




Sapphire
Wind Farm

Landscape & Rehabilitation Management Plan

SWF01-3-PLN-ENV-04-LandscapeRehabilitationMgt-180620-1600-A

Rev	Description	Originator	Reviewed	Approved	Signature	Date
180618-1141	Issued for use	P Millar	D Dymond	B Filby		18/6/18
180620-1600	Approved	P Millar	D Dymond	B Filby		20/6/18

Details of Revision Amendments

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 Landscape and Rehabilitation. It is for use by all workers and their supervisors and managers.

2. Background

The purpose of this Landscape and Rehabilitation Management Plan (LRMP) is to detail the landscaping restoration and rehabilitation for all areas of the development footprint disturbed during the construction and operations period, including the areas containing the temporary construction facility sites and sections of construction access roads.

The LRMP aims to ensure that the rehabilitation of the disturbed areas closely resembles the original landform and vegetation structures. This will be achieved by addressing the methods, techniques and timing of rehabilitation and by using appropriate materials, best practice site preparation and planting techniques, carefully selected plant species, installation of plants as they occur in nature, and regular maintenance and observation.

2.1 Revegetation Measures

All revegetation measures have been implemented progressively based on completion of construction works, climatic conditions and seasons. Where persistent drought or unseasonable climatic conditions mean rehabilitation, success is likely to be undermined, plans may be modified, or additional time may be required to establish vegetation.

Revegetation of disturbed areas was undertaken as quickly as possible or within six months of the conclusion of construction, but timed to maximise success. Ongoing revegetation and rehabilitation will be undertaken in accordance with **Condition F4** and **F5**. Certification of revegetation and rehabilitation will be undertaken by a suitably qualified person as approved by the Secretary for Planning in accordance with **Condition F5**.

Seed species used for the revegetation of disturbed areas was determined in consultation with the relevant landholders and approved by the ER. The EPC contractor has mapped the areas that were revegetated. The approved rehabilitation seed mix for use on the project:

- Demeter fescue – 20kg/ha
- Australian phalaris – 4kg/ha
- USA red clover – 2kg/ha
- Haifa white clover – 2kg/ha
- Porto cocksfoot – 2kg/ha
- Ryecorn – 25kg/ha
- Agri Boost Manure Pellet – 250kg/ha

2.2 Potential Impacts

The road and hardstand network has been constructed throughout the Facility and is used for the movement of light vehicles. It is not expected that areas that are being, or have been rehabilitated will need to be accessed on a regular basis. Any future access will be for further rehabilitation activities, maintenance or erosion and sediment controls or for maintenance of underground cables.

Other ongoing potential impacts during the operations phase would be expected to be:

- Failure of existing rehabilitation undertaken during construction
- Weed outbreaks impacting on rehabilitation, addressed by weed mitigation strategies.
- New excavations generally minor and localised in nature.

2.3 Management Principals

The key principle of the LRMP is to:

- Ensure that the rehabilitation is maintained to ensure its effectiveness in erosion control and reduce the visual impacts resulting from disturbed earth, such as on batters and cable trenching.
- Where areas have been rehabilitated with native species these are maintained for their ecological value.

3. Risks

Risk Description	Cause	Potential Impacts	Probability	Consequence	Risk Score	Mitigation Strategies
Failure of seed growth in existing rehabilitation	Weather, soil conditions, grazing, poor application	Rehabilitation ceases to provide required erosion control and recovery of visual appearance of landscape	Likely	Minor	Medium	Monitoring and further remedial actions as required
New rehabilitation required	New excavation	Exposed top soils subject to erosion	Rarely	Minor	Low	Application of new rehabilitation and WMS
Erosion runoff from stockpiles	Material from road base stockpiles	Sediment movement off site	Rarely	Moderate	Low	Implement appropriate erosion and sediment control measures. WMS to select locations of stockpiles to ensure no runoff into critical areas and appropriate covering and sediment controls

4. Management Strategies

Management Actions	Strategies	Responsibilities
Reporting of rehabilitation outcomes	Assessment reports to be undertaken of the rehabilitation outcomes and reported to landholders, and the respective NSW and Commonwealth Government agencies. Certification of revegetation and rehabilitation will be undertaken by a suitably qualified person as approved by the Secretary for Planning in accordance with Condition F5 .	EPC Contractor for first 2 years, then Environment Manager
Maintenance of rehabilitation	Maintenance of rehabilitated areas as required to ensure the effectiveness of the rehabilitation. Maintenance will be undertaken until such time that the plantings have been verified by an independent and suitably qualified expert as being well established, in good health and self-sustaining.	EPC Contractor for first 2 years, then Environment Manager
Planting of screening vegetation	Implementation of Visual Impact Mitigation measures as outlined in Condition C24 .	Environment Manager
Replacement of failed or poorly performing rehabilitation	Implementation of program to reseed poorly performing areas with appropriate seed mixes, within a season or time frame appropriate to the seed mixture being used, taking into account any lessons learnt from the failure of the previous rehabilitation.	EPC Contractor for first 2 years, then Environment Manager
Watering	Maintenance of the watering regimes as determined by the EPC Contractors Facility specific rehabilitation management plan.	Facility Manager
Weed management	Maintenance of the weed management regimes as determined by the EPC Contractors Facility specific rehabilitation management plan and dictated by the Facility Weed Management Plan in this OEMP (<i>See Error! Reference source not found. – Error! Reference source not found.</i>).	Facility Manager
Establishment techniques	Where additional rehabilitation is required, establishment types and techniques will be determined in consultation with the relevant landholders and of necessary a locally qualified agronomist.	Facility Manager
Spreading of native seeds	Where native seeds are used their	Environment Manager

	<p>establishment will be determined in consultation with a suitably qualified person familiar with native vegetation techniques.</p>	
Seed quantities and density	<p>Quantities and density of seeds spread or planted are to be determined by the seeding contractor used.</p>	Environment Manager
Soil preparation	<p>Where further seeding is to be undertaken, prior to reinstatement of the topsoil layer, compacted areas will be cultivated to a depth suitable to alleviate compaction. Weeds will be sprayed out prior to sowing and maintained using spot spraying, when necessary (See Weed Management Plan, Section Error! Reference source not found. – Error! Reference source not found.).</p> <p>Sowing is to only occur when there is adequate moisture in the soil as this provides the seedbed with adequate moisture for germination. A suitable starter type fertiliser will be used</p>	Environment Manager
Hydro mulching	<p>Where short term stabilisation needed, or seeding methods are not working, or access is difficult for direct seeding, hydro mulching can be considered for use. Where used, is to be under taken within 48 hours of soil preparation, weather permitting as should not be applied where winds exceed 15km/hr, temperatures greater than 35 degrees Celsius, surface is very wet or when raining or imminent rain.</p> <p>Seed quantities and application rate determined by the contractor. Minimum thickness to be 25 mm within 48 hours of application.</p>	Environment Manager
Planting of cells and tube stock	<p>If required, the replanting of native trees will be undertaken using cells or tube stock and be planted into top soil</p>	Environment Manager
Selection of plant stock	<p>Plants selected for use must be suited to the classified vegetative community as per the species schedule. Plants must be sun and frost hardened. Plants are to be healthy, disease free specimens with strong root systems. Any signs of pests, diseases or weed infestation will be rejected.</p>	Environment Manager
Timing of planting	<p>Planting and seeding may be staged depending on the season and species, as different species grow at different times of the year and are best planted in accordance</p>	Environment Manager

	with these parameters. Refer to the plant supplier and landscape contractor for time lines.	
Conditions for planting	Planting and seeding will also be affected by the season and weather conditions. Do not plant when wind speeds exceed 45 km/hr; when temperature exceeds 35 degrees or when surface is very boggy.	Facility Manager
Protections of planting	Where considered necessary, protective measures around new plantings may be employed to prevent loss through grazing.	Facility Manager
Water quality	Where water is used for watering of plantings, the water must be potable and free of toxins & pollutants.	Facility Manager

5. Management Controls

Control	Purpose	Reference
Monthly Inspection Forms	To identify poorly performing rehabilitation	Facility Inspection Checklist

6. Monitoring & Inspection

Description	Frequency
Inspection of status of growth of grasses in rehabilitated areas	Monthly
Inspection of failure of rehabilitation measures	Monthly
Internal verification of rehabilitation outcomes	Annually
External validation of rehabilitation outcomes	2 years after completion

7. Key Performance Indicators

KPI	Measurement
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Landscape & Rehabilitation Management Plan

In the disturbed areas of non-native pasture: ground cover >70% weeds <15% ground cover	Inspections and Audit Reports
In the disturbed areas of native grassland: ground cover >70% vegetation cover of the native species sown (note, this may be climatic season dependent and may be achieved over a longer time frame) exotic species including weeds <15% ground	Inspections and Audit Reports