GOONUMBLA SOLAR FARM

LANDSCAPING PLAN

PREPARED FOR:

FRV SERVICES AUSTRALIA PTY LTD

PREPARED BY:

GEOLYSE

OCTOBER 2019

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Revision History

Version	Date	Reason	Approved
Draft V.1	13/3/2019	Council, OEH, R2 and R6 review	FRV
Draft V.2	26/3/2019	Incorporate OEH comments and weed monitoring commitment to Council.	Geolyse
Draft V3	28/3/2019	Extension of plantings for R6	FRV
Draft V4	5/4/2019	Submission to DPE	FRV
Final	8/5/2019	Inclusion of timeframe for achieving 5 m depth in screening.	FRV
Final V1	9/10/2019	Re-positioning security fence	FRV

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Abbreviations

ARA	Appropriate Road Authority
CoA	Condition of Approval
CWLLS	Central West Local Land Services
DPE	Department of Planning and Environment
EIS	Environmental Impact Statement
EPC	Engineering, Procurement and Construction
FRV	FRV Services Australia Pty Ltd
GSF	Goonumbla Solar Farm
LP	Landscaping Plan
MM	Mitigation Measure
OEH	Office of Environment and Heritage
PCT	Plant Community Type
PSC	Parkes Shire Council
RAP	Registered Aboriginal Parties
RMS	Roads and Maritime Services
TMP	Traffic Management Plan
TSR	Travelling Stock Reserve

Introduction

1.1 APPROVED PROJECT

The Goonumbla Solar Farm (GSF) was granted development consent on 5 December 2016 (SSD 7618).

The approved General Layout is shown below.

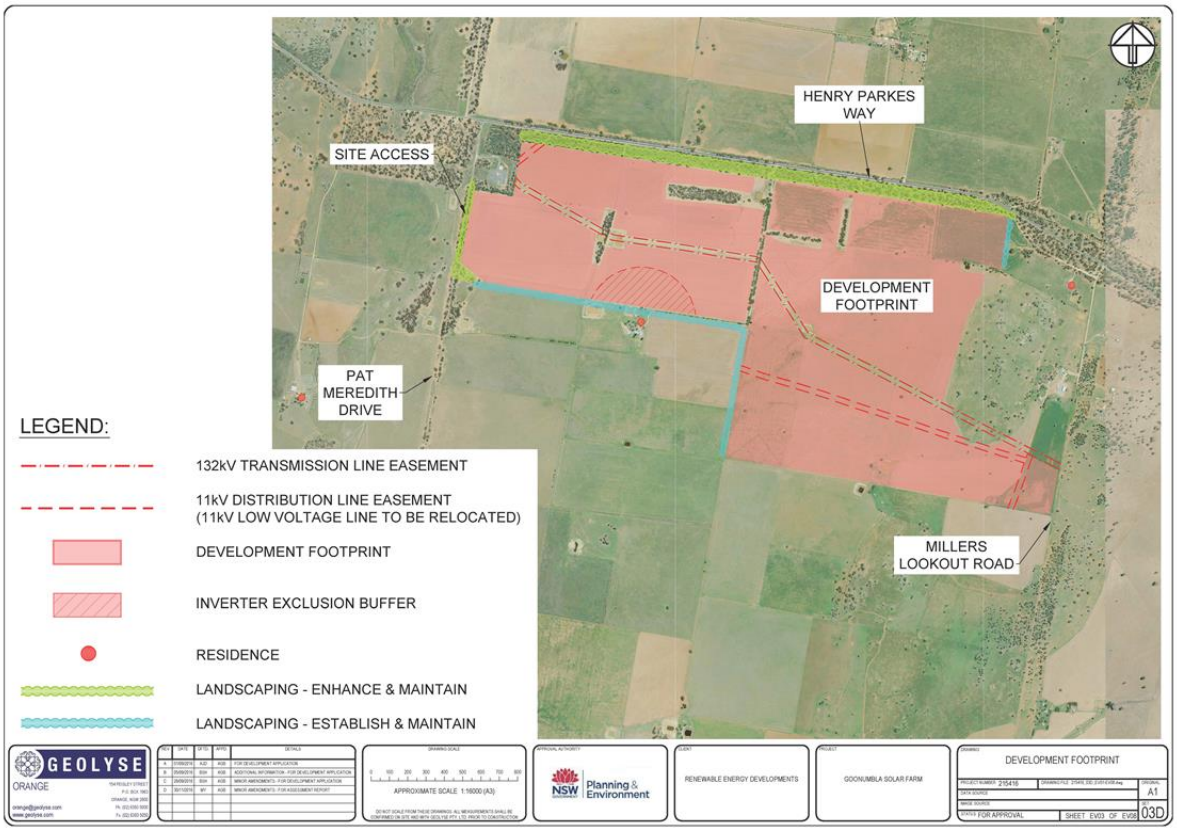

Figure 1: Approved Layout

Source: Development Consent SSD 7618

1.2 APPLICANT

The Applicant is the overall developer and owner of GSF.

FRV Services Australia Pty Ltd (FRV) is the GSF Applicant.

1.3 CONTRACTOR

An Engineering Procurement and Construction (EPC) contractor will be engaged by the Applicant to build the GSF.

1.4 PLAN OBJECTIVE

The objective of this Landscaping Plan (LP) is to provide visual impact mitigation.

Schedule 3 Condition of Approval (CoA) 11 of the Minister's development consent states:

> ***Landscaping Plan***
>
> *Prior to the commencement of construction, the Applicant must:*
> *(a) prepare a detailed Landscaping Plan for the site in consultation with RMS, OEH and Council; and*
> *(b) submit a copy of the plan to the Department.*
> *Note: This plan must include the measures that would be implemented to ensure compliance with condition 10 of this consent.*

1.5 PLAN SCOPE

The scope of this LP is detailed in Schedule 3 CoA 10 of the Minister's consent.

> ***Vegetated Buffer***
>
> *10. The Applicant must:*
> *(a) enhance and maintain the mature vegetation buffer along Henry Parkes Way and Pat Meredith Drive as outlined in the figure in Appendix 1;*
> *(b) establish and maintain a mature vegetation buffer around the site at the locations outlined in the figure in Appendix 1, unless the Applicant submits an agreement in writing from the relevant affected owner of Residence R2 or R6 for a reduction in the extent of the buffer, to the satisfaction of the Secretary; and*
> *(c) ensure the vegetation buffer referred to in condition 10(a) and (b):*
> - *be comprised of species that make up the Western Grey Box – Poplar Box – White Cypress Pine tall woodland community;*
> - *be at least 5 metres deep, comprising at least two rows of staggered trees;*
> - *be effective at screening views of the solar panels and ancillary infrastructure on site from surrounding residences, and minimising the glare from the solar panels on road users; and*
> - *is properly maintained and kept free of weeds.*

Note: Appendix 1 is the approved Development Layout, which is shown above in **Figure 1**.

1.6 PLAN STRUCTURE

Table 1.1 – Plan Structure

Section	Content
2	Outlines the consultation undertaken in preparing the plan.
3	Identifies the location and extent of screen plantings proposed.
4	Identifies the species composition for the vegetated buffers.
5	Identifies the preferred bed preparation and planting technique.
6	Describes the maintenance to be undertaken to maximise success of the plantings.
7	Clarifies the allocation of responsibilities for establishing and maintaining healthy screen plantings.
8	Makes comment on timeframes

Consultation

2.1 AGENCIES

CoA 11 states the LP must be prepared in consultation with Roads and Maritime Service (RMS), Office of Environment and Heritage (OEH) and Parkes Shire Council (PSC).

The consultation undertaken to date in the preparation of this LP is outlined below.

2.1.1 ROADS AND MARITIME SERVICE

FRV met with the RMS (and PSC) and undertook a drive by inspection of the development site on 18 February 2019. RMS has advised:

- The current vegetation buffer along Henry Parkes Way offers a satisfactory level of screening of the project site from the road.
- To ensure Safe Intersection Sight Distance (SISD) is maintained in accordance with the *Austroads Guide to Road Design*, Roads and Maritime would recommend no further vegetation planting needs to be undertaken at the intersection of Henry Parkes Way and Pat Meredith Drive.

A copy of RMS correspondence is provided in **Appendix A**.

2.1.2 PARKES SHIRE COUNCIL

FRV met with the PSC and undertook a drive by inspection of the development site on 18 February 2019. Consistent with the RMS position, as it relates to enhancement of vegetation in the road reserves (ie. outside the GSF development site), Council has advised:

- Council is of the opinion that the vegetation that is in place now adequately screens the project site from these roads.

Subsequent to this inspection Geolyse consulted with a representative from Council's Parks and Gardens to discuss the respective merits and opportunities for adopting different planting techniques, supply issues for sourcing tube stock species, favourable planting windows and local experience in maximising the success of plantings.

A copy of PSC correspondence is provided in **Appendix A**.

2.1.3 OFFICE OF ENVIRONMENT AND HERITAGE

Consultation with the Office of Environment and Heritage (OEH) in the preparation of this Landscaping Plan has resulted in the OEH recommendations incorporated into the plan. These recommendations included:

- FRV discuss with PSC conducting or supporting weed monitoring and control in areas of mature native vegetation on the adjacent Henry Parkes Way and Pat Meredith Drive road reserves.
- The conduct of weed monitoring and control within those patches of native vegetation within the development site that are to be retained and protected.
- Wilga (*Geijera parviflora*) be included in the species planting mix.

A copy of OEH correspondence is provided in **Appendix A**.

2.2 NEIGHBOURS

2.2.1 RECEPTOR 2

FRV and Geolyse met with R2 on 18 February 2019 to discuss the location, extent and preferred composition of the vegetation buffer. The outcomes of this initial consultation, which FRV had agreed to, was for the screen plantings to be located inside the security fence which will be located on the lot boundary with, where possible, Kurrajongs (*Brachychiton populous*) to be included in the species.

Subsequent consultation with the landowner in July 2019 has resulted in changes to the proposed screen plantings to further mitigate visual impact and to utilise existing established plantings as part of the screeing. Specifically,

- the security fence will be located on the side of the solar infrastructure such that the screen plantings obscure the security fence from the R2 residence; and
- the first row of proposed landscape plantings will be incorporated into the existing mature plantings along the northern property boundary to fill gaps and provide full screening.

These arrangements are consistent with the preference of R2.

Detail on the indicative location of the agreed plantings is provided in **Section 3**.

Additional communication will be undertaken with R2 prior to planting.

2.2.2 RECEPTOR 6

FRV met with R6 on 5 March 2019 to discuss this landowner's preferences for screen plantings. The outcomes of this consultation, which FRV agreed to, was for screen plantings to be located inside the security fence which will be located on the lot boundary. As such, the screening will not be a north/south stand, but will follow the legal boundary as agreed in consultation with the landowners.

It is now proposed that the security fence will be located on the side of the solar infrastructure such that the screen plantings obscure the security fence from the R6 residence. Again. This re-positioning of the security fence will further mitigate visual impact.

Detail on the indicative location of the agreed plantings is provided in **Section 3**.

Additional communication will be undertaken with R6 prior to planting.

Planting Locations

3.1 SCREEN PLANTING LOCATIONS

3.1.1 SCREEN ESTABLISHMENT

Consultation with neighbours R2 and R6 has established a preferred location and extent of screen plantings. The location of these are shown in **Figure 2, Figure 3** and **Figure 4**; noting that they are different to that shown in the Approved Layout (refer **Figure 1**).

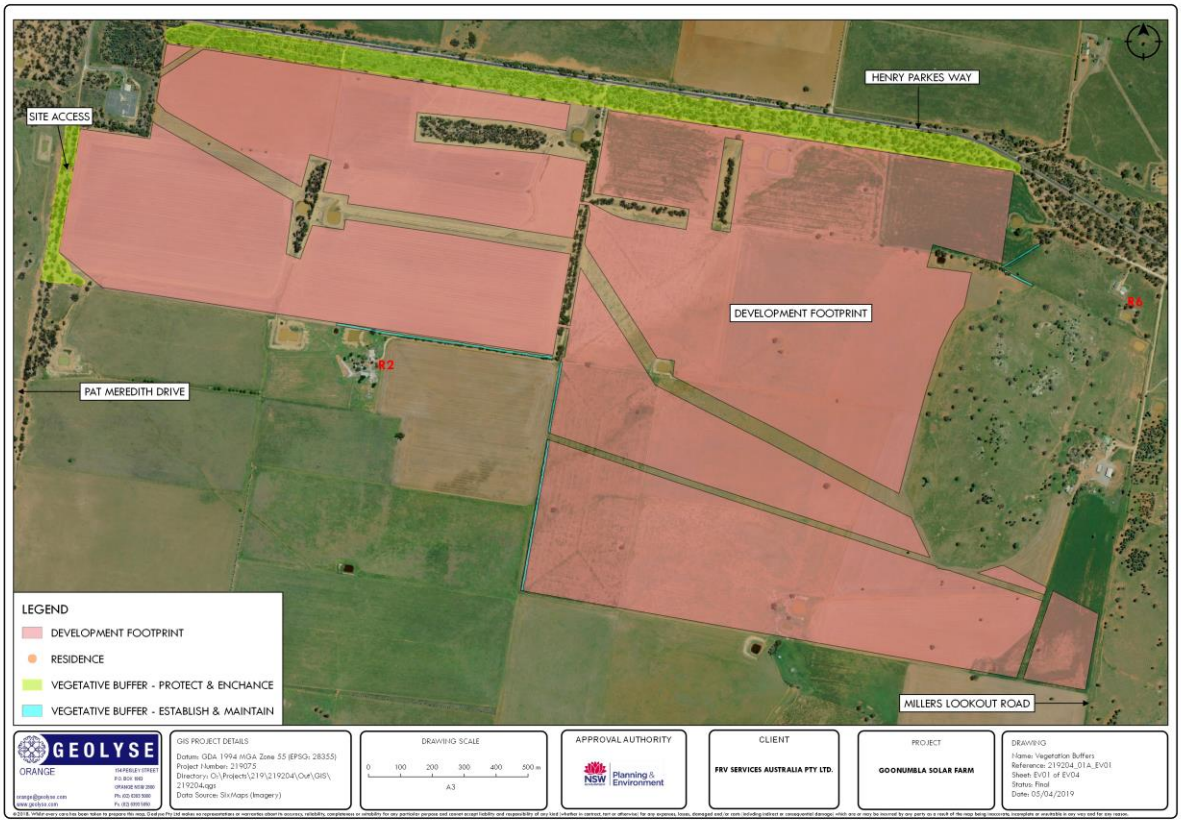

Figure 2: Vegetation Buffers

As noted in CoA 10(b), departure from the location of screen plantings as shown on the Approved Layout is permissible, subject to FRV submitting an agreement in writing from the relevant affected owner of Residence R2 and R6 for a reduction in the extent of the buffer, to the satisfaction of the Secretary.

Table 3.1 – Planting Configurations

Neighbour	Dimensions of Plantings
R2	Screen plantings will be established in two locations – both within the development site and outside the security fence following the Lot boundary alignment. This will include: - a 685 m long planting to the north of R2, running east/west; and - a 710 m long planting to the east, running north/south.
R6	Screen plantings will be established inside the development site boundary, outside the security fence and following the Lot boundary alignment. This will include: - a 140 m long planting to the west of R6, running in a southwest/northeast alignment; and - a 100 m long planting to the west of R6, running in an east/west alignment.

Figure 3: R2 Screen Plantings

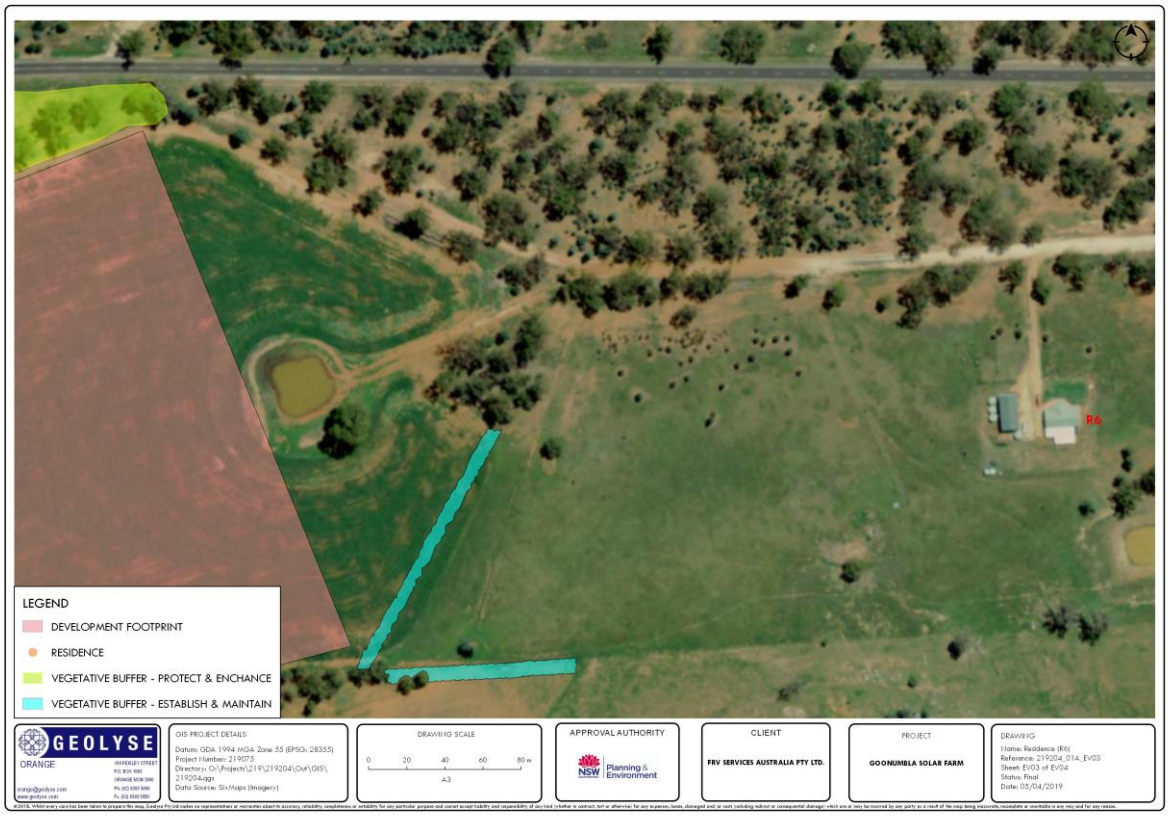

Figure 4: R6 Screen Plantings

3.1.2 ENHANCING MATURE ROAD RESERVE VEGETATION

Through consultation and review with the Appropriate Road Authorities (ARA) and the Office of Environment and Heritage, the landscaping plan does not require additional plantings within mature vegetation along Henry Parkes Way or Pat Meredith Drive.

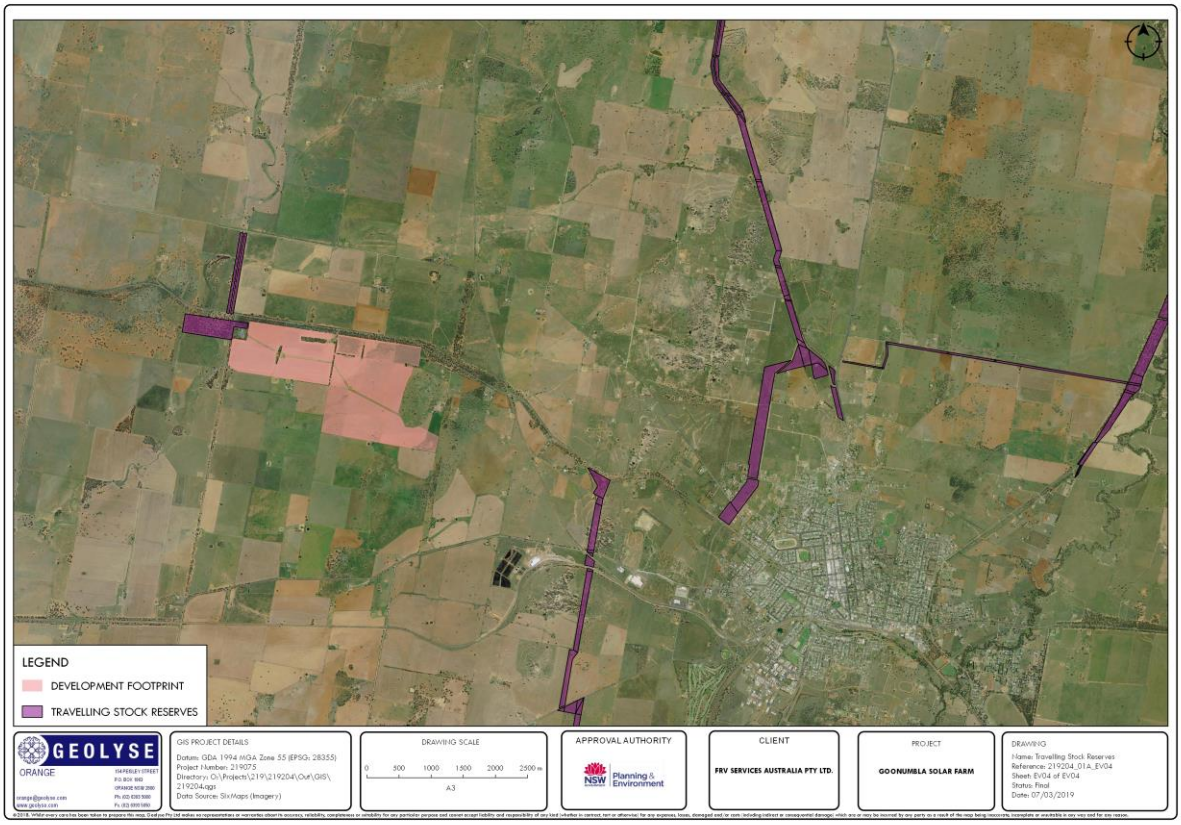

Figure 5: Travelling Stock Reserves

There are several reasons for this:

- Consultation with both Appropriate Road Authorities, being the RMS and PSC, has confirmed that both are of the opinion that the existing roadside vegetation adequately screens the project site from these public roads for road users.
- Consultation with Central West Local Land Services (CWLLS) has confirmed that whilst these sections of road reserves are not formal Travelling Stock Reserves (TSRs), they are located in close proximity to functioning TSRs and, when circumstances require, are used to move stock between established TSRs (refer **Figure 5**). Enhancement plantings in an area that can be subject to stock movement and grazing would be futile without substantial protective fencing which, in and of itself, would then create additional problems for use of this corridor for stock movement.

- It is emphasised, however, that the existing roadside vegetation will be preserved and protected. Neither the construction nor operation of the GSF entails any disturbance to this existing roadside vegetation. The GSF can be built and operated with no impact to this established corridor of roadside vegetation that adequately screens the development site.
- As noted by OEH, enhancement and maintenance can also include monitoring and control of weeds in these areas. To this end, FRV has consulted with Parkes Shire Council and made the following commitment with respect to supporting weed monitoring and control to areas of mature native vegetation on the adjacent road reserves.

Annually, for the first 3 years of operation, FRV would undertake a weed inspection of these road reserves and provide the results to Council and, if required, work in partnership with Council in terms of any required treatment.

Pending the results over these first 3 years, and to be included in the third report submitted, a revised monitoring schedule of inspections would be submitted to Council.

3.2 SPACING DENSITY

The planned vegetated buffer area would be comprised of two rows of trees and shrubs to provide an effective screening of the solar panels, with an expected 3 – 5 year timeframe for provision of a screening at least 5 m deep. The only exception to this is the 685 m long section to the north of R2 where, as a result of consultation with the landowner, the preference is to integrate the first row of proposed plantings within the existing row of mature Kurrajong trees to infill existing gaps in these trees.

The centre of the first planting row would be offset approximately 4 metres from the security fence. The second row would be located approximately 8 metres from the security fence. The two rows would be separated by 4 metres to allow for adequate room for growth and to provide access for mowing between rows as the plantings become established. Spacings between plantings within each row would vary between 3 – 5 m to provide sufficient room for healthy growth.

A total of approximately 1,635 metres of vegetated buffer is required to be planted with tube stock. Two rows of plantings dominated by medium shrubs and small trees would be interspersed by a low density of taller trees. The shrub to taller tree ratio would be approximately 15:1. The density of planting would be approximately 26 seedlings for 50 m of vegetated buffer: equating to approximately ~850 plants, comprising approximately 795 shrubs/small trees and 55 taller trees. **Figure 6** illustrates this planting layout.

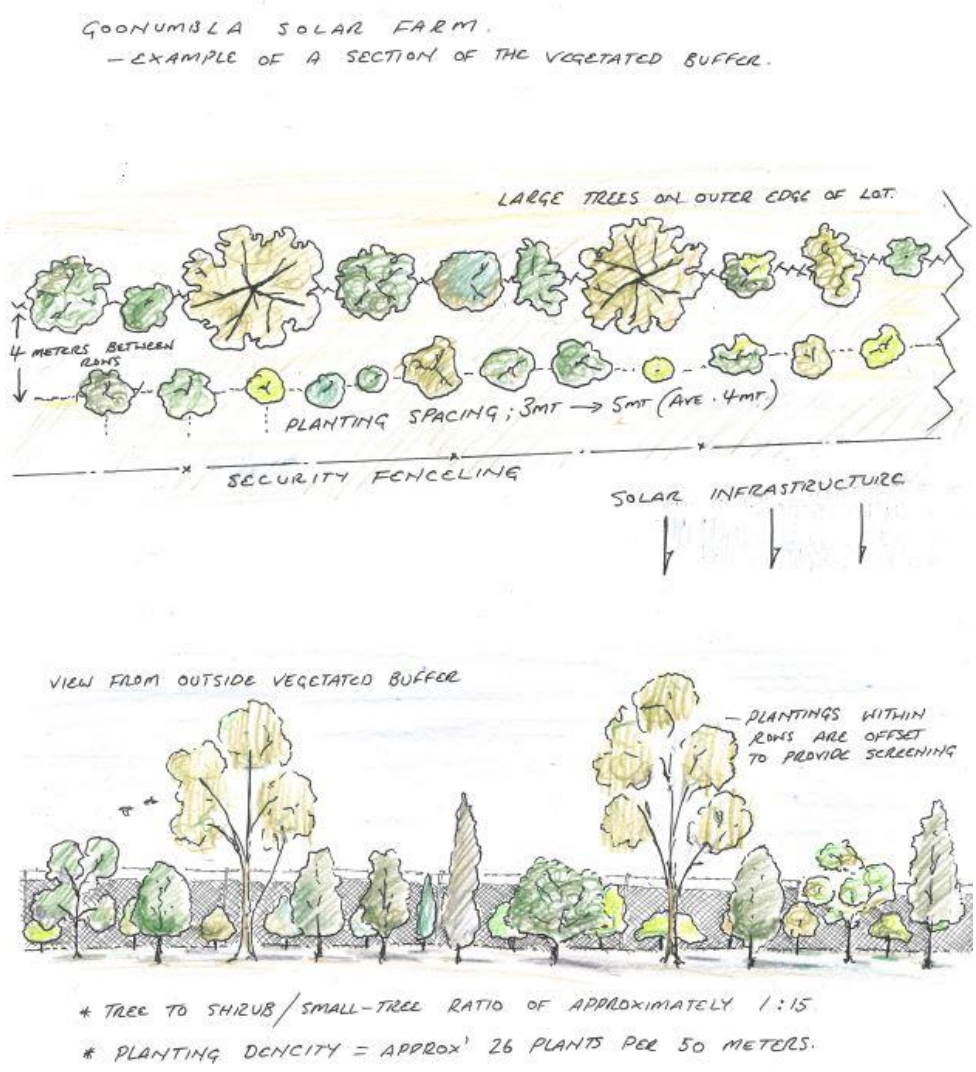

Figure 6: Planting Layout

Species Composition

4.1 GUIDING PRINCIPLES

The principles inherent in preparing this LP are that suitable species selection, optimal planting technique, sensible timing and appropriate maintenance, are the best measures to establish a vegetated buffer that will be effective at screening views.

4.2 SPECIES CRITERIA

The composition of species to be planted to establish the vegetative buffers has been determined through several criteria. These include requirements emanating from the development consent, neighbour requests and consideration of local supply options.

The development consent requires that the buffers:

- be comprised of species that make up the *Western Grey Box – Poplar Box – White Cypress Pine tall woodland community*; and
- be effective at screening views of the solar panels and ancillary infrastructure on site from surrounding residences.

Both neighbours indicated a preference for inclusion of Kurrajongs in the mix.

4.3 SPECIES SELECTION

Table 4.1 provides a list of tree and shrub species that will be used to establish the vegetative buffers.

These species are endemic to the *Western Grey Box – Poplar Box – White Cypress Pine tall woodland community* identified in the locality and include relatively fast growing shrubs.

In using a selection of these species:

- the shrubs will provide screening (the *Acacia* should reach 3 m within 3 years);
- the vegetative screening will be comprised of species representative of the woodland community endemic to the locality; and
- the screening will comprise species that offer a diversity of growth characteristics (such as density, speed of growth and height at maturity).

These species are commercially as tube stock for planting, however the availability from local nurseries is often dependent upon seasonal conditions and seed availability. Preferably, high quality seed stock should be of a local provenance with a high level of genetic diversity.

The mix of species should be evenly represented, with no one individual species >10% of the planting composition. Records from the supplier should be retained validating the species used and the respective number of each.

Table 4.1 – Landscape Species

Family Name	Botanical Name	Common Name	H x W (m)	Form	Notes
CASUARINACEAE	*Casuarina cristata*	Belah	14 x 6	Erect, single stemmed tree	Can tolerate saline conditions and heavy clays
	Allocasuarina luehmannii	Bull Oak	12 x 6	Erect tree	Drought tolerant. Important fauna foraging.
CUPRESSACEAE	*Callitris endlicheri*	Black Cypress Pine	12 x 5	Erect single- stemmed tree	Good windbreak qualities. Drought tolerant.
	Callitris glaucophylla	White Cypress Pine	10 x 5	Erect single- stemmed tree	Good windbreak qualities. Drought tolerant.
MALVACEAE	*Brachychiton populeus*	Kurrajong	14 x 8	Slow growing densely crowned	Drought resistant. Good fauna/ insect habitat.
MIMOSOIDEAE	*Acacia doratoxylon*	Currawang	6 x 3	Occasionally a small erect tree	Suitable screening plant
	Acacia oswaldii	Miljee	<6 x 4	Erect to spreading shrub/small tree	Good low to medium screening qualities. Drought resistant.
	Acacia burrowii	Yarran	8 x 5	Small tree	Drought resistant. Fauna habitat
	Acacia hakeoides	Western Black Wattle/Hakea Wattle	5 x 3	Rounded shrub	Hardy species in well drained sites
	Acacia decora	Western Golden Wattle	2 x 2	Variable shrub to tree	Lower storey habitat. Good pioneer species
	Acacia deanei	Deane's Wattle	<6 x 3	Erect shrub or small upright tree	Favourable for windbreaks and eroded sites.
MYOPORACEAE	*Eremophila bignoniiflora*	Eurah	<5 x 3	Spreading/ weeping shrub	Hardy in dry areas.
	Myoporum montanum	Western Boobialla	<3 x 2	Upright to spreading shrub	Hardy in dry areas. Good windbreak or screen.
MYRTACEAE	*Eucalyptus populnea*	Bimble Box	14 x 8	Medium spreading tree	Medium level windbreak. Good fauna habitat
	Eucalyptus microcarpa	Grey Box	16 x 8	Medium sized, spreading tree	Medium level windbreak. Good fauna habitat
RUTACEAE	*Geijera parviflora*	Wilga	10 x 5	Small tree	Recommended by OEH
SAPINDACEAE	*Alectryon oleifolius*	Rosewood	7 x 4	Medium spreading shrub to small tree	Drought tolerant
	Dodonaea viscosa	Broad-leaf Hopbush	< 4 x 4	Erect to spreading shrub	Drought tolerant. Good pioneer species.
	Dodonaea viscosa angustissima	Narrow-leaf Hopbush	<3 x 3	Erect to spreading shrub	Drought tolerant. Good pioneer species .

Where possible tube stock of local provenance that is genetically adapted to the local environment will be sourced. If a particular species is not available at the time of planting a close approximate species will be chosen in replacement. The table provides an average form description and size of these species growing in a natural open woodland community.

Preparation and Planting

5.1 NEIGHBOUR CONSULTATION

Additional communication will be undertaken with R2 and R6 prior to planting.

5.2 BED PREPARATION

The following methodology outlines the principal steps for tube stock planting of the vegetated buffer. Correct site preparation is required to maximise establishment of planted species.

5.2.1 WEED ERADICATION

Eradication of exotic weeds by spraying or scalping with a grader blade. Exotic weeds will not only use sub-surface moisture but will also compete with newly establishing tube stock. Scalping may also be used to lower soil nutrients along the planting row.

Ideally, planting rows should be kept weed-free for at least 12 months before planting. A second spraying, scalping or spot spraying may be required to eliminate emerging regrowth of exotic weeds prior to tube stock planting.

5.2.2 DEEP RIPPING

Deep ripping is recommended on country that has had a prior cropping and/or grazing history. Deep-ripped lines along the planting row will assist in allowing water to penetrate deeper into the soil profile and break through any hard-subsurface layer created by a history of cultivation. Single tyne ripping to a depth of at least 400 mm is required.

This will allow for greater root penetration and reducing the energy output required for root growth. This will increase the seedling growth rate and will enable greater access to water and nutrients.

5.3 PLANTING

All equipment required for the planting works, including guards, mats, watering-in and mulching should be on site and ready for the planting procedure. The mix of species and planned distribution along the vegetation buffer rows should be laid out first to avoid large groups or clumps of one species type.

Tree and shrub spacing should not be uniform but partly defined by the advised size of the species being planted. Smaller shrub species can be planted at least 3 m apart, whereas larger shrubs and trees should be spaced up to 5 m apart. Planting positions between the two rows should be staggered to offset the planting locations.

Tube stock is to be well watered at least 24 hours before transplanting. The seedling should be placed into a prepared wet hole at least three times the size of the root ball. The seedling should be removed cleanly from the tube casing and planted immediately into the soil. Seedlings are to be watered in soon after planting to assist in settling the root-zone and to remove any air pockets. A shallow dish should be formed in the soil around the seedling to assist in watering-in and to direct rainwater towards the roots.

The seedlings tube soil should not be exposed after planting. The soil around the roots should be lightly tramped to secure the plant.

The soil around the new seedling should be covered with a suitable native-origin mulch, leaving a bare-soil space around the stem of approximately 10 cm. Examples include eucalyptus leaf and bark litter, fine chipped hardwood mulch or commercially prepared native seedling mulches (refer **Figure 7**).

If the soil begins to dry out within the first two months after planting due to lack of rainfall or warm, windy weather, the new plantings will require follow up watering to prevent losses and stunted establishment. It is important that the root ball remains moist during this early establishment phase after planting.

Tree guards provide the new seedling with a protected microclimate during the early stages of growth. Guards also protect the new plant from damage and interference from grazing animals, kangaroos and wallabies. As the landscape plantings will be located inside the security fence grazing pressures from these larger animals should not be a problem. As such, smaller 300 mm tree bags or cardboard tree guards can be used. The tree guards can be removed after 5 years growth if the young plants are well established and growing well.

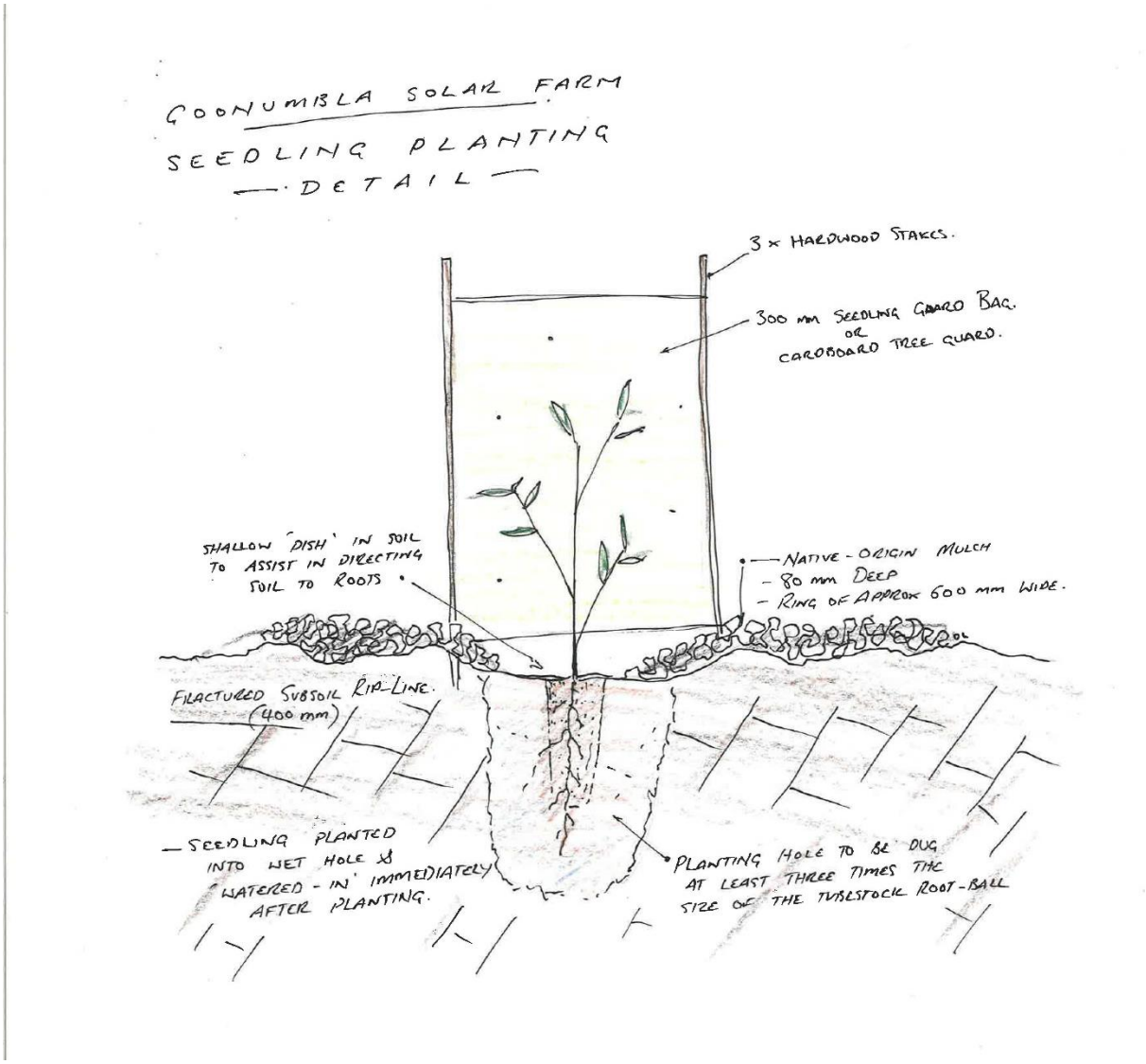

Figure 7: Tube Stock Planting

Whilst mechanical direct seeding has been successful in the Parkes district, tube stock planting has been selected because it provides a better potential for faster growth, thereby establishing an effective visual screen quicker than that which would be possibly with direct seeding, if seasonal conditions are not favourable.

Maintenance

6.1 OVERVIEW

While the vegetative screening must be maintained for the life of the GSF, the scope and frequency of maintenance activities should diminish over time. Appropriate species selection, good bed preparation, careful planting technique and suitable early maintenance during the planting establishment phase will reduce longer term maintenance requirements.

The vegetation buffers will require monitoring and maintenance for at least four years while the seedlings become established and more advanced. Care of the young seedlings during this time will significantly improve survival rates and improve establishment growth. The following details post-planting care procedures.

6.2 CONTROL GRAZING PRESSURE

As the plantings are located inside a security fence grazing pressures from stock, kangaroos and wallabies should not be an issue. Smaller pests such as hares and rabbits may have opportunity to interfere with the new seedings if tree guards are not maintained and left to collapse or fall due to wind or storm damage.

Rabbits may also dig and scatter the mulch bed around the base of individual tree guards. Hares will often browse young plants off to ground level if guards have been removed. Monitoring and management of these pest species should be carried out as part of the maintenance program.

Any kangaroos or wallabies which have gained access to the site should be removed as soon as possible. These animals will cause a high degree of damage to tree-lots along perimeter fence lines.

6.3 HEAT OR DRY STRESS MONITORING

All areas of the vegetation buffer will require monitoring to ensure that the young seedlings are receiving adequate water during the establishment phase. The vegetation buffer should be inspected during dry or excessively warm periods during the first two years of growth. During the dry Summer period (November to March), if soil moisture conditions dictate, plantings should be inspected fortnightly for evidence of wilting or loss of young leaves.

During periods with little or no soil moisture provision for watering trees must be made. Approximately 20 to 30 litres per tree/ per fortnight is required to maintain young seedlings. The mulch bed will assist in retaining this soil moisture. Soil moisture can be inspected and measured with a shovel or steel rod to ascertain if moisture extends down to a root zone depth. Within two years of growth it is expected that young plantings would become sufficiently established not to require sustenance watering during Summer.

6.4 WEED MONITORING

The mulch-bed for each planting will assist in excluding weed species. Pre-planting weed eradication of the planting rows will also minimise early weed competition. New plantings should be inspected during late Winter to early Summer for problem weed species within the vegetation buffer. Open spaces between the rows should be mown during the first three years to lessen the effect of shading and moisture competition by tall grasses and weed species. Care must be taken with spray drift and over-spray when using herbicides around the young native plants.

6.5 MORTALITY REPLACEMENTS/INFILLING

Monitoring of the vegetation buffers should include inspections for the loss of young plants. All dead seedlings should be replaced and replanted during the following planting season. Records should be kept on species survival and losses to identify species-specific losses. Failure to thrive or repeated losses may indicate that the site is not suitable. Reasons may include shallow rock or concentrated nutrients from old stock camps. Change of species or extra maintenance may facilitate the success in replacing these lost seedlings. Infilling can be used to close openings or gaps in the planting rows where shrubs or trees have not reached an adequate size or where additional screen density is required.

6.6 MAINTENANCE SCHEDULE

Table 6.1 – Maintenance Schedule

Activity	Requirement
Log Book	All inspections and actions (eg. weed treatments, mowing, mortality replacements, etc) should be documented and retained in a log book.
General Inspections	Weekly, for the first 3 months post planting, then fortnightly until 6 months post planting, inspections of general health, presence of pest grazing impacts, emergent weeds and the integrity of the tree guards should be undertaken, with mitigation actions implemented (as required) and documented in the log book. From 6 months post planting to 4 years, inspections should be completed on a quarterly basis. From 4 years post planting general inspections should be completed annually (at the end of summer).
Heat Dry Stress Monitoring	During the dry Summer period (November to March), if soil moisture conditions dictate, plantings should be inspected fortnightly for evidence of wilting or loss of young leaves. During periods with little or no soil moisture provision for watering trees must be made. Approximately 20 to 30 litres per tree/ per fortnight is required to maintain young seedlings. Soil moisture can be inspected and measured with a shovel or steel rod to ascertain if moisture extends down to a root zone depth. Within two years of growth it is expected that young plantings would become sufficiently established not to require sustenance watering during Summer.
Weed Monitoring/Control in Plantings	Plantings should be inspected from late Winter to early Summer for problem weed species within the vegetation buffer. Open spaces between the rows should be mown during the first three years to lessen the effect of shading and moisture competition by tall grasses and weed species. Details of spray treatment should be retained in accordance with best practice (climatic conditions, chemical active used, application rates) and be undertaken by someone with ChemCert accreditation.
Mortality Replacements	Monitoring of the vegetation buffers should include inspections for the loss of young plants. All dead seedlings should be replaced and replanted during the following planting season. Records should be kept on species survival and losses to identify species-specific losses.

6.7 ONGOING

6.7.1 SOLAR FARM

Following the more intense maintenance regime undertaken during the initial four years after initial planting, monitoring of the vegetative screen would be undertaken annually and be restricted to weed control and mortality replacement. Weed monitoring and control in stands of native vegetation within the development site to be retained and protected will be included in the weed monitoring regime.

6.7.2 ROAD RESERVES

Annually, for the first 3 years of operation, FRV would undertake a weed inspection of these road reserves and provide the results to Council and, if required, work in partnership with Council in terms of any required treatment.

Pending the results over these first 3 years, and to be included in the third report submitted, a revised monitoring schedule of inspections would be submitted to Council.

Responsibilities

7.1 DEVELOPMENT APPLICANT

FRV is the development Applicant and as such has ultimate responsibility to ensure all development consent conditions are met, including those related to landscaping: notwithstanding that an EPC contractor will build the GSF for FRV.

Contractual obligations between FRV and the EPC are subservient to the Applicant's compliance obligations pursuant to the Minister's approval.

FRV will have the responsibility for monitoring, reviewing and ensuring the EPC Contractor implements this Landscaping Plan.

Timeframes

8.1 PLANTING WINDOW

Suitable bed preparation and favourable seasonal conditions should dictate when plantings are undertaken. Inadequate bed preparation, poor weed eradication and/or planting in dry and hot conditions are the most significant impediments to the successful establishment of healthy screen plantings.

Timing the plantings will be critical to the survival and robust establishment of the plantings. Native species planting seasons for the Parkes district extends from late May to September. Correct timing of the planting event within these months depends on seasonal conditions and available ground moisture.

Optimal planting conditions would have good soil moisture present (not wet), deep into the profile, the likelihood of good follow-up rains and at least one to two months of cool to mild weather while the young tube stock became stabilised after planting. The existing soil and climate conditions on the site must be inspected and considered to determine the best logical window for planting. For example, if there has been a particularly cold winter seasonal pattern it is recommended that planting be delayed until warmer Spring seasonal conditions.

Ideally, good soil moisture accumulation from damp Autumn and Winter conditions provide an optimal planting bed in early Spring.

Ideally, planting rows should be kept weed-free for at least 12 months before planting. This consideration, given the current construction schedule, coupled with forecasts for a relatively dry 2019 Autumn/Winter, indicates that the plantings will best be scheduled for no later than early Spring 2020.

Bed preparation and weed eradication can commence as a priority task immediately after erection of the security fence, which is one of the first actions in the GSF build.

8.2 SECURING TUBE STOCK

Well prior to the planting date tube stock will need to be ordered from suppliers. Nurseries require lead time for larger orders.

In securing tube stock from suppliers all effort will be made to acquire the most growth advanced tree species available; particularly for Kurrajong.

References

Department of Infrastructure Planning and Natural Resources (2004) *Guideline for the Preparation of Environmental Management Plans*

International Organization for Standardization (2015) *ISO 14001:2015(E) Environmental management systems – Requirements with guidance for use*

Geolyse (November 2016) *Goonumbla Solar Farm – Submissions Report*

Geolyse (September 2016) *Goonumbla Solar Farm – Environmental Impact Statement*

Appendix A

AGENCY CONSULTATION

DOC19/221267

Mr Andrew Brownlow
General Manager – Central NSW
Geolyse
aBrownlow@geolyse.com

Dear Mr Brownlow

Goonumbla solar farm – landscaping plan

Thank you for your email of 13 March 2019 seeking comment from the Office of Environment and Heritage (OEH) on the Goonumbla solar farm landscaping plan.

We note that condition 10 of the consent requires the landscaping plan to:

- Enhance and maintain the mature vegetation buffer along Henry Parkes Way and Pat Meredith Drive
- Establish and maintain a mature vegetation buffer at specific locations around the site. This buffer must be comprised of species that make up the Western Grey Box – Poplar Box – White Cypress Pine tall woodland community.

Enhancing and maintaining mature vegetation

OEH notes that there is an intent to protect and preserve vegetation within the road reserves but not enhance it with additional plantings.

OEH agree that it is not necessary to conduct additional plantings within mature vegetation along Henry Parkes Way and Pat Meredith Drive. However, enhancement and maintenance can also include monitoring and control of weeds within these areas.

In addition, while not specified in the development consent, the landscape plan should include measures to enhance and maintain remnant vegetation patches on the site, again through weed control.

OEH recommends that the proponent discuss with council conducting or supporting weed monitoring and control to areas of mature native vegetation on adjacent road reserves.

Establishing vegetation buffers

OEH considers that new buffers must comprise species that make up the Western Grey Box – Poplar Box – White Cypress Pine tall woodland community should contain species that:

- Are commensurate with the species identified as being part of Plant Community Type (PCT) 82: Western Grey Box - Poplar Box - White Cypress Pine tall woodland on red loams mainly

of the eastern Cobar Peneplain Bioregion (as identified in the BioNet Vegetation Classification), and

- Contain species from PCT 82 that are known to occur in the area.

Based on this, OEH supports the use of the following species listed in table 4.1 of the landscape plan:

- Bull Oak (*Allocasuarina luehmannii*)
- White Cypress Pine (*Callitris glaucophylla*)
- Kurrajong (*Brachychiton populeus*)
- Hakea Wattle (*Acacia hakeoides*)
- Deane's Wattle (*Acacia deanei*)
- Western Boobialla (*Myoporum montanum*)
- Bimble Box (*Eucalyptus populnea*)
- Western Grey Box (*Eucalyptus mircrocarpa*)
- Broad-leaf Hopbush (*Dodonaea viscosa subsp. spatulata*)

In addition, we suggest that Wilga (*Geijera parviflora*) be included.

If you have any queries, please contact Liz Mazzer, Conservation Planning Officer on 6883 5325 or email liz.mazzer@environment.nsw.gov.au.

Yours sincerely

PETER CHRISTIE
Director, North West
Conservation and Regional Delivery

19 March 2019

Contact officer: LIZ MAZZER
6883 5325

No thank you Andrew I think we are satisfied that this won't have any interaction with the classified road network and therefore falls out of our scope to have any further say on the matter.

If I have assumed this incorrectly then by all means happy to look at it.

Regards,

Ainsley

Ainsley Bruem
Acting Manager
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PO Box 334 Parkes NSW 2870

From: Andrew Brownlow [mailto:aBrownlow@geolyse.com]
Sent: Friday, 1 March 2019 12:05 PM
To: BRUEM Ainsley; Annalise Cummings
Cc: Cliona Gormley
Subject: RE: Goonumbla Solar Farm - Landscaping Plan

Ainsley

Very much appreciated.

Given that the landscape plantings will be restricted to inside the development site to provide screening for the two neighbours, did you still want me to forward a copy of the Landscaping Plan to RMS for any comment when done?

Regards

Andrew

Andrew Brownlow
General Manager - Central NSW

From: BRUEM Ainsley <ainsley.bruem@rms.nsw.gov.au>
Sent: Friday, 1 March 2019 12:02 PM
To: Andrew Brownlow <aBrownlow@geolyse.com>; Annalise Cummings <annalise.cummings@parkes.nsw.gov.au>
Cc: Cliona Gormley <cliona.gormley@frv.com>
Subject: RE: Goonumbla Solar Farm - Landscaping Plan

Dear Andrew,

I can confirm that I met on Monday 18 February 2019 to review the vegetation buffer along Henry Parkes Way and Pat Meredith Drive, adjoining the project site as a representative of Roads and Maritime Services.

As discussed the current vegetation buffer along Henry Parkes Way has been adequately maintained offering a satisfactory level of screening of the project site from the road.

It is further noted that to ensure Safe Intersection Sight Distance (SISD) is maintained in accordance with the *Austroads Guide to Road Design* and to negate the possibility of vegetation interacting with power lines as part of the electricity sub-station, Roads and Maritime would recommend no further vegetation planting needs to be undertaken at the intersection of Henry Parkes Way and Pat Meredith Drive.

It is our expectation that that no damage to the existing vegetation will occur as a result of construction activities associated with the project and that the current vegetation buffer is maintained.

Regards,

Ainsley
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NSW GOVERNMENT | Transport Roads & Maritime Services

From: Andrew Brownlow [mailto:aBrownlow@geolyse.com]
Sent: Friday, 1 March 2019 11:01 AM
To: Annalise Cummings
Cc: Cliona Gormley; BRUEM Ainsley
Subject: RE: Goonumbla Solar Farm - Landscaping Plan

Annalise

Appreciated. We will look to provide the Landscape Plan for your comment as soon as it is prepared and at this stage we are hoping this will be sometime in the week starting 11 March.

And just to let you know, Michael Chambers has been very generous with his time and knowledge working with our ecologist in looking at species and planting techniques that will best suit local conditions.

With thanks

Andrew

Andrew Brownlow
General Manager - Central NSW
GEOLYSE
Part of Premise

From: Annalise Cummings <annalise.cummings@parkes.nsw.gov.au>
Sent: Friday, 1 March 2019 10:08 AM
To: Andrew Brownlow <aBrownlow@geolyse.com>
Cc: Cliona Gormley <cliona.gormley@frv.com>; BRUEM Ainsley <ainsley.bruem@rms.nsw.gov.au>
Subject: Re: Goonumbla Solar Farm - Landscaping Plan

Dear Andrew

Apologies for the delay in our response.

Council can confirm that we met on Monday 18 February 2019 to review the current plantings along Henry Parkes Way and Pat Meredith Drive, adjoining the project site.

Council is of the opinion that the vegetation that is in place now adequately screens the project site from these roads. It is also understood that no damage to the existing vegetation will occur as a result of construction activities associated with the project.

Regards
Annalise Cummings
Parkes Shire Council
Manager Planning Services

Sent from my iPhone

From: Andrew Brownlow <aBrownlow@geolyse.com<mailto:aBrownlow@geolyse.com>>
Sent: Wednesday, 20 February 2019 10:17 AM
To: Cliona Gormley <cliona.gormley@frv.com<mailto:cliona.gormley@frv.com>>; BRUEM Ainsley <ainsley.bruem@rms.nsw.gov.au<mailto:ainsley.bruem@rms.nsw.gov.au>>; Annalise Cummings <annalise.cummings@parkes.nsw.gov.au<mailto:annalise.cummings@parkes.nsw.gov.au>>; Michael Chambers <Michael.Chambers@parkes.nsw.gov.au<mailto:Michael.Chambers@parkes.nsw.gov.au>>
Subject: Goonumbla Solar Farm - Landscaping Plan

Ainsley/Annalise/Michael

Your time on Monday looking at the Goonumbla Solar Farm site and discussing landscaping requirements was very much appreciated. As mentioned, the Minister's consent requires consultation with both RMS and Council with respect to the Landscaping Plan. As it pertains to enhancement plantings in the public road reserves (both Henry Parkes Way and Pat Meredith Drive) it is our understanding that you were comfortable that this was not needed given that existing roadside vegetation effectively screens the site. We also confirm that none of this vegetation would be impacted as a result of the proposed development. Confirmation that this is your position would be very much appreciated.

Attached is a copy of the Minister's consent. Details on the Landscaping Plan are specified in Schedule 3 Condition 11, with Appendix 1 to the consent highlighting those areas in the road corridors.

We will off course consult further and provide you a copy of the Landscaping Plan we are preparing for your comment and feedback before submission to the Department of Planning and Environment. As discussed, this plan will focus on the establishment of screen plantings to mitigate impacts on adjoining landowners as required in the Minister's approval.

Regards

Andrew

Andrew Brownlow
General Manager - Central NSW

Andrew Brownlow

From: Annalise Cummings <annalise.cummings@parkes.nsw.gov.au>
Sent: Wednesday, 27 March 2019 10:03 AM
To: Andrew Brownlow
Cc: Cliona Gormley
Subject: RE: Updated Landscaping Plan

Dear Andrew and Cliona

Thank you for providing the updated Landscaping Plan which incorporates recommendations from OEH regarding weed monitoring in the Henry Parkes Way and Pat Meredith Drive reserves adjoining the project site.

I can confirm that Council supports the proposed weed monitoring program to enhance and maintain the native vegetation within the reserves.

Council has also reviewed the landscaping plan and confirm that it is satisfied with the proposed plantings, location and density as outlined within the plan.

Regards

Annalise Cummings
Manager Planning Services | Parkes Shire Council

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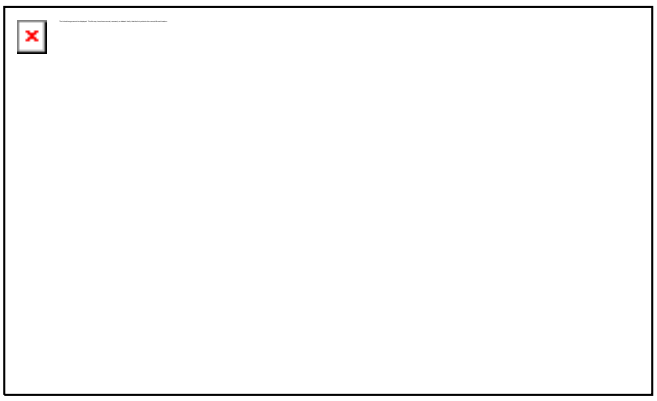
E annalise.cummings@parkes.nsw.gov.au
W parkes.nsw.gov.au
2 Cecile Street Parkes NSW 2870



From: Andrew Brownlow <aBrownlow@geolyse.com>
Sent: Wednesday, 27 March 2019 9:03 AM
To: Annalise Cummings <annalise.cummings@parkes.nsw.gov.au>
Cc: Cliona Gormley <cliona.gormley@frv.com>
Subject: RE: Updated Landscaping Plan