




# Soil & Water Management Plan

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## **Document Control**

The latest approved version of this Document will be available for all personnel on the SWF Confluence Space. The Head of Construction and Asset Management (HOCAM) will maintain, review and update this Document in accordance with the Records & Documents Procedure.

## **Amendments**

Each new revision to the Document will be distributed to all required personnel for review and approval.

The revision number is included at the end of the document number, which is noted in the footer of each page. The document will be allocated a new revision number each time a change is made to the document and changes will be in red for easy reference.

When a new revision to the document is available, a notification email will be distributed to all personnel by the Head of Construction and Asset Management advising of the update.

The Head of Construction and Asset Management is responsible for the implementation and review of the Document. The Head of Construction and Asset Management will approve new revisions of the Document via the review and approval process a detailed in the Records & Documents Procedure.

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## 1. Overview

This document is about describes the appropriate measures for the effective management of soil and water. It is for use by all workers and their supervisors and managers.

## 2. Background

The purpose of this Soil and Water Management Plan (SWMP) is to identify erosion, sedimentation and water quality issues arising from the operation of SWF. It contains mitigation measures which are designed to minimise the adverse impacts on local waterways and surrounding land.

A road and hardstand network has been constructed throughout the Facility. Erosion and sediment control systems were installed during construction and were designed to manage and prevent any movement of road materials from the Facility area into the natural environment. These systems need to continue to function in accordance with their design specifications during and after rainfall events. There will be requirements for minor civil works and maintenance of existing drainage networks.

Maintenance activities at the Facility for both the wind turbines and the Substation will require the use of hazardous materials including: fuels, oils, solvents, paints, fertilizers and herbicides. This needs to be managed to minimise the potential for spillage into the natural environment.

There are diesel and petrol backup generators at the Facility which will require the use of fuels. Work may also need to be undertaken where no power is available, requiring generators

New excavation work, such as for maintenance of cable repairs, provision of additional drainage and erosion controls and major road repairs are possible but are expected to occur very infrequently.

### 2.1 Applicable Legislation and Guidelines

Guidelines, legislation and regulations that are applicable to this plan include:

- *Protection of the Environment Operations Act 1997* (POEO Act, Section 120, Part 5.7A);
- *“Storing and Handling of liquids: Environment Protection, Participants Manual: Appendix: Technical Considerations”* (DECC, 2007);
- *“Managing Urban Stormwater: Soils and Construction, Volume 1 - Blue Book”* (Landcom, 2004);
- *“Managing Urban Stormwater: Soils and Construction, Volume 2C - Unsealed Roads”* (NSW Department of Environment and Climate Change, 2008);
- *“Guidelines for the Control of Erosion and Sedimentation in Roadworks”* (Road and Traffic Authority, undated);
- *“Environmental Guidelines: Assessment, Classification and Management of Liquid and Non-Liquid Wastes”* (EPA, 1999);
- *“The storage and handling of flammable and combustible liquids”* (AS 1940-2004);
- *Water Management Act 2000* (Controlled Activity Approval);
- *Local Governments Act 1993* (Section 68, Part C – Management of Waste);
- *Fisheries Management Act 1994* (Part 7); and

- *Roads Act 1993* (Section 138).

## 2.2 Objectives

The objectives of this plan are to:

- Ensure that erosion and sediment control systems installed during construction are maintained and functioning;
- Minimise soil erosion caused by the operation and maintenance of the Wind Farm;
- Stabilise disturbed construction areas through management of the re-vegetation works undertaken during construction;
- Maximise sediment retention at the Facility; and
- Prevent the discharge of pollutants and contaminants into natural environment including the atmosphere, water courses and native vegetation.

## 2.3 Potential Impacts

The operational activities occurring at the Facility which are likely to lead to soil erosion and sediment movement are:

- Routine access to the road and hardstand network by motor vehicles, plant and equipment
- Unauthorised access to the Facility
- Motor vehicle and plant movements not on hardstands and access tracks
- Erosion of tracks and hardstands following heavy rainfall events
- Spillage of hydrocarbons during maintenance of WTGs or refuelling of plant and equipment at the Facility.

A road and hardstand network has been constructed throughout the Facility. The traffic on these areas will be primarily light vehicles and some minor wear and tear of these surfaces is expected. Erosion and sediment control systems were installed during construction and were designed to manage and prevent any movement of road materials from the Facility area into the natural environment. These systems need to continue to work during rainfall events.

New excavation work, such as for maintenance of cable repairs, provision of additional drainage and erosion controls and major road repairs are possible but are expected to occur very infrequently.

Maintenance activities at the Facility for both the wind turbines and the Substation will require the use of hazardous materials, primarily oils, solvents and paints.

There are diesel and petrol backup generators at the Facility which will require the use of fuels. Work may also need to be undertaken where no power is available, requiring generators. All these systems will require refuelling.

## 2.4 Management Principals

The key principles of the SWMP are to ensure that erosion, sediment controls, and containment systems are maintained to:

- Control water movement around and through the Facility;
- Minimise soil erosion;
- Stabilise disturbed areas;
- Maximise sediment retention at the Facility; and
- Prevent the discharge of pollutants and contaminants into the natural water courses and native grasslands.

## 3. Risks

Risk Description	Cause	Potential Impacts	Likelihood	Consequence	Risk Score	Mitigation Strategies
Disturbance of sensitive areas	Access to sensitive areas	Disturbance of soils	Rarely	Moderate	Low	Controlled access only to sensitive areas using WMS process
Sediment runoff	Failure of installed erosion and sediment controls or new excavation work undertaken	Destruction of native grass lands, exposure of soils and topsoil stripping, localised flooding, modification of local water quality.	Very Likely	Minor	Medium	Ongoing inspection and maintenance
Vegetation clearing	Need for maintenance works of the Facility	Destruction of native grass lands, exposure of soils and topsoil stripping	Rarely	Moderate	Low	WMS to identify preventative measures required for access to these areas
Clean water run-off from substation and service buildings	Overflow from water tanks and roof stormwater runoff	Exposure of soils and topsoil stripping, localised flooding	Rarely	Minor	Low	Ensure water is flowing into established drainage systems
Release of contaminated fluids (oils, solvents, fuels)	Leakage or washout during storage, use or disposal of hazardous material used at the Facility	Pollution of grass lands and water ways, aquatics, ground water, flora and fauna	Unlikely	Moderate	Medium	Maintenance of storage systems and rules and processes for the proper use and disposal, including training.

## 4. Management Strategies

Management Actions	Strategies	Responsibilities
Environmental incident reporting	Where an environmental impact is observed, including soil erosion, sediment run off or release of hazardous materials regardless of severity by any Facility Staff, contractor or by external reporting or complaint, that an <i>Environmental Incident Report</i> is lodged and investigated. Records to be maintained according to the requirements of the EPL, part 5 M1 and M2.	Environment Manager
<b>Soil and Water</b>		
Off Site access	A general requirement to not allow access to undisturbed areas. If access is required, a specific WMS including an assessment of environmental impacts will be completed. This requirement is communicated via the Facility Induction Package.	Facility Manager
Maintenance of permanent erosion controls installed during construction	Monthly inspections during dry weather Within 24 hours of significant rainfall events (nominated as >30 mm in any 24-hour period) Damage to controls will be reported and repairs to the controls undertaken by the EPC Contractor (for the first two years) After two years reasonability for repairs and maintenance falls with the Facility Manager	Facility Manager
Maintenance of rehabilitation and revegetation works	Monthly inspection for failure of vegetation to establish as per the rehabilitations plans. Arrange further reseeding as required with the EPC Contractor (for the first two years). After two years reasonability for maintaining and restabilising revegetation works falls with the Facility Manager	Facility Manager
Maintenance of temporary erosion and sediment controls	Where temporary erosion controls are used: Monthly inspections during dry weather Within 24 hours of significant rainfall events (nominated as >30 mm in any 24-hour period) Replacement of temporary measures with permanent measures as soon as is practicable by the Facility Manager	Facility Manager

Management Actions	Strategies	Responsibilities
Failure of works due to rainfall events	Should previously rehabilitated areas become damaged following a significant rainfall event, then the affected area will be reshaped, topsoiled and re-sown with the approved seed mixture	Facility Manager
Cleaning out of sediment traps after significant rainfall events > 30mm per 24 hours	Facility inspections after a significant rainfall event. Maintain a log of where cleanout is required to identify "hotspots" for future inspections.	Facility Manager
Checks to ensure erosion and sediment controls are achieving design function	Six monthly checks for first two years and every two years thereafter to ensure that controls are reducing water velocities and soil is not being transported.	Environment Manager
<b>Hazardous Materials</b>		
Identification of hazardous materials	Maintenance of a <i>Hazardous Materials Register</i> on Facility, accessible by all Facility Staff including provision of <i>Safety Data Sheets (SDS)</i> and a Facility Map showing the location of hazardous materials and allowable storage quantities. The register will also show who is authorised to access and use the materials.	Facility Manager
Storage of hazardous material	When not being used, all hazardous materials must be stored in Australian Standard storage containers and stored according to AS 1940-2004. All storage is to be in the designated locations, secure and only accessible by authorised personnel.  All storage containers will be clearly marked, and where indicated by the SDS, stored separately from other hazardous materials in suitably bunded and secure areas..	Facility Manager
Use of hazardous materials	All personnel using hazardous materials must have appropriate training in the handling and use of the materials. Training records will be maintained with the <i>Hazardous Materials Register</i> .  Where hazardous materials are to be used for specific tasks, pre-agreed work procedures or a WMS must include relevant instructions for the use of the materials.  Included in work instructions will be requirements to ensure that materials are kept away from water sources and off-Site areas, use bunds and drip trays appropriate to the volumes in use, using the proper equipment to decant and transfer materials and remove from store the amounts that are required for use.	Facility Manager



Management Actions	Strategies	Responsibilities
Disposal of hazardous material	<p>All hazardous materials requiring disposal shall be disposed of according to the regulatory requirements and requirements of the SDS. Where licensed contractors are required, they will be used with a record of disposal maintained.</p> <p>There will be NO dumping or disposal of materials other than to licensed waste disposal facilities.</p>	Facility Manager
Emergency response	<p>The emergency response plan for the Facility will include instructions on how to deal with a significant spill of hazardous materials.</p> <p>Appropriate spill kits will be maintained in the workshops, the substation and service vehicles to manage potential minor spills, relevant to the activity and material being used. Spill kits will undergo regular maintenance checks.</p>	Facility Manager
Vehicle refuelling and maintenance	<p>Vehicle refuelling or maintenance at the Facility is to be avoided where possible. Other than in emergency situations, a WMS will be created prior to vehicle refuelling or maintenance.</p>	Facility Manager
Generator refuelling	<p>Refuelling of the substation backup generator and the telecommunication backup generator is carried out under established procedures including ensuring spill kits are available and the supervision of a trained person. Refuelling records are maintained.</p>	Facility Manager
Use of paints at the Facility	<p>It is illegal to dispose of liquid paints into the environment. No wash out of paints is to occur at the Facility. All painting materials are to be bagged and removed from the Facility for disposal or clean up in an appropriate facility. Suitable bags and containers to be available prior to starting work for disposal. Rags available for mopping up spills are to be disposed of appropriately. Unused paint is stored in suitable containers and re-stored in the designated locations.</p>	Facility Manager
Gearbox oil release	<p>Oil released from the WTG gearbox is released into bunds and drains to base of WTG. Removal of oil will be via an approved method to an approved disposal site by a suitably licensed operator</p>	Vestas Manager
Sewerage system	<p>The Facility has a sewerage system installed with an absorption trench. Periodic removal of solids will be required as per the manufacturers recommendations. All solid waste will be removed by a licensed contractor.</p>	Facility Manager

## 5. Management Controls

Control	Purpose	Reference
Incident Reporting and Investigation	Report environmental incidents and subsequent investigations	Incidents Register
Facility Induction Package	Include information on standard environmental practices at the Facility	Facility Inductions
Monthly Inspections	To identify any issues with erosion, sediment controls and hazardous materials.	Facility Inspections Register
Rainfall Records	Trigger for high rainfall event inspections of erosion controls	Bureau of Meteorology rainfall data and Rainfall Register
Maintenance Records	Tracking of areas where sediment is being removed or controls are continually failing	Maintenance Management System
External Audits	Includes audits of environmental management systems	Compliance Audit Register
Hazardous Material Register	Recording of hazardous materials at the Facility	Hazardous Materials Register
Material Safety Data Sheets	Information on use and handling of hazardous materials	SDS file located in Facility Office
Training Records	Identification of persons trained in use of hazardous materials	Training Register
Work Instructions, Work Method Statements (WMSs) and Manuals	Instructions including proper use of hazardous materials	Various
Disposal Register	Records of disposal of hazardous materials, oil and sewage	Waste Removal Register
Safety Equipment Inspections	Includes inspections of spill kits	Equipment Register

## 6. Monitoring & Inspection

Description	Frequency
Ad hoc observation from all Facility Staff of controls not working, reported to the Facility Manager. Checked as part of regular Facility activities.	Daily
Inspections of erosion, sediment controls and contaminant systems to determine effectiveness of controls by Facility Manager or delegate. Details recorded on checklist.	Weekly in dry weather Within 24 hours of significant rainfall events being greater than 30 mm in any 24-hour period)
Inspections by Facility Manager or delegate following significant rainfall (>30mm/24 hours) to identify where sediment is observed travelling beyond the erosion and sediment traps.  All active erosion events where sediment is observed travelling >3m beyond roads/hardstands/lay down areas/cable routes must be reported and investigated as an environmental incident.	Per event
Assessment of mitigations to ER	Within 3 months after the first 24 months period of operation

## 7. Key Performance Indicators

KPI	Measurement
Prevention of environmental issues relating to soil or water contaminations or excessive erosion and rapid response to any incidents	Incident Register
Effective utilisation and maintenance of erosion or sediment control	Inspection Records
Prevention of release of a hazardous material and rapid response to any incidents	Incident Register
100% monthly inspections	Inspection records
100% inspections after significant rainfall events	Inspection records cross referenced with rainfall records
All hazardous materials properly stored	Corrective Actions Requests
All hazardous material records maintained	Corrective Actions Requests
Management of hazardous materials correctly implemented	Corrective Actions Requests