

Landscape and Revegetation Plan

Goyder Wind Farm

Green Light Contractors, Elecnor Group



PROJECT SPECIFICATION

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ACRONYMS

CEMP Construction Environment Management

DNF Decision notification form

EPA Act Environment Protection Act (SA)

EMS Environmental Management System

EWMS Environmental Work Method Statement

GLC Green Light Contractors

GWF Goyder Wind Farm

HSE Health Safety and Environmental Manager

LRP Landscape and Revegetation Plan

MW Mega Watts

PV Photo Voltaic

RMP Rehabilitation Management Plan

VA Vegetation Association

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1. INTRODUCTION

1.1 Background

The Goyder South Hybrid Renewable Energy Facility, to be developed south of Burra (Figure 1), is a hybrid power station comprising up to 1,200MW of wind generation, up to 600MW of solar PV generation and up to 900MW/1,800MWh of battery storage. The proposed connection point near Robertstown means that the project's large-scale battery would be in an ideal position to inject emergency power and fault current into the South Australian grid in the event of a fault impacting the proposed SA-NSW interconnector and enable the continued stable operation of the South Australian grid in any subsequent separation from the NSW grid.

Neoen Australia Pty Ltd has sought Development Authorisation for the Goyder South Hybrid Renewable Energy Facility (Goyder South) pursuant to section 49 of the Development Act 1993 (SA). Approval was issued by the South Australian Minister for Planning and Local Government and Planning, dated 3 March 2021. Neoen is also submitting applications under the relevant legislation as a concurrent process with the Development Application to address all regulatory requirements for the project.

The project has been divided into three separate stages, each comprising 400MW wind, 200MW solar and 300MW/600MWh storage. The size and composition of each stage depends on the size and type of the demand from electricity customers. This will be communicated through approved engineering plans prior to site works commencing for each stage. Given the scale of the project stages, the development timeframes will be structured on a 'rolling' basis with construction of the entire project be completed within 12 years from the date of the approval.

Green Light Contractors (The Contractor) have been engaged as the Contractor to carry out the Goyder Wind Farm (GWF) aspect of this development, being Stage 1 (Figure 2). These works will be divided into two stages (1A and 1B), 38 and 37 turbines respectively.

A Construction Environmental Management Plan (CEMP) has been developed for GWF Stage 1 in response to legislative and approval requirements. This document outlines the environmental management and mitigation measures, associated with the construction phase of the project. The primary objective of the CEMP is to reduce any associated adverse environmental impacts and satisfy regulatory requirements. It provides a framework for actions, responsibilities and protocols associated with environmental management with which the Proponent and their Contractors are required to adhere. A series of sub-plans (including this Landscape and Revegetation Plan) describes additional details for implementation of mitigation actions on the project site.

1.2 Purpose

Landscaping and Revegetation will be applied as part of the GWF Stage 1 to improve amenity and restore areas that were cleared for the purposes of the development but are not required in the long-term operation of the project. This Landscaping and Revegetation Plan (LRP) describes the landscaping and revegetation activities that will be implemented across the GWF Stage 1 and follows on from the Rehabilitation Management Plan (RMP; post-construction). The Plan describes the activities required to revegetate all tracks and disturbed areas not required for ongoing access and maintenance. It will also identify species to be used, seeding and planting densities, planting depths, irrigation methods and fencing for landscaping features.

1.3 Objectives

The objective of this plan is to:

- Identify the relevant legislative and regulatory requirements and Development Approval (DNF) guiding Landscaping and Revegetation.
- Describe where landscaping and revegetation will be required.
- Define the landscaping and revegetation methods to be applied on site.

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- Develop a decision matrix to determine the appropriate rehabilitation method to be applied.
- Establish a monitoring program with appropriate indicators for assessing landscaping and revegetation success.

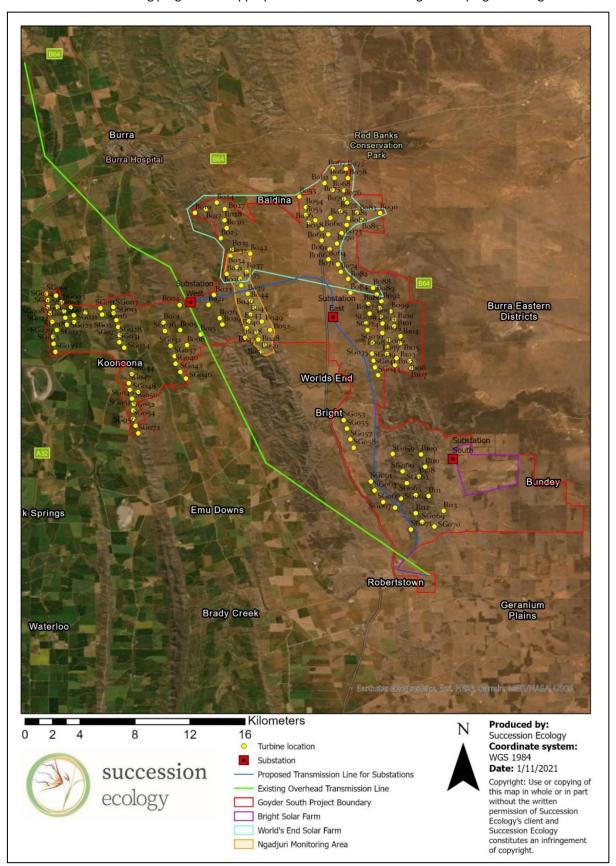


Figure 1: The Goyder South Hybrid Renewable Energy Facility, located south of Burra, including wind, solar and battery storage.

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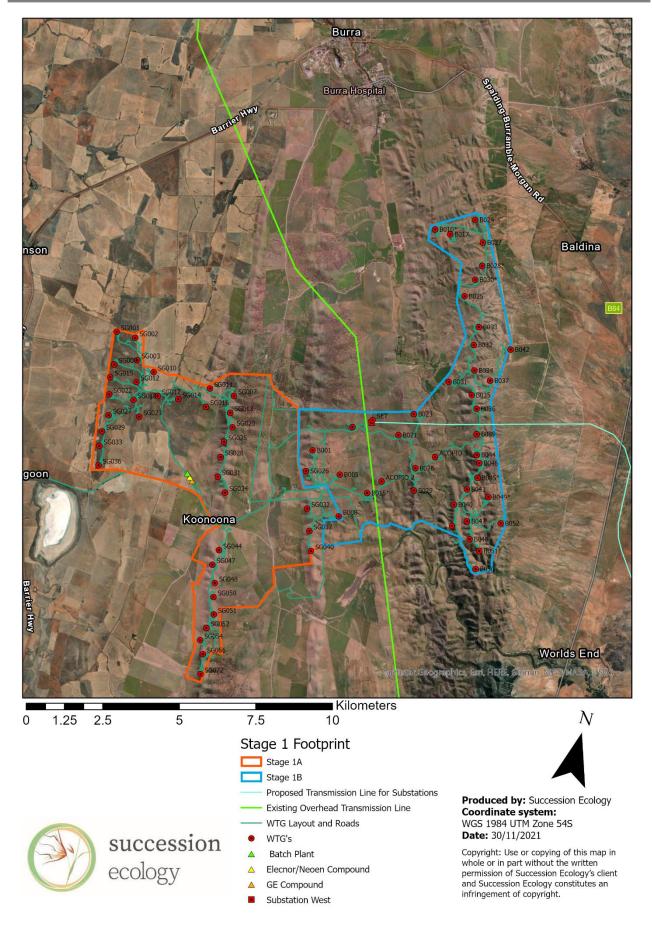


Figure 2: Goyder Wind Farm Project Area and Proposed Turbine Layout.

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2. REGULATORY REQUIREMENTS

2.1 Approval Conditions and Legislation

Landscaping and Revegetation following the construction of the GWF Stage 1 are governed by regulatory requirements (Table 1) and commitments within Neoen's Development Application and the Decision Notification (DNF) Conditions for the GWF Stage 1 as issued by the South Australian Minister for Planning and Local Government and Planning, dated 3 March 2021.

Table 1: Legislation and standards used to inform the CEMP.

Element	Legislative and other requirements
Landscaping, Revegetation and Rehabilitation	DNF condition 7: Staged rehabilitation following construction. DNF condition 9: Rehabilitation Management Plan and Landscaping and Revegetation Plan
Dust Management	DNF condition 9: Dust Management Plan Environment Protection Act 1993 (EPA Act) (SA) Environment Protection (Air Quality) Policy 1994 (SA)
Erosion Management	DNF condition 9: Soil Erosion and Drainage Management Plan Environment Protection Act 1993 (EPA Act) (SA)
Amenity	DNF condition 12: Targeted landscaping around buildings to mitigate visual impacts DNF condition 34: Reinstate Road reserves

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2.2 Environmental Management System

The landscaping and revegetation methods used for GWF Stage 1 will be implemented under GWF Environmental Management System (EMS). This system is defined in the CEMP and presented in Figure 3. This diagram demonstrates the position of the LRP in the EMS management structure.

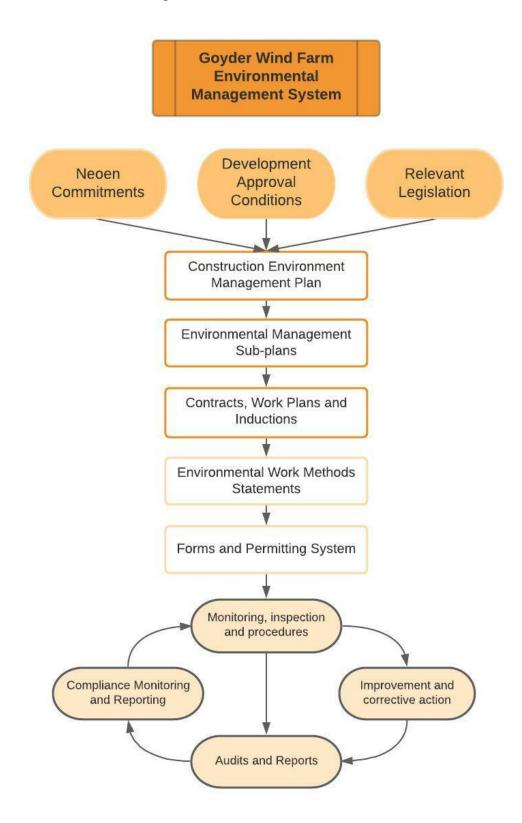


Figure 3: The Goyder Wind Farm Environmental Management System Structure

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3. LANDSCAPING AND REVEGETATION REQUIREMENTS

3.1 Site description

The GWF Stage 1 will be located south of Burra and north of Robertstown in the Goyder Regional Council area (Figure 2). It is approximately 5.5km south of Burra and located between Barrier Highway and Worlds End Highway, covering an area of 7610 hectares. The region is typical of the dry mid north, experiencing cool to cold winters and warm to hot summers. Its topography comprises undulating hills typical of the eastern Mount Lofty Ranges, with steep valleys occur where watercourses cross the escarpments. Soils of the eastern slopes of the Mount Lofty Ranges generally have a high to very high erosion potential and are likely to be subject to water and wind impacts, if the ground is disturbed.

Much of the area was cleared of vegetation during the mining period and the land on which the project site is situated has been cropped and grazed since the late 1800s. Remnant native vegetation tends to exist in the steeper areas of the ranges and in patches along drainage lines. The areas that have not been cleared for agriculture represent a broad range of habitats with 14 vegetation associations identified in ecological surveys (EBS, 2020; Figure 4). The dominant native habitats are *Austrostipa sp.* (Spear Grass) mixed grassland, *Lomandra multiflora spp. dura* (Hard Mat-rush)/*Lomandra effusa* (Scented Mat-rush) mixed open grassland and *Eucalyptus porosa* open woodland (Table 2). Ecological surveys have identified the presence of a range of threatened flora and fauna species on the site (EBS 2020).

Table 2: Vegetation associations present in GWF Stage 1 and the construction activities occurring within each.

VA#	Vegetation Association	GWF Stage 1 (ha)	Building Facilities	Roads	Transmission Line	WTGs
8	Austrostipa sp. (Spear Grass) Mixed Grassland	4,612.12	✓	~	√	SG001-3, SG007-8, SG012-13, SG015-18, SG020, SG022-23, SG025-29, SG031-34, SG036-37, SG040, SG044, SG056, SG072 B001, B004, B008, B010, B015, B017, B021, B023- B025, B027-28, B030-40, B042, B044-45
0	Cropping	1509.9	✓	✓	-	SG010-11, B005
2	Lomandra multiflora spp. dura (Hard Mat- rush)/Lomandra effusa (scanted Mat-rush) Mixed Open Grassland	360.9	-	✓	-	SG014, SG047-48, SG050-52,
3	Eucalyptus porosa Open Woodland	310.5	-	✓	-	B026, B029, B043, B047- 48, B050-51
6	Eucalyptus leucoxylon ssp. pruinose (Inland South Australian Bluegum) Open Woodland.	261.27	-	~	√	-
7	Eucalyptus camaldulensis ssp. camaldulensis (River Redgum) Woodland	1.1	-	-	-	-
4	Eucalyptus odorata (Peppermint Box) Closed Woodland	37.7	-	-	-	-
10	Callitris gracilis (Southern Cypress Pine) Low Open Woodland	6.92	-	✓	-	SG054
9	Exotic Grassland	180.1	-	√	-	-
14	Triodia irritans (Spinifex) Grassland +/- Emergent Eucalyptus oleosa (Red Mallee)	87.1	-	√	-	B046, B049, B052
17	Phragmites australis (Common Reed) Grassland	45.47	-	-	✓	-
24	Allocasuarina verticillata Open Woodland over Bursaria spinosa and Austrostipa spp.	0.75	-	✓	-	-
0	Amenity / Residential	12.5	-	-	-	-

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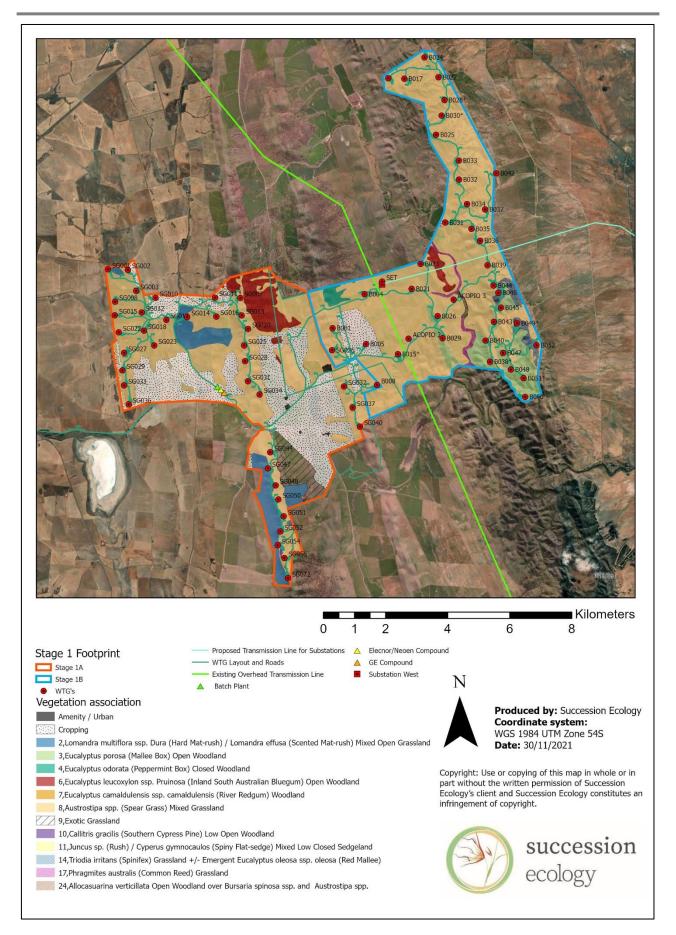


Figure 4: The vegetation communities identified in the area covered by GWF Stage 1.

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3.2 Areas to be Landscaped and Revegetated

The conditions of the Development Approval require the Contractor to establish and maintain vegetation around permanent buildings to mitigate visual impacts and to revegetate the disturbed areas that will not be required for the operational phase of the project (DNF 12 and 34). This will include any road reserves that are impacted through the construction activities, cable runs and roads that do not need to remain the width established for construction. A secondary benefit in planting around permanent building structures will be to improve ambient temperature and suppress dust around the immediate area of the compound. Areas requiring landscaping and revegetation, the vegetation associations impacted, the recovery management required, and the timing of these works are presented in Table 3. Note that while the Sub-station is a permanent facility, revegetating this would prove a significant fire risk. As such it is proposed that any area requiring revegetation outside of this compound be revegetated.

Table 3: Areas in GWF Stage 1 requiring landscaping and revegetation (See Figure 4).

Construction Impact	Description	Vegetation Association (VA)	Management Required	Timing
Permanent facility	Substation West	VA8	Revegetation	At the time of construction
	GE Compound (Springbank Road)	VA0 – Cropping	Revegetation	At completion of construction
Temporary facilities	Elecnor/Neoen Compound (Springbank Road)	VAO – Cropping	Revegetation	At completion of construction
	Batching Plant (Springbank Road)	VA0 - Cropping	Revegetation	At completion of construction
Access Tracks and Cable Routes	Throughout site	All VA's except VA6 and VA17	Revegetation	During construction if the disturbed area is not required At completion of construction
Transmission Line	From Substation West through to the east	VA6, VA8 and VA17	Revegetation	During construction if the disturbed area is not required At completion of construction

3.3 Landscaping

Any permanent building facilities will be landscaped with a suitable visual screen or enhancement of existing vegetation during the construction program. These landscaping activities will utilise locally native species that facilitate a visual screen and improve the amenity of the buildings (Table 4). Planted Screens should be a minimum of 5 m wide. The height and plant spacing for each species is presented in Table 4. Growth of these areas will be supported with an irrigation system and will be properly maintained with appropriate weed and pest management throughout the construction period. The maintenance of these areas will be handed over in the shift of the project to operation.

Table 4: Suitable species for landscaping around buildings

Species name	Common name	Height	Spacing
Trees and Shrubs			
Acacia brachybotrya	Grey Mulga	2m	2m
Acacia calamifolia	Wallowa	4m	2m to 4m
Acacia ligulata	Umbrella Bush	2m	2m
Atriplex paludosa	Marsh Saltbush	1m	1m

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Species name	Common name	Height	Spacing
Bursaria spinosa	Bursaria	2m	1m
Correa glabra	Rock Correa	1m	1m
Dodonaea viscosa	Sticky Hop-bush	1m	1m
Enchylaena tomentosa	Ruby Saltbush	1m	1m
Eucalyptus gracilis	Yorrell	2m to 4m	2m to 4m
Eucalyptus oleosa	Red Mallee	2m to 4m	2m to 4m
Eucalyptus socialis	Beaked Red Mallee	2m to 4m	2m to 4m
Einadia nutans	Climbing Saltbush	Up to 1m	1m
Eutaxia microphylla	Common Eutaxia	40cm	0.5m
Rhagodia spinescens	Spiny Saltbush	1m	1m
Grasses and Sedges		1	I
Austrostipa elegantissima	Feather Spear-grass	Up to 1m	0.5m
Austrostipa scabra	Rough Spear-grass	0.6m	0.5m
Dianella longifolia	Pale Flax-lily	Up to 1.5m	1m
Dianella revoluta	Black-anther Flax-lily	Up to 1.4m	1m
Rytidosperma sp.	Small-flower Wallaby Grass	0.6m	0.5m
Themeda triandra	Kangaroo Grass	1m	0.5m

3.4 Revegetation

As disturbed areas are no longer required for the project they will be revegetated as described in the rehabilitation Management Plan (RMP). The methods applied in RMP will be replicated for the revegetation at the end of construction. Both Revegetation and rehabilitation will begin with a minimum disturbance approach taken to construction. Where possible, biomass reduction rather than grading should be applied. This will allow for natural regeneration of the seedbank on site. As this is not expected to be the primary site preparation approach, the seedbank resource in the topsoil should be preserved using scalping and stockpiling. This soil can be re-distributed across the disturbed areas to be revegetated at the end of construction.

Direct seeding using a broadcast seeder will be the primary revegetation method applied on site. The soil will be prepared with top-soil (when available) and harrowed to create ridges for seed and water capture. Where the site is small, seed application can be by hand rather than with a broadcast seeder. As the majority of areas requiring revegetation will occur in grasslands and on retired cropping land, the seed mix will include native grasses and low groundcovers and an annual pasture mix, incorporated to support continued grazing use for the landholders. Where roads and WTGs occur in woodlands these will be seeded with the same groundcover mix to avoid large trees growing along roadsides and becoming a hazard. In the situation of temporary roads, cable routes and transmission lines, the same seed mix will be used to support recovery but allow continued access for site management. Seeding will occur at a rate of 15 kg native and 40 kg of pasture seed per ha. The species selected will be those known to germinate rapidly and provide rapid cover, drought tolerant species and those known to thrive in disturbed environments (Table 5).

The outcomes of a revegetation program are significantly linked with rainfall. Without rainfall this method will be slow to provide cover. However, if established at a good seeding rate a direct seeding program can be established at any time of year with the sporadic rainfall in a semi-arid system supporting outcomes even through the summer months. If dry periods cause some desiccation, other seed will be waiting in the seedbank for the next rainfall event.

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Table 5: Native Seed for revegetation.

Species name	Common name
Shrubs	,
Atriplex holocarpa	Pop Saltbush
Atriplex lindleyi	Flat-top Saltbush
Atriplex paludosa	Marsh Saltbush
Atriplex semibaccata	Berry Saltbush
Atriplex suberecta	Lagoon Saltbush
Atriplex vesicaria	Bladder Saltbush
Brachyscome ciliaris	Variable daisy
Convolvulus sp.	Bindweed
Enchylaena tomentosa	Ruby Saltbush
Einadia nutans	Climbing Saltbush
Maireana brevifolia	Short-leaf Bluebush
Maireana georgei	Satiny Bluebush
Maireana turbinata	Top-fruit Bluebush

Species name	Common name
Shrubs	
Rhagodia parabolica	Mealy Saltbush
Rhagodia spinescens	Spiny Saltbush
Roepera aurantiaca	Shrubby Twinleaf
Vittadinia sp.	New Holland Daisy
Grass	,
Aristida behriana	Brush Wire-grass
Austrostipa sp.	Spear-grass
Chloris truncata	Windmill Grass
Cymbopogon ambiguous	Lemongrass
Ennepognon nigricans	Black-head Grass
Rytidosperma sp.	Small-flower Wallaby Grass
Themeda triandra	Kangaroo Grass

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4. IMPLEMENTATION

4.1 Actions required

Planning will be required for achieving both landscaping and revegetation outcomes. The steps to be taken to achieve effective landscaping and revegetation outcomes are presented in Table 6.

Table 6: Landscaping planning schedule.

Steps		Timing	Person Responsible
Landsca	aping		
1)	Confirm areas requiring landscaping (identified in Table 3)	Commencement of Construction	Environmental Manager / Health Safety and Environment Manager (HSE)
2)	Engage contractor to carry out landscaping	Commencement of Construction	Environmental Manager/HSE
3)	Determine scale of planting and the number of plants, extent of irrigation materials needed and timing for planting.	Commencement of Construction	Contractor
4)	Identify logistical limitations e.g. Site access, water sources etc.	Commencement of Construction	Contractor
5)	Order plants and materials	Commencement of Construction	Contractor
6)	Carry out plantings	As required	Contractor
7)	Maintenance	As Required	Contractor
8)	Monitoring – as part of weekly inspections and External Audit process (see CEMP)	As Required	Environmental Manager
Revege	tation		
1)	Site preparation – either biomass reduction with no scalping or scalping with the topsoil preserved and stored.	During Construction	Environmental Manager/HSE
2)	Order seed stock – To ensure that all of the required species are available the seed required for site recovery should be ordered in advance	Prior to construction commencing	Environmental Manager/HSE
3)	Use weekly site inspections process to identify areas ready for revegetation	During Construction	Environmental Manager/HSE
4)	Prepare site for seeding – add soil cap and harrow soil	During Construction	Environmental Manager/HSE
5)	Seed with the mix of native and pasture seed	During Construction	Environmental Manager/HSE
6)	Monitor progress as part of weekly inspections and External Audit process (see CEMP)	During Construction	Environmental Manager/HSE Qualified Consultant

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4.2 Monitoring

Monitoring of landscaping and revegetation outcomes will be used to identify any issues that may require further management. This will be included in the weekly inspections and quarterly site audits (CEMP), using the metric presented in Table 7. The data collected during the monitoring process will also provide evidence on the achievement of objectives of this LRP, and the project's Development Approval Conditions. Where monitoring detects a management issue that requires action, this will be reported to the Environment Manager or Construction Manager. Changes to management or specific actions will be implemented based on the mitigation measures presented in Table 7. If the management issue is complex, expert advice will be sought on alternative establishment measures. All reporting will be included within the framework established in the CEMP.

Table 7: Monitoring criteria

Measure	Measured using	Target Metric	Person Responsible		
Landscaping					
Plant Survivorship	Observations of plant health and survival	Survivorship > 80%	Environmental Manager/HSE		
Revegetation *NOT	E sufficient replicates of me	easures will be required to achieve a	a reliable measure		
Plant Density	1 m² quadrat counts Photo points	6 months = 4 plants/ m ² (In average climatic conditions)			
Species Diversity	1 m² quadrat counts	2-4 species per m ²	Environmental Manager/HSE Consultants		
% Cover	1 m² quadrat counts	12 months = 50% cover (In average climatic conditions)			

4.3 Responsibilities

Responsibilities specific to LRP are detailed in Table 8.

Table 8: Personnel with specific Landscaping and Revegetation Plan responsibilities

Role	Responsibility
Project Manager	Provides the required resources to facilitate the LRP Responsible for compliance with all applicable environmental legislation and contract obligations.
Construction Manager	Ensures the objectives of the LRP are achieved. Ensures requirements of the LRP are communicated and implemented. Ensures appropriate contractors are engaged Ensures appropriate training is delivered. Ensures communication and reporting framework is in place. Reports incidents to Project Manager, Neoen representative and to agencies as required. Ensures the timely delivery of corrective actions and monitoring of outcomes. Responsible for compliance with all applicable environmental legislation and contract obligations.

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	Reviews the LRP.
Environmental Manager	The principal point of advice in relation to the environmental performance. Oversees engagement of contractors, purchase of materials and ordering of seed. Oversees implementation of LRP activities Oversee the implementation of all LRP monitoring and reporting. Provide support and advice regarding applicable environmental legislation and contract obligations. Ensure environmental auditing is undertaken in accordance with all relevant CEMP and LRP requirements.
Contractors and their staff	Ensure goals of LRP are implemented upon instruction. Identify and proactively report incidents. Receive training.

4.4 Subcontractor Management

Subcontractors are required to utilise the LRP to build Environmental Work Method Statements (EWMS) specific to their activities. These EWMS is to be supplied to the GLC prior to works being undertaken. GLC will be responsible for verifying whether the sub-contractors' documents are consistent with the LRP and adequately address the environmental risks of the activity. Formal advice in this respect will be provided to the sub-contractor before works can commence.

5. REFERENCES

EBS Ecology (2020). Goyder South Hybrid Renewable Energy Facility: Flora and Fauna Assessment. EBS Ecology, Torrensville SA.

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