

Environmental Program

MANAGEMENT OF POTENTIAL ACID SULPHATE SOILS

BBA-ENP-1000-1400-0004

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Operational Control Tables

Table OCO 4.1 Acid Sulphate Soils Management

1. Purpose and Scope

This Environmental Program describes management measures for Acid Sulphate Soils (ASS, and potential ASS, PASS) to minimise the impact of the design and construction of the Gunns pulp mill.

This Environmental Program forms part of the Bell Bay Alliance (BBA) Construction Environmental Management Plan (CEMP) and must be read in conjunction with the CEMP.

2. Objectives

1. Protect the beneficial uses of land.
2. Maintain or improve existing surface water quality during construction, consistent with the requirements of Tasmania's State Policy on Water Quality Management 1994.

3. Targets

1. Avoid risk to ecosystems from exposure to Acid Sulphate Soil (ASS).
2. Maintain and where appropriate and practicable improve the condition of land to protect current and future beneficial uses of land from the detrimental impacts of ASS.
3. All ASS that is removed from the project alignment sent for beneficial use or to a licensed waste receiver.
4. Maintain or improve existing surface water quality and flow rates during construction, consistent with the requirements of the State Policy on Water Quality Management 1994.

4. Regulatory and Contractual Requirements

Refer to:

CEMP Appendix B – Environmental Legislation Register

CEMP Appendix C – Approvals Matrix

CEMP Appendix D - Environmental Licences Register

- CEMP Appendix F – Environmental Commitments
- CEMP Environmental Obligations Register: GNS-OBL-1000-1400-001.

5. Technical Documents

The following background studies, research documents and assessments have been used to identify the key environmental aspects:

Reference	Document Title
http://www.gunnspulpmill.com.au/iis/	Bell Bay Pulp Mill Draft IIS and Appendices

The following technical documents have been used to assist in identifying appropriate operational controls:

Availability	Document Title
EPA Victoria	Bulletin 655 "Acid Sulfate Soil and Rock" August 1999
EPA Victoria	Bulletin 680 "Managing Waste Acid Sulfate Soils" January 2000
QASSIT	Queensland Acid Sulfate Soil Technical Manual, November 2002

6. Key Issues

Refer to:

- EMP Appendix G – Environmental Risk Assessment.

Acid sulphate soils (ASS) and potential acid sulphate soils (PASS) are sediments which respectively contain or potentially contain iron sulphide minerals. They have potential to generate acid when exposed to oxidising conditions which generally results from soil disturbance associated with construction activities and excavated agricultural drainage. Acid sulphate soils are most likely to occur within low lying coastal swamps, back swamps and also within estuarine environments. Where construction activities may cause disturbance to acid sulphate soils, Section 36.1 of the Tasmanian State Policy on Water Quality Management (1997) requires that "a survey is carried out to identify Tasmanian soils and surface geology with the potential to give rise to highly acidic drainage if disturbed or developed".

Environmental risks include:

- Generation of acid through the disturbance of sub surface acid sulphate geological material
- Ecological damage to waterways through discharge of generated acid and associated dissolved metals and flocculants
- Acidification of soil leading to a reduction in the effectiveness of rehabilitation activities
- Mixing of excavated acid sulphate material with topsoil and soil horizons

The technical documents and the environmental risk assessment have identified the following areas of potential acid sulphate soils:

- The Distribution of Acid Sulphate Soils in Tasmania map (Gurung, 2001) indicates that no ASS have been recorded near the pulp mill, wharf or landfill site. The map also indicates that coastal sediments with the potential to host ASS are not located in the pulp mill area.
- The Distribution of Acid Sulphate Soils in Tasmania map (Gurung 2001) indicates that no Acid Sulphate Soils have been recorded in areas along the proposed route of the water supply pipeline.
- The workers accommodation facility site falls within the general area of potential distribution of coastal sediments that may host potential acid sulphate soils (Gurung

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2001). However, the elevation of the site (> 20 m ASL) means that acid sulphate soils are unlikely to occur on the site.

- The Distribution of Acid Sulphate Soils in Tasmania map (Gurung 2001) indicates that no ASS have been recorded in the vicinity of the pipeline from the pulp mill site to south of George Town. The coastal dunes, barriers and saltwater lagoons that occur along the Bass Strait coastline east of George Town are potential acid sulphate soil areas. Lauriston Creek tributaries following a similar alignment to Bridport Road are indicated as 'distribution of coastal sediments with potential to host potential ASS'. From George Town to Four Mile Beach the effluent pipeline route will traverse soils that are coastal sediments with potential to host ASS. North of George Town there is a location near Low Head that has been identified as having potential ASS. Two areas near Four Mile Beach (west of British Creek and an unnamed creek near Potato Hill) have been illustrated as non ASS.

The Contaminated Soil Register summarises project areas according to contamination status and also the presence of PASS.

7. Operational Controls

Environmental outcomes to be achieved are:

- Prevention of adverse effects of acid sulphate soil (ASS/PASS) exposure to surrounding land and water through appropriate construction and soil handling techniques
- Identification and isolation of acid sulphate soils in stockpiles within appropriate bunding to avoid mixing with other soils
- Effective treatment of ASS/PASS where they are likely to be exposed for extended periods, through being covered or treated to minimise the potential for generation of acid leachate

Minimised time of exposure of excavated soils to reduce the potential for oxidation of ASS/PASS and subsequent acid discharge

The operational controls for management of contaminated soil during design and construction are set out below:

Table	Title
OCO 4.1	Acid Sulphate Soils Management

The operational controls include requirements and responsibilities for:

- Consultation
- Approval requirements
- Design of permanent works
- Design of temporary works
- Construction activities
- Commissioning and handover.

8. Site Environmental Plans

- Refer to SEP Register.

Site Environmental Plans (SEPs) detail practical environmental management measures to be implemented at specific worksites to minimise potential impacts of construction activity on the environment and community. They are designed to provide more site specific detail than is included in the Environmental Program and Operational Control tables.

The information contained in the SEPs is presented in tabular drawing format. This is to make them easy for use by all BBA site personnel, consultants and subcontractors.

The controls set out in the SEPs are drawn from the Environmental Programs.

9. Contingency Management

The environmental risk assessment has identified the following circumstance which could occur outside normal operating conditions:

- Unexpected discovery of suspected acid sulphate soil or rock during construction.

Acid sulphate rocks may be caused by metal sulphides in the rock but may not be readily identified in the field without laboratory testing. PASS may be characterised by waterlogged, soft buttery textured mud and estuarine silty sands, possibly with a rotten egg gas odour. Actual acid sulphate soils may also display iron staining, pale yellow jarosite mineral deposit and a pH of less than 4.

If these circumstances occur, the following contingency measures will be implemented:

- Suspend work in the vicinity of the suspected PASS and contact BBA Environmental Manager.
- BBA Environmental Manager shall arrange for field and analytical testing of the suspected soil prior to excavation progressing to minimise the area of soil exposed.
- Where necessary, establish a neutralising procedure to treat any affected soil prior to replacement/ reuse/ disposal as deemed appropriate.

10. Evaluating Performance

The Operational Controls, together with the SEPs are used as the basis for evaluating performance.

Refer to:

- CEMP Appendix H – Construction Monitoring Plan.
- CEMP Appendix I – Internal Environmental Audit Schedule.
- CEMP Appendix J – External Environmental Audit Schedule.

Environmental Checklists are used for evaluating performance.

Refer to:

- BBA-CKL-1000-1400-003A Acid Sulphate Soils Management.

11. Reporting

Refer to:

- CEMP Appendix K – Environmental Reporting Program.

12. Attachments

Not Used.