

# NEOEN

#### **MUCHEA BATTERY**

Landscaping Plan

**FINAL** 

October 2023

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Prepared by Umwelt (Australia) Pty Limited on behalf of Neoen Australia Pty Limited

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This report was prepared using Umwelt's ISO 9001 certified Quality Management System.



#### Acknowledgement of Country

Umwelt would like to acknowledge the traditional custodians of the country on which we work and pay respect to their cultural heritage, beliefs, and continuing relationship with the land. We pay our respect to the Elders – past, present, and future.

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# 1.0 Introduction

#### 1.1 Background

Neoen Australia Pty Ltd (Neoen) has received Development Approval (P063/22; DAP/22/02230) for the construction and operation of a utility-scale Battery Energy Storage System (BESS) (the Project) in the Shire of Chittering. The Project is located within a cleared portion of Lot 2364 on Deposited Plan 124489.

Condition (4) of the development approval (P063/22) requires that:

"A landscaping plan shall be submitted to the Shire and approved prior to the commencement of any works on-site. The approved Landscaping Plan shall be implemented to the satisfaction of the Shire prior to the operation and/or use of the proposed development and the landscaping maintained in perpetuity."

The purpose of this document is to provide a Landscaping Plan that meets the requirement of Condition (4) of the Development Approval (P063/22).

The Shire of Chittering and the Chittering Landcare Group have been consulted in the development of this plan.

#### 1.2 Purpose

The purpose of this Landscaping Plan is to:

- Satisfy Condition (4) of the DA.
- Identify a suitable area for the proposed vegetation.
- Identify vegetation species that are suited to the condition of the area and that can provide visual screening.
- Provide guidance for site preparation, planting, maintenance and monitoring.
- Outline completion criteria to be achieved.



### 2.0 Project Overview

### 2.1 Project Description

The Project is for the construction and operation of a BESS in a cleared portion of land within Lot 2364 on Deposited Plan 124489 (Figure 2.1). This Lot comprises a total area of 57 ha.

Approval has been received for a 200 MW/400 MWh project. There is the potential for the Project to be expanded beyond this and for the purposes of future proofing, this Landscaping Plan considers both the initial and potentially expanded Project.

The initial project will be a 100 MW/400 MWh BESS with a disturbance footprint of 5.8 ha. This will hereinafter be referred to as Stage 1. The layout of the Stage 1 BESS is illustrated in **Figure 2.2**.

The potentially larger project would be a 200 MW/800 MWh BESS with a disturbance footprint of 8.4 ha. This will hereinafter be referred to as Stage 2. The layout of the Stage 2 BESS is illustrated in **Figure 2.3**.

The Project will comprise of the following key infrastructure and facilities:

- Battery Banks, Power Conversion Systems (PCS), Power and Auxiliary Transformers and Ring Main Units (RMU).
- Internal access roads and limited car spaces.
- A combined 33 kV switchgear and control building, housing protections, metering, and control panels.
- A 132 kV/33 kV substation with step-up power transformers, Neutral Earthing Resistors (NERs) and 132 kV outdoor switchgear.
- 132 kV overhead cables assumed to connect directly to the adjacent Muchea Substation.
- A 33 kV cable reticulation and earthing networks.
- Low voltage cabling for auxiliary supplies, between the PCS and Power Transformers, and between the battery banks and the PCS.
- Communication cable network.
- Operations and maintenance (O&M) office, facilities, storage warehouse and rainwater tank.
- Two firewater tanks with a combined capacity of 576,000 L.
- Lightning rods up to 15 metres.
- CCTV cameras and lighting.
- Site perimeter fences and gates.
- Stormwater and fire water retention pond.
- Temporary site laydown area and facilities for Project construction.



### 2.2 Project Location

The Project site is located approximately two (2) km north of the town of Muchea in the Shire of Chittering.

The Project will be developed on cleared land located in the eastern area of Lot 2364 on Plan 124489 held in the Certificate of Title Volume 2908, Folio 693.

The Project will be approximately 1.2 km west of Brand Highway and accessed via Byrne Road, as shown in **Figure 2.1**. Byrne Road provides the only access for the site, as well as access to the Western Power Muchea Substation, Neerabup Gas Transfer Station, a farm, and a private residence.

As a result, Byrne Road receives limited use, with existing traffic volumes estimated at a maximum of 14 vehicles per day, as follows:

- Western Power 1 trip per day.
- Neerabup Gas Transfer Station 1 trip per day.
- Farm 1–2 trips per day.
- Residence 1–10 trips per day.

#### 2.3 Land Use and Surrounding Vegetation

The Project Area is used for agriculture, although it is directly adjacent to the Muchea substation to the east and the Neerabup gas transfer station to the north. The remaining surrounding land use types are agriculture on predominantly cleared land.

Two small pockets of degraded vegetation occur in the north-western and south-western corners of the Project Area, outside of the proposed disturbance footprint.

There are only three isolated residential properties located within 1.5 km of the project site. The majority of residential receptors in the area are located 1.6 km to the south in the townsite of Muchea.



Image Source: Landgate (2023) | Data Source: Landgate (2023), Umwelt (2023)











# 3.0 Landscaping Considerations

The following aspects were considered in the development of the Landscaping Plan:

- Purpose of the plan.
- Site constraints.
- Species suitability.

#### 3.1 Purpose of the Plan

The purpose of the Plan, as advised by the Shire of Chittering, is to provide visual relief to the adjacent Byrne Road. The Shire further advised that in accordance with the *Local Planning Scheme No. 6*, the area of vegetation to be planted should be 10% of the Project disturbance area.

### 3.2 Site Constraints

Byrne Road currently contains a line of planted trees (most likely Eucalypts) along a single side of the road. Between Brand highway and the Muchea substation, these trees are located along the southern side of Byrne Rd. Between the Muchea Station and the Neerabup gas station, the trees are located along the northern side of Byrne Rd (**Figure 2.2**). These trees in their existing condition provide a form of visual screening when initially approaching the site from Brand Highway.

While the purpose of the landscaping is to provide additional visual relief to Byrne Rd, numerous site constraints with the potential to impact on siting of the proposed vegetation have been determined through desktop review and a site inspection. These constraints are discussed in the following sections.

#### 3.2.1 Overhead Transmission Lines

Noting the intended purpose of the Landscaping Plan is to provide visual relief from Byrne Road, the most logical place to site the proposed vegetation would be along the northern boundary of the Project.

However, during the site visit, it was noted that there are a number of overhead powerlines that run along the northern boundary of the Lot (**Figure 2.2** and **Figure 2.3**). For the rated voltage and design of the overhead powerlines that run parallel to the Project site, the minimum horizontal clearance is 4 m, however restrictions and additional management procedures are required for any vegetation within 10 m of these lines.

Landscaping within the vicinity of these powerlines would therefore need to comply with the minimum clearances identified above, and this may also restrict the types of species that could be planted. Trees or tall shrubs that are likely to occupy these clearance spaces, in order to provide visual relief would be unsuitable and landscaping would be restricted to smaller trees, shrubs or groundcovers that provide minimal visual relief. Additionally, planting vegetation beneath overhead powerlines can lead to increased maintenance requirements and safety risks. As a result, the northern boundary of the Project is considered unsuitable for landscaping.



#### 3.2.2 Gas Pipelines

Directly to the east of the Project site is a gas pipeline than runs in a NNW-SSE direction. This pipeline has an associated easement width of 30 m. Another gas pipeline runs in a N-S direction directly to the west of the Project and has an associated easement width of 70 m. There are also a number of gas pipeline easements located along the Northern boundary of the Lot (**Figure 2.2** and **Figure 2.3**).

Planting of vegetation is not permitted within the gas pipeline easements and the final location for the landscaping has been sited to avoid this infrastructure.

#### 3.2.3 Bushfire Compliance

A Bushfire Management Plan (BMP) was developed for the Project in accordance with the requirements of *State Planning Policy 3.7 Planning in Bushfire Prone Areas* and associated Guidelines for developments within declared Bushfire Prone Areas. The BMP recommended an Asset Protection Zone (APZ) ranging from 22 to 33.9 metres for Project infrastructure, based on the bushfire hazard risk posed by surrounding flat grassland.

Given the proposed planting of vegetation for screening purposes in proximity to Project infrastructure, guidance was sought from Bushfire Prone Planning on considerations for any proposed landscaping and setback distances that should be applied to types of vegetation proposed. The following setback distances were recommended based on the vegetation species proposed to be planted:

- 63.2 m from O&M buildings.
- 43 m from the development areas (excluding the laydown area).

#### 3.2.4 Future Proofing

As discussed in **Section 2.1**, there is potential for the original 100 MW/400 MWh Project to be expanded to double its capacity which has been considered as part of the design and planning for its current stage.

Stage 1 is a 100 MW/400 MWh BESS with a disturbance footprint of 5.8 ha as illustrated on **Figure 2.2**. Stage 2 is a 200 MW/800 MWh BESS with a disturbance footprint of 8.4 ha as illustrated on **Figure 2.3**.

Based on the alignment of the Stage 1 battery compound and ancillary infrastructure, expansion from Stage 1 to Stage 2 would need to be towards the south of Lot 2364.

### 3.3 Species Suitability

The Project is located within a water prone area. Groundwater levels recorded at two bores installed within the site in October 2021 were between 0.475 to 0.573 m below ground level (bgl). Therefore, it is considered likely that proposed species for landscaping would need to be suited to growing in locations close to the water table in order to improve survival rates and success in achieving completion criteria.

Understanding what species are already established in the general area provides a strong indicator of species suitability. In 2021, Umwelt completed a Reconnaissance and Targeted Flora and Vegetation Survey of Lot 2364. The results of this survey have been reviewed and species recorded with potential for providing visual screening are summarised in **Table 3.1**.



Species	Attributes for screening	Comments or Considerations	Example Photo
Astartea scoparia (Astartea)	<ul><li>Typically 1.8 m in height.</li><li>Suitable for wetland areas.</li></ul>	<ul> <li>Considered less effective for screening of the BESS.</li> <li>Could supplement screening at 0–2 m.</li> </ul>	
Kunzea glabrescens (Spearwood)	<ul> <li>1.5–4 m in height.</li> <li>Multi-stemmed.</li> <li>Suitable for wetland areas.</li> </ul>	• May supplement screening at 0–4 m.	

#### Table 3.1Species Recorded on Lot 2364 with Potential to Provide Screening



Species	Attributes for screening	Comments or Considerations	Example Photo
Melaleuca preissiana (Swamp Paperbark)	<ul> <li>Tree or shrub typically 0.2–10 m in height.</li> <li>Multi-stemmed.</li> <li>Suitable for wetland areas.</li> <li>Readily available in nurseries.</li> <li>Lower fire risk than Eucalyptus species.</li> </ul>	<ul> <li>Suitable for providing screening for the BESS.</li> <li>Need to ensure tall forms are planted for maximum visual relief.</li> </ul>	
<i>Corymbia calophylla</i> (Marri)	<ul> <li>Tree typically up to 40 m in height (likely 20–30 m in the environs of the site).</li> <li>Single-stemmed.</li> <li>Some tolerance for wetlands (endemic to the site).</li> <li>Easily propagated.</li> <li>Higher fire risk than Melaleuca species^.</li> </ul>	<ul> <li>Suitable for providing screening for the BESS from higher vantage points in the distance.</li> <li>Need to ensure wetland provenances are planted.</li> <li>Planted intermittently to break up vegetation height (lower increases to fire risk).</li> </ul>	

Notes:

^ As advised by Bushfire Prone Planning.

<sup>1</sup> Source: Friends of Queens Park Bushland (https://www.friendsofqueensparkbushland.org.au/astartea-scoparia/).

<sup>2</sup> Source: Honkey Nuts Tree Directory (https://honkeynuts.com.au/spearwood/).

<sup>3</sup> Source: Geographe Community Landcare Nursery (https://gcln.org.au/product/melaleuca-preissiana/).

<sup>4</sup> Source: Friends of Queens Park Bushland (https://www.friendsofqueensparkbushland.org.au/corymbia-calophylla/).



## 4.0 Proposed Landscaping Plan

### 4.1 Location of Vegetation

Noting the constraints identified in **Section 3.2**, the most suitable location for the landscaping vegetation is considered to be to the south of the Project along the southern boundary of Lot 2364. This location was deemed the most suitable for the following reasons:

- The northern boundary of the Project site is constrained by the presence of overhead transmission lines and gas pipeline easements.
- The eastern boundary of the site is constrained by the presence of the existing Dampier to Bunbury natural gas pipeline corridor.
- The western boundary of the site is constrained by the easement reserved for future expansion of the Dampier to Bunbury natural gas pipeline corridor.
- The proposed vegetation needs to be set back 63.2 m from the O&M buildings and 43 m from the development areas to meet bushfire requirements.
- Placing the vegetation along the southern boundary of Lot 2364 allows for expansion of Stage 2 should it progress. It should be further noted that the town of Muchea is located to the south of the project, so planting in this location will provide additional screening from the town (**Figure 2.2**).
- Byrne Rd has limited traffic use and has established trees along its verge that provide a level of visual screening.
- An isolated residential receptor is located approximately 900 m northwest of the Project development envelope. This receptor will be visually screened from the Project by the presence of exiting vegetation located at the northwestern corner of the Project site.
- There are no sensitive receptors to the west of the project with the dominant feature being Gnangara-Moore River State Forest approximately 4 km west.

The extent of the landscaping vegetation required is 10% of the disturbance footprint. For Stage 1, this would be 0.58 ha. The vegetation would be planted in a 20 m wide by 290 m long strip as illustrated in **Figure 4.1**. For the Stage 2 project, the overall landscaping vegetation required is 0.837 ha. This vegetation would be planted in a 29 m wide by 290 m long strip as illustrated in **Figure 4.2**.

There is the potential for the firewater retention pond to be downsized. Should the scale of downsizing allow for it, the screening vegetation will be moved further east to include the southern boundary of the pond.

### 4.2 Species to be Planted

The vegetation proposed to be planted comprises of *Melaleuca preissiana* and *Kunzea glabrescens* with *Corymbia calophylla* interspersed intermittently between.



These species were chosen as they are already established in the general area, thereby indicating their suitability to establish in the local conditions. They have also been chosen for their ability to provide a sufficient level of visual screening from a distance.

Furthermore, the Chittering Landcare Group have been consulted about the proposed landscaping species and were agreeable to the proposed species.

### 4.3 Establishment of Vegetation

Establishment will involve:

- Repeated weed control using appropriate herbicides in the year prior to the commencement of landscaping to reduce weed burdens.
- Deep ripping (minimum of 0.6 m) under dry soil conditions (February/March) to alleviate any induced compaction.
- Repeated weed control following ripping, including scalping the surface 100 mm of the topsoil with weed seed.
- Planting seedlings in rows with 3 m spacing between each row. Seedlings are to be planted following sufficient rainfall to wet the soil profile (generally late May/June depending on seasonal conditions) at a spacing of 1.5 m between plants. Note: Higher planting density allows for thinning with high rates of establishment. Considering the area has been managed as pasture with historical fertiliser applications, additional fertiliser is unlikely to be needed.
- Installation of fencing surrounding the landscaped area to minimise herbivory from fauna or disturbance by livestock.
- Species are to be planted at the following rates:
  - Melaleuca preissiana and Kunzea glabrescens Seedlings planted intermittently in groups of 1–4 (12 approximately total of 65 seedling/100 m of row).
  - *Corymbia calophylla* 20 seedlings/100 m of corridor planted within the 2 southernmost rows (assuming a 10–20% survival with thinning in later years).

#### 4.4 Monitoring and Maintenance

Ongoing monitoring and maintenance for weed establishment, overall growth progress, plant health and survivability will be undertaken as defined in **Table 4.1**.

In summary, monthly monitoring will be undertaken for the 6 months following planting to address constraints to plant establishment, growth and survival. For the following two-year period, monitoring should be undertaken in March, June, September and December. Subject to acceptable survival and growth, monitoring may be reduced to June and December each year until year 10.



Monitoring Purpose	Monitoring Frequency	Contingency Measures	
Weeds	<ul> <li>Initial 6 months – Monthly.</li> <li>Thereafter for 2 years – Quarterly (March, June, September and December).</li> <li>Years 2 to 10 – Biannually, subject to acceptable survival and growth.</li> <li>(June and December).</li> </ul>	<ul> <li>Weed treatment and controls where weed establishment or spread is identified.</li> </ul>	
Plant health (disease, growth progress etc.)	<ul> <li>Initial 6 months – Monthly.</li> <li>Thereafter for 2 years – Quarterly (March, June, September and December).</li> <li>Years 2 to 10 – Biannually, subject to acceptable survival and growth.</li> <li>(June and December).</li> </ul>	<ul> <li>Treatment of landscaped area for diseases if identified.</li> <li>Soil amendments where vegetation growth is insufficient or reduced.</li> </ul>	
Survivability	<ul> <li>Initial 6 months – Monthly.</li> <li>Thereafter for 2 years – Quarterly (March, June, September and December).</li> <li>Years 2 to 10 – Biannually, subject to acceptable survival and growth.</li> <li>(June and December).</li> </ul>	<ul> <li>Infill planting where there is a risk that completion criteria will not be met due to survival rates.</li> </ul>	

#### Table 4.1 Landscaping Monitoring Program

### 4.5 Completion Criteria

Initial planting densities are higher than the completion criteria densities based on expected plant deaths (thinning is considered more efficient than infill planting to achieve target densities).

The revegetation aims to establish at 10 years the completion criteria listed in Table 4.2.

Table 4.2 Landscaping Completion Crite
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Completion Criteria	Timeline	Contingency Measure
A total of 30 plants of <i>Melaleuca preissiana</i> and <i>Kunzea glabrescens</i> are established per 100 m vegetation corridor, with a minimum of 10 these being <i>Melaleuca preissiana</i> .	<ul> <li>Within 10 years of landscaping.</li> </ul>	• Infill planting.
Between 2 and 4 <i>Corymbia calophylla</i> trees are established per 100 m of vegetation corridor.	<ul> <li>Within 10 years of landscaping.</li> </ul>	Infill planting.
No significant gaps in the vegetation screen where the BESS facility is clearly visible.	<ul> <li>Withing 10 years of landscaping.</li> </ul>	Infill planting.





Image Source: Landgate (2023) | Data Source: Landgate (2023), Umwelt (2023), WP (2022), Neoen (2023)







# 5.0 References

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