GAIA

Landscape and Vegetation Plan

Bonshaw Solar Farm

29 May 2023

Project No.: 0657342

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Signature Page

29 May 2023

Landscape and Vegetation Plan

Bonshaw Solar Farm

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Acronyms and Abbreviations

Name	Description
BC Act	Biodiversity Conservation Act 2016
CoC	Consent of Conditions
DPI	Department of Primary Industries
DPE	Department of Planning and Environment
DPIE	The former Department of Planning Industry and Environment
DP	Deposited Plan
EIS	Environmental Impact Statement
GAIA	GAIA Australia Pty Ltd
IEA	Independent Environmental Audit
EMS	Environmental Management Strategy
ERM	Environmental Resources Management Australia Pty Ltd
EP&A Act	Environmental Planning and Assessment Act 1979
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
LVP	Landscape and Vegetation Plan
IBRA	Interim Biogeographic Regionalisation for Australia
OEH	Office of Environment & Heritage
SEPP	State Environmental Planning Policy
SSD	State Significant Development
SMART	Specific, Measurable, Attainable, Relevant and Time-based
TEC	Threatened Ecological Communities
WoNS	Weeds of National Significance

1. INTRODUCTION

1.1 Background

Environmental Resources Management Australia Pty Ltd (ERM) has been engaged by GAIA Australia (GAIA) to prepare a Landscape and Vegetation Plan (LVP) for the approved Bonshaw Solar Farm (the Project) at Bonshaw, within the Inverell Local Government Area in New South Wales (NSW).

The Project includes the installation, operation, maintenance and decommissioning of a new 200 megawatt (MW) solar farm with up to 300 MW of battery energy storage system (BESS) and associated infrastructure[1]. The Project is located approximately 66 km north of Inverell, with site access fronting the Bruxner Highway.

The Project site comprises Lot 2 Deposited Plan (DP) 1039185 and Lot 201 DP 879480 and covers an area of approximately 368 hectares (ha), of which the proposed development area occupies approximately 149.24 ha (Development Footprint).

The location is shown in Figure 1-1. The approved Bonshaw Solar Farm development footprint and the approved conceptual layout is provided in Figure 1-2.

1.2 Purpose and Scope

This LVP has been prepared to satisfy the requirements of Schedule 3, Condition 12 and 13 of the Development Consent for the Bonshaw Solar Farm (refer to Section 2.2). It outlines:

- Measures to ensure that vegetation buffers are planted prior to construction;
- Measures to minimise views from the Bruxner Highway within 3 years of commencing operations;
- A program to monitor and report on the effectiveness of the plan; and
- Details on the roles and responsibilities for monitoring, implementing and reviewing the plan.

1.3 Objectives and Targets

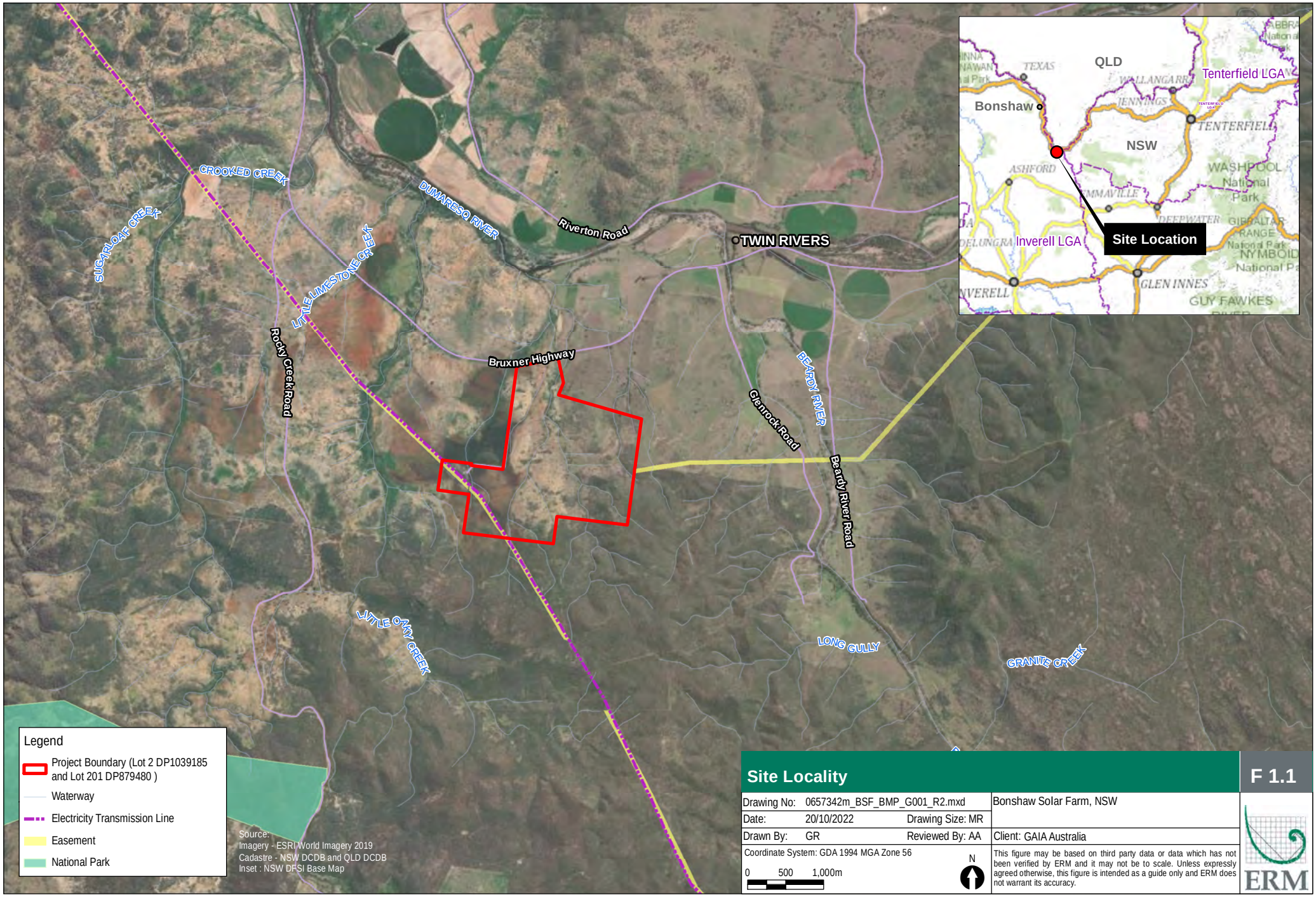
This LVP describes the management measures that will be implemented to avoid, minimise, and mitigate visual impacts associated with the construction and operation of the approved Bonshaw Solar Farm for nearby residences and road users along the Bruxner Highway. To achieve these objectives, the following targets have been established and will aim to:

- Ensure appropriate planning, controls and procedures are implemented during construction and prior to operations to facilitate the preparation and completion of landscape areas to be maintained during operation;
- Ensure appropriate measures are implemented to address the development approval conditions; and
- Ensure appropriate measures are implemented to comply with all relevant legislation and other requirements.

This LVP has been written to complement other management plans for the Project and has been developed as a component of, and should be read in conjunction with:

- Bonshaw Solar Farm Environmental Management Strategy (EMS);
- Bonshaw Solar Farm Heritage Management Plan;
- Bonshaw Solar Farm Biodiversity Management Plan; and
- Bonshaw Solar Farm Bushfire Management Plan.

[1] A full description of the Project is provided with the Environmental Impact Statement (EIS) and subsequent Submissions Report and Amendment Report. This information can be accessed on the Project website: https://www.gaiaau.com/projects-6



Site Locality

F 1.1

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Date:	20/10/2022	Drawing Size: MR	
Drawn By:	GR	Reviewed By: AA	Client: GAIA Australia

Coordinate System: GDA 1994 MGA Zone 56

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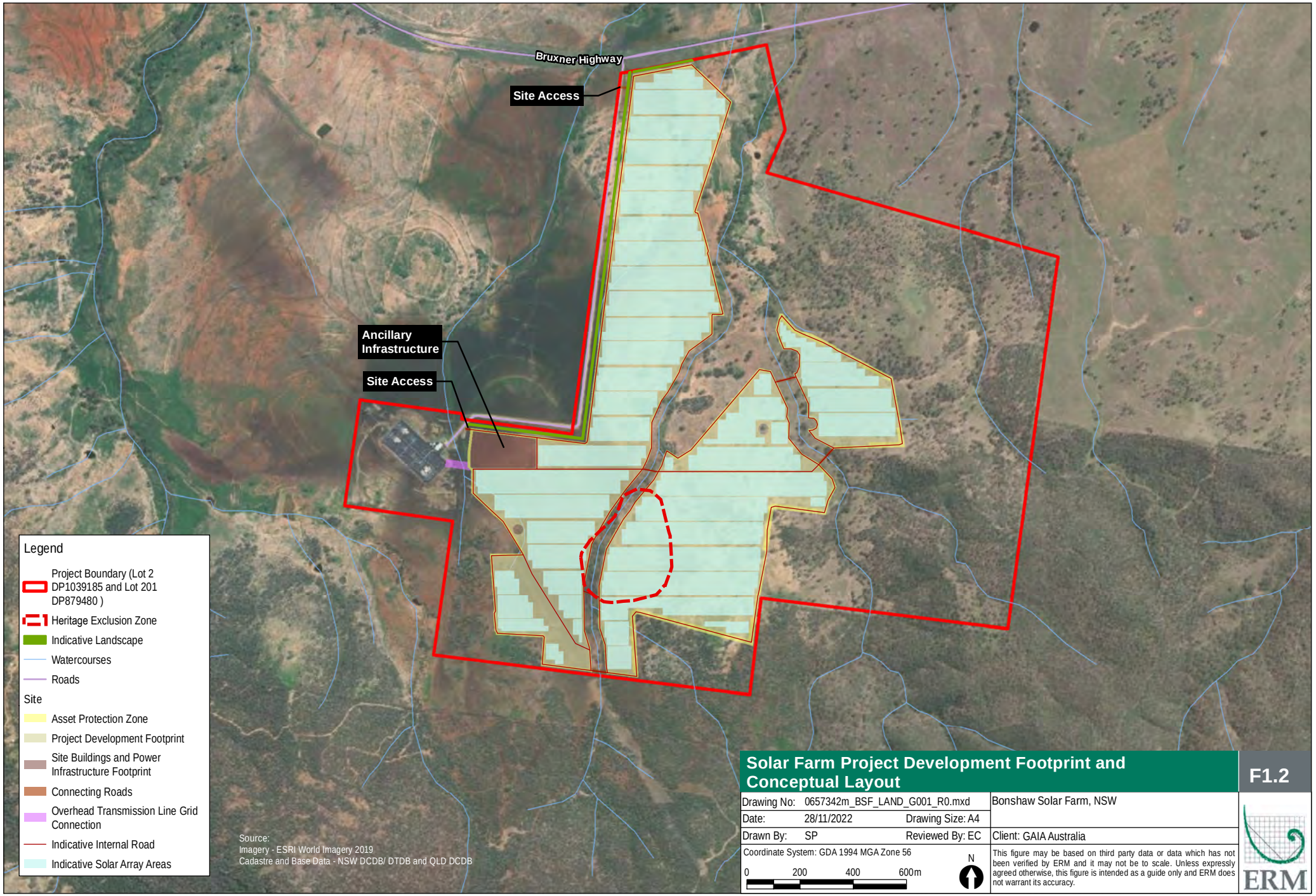

Solar Farm Project Development Footprint and Conceptual Layout

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Drawn By:	SP	Reviewed By: EC	Client: GAIA Australia

Coordinate System: GDA 1994 MGA Zone 56

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2. PLANNING CONSIDERATIONS

2.1 Relevant Legislation and Guideline

Legislation relevant to landscape management includes:

- NSW Biosecurity Act 2015 (BS Act);
- NSW Pesticides Regulation 2017; and
- NSW Biodiversity Conservation Act 2016 (NPW Act).

The main guidelines, specifications and policy documents relevant to this Plan include:

- AS 4419-2003 Soils for landscaping and garden use; and
- AS 2303:2015 Tree stock for landscape use.

2.2 Conditions of Consent

The EIS for Bonshaw Solar Farm (SSD 9438) was placed on public exhibition in October 2019, and a Response to Submissions Report (RtS) was submitted in March 2020. SSD 9438 was approved by the NSW Land and Environment Court on 3 December 2020 under the EP&A Act, subject to a number of conditions. Conditions of consent (CoC) relevant to this LVP and where they have been addressed are detailed in Table 2-1.

Table 2-1 Relevant Conditions of Consent and Reference Location

Condition of Consent	Description	Reference Location
Schedule 3, Condition 12 **Vegetation Buffer**	The Applicant must establish and maintain a mature vegetation buffer (landscape screening) as shown in Appendix 1 of the CoC to the satisfaction of the Secretary. This vegetation buffer must: (a) be planted prior to commencing construction;	Section 4.8
	(b) be comprised of species that are endemic to the area;	Section 4.5
	(c) minimize views from Bruxner Highway within 3 years of commencing operations; and	Section 4
	(d) be designed and maintained in accordance with RFS's *Planning for Bushfire Protection 2019* (or equivalent); and	Section 4.4
	(e) be properly maintained with appropriate weed management, unless the Secretary agrees otherwise	Section 4.7
Schedule 3, Condition 13 **Landscaping Plan**	Prior to the commencement of construction, the Applicant must prepare a detailed Landscaping Plan for the development to the satisfaction of the Secretary. This plan must include: (a) a description of the measures that would be implemented to achieve the objectives of Schedule 3, Condition 12 (a) – (d) below;	This LVP
	(b) a program to monitor and report on the effectiveness of these measures; and	Section 4.9 Section 5
	(c) details of who would be responsible for monitoring, reviewing and implementing the plan, and timeframes for the completion of actions	Section 4.8 Section 4.9

2.3 Consultation

As per the consultation requirements of Schedule 3, Condition 13 of SSD 9438, a draft copy of the LVP was provided to the DPE for their review and comment on 28 October 2022. A summary of their responses and where addressed in the revised report are provided below.

Table 2-2 Ongoing Consultation and Review of the LVP

DPE Recommendation	Where addressed in this LVP
Provide further information, including timing of inspections and performance indicators to measure the effectiveness of the vegetation buffer to screen views	Section 4.8 Section 4.9
Provide further information on the measures that would be implemented to ensure that the vegetated buffers achieve the objectives in the conditions of consent (i.e. planting strategy, plant selection and numbers, planting density, planting method, maintenance, works and monitoring schedule, planting areas and retention of any existing vegetation).	Section 4
Include a figure of the proposed location of the vegetation buffer, as part of the project layout	Figure 4-1

[A copy of the LVP has been provided to the DPE on the 29 May 2023. A copy of their response will be provided in Appendix A prior to finalisation and implementation].

3. EXISTING ENVIRONMENT

The predominant land use in the proximity of the Project is rural landscape used for grazing and some cropping with natural waterways and vegetated ridgelines. The 330 kV TransGrid Dumaresq Substation is located to the south-west of the proposed site with a 264 kV power lines running roughly in a south-easterly direction in the southern portion of the site.

The Dumaresq River valley consists largely of natural grasslands on basalt and fine textured alluvial plains of northern New South Wales and southern Queensland. The flood plain is largely cleared of native vegetation with isolated larger trees scattered across the landscape where irrigated fields and grazing dominate. The Dumaresq River is lined on both sides by various large eucalypt tree species.

The area to the south of the Bruxner highway is dominated by open grasslands with wooded waterways with the vegetation becoming progressively denser further south into the foothills. Larger eucalypt species on granite become more prevalent to the south of the Project Site.

The visual impact from the Bruxner Highway was assessed as part of the EIS (ERM 2020) and was reported as being medium to low impact, however given the short frontage and period of time the facility is seen, the low traffic volumes along this route and the setback from the road means that the overall impacts from this locality are localised and the overall visual impact was assessed within the EIS as low. The provision of a five metre landscape strip along the northern and north western boundaries will further reduce these minor visual impacts from the Bruxner Highway and is the focus of this LVP.

Viewpoint 1 is from the Bruxner Highway near the entrance to the Transgrid Dumaresq Substation looking south. The red line denoting the approximate location of the solar farm (ERM, 2020).

Viewpoint 2 is located immediately to the north of the site on Bruxner Highway. The red line denoting the approximate location of the solar farm (ERM, 2020).

3.1 Vegetation Communities

Numerous targeted flora surveys have been completed on the Project Site as part of the Environmental Impact Statement (EIS) and Biodiversity Development Assessment Report (BDAR) prepared for the approved development (ERM 2020).

The Development Footprint occupies 149.24 ha, including 54.4 ha (36.5 %) of mapped Biophysical Strategic Agricultural Land. A total of four our Plant Community Types (PCTs) in various conditions (woodland and derived grasslands) have been identified and mapped across the Project Site.

Table 3-1 Vegetation Communities

PCT	PCT Name	Vegetation Condition	Approved for Impact	Retained within the Project Site
PCT 516	Grey Box grassy woodland or open forest of the Nandewar Bioregion and New England Tableland Bioregion.	Moderate and very low condition	5.76 hectares	36.28 hectares
PCT 544[2]	Rough-barked Apple – White Cypress Pine – Blakely's Red Gum riparian open forest / woodland of the Nandewar Bioregion and New England Tableland Bioregion	Low condition	0.83 hectares	7.54 hectares
PCT 594	Silver-leaved Ironbark – White Cypress Pine shrubby open forest of Brigalow Belt South Bioregion and Nandewar Bioregion	Moderate and low condition	13.64 hectares	211.75 hectares
PCT 596	Tumbledown Red Gum – White Cypress Pine – Silver-leaved Ironbark shrubby woodland mainly in the northern Nandewar Bioregion	Moderate, low, very low and derived grasslands	20.74 hectares	345.47 hectares
NA	Disturbed Grasslands/cleared lands	NA	107.79 hectares	2.13 hectares

3.2 Flora and Weeds

No threatened flora species have been recorded within the Project site.

A total of 32 exotic species, including five high threat exotic (HTE) were recorded within the Project Site. Of these, two are Weeds of National Significance (WoNS):

- Tiger Pear (*Opuntia aurantiaca*); and
- Velvet Tree Pear (*Opuntia tomentosa*).

Priority weeds for the Northern Tablelands include Fireweed (*Senecio madagascariensis*) which was also commonly encountered across the Project Site.

[2] *Note: PCT 544 corresponds to the NSW listed endangered ecological community (EEC) "White Box Yellow Box Blakely's Red Gum Woodland". The occurrence of this TEC is not considered to satisfy the minimum condition criteria for the Commonwealth listing of this TEC. This determination has been made because of very small patch sizes, low diversity of native understorey species and absence of "important species" as described in the Threatened Species Scientific Committee listing advice and National Recovery Plan for the TEC.*

4. LANDSCAPING MANAGEMENT MEASURES

This LVP describes the management measures that will be implemented to avoid, minimise, and mitigate visual impacts associated with the construction and operation of the approved Bonshaw Solar Farm for nearby residences and road users along the Bruxner Highway.

The EPC Environment Officer is responsible for the implementation and outcomes of the management and mitigation measures during the construction phase of the project. This responsibility will transfer to the Project Environmental Management Representative post-construction. The EPC Environment Officer and Project Environmental Management Representative are able to engage suitably qualified specialists (i.e. landscape specialist/weed contractor) as required but are ultimately responsible for any outcomes delivered by those specialists.

Proposed landscape treatments include:

- Retention of existing vegetation; and
- Native vegetation buffers.

4.1 Retention of Existing Vegetation

Approximately 603 ha of existing vegetation will be retained within the Project site and will be managed separately in accordance with the Bonshaw Solar Farm Biodiversity Management Plan[3].

To compensate for the loss of trees and vegetation, replacement of trees (ideally native to the Project Site) will be planted along the second and third order streams within the Project Boundary. This will increase the vegetation density along the creek-lines and enhance its value as a linking corridor with remnant vegetation fragments and paddock trees beyond the Development site. This is also to be managed separately in accordance with the Bonshaw Solar Farm Biodiversity Management Plan and is not included as part of the LVP.

4.2 Managed Grazing

All landscaped buffers will be outside of the perimeter security fencing surrounding the site and stock will be excluded.

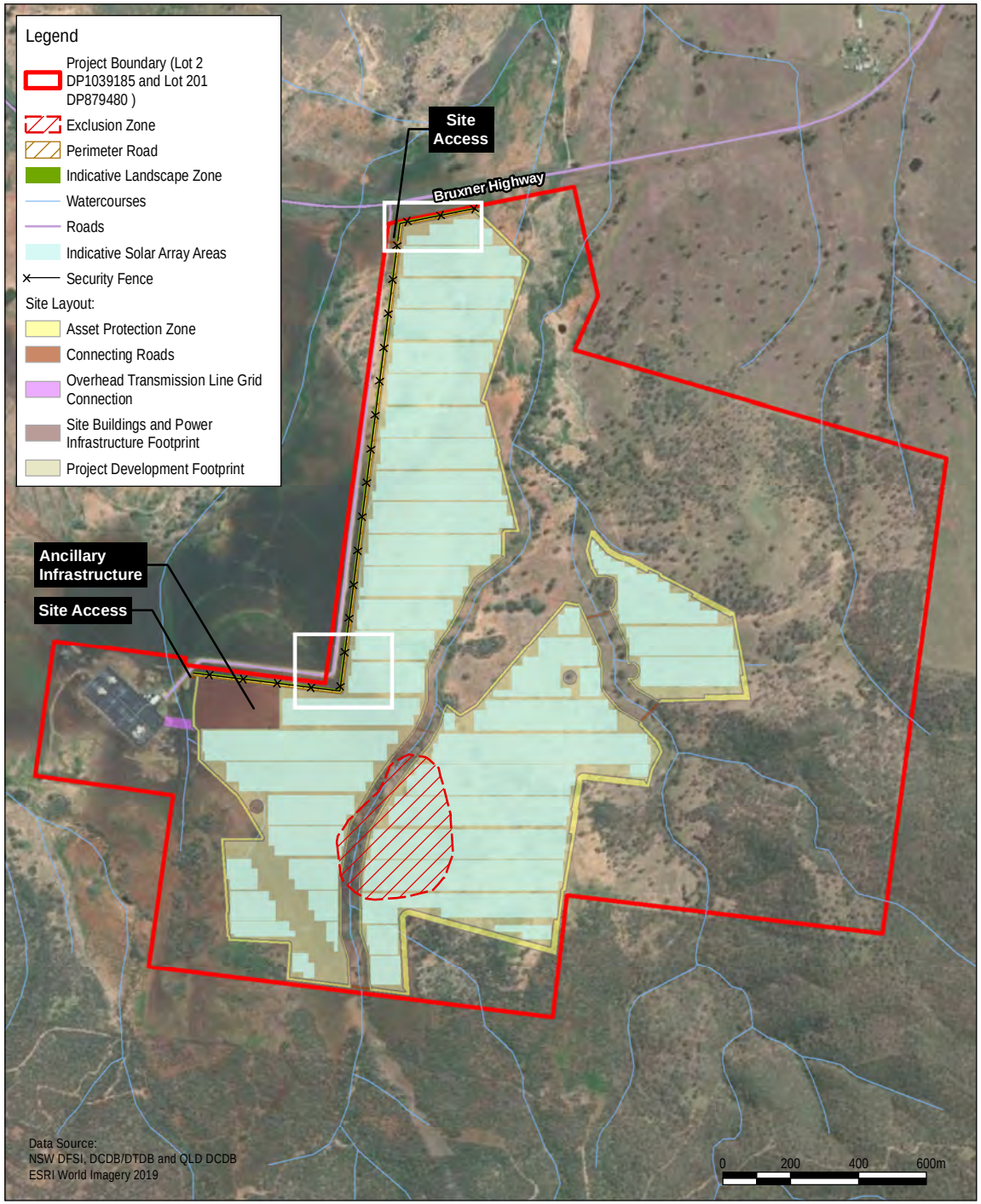
4.3 Native Vegetation Buffer

As shown in Figure 4-1, two 5m wide vegetation buffers will be established and maintained:

- along the northern boundary of the Solar Farm;
- along the north-western boundary on the eastern side of the TransGrid Dumaresq Substation access road; and
- along the western boundary on the southern side of the TransGrid Dumaresq Substation access road.

These vegetation buffers will act as a landscape screen to minimise views along the Bruxer Highway.

[3] An application for a Biodiversity Stewardship Agreement over the undeveloped portions of Lot 2 DP1039185 has been submitted to the Biodiversity Credit Taskforce. In the event that the Biodiversity Stewardship Agreement (BSA) is approved, all areas of retained vegetation will be managed in perpetuity in accordance with the BSA.



Landscape Plan

F4.1

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Coordinate System: GDA 1994 MGA Zone 56

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The vegetation buffers must:

- be planted prior to the commencement of construction;
- be comprised of species that are endemic to the area that will survive the climatic conditions and require minimal maintenance;
- be designed and maintained in accordance with RFS's *Planning for Bushfire Protection 2019* (or equivalent);
- minimise views from Bruxer Highway within 3 years of commencing operations; and
- be properly maintained with appropriate weed management.

4.4 Planting Strategy

In most cases, the aim of the plant screening is to fragment views of infrastructure and not eliminate them. Less dense vegetation plantings, rather than formal 'hedge' plantings, are considered more appropriate to the existing environment. These will provide a more natural structure to the vegetation, akin to small remnants. In order to achieve effective screening within 3 years, this Strategy relies on:

- Be located outside of and adjacent to perimeter fencing, allowing sufficient space for plants to mature;
- Planting would be undertaken by an experienced landscape contractor in consultation with local nurseries;
- Planting will be completed prior to commencing construction activities;
- Use of quality seasoned tube stock / long stem tube stock;
- Planting would occur in following sufficient rainfall; and
- Maintenance of the vegetation buffer during establishment and throughout the life cycle of the Project.

Regardless of whether you are planting advanced trees or tubestock, you need to plant into a soil with a full moisture profile during seasons when evaporation and plant transpiration are low. This will vary from region to region and depends on climate and seasonal rainfall. Within the Northern Tablelands it is best to plant in spring, summer and early autumn when there is minimal frost and optimum growing conditions. Planting in late autumn through winter can raise the issue of frost damage within the Northern Tablelands. To mitigate potential frost damage, plants should be 'hardened off' prior to planting.

In accordance with the objectives of *Planning for Bushfire Protection Guidelines 2019*, landscaping is to be designed and managed to minimise flame contact and radiant heat to infrastructure, and the potential for wind-driven embers to cause ignitions. The 5m wide vegetation buffer will be separated from the solar arrays by a 10m wide asset protection zone which includes the security fence and 6m wide perimeter road system.

In accordance with the *CSIRO Bushfire Best Practice Guide* (2023), and the *NSW RFS Standards for Asset Protection Zones*, if sited correctly, visual screen plantings and wind breaks can actually filter out a large proportion of the burning debris that are carried by the wind during a bushfire.

4.5 Plant Selection

To assist with species selection, it is critical to understand the vegetation types that have been recorded within the Project site and are suited to the local environment and soil type. This will ensure that the right species are chosen for the vegetation buffer to be effective as a visual screen.

Plantings will:

- Be native species that are a part of the existing plant community types in the area;
- Be dominated by shrubs and trees and will therefore be most effective screening views;
- Be mixed to produce a heterogeneous mix of plantings;
- Provide a successional planting strategy whereby:
  - Fast growing pioneer species are planted closest to receivers;
  - Slower growing species are planted in the second and third row; and
  - Pioneer species are replaced by the slower growing species either as they senesce or as the slower growing species become effective in screening infrastructure.
- Plantings won't be more than 5 m apart.

Species suitable for the project site will be determined based on four criterions, use locally native plants, consider climate ready species, focus on a diversity of species, consider site specific requirements, and source seeds locally. The plantings will be a heterogenous mix of species that are locally available at the time of planting.

The following species list has been derived from the native vegetation communities found within the Project site. This list is an example only and will be refined based on site conditions at the time of planting and in consultation with the landscape contractor and local native nurseries.

Based on the existing density of native grasses already located within these areas, the planting of additional groundcovers may not be required as part the landscape buffers, or alternative species may be selected. This will be confirmed at the time of planting.

Table 4-1 Planting List, example only

Large Trees	Medium Trees and Shrubs	Small Shrubs and Groundcovers
Density: 4 trees/100m^2	**Density: 15 trees/100m^2**	**Density: 4 trees/100m^2**
Angophora floribunda	*Acacia buxifolia*	*Lomandra sp.*
Eucalyptus albens	*Acacia leiocalyx*	*Poaceae sp.*
Eucalyptus caleyi subsp. caleyi	*Acacia neriifolia*	*Perennial Grasses*
Eucalyptus crebra	*Acacia sp.*	
Eucalyptus dealbata subsp. dealbata	*Callitris glaucophylla*	
Eucalyptus melanophloia	*Callitris endlicheri*	
Eucalyptus melliodora	*Dodonaea viscosa*	
Eucalyptus moluccana	*Leptospermum brevipes*	
Eucalyptus sp.	*Leptospermum polygalifolium*	

4.6 Planting Distances and Ratios

Plantings will be up to three rows deep and planted on the outside of the perimeter fence. The main design features are:

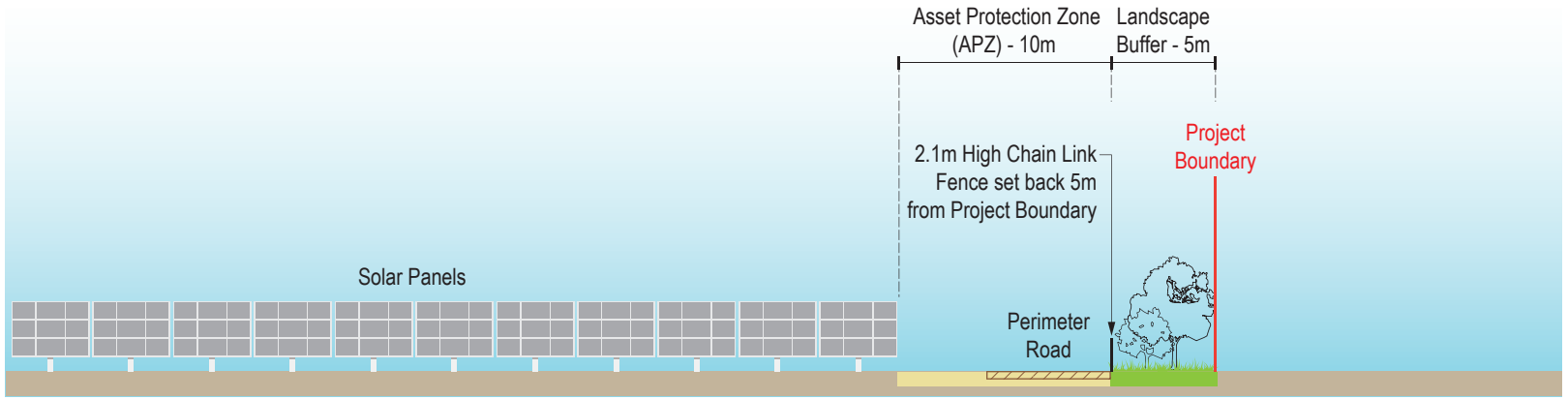
- Plant the outside rows with shrub species. This will provide uniform low hedge like foliage cover and reduce the moisture and nutrient robbing effect of large trees on adjacent pastures; and
- Trees are a minimum 5-8 m apart to allow canopy spreading and to reduce long-term competition.

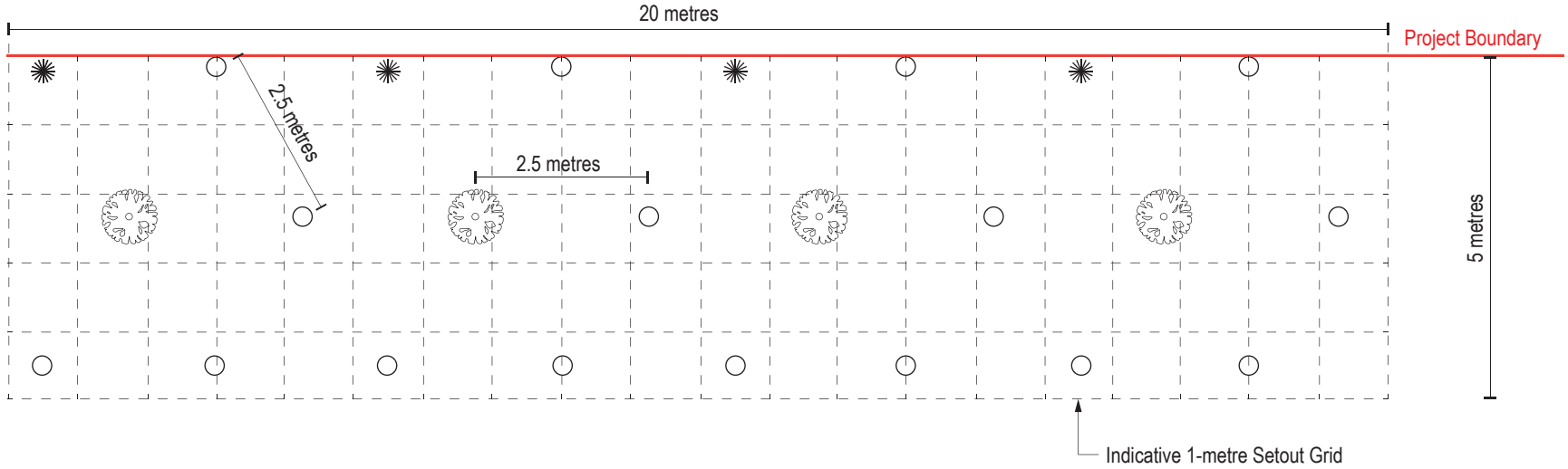
The site-specific conditions will be taken into consideration at the time of planting to ensure that the desired screening coverage is attained.

Table 4-2 Planting Density

Screen	Receiver	Dimensions	Area	Trees	Shrubs	Grasses
Northern Boundary	Bruxner Highway	230 x 5 m	0.12 ha	46	173	46
North-western Boundary	Bruxner Highway	1400 x 5 m	0.7 ha	280	1050	280
Western Boundary	Bruxner Highway	400 x 5 m	0.2 ha	80	300	80

Note: trees and shrubs are alternated in the centre row and the outside rows are offset against the centre rows. This ensures good foliage cover when looking across the vegetation buffer.





Legend

✳	Ground Covers	Plant Density: 4 Ground Covers/100m²
○	Shrubs	Plant Density: 15 Shrubs/100m²
✳	Trees	Plant Density: 4 Trees/100m²

Proposed Landscape Planting Ratios

F4.2

Drawing No.: 0657342s_BSF_LAND_I001_R0.ai			**Bonshaw Solar Farm**
Date:	24/05/2023	Drawing Size: A4	
Drawn by:	GC	Reviewed by: JW	Client: GAIA Australia
Drawing Not to Scale			This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.

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4.7 Planting Methods and Maintenance

Establishment

- The use of tube stock seedlings is recommended. Tube stocks should be planted in a hole slightly longer than the root mass.
- Increasing organic matter content with composted organics may improve fertility, assist nutrient retention and improve moisture holding capacity of this type of soil.
- Matting or mulching also helps to conserve soil moisture, improves water infiltration and soil structure, and moderates soil temperatures, thereby improving plant growth.
- Regular, small amounts of fertiliser additions can be beneficial over single large quantities.
- These soils will require frequent, low volume watering due to the dense subsoils.
- The use of tree guards is also recommended, as they protect against grazing by wildlife and pests such as rabbits, as well as providing protection from dying winds. Standard plastic sleeve guards held away from the seedling by three stakes would be utilised as far as practicable to protect new plantings.

Weed Control

- Weed control will be undertaken around plantings, as required to ensure they are not outcompeted by surrounding vegetation.
- Any weed control must have regard to the broader biodiversity objectives contained in the Biodiversity Management Plan, including vehicle and equipment hygiene.
- Monitoring of weed infestations will occur as part of the routine environmental inspections to determine effectiveness of management controls. The presence of any weeds and the necessary management actions will be noted on the Environmental Inspection Checklist.
- Pesticide application, if required, will only be administered by authorised personnel in accordance with chemical handling.

Maintenance and Watering

- Planting should occur before commencement of operations following sufficient rainfall. If sufficient rainfall has not occurred irrigation will be installed, or weekly hand watering is to be undertaken to achieve the consent condition of ‘effective screening in 3 years’.
- Irrigation may improve the success of the plantings, reducing replacement of mortalities. Where irrigation is used, temporary polypipe, moveable water tanks and moveable pumps will be used to irrigate the plantings during establishment. This will allow more frequent lower intensity watering.
- Weed control will be undertaken around plantings, as required to ensure they are not outcompeted by surrounding vegetation.
- Replace tree guards as required and remove once plants have outgrown them.
- Replace dead plants to achieve an overall 90% success rate for the life of the Project.

4.8 Works Schedule

This schedule of work guides the timing and outcomes of landscaping work. This table will be modified based on alterations to Project phases and climatic conditions. It is intended to be used as a guide only.

Project Phase	Landscaping Work	Indicative timing	Performance Target	Reporting Requirements	Responsibility
Preconstruction	Confirm plant species Source/order tube stock	6 months prior to planned landscaping works	Oder sufficient numbers as per required planting densities	Keep records of orders	EPC Environment Officer or Landscaping Contractor
	Ground preparation Control exotic pasture - herbicide application if required to prepare the ground for planting	10 days after rain 1 month prior to planting	Ground preparation suitable for planting	Record the type and timing of ground preparation and any weed control methods	Landscaping Contractor
	Planting of the landscape buffers	**Planting will occur prior to the commencement of construction.** AVOID planting in late Autumn and Winter due to risk of frosts.	Plant locations and spacing are aligned with the recommended planting ratios	Record climatic conditions leading up to and just after planting, when planting occurred, what methods were used and the number of individuals of each species planted.	Landscaping Contractor
Construction and Operation	Maintain plantings (watering, follow up weed control)	Weekly for first 12 months, then reduced as required	90% plant survival rate Visual screening from the Bruxner Highway within 3 years post construction	Ongoing monitoring and reporting required.	Project Environmental Management Representative

4.9 Monitoring Program

Monitor	Establishment (first 12 months after planting)			Three Years Post Construction			Operation of the Solar Farm to Decommissioning		
	Timing	Action	Responsibility	Timing	Action	Responsibility	Timing	Action	Responsibility
Watering	Weekly	Regular hand watering where <30mm of rain has occurred in that month, unless irrigated	EPC Environment Officer	Monthly	Water when rainfall less than 10mm/month	Project Environmental Management Representative	Monthly	Water when rainfall less than 10mm/month	Project Environmental Management Representative
Weeds	Monthly	Spot spray or manually remove weeds within 1.5 m of plantings	EPC Environment Officer	Quarterly	Spot spray or manually remove weeds within 1.5 m of plantings	Project Environmental Management Representative	Six Monthly	Spot spray or manually remove weeds within 1.5 m of plantings	Project Environmental Management Representative
Plant Survival	Monthly	Replacement planting to achieve a 90% success rate.	EPC Environment Officer	Quarterly	Replacement planting to achieve a 90% success rate.	Project Environmental Management Representative	Annually	Replacement planting to achieve a 90% success rate.	Project Environmental Management Representative
Visual Screening	Annually	Visual inspection and photographic monitoring from the Bruxner Highway	EPC Environment Officer	Annually	Visual inspection and photographic monitoring from the Bruxner Highway	Project Environmental Management Representative	Annually	Visual inspection and photographic monitoring from the Bruxner Highway	Project Environmental Management Representative
Reporting	Monthly	Report on success of watering, weeding, mortalities, replacement plantings and visual screening.	EPC Environment Officer	Quarterly	Report on success of watering, weeding, mortalities, replacement plantings and visual screening.	Project Environmental Management Representative	Annually	Report on success of watering, weeding, mortalities, replacement plantings and visual screening	Project Environmental Management Representative

5. INCIDENT RESPONSE AND ADAPTIVE MANAGEMENT MEASURES

Maintenance for plantings at the Project Site are likely to require follow-up activities and maintenance, including fence maintenance, weed control, control of exotic animals and over-abundant native herbivores.

Follow-up watering should not be necessary if ground preparation and soil moisture at planting was correct. Use personal judgement, as watering often promotes weed growth and may not be necessary for native plants. If sufficient rainfall has not occurred irrigation will be installed, or weekly hand watering is to be undertaken to achieve the consent condition of ‘effective screening in 3 years’.

Monitoring utilises performance measures that adhere to the SMART principles (specific, measurable, achievable, realistic, timebound). It is important to set a quantifiable target for each management action, for example, survival rate of 90% in 3 years etc. Record keeping for the monitoring can include the following:

- Planting - a record of the type and timing of ground preparation, weed control methods, climatic conditions leading up to and just after planting, when planting occurred, what methods were used and the number of individuals of each species planted;
- Monitoring - undertake survivorship counts for each species. The height of the best performing species should be checked monthly for the first 12 months after planting and then quarterly for the first three years after planting. Keep a record of the date and type of any maintenance such as weeding, rabbit control, or watering of seedlings and record any replacement plantings; and
- Take Photos - plantings can change very quickly and photos can be a useful way to illustrate changes that occur with revegetation efforts. Set up permanent photo points and take photos at regular intervals to be submitted for reporting.

Monitoring and reporting commitments are summarised in Section 6.3. Any recommendations or changes to the monitoring should be acted upon within a reasonable timeframe. All monitoring actions/inspections will be recorded by the EPC Environment Officer (during the Construction phase) and the Project Environmental Management Representative (during the Operational phase) and be utilised to meet the projects reporting requirements as outlined within the EMS.

6. AUDIT AND REVIEW

6.1 Auditing

The EPC Project Manager (during construction) and the Quality & Environmental Manager (during operations) will maintain a compliance register for the Project to ensure audits and reporting requirements are met within scope and within set timeframes.

Audits (both internal and external) will be undertaken to assess the effectiveness of environmental controls, compliance with this LVP and compliance with other relevant approvals, licenses and guidelines including:

- Independent Environmental Audit (IEA) within 3 months from the commencement of construction. This will be prepared in accordance with the relevant *Independent Audit Post Approval requirements* (DPE 2020). A copy of the report will be submitted to DPE and any other NSW government agency that requests it within 3 months of commencement of the audit;
- Corrective measures or actions to improve the environmental performance of the Project recommended by auditors will be reviewed by the senior management team and incorporated into strategies, plans, or programmes required under the Development Consent; and
- The recommendation of the IEA must be implemented to the satisfaction of the Secretary.

Additional audit requirements are detailed in the EMS.

6.2 Review and Improvement

This LVP will be reviewed within 3 months of commencing construction and after 26 weeks thereafter. Continuous improvement of this LVP will be achieved by the ongoing evaluation of performance against the LVP environmental policies, objectives and targets to identify opportunities for improvement.

The continuous improvement process will be designed to:

a. Identify areas of opportunity for improvement of environmental management and performance;

b. Determine the cause or causes of non-conformances and deficiencies;

c. Develop and implement a plan of corrective and preventative action to address any non-conformances and deficiencies;

d. Verify the effectiveness of the corrective and preventative actions;

e. Document any changes in procedures resulting from process improvement; and

f. Make comparisons with objectives and targets.

6.3 Monitoring and Reporting

Monitoring will be undertaken to ensure the landscaping and vegetation management measures is achieving the required outcomes. This allows for an adaptive management approach and will enable the identification of issues and any remedial actions or adjustments to the LVP.

APPENDIX A EVIDENCE OF CONSULTATION

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