement dated 15th March, 1993. The final landform levels will range between 58 and 62m.

4. RECLAMATION PROGRAM

4.1 Background

This Rehabilitation is the final phase that will culminate in excess of 40 years of mining on the site. It is an undertaking that has and will continue to receive detailed Landscape input. Each phase of reclamation and planting will be undertaken as fill becomes available for the final landform and will be followed by 24 months of establishment care.

4.2 Timetable for Implementation

Under the terms of the Section 173 Agreement the site is programmed to operate until 2014. During that time it has been agreed between Pioneer and the City of Oakleigh that the site will be filled at the direction of the City of Oakleigh. Initially this work entails the filling of the eastern hole followed by the western hole.

During the term of the Section 173 Agreement with the City of Oakleigh, commercial processing of sand will continue and the following Reclamation Works Program is scheduled:

Present and ongoing	Identification/Control of Weeds.
" "	Additional Planting
" "	Drainage Works and Erosion Control.
" "	Filling of Eastern water hole.
" "	Filling of Western extraction hole from the south to the north.

5. RECLAMATION ELEMENTS

5.1 Background

To attain the Primary Objectives will require planning, organisation and supervision. Throughout these phases, professional expertise will be sought and every effort will be made to incorporate the latest techniques available in science of Land Rehabilitation. Final Plans and implementation details will evolve and be refined during the period the site continues in use for the processing of sand. However, in broad terms, the following elements will become an integral basis for the rehabilitation process.

5.2 Redundant Structures, Roads and Tracks

Upon cessation of processing and the Section 173 Agreement, all structures and their foundations will be removed. All redundant roads and tracks will be removed and scarified to minimum 75mm depth and prepared for revegetation. Talbot Avenue may remain open and sealed as an access to the site. This will be agreed with the relevant authority.

5.3 Bulk Earthworks

The re-shaping of the Works area will include major earthworks to form the base for the final earthform. Maximum slopes will be \approx 1m vertical and 2m horizontal. Material will be fill brought in from outside. Depth will be 900mm below final finished surface levels. Machinery utilised for this purpose will include heavy dozers/scrapers.

5.4 Sub-Soil Strata

Material suitable for the formation of a sub-soil will be placed by a "loose tipping" procedure carried out when the material is in a friable condition. Depth will be to 150mm below final finished surface levels. The essence of this operation will be to avoid soil compaction which severely inhibits growth.

5.5 Surface Soil Layer

The naturally occurring surface soil in the area varies from 50-100mm in depth. Depth of soil will be 150mm. Material used will be topsoil from the western acoustic mound, imported material and conditioning of other soils and sub-soils brought in. Final conditioning techniques are likely to include a 6 month procedure: Loosely Spread. Fallow (to germinate weed). Herbicide. Hoe to medium tilth. Seasonal annual legume crop (e.g. rye corn, lupins, clover, acacias). Slash. Hoe. Fallow. Herbicide. Ready for planting.

5.6 Revegetation

The project seeks to recreate indigenous vegetation units similar to those on the surrounding area.. It is proposed to match the existing vegetation in both the upper canopy and understorey species. It will seek to achieve a similar percentage of foliage cover, litter depth, microbial activity and ultimately canopy height.

After planting and throughout the Establishment Period, each plant shall be maintained with a 450mm diameter depression filled with 40mm depth organic mulch.

Revegetation seeks to achieve an average density of 100 trees/shrubs per 4,000sqM, with a minimum 50 trees/shrubs in any 4,000sqM quadrat. These densities will be achieved in areas not required for open grassland. The trees and grasses will be selected from the list attached as Appendix A.

5.7 Pest Plants

The program includes ongoing vigilance to identify and control noxious and environmental weed species with minimum environmental disturbance. Appropriate methods may include the use of herbicides, cutting and painting stumps with herbicides, cutting without the use of herbicides, pulling or grubbing and ecological control.

5.8 Water

Hydrologic Design will seek to:

- stabilise and prevent erosion.
- maintain and monitor water quality and sedimentation controls.

5.9 Access and Fencing

The Owners will continue to restrict public access throughout the years of processing and reclamation ie the term of the Section 173 Agreement. The long-term design for the site envisages a Reserve which will include recreation facilities. There will be NO public access initially unless by agreement or invitation. Locked gates will control the only road entry. Strained wire security fencing will surround the site.

6. RECLAMATION POLICIES

6.1 Background

This reclamation project requires many facets beyond the physical rehabilitation of the land and its vegetation. These elements described below will continue to receive careful attention throughout the term of the program.

6.2 Conservation

The RMP identifies the importance of conservation practices to:

- reinstate flora in appropriate ecological patterns.
- ensure appropriate land management practices are implemented.

6.3 Fire

The RMP recognises the need to:

- maintain adequate fire prevention and control measures.
- protect adjacent land from fire risk.

6.4 Pollution

The RMP recognises the responsibility to:

- rectify any pollution on the land.
- minimise any sedimentation off the site.
- ensure good water quality throughout the site.

6.5 Occupational Health and Safety

Awareness of hazards, use of safe work practices and appropriate safety equipment will be paramount in the implementation of all reclamation works. This is applicable to all phases of the works, in particular the use of machinery, the application of chemicals, and any works.

Control of any hazard, by other than elimination, will rely on identification, assessment and controls such as maintenance, education, training and supervision.

6.6 Fencing, Access and Public Safety

The RMP recognises the importance of maintaining security around the site and will include:

- regular inspection/maintenance of wire fencing around the site.
- regular inspection/maintenance of internal tracks.
- private security company checks, nights and weekends.

6.7 Communication

The RMP recognises the importance of:

- maintaining good liaison with local/state government instrumentalities.
- creating a good neighbour and responsible corporate image for the site.

7. RECLAMATION ESTABLISHMENT

7.1 Objectives

The RMP seeks to nurture and establish similar indigenous vegetation communities and to reclaim the quarry into slightly undulating parkland. This will include:

- revegetation by both planting and direct seeding methods.
- ongoing removal of weed species.
- encouragement of natural regeneration.

7.2 Establishment Management Zones

Two Management Zones, related to their vegetation and management requirements, have been identified. Each will be managed to achieve the design Intent:

WOODLANDS Environment: Re-created.
Access: Convenient.
Intent: Habitat. Planting to simulate surrounding undisturbed vegetation.

GRASSLANDS Environment: Re-created.
Access: Convenient.
Intent: Open appearance.
Indigenous Grasses

7.3 Responsibilities

The Owners of the site will be responsible for the Implementation and Maintenance of all works including the two year Establishment Period following Practical Completion.

7.4 Technical Control, Funding and Liaison

The Owners of the site will be responsible for ensuring the latest revegetation Techniques, Funding of the works, and Liaison with relevant authorities to ensure that management practices within the site are in accord with current practices.

7.5 Monitoring

The RMP intends that accurate records be kept of the works and that monitoring procedures be introduced.

Likely measurements would include data on planting techniques, watering regimes, plant replacements, species successes and failures, percentage of foliage cover, accumulating litter depth and growth rates.

8. RECLAMATION REMEDIAL WORKS

8.1 Background

During the years of processing ongoing vigilance and horticultural control will be required to successfully revegetate the site.

8.2 Works

Soil and planting works along the north-western boundary commenced in 1991. Completed rehabilitation works now include:

- Placing of mounds as per plan 1533/3 (Carol Frank Mas & Associates).
- Planting of tube stock selected from the list attached as Appendix A.

The Primary Reclamation Objective "to achieve the scenic blending of the quarry into the surrounding landform" will require additional works:

- ongoing removal of all noxious and environmental weeds.
- new planting of tall trees (Eucalyptus pryoriana) toward the rear of each mound.

New planting is to be undertaken during autumn. Planting of trees is to be in accordance with the methods outlined in Appendix B.

9. SUMMARY

The Rehabilitation Design Concept for the Oakleigh quarry is based on an environmental design approach that recognises the importance of Scenic values as an integral part of today's land-use planning.

This Reclamation Management Plan outlines the Primary Objectives and Implementation Guidelines for the proposed reclamation works.

The process of Reclamation will transform the existing extraction site into a Scenic Reserve specifically designed to blend with the abutting landforms.

10. PLAN AMENDMENTS

This document is prepared for the use of Pioneer Concrete (Vic.) Pty. Ltd., or its assignees as part of its working of the Oakleigh site as an extractive industry. The objectives and implementation of the plan is dependant on Pioneer Concrete working the site. Pioneer Concrete reserves the right to amend this plan both over time due to more knowledge of the site and surrounds or remove parts or all of the land from this plan if a third party wishes to use the land for a purpose other than the objectives stated herein. Pioneer Concrete cannot be held responsible should elements of the plan dependant on third parties become necessary for the implementation of the Reclamation Management Plan.

APPENDIX A

PLANT SPECIES LIST

Carol Frank-Mas & Associates landscape architects



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1 August 1994
Our No. 1533

Indigenous Plant Selection for Oakleigh Sand E.I.L.

The following Master List of Locally Indigenous Species are recommended for inclusion in the Perimeter and Buffer Screen Planting around the Extraction area. Detail Planting Design will be to later Landscape Plans specific to site circumstances.

	Ultimate	
	Ht	Spread
<u>UPPER CANOPY TREES (10+M)</u>		
EUCALYPTUS CEPHALOCARPA Silver Leaf Stringybark	12+	8+
EUCALYPTUS PRYORIANA Gippsland Manna Gum	12+	8+
EUCALYPTUS RADIATA Narrow-leaf Peppermint	15+	10+
<u>MIDDLE CANOPY TREES (4 - 10 M)</u>		
ACACIA IMPLEXA Lightwood	7	5
ACACIA MEARNsii Black Wattle	10	5
ACACIA MELANOXYLON Blackwood	8	4
ACACIA OXYCEDRUS Spike Wattle	6	4
ALLOCASUARINA VERTICILLATA Drooping Sheoke	8	4
BANKSIA MARGINATA Silver Banksia	6	4
BURSARIA SPINOSA var spinosa Sweet Bursaria	4	3
KUNZEA ERICOIDES Burgan	4	3
MELALEUCA SQUARROSA Scented Paperbark	4	3

Indigenous Plant Selection for Oakleigh Sand continued...

<u>LOWER STOREY (1 - 4 M)</u>	<u>Ultimate</u>	
	<u>Ht</u>	<u>Spread</u>
ACACIA STRICTA Hop Wattle	2	2
ACACIA SUAVEOLENS Sweet Wattle	2	2
CASSINIA ARCUATA Dropping Cassinia	2	2
CORREA REFLEXA Common Correa	1	1
DAVIESIA ULICIFOLIA Gorse Bitter-pea	2	1
DILLWYNIA GLABERRIMA Smooth Parrot-pea	2	2
GOODENIA OVATA Hop Goodenia	2	2
HAKEA NODOSA Yellow Hakea	2	2
LEPTOSPERMUM CONTINENTALE Prickly Tea Tree	3	2
LEPTOSPERMUM MYRSINOIDES Heath Tea Tree	2	1
MONOTOCA SCOPARIA Prickly Broom-heath	2	2
OZOTHAMNUS FERRUGINEUS Tree Everlasting	4	3

GROUND COVERS (less than 1M)

DIANELLA REVOLUTA Black-anther Flax Lily	.5	1
GOMPHOLOBIUM HUEGELII Common Wedge-pea	.5	.5
HIBBERTIA STRICTA Erect Guinea Flower	.8	.5
PULTENEIA DENTATA Clustered Pea-bush	.5	.5
STYLIDIUM GRAMINIFOLIUM Grass Trigger Plant	.5	.3

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APPENDIX B

VEGETATION ESTABLISHMENT

Indigenous Vegetation on the Oakleigh South Quarry site will be re-established using three techniques:

- Establishment with Tube stock Seedlings.

The actual use of each method will be determined according to seed availability and appropriateness to the design intent. The following Guidelines will be followed:

Establishment with Tube stock Seedlings

This is the most common technique for establishing native species. The general procedures will be:

- Soil preparation as per RMP 5.4 and 5.5.
- Seedlings acclimatised 2-3 weeks prior to planting.
- Each tube thoroughly moist at time of planting.
- Minimum root disturbance when removing from tube.
- Soil moist (not wet, not dry) at time of planting.
- Slow-release fertiliser for each plant.
- Each plant firmed into hole and upright in the centre of the hole.
- Saucer depression 450mm diameter around each plant.
- Each plant watered well at planting.
- Occasional deep watering during summer.
- Mulched circle 450mm diameter around each plant.
- No staking.
- Each plant with individual guard to reduce winds and protect from vermin.