



Landscaping Plan for Bomen Solar Farm

Prepared for Renew Estate Pty Ltd

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1 Introduction

1.1 Background

Renew Estate Pty Ltd is proposing to develop the Bomen Solar farm, 120 megawatt (MW) solar photovoltaic generation facility and associated infrastructure within Wagga Wagga Local Government Area (LGA), approximately 7 kilometers north-east of the Wagga Wagga central business district (CBD) (Figure 1) Biosis Pty Ltd was commissioned by Renew Estate Pty Ltd to prepare a landscaping plan to satisfy the visual screening requirements for the Bomen Solar Farm.

The Bomen Solar Farm, a State Significant Development, received Development Consent from the Minister of Planning on 8 October 2018 under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP & A Act). The Development Consent includes a number of Conditions of Consent (CoC) which must be complied with, including the minimum landscaping requirements. Conditions 7 and 8 under Schedule 3 of the Development Consent stipulate that the proponent must establish and maintain a mature vegetation buffer, as shown in Appendix 1 of the Development Consent, and implement a landscaping plan to provide visual screening from surrounding residences (this plan). After consultation with nearby residents Renew Estate will implement landscaping beyond these minimum conditions, including longer perimeter screens, additional internal screening rows and a 9 hectare revegetation area within the solar farm.

Compliance with the Development Consent also requires compliance with the mitigation measures developed as part of the project's Environmental Impact Statement (EIS), referred to as the Statement of Commitments (SoC). The SoC relevant to landscaping also relate to the preparation of this Landscaping Plan.

Table 1 lists relevant CoC and SoC and where they are addressed in this Landscaping Plan.

Table 1 Statutory requirements

Requirement	Where addressed
Condition of Consent - Vegetation Buffer	
Schedule 3, Condition 7 The Applicant must establish and maintain a mature vegetation buffer (landscape screening) at the locations outlined in the figure in Appendix 1 to the satisfaction of the Secretary. This vegetation buffer must:	This document
(a) be planted prior to the commencement of operations;	Table 4.1.6
(b) consist of species that facilitate the best possible outcome in terms of visual screening;	Section 2.2 Table 3
(c) within 3 years of the commencement of construction be effective at screening view of the solar panels and ancillary infrastructure on site from surrounding residences; and	Table 3 Table 4.1.1

Requirement	Where addressed
(d) be properly maintained with appropriate weed management.	Section 3.1 Section 3.2 Section 3.4 Table 4.
Condition of Consent - Landscaping Plan	
Schedule 3, Condition 8 Prior to the commencement of construction, the Applicant must prepare a detailed Landscaping Plan for the development in consultation with Council and surrounding landowners, to the satisfaction of the Secretary. This plan must include:	This document
(a) a description of measures that would be implemented to ensure that the vegetated buffer achieves the objectives of condition 7 (a) – (c) of this consent;	Table 4
(b) include a program to monitor and report on the effectiveness of these measures; and	Section 3.3 Table 4
(c) include details of who would be responsible for monitoring, reviewing and implementing the plan, and timeframes for the completion of actions.	Table 4
Following the Secretary’s approval, the Applicant must implement the Landscaping Plan.	-
Condition of Consent - Land Management	
Schedule 3, Condition 9 Following any construction or upgrading on the site, the Applicant must: <ul style="list-style-type: none"> (a) restore the ground cover of the site as soon as practicable, but within 12 months of completing any construction or upgrading, using suitable species; (b) maintain the ground cover with appropriate perennial species; and (c) manage weeds within this ground cover. 	Construction Environmental Management Plan / Operational Environmental Management Plan (Groundcover management sub-plan)
Statement of Commitment - Landscaping	
A landscape plan (see draft in Figure 3.16 of the EIS) will be further developed to outline the location and type of plantings to assist in minimising impacts on views of the proposal site from nearby properties. The landscape plan will be prepared in consultation with all impacted nearby property owners. The plan will outline the species to be used on site and will use species from native vegetation communities found in the local area. All selected species will be determined in consultation with Riverina Local Land Services, the Rural Fire Service and property owners (where required).	This document

1.2 Scope

The landscaping plan scope includes:

- A description of the site and measures required by conditions of consent 7 and 8 to achieve visual screening.
- A description of objectives of the visual screening, i.e. to minimise visual impact on surrounding areas.
- A description of the location where visual screening is required in accordance with Appendix 1 of the development consent.
- Specifications for screening planting design such as dimensions, layout, planting densities, fencing, species selection and likely growth rates to achieve the three year screening requirements.
- Recommend locally native species for planting or infill due to their low maintenance requirements.
- A map showing the location of screening plantings and revegetation.
- An implementation plan setting out steps to establish, maintain (e.g. weed management) and protect screening plantings. The implementation plan also includes a table outlining management responsibilities and timing.
- A monitoring and review framework with actions to address planting failures. This will assist in ensuring the ongoing success of the screening plantings.
- Discussions with relevant agencies and stakeholders.

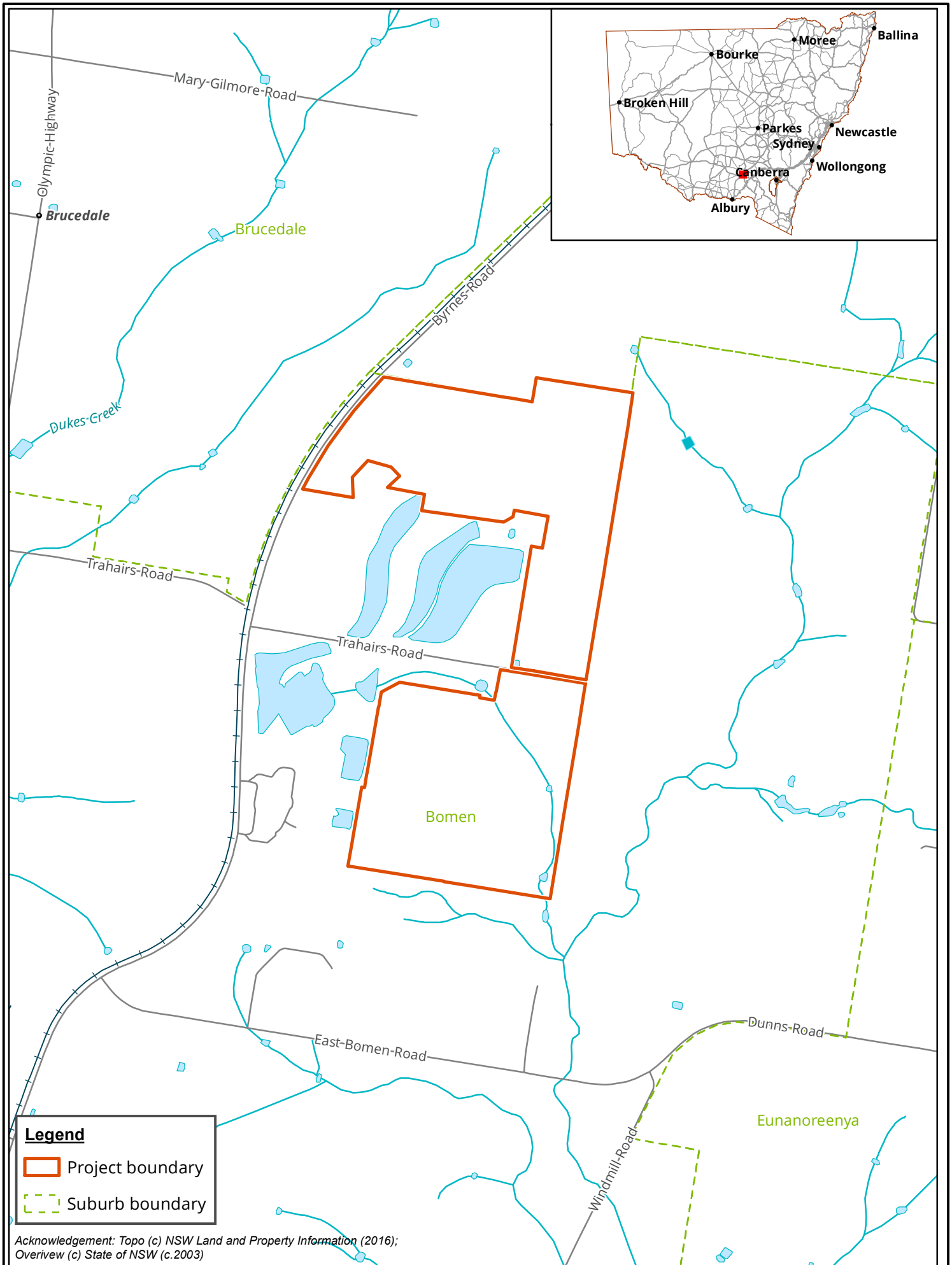


Figure 1: Location of the project boundary

2 Landscaping Plan

2.1 Site Description

Renew Estate Pty Ltd is proposing to develop Bomen Solar Farm about seven kilometres north-east of the Wagga Wagga CBD on the eastern side of Byrnes Road. The development footprint of the solar farm covers approximately 235 hectares and is situated on six lots zoned IN1 General Industrial which are currently being used for agricultural purposes (Figure 1, Plate 1 to Plate 4). The proposed Bomen Solar Farm would be visible from locations in the surrounding area. A change in elevation from east to west results in parts of the proposal site being visible from properties to the east. Existing shelterbelt plantings and remnant vegetation on, and near, the site provide some screening from the surrounding sensitive receivers. Additional planting and infill planting is proposed along parts of the northern, eastern and southern boundaries of the site to provide additional screening (Figure 2) (GHD 2018).

The site is located within the Riverina Interim Biogeographic Regionalisation for Australia (IBRA) bioregion of south-western (lower slopes) NSW, therefore the preferred vegetation for the visual screening will be locally native species that adhere to the revegetation guidelines for this bioregion (Walker & Stelling 1998). The soil landscape on site is typically transitional from thin gritty red and yellow texture-contrast soils on slopes with harsh blocky subsoil as well as loam on the floodplain including brown gradational loam and yellow texture-contrast soils on higher terraces, described as Junee Hills and Slopes (JHS) and Murrumbidgee – Tarcutta Channels and Floodplains (DECC 2010).

The previous assessments at Bomen Solar Farm undertaken by GHD (2018) confirmed that no intact native plant community types (PCTs) were present on the study site, with only scattered paddock trees remaining.

Vegetation mapping provided in the State Vegetation Type Map: *Riverina Region Version v1.2 - VIS_ID 4469* (OEH 2016) spatial package indicates landscape has been mostly cleared of native vegetation but does contain two PCTs within 5 kilometres of the site including; PCT 277 Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion and PCT 346 - White Box - Blakely's Red Gum - White Cypress Pine shrubby woodland on metamorphic hills in the Wagga Wagga - Cootamundra region of the NSW South Western Slopes Bioregion. Due to the absence of native vegetation on site and variability of PCTs located within the broader area Biosis has selected plant species from both the surrounding PCTs and the Native Vegetation Guide for the South West Slopes including suggested species from Wagga Wagga City vegetation profile for landforms synonymous with mid to lower slopes with mixed box woodland (Walker & Stelling 1998). Plant species from these vegetation communities and types are naturally suited to local soil and climatic conditions, and are a logical choice for screening plantings. Suggestions regarding locally native species were also provided by local residents who attended a consultation session in Wagga Wagga on 1 November 2018.



Plate 1 View of southern boundary (MZ1, Figure 2) infill planting area for screening, looking east from the top of the hill



Plate 2 View of north eastern boundary (MZ1, Figure 2) infill planting area for screening, looking north



Plate 3 View of south eastern boundary (MZ2) planting area - full screening and in-fill planting required, looking north



Plate 4 View of northern boundary (MZ2) planting area - full screening required, looking east

2.2 Objectives of Landscape Plan

Conditions of consent 7 and 8 of Schedule 3 under the Development Consent require Renew Estate to establish and maintain a mature vegetation buffer along parts of the northern, eastern and southern boundaries of the site to provide additional screening. In order to meet the conditions of Consent, a suitable visual screen will be planted and/or enhanced prior to the commencement of operations, consisting of species that facilitate the best possible visual screen outcomes, be effective at screening the view of the solar panels and ancillary infrastructure on site within three years of the commencement of construction, and be properly maintained with appropriate weed management. The vegetation buffer will need to be actively managed for up to three years from commencement of construction (i.e. site preparation, planting, plant replacement, watering, weed control, regular monitoring) to ensure establishment is effective. After three years the vegetation buffer will need to be maintained for the operational lifetime of the solar farm through occasional weed control, trimming and monitoring. Three years has been set as the most intensive management period as similar screening and shelterbelt plantings in rural landscapes generally reach a self-sustaining point over this period and then only require occasional maintenance.

The visual screening is intended to be effective at screening views of the solar panels and ancillary infrastructure from surrounding residences.

Active revegetation is to be carried out in a manner that avoids structured plantings in straight lines and achieves a more randomised pattern (non-grid pattern) as requested by neighbours during consultation.

Appendix 1 of the conditions of consent outlines minimum screening requirements as determined by DPE. Renew Estate proposes to increase the perimeter screening and internal landscaping in response to the outcomes of community consultation with nearby residents.

2.3 Management zones

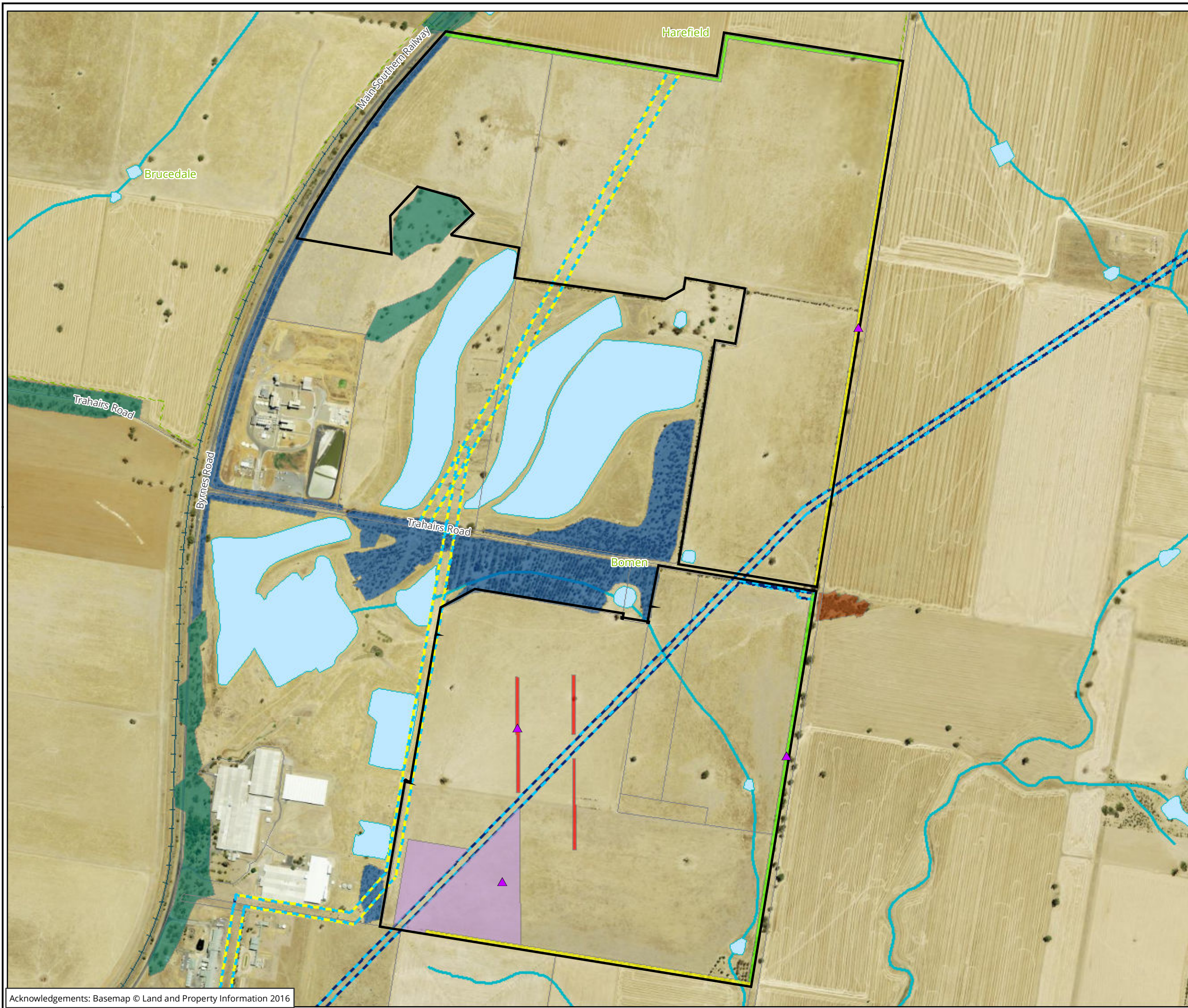
A site investigation conducted by Matt Looby (Senior Consultant Ecologist) on 1 November 2018 identified existing screen plantings in varying levels of establishment along sections of the north eastern and southern boundary (see previous plates). These have previously been identified as planting areas for screening in the EIS (GHD 2018). As such, the screening planting areas on the property boundary have been delineated into two separate management zones that reflect existing conditions. A further two management zones have been created to capture the requirements for the internal screen planting and revegetation area in the south western corner of the site.

The location and extent of each zone is provided in Figure 2 with a corresponding summary of the management requirements for each zone provided in Table 1 below. The visual screening will be up to 10 metres wide for MZ1, MZ2 and MZ3 and a typical cross section is provided below in Figure 3. Specific cross sections for the first three management zone types are provided in Figure 4, Figure 5 and Figure 6.

Table 2 Management zones

Management zone	Description
<p>Management Zone 1: Existing perimeter plantings / infill planting (MZ1)</p>	<p>MZ1 includes areas with established screening plantings along the north-eastern and southern boundaries. MZ1 already contains a discontinuous canopy / mid storey of planted native (indigenous and non-indigenous) trees and shrubs, including Eucalypts (<i>Eucalyptus blakelyi</i>, <i>E. sideroxylon</i>, <i>E. camaldulensis</i>), Wattles (<i>Acacia</i> spp.), Paperbarks (<i>Melaleuca</i> spp.) and She-oaks (<i>Casuarina</i> spp.) with a predominantly exotic ground cover made up of naturalised annual grasses pasture weeds. Additional screening planting in this zone is limited to infill planting where required to thicken established tree and shrub species. Infill planting of trees is to occur outside the drip line of old and remnant eucalypts. Where infill planting is required to screen areas under drip lines of established trees, shrub species listed in Table 3 will be used. Tree species listed in Table 3 should be installed for screening required outside the drip line of established trees.</p> <p>It is noted that MZ1 is a 10 metre wide corridor with up to three rows of trees and shrub species planted (where required around existing plantings) at a linear distances of one tree/shrub at approximately 5 metre intervals along the ripped row. Planting in this area will be restricted to trees and large shrubs as screening is the main objective for MZ1. Groundcovers and grasses may compete with trees and shrubs for water and nutrients and are not recommended for planting in MZ1.</p> <p>See Figure 3 and Figure 4 for screening cross section.</p>
<p>Management Zone 2: No or poor quality existing perimeter plantings / full screening planting (MZ2)</p>	<p>MZ2 includes screen planting locations that have no existing plantings or poor quality plantings. Full screening planting is required within this zone. MZ2 makes up a portion of the northern and south eastern boundary. The vegetation in MZ2 is in low condition and consists as a mosaic of exotic grasses and pastoral weed species. MZ2 is devoid of native shrubs and canopy species.</p> <p>It is noted that MZ2 is a 10 metre wide corridor with up to three rows of trees and shrub species planted (where required around existing plantings) at a linear distances of one tree/shrub at approximately 5 metre intervals along the ripped row. Planting in this area will be restricted to trees and large shrubs as screening is the main objective for MZ2. Groundcovers and grasses may compete with trees and shrubs for water and nutrients and are not recommended for planting in MZ2.</p> <p>See Figure 3 and Figure 5 for screening cross section.</p>

Management zone	Description
Management Zone 3: Internal screen planting (MZ3)	<p>MZ3 includes additional internal screen planting locations within Bomen Solar Farm. MZ3 will consist of a 10 metre wide row of plantings that will provide additional screening to properties to the east. The vegetation in MZ3 is in low condition and consists as a mosaic of exotic grasses and pastoral weed species devoid of native mid and canopy species.</p> <p>It is noted that MZ3 is a 10 metre wide corridor with up to three rows of trees and shrub species planted (where required around existing plantings) at a linear distances of one tree/shrub at approximately 5 metre intervals along the ripped row. Planting in this area will be restricted to trees and large shrubs as screening is the main objective for MZ3. Groundcovers and grasses may compete with trees and shrubs for water and nutrients and are not recommended for planting in MZ3.</p> <p>See Figure 6 for screening cross section.</p>
Management Zone 4: Internal Revegetation area (MZ4)	<p>MZ4 is a 9 hectare area in the south-west corner of the site set aside for revegetation. The vegetation in MZ4 is low condition and consists as a mosaic of exotic grasses and pastoral weed species. There are no existing plantings in this management zone. Revegetation actions for this zone will be judged on biodiversity value with regard to performance criteria rather than screening effectiveness. The eastern boundary of MZ4 is located on the mid elevation point of the southern portion of the study site at the 225 m above sea level (asl) contour.</p> <p>In the interest of reducing the potential risk of bushfire it is recommended that tree and shrub planting in MZ4 are installed in isolated clumps with mature canopies being separated by 2 to 5 metres to minimise fire moving into the canopy and across canopies. Outside these clumps exotic grass will be managed to an appropriate height. Density of plantings will be reduced to achieve a 'Woodland' formation.</p> <p>As plantings in this area will not be restricted to rows the following maximum densities are recommended as a guide only:</p> <ul style="list-style-type: none"> • Trees planted at a rate of 1 per 150 m² • Shrubs planted at a rate of 1 per 50 m² • Groundcovers and grasses planted at a rate of 1 per 4 m²



Legend

- Project boundary
- Suburb
- Lot boundary (Source: DCDB *)
- Existing subtransmission easement **
- Existing high pressure gas pipeline easement **
- Railway
- Waterbody
- Watersource
- ▲ Photo Point Monitoring

Planting areas for vegetation screening

- (MZ1) - Existing plantings (infill planting only)
- (MZ2) - No existing planting/poor quality plantings (full screening required)
- (MZ3) - Internal planting
- (MZ4) - Internal revegetation area

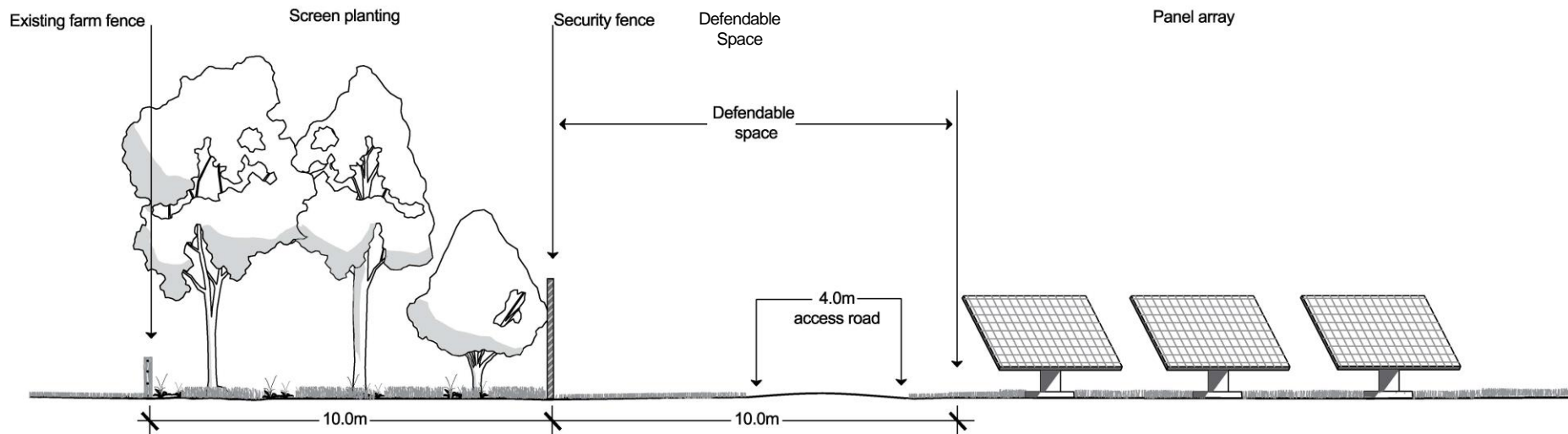
Existing vegetation community

- Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South-western Slopes Bioregion
- Yellow Box grassy tall woodland on valley flats in the upper slopes of the South-western Slopes Bioregion and South Eastern Highlands Bioregion
- Planted woody vegetation

Note:
 * DCDB lot boundaries are approximate only. The project site is drawn based on actual surveyed lot boundaries
 ** No planting is permitted within the easement.

0 100 200 300 400 500
 Metres
 Scale: 1:10,000 @ A3
 Coordinate System: GDA 1994 MGA Zone 55

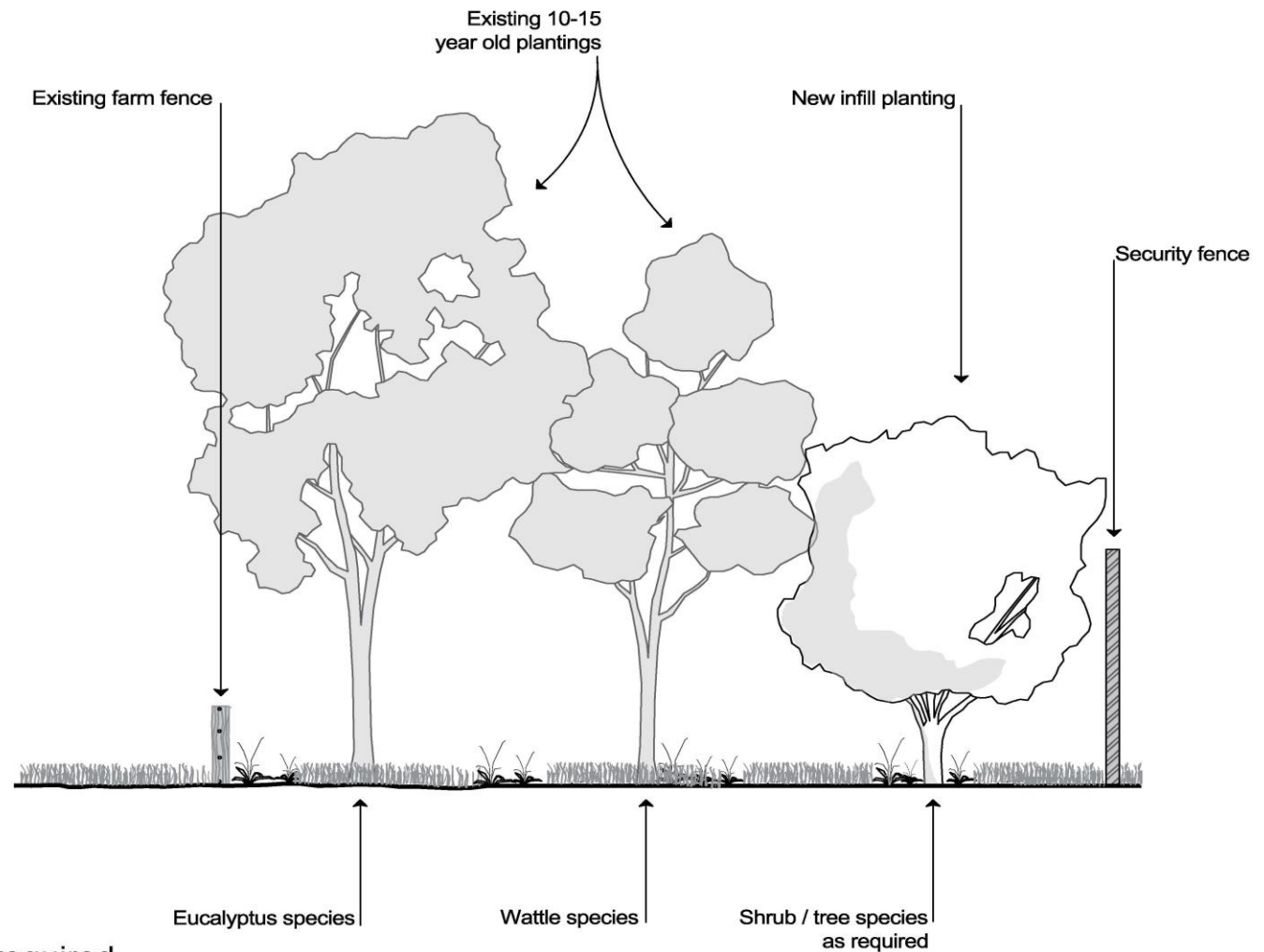
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Typical cross section for perimeter screen planting

Not to scale

Figure 3 Typical cross section of perimeter screen planting

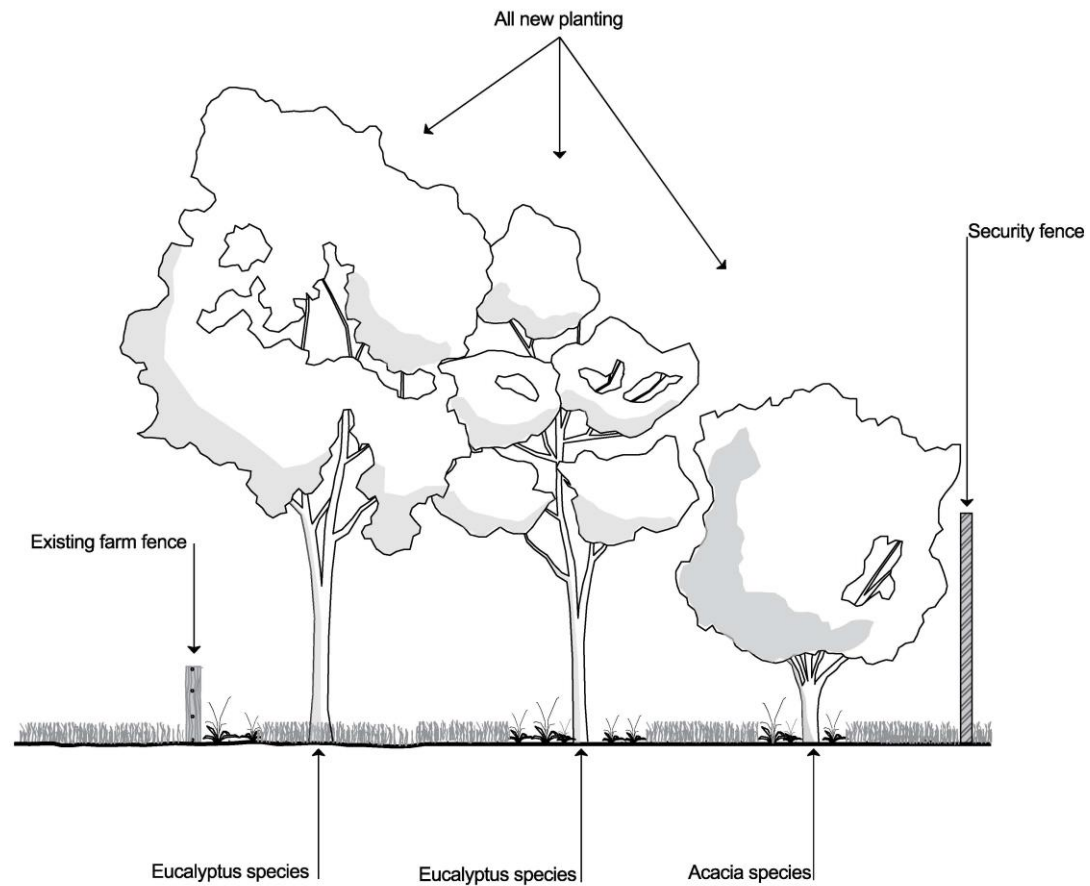


Existing plantings - infill required

Typical cross section for perimeter screen planting

Not to scale

Figure 4 Typical cross section of perimeter screen planting in MZ1 where infill planting is required

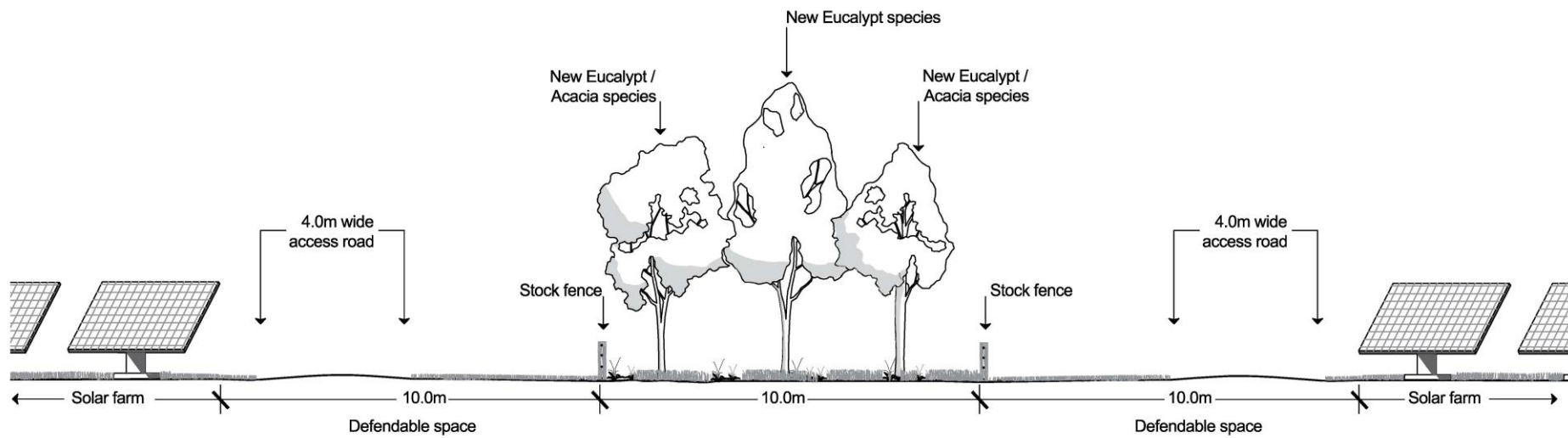


No existing or poor condition planting

Typical cross section for perimeter screen planting

Not to scale

Figure 5 Typical cross section of perimeter screening planting MZ2 where new planting is required



Internal landscaping

Figure 6 Typical cross section planting for internal screen planting in MZ3

2.4 Infill planting and revegetation

Active revegetation is required in all management zones. Infill planting and active revegetation are to be undertaken in general accordance with the specifications outlined below. A recommended species list for infill planting and active revegetation is provided in Table 3. The recommended planting list is based on species that are characteristic of surrounding PCTs 227 and 346 as well as species that were recorded in the study area.

Active revegetation in areas MZ4 will be carried out in a manner that avoids structured plantings in straight lines and achieves a more randomised non grid pattern. Ripping will occur along contours rather than down slopes to prevent rilling and erosion. As MZ1, MZ2 and MZ3 are 10 metre wide screening corridors, planting in up to three straight ripped lines is recommended to maximise vegetative screening. Groundcovers and grasses will be planted in MZ4 only.

All plants to be installed as part of the required revegetation works are to be either as hikos and/or enviro-cells sized pots. Advanced stock are not to be used for rehabilitation purposes and do not compensate for multiple plantings within the study area. A recommended species list is provided in Table 3. The recommended planting list is based on species that are characteristic of the Wagga Wagga City vegetation profile for landforms synonymous with mid to lower slopes with mixed box woodland (Walker & Stelling 1998) and that have been recorded in the study area.

At a minimum stock fencing will be erected around all planting locations prior to establishment to protect from trampling and herbivory.

2.5 Planting species list

Condition of Consent 7b requires the vegetation buffer to 'consist of species that facilitate the best possible outcomes in terms of visual screening'. To respond to this requirement it is proposed to use locally indigenous vegetation species as they are considered to be best suited to local environmental conditions (soils and climate) and will have the best chance of establishing and providing effective screening within three years of construction commencement.

The list of species presented in Table 3 are locally native, and are considered to provide the most robust and low maintenance option for establishing effective vegetation screening. In the interest of reducing fuel load and at the request of local residents Saltbush *Atriplex* ssp. have been omitted from the species list, it has been noted during consultation that due to their habit they collect a large load of leaf litter and dry weed debris from Hairy Panic *Panicum effusum*. The list has been compiled from consultation with local residents presented in Table 5, observations of naturally occurring species with suitable growth forms, and from lists provided in Kent et al. (2002) and Walker & Stelling (1998) specific to the Bomen area. Species listed in Table 3 will be planted subject to availability from supplier(s) and may be substituted for other locally suitable species if availability issues arise, subject to approval from the DPE.

Table 3 Suggested indigenous species for landscape screening plantings

Scientific name	Common name	Height	Spacing	Flowering time
Large trees > 8 m				
<i>Acacia baileyana</i>	Cootamundra Wattle	3-10 m	5m	June – September ²
<i>A. implexa</i>	Hickory Wattle	> 8 m	5 m	December - March ¹
<i>A. leucoclada</i>	Northern Silver Wattle	5-15 m	5 m	July – December ¹

Scientific name	Common name	Height	Spacing	Flowering time
<i>Eucalyptus albens</i>	White Box	> 8 m	5 m	January – September ³
<i>E. blakelyi</i>	Blakelys' Red Gum	> 8 m	5 m	October – December ³
<i>E. melliodora</i>	Yellow Box	> 8 m	5 m	January – February, May – December ³
<i>E. microcarpa</i>	Grey Box	> 8 m	5 m	February – March May – June ³
Shrubs – *Spaced at 5m intervals in MZ1 / MZ2 / MZ3				
<i>Acacia deanei</i>	Deane's Wattle	1.5 – 7 m	1 – 2 m *	All year ¹
<i>A. decora</i>	Western Silver Wattle	1 – 4 m	1 m *	April – October ²
<i>A. pycnantha</i> #	Golden Wattle	3 – 8 m	2 – 3 m *	August – October July – November ¹
<i>Calytrix tetragona</i> (can be substituted for <i>Bursaria spinosa</i>)	Common fringe-myrtle	0.5 – 2 m	0.5 m *	All year ²
<i>Pultenaea foliolosa</i>	Bush Pea	0.5 – 2 m	0.5 m *	August - January ⁴
Ground cover and grasses				
<i>Xerochrysum viscosum</i>	Sticky Everlasting	0.2 – 0.8 m	0.3-0.5 m	September – November ²
<i>Dianella revoluta</i>	Spreading Flax-lily	0.2 – 1 m	0.3-0.5 m	September – February ²
<i>Dillwynia sericea</i>	Showy Parrot Pea	0.5 – 1 m	0.3-0.5 m	September – November ¹
<i>Einadia nutans</i>	Climbing saltbush	0.2 m	0.3 m	December – May ²
<i>Themeda triandra</i>	Kangaroo Grass	0.3 -1.2 m	0.3-0.5 m	September – February ²
<i>Lomandra multiflora</i> (or similar <i>Lomandra</i> spp.)	Many-flowered Mat-rush	0.3 m	0.3 m	June – November ²
# - not noted in area but suggested for re-planting				
¹ – Florabank - accessed 23/01/2019 at: http://www.florabank.org.au/				
² – PlantNET- accessed 23/01/2019 at: http://plantnet.rbgsyd.nsw.gov.au				
³ – Lucid Eucalypts of Australia - accessed 23/01/2019 at: http://keyserver.lucidcentral.org				
⁴ –Australian Plants Society NSW - accessed 23/01/2019 at: http://www.aps-armidale.org.au/resources/facts/articles/blooms12.html				

3 Implementation Plan

This section outlines the actions required for visual screening establishment, maintenance, monitoring, reporting and response to failure of establishment.

3.1 Outcome-based implementation

Establishment of the vegetation buffers and enhancement of existing plantings will occur during the construction phase of the solar farm to achieve effective screening within three years of construction commencement. Construction is expected to take 9-12 months and this will be ample time for the construction site manager and contractors to prepare and plant the vegetation buffers and internal revegetation area. The intensive management period, required for up to the first three years from establishment, will run into the operational phase of the project and will be implemented by the site (operations) manager. Table 4 outlines an outcome-based approach during three key stages of this Landscaping Plan:

- Establishment during project construction
- Intensive management during transition from project construction to operation
- Maintenance during project operation as required.

The locations for perimeter screen planting and internal planting is shown in Figure 2, and these plantings will be 10 metres wide (up to three rows of plants) and planted at the densities set out in Table 2. Intensive management will occur over the first three years and then the vegetation buffers will be maintained to meet the screening objective for the life of the solar farm as required. In terms of acceptable growth rates, this is defined as visible growth, evidenced by photographic monitoring. Growth will be recorded across monitoring events allowing for calculation of growth rates, which will be reported to DPE (Table 4).

3.2 Monitoring and contingencies

Monitoring will occur across all three stages of the Landscaping Plan to ensure establishment is successful, the three year screening goal is achieved, and the plantings remain effective at screening. The monitoring requirements against outcome-based success criteria/indicators and frequencies are outlined in Table 4 below. Monitoring will assist in responding to any management issues or establishment failures. Monitoring will also collect evidence on achievement of objectives of this Landscaping Plan, and the project's Conditions of Consent, for reporting back to DPE (see Section 3.3 below).

Where monitoring detects a management issue that requires action, this will be reported to the site or construction manager in the first instance and then changes to management or specific actions will be implemented. If the management issue is complex or considered beyond the control of the site manager (e.g. drought preventing plant establishment), remedial actions will be discussed with DPE and expert advice will be sought on alternative establishment measures.

Monitoring data will be collected across established photopoints and quadrats at a rate of one per management zone Figure 2.

3.3 Reporting

The construction or site manager will supply a report to DPE every six months for the first three years of the screening establishment. This report will take the form of an email or short letter, and cover issues such as:

- Establishment success and collection of growth data to include:
 - number of individuals
 - height (cm)
 - diameter Breast Height (cm)
 - survival rate
- Dated images from photo monitoring points
- Dated photographs of key issues and responses
- Monitoring outcomes and contingencies implemented to address failures.

Six monthly reporting should include monitoring for MZ1, MZ2 and MZ3 only.

Table 4 Management actions, timeframes, responsibilities and monitoring

Project phase	Management actions	Task breakdown	Responsibility	Timeframe	Success criteria / indicators	Monitoring frequency / reporting action	Contingency to address failure
OUTCOME TO BE ACHIEVED: 1. Establishment - Installation of visual screening							
Construction phase	1.1 Finalise planting list and order plants	Consult with local native plant nursery and place order based on desired planting list and densities (Table 3)	Site (construction) manager	Six months prior to planting	Order is placed well in advance of planting to ensure appropriate species can be obtained	<ul style="list-style-type: none"> Retain evidence of plant order and include in six monthly report to DPE Contact nursery monthly to check on order progress 	<ul style="list-style-type: none"> If local indigenous nursery does not stock appropriate species, then contact other nurseries in the Riverina/SW Slopes or investigate seed collection and propagation options.
		Jayfield nursery and Riverina Highlands Community Nursery have been suggested for consideration during consultation.					

Project phase	Management actions	Task breakdown	Responsibility	Timeframe	Success criteria / indicators	Monitoring frequency / reporting action	Contingency to address failure
	<p>1.2 Ripping</p> <p>Required for all management zones prior to planting.</p>	<p>Vehicles will attend a local wash-down facility to ensure all vehicles are weed, soil and weed-seed free prior to entering the site.</p> <p>Contact Dial Before You Dig to check for underground services in areas to be ripped</p> <p>Mark-out and rip planting lines (300-500 mm deep) while soil is hard to achieve a 'deep shatter'</p> <p>In MZ4 only rip lines will occur in a non-grid pattern and follow the natural landscape contour to avoid undue rilling and the formation of gullies.</p>	<p>Site (construction) manager and revegetation contractor / farmer</p>	<p>Prior to planting (but after the commencement of construction)</p>	<p>Rip lines established at desired depth for all management zones (Figure 2)</p>	<ul style="list-style-type: none"> Immediately after ripping inspect depth and effectiveness of rip lines Take photos of rip lines and include in six monthly report to DPE If appropriate, retain contractor invoices as evidence of works and include in six monthly report to DPE 	<ul style="list-style-type: none"> If rip lines are ineffective have contractor repeat ripping as necessary If weather conditions mean effective soil shatter cannot be achieved then consider hand or mechanical digging of planting holes

Project phase	Management actions	Task breakdown	Responsibility	Timeframe	Success criteria / indicators	Monitoring frequency / reporting action	Contingency to address failure
	1.3 Fencing installation (‘livestock proof fencing installation’ Figure 3)	Mark-out and fence boundaries with livestock proof fencing and install gates for maintenance and access All screening and revegetation areas are to be fenced off to protect plants from trampling and herbivory.	Site (construction) manager and fencing contractor	Prior to planting	Livestock proof fencing installed and functional with appropriate access for maintenance.	<ul style="list-style-type: none"> • During and immediately after fencing inspect locations and appropriateness of installation • Take photos of fencing and include in six monthly report to DPE • If appropriate, retain contractor invoices as evidence of works and include in six monthly report to DPE 	<ul style="list-style-type: none"> • If fencing is not to appropriate location or livestock proof standards have fencing contractor remediate any issues.
	1.4 Weed spraying (pre-planting)	Broad acre and spot spraying of annual grasses and weeds within proposed planting areas following relevant herbicide application standards and procedures.	Site (construction) manager and weed / pest contractor	4-6 weeks prior to planting, after autumn break.	Reduction in live weed cover by 90%.	<ul style="list-style-type: none"> • Within 14 days of spraying (herbicide activation period) inspect the site for kill effectiveness • Take photos of weed spraying effects and include in six monthly report to DPE • If appropriate, retain contractor invoices as evidence of works and include in six monthly report to DPE 	<ul style="list-style-type: none"> • If first weed spraying is not considered effective after 14 days then repeat spraying to achieve 90% weed cover reduction

Project phase	Management actions	Task breakdown	Responsibility	Timeframe	Success criteria / indicators	Monitoring frequency / reporting action	Contingency to address failure
	1.5 Pest animal control (pre-planting)	Inspect the site for any rabbit warrens and treat as necessary by physical or chemical means	Site (construction) manager and weed / pest contractor	Prior to planting	No evidence of rabbits / hares present in planting areas and no evidence of damage to plantings	<ul style="list-style-type: none"> Monitor site weekly during establishment period for evidence of pest animals (scats, diggings) Take photos of pest control works and effects, and include in six monthly report to DPE If appropriate, retain contractor invoices as evidence of works and include in six monthly report to DPE 	<ul style="list-style-type: none"> If pest animals that pose a serious threat to planting establishment cannot be effectively controlled then consider intensive further pest control, or additional fencing and guarding of plantings.

Project phase	Management actions	Task breakdown	Responsibility	Timeframe	Success criteria / indicators	Monitoring frequency / reporting action	Contingency to address failure
	1.6 Planting and Guarding	<p>Plant species at recommended densities within vegetation screening areas identified in Figure 2 and Table 3.</p> <p>Stake and guard all plantings with standard tree guards, or equivalent.</p>	Site (construction) manager and revegetation contractor	<p>Planting and guarding to take place in winter, preferably between July-August.</p> <p>It is noted that condition 7 of the COCs states that vegetation buffer must be planted prior to the commencement of operations.</p>	Vegetation successfully planted and guarded prior to the commencement of operations.	<ul style="list-style-type: none"> • During and immediately after planting and guarding inspect locations and appropriateness of works. • Inspect plantings every two days for the first two weeks for signs of pest animal damage. • Take photos of initial planting and include in six monthly report to DPE. • Tree guards will be monitored and removed when guarding is deemed to be no longer required by revegetation contractor. If appropriate, retain contractor invoices as evidence of works and include in six monthly report to DPE. 	<ul style="list-style-type: none"> • If conditions are too dry for planting during the scheduled planting period (e.g. declared drought), planting will still go ahead in that period and plantings will be watered by way of water truck or similar as necessary for their survival. • Tubestock is to be actively watered while stored prior to installation and immediately after installation to reduce heat stress and shock after planting. Apply watering to plantings through their first winter-spring period or as deemed necessary to their survival by the site manager or revegetation contractor see 2.2 below. • If standard tree guarding is not effective then undertake additional fencing and guarding of plantings use 1.5 m tall guards / netting.

Project phase	Management actions	Task breakdown	Responsibility	Timeframe	Success criteria / indicators	Monitoring frequency / reporting action	Contingency to address failure
	1.7 Review	A review of the Landscaping plan will be carried out within two months of operation commencing.	Project Manager	Within two months of operation commencing	Review completed and any additional management items addressed.	If significant changes identified Landscape plan to be updated	If internal review does not occur , the first six monthly monitoring report to DPE should discuss any additional management items identified during the first two months of operation.
	1.8 Loss of hollows	Felled limbs with hollows will be placed in woodland or plantings along the boundary of the development area. The woody debris retained will be spread in a fashion that replicates the natural occurrence of woody debris in the environment and will not be stacked.	Site (construction) manager and revegetation contractor	As required during construction	Felled limbs are successfully relocated to MZ1, MZ2, MZ3, MZ4 or surrounding refuge habitat	<ul style="list-style-type: none"> • During and immediately after tree felling all limbs to be inspected for hollows • Take photos of hollow relocation and include in first six monthly report to DPE. 	Any loss of hollow that are not retained on site will need to be offset with like for like nest boxes within the planting area

OUTCOME TO BE ACHIEVED: 2. Effective screening during intensive management period

Construction / Operational phase	<p>2.1 Achievement of satisfactory growth rates and effective screening</p> <p>(monitoring during intensive management period)</p>	<p>Establish at a minimum one repeatable photo monitoring point per each management zone to demonstrate growth rates and screening effectiveness.</p> <p>The phot point will make up one corner of a 10 meter by 10 metre quadrat where the following monitoring data will be recorded:</p> <ul style="list-style-type: none"> • Number of individuals • Height (cm) • DBH (cm) • Survival Rate <p>All growth rate data will be recorded and used measure growth/survival rates of plantings and will be included in six monthly report to DPE</p>	<p>Site (construction) manager and bush regeneration contractor</p>	<p>Measure plant rate and take photos every three months for first two years, or after this period depending on planting success (up to three years)</p>	<p>Satisfactory growth is occurring as per desired heights in Table 3. Photos are taken and catalogued</p>	<ul style="list-style-type: none"> • Every three months document planting success (i.e. which species grow best) and growth data from a 10 x10 metre quadrat at a rate of one quadrat per management zone and compile into six monthly report for DPE. • Collate and review repeated photo point monitoring and compile into six monthly report for DPE 	<ul style="list-style-type: none"> • If consecutive monitoring events indicate plant growth is inhibited or slow site construction manager and/or revegetation contractor are to apply additional establishment techniques where required these can include the use of mulch, fertiliser, additional watering/weeding, and soil enhancement (inoculation). Any additional establishment techniques are to be documented and included in six monthly monitoring reports for DPE. • The six monthly reports will indicate the need for replacement planting through the measure of survival rates. • If plant deaths occur or growth rates are unacceptable use monitoring results to determine which species are performing best and use these species for any replacement plantings to achieve effective screening (see infill planting process below)
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Project phase	Management actions	Task breakdown	Responsibility	Timeframe	Success criteria / indicators	Monitoring frequency / reporting action	Contingency to address failure
	2.2 Watering during intensive management period	Water juvenile plants to ensure establishment	Site (construction) manager and/or revegetation contractor	Weekly watering (or as required) over the three months following planting, or beyond this period if drought conditions prevail (see 1.6)	95% survival rate for planted vegetation following three months of watering	<ul style="list-style-type: none"> Use regular monitoring of planting site to determine if watering is required (e.g. signs of drought stress, plant wilting early in the day, local soil moisture levels based on effective rainfall at Wagga weather station) Document each watering event and include in six monthly report to DPE 	<ul style="list-style-type: none"> Watering is a measure to assist plant survival, if water is unavailable due to severe drought conditions then contact DPE to discuss contingencies for screening plantings
	2.3 Weed spraying during intensive management period	Spot spray along planting zones to control any weeds that establish	Site (construction) manager and weed contractor	Spray monthly for the first 12 months (or as seasonal conditions allow), then quarterly for three years or when canopy establishes to shade out weeds	Visual screening area is 95% native vegetation	<ul style="list-style-type: none"> Within 14 days of maintenance spraying (herbicide activation period) inspect the site for kill effectiveness Take photos of weed spraying effects and use native plant growth rate monitoring to demonstrate success and report to DPE If appropriate, retain contractor invoices as evidence of works and include in six monthly report to DPE 	<ul style="list-style-type: none"> If first weed spraying is not considered effective after 14 days then repeat spraying

Project phase	Management actions	Task breakdown	Responsibility	Timeframe	Success criteria / indicators	Monitoring frequency / reporting action	Contingency to address failure
	2.4 Pest animal control during intensive management period	Inspect the site for any rabbit warrens and treat as necessary by physical or chemical means (warren ripping, baiting, shooting). Inspect for evidence of other pests such as pigs, hares and foxes, or native herbivores such as kangaroos. If present treat as necessary by physical or chemical means (additional fencing for kangaroos, baiting and shooting of pigs, hares)	Site (construction) manager and weed / pest contractor	Three times annually for first three years	No evidence of rabbits, foxes, pigs or hares present in planting areas and no evidence of damage to plantings	<ul style="list-style-type: none"> Use regular monitoring of planting site to determine if pest animal control is required, or effective based on signs (e.g. scats, diggings) and/or physical damage to plantings If appropriate, retain contractor invoices as evidence of pest animal control works and include in six monthly report to DPE 	<ul style="list-style-type: none"> If fencing, tree guarding and pest control has not been effective then undertake additional fencing and guarding of plantings using 1.5 m tall guards / netting, or implement a more intensive pest control program.
	2.5 Infill planting	Replace any dead plants with new stock of the species that are growing most successfully	Site (construction) manager and revegetation contractor	Plant new plants in winter	Failed plantings identified and replaced with new stock to achieve 95% survival rate	<ul style="list-style-type: none"> See above for monitoring frequency and process for planting site success and growth rates 	<ul style="list-style-type: none"> If plant deaths above 5% occur or growth rates are unacceptable use monitoring results to determine which species are performing best and use these species for any replacement plantings to achieve effective screening

Project phase	Management actions	Task breakdown	Responsibility	Timeframe	Success criteria / indicators	Monitoring frequency / reporting action	Contingency to address failure
	2.6 Monitoring of fences during intensive management period	Monitor fence condition	Site (construction) manager	Quarterly over three years following installation or up to three years depending on success	Fences and gates are in good working order and are effective at excluding livestock, or pest animals	<ul style="list-style-type: none"> Take photos of fence condition and include in six monthly report to DPE If appropriate, retain contractor invoices for fence repairs and include in six monthly report to DPE 	<ul style="list-style-type: none"> If fencing requires repair then undertake works or engage fencing contractor to remediate any issues.

Project phase	Management actions	Task breakdown	Responsibility	Timeframe	Success criteria / indicators	Monitoring frequency / reporting action	Contingency to address failure
OUTCOME TO BE ACHIEVED: 3. Ongoing maintenance of effective screening (year 4 onward after intensive management)							
Operational phase	3.1 Weed spraying during maintenance period	Spot spray within management zones to control any weeds that establish	Site manager and weed contractor	Spray twice annually as seasonal conditions allow or in response to particular weed issues that arise	Visual screening area is 95% native vegetation	<ul style="list-style-type: none"> Within 14 days of maintenance spraying (herbicide activation period) inspect the site for kill effectiveness 	<ul style="list-style-type: none"> If first weed spraying is not considered effective after 14 days then repeat spraying
	3.2 Pest animal control during maintenance period	Inspect the site for any rabbit warrens and treat as necessary by physical or chemical means (warren ripping, baiting, shooting). Inspect for evidence of other pests such as pigs, hares and foxes, or native herbivores such as kangaroos. If present treat as necessary by physical or chemical means (additional fencing for kangaroos, baiting and shooting of pigs, hares)	Site manager and weed / pest contractor	Inspect twice annually or as pest animal issues arise	No evidence of rabbits, foxes, pigs or hares present in planting areas and no evidence of damage to mature plants	<ul style="list-style-type: none"> Use monitoring of planting site to determine if pest animal control is required, or effective based on signs (e.g. scats, diggings) and/or physical damage to plantings 	<ul style="list-style-type: none"> If standard fencing, tree guarding and pest control has not been effective then implement a more intensive pest control program.

Project phase	Management actions	Task breakdown	Responsibility	Timeframe	Success criteria / indicators	Monitoring frequency / reporting action	Contingency to address failure
	3.3 Monitoring of fences during maintenance period	Monitor fence condition	Site manager	Inspect twice annually	Fences and gates are in good working order and are effective at excluding livestock, or pest animals	<ul style="list-style-type: none"> Quarterly 	<ul style="list-style-type: none"> If fencing requires repair then undertake works or engage fencing contractor to remediate any issues.
	3.4 Planted vegetation maintenance and trimming	If planted vegetation interferes with public or private infrastructure / assets then undertaken trimming to relevant industry standards	Site manager	Inspect annually	Screening effectiveness is maintained and infrastructure / assets are protected	<ul style="list-style-type: none"> Annually 	<ul style="list-style-type: none"> Not applicable

3.4 Pest plant and animal management

Management of weeds and pests will be required prior to the establishment of plantings and during maintenance to ensure these areas establish successfully, remain effective and do not become harbour for weeds and vermin. This is outlined in Table 4 above. Weed control methods will be selected to ensure that screening plantings are not subjected to off-target impacts, and that adjacent agricultural land, crops or residents are not negatively impacted.

Pest management will focus on the following actions:

- Removal of any rabbit warrens as part of site preparation and ongoing surveillance and rabbit control.
- If native herbivores such as kangaroos or emus become an issue, consider additional tree guarding with higher guards up to 1.5 metres.
- Spraying of annual grasses and weeds with a broad-spectrum knock down herbicide at least four weeks prior to ripping and planting. A second application closer to planting would be required if sufficient die-off has not occurred. If non-chemical means are preferred then scraping of the topsoil would be required to remove weed cover prior to planting.
- Spot spraying of high threat weeds. These are weeds likely to inhibit native plant growth, cause issues to adjacent productive land and to become established in screening plantings. Species include but are not limited to:
 - African Love-grass *Eragrostis curvula*
 - Barley grasses *Hordeum* spp.
 - Bathurst Burr *Xanthium spinosum*
 - Blackberry Nightshade *Solanum nigrum*
 - Brome grasses *Bromus* spp.
 - Crowfoot *Erodium* spp.
 - Docks *Rumex* spp.
 - Fat Hen *Chenopodium* spp.
 - Fleabane *Conyza bonariensis*
 - Hairy Panic *Panicum effusum*
 - Khaki Weed *Alternanthera pungens*.
 - Patterson's Curse *Echium plantagineum*
 - Prickly Lettuce *Lactuca serriola*
 - Saffron Thistle *Carthamus lanatus*
 - Silver Leaf Nightshade *Solanum elaeagnifolium*
 - Small-flowered Mallow *Malva parviflora*
 - Spear Thistle *Cirsium vulgare*
 - Toowoomba Canary-grass *Phalaris aquatica*
 - Turnip Weed *Rapistrum rugosum*
 - Weld *Reseda luteola*
 - White Horehound *Marrubium vulgare*
 - Wild Oats *Avena fatua*

4 Consultation

4.1 Consultation with relevant stakeholders

To produce a suitable species list and implementation plan for the visual screen, Renew Estate has consulted with a number of stakeholders including Wagga Wagga City Council and local residents as per the conditions of consent for development.

The results of consultation to-date are included in Table 5 below.

Table 5 Stakeholder consultation

Consultation notes & comments	Actions & considerations
Community consultation and neighbour meetings	
<p>Community information session during EIS exhibition Wagga Wagga, 7 May 2017 Attendees: Renew Estate Local residents: approximately 60 attendees</p>	
<p>A large volume of information was on display, including draft landscaping information from the EIS.</p>	<p>Local residents given an opportunity to make comments that were incorporated into the final EIS.</p>
Community consultation and neighbour meetings	
<p>During the development of the EIS, Renew Estate held multiple meetings with local residents, including members of the EVA, to discuss any concerns they had regarding the project. Key concerns discussed included visual amenity and landscaping.</p>	<p>See specific actions below.</p>
<p>Due to the sloping nature of the land, implement a 'grid' of internal landscaping within the site to mitigate visual impact, water runoff, noise generation and heat dispersion</p>	<p>See Figure 2. Internal landscaping has been incorporated in the southern half of the site where the elevation difference across the site is the greatest and internal landscaping has the highest impact on visual impact mitigation. Extra landscaping strips that are 450 m and 330 m long and 10 m wide are included in the southern development area.</p>
<p>Avoid building solar farm infrastructure on the higher elevation south west corner of the site to minimise visual impact.</p>	<p>See Figure 2. An area of 9 ha in the south west corner of the site has been set aside and will be revegetated, as specifications in Table 2 and Table 3.</p>
<p>Extra landscaping will be incorporated on the perimeter of the site to fill the gaps not covered in the draft landscaping plan shown in the EIS.</p>	<p>An extra 900 m of landscaping has been included on the northern perimeter of the site.</p>

Consultation notes & comments	Actions & considerations
<p>Landscaping initial consultation session Townhouse international; Thursday 1 November 2018; 4-6pm. Attendees: Renew Estate: Will Stone, Tom Harrison, Chris Fitzpatrick, Matt Looby (Biosis). Local residents: 16 attendees</p>	
<p>A large proportion of the attendees have agricultural backgrounds and were very knowledgeable in the native eucalypt species that they considered suitable for the locality.</p>	<p>Noted.</p>
<p>One neighbour advised of the problems that had been experienced with the Red River gum trees they had planted on their property and how the digested residue from the caterpillars had killed several of their foals. This was concluded by post mortem diagnosis from the Vet Laboratory at CSU.</p>	<p>River Red Gum <i>Eucalyptus camaldulensis</i> has been omitted from the species list as it is generally only occurs within the Wagga wagga City native vegetation profile on the river's edge and is not considered suitable for screening at Bomen Solar Farm.</p>
<p>Hairy Panic <i>Panicum effusum</i> noted as a dominant emerging weed after rainfall in the local area. Existing use of Saltbush <i>Atriplex sp.</i> within screening planting is noted to capture windblown seed heads of Hairy Panic increasing local germination while providing a safe haven for pest fauna such as hares.</p>	<p>Saltbush <i>Atriplex sp.</i> has been omitted from species list for screening plantings. Hairy Panic <i>Panicum effusum</i> has been included with list of high threat weeds in S3.4.</p>
<p>Planting trees under large remnant <i>Eucalyptus</i> is not advised due to low survival rates that can be attributed to the following; Mature trees use most of the immediate and surrounding ground moisture Reduced sunlight reducing photosynthesis Allelopathy; The mature tree excrete a natural gel/oil/chemical that stops other eucalypt trees from germinating</p>	<p>Specific guidance around infill planting in and around large remnant eucalypts has been included in Table 2.</p>
<p>Large scale tree planting guidelines provided by a local resident.</p>	<p>Guidance provided in report relating to soil preparation, weed control, timing, plant selection, planting width and tree guards are considered to be in synonymous with the outcome based implementation presented in S3.1.</p> <p>Jayfield Nursery has been noted as a local supplier of native species.</p>

Consultation notes & comments	Actions & considerations
Rural Fire Service (RFS) Riverina Zone NSW RFS	
Riverina contacted for comment during the EIS development process.	Comments provided for inclusion in the EIS. Renew Estate has undertaken to regularly communicate with RFS on an ongoing basis, including annual inspections and independent access to the site and static water supplies.
Renew Estate consulted Riverina RFS when preparing the Landscaping plan for comment.	NSW RFS re-affirmed the bush fire management plan measures previously discussed and confirmed that these will be incorporated into the new plan.
To allow for emergency service personnel to undertake property protection activities, a 10 metre defendable space that permits a minimum 4 metre wide, unobstructed vehicle access is to be provided around the perimeter of the solar array and associated infrastructure.	Defendable space has been incorporated surrounding planting locations see Figure 3 and Figure 5.
The NSW RFS provided recommended conditions of consent regarding fire safety during the consent process. These recommendations were adopted in the Response to Submissions. The DPE is the consent authority responsible for ensuring compliance with the conditions of consent.	The Landscape Plan has taken into account and is compliant with the RFS recommendations and conditions of consent related to defendable space and fire safety.
Landcare Mid-Murrumbidgee Landcare Group Telephone and public consultation	
Mid-Murrumbidgee Landcare Group consulted during initial development of the EIS and the first community information session.	Landcare provided comment on landscaping and planting selections which could be incorporated in the project and surrounding area and agreed to further discussions when landscape plan is being developed.

Consultation notes & comments	Actions & considerations
<p>Landcare suggested the project consult Dr Peter Orchard from the Graham Centre for Agricultural Innovation.</p>	<p>Dr Peter Orchard from the Graham Centre for Agricultural Innovation is acknowledged as having experience in landscape scale biodiversity.</p> <p>Dr Peter Orchard (Graham Centre for Agricultural Innovation) included in list of stakeholders to be consulted with the draft Landscape Plan for comment.</p>
<p>Consideration for source of plants. Recommendation made for using the Riverina Highlands Community Nursery which is run by Landcare.</p>	<p>See S1.1 in Table 4. Nursery to be considered by landscaping contractor when contract awarded.</p>
<p>Consider improvements to biodiversity and pollinating benefits to canola crops.</p>	<p>See Table 3. Care has been taken to select local indigenous species that are well suited to the climatic and landscape conditions. The species selected will add to the biodiversity value of the area and will increase the connectivity to foraging and refuge habitat for local fauna. The addition of native flowering plants is expected to increase pollinator activity of the locality and surrounds.</p>
<p>Additional meeting with the Eunony Valley Association (EVA) in December 2018</p>	
<p>Renew Estate met with the EVA to respond to requests for more landscaping, additional to the perimeter screening approved as part of the Development Consent. The EVA requested internal landscaping to further screen the solar arrays, particularly on sloping land.</p>	<p>Renew Estate agreed to incorporate internal landscaping in the southern half of the site where the elevation difference across the site is the greatest and internal landscaping has the highest impact on visual impact mitigation. Extra landscaping strips that are 450 m and 330 m long and 10 m wide are included in the southern development area (MZ3). Renew Estate also agreed to not construct solar arrays in south-west corner of the site which has the highest elevation and highest visual impact. A revegetation area (MZ4) will instead be established to increase the site's visual amenity.</p>

Consultation notes & comments	Actions & considerations
<p>Consultation on Draft Landscaping Plan Draft Landscaping Plan provided to stakeholders for review and comment on 20 December 2018, seeking a response by 16 January 2019.</p> <p>Stakeholders consulted: Nearby residents, Wagga Wagga City Council, RFS, Landcare, Jayfields Nursery and Dr Peter Orchard of the Graham Centre for Agricultural Innovation.</p>	
<p><u>Dr Peter Orchard from the Graham Centre for Agricultural Innovation</u></p>	
<p>Provided additional species suggestions based on local knowledge.</p>	<p><i>Pittosporum angustifolium</i> will be considered as a replacement should one of the tree species be unavailable at the time of procurement.</p> <p>Should any shrub or ground cover species included in Table 3 be unavailable at the time of procurement Dr Peter Orchard's list of recommended species will be considered for replacement species.</p>
<p>Regarding the ground cover list- <i>Lomandra multiflora</i> is a common component of open woodland and grassland around Wagga Wagga and is in most reserves and well-preserved roadsides so should be included.</p>	<p>Agreed, If the successful nursery cannot provide <i>L. multiflora</i> Biosis recommends contacting other local native nurseries for the tube stock supply of this species before substituting with other <i>Lomandra</i> species.</p>
<p>Noted the planting could form a windbreak if 5 rows are planted.</p>	<p>5 rows within the planting corridor is not feasible as the plant density required would restrict the growth and long term survival and screening abilities of the vegetation screening buffer. A windbreak is not an objective for the landscaping conditions of the Bomen solar farm outlined in section 2.2 of this report.</p>
<p>Plantings that have year-round flowering can change the insect spectrum from pests to more beneficial invertebrate species and have a possible impact on surrounding crops. Noted that while most of the species are spring flowering, some provide summer and autumn-winter flowering.</p>	<p>Species selected in Table 3 exhibit a broad flowering range that is likely to present all year flowering. Flowering times have been included in Table 3 for reference.</p>
<p>As most of the planted components are dicotyledonous then post planting herbicide options could be used to control grasses with spot spraying of dicotyledonous weeds. Local experience has also shown that the soil scraping suggestion in the report (section 3.4) can be successful, as is spraying-mowing-mulching</p>	<p>Noted. A copy of the landscape plan is to be provided to all future Bush regeneration contractors engaged to manage the planting, weed control and management actions outlined in section 2.3.</p>

Consultation notes & comments	Actions & considerations
<u>Eunony Valley Association (EVA)</u>	
<p>To maximise screening effectiveness the height of the trees is the number 1 consideration. The species attributes that serve no purpose to the visually impacted residences for screening are ground covers and shrubs less than 5 metres or those not suited the specific local environmental conditions.</p>	<p>All species selected are suited to the local environmental conditions at the time of preparing the landscape plan. Ground covers and shrubs less than 5 metres are proposed to be planted in the revegetation area (MZ4) which has the objective of providing biodiversity value to the area, rather than screening effectiveness. It is the resilience of the plants, and the associated fauna linkages which governs the capacity of an ecosystem to recover when damaged. The introduction of ground covers and shrubs under 5 metres not only increases the function and biodiversity of the local area but also help the vegetation to recover when damaged and eventually become self-sustaining (OEH 2011).</p>
<p>Provided feedback on the proposed species and suggested additional varieties suitable to the area and the core objective of screening.</p>	<p>After consideration and comment from the EVA the following species were removed from the species list:</p> <ul style="list-style-type: none"> • <i>Kurrajong Brachychiton populneus</i> • White Cypress Pine <i>Callitris glaucophylla</i> • Western Silver Wattle <i>Acacia decora</i>. <p>The aforementioned species have been replaced with species that are considered to exhibit a faster growth rate and be more adept at addressing screening requirements presented in section 1.2.</p> <p>Replacement species as suggested by EVA and accepted by Biosis include:</p> <ul style="list-style-type: none"> • Northern Silver Wattle <i>Acacia leucoxyla</i> • Cootamundra Wattle <i>Acacia baileyana</i>. <p>Black Wattle <i>Acacia mearnsii</i> was suggested by EVA although this species has been rejected as it is commonly short lived and prone to attack by borers, as such the species is not considered suitable.</p>
<p>Clarification sought on Management actions, timeframes, responsibilities and monitoring Table 4 section 1.6.</p>	<p>In the event that conditions are too dry for planting i.e. declared drought or insufficient rainfall watering actions described in Table 4 section 2.2 may be applied to plantings.</p>

Consultation notes & comments	Actions & considerations
<p>Add the following two invasive weed species to the list of high threat weeds in section 3.4:</p>	<p>The following weed species have been included in section 3.4 Pest plant and animal management:</p> <ul style="list-style-type: none"> • Silver Leaf Nightshade <i>Solanum elaeagnifolium</i> • Khaki Weed <i>Alternanthera pungens</i>.
<p><u>Wagga Wagga City Council (WWCC)</u></p>	
<p>WWCC is comfortable with the Landscape Plan and no specific comments were provided.</p>	<p>Appendix- A Council</p>

Consultation notes & comments	Actions & considerations
<p>Jayfields Nursery</p> <p>Provided comments on the availability of species at the nursery. Noted the following plants are not grown by Jayfields:</p> <ul style="list-style-type: none"> • <i>Eremophila deserti</i> • <i>Lomandra multiflora</i> • <i>Dillwynia sericea</i> • <i>Calytrix tetragona</i>. 	<p>See comments below regarding species availability.</p> <ul style="list-style-type: none"> • <i>Eremophila deserti</i> – species has been removed from planting list. • <i>Lomandra multiflora</i> – other local native nurseries will be contacted to supply before substituting with forest variety of <i>L. longifolia</i>. • <i>Dillwynia sericea</i>, noted that seed availability is dependent on weather. Use if available with the nursery if not omit and adjust density for other small shrubs accordingly. • <i>Calytrix tetragona</i> – Preferable to plant from cuttings, sufficient lead time will be given to the nursery to facilitate this. In the event that <i>C. tetragona</i> is not available this species can be substituted with <i>Bursaria spinosa</i>.
<p>Provided comment regarding the usual timing of planting activities in the local area:</p> <ul style="list-style-type: none"> • Deep Rip in Jan to Mar – while the ground is hard, to achieve a good shattering effect. • Autumn spray (after germination of weeds) – knockdown. • Further weed spray – 4 weeks before planting with the knockdown and the inclusion of a residual herbicide – this helps keep weeds free in spring. <p>Planting – Usually Jul/Aug – we plant generally when there is good subsoil moisture and also so the plants have gone through frosts in the nursery to hardened them up before they are planted.</p>	<p>Methodology is considered to be consistent with Table 4.</p>
<p>The infill planting will require a lot of watering and maintenance.</p>	<p>Noted, watering actions described in Table 4 section 2.2 may be applied to plantings as deemed necessary from the project manager of bush regenerator contractor.</p>

Consultation notes & comments	Actions & considerations
Suggested canopy species seedlings are planted no less than 5m or 6m apart, as at any higher density the plants would struggle when bigger, using a lot of water.	Agreed, spacing for canopy species has been adjusted in Table 2 and Table 3.

5 References

Department of Environment, Climate Change and Water (DECC). NSW, 2010 *Mitchell Landscapes NSW* OEH v3 2011. Bioregional Assessment Source Dataset. Viewed 30 October 2018, <http://data.bioregionalassessments.gov.au/dataset/e64597db-453c-46be-a352-360b775d2852>.

OEH 2011. Conservation Management Notes: Managing bushland and wildlife habitat. *Restoring native vegetation: regenerate or revegetate*. Office of Environment and Heritage, Department of Premier and Cabinet NSW. Sydney.

OEH 2016. *State vegetation Type Map (SVTM): Riverina Region Version v1.2*. VIS_ID 4469.

GHD 2018. Bomen Solar farm: Environmental Impact Statement. Report for Renew Estate Pty Ltd - Bomen 120 MW Solar Farm, 2316243.

Kent, K., Earl, G. Mullins, B., Lunt I., and Webster, R. 2002. Native vegetation guide for the Riverina: notes for land managers on its management and revegetation. Published by the Johnstone Centre, Charles Sturt University.

Walker, Karen.& Stelling, Fleur. & National Landcare Program (Australia). & Murray Catchment Management Committee. & New South Wales. Department of Land and Water Conservation. & Greening Australia South West Slopes. 1998, *South West Slopes revegetation guide (south of the Murrumbidgee River) / edited by Fleur Stelling with a major contribution by Karen Walker*, Murray Catchment Management Committee. Deniliquin, N.S.W

Appendix- A Council correspondence

From: Stander, Adriaan <Stander.Adriaan@wagga.nsw.gov.au>
Sent: Thursday, 17 January 2019 10:52 AM
To: Will | Renew Estate
Subject: RE: Bomen Solar Farm - Landscape Plan - WWCC Comment

Hi Will,

We are comfortable with the plan. I assume there will be some further consultation on this with the community out there?

Regards,

Adriaan Stander
Strategic Planning Coordinator

1300 292 442
d +61 2 6926 9564 | e stander.adriaan@wagga.nsw.gov.au
[Wagga Wagga City Council](#) · 243 Baylis Street (PO Box 20) · Wagga Wagga NSW 2650

From: Will | Renew Estate <will@renewestate.com.au>
Sent: Tuesday, 15 January 2019 9:48 PM
To: Stander, Adriaan <Stander.Adriaan@wagga.nsw.gov.au>
Cc: Kell, Tristan <Kell.Tristan@wagga.nsw.gov.au>; Tom | Renew Estate <Tom@renewestate.com.au>; 'Lauren | Beast Solutions' <Lauren@beast.solutions>
Subject: RE: Bomen Solar Farm - Landscape Plan - WWCC Comment

Dear Adriaan,

I'm writing to remind you about the Landscape Plan for Bomen Solar Farm that I sent to Council before Christmas. If Council has any comments on the plan could you please provide these before C.O.B tomorrow?

Feel free to get in touch if you have any questions about the plan.

Regards
Will Stone
0468 745 736

From: Will | Renew Estate
Sent: 20 December 2018 16:14
To: Stander.Adriaan@wagga.nsw.gov.au
Cc: Kell, Tristan <Kell.Tristan@wagga.nsw.gov.au>; Tom Harrison <tom@renewestate.com.au>; 'Lauren | Beast Solutions' <Lauren@beast.solutions>
Subject: Bomen Solar Farm - Landscape Plan - WWCC Comment

Dear Adriaan,

As a key stakeholder for the approved Bomen Solar Farm, we invite Wagga Wagga City Council to review the attached draft Landscape Plan for the project.

The plan has been produced to satisfy the conditions of consent for the project regarding the establishment and maintenance of vegetation screening to minimise views of the solar farm from nearby residences.

The plan has been prepared by Biosis, an environmental consultancy with extensive ecological and landscaping experience and incorporates feedback received from nearby neighbours and stakeholders including Landcare and the RFS.

We request that, if you have any comments on the Landscape plan, you provide these before C.O.B on Wednesday 16th January 2019 so that they can be incorporated into the final version of the plan. This version will then be submitted to the Department of Planning and Environment for approval.

Please feel free to contact me by email or the number below if you have any questions about the Landscaping Plan or Bomen Solar Farm in general. Note that our office will be closed for the holidays from Monday 24th December until Wednesday 2nd January and I may be slower to respond during this period.

Regards
Will Stone
Development Manager

Renew Estate
M: +61 (0) 468 745 736



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