



Centennial Coal



Wetland Management Plan

Newstan Colliery

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Abbreviations

AHD	Australian Height Datum
AEMR	Annual Environmental Management Report
ANZECC	Australia and New Zealand Environment and Conservation Council
CHPP	Coal Handling and Preparation Plant
DA	Development Application
DoPI	Department of Planning & Infrastructure
DRE	Division of Resources & Energy
EIS	Environmental Impact Statement
EMS	Environmental Management System
EPA	Environmental Protection Agency
ESCP	Erosion and Sediment Control Plan
KI	Kilolitres
LDP	Licensed Discharge Point
LMCC	Lake Macquarie City Council
m	Metres
ML	Megalitres
NCLEP	Newstan Colliery Life Extension Project
NOW	NSW Office of Water
NREA	Northern Reject Emplacement Area
RWMP	Revised Water Management Plan
SREA	Southern Reject Emplacement Area

1.0 Introduction

This Wetland Management Plan forms part of Centennial Newstan's (Newstan) Environmental Management System (EMS) and is a requirement of Newstan's Development Consent (DA73-11-98 MOD3).

1.1 Background

Underground coal mining has been undertaken at Newstan Colliery on the western side of Lake Macquarie since 1887. Surface facilities are located adjacent to Miller Road, northwest of Fassifern.

The Newstan Colliery holding comprises two mines and is predominately covered with bushland. The surface facilities include offices (including the Fassifern office), workshops, coal handling plant, washery, rail loop and emplacement areas.

The Newstan Colliery was placed on care and maintenance following the cessation of all coal extraction in May 2009. In July 2011, Newstan re-commenced first workings development, with mining commencing in areas currently approved for mining under the existing Newstan Development Consent.

The construction of a causeway associated with the old Newstan No 1 workings prior to 1950 resulted in the artificial ponding of water in the upper reaches of southern branch of LT Creek resulting in the growth of wetland vegetation in some small areas in the Southern Rejects Emplacement.

The construction of the Bywash Dam (initially as a railway embankment) across the upper reaches on the northern branch of LT Creek at Newstan Colliery prior to 1956 resulted in the creation of an artificial wetland in the shallow sections around the edges and upper reaches of the Bywash Dam.

1.2 Scope

The Plan applies to Newstan Colliery premises and all work sites associated with the Life Extension Area (LEA) and has been developed accordance with development consent (DA-73-11-98 MOD 3) condition 3.9 (c).

This Wetland Management Plan has been developed as a response to the environmental risks as identified in the:

- Newstan Colliery Environmental Management System; and the
- Newstan Colliery Life Extension Project (NCLEP) Environmental Impact Statement (EIS).

1.3 Development Consent Conditions

The Wetland Management Plan has been prepared to satisfy the approval conditions of the Director General of the Department of Planning & Infrastructure included in the Newstan Development Consent (DA73-11-98 MOD3). The conditions within this consent that relate to this management plan are listed in the table below.

Consent Conditions		Section of Plan
3.2 (d)	The Applicant shall also prepare the following environmental management plans... Wetland Management Plan (refer condition 3.9 (c))	All Sections
3.2 (e)	The Management plans are to be revised / updated at least every 5 years or as otherwise directed by the Director – General in consultation with the relevant government agencies. They will reflect changing environmental requirements or changes in technology / operational practices. Changes shall be made and approved in the same manner as the initial environmental management plan. The plans shall also be made publicly available at LMCC within two weeks of approval of the relevant government authority.	Section 6
3.9 (c)	The Applicant shall prepare and implement a Wetland Management Plan for all wetland areas affected by the surface facilities, particularly within the proposed southern reject emplacement area. The Plans shall be prepared in consultation with DECCW (EPA), DII (DRE) and affected landowners, and to the satisfaction of LMCC, prior to surface construction works in	Section 4 & 5

	the relevant area. The plan shall include, but not limited to, replacement of habitat and in creek storages for water flows as part of the restoration of the emplacement areas.	
9.2(a)	<p>Within 3 months of the approval of any plan/strategy/program required under this consent (or any subsequent revision of these plans /strategies /programs).... the Applicant shall:</p> <p>Provide a copy of the relevant document/s to the relevant agencies;</p> <p>Ensure that a copy of the relevant document/s is made publicly available at the mine; and</p> <p>Put a copy of the relevant document/s on its website.</p>	Section 6

2.0 Consultation

Consultation regarding this Wetland Management Plan will occur as per Newstan's development consent requirements.

2.1 Regulatory Authorities

The content and application of this Plan are outlined in Development Consent DA 73-11-98 (MOD3) condition 3.9 (c).

The Wetland Management Plan is to be developed in consultation with EPA, DRE and affected landowners and to the satisfaction of the Lake Macquarie City Council. This plan is to be made publicly available at the LMCC, within two weeks of approval by LMCC as required by Newstan's development consent condition 3.2(e).

2.2 Employees and Contractors

Newstan Colliery will consult with relevant employees and contractors with the regards to the requirements of the Wetland Management Plan.

3.0 Risk Assessment

Newstan Colliery will conduct an annual operational risk assessment to assess the environmental aspects and impacts of the Mine and to meet requirements of Centennial Coal's Environmental Policy.

This assessment considers the operational activities of the Mine, identifies the potential environmental hazards associated with the activity and assesses the potential risk posed by that hazard. As part of Division of Resources & Energy (DRE) requirements and the Mine's due diligence, commitments are made for reducing unacceptable risks. The reporting process then allows for these commitments to be reviewed for action at the next reporting period.

This annual environmental risk assessment considers potential impacts as a result of operational activities on wetlands within the Newstan Colliery holding.

4.0 Existing Operations

This section details a general overview of Centennial Newstan's existing operations. These details are based upon current management practices and procedures.

4.1 By-wash Dam

The 1998 NCLEA EIS identified wetland species around the edges and upper reaches of the By-wash Dam (**Appendix 1**). The By-wash Dam was originally formed by a railway embankment prior to 1956. The earthen spillway was later modified to a permanent weir structure. The weir allows overflow to continue down the north arm of LT Creek and also maintains a fixed water level within the By-wash Dam. See **Appendix 3** for the location of the By-wash Dam.

The By-wash Dam supports a large diversity of wetland fauna and flora. Wetland flora includes *Eleocharis sp.*, *Baumea sp.*, *Juncus sp.*, *Alisma sp.*, and *Philydrum sp.* The conductivity of this dam is typically $2350 \mu\text{Scm}^{-1}$, pH varying from 7.5 to 8.5 and suspended solids less than 10mg/L.

The main inflows to the By-wash Dam are discharge water from Newstan's Licenced Discharge Point (LDP) 001 and run off water from surrounding areas including the old Rhonda Colliery.

Water is also drawn from the By-wash Dam under licence from NOW, at a rate not exceeding 110 Ls^{-1} . This water is used to supplement the supply from Connolly's Dam, for use in the CHPP, as well as to the holding tanks for use underground.

The capacity of the By-wash Dam is approximately 40ML.

4.2 Southern Rejects Emplacement Area

The SREA includes the Stage 1 Tailings Storage Facility (TSF), the Stage 2-4 TSF, and the Causeway, Seepage and Clean Water Dams. It also includes the SREA Haul Road that joins the Eraring Haul Road and two powerline easements and two main clean water diversion drains. See **Appendix 3** for the location of the SREA Dams.

A small proportion of the SREA is covered with native vegetation and there are a number of tracks and trails throughout the area. Progressive rehabilitation works have been undertaken in this area and will continue where possible.

Part of the area mined for the Fassifern Auger Mine (FAM) and currently within the Southern Reject Emplacement Area was previously disturbed from prior to 1950 to November 1969 as a result of the Newstan No.1 workings and associated infrastructure and then again from January 1980 until late 1995.

A conveyor embankment including culverts was formed across the upper reaches of the southern branch of LT Creek (now known as the Causeway Dam). This resulted in the ponding of water in the ephemeral water courses and the growth of wetland vegetation

described in section 5.5.1 of the NCLEA EIS. **Appendix 2** shows the wetland species that existed in 1998. Flora species recorded included *Eleocharis* sp., *Baumea* sp., *Juncus* sp., *Alisma* sp. and *Philydrum* sp.

Of the four areas shown in **Appendix 2**, the two areas in the upper most part of the catchment were removed during mining of Areas 7 and 8 of the FAM. The third area was excavated to form the sediment dam for the FAM known as the Sub-causeway Dam and the fourth currently remains in the shallow Causeway Dam.

4.3 Options for the Creation of Additional Artificial Wetlands

The construction of a Seepage Dam and Clean Water Dam were completed in the SREA in 2007. Whilst the Seepage Dam will need to be cleaned out on a regular basis to remove accumulated sediment, the Clean Water Dam, should not require additional disturbance. Given the experience of the rapid colonisation of the By-Wash Dam by wetland species, it is reasonable to expect the same could occur in future around the shallow sections of the Clean Water Dam. The shallow Causeway Dam was expanded in 2011 and will provide an opportunity for further colonisation of the area by the existing wetland species.

4.4 Management Measures for Wetland Maintenance

The artificial wetlands in the By-wash Dam and the SREA require the following conditions for continued survival:

- Maintenance of constant water level;
- Sufficient volume and quality of water entering the system; and
- Protection from disturbance.

The By-wash Dam is a key source of process water for the operation. It is Centennial Newstan's intention to maintain the dam wall and overflow weir in good condition. There are no plans to raise or lower the current height of the weir.

The majority of water that enters the By-wash Dam comes via LDP001 from Graunch's Dam or the Fassifern seam underground workings. Water inputs to Graunch's Dam include:

- Surface runoff from the NREA
- Seepage from the various dams located on the old reject emplacement area including the Tailings Dam, Connolly's Dam and the Sewage Maturation Pond.
- By-pass flows from the Fassifern No.1 pump line (from the Fassifern seam underground workings).

4.4.1 Inspections and Monitoring

Inspections of Graunch's Dam, the By-wash Dam and the SREA Dams are undertaken daily by the Washery Manager.

An automated flow logger located prior to LDP001 monitors flow volume and turbidity daily flowing into the By-wash Dam.

Surface water samples are collected by an independent consultant at Newstan and provided to a NATA accredited laboratory for analysis. Surface water samples are taken upstream, in and downstream of the By-wash Dam and within the SREA. Relevant surface water monitoring locations include:

Site	Description
MP1	Upstream of LDP001
MP2	LDP001
MP2A	Graunch's Dam Cell 1
MP2B	Graunch's Dam Cell 2
MP3	Spillway of By-Wash Dam to LT Creek
MP4	Sewage Maturation Pond
MP14	Pump line from Fassi No.1 bore to LDP001
MP9	Located upstream from SREA.
MP11	Seepage Dam
MP12	Clean Water Dam
MP13	Located downstream from SREA.

For locations of monitoring points refer to **Appendix 3**.

Monitoring is undertaken daily, weekly, monthly and annually depending on the location. The frequency of monitoring at each site and analytes monitored at each site are described in Newstan's Revised Water Management Plan (RWMP)

Additional monitoring is to be taken when deemed necessary, during abnormal rain events, or circumstances to ascertain the environmental impact of runoff from the site and the effectiveness of the water management system.

The comprehensive monitoring program allows the identification of parameters that may impact on the artificial wetland environment.

5.0 Decommissioning

5.1 By-wash Dam

Centennial Newstan's intention is that the By-wash Dam and associated artificial wetlands will remain in place following decommissioning of the mine. The ultimate decision on whether the By-wash Dam will remain will be determined during consultation with DRE, NOW and any potential future landholder that will have to take over responsibility for the dam.

5.2 Southern Reject Emplacement Area Dams

The Seepage Dam, Clean Water Dam and Causeway Dam will remain after decommissioning and rehabilitation of the SREA. Depending on the success of the rehabilitation of the SREA it is envisaged that in the long-term run-off waters from the SREA will enter these dams prior to flowing into the South Arm of LT Creek.

6.0 Review and Reporting

6.1 Performance Review

The Environment & Community Coordinator will undertake regular reviews of water monitoring results and visual inspection of the By-wash Dam and SREA artificial wetlands to identify any threatening processes. Management actions will be implemented as necessary.

6.2 Annual Environmental Management Report

Centennial Newstan will report environmental performance to DoPI and DRE on an annual basis in the Annual Environmental Management Report (AEMR). Copies of the AEMR are made available to other Government Agencies, LMCC and to the Community Consultative Committee members. A summary of water monitoring results and an interpretation will also be included.

6.3 Review

Revisions are to be coordinated by the site Environmental Coordinator or as directed by the Mine Manager. The revision status is contained in the controlled document within Lotus Notes and updated as per the Newstan Colliery Change Management System.

The outcomes of a review will be documented by updating sections of these documents where required and revisions incorporated into the Wetland Management Plan for approval. Revised documents will be approved by the Environmental Coordinator before placing the document on the intranet as required by the Newstan Colliery Change Management System.

6.3.1 Time Based

The Newstan Colliery Wetland Management Plan is required to be reviewed every 5 years by the Environmental Coordinator or as directed by the Mine Manager, to assess the Plans effectiveness and to remain in compliance with development consent conditions.

6.3.2 Event Based

Events which will trigger a review of the Wetland Management Plan or its associated documents include:

- As directed by the Director-General (in consultation with other governmental agencies),
- Reportable incidents,
- Changes to management structure,
- Modification/improvement to the system,
- Guidelines or codes of practice applied to the mine.

6.4 Audit

Internal audits of the Newstan Colliery Wetland Management Plan will be conducted as specified in the corporate guideline (ECMG 06) Audit and Inspection. The Plan audits will investigate compliance with the EMS, Standards, Procedures and other legal requirements.

7.0 Associated Documents

7.1 Organisational & Newstan Documents

Newstan Colliery Environmental Management System 2011

Erosion and Sediment Control Management Plan.

Revised Water Management Plan

Newstan Colliery Life Extension Project Environmental Impact Statement Volume 1

– Umwelt 1998.

7.2 Statutory

Newstan Legal Register

Development Consent DA73-11-98 MOD 3

Environmental Protection Licence 395

7.3 Risk Assessments

Newstan Environmental Risk Assessment Dated January 2011.

Newstan Water Management Risk Assessment Dated May 2011.

7.4 Standards

ANZECC 2000 *National Water Quality Management Strategy – Australian and New Zealand Guidelines for Fresh and Marine Water Quality.*

DEC NSW 2004 *Approved Methods for the Sampling and Analysis of Water Pollutants in New South Wales*

8.0 APPENDICIES

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8.1 Appendix 1 – Environmental Impact Statement Figure 5.8

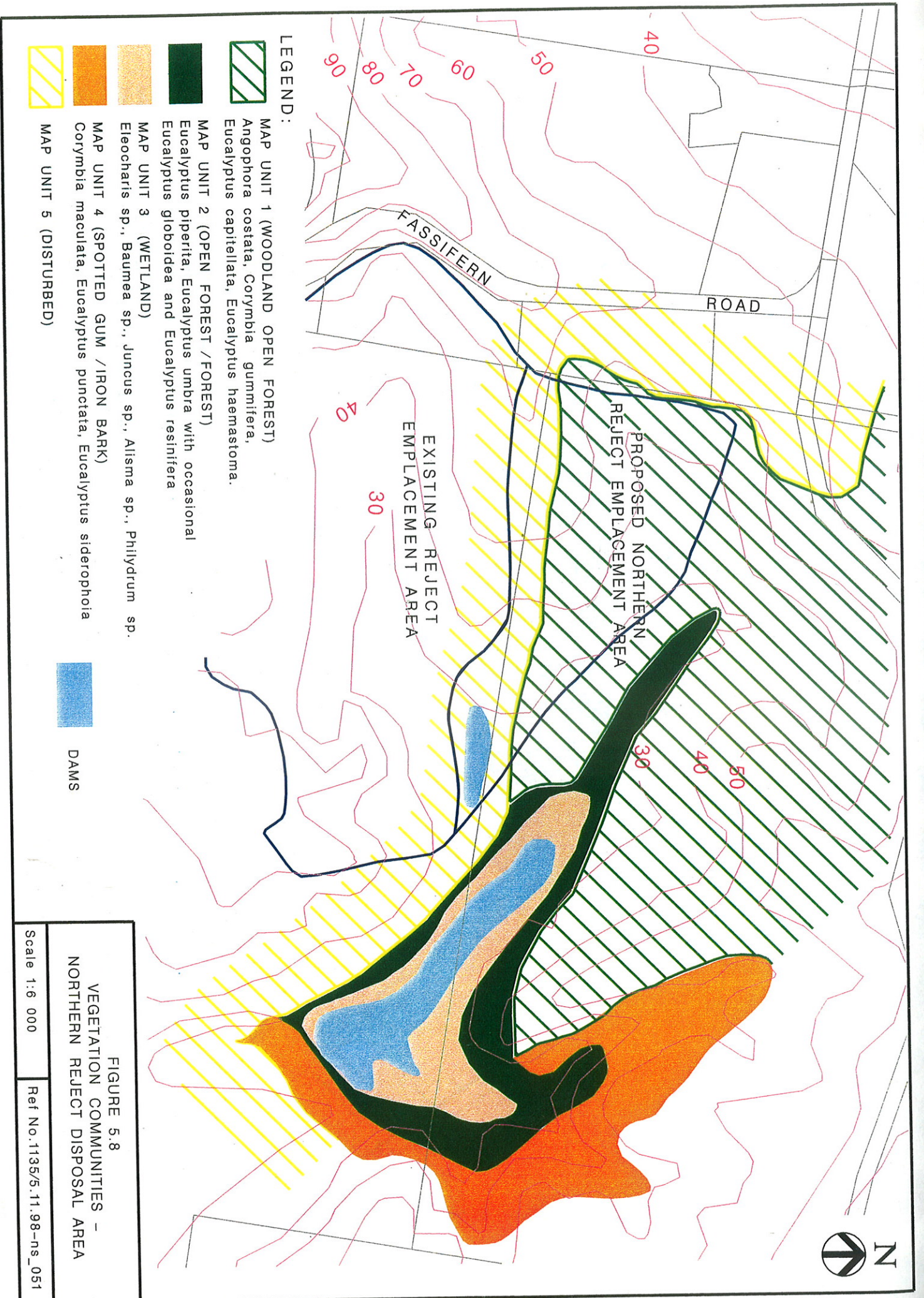
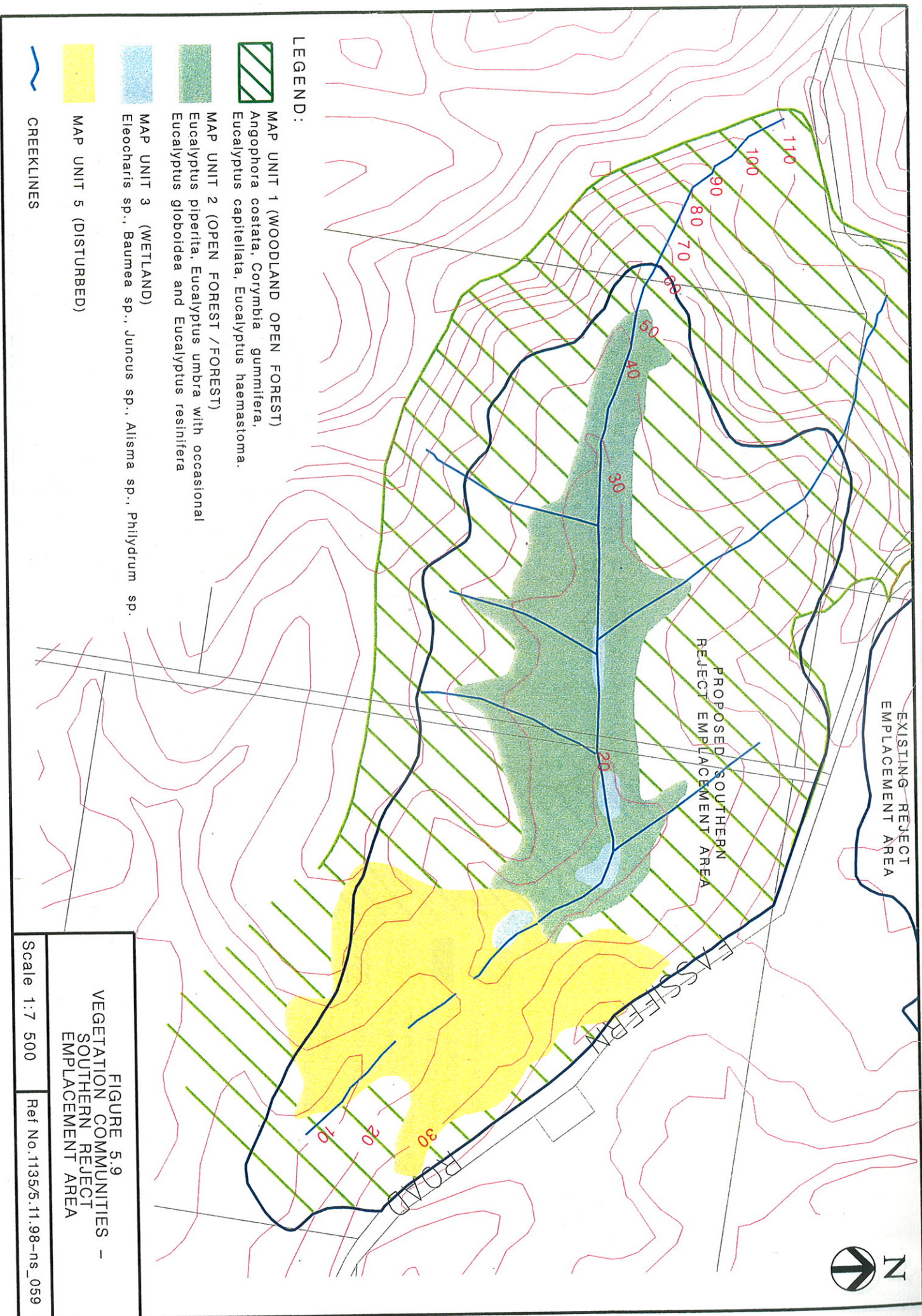


FIGURE 5.8
 VEGETATION COMMUNITIES -
 NORTHERN REJECT DISPOSAL AREA

8.2 Appendix 2 – Environmental Impact Statement Figure 5.9



LEGEND:






- 
MAP UNIT 1 (WOODLAND OPEN FOREST)
Angophora costata, *Corymbia gummitera*,
Eucalyptus capitellata, *Eucalyptus haemastoma*.
- 
MAP UNIT 2 (OPEN FOREST / FOREST)
Eucalyptus piperita, *Eucalyptus umbra* with occasional
Eucalyptus globoides and *Eucalyptus resinifera*
- 
MAP UNIT 3 (WETLAND)
Eleocharis sp., *Baumea* sp., *Juncus* sp., *Alisma* sp., *Philydrum* sp.
- 
MAP UNIT 5 (DISTURBED)
- 
CREEKLINES

FIGURE 5.9
 VEGETATION COMMUNITIES -
 SOUTHERN REJECT
 EMPLACEMENT AREA

Scale 1:7 500

Ref No. 1135/5.11.98-ns_059



8.3 Appendix 3 - NS2541- Surface Water Quality Monitoring Locations.