180 Lonsdale Street, Level 9
Melbourne, Victoria 3000
Australia

Your ref: PA2402864
Our ref: 12579414

01 July 2024

Divyaa Sundaravadivel
Planner, Development Approvals and Design
Department of Transport and Planning
GPO Box 2392
Melbourne VIC 3001

Response to Department of Transport – Request for further information – Application for a planning permit PA2402864

Dear Divyaa,

Introduction

I refer to your Request for Further Information (RFI) regarding the above mentioned application for a planning permit for a solar energy facility at 730 Dhurringile Road, Tatura.

GHD Pty Ltd (GHD) continues to act on behalf of the applicant, Goulburn Valley Water (GVW). This letter has been prepared by GHD in response to this request from the Department of Transport and Planning (DTP). We look forward to engaging with DTP to satisfy the requests for further information as soon as possible.

The following attachments are included in this letter:

– Attachment 1: Ecology Report
– Attachment 2: Native Vegetation Removal Report (NVRR)
– Attachment 3: Development Plans
– Attachment 4: Noise Assessment

Response to the request for further information

The matters outlined in your letter have been addressed below:

1. **Amended Application Form and Additional Titles (if applicable)**

   It appears that the proposed power lines are located outside of the subject site. If so, you are required to provide the current title(s) of that relevant parcel (searched within the last 30 days) and an amended application form to include additional land title information.

   The works area for the proposal is solely located in the south-east corner of the land shown in the title provided. The Project will rely on existing overhead electrical lines and poles, the point of connection is located within the land title that the solar farm is proposed to be situated in, therefore no additional title or amended application form is required for the Project.

2. **Amended Set of Plans and Elevations**

   Provide an updated set of plans and elevations to scale to show the following:

   a. **All existing native vegetation proposed to be retained within 15 metres of works and removed clearly shown in green (retain) and red (remove) hatch on the plans.**

      See updated drawing number 2 in Attachment 3.

   b. **A plan showing the proposed development with the LSIO impacting the site, including setbacks of proposed infrastructure from the overlay boundary.**

      Shown at Figure 1, the proposed works will not fall within the LSIO.

      See updated drawing number 3 in Attachment 3.

   c. **Setbacks from proposed building and ancillary infrastructure to title boundaries.**
      See updated drawing number 2 in Attachment 3.

   d. **Elevations of the proposed:**

      Powerline to connect the facility to the grid distribution network, including the location of any proposed powerlines.

      No proposed overhead powerlines, the solar farm utilises buried 22kV cable to the point of connection on an existing Powercor owned power pole.

      – **All ancillary infrastructure (inverters, switchroom, transformer etc.).**

        See updated drawing number 5 in Attachment 3.

      – **Admin building.**

        See updated drawing number 5 in Attachment 3.

   e. **Dimensions of the proposed admin building, switchroom etc.**

      See updated drawing number 5 in Attachment 3.

   f. **Detail the maximum voltages of any existing and proposed powerlines on all plans.**

      See updated drawing number 7 in Attachment 3.

   g. **Title details of the lot comprising the site.**

      See updated drawing number 2 in Attachment 3.

   h. **Dwellings and other sensitive land uses within 1km from the site, with labels to match the numbering in the Glare Report.**

      See updated drawing number 3 in Attachment 3.

3. **Updated Planning Report**

   a. **Clarify if the proposal includes a utility installation (battery energy storage system (BESS)) (refer comments below).**

      The planning report incorrectly states that the Project will include the installation of a battery energy storage system (BESS). We can confirm that the Project does not include the installation of a BESS.

   b. **Clarify the details of the selected panel options and explain how the panels will be tracked.**

      The proposed panels will be a 'Fixed tilt or Single Axis Tracking system'. This has been discussed in section 2.3 - proposed works of the submitted planning report.

      A single axis tracking system means that the panels will track the sun east to west as it travels through the sky and a fixed tilt system is where the panels are mounted at a fixed angle and don't move. Note that the Glint and Glare Assessment considers the worst-case glint and glare for the proposed system.

   c. **Clarify if and why the proposed works, including any earthworks, triggers a permit under Clause 44.04 (LSIO) under Greater Shepperton Planning Scheme.**

      The proposed works are not located within the LSIO. The LSIO covers the northern section of the land parcel, however the Project is located on the southern portion of the site, outside the LSIO. Therefore, the Project does not trigger a permit under the LSIO.

      Please refer to Figure 1 for the exact positioning of the solar farm in relation to the LSIO.

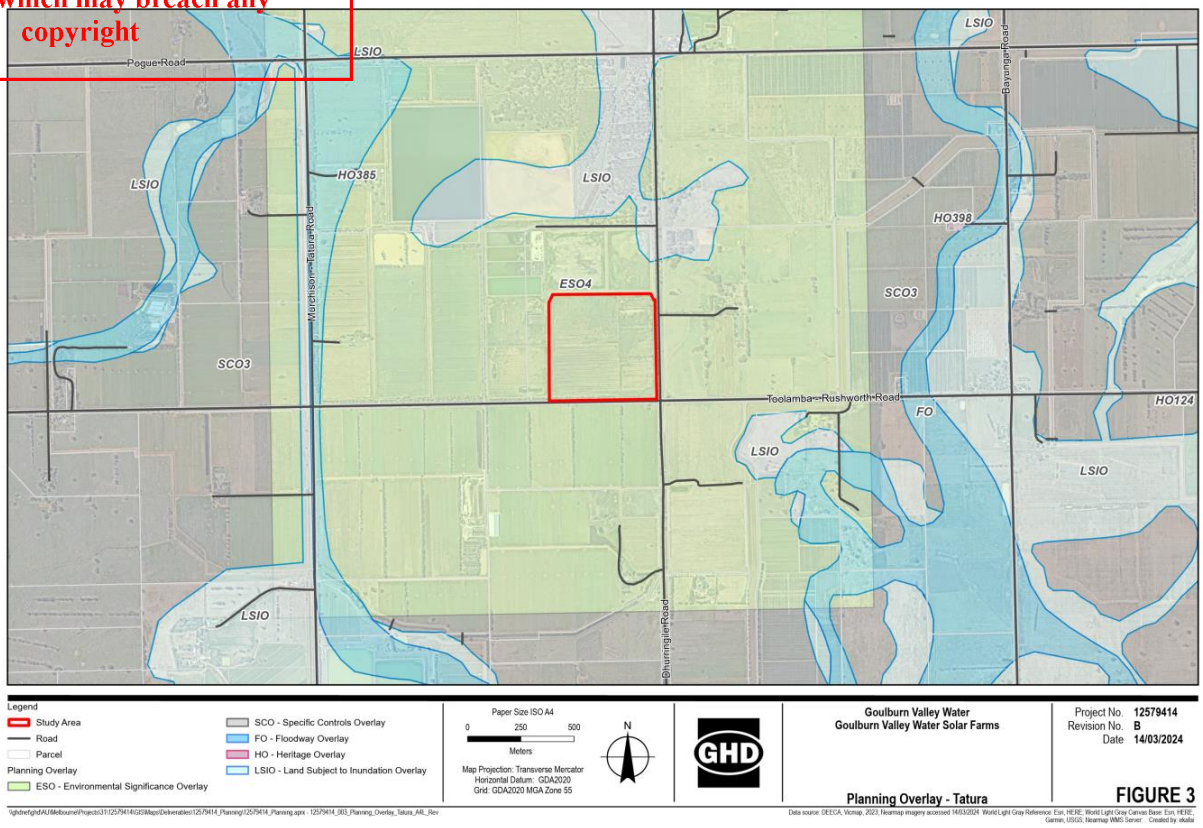

Figure 1 LSIO

d. Demonstrate if the Goulburn-Murray Water: Connections Project and Water Efficiency Project Incorporated Document, November 2021 is relevant to the application.

It is our understanding that the '*Goulburn-Murray Water: Connections Project and Water Efficiency Project Incorporated Document, November 2021*' is not relevant to the application. This document applies to the *use and development of land undertaken by or on behalf of Goulburn – Murray Water for the purpose of the following Goulburn – Murray Water Projects:*

Goulburn – Murray Water Connections Project

Goulburn – Murray Water – Water Efficiency Project.

Works undertaken by Goulburn – Murray Water and their contractors on behalf of private landowners as part of both projects, are subject to these controls.

However, the control does not apply to connection works and on-far, works undertaken by private landowners, or their agents or contractors, whether or not undertaken by agreement with Goulburn – Murray Water.

These works are not being undertaken by Goulburn – Murray Water, they are being undertaken by Goulburn Valley Water. Furthermore, Goulburn Valley Water own the land therefore excluding them from this provision.

e. Confirm if additional vegetation, including native vegetation, is being impacted/removed to improve sight lines as recommended in the Traffic Impact Assessment.

Note: Ensure all relevant documentation is updated to reflect any additional vegetation impacts/removal under Clauses 42.01 (ESO) and 52.17 (Native Vegetation), if applicable.

Additional vegetation, including native vegetation, will be impacted to improve sight lines as recommended in the Traffic Impact Assessment. Previously, impacts to native vegetation associated with the Project would include the removal of 0.082 hectares of EVC 803 Plain Woodlands. Now the Project will require the removal of 0.150 ha of native vegetation, all of which is still comprised of EVC 803 Plains Woodlands. The Project will still be assessed under the 'intermediate' assessment pathway so will not change the response to the application requirements and decision guidelines under clause 52.17. Further, as the application includes the removal of vegetation an amendment to the application is not required.

The final version of the Native Vegetation Removal Report is provided at Attachment 2.

4. **Final Version of Native Vegetation Removal Report (NVRR)**

   Please provide the final version of the NVRR without the scenario test. The submitted NVRR is a scenario test, which will not be accepted.

   The final version of the Native Vegetation Removal Report is provided at Attachment 2. It has also been updated to reflect the additional vegetation impacts.

5. **Updated Glare Assessment to include:**

   a. **Potential glint on aviation infrastructure including any air traffic control tower or runway approach path close to the proposed facility.**
   Glint is typically defined as a momentary flash of bright light, often caused by a reflection off a moving source. A typical example of glint is a momentary solar reflection from a moving car or wind turbine. Glare is defined as a continuous source of bright light. Glare is generally associated with stationary objects or objects with very limited movement, which, due to the slow relative movement of the sun, reflect sunlight for a longer duration.
   For solar farms, the hazard is glare and not glint because of arrays large area and relatively stationary nature hence glint impact of a solar farm is close to zero for observers (ACTC, Approach paths etc). A 2 - Mile approach path is modelled within the tool for Glare assessment and no impact is found. Additionally, there is no Air Traffic Control Tower at the Shepparton Airport.

   b. **Dwellings and other sensitive land uses must be identified in Table 6 under section 4.4.**

   All dwellings within the vicinity of the solar farm are identified in the report. Any sensitive use shown as OP01, OP05, OP06, OP07 and OP08 being closest to the proposed farm (within 1 km) are within the report.

   c. **Potential glint impacts on nearby dwellings and road users (within 1km).**

   Glint is typically defined as a momentary flash of bright light, often caused by a reflection off a moving source. A typical example of glint is a momentary solar reflection from a moving car or wind turbine. Glare is defined as a continuous source of bright light. Glare is generally associated with stationary objects or objects with very limited movement, which, due to the slow relative movement of the sun, reflect sunlight for a longer duration. For solar farms, the hazard is glare and not glint because of arrays large area and relatively stationary nature. Hence the glint impact for the solar farm is close to zero for observers including nearby dwellings and road users.

   d. **Explanation of any 'assumptions' which have resulted in predicted glint and glare impacts, for example:**

   – **Does the assessment consider the land's topography, and existing or proposed vegetation?**

     ForgeSolar is the industry leading tool for Solar Glare assessment, and it will predict the worst case glare impact. It will consider the lands topology and model glare impact without any vegetation or screening as this will provide the worst-case scenario and impact of proposed solar farm. The existing vegetation and structures will only reduce the glare detected by an observer.

   – **Does the assessment take into consideration the panels' maximum tilt angle?**

     Yes. ForgeSolar will consider solar arrays maximum tilt angle and rotation. Please refer to the Appendix C Component Data section of the Glare Assessment for details.

– **What is the proposed tracking behaviour, and how will this be ensured to mitigate any potential glint/glare impacts? For example, at what time/s of day do the panels enter full tilt and then revert to flat (0 degrees) tilt? DTP understand that if panels sit flat early in the morning or late in the day (whilst the sun is rising/setting), there are typically potential glint/glare impacts at this time of day, particularly to road users and nearby dwellings.**

  Modelled SAT will track sun from East -West with a maximum tilt angle of 60degrees to represent worst case impacts. ForgeSolar tool is used for the assessment, and it is assumed that trackers will be resting at an angle of 0 degrees hence the model represent the worst case scenario this is also provided as an input to the ForgeSolar modelling.

  Please refer to the Appendix C - Component Data section of the Glare Assessment for details.

6. **Noise Impact Assessment**

A Noise Impact Assessment, prepared by a suitably qualified professional, to include.

A Noise Impact Assessment has been provided at Attachment 4.

a. **Identify all sensitive receptors within 1km.**

   Please see Figure 1 of Attachment 4: Noise Impact Assessment, which shows the sensitive receptors within 1.5 km.

b. **Noise modelling to consider the noise output from the entire solar farm, including any inverters.**

   Please see section 4 of Attachment 4: Noise Impact Assessment for details of the noise modelling.

c. **Assessment against the EPA's Publication 1826 Noise limit and assessment protocol for the control of noise from commercial, industrial and trade premises and entertainment venues (the Noise Protocol) and confirm whether the proposal complies with the noise limits in the publication.**

   Please see section 3.2.2 of Attachment 4: Noise Impact Assessment for an assessment against the Noise Protocol.

d. **Any recommendations and mitigation measures to reduce the noise emitted from the proposal to meet the Noise Protocol. These measures should be shown on the development plans and elevations (as appropriate).**

   Please see section 6 of Attachment 4: Noise Impact Assessment. No mitigation measures are required.

General Comments

1. **It is unclear if the proposal includes a BESS. While the planning report on page 26 references the inclusion of a BESS, other documents such as the site plan and supplementary reports do not detail the BESS. Please note that if the proposal includes a BESS, you must update all documentation, including plans, and lodge a section 50 amendment.**

   The planning report incorrectly states that the Project will include the installation of a battery energy storage system (BESS). We can confirm that the Project does not include the installation of a BESS.

2. **Please ensure that all application documents are consistent, and that any updates/amendments made to the plans in response to the above are consistent with the relevant assessments (e.g. ensure the infrastructure assessed in the noise report is the same as that which is shown on the plans; proposed landscaping is consistent with photomontages; etc.).**

   We have updated all the application details to ensure that they are consistent with amendments made to the plans and relevant assessments.

Conclusion

We trust this response will satisfy all requests for further information and look forward to your approval of planning application PA2402864. We hope that this application is proceeding under clause 53.22 – Significant Economic Development. Should you have any further queries in relation to this matter please do not hesitate to contact me at the information below.

Regards

Kelly Nelson
Senior Planner – Planning and Approvals

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Kelly.Nelson@ghd.com

Attachments:

Attachment 1 – Ecology Report

Attachment 2 – Native Vegetation Removal Report (NVRR)

Attachment 3 – Development Plans

Attachment 4 – Noise Assessment

Attachments

Attachment 1

Ecology Report

Tatura Solar Farm

Ecology Assessment

Goulburn Valley Water

14 June 2024

→ The Power of Commitment

Project name		Goulburn Valley Water Solar Farms					
Document title		Tatura Solar Farm | Ecology Assessment					
Project number		12579414					
File name		12579414_RPT_01_Tatura Solar Farm_Ecology Assessment.docx					
Status Code	**Revision**	**Author**	**Reviewer**		**Approved for issue**		
			Name	**Signature**	**Name**	**Signature**	**Date**
S4	0	R Khot C Grabham	S Bidwell R Retallick		M Goode		08/03/24
S4	1	R Khot C Grabham	S Bidwell R Retallick		M Goode		19/06/24

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1. Introduction

GHD Pty Ltd has been engaged by Goulburn Valley Water (GVW) to undertake an environmental and planning assessment to determine the planning requirements involved with delivering a solar farm. GVW aspire to reduce their carbon emissions through the development of a 5 megawatt (mW) solar farm at the existing Tatura Water Management Facility (WMF) site located on Dhurringile Road, Tatura, VIC, 3616. The national electricity transmission network will receive all power that is generated by the solar facility on the GVW owned site.

The proposed works involve the installation of a solar array within a project area of 17.1 hectares (ha). Additional works associated with this project include the installation of the solar array, unsealed access roads, Operations and Maintenance (O&M) building (including supporting) utilities, AC electrical infrastructure, stormwater, fences, and gates.

1.1 Purpose of this report

This report summarises the ecological values present within the proposed project site and adjacent road reserves and provides recommendations to avoid and minimise impacts on native vegetation and fauna habitat during construction and operation of the project.

The footprint for the project has now been determined, and this report outlines the proposed impacts on ecological values identified within the study site and details the environmental legislative requirements for the project.

1.2 Scope of work

The ecological assessment for the project involved a desktop and field investigation including:

- Mapping native vegetation as per current Department of Energy, Environment, and Climate Change (DEECA) guidelines (DELWP 2017) including patches of native vegetation, large patch trees and/or scattered trees
- Undertaking a vegetation quality assessment (VQA) of all native vegetation patches
- Mapping and describing habitat values
- Mapping and describing the extent of noxious and high-risk environmental weeds
- Assessing proposed impacts to ecological values
- Preparing a flora and fauna report and documenting the results of the ecological assessment. This report includes:
  - A description of the vegetation, flora, and fauna of the study site
  - Assessment and confirmation of the extent of impacts on native vegetation and fauna habitat
  - Determination of offset requirements for the proposed works under the *Planning and Environment Act 1987* for the removal of native vegetation (Clause 52.17)
  - Summary of the potential ecological legislative implications for the project
  - Recommendations for project moving forward including additional steps to avoid and minimise impacts on native vegetation.

1.3 Limitations

This report: has been prepared by GHD for Goulburn Valley Water and may only be used and relied on by Goulburn Valley Water for the purpose agreed between GHD and Goulburn Valley Water as set out in section 1.2 of this report.

GHD otherwise disclaims responsibility to any person other than Goulburn Valley Water arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations stated in this section and also set out in the report.

The field assessment was limited to an ecological assessment of vascular plant species (ferns, conifers, and flowering plants) and terrestrial vertebrate fauna. This assessment did not include non-vascular flora (e.g., mosses, liverworts, lichens), fungi, or terrestrial invertebrates, except where listed threatened species are known or are suspected to occur; marine fauna (including marine mammals, birds, reptiles, or invertebrates); aquatic fauna in the field assessment or targeted surveys for threatened flora or fauna.

The field investigation was undertaken during early summer, which is not an optimal time of year for conducting botanical assessments, as many native flora species are not flowering or readily identifiable. Additional native species may be recorded at the site at other times of the year. Therefore, it is considered possible that threatened flora may be present, but were not detected during the survey because of the timing of the survey (e.g., threatened species that emerge in early summer would not have been detected). This limitation is somewhat overcome by consideration of records from the Victorian Biodiversity Atlas (VBA) databases, which span all seasons and many years.

Field data was recorded using Collector for ArcGIS mapping/Field Maps application to record site information. This mapping tool was accurate to within ten metres. Maps presented in this report displaying site information should not be relied on for the detailed design during the construction process.

The opinions, conclusions and any recommendations in this report are based on conditions encountered, observations made and information reviewed up to the date of preparation of the report. As GHD was only present on a specific date and certain time periods, this report is only indicative (and not definitive) of flora and fauna present on the site. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

GHD has prepared this report on the basis of information provided by Goulburn Valley Water and others (including Government authorities). GHD has not independently verified or checked this information beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

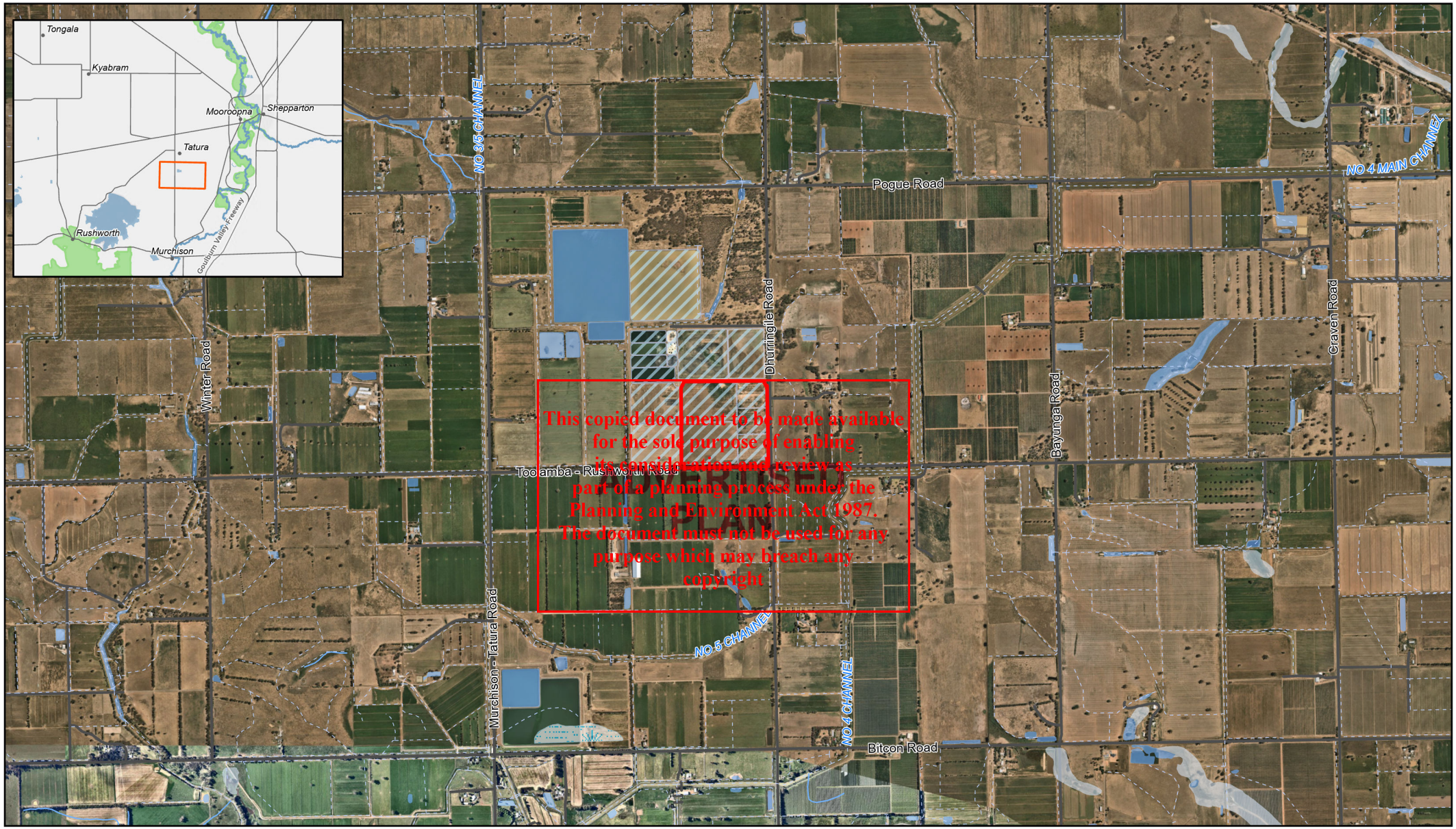
The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD and described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

1.4 Study site and study area

The site is located within the existing Tatura Wastewater Management Facility (WMF) and is positioned on the corner parcel abutting both Toolamba-Rushworth Road and Dhurringile Road approximately six kilometers (km) south of Tatura town centre (Figure 1 Study site location). The study site consists of the parcel of land within the existing WMF and the adjoining road reserves along the eastern and southern boundaries (Figure 1). The site was previously part of the pondage network of the Tatura WMF. However, it is not currently in use, and has instead been used as a wheat paddock for several years.

The study area refers to a broader region (approximately 10 km radius) surrounding the study site. This description covers a much broader area than the expected zone of impact, and the additional information captured has been used to provide context to assess the significance of ecological features identified within the study site. The broader study area was only assessed at a desktop level.

According to DEECA's NatureKit Map, the study site occurs within the Victorian Riverina (VRiv), Greater City of Shepparton and the Goulburn Broken Catchment Management Authority (GBCMA) areas.



Legend

- Study Area
- Road
- Watercourse - Stream
- Watercourse - Drain/Channel/ Other
- Flat
- Pondage
- Lake
- Swamp

Paper Size ISO A4

0 250 500 750 1,000

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 55

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Goulburn Valley Water
Goulburn Valley Water Solar Farms

Project No. **12579414**
Revision No. **A**
Date **1/02/2024**

Locality Map - Tatura

FIGURE 1

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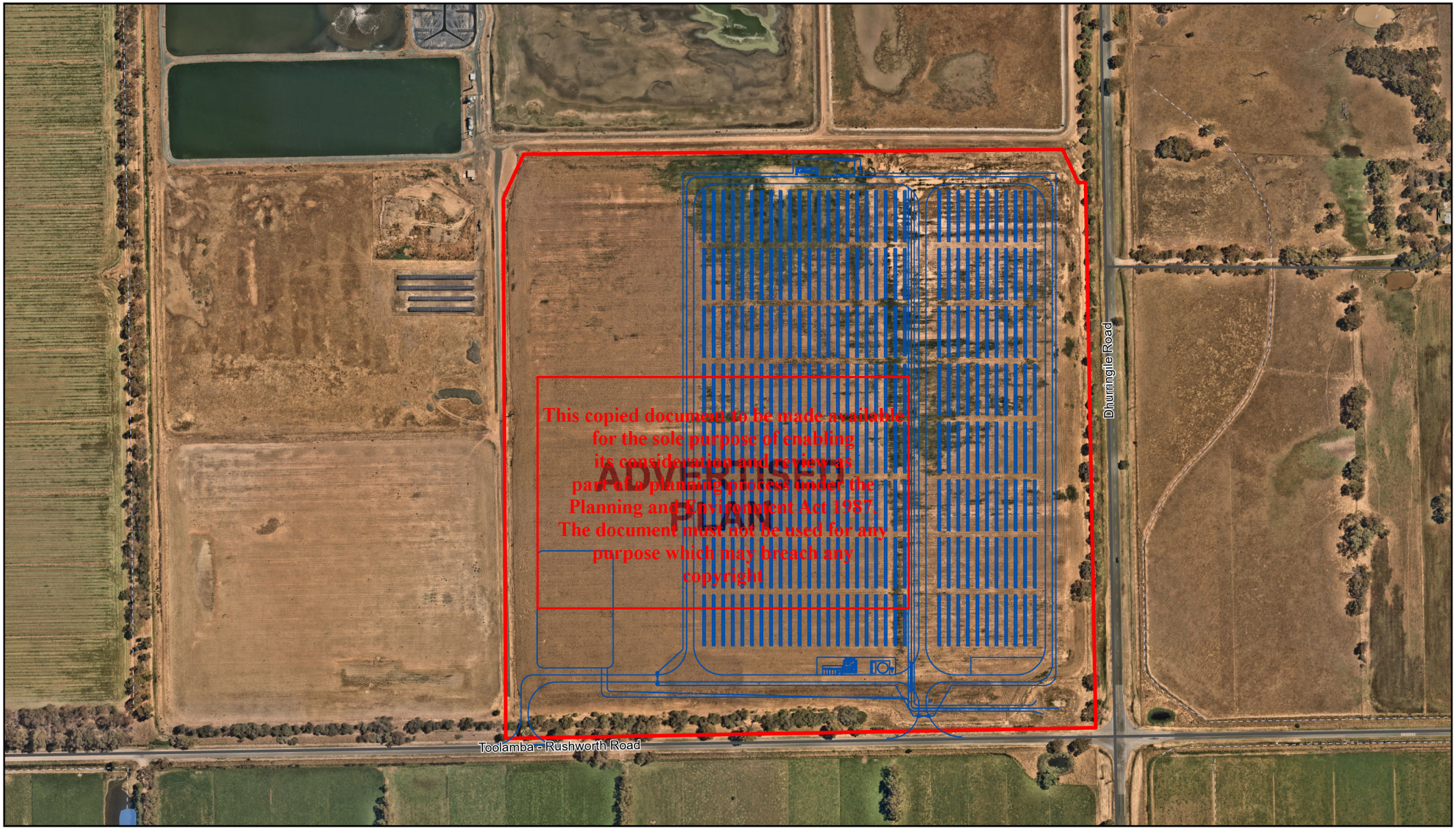
Data source: DEECA, Vicmap, 2023; Nearmap imagery accessed 1/02/2024 World Light Gray Reference: Esri, HERE; World Light Gray Canvas Base: Esri, HERE, Garmin, USGS; Nearmap WMS Server: . Created by: kgardner



Legend

- Proposed Works Design Layout
- Study Area
- Watercourse - Drain/Chan
- Other
- Lake
- Road

Paper Size ISO A4

0 50 100 150

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 55

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GHD

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Goulburn Valley Water Solar Farms

Proposed Works - Tatura

Project No. **12579414**
Revision No. **A**
Date **1/02/2024**

FIGURE 2

N:\AU\Melbourne\Projects\31\12579414\GIS\Maps\Deliverables\12579414_Ecology\12579414_Ecology.aprx - 12579414_002_ProposedWorks_Tatura_A4L_Rev

Data source: DEECA, Vicmap, 2023; Nearmap imagery accessed 1/02/2024 World Light Gray Reference: Esri, HERE; World Light Gray Canvas Base: Esri, HERE, Garmin, USGS; Nearmap WMS Server: . Created by: kgardner

2. Methods

2.1 Desktop assessment

A desktop assessment of ecological values known or predicted to be present within the study site and study area was undertaken. That desktop information was used for this report, and included reviews of the following government databases and spatial datasets:

- NatureKit database[1] (maintained by the Department of Energy, Environment and Climate Change (DEECA))
- The Victorian Biodiversity Atlas (VBA) [2] database for flora and fauna species (maintained by DEECA) recorded within a 10-km radius of the study site
- Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Protected Matters Search Tool (PMST) (maintained by the Department of Climate Change, Energy, the Environment and Water (DCCEEW)[3] (10 km buffer of the study site)
- GIS mapping by DEECA, e.g., mapping of extant and pre-European Ecological Vegetation Classes (EVCs), Location Risk maps, Native Vegetation Extent maps and current wetlands
- Birdata database (maintained by BirdLife Australia)
- Aerial imagery

2.2 Field assessment

The terrestrial flora and fauna field assessment was undertaken on 14 December 2023 by GHD ecologists. All botanical fieldwork was undertaken in accordance with GHD's Permit to take Protected Flora under the FFG Act (permit no. 10009910). All field investigations for fauna were undertaken in accordance with GHD's Wildlife Act Research Permit (permit no. 10010378) and GHD's Animal Ethics Committee requirements.

2.2.1 Flora and vegetation

The botanical assessment involved an appraisal of native and non-native vegetation and scattered trees, identified from aerial imagery and on the ground. The assessment included:

- Mapping the extent and condition of native vegetation present within the study site and in the road reserves adjacent to the site, including:
  - Defining and mapping EVCs
  - Mapping and measuring Patch Trees that meet the benchmark for Large Trees
  - Mapping and measuring remnant Scattered Trees and assigning a size class (small or large as per the relevant EVC Benchmark)
  - Recording the location of threatened or protected flora species, where encountered
  - Recording the location of listed ecological communities
- Collecting an inventory of incidental observations of native and non-native flora species encountered during the field assessment, together with their conservation status and origin
- Identifying the presence of significant weed species including those declared under relevant state and national legislation, policy or strategy, e.g., *Catchment and Land Protection Act 1994* (CaLP Act) and National Weeds Strategy

[1] **http://maps.biodiversity.vic.gov.au/viewer/?viewer=NatureKit** (accessed September 2023)
[2] **https://www.environment.vic.gov.au/biodiversity/victorian-biodiversity-atlas** (accessed September 2023)
[3] **http://www.environment.gov.au/webgis-framework/apps/pmst/pmst.jsf** (accessed September 2023)

2.2.2 Fauna

The field assessment was used to undertake the following:

- Collecting an inventory of incidental observations of native and non-native fauna species encountered during the field assessment, together with their conservation status and origin.
- Undertaking a fauna habitat assessment across the study site, including:
  - An assessment of habitats for native fauna and condition of those habitats
  - Determining the likelihood of occurrence of threatened fauna at the site (based on the presence and condition of suitable habitat)

2.3 Nomenclature, terminology and conservation status

2.3.1 Flora

Unless otherwise noted, common and scientific names for flora follow the VBA (Version 3.2.6).

Conservation status was determined in accordance with the Commonwealth EPBC Act and the Victorian *Flora and Fauna Guarantee* (FFG) *Act 1988*.

Native vegetation is defined in the Victoria Planning Provisions as 'plants that are indigenous to Victoria, including trees, shrubs, herbs and grasses. For the purpose of the Guidelines for the removal, destruction or lopping of native vegetation (DELWP 2017b), native vegetation is classified into two categories, a Patch of vegetation or a Scattered Tree:

- A Patch of native vegetation is either:
  - An area of native vegetation where at least 25% of the total perennial understorey plant cover is native
  - Any area with three or more native canopy trees where the drip line of each tree touches the drip line of at least one other tree, forming a continuous canopy
  - Any mapped wetland included in the Current wetlands map (available on DELWP online mapping tools)
- A Scattered tree is a native canopy tree that does not form part of a patch
- Other forms of vegetation include:
  - Planted native vegetation, i.e., includes non-indigenous native species and areas of revegetation)
  - Non-native vegetation, i.e., vegetation that comprises entirely introduced flora

2.3.2 Vegetation communities

Native vegetation in Victoria is mapped in units known as Ecological Vegetation Classes (EVCs) (DELWP 2018b). EVCs are described according to a combination of floristic, life form and ecological characteristics, and through an inferred fidelity to particular environmental attributes.

Each EVC occurs under a common regime of ecological processes within a given biogeographic range and may contain multiple floristic communities.

Other vegetation types that may occur in Victoria include vegetation communities listed as threatened under the EPBC Act and/or the FFG Act. These have separate vegetation classification systems, each of which is also separate to the EVC classification system. As such, any single patch of native vegetation occurring within the subject site (or anywhere in Victoria) will be classifiable as a particular EVC and may also be separately classified as a different threatened ecological community under the EPBC Act, and/or as another vegetation community under the FFG Act.

2.3.3 Fauna species and fauna communities

Unless otherwise noted, common and scientific names for fauna follow the VBA database (Version 3.2.6). Fauna conservation significance was determined in accordance with the Victorian FFG Act and the Commonwealth EPBC Act.

The EPBC Act and the FFG Act list a number of threatened fauna communities, at a national or state scale, respectively. Fauna communities known or potentially occurring within the study area are only considered if they are listed under one or more of these Acts.

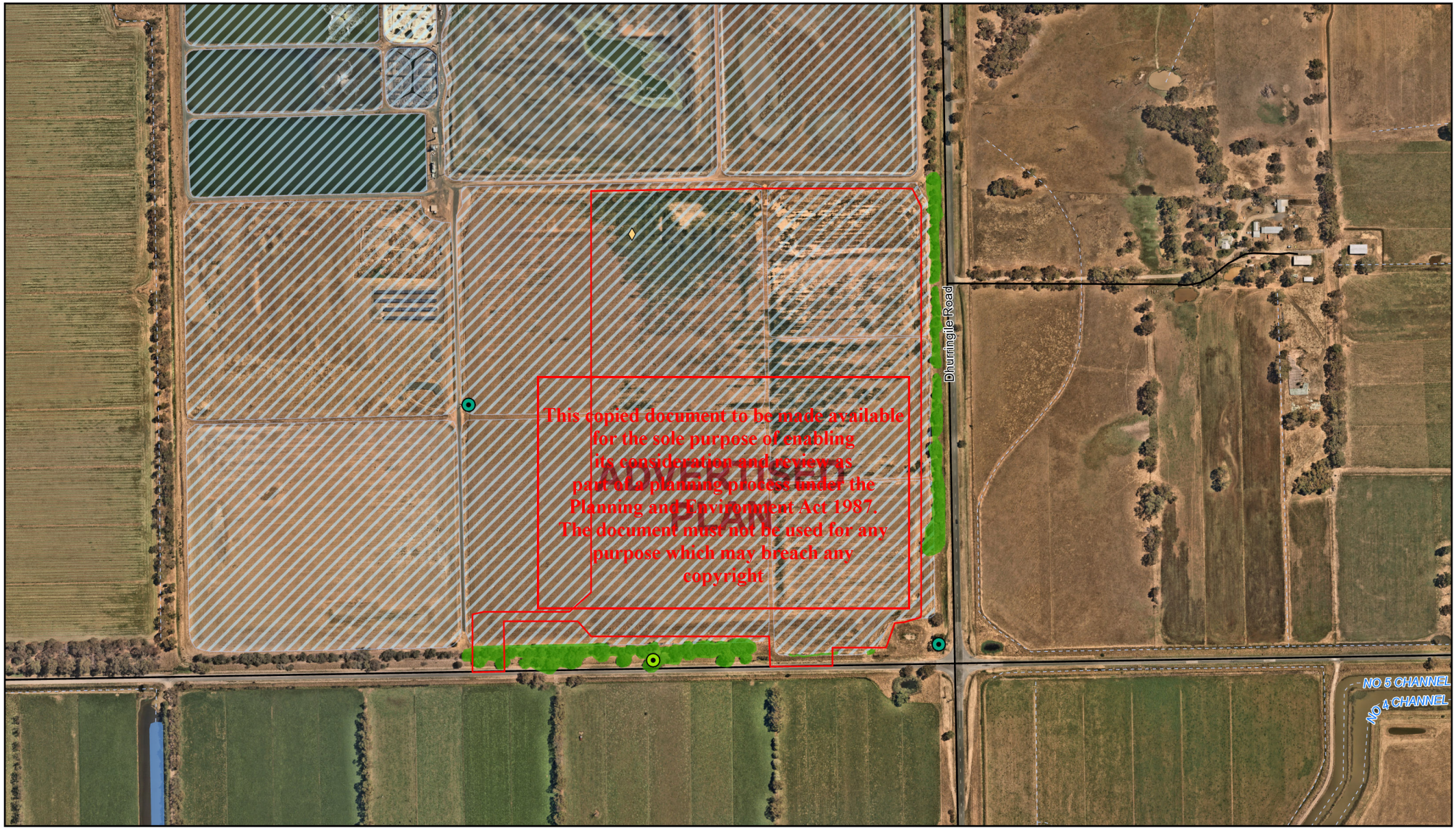
3. Results

3.1 Study site overview

The study site consists of the parcel of land within the existing WMF and the adjoining road reserves along the eastern and southern boundaries (Figure 1 and Figure 2). The site has a long history of disturbance, is generally flat and was previously used as a drying pan facility that has since been decommissioned. The former drying pan been cultivated and cropped since 2018 for Canola, and more recently for Wheat (*Triticum* sp). The study site is dominated by non-native species. Native vegetation was restricted to the roadside reserves and a short extent within the study site along the southern boundary.

The surrounding environment of Tatura is rural in character, defined by grassed paddocks and agricultural landscapes.

Currently the Tatura WMF is mapped as a current wetland in DEECA's current wetland layer, because of its historic use as a series of sewage treatment pounds.



Legend

- Project area
- Canopy Tree
- Scattered Tree
- Calp/WoNS listed weeds
- Xanthium spinosum
- Vegetation Polygons (Habzones)
- HZ1
- Watercourse - Drain/Channel/ Other
- Pondage
- Lake
- Road

Paper Size ISO A4

0 50 100 150

Meters

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 55

N

GHD

Goulburn Valley Water
Goulburn Valley Water Solar Farms

Ecological Values - Tatura

Project No. **12579414**
Revision No. **A**
Date **6/02/2024**

FIGURE 3

\\ghdnet\ghd\AU\Melbourne\Projects\31\12579414\GIS\Maps\Deliverables\12579414_Ecology\12579414_Ecology.aprx - 12579414_003_EcologicalValues_Tatura_A4L_Rev

Data source: DEECA, Vicmap, 2023; Nearmap imagery accessed 6/02/2024 Nearmap WMS Server: . Created by: kgardner

3.2 Flora and vegetation

The VBA and PMST searches identified 518 species of flora that have been recorded or are predicted to occur within 10 km of the study site. Of these species, 279 species are native, 217 exotic species and 22 species that are native, but non-indigenous to the area.

During the field assessment a total of 26 species were recorded within the study site. This list comprised 16 native flora species and 10 exotic species (Appendix A).

3.2.1 Threatened and protected flora

The VBA and PMST searches undertaken by GHD identified 21 threatened flora species previously recorded or predicted to occur within 10 km of the study site. Of the threatened flora species known or predicted to occur within 10 km of the study site, 18 species are listed under the FFG Act, 13 species are listed under the EPBC Act, and 10 additional species are listed on both the FFG and EPBC Acts. The likelihood of occurrence was assessed for all the listed threatened flora species recorded in the desktop assessment (Appendix B).

One threatened flora species, *Allocasuarina luehmannii* (Buloke), listed as Critically Endangered under the FFG act was potentially identified during the field assessment. Unfortunately, fertile material was not present at this time, and as a result the species was unable to be confirmed. A conservative approach has been taken and presence of the species has been assumed, but subsequent follow-up surveys could provide a definitive identification.

It is outside the scope of this assessment to conduct targeted surveys for threatened flora species within the study site. All other threatened species outlined in Appendix B are considered unlikely to occur within the study site.

Table 1 Threatened flora identified during the field assessment

Threatened flora	Photo
Allocasuarina luehmannii (Buloke) (Unconfirmed)	

Additionally, three flora species listed as protected under the FFG act were identified during the field assessment:

– *Centipeda cunninghamii* (Common Sneezeweed)
– *Chrysocephalum semipapposum* (Clustered Everlasting)
– *Senecio quadridentatus* (Cottony Fireweed)

3.2.2 Vegetation type, extent, and condition

Remnant native vegetation in the study area has been mapped by DEECA at a scale of 1:25,000 (DEECA 2005 extant mapping of EVCs). NatureKit (DEECA 2024) indicates that one EVC (Plains Woodland, EVC 803) may be present in the study site.

The field assessment confirmed presence of several patches of Plains Woodland along the road reserve, with some small patches extending past the property boundary fence into the paddock area (see Figure 2). No other patches of native vegetation were recorded in the paddock.

Vegetation inside the paddock area was dominated by the introduced *Triticum sp.* (Wheat grass), which has been planted as a crop species by the land managers. There was no evidence of remnant wetland vegetation within the paddock area. Two scattered individuals of *Atriplex semibaccata* (Berry Saltbush) were also mapped amongst non-native vegetation within the paddock area.

Within the Victorian Riverina bioregion, this EVC usually consists of a *Eucalyptus* overstory up to 15m tall, occupying areas of lower elevation. The ground layer in this EVC is generally includes a sparse shrub layer above a diverse ground layer of native grasses, herbs, and chenopods (DEECA 2023). Plains Woodland is listed as Endangered within the Victorian Riverina bioregion.

The small roadside patches of Plains Woodland within the study site were consistent with a description and the EVC has been mapped as one habitat zone (HZ1) to reflect the relatively uniform condition of this EVC across the site.

3.2.3 Noxious weeds

One species (*Xanthium* spinosum, Bathurst Burr) listed as a noxious weed under the *Catchment and Land Protection Act 1994* (CaLP Act) in the Goulburn Broken CMA region was recorded at the study site.

Table 2 Noxious Weeds recorded within the study site during the field assessment

Scientific Name	Common Name	Listing
Xanthium spinosum	Bathurst Burr	Regionally Controlled (C)

3.2.4 Ecological vegetation classes

Habitat Zone 1 – Plains Woodland (EVC 803)

EVC 803 Plains Woodland is listed as Endangered within the Victorian Riverine Bioregion.

This habitat zone was located along the roadside verges of Toolamba-Rushworth Road and Dhurringile Road. In some small patches native vegetation encroached past the property fence lines and into the Tatura WMF.

The overstory contained a canopy of *Eucalyptus microcarpa* (Grey Box, Eucalyptus leucoxylon (Yellow gum), and *Allocasuarina luehmannii* (Buloke). The midstory was primarily dominated native shrub species, including Acacia verniciflua (Varnish Wattle), *Enchylaena tomentosa* var. *tomentosa* (Ruby Saltbush), *Einadia nutans* (Nodding Saltbush), and *Atriplex semibaccata* (Berry Saltbush).

The ground layer was dominated by introduced grasses, including *Phalaris aquatica* (Canary Grass) and *Dactylis glomerata* (Cocksfoot). Also present were some native grasses and forbs, including *Rytidosperma* spp. (Wallaby grass), *Senecio quadridentatus* (Cottony Fireweed), and *Centipeda cunninghamii* (Common Sneezeweed).

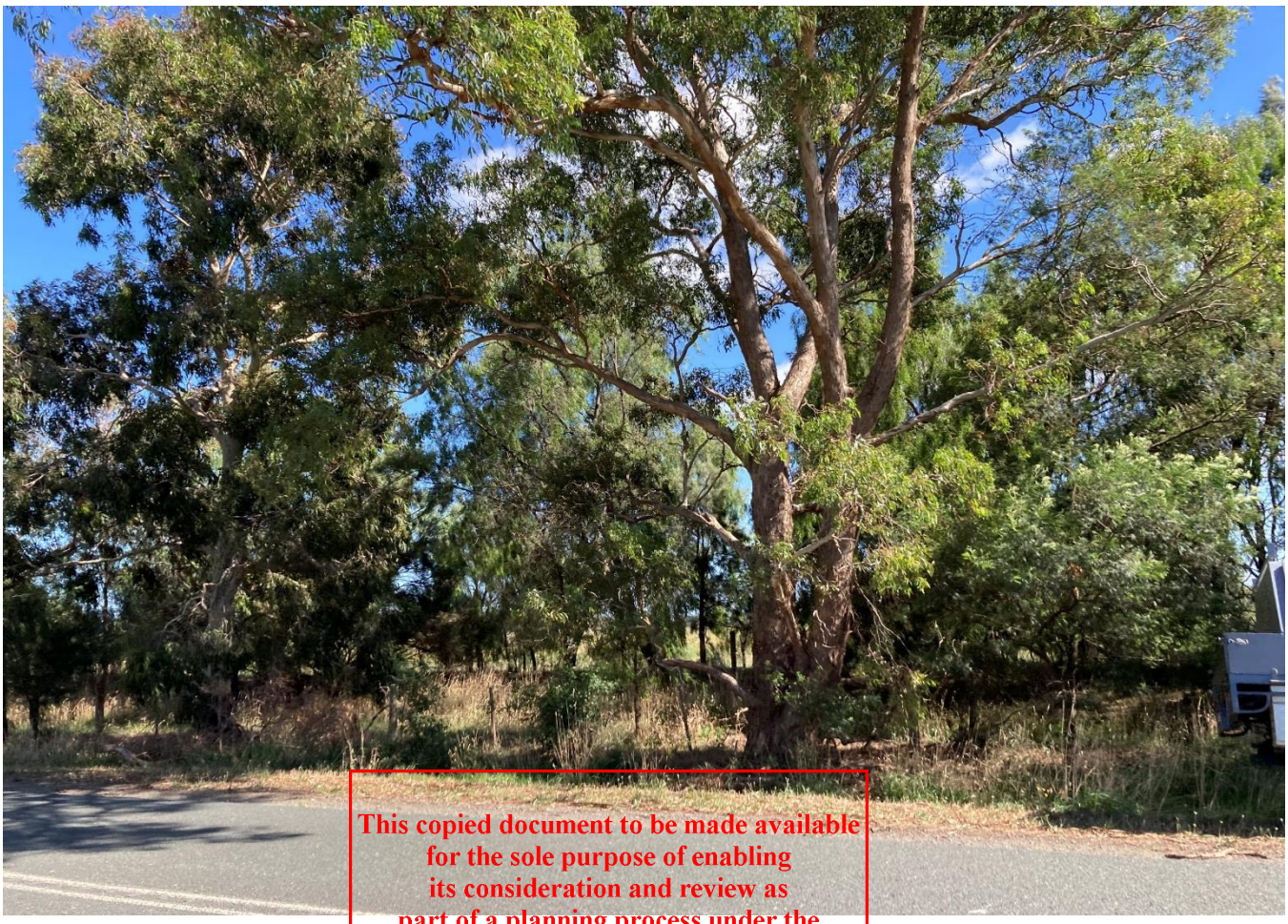


Figure 3 Representative image of Habitat Zone 1

3.2.5 Vegetation quality assessment

A summary of the Vegetation Quality Assessment results for the study site are shown in Table 3.

Table 3 Vegetation Quality Assessment

VQA		HZ1
Bioregion		Victorian Riverina
EVC #		803
EVC Name		Plains Woodland
Bioregional Conservation Status		Endangered
		Score
Site condition	Large Trees	3
	Tree Canopy Cover	3
	Lack of Weeds	6
	Understory	15
	Recruitment	6
	Organic Litter	3
	Logs	2
	Standardiser	1
	Total Site Score	39
Landscape value	Patch Size	1
	Neighbourhood	0
	Distance to Core	0
Habitat Score		**40**
Habitat points = #/100		**0.40**

3.2.6 Threatened ecological communities

The PMST predicted five EPBC Act-listed threatened ecological communities may or are likely to occur within the study area:

- *Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions* (Endangered)
- *White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland* (Critically Endangered)
- *Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains* (Critically Endangered)
- *Natural Grasslands of the Murray Valley Plains* (Critically Endangered)
- *Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia* (Endangered)
- During the site visit native vegetation was assessed against the listing criteria for two TECs

3.2.6.1 EPBC listed communities

Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia

The Threatened Ecological Community (TEC) *Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia* is considered synonymous with the recorded EVC 803 Plains Woodland within the Victorian Riverina Bioregion. However, the significantly degraded vegetation at the study site does not meet the following criteria for this TEC:

- 50% of the plant cover in the ground layer is **not** made up of perennial native species
- 10% of the plant cover in the ground layer is **not** made up of perennial native grass species
- As a result, this TEC can be discounted from the study site

Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions

The listing advice for the *Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions* (Endangered Species Scientific Subcommittee, 2000) lists four EVCs within Victoria as being closely associated with the TEC. These are:

- EVC 97 Semi-arid Woodland
- EVC 98 Semi-arid Chenopod Woodland
- EVC 826 Plains Savannah
- EVC 882 Shallow Sands Woodland

The vegetation mapped at the study site (EVC 803 Plains Woodland) is not a part of this list of associated communities. However, the listing advice notes that in some cases the TEC may be present in other EVCs. Additionally, the key diagnostic characteristic for this TEC also specifies that vegetation with abundant weeds, but with the characteristic trees also present should be considered as part of the ecological community amenable to rehabilitation. Similarly, revegetated or replanted sites, or areas of regrowth are not excluded from the listed ecological community so long as the patch meets the description.

As a result, and due to the potential presence of *Allocasuarina luehmannii* (Buloke) within the mapped woodland EVC, the following diagnostic criteria were also considered:

Table 4 Buloke Woodlands of the Riverina and Murray Darling Depression Bioregions listing advice

Key diagnostic characteristics	Relevance to the study site
Distribution limited to the Riverina and Murray Darling Depression IBRA bioregions.	The study site lies within the Riverina IBRA Bioregion
Structure is typically open woodland to woodland, but can be a forest (including high stem density), particularly temporarily following disturbance	Native vegetation at the study site was a *Eucalyptus microcarpa* and *Eucalyptus leucoxylon* subsp. *pruinosa* woodland (Specht, 1970)
Typically has a canopy of trees dominated *by Allocasuarina luehmannii* (Buloke), and sometimes other tree species are prominent such as *Callitris gracilis* (Slender Cypress pine), *Callitris glaucophylla* (Murray Pine), *Eucalyptus largiflorens* (Black Box), *E. leucoxylon* subsp. *pruinosa* (Yellow Gum) and *E. microcarpa* (Grey Box)	Vegetation at the study site held a canopy of *Eucalyptus microcarpa* and *Eucalyptus leucoxylon. Allocasuarina luehmannii* was present as a sub-canopy tree
Native grasses often include *Rytidosperma* spp. (wallaby grasses) (such as *R. caespitosum* and *R. setaceum*), *Austrostipa* spp. (spear grasses) (such as *A. blackii and A. elegantissima*) and other grasses including *Anthosachne scabra* (syn. *Elymus scaber*) and *Chloris truncata*.	*Rytidosperma caespitosum* (Common Wallaby-grass) and another unidentified *Rytidosperma* sp. (unidentified due to lack of fertile material) were observed at the site. The site was generally dominated by weedy introduced grasses
Native subshrubs and herbs in Group 10 (Grey box – Buloke Grassy Woodland) forms of the TEC may include the following species (Cheal. 2011): *Maireana enchylaenoides* (Wingless bluebush) *Rumex brownii* (Slender Dock) *Rytidosperma setaceum* (Bristly Wallaby-grass) *Rytidosperma caespitosum* (Common Wallaby-grass) *Austrostipa blackii* *Austrostipa elegantissima* *Chloris truncata* (Windmill Grass) *Anthosachne scabra* (Common Wheat-grass)	Only *Rytidosperma caespitosum* (Common Wallaby-grass) was observed at the study site during the field assessment

The *National recovery plan for the Buloke Woodlands of the Riverina and Murray Darling Depression Bioregions* (Cheal, 2011) notes that the distribution of Buloke is far greater than the distribution of Buloke Woodlands. As a result, the physical and floristic evidence the vegetation at the study site suggests it is more likely to represent a highly modified example of a Grey-box woodland community, with potentially *Allocasuarina luehmannii* than the *Buloke Woodlands* TEC. This evidence includes:

– The significant difference between the understory vegetation present at the study site and the description of common species in Group 10 forms of the TEC in *National recovery plan for the Buloke Woodlands of the Riverina and Murray Darling Depression Bioregions* (Cheal, 2011).
– The position of the study site is at the southern edge of the mapped occurrence of the *Buloke Woodlands of the Riverina and Murray Darling Depression Bioregions* TEC. In this location there is significant overlap between the occurrence of this community and the similar *Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia* TEC, as described in section 3.2.6.
– The Victorian Soil Type Map[4] shows the study site lies predominantly on Sodosol (Australian Soil Classification type SOAB and SOAA[5]). These soils tend to be prone to hard setting when dry and promote significant water run-off. This contrasts the description of the loamy Buloke Woodlands found in the Victorian Riverina, which are characterised by frequent waterlogging and heavy clay loams (Cheal, 2011). It should be noted that mapped soil types are not always accurate and could be contradicted by an on-ground soil test.

As a result of these factors, and that the EVC 803 Plains Woodland is not considered one of the primary synonymous vegetation communities, it is considered unlikely that this TEC is present at the study site.

[4] https://discover.data.vic.gov.au/dataset/victorian-soil-type-mapping
[5] https://vro.agriculture.vic.gov.au/dpi/vro/wimregn.nsf/pages/natres_soil_sodosols

3.2.6.2 FFG listed communities

Grey Box - Buloke Grassy Woodland Community

The vegetation at the study site matches the overstorey description of the FFG listed community, containing and dominant canopy of *Eucalyptus microcarpa* (Grey Box) and a sub-canopy of *Allocasuarina luehmannii* (Buloke). However, the composition of understory plants does **not** include the majority of the species in the description, with the exception of one *Rytidosperma* (Wallaby-grass) species. As a result, the FFG community can be discounted from the vegetation at the site.

3.3 Fauna species and habitats

The study site is currently used as a wheat paddock (see Table 5) within a predominantly agricultural landscape and provides degraded and limited habitat for common and generalist fauna species. The paddock is devoid of native vegetation with the exception of a single dead tree located along the western boundary. The dead tree contains small (< 10 cm wide), medium (10-20 cm wide) and large (> 20 cm wide) hollows which may provide habitat for native parrots (e.g. Rosella species, Galah) and insectivorous bats, and for non-native invasive species such as Common Starling. If the tree is required to be removed, a management authorisation would be required under the *Wildlife Act 1975* – this is required when native fauna need to be relocated during works (e.g., if fauna need to be removed from hollow-bearing trees).

The native vegetation within the roadside reserves along the eastern and southern boundary provide foraging habitat and corridor value for native birds, arboreal mammals and common reptiles and frogs. The vegetation consisted of one - two rows of mature indigenous and native planted shrubs and trees. Some of the mature trees and shrubs were flowering during the field investigation providing foraging opportunities for native fauna. Although narrow (<5 m wide), the roadside reserve vegetation was often dense providing refuge and breeding opportunities for native birds. No obvious hollows were recorded in the roadside vegetation.

A small shallow dam is located in the south-east corner of the site. The dam was dry during the field investigation and lacked fringing and aquatic vegetation. When filled, the dam may provide limited habitat value for common frog species (e.g., Common Froglet, Spotted Marsh Frog).

The VBA and PMST searches identified 329 fauna species that have been recorded or are predicted to occur within the study area. This comprises 306 native species and 23 non-native species.

During the field assessment, a total of 12 fauna species, all common native birds, were recorded (Appendix A). No fauna of conservation significance were observed during the field assessment.

Of the fauna species identified for the project, 65 species are listed as threatened under state and/or federal legislation and 10 are listed as migratory under the EPBC Act. The likelihood of threatened and/or migratory species occurring within the study site is considered low due to the absence of suitable habitat and generally degraded quality of habitat across the site.

Table 5 Fauna habitat at the study site

Site photos	Description
	Former drying pan – now paddock with wheat and non-native vegetation
	Former drying pan – now paddock with wheat and non-native vegetation

Site photos	Description
	Dead hollow-bearing tree – west boundary of study site
	Dam in the south-east corner of study site. This dam was dry at the time of assessment.

Site photos	Description
	Planted native vegetation in road reserve - east boundary of study site
	Remnant and planted native vegetation in road reserve - southern boundary of study site

3.4 Wetlands

According to the Guidelines for the removal, destruction or lopping of native vegetation (DELWP 2017a), all mapped wetlands (i.e., Current wetland layer in DEECA's NVIM Maps) proposed to be impacted are considered as a remnant patch of native vegetation, and consequently, must be included in the extent of native vegetation removal.

During the desktop assessment, the Tatura WMF parcel was identified as an artificial wetland under the *Current Wetlands* layer, with an area of approximately 60.5 hectares. As it stands, the area within the study site does not hold water or support any native wetland vegetation, as it is no longer in use as a drainage pond and instead is used for agricultural purposes.

4. Impacts on native vegetation and fauna habitat and measures to avoid and minimise impacts

The proposed works involve the installation of a solar array within a project area of 17.1 hectares (ha). Additional works associated with this project include the installation of the solar array, unsealed access roads, Operations and Maintenance (O&M) building (including supporting) utilities, AC electrical infrastructure, stormwater, fences, and gates.

4.1 Avoidance and minimisation

4.1.1 Avoidance measures

Three potential layout options for the solar array were considered by GVW for the site, and GHD ecologists provided advice on those options relating to minimising the impacts on native vegetation and fauna habitat. These included altering access routes to utilise existing gates, changing the routes of internal roads to avoid a large dead paddock tree (Table 5), and repositioning the solar array within the site to avoid impacting native vegetation along the southern and eastern site boundaries.

4.1.2 Minimisation measures

The following measures should be implemented during the works to avoid and minimise impacts on native vegetation:

- Restrict access tracks to the minimum required for vehicles and machinery needed for the works and operation of the solar facility.
- Do not park vehicles or machinery on roadside vegetation outside of the allotted impact area.
- Avoid impacting FFG Act listed species where possible.
- Install No-Go fencing to protect surrounding native vegetation.

4.1.3 Controlling the spread of noxious weeds

One noxious weed was identified within the study site (see section 3.2.3), which has the potential to spread during the construction stage and may consequently impact native vegetation and fauna habitat. There is also the potential for new noxious weeds to be introduced to the study site during the works. To avoid such impacts, incorporate weed management strategies into the CEMP that will prevent the spread and introduction of noxious weeds and thus minimise impacts on ecological values. Under the Catchment and Land Protection Act 1994, concerted efforts must be taken to avoid spreading or introducing weeds into or out of the study site.

Prior to the works, it is recommended that a Construction Environmental Management Plan (CEMP) is developed and implemented for the project to further avoid and minimise impacts on ecological values. The CEMP should include provisions relevant to protecting the ecological values identified within the study site. Measures to avoid or minimise impacts on ecological values that are recommended for inclusion in the CEMP are listed below:

- Implement measures, such as temporary No-Go Zones, to protect native vegetation to be retained. No Go Zones should be clearly delineated so that construction workers are able to avoid any accidental damage to native vegetation during construction, beyond the approved project footprint.
- One noxious weed was identified within the study site (see section 3.2.3), which has the potential to spread during the construction stage impacting native vegetation and fauna habitat. There is also the potential for new noxious weeds to be introduced to the study site during the works. To avoid such impacts the CEMP should include weed management strategies that will prevent the spread and introduction of noxious weeds and thus minimise impacts on ecological values. Under the *Catchment and Land Protection Act 1994*, concerted efforts must be taken to avoid spreading or introducing weeds into or out of the study site.

– Control of weeds prior, during, and post construction where appropriate. Works should be undertaken by an appropriately qualified person with the ability to accurately distinguish the relevant weed species from indigenous flora, in order to avoid impacting native species during control works.
– Wash-down and inspection of vehicles, machinery, and boots before entering/leaving working areas to avoid transporting viable plant materials or large clods of soil.

4.2 Impacts on ecological values

Despite the aforementioned efforts to avoid and minimise impacts, the works will still impact some native vegetation. The following figures for native vegetation impacts and permit requirements are predicated on the removal of the Tatura WMF from DEECA's mapped wetland layer, as discussed in section 5.3.1.

4.2.1 Impacts on native vegetation and fauna habitat

In total, 0.150 hectares of native vegetation is expected to be impacted by the proposed works, all of which is comprised of EVC 803 Plains Woodland. Offsets are calculated within the native vegetation removal report (NVRR) based on the habitat hectare score recorded at the site.

The proposed project would remove 0.150 ha of low-quality fauna habitat (including native and non-native vegetation) from two proposed access route locations along the southern road reserve for access into the site (see Figure 2). In addition, 16.9 ha of low quality, non-native vegetation will be removed for the solar panel array and associated infrastructure (e.g., internal access roads, see Figure 2). It is unlikely that any threatened FFG Act or EPBC Act listed fauna species would rely on or regularly utilise the habitats of the study site. The removal of this habitat is unlikely to comprise a substantial or important portion of habitat for any threatened FFG Act or EPBC Act listed fauna species.

4.2.2 Impacts on threatened flora and fauna species

One threatened flora species, *Allocasuarina luehmannii* (Buloke), listed as Critically Endangered under the FFG Act, was potentially identified within the impact area during the field assessment. An assessment of the extent of impacts based on known population and extent data for this species were calculated based on data available in the threatened species assessment documents available on Nature Kit (www.environment.vic.gov.au/biodiversity/naturekit) and results are presented in Table 6 and. Percent of Area of Occupancy in Victoria (AoO) proposed to be removed has been calculated using the total area impacted (0.082 ha). No mature *A. luehmannii* individuals are to be impacted by the proposed works. Specimens located within the impact area are immature, and likely root suckering from nearby individuals.

It is highly unlikely that these individuals will be of significance to the overall populations remaining in Victoria given the extent of native vegetation surrounding the proposed access tracks and percent of AoO proposed to be impacted. However, the avoid and minimise measures outlined in section 4.2.1should be followed to reduce impacts where possible.

Table 6 Impacts on FFG Act threatened species

Species	Estimated AoO[6]	Percent of AoO impacted	Number impacted	Reference
Allocasuarina luehmannii	134,606 km^2	0.00000006%	3	DELWP (2021a)

No other threatened flora or fauna species were observed within the study site during the field assessment. Due to the degraded nature of the site and highly modified surrounding agricultural landscape, it is considered unlikely that other threatened flora or fauna species were present and unobserved during the assessment.

[6] AoO = Area of Occupancy

5. Native vegetation removal guidelines

The *Guidelines for the removal, destruction, or lopping of native vegetation* (the Guidelines) were incorporated into the Victorian Planning Provisions and all planning schemes in Victoria in December 2017 (DELWP 2017).

5.1 Objective of the guidelines

The purpose of the Guidelines is to guide how impacts on biodiversity should be considered when assessing an application for a permit to remove, destroy, or lop native vegetation. The Guidelines set out the rules and tools for how the responsible authority (DEECA) should consider biodiversity when assessing an application.

When native vegetation removal is permitted, an offset must be secured that achieves a no net loss outcome for biodiversity. To achieve this, the offset needs to contribute to Victoria's biodiversity so that it is equivalent to the contribution made by the native vegetation that was removed. Therefore, the type and amount of offset required depends on the native vegetation being removed and the contribution it makes to Victoria's biodiversity.

An offset statement that explains that an offset has been identified (and how it will be secured) will need to be included in the permit application for the removal of native vegetation for this project.

5.2 Assessment Pathway

Applications to remove native vegetation are categorised into one of three assessment pathways with corresponding application requirements and decision guidelines. The assessment pathway for an application to remove native vegetation reflects its potential impact on biodiversity and is determined from the location and extent of the native vegetation to be removed (DELWP 2017a) [now DEECA].

The three assessment pathways recognised by DEECA are:

- *Basic:* limited impacts on biodiversity
- *Intermediate:* could impact on large trees, endangered EVCs, and sensitive wetlands and coastal areas
- *Detailed:* could impact on large trees, endangered EVCs, sensitive wetlands and coastal areas, and could significantly impact on habitat for rare or threatened species.

The assessment pathway determines the information that is required to accompany an application to remove, lop, or destroy native vegetation. There are three location categories (Location 1, 2, and 3) that indicate the potential risk to biodiversity from removing a small amount of native vegetation and play a role in determining the assessment pathway. The higher category is used if the native vegetation proposed to be removed includes more than one location category. The process for determining the assessment pathway is demonstrated in Table 7. The project will follow the "intermediate assessment pathway" as the vegetation impact is <0.5 ha and the study site falls within a Location Category 2.

A *native vegetation removal report* (NVRR) was generated by DEECA for the project on 6 February 2024 (Appendix C). The extent of impacts for the project calculated by DEECA included the clearance of 0.150 ha of native vegetation. The NVRR confirmed the project would be assessed under the 'intermediate' assessment pathway as shown in Table 7, because the study site is within location 2 and < 0.5 ha of native vegetation is proposed to be removed, assuming the removal of the mapped wetland layer at the site.

Table 7 Risk matrix for determining the assessment pathway that an application to remove native vegetation will take

Extent of native vegetation	Location Category		
	Location 1	Location 2	Location 3
< 0.5 hectares (ha) and not including any large trees	Basic	**Intermediate**	Detailed
< 0.5 hectares (ha) and including one or more large trees	Intermediate	Intermediate	Detailed
0.5 hectares (ha) or more	Detailed	Detailed	Detailed

5.3 Application requirements for a permit to remove native vegetation

The intermediate assessment pathway permit application will be assessed by DEECA under the *Planning and Environment Act* (1987).

5.3.1 Removal of the mapped wetland layer

As described in Section 3.4, the study site no longer holds water or supports any native wetland vegetation. Under the current land use regime, it is highly unlikely that the ponds in their current form will be able to sustain native vegetation, owing to the depth of the water bodies, steep edging slopes of the embankments lined with rocks, and competition with crop species and terrestrial weeds throughout the site. It is expected that the introduced crop species (*Triticum sp.*) would continue to dominate under the current regime.

Additionally, the water inflow to the ponds appears to have limited catchment contribution and appears to be reliant on water from the Tatura WMFRP. As a result, it is recommended that a request is made to DEECA to approve removal of the wetland within the study site from the current wetlands layer.

5.3.2 Unavoidable losses of native vegetation

It has not been possible to avoid all impacts to native vegetation and the unavoidable impacts associated with the project would include removal of 0.150 hectares of EVC 803 Plains Woodland.

The vegetation proposed for removal includes three individuals of the FFG Act-listed *Allocasuarina luehmannii* (Buloke). No FFG Act-protected species will be impacted by the proposed works.

5.3.3 Offset requirements and availability

Due to the proposed impacts to native vegetation as a result of the works, offsets will need to be secured that meet specific criteria as outlined in the native vegetation removal report (NVRR) in Appendix C. The NVR report states that the following general habitat unit offsets are required for the Project.

A total of 0.062 general habitat units (GHU) with a minimum strategic biodiversity value of 0.307 must be secured from the Greater Shepparton City LGA area or the Goulburn Broken CMA. No species-specific offsets are required based on the NVR report.

An offset availability statement was generated using the GHU search tool (DEECA 2022c). As of the 7 June 2024, there were eight (8) registered offset sites that meet the offset requirements for this project (Appendix D).

6. Environmental policy and legislative implications

Table 8 provides information with regard to specific biodiversity legislation and policy that is relevant to the project. The information below is based upon GHD's understanding of the legislation and policy, and GHD's experience with project implementation in line with this legislation and policy.

Within the study site, impacts on vegetation will be confined to non-native vegetation and small sections of native vegetation in the road reserve. In the road reserves, where works will be required to enable better access to the site, works have the potential to impact on native vegetation and fauna habitat.

Table 8 Potential legislative implications and requirements for the project

Legislation / Policy	Relevance to project	Outcomes
Federal		
Environment Protection and Biodiversity Conservation Act 1999	No EPBC listed flora or fauna species or communities are present within the study site or the road reserves. It is considered unlikely that EPBC listed flora or fauna occur within the study site or road reserves, owing to past disturbance, low quality of native vegetation and habitat, high weed cover and fragmentation of habitat areas. The current land-use of the site for cropping greatly reduces its value for native fauna. In the roadsides adjacent to the study site, the habitat value is low, and it is unlikely any threatened flora and fauna would occur within the roadside reserve vegetation. No Ramsar wetlands are expected to be impacted by the proposed works. No species of Migratory fauna are expected to use habitats within the study site frequently or regularly or in important or significant numbers.	It is highly unlikely that significant impacts under the EPBC Act would occur as a result of this project. A referral under the EPBC Act is not required for threatened flora and fauna species, migratory species or ecological communities listed under the EPBC Act.
State		
Environment Effects (EE) Act 1978	No flora or fauna species listed under the FFG Act were present within the study site that need to be considered under the EE Act.	Based on the current footprint and expected or potential impacts on native vegetation and threatened species, the project is not considered to require a referral under the EE Act for effects on flora and fauna values. It should be noted that the EE Act also includes social, economic, and environmental criteria, which are not considered in this report.
Planning and Environment Act 1987 (P&E Act)	The *Planning and Environment Act* is addressed through Clause 52.17 of the Victorian Planning Provisions (VPP), which stipulates that a permit is required for the removal of native vegetation. ESO4 of the Greater City of Shepparton planning scheme stipulates that a permit is required for the removal of native vegetation.	Based on the current works footprint within the paddock, native vegetation will not be impacted by the works and a permit will not be required. However, there is native vegetation within the road reserves, where large-vehicle access is likely to be required. If native vegetation is proposed to be impacted by works, then a planning permit will be required pursuant to Clause 52.17 and ESO4.
Guidelines for the removal, destruction or lopping of native vegetation (DELWP 2017) – the Guidelines.	The location mapping for the study site identifies that the study site is classified as Location 2. The project would follow the intermediate assessment pathway when being assessed under the Guidelines, if native vegetation is proposed to be removed.	If a planning permit is required, it would be assessed under the **intermediate** assessment pathway. Offsets would be required and need to be secured from the Greater Shepparton City LGA or the Goulburn Broken CMA.

Legislation / Policy	Relevance to project	Outcomes
Flora and Fauna Guarantee Act 1988	No FFG Act-listed fauna species or communities are likely to be present within the study site or adjacent road reserves. No FFG Act-listed flora communities are likely to be present within the study site or adjacent road reserves. Three individuals of the FFG Act-listed species, *Allocasuarina luehmannii* (Buloke) will be impacted by the proposed works.	An FFG permit will be required for the removal of three individual *Allocasuarina luehmannii* (Buloke). Mitigation measures should be implemented to avoid and minimise the impacts of the project, including protecting native vegetation not proposed to be impacted and preventing Potentially Threatening Processes, e.g., spread of weeds. It is unlikely that any FFG Act listed fauna species would make regular use of the habitats within the study site.
Wildlife Act 1975	A Management Authorisation under the Act is required when native fauna need to be relocated during works (e.g., if fauna need to be removed from rock piles or trenches that are left open or from hollow-bearing trees or limbs to be removed).	Based on the fauna expected to be present at the site and the expected construction techniques, a Management Authorisation is likely to be required to assist fauna that may occupy fauna habitat within the site.
Catchment and Land Protection Act 1994	One noxious weed listed under the CaLP Act (*Xanthium spinosum*) was observed within the study site.	Under this Act, concerted efforts must be taken to avoid spreading or introducing weeds into or out of the study site. Mitigation measures to prevent the introduction and spread of CaLP Act listed weed species (and any weed species) must be incorporated into the CEMP.

7. Conclusions and recommendations

The study site is located within the existing Tatura Wastewater Management Facility and contains areas of both intact and modified native vegetation. As part of the project, vegetation and habitat were assessed in areas with the potential to be impacted by the proposed works. Native vegetation comprised one habitat zone (several patches) of EVC 803 (Plains Woodland) of moderate quality was identified (VQA score of 40, out of a possible 100).

Despite efforts undertaken to avoid and minimise impacts to native vegetation during the project and to utilise the existing access points, the required construction works will impact 0.150 ha of native vegetation (Plains Woodland, EVC 803).

The proposed project would remove less than 0.5 ha of low-quality fauna habitat from two proposed access route locations along the southern road reserve for access into the site. Noting fauna habitat includes native and non-native vegetation. In addition, 16.9 ha of low quality, non-native vegetation will be removed for the solar panel array and associated infrastructure. It is unlikely that any threatened FFG Act or EPBC Act listed fauna species would rely on or regularly utilise the habitats of the study site. The removal of this habitat is unlikely to comprise a substantial or important portion of habitat for any threatened or migratory FFG Act or EPBC Act listed fauna species.

The following next steps are recommended for this project:

- Apply to DEECA to seek the removal of the current mapped wetland layer over the Tatura WMF site. As the current site does not support wetland vegetation and no longer has the capacity to hold water it should not be considered as a current wetland.
- Apply for a planning permit to remove 0.150 ha of native vegetation from DEECA under the *Planning and Environment Act 1987*.
- If a planning permit is granted, then obtain offsets for the project ***prior*** to the commencement of any construction works. A total of 0.062 general habitat units (GHU) are triggered for this project with a minimum strategic biodiversity value score of 0.307. These offsets must be sourced from within the Greater Shepparton City LGA or the Goulburn Broken CMA.
- Prior to the works, it is recommended that a Construction Environmental Management Plan (CEMP) is developed and implemented for the project to further avoid and minimise impacts to ecological values. The CEMP should include provisions relevant to protecting the ecological values identified within the study site, including:
  - Implement measures, such as temporary No-Go Zones, to protect native vegetation to be retained. No Go Zones should be clearly delineated so that construction workers are able to avoid any accidental damage to native vegetation during construction, beyond the approved project footprint.
  - Implement the use of sediment control devices such as silt traps and sediment fencing during the construction period.
  - Incorporate weed, disease, and pest control measures to prevent the spread of existing and/or the introduction of new weeds, diseases, or pests to the study site.
  - Wash-down and inspection of vehicles, machinery, and boots before entering/leaving working areas to avoid transporting viable plant materials or large clods of soil.
- Prior to construction, obtain a Management Authorisation under the *Wildlife Act 1975* to carry out fauna-related mitigation measures if removing the hollow-bearing tree identified in the Construction Environmental Management Plan, including salvage, capture, handling, relocation, as required.

8. References

BirdLife Australia (2023). BirdLife Australia, atlas. Occurrence dataset https://doi.org/10.15468/dchsnk accessed via GBIF.org on 2023-12-19

DELWP (2017). Guidelines for the removal, destruction or lopping of native vegetation. Department of Environment, Land, Water and Planning

DELWP (2020) Procedure to rely on the utility installations exemption in planning schemes Water service providers. Department of Environment, Land, Water and Planning

DNRE (2002). Victoria's Native Vegetation Management – A Framework for Action. Department of Natural Resources and Environment, East Melbourne, Victoria

Appendices

Appendix A

List of flora and fauna species recorded at the study site

Fauna species recorded during GHD field survey – December 2023

Common name	Scientific Name	GHD survey
Stubble Quail	*Coturnix pectoralis*	Y
Peaceful Dove	*Geopelia striata*	OS
Crested Pigeon	*Ocyphaps lophotes*	OS
Nankeen Kestrel	*Falco cenchroides*	OS
Galah	*Cacatua (Eolophus) roseicapilla*	OS
Eastern Rosella	*Platycercus eximius*	OS
Red-rumped Parrot	*Psephotus haematonotus*	OS
Welcome Swallow	*Hirundo neoxena*	OS
Willie Wagtail	*Rhipidura leucophrys*	Y
Magpie-lark	*Grallina cyanoleuca*	OS
Superb Fairy-wren	*Malurus cyaneus*	Y
Australian Magpie	*Gymnorhina tibicen*	Y

Table notes: Y = recorded within study site during survey, OS = recorded offsite nearby study site during survey

Flora species recorded at study site

Scientific Name	Common Name
Acacia spp. (naturalised)	Wattle (naturalised)
Acacia verniciflua (typical variant)	Varnish Wattle
Allocasuarina luehmannii	Buloke
Alternanthera denticulata s.l.	Lesser Joyweed
Atriplex semibaccata	Berry Saltbush
Avena fatua	Wild Oat
*Briza maxima**	Large Quaking-grass
Bursaria spinosa subsp. *spinosa*	Sweet Bursaria
Callistemon sieberi	River Bottlebrush
*Centaurium erythraea**	Common Centaury
Centipeda cunninghamii	Common Sneezeweed
Chrysocephalum semipapposum	Clustered Everlasting
Einadia nutans	Nodding Saltbush
Enchylaena tomentosa var. *tomentosa*	Ruby Saltbush
Eucalyptus melliodora	Yellow Box
Eucalyptus microcarpa	Grey Box
Eucalyptus spp. (naturalised)	Eucalyptus
*Hypochaeris glabra**	Smooth Cat's-ear
Melaleuca spp. (naturalised)	Tea-tree
Oxalis spp.*	Wood Sorrel
*Phalaris aquatica**	Toowoomba Canary Grass
Rytidosperma caespitosum	Common Wallaby-grass
Rytidosperma spp.	Wallaby Grass
Senecio quadridentatus	Cotton Fireweed
*Sonchus oleraceus**	Common Sow-thistle
Vicia sativa subsp. *sativa**	Common Vetch
Wahlenbergia spp.	Bluebell
*Xanthium spinosum**	Bathurst Burr[7]

[7] * = Introduced species

Appendix B

Likelihood of occurrence – threatened flora

Key to table:

EPBC: Environment Protection and Biodiversity Conservation Act

VU Vulnerable

EN Endangered

CR Critically Endangered

FFG: Flora and Fauna Guarantee Act

vu Listed as Vulnerable

en Listed as Endangered

cr Listed as Critically Endangered

: Non-indigenous native species outside its natural range

Source:

VBA Victorian Biodiversity Atlas

PMST Protected Matters Search Tool

Likelihood of occurrence:

Not all threatened species identified during this assessment are equally likely to occur in the project site, due to the geographic location or context of the site, or the habitat type and condition. For each species, the likelihood of occurrence was evaluated using the following rationale:

PRESENT – Species known to occur within the study site or detected during the site visit.

POSSIBLE – Potentially suitable habitat occurs within study site and species' known range encompasses the study site. Species recorded historically within the study area (but not the actual study site, and not identified during field surveys), generally within the last 30 years.

UNLIKELY – Species' known range encompasses the study site, but suitable habitat is not present or is not likely to be present. Species may or may not have been recorded historically within the study area but generally not within the last 30 years, and not within the actual study site.

HIGHLY UNLIKELY – No historical records of the species within 10 km of the study site and/or no suitable habitat within the study site.

Scientific Name	Common Name	EPBC	FFG	Count of Sightings	Last Record	Source	Habitat	Likelihood of occurrence
Acacia howittii	Sticky Wattle		vu #	1	2014	VBA	Confined to eastern Victoria from the upper Macalister River area near Mt Howitt south to near Yarram and east to near Tabberabbera; collections from near Daylesford and Melbourne are presumably of cultivated origin (Walsh & Entwisle 1996).	Unlikely. Minimal local records and not observed during the field assessment
Allocasuarina luehmannii	Buloke		cr	28	2008	VBA	Usually growing in woodland with Eucalyptus microcarpa, on calcareous soils. (Walsh and Entwistle, 1996).	**Present (unconfirmed)** – 8 to 10 immature individuals up to 6m in height were possibly observed during field assessment. This could not be confirmed due to the lack of fertile material, but for the purpose of this report presence has been assumed.
Amphibromus fluitans	River Swamp Wallaby-grass, Floating Swamp Wallaby-grass	VU				PMST	Grows mostly in permanent swamps and lagoons, billabongs, dams and roadside ditches. The species requires moderately fertile soils with some bare ground; conditions that are caused by seasonally-fluctuating water levels.	Highly unlikely – no nearby records and species habitat is not present at the study site
Brachyscome muelleroides	Mueller Daisy	VU	en			PMST	Extremely rare, in Victoria confined to floodplains of the Murray River and its tributaries, from Tocumwal east to the Ovens River.	Highly unlikely – no nearby records and species habitat is not present at the study site

Scientific Name	Common Name	EPBC	FFG	Count of Sightings	Last Record	Source	Habitat	Likelihood of occurrence
Cardamine moirensis	Riverina Bitter-cress		en	1	2014	VBA	In Victoria, occurring in the north and west in seasonally wet areas (Stajsic,2018).	Highly unlikely – few recent records and species habitat is not present at the study site
Cyperus leptocarpus	Button Rush		en	2	1993	VBA	Found in open damp places such as sandy stream-banks and drying lake margins; widespread but scattered and uncommon (Stajsic,2021).	Highly unlikely – few recent records and species habitat is not present at the study site
Dianella tarda	Late-flower Flax-lily		cr	1	2011	VBA	Open, often grassy forests of foothills and plains of north-eastern and north-central Victoria (e.g. Mansfield, Euroa, Chiltern, Nagambie, Nathalia areas). Often on lower slopes or near gullies and watercourses, usually on clay or clay-loam soils (Walsh, 2017).	Highly unlikely – few recent records and species habitat is not present at the study site
Diplachne fusca subsp. fusca	Brown Beetle-grass		en #	1	1987	VBA	Occurs in all mainland States and Territories. Confined in Victoria to floodplains and billabongs of the Murray River and the lower reaches of its major tributaries. Frequently grows in shallow water. Flowers most of the year (Walsh & Entwisle 1994). Nearest known occurrence	Highly unlikely – few recent records and species habitat is not present at the study site

Scientific Name	Common Name	EPBC	FFG	Count of Sightings	Last Record	Source	Habitat	Likelihood of occurrence
Fimbristylis velata	Veiled Fringe-sedge		en	1	2000	VBA	Occasional on drying mud beside lakes and rivers and in seasonally wet depressions; mostly in northern Victoria, but recent collections in the south, I.e. bairnsdale and Healesville. Flowers spring-summer. (Walsh & Entwisle 1996). Nearest known location.	Highly unlikely – few recent records and species habitat is not present at the study site
Glycine latrobeana	Clover Glycine, Purple Clover	VU	vu			PMST	Widespread but of sporadic occurrence and rarely encountered. Grows mainly in grasslands and grassy woodlands. (Walsh and Entwisle 1996).	Unlikely – no nearby records and minimal suitable habitat found at the study site
Lepidium monoplocoides	Winged Pepper-cress	E	en			PMST	Uncommon in north western quarter of state, mostly on heavy soils near lakes and watercourses. Flowers mostly spring-summer (Walsh & Entwisle 1996).	Highly unlikely – few recent records and species habitat is not present at the study site
Myoporum montanum	Waterbush		en	3	2002	VBA	Scattered across northern Victoria where uncommon to rather rare; mostly in mallee and riparian woodland communities but also in rocky gorges (Walsh & Entwisle 1999). Flowers mainly Jun-Nov.	Highly unlikely – few recent records and species habitat is not present at the study site

Scientific Name	Common Name	EPBC	FFG	Count of Sightings	Last Record	Source	Habitat	Likelihood of occurrence
Myriophyllum porcatum	Ridged Water-milfoil	VU	cr			PMST	Rare and restricted to northern and north-western Victoria where it has been recorded growing in temporary waterholes, lagoons, farm dams and rock holes, and on clay pans (Stajsic, 2017).	Highly unlikely – no recent records and species habitat is not present at the study site
Pimelea spinescens subsp. *spinescens*	Plains Rice-flower, Spiny Rice-flower, Prickly Pimelea	CR	cr			PMST	Grows in grassland or open shrubland on basalt-derived soils west of Melbourne.(Walsh and Entwisle 1999).	Highly unlikely – no recent records and species habitat is not present at the study site
Prasophyllum validum	Sturdy Leek-orchid, Mount Remarkable Leek-orchid	VU				PMST	Scattered across northern and western Victoria, with an isolated occurrence in the south. Grows in a variety of woodland habitats on stony clays to sandy loam soils (Backhouse and Jeanes 2017)	Highly unlikely – no recent records and species habitat is not present at the study site
Sclerolaena napiformis	Turnip Copperburr	E	cr			PMST	In remnant grasslands on clay loam soils. Nearest known occurrence. Near Nathalia in northern VIC or between Donald and Stawell in the west. (Walsh and Entwisle 1999)	Highly unlikely – no recent records and species habitat is not present at the study site

Scientific Name	Common Name	EPBC	FFG	Count of Sightings	Last Record	Source	Habitat	Likelihood of occurrence
Senecio behrianus	Stiff Groundsel, Behr's Groundsel	E	cr			PMST	Exceedingly rare in Victoria, and thought to be extinct until 1991. Apparently confined to heavy, winter-wet, clayey soils. Formerly known from Casterton, Swan Hill, Barham areas, with specimens from the 'Wimmera', and You Yangs near Lara of uncertain affinity, but closest to Senecio behrianus (Stajsic, 2018).	Highly unlikely – no recent records and species habitat is not present at the study site
Senecio macrocarpus	Large-fruit Fireweed, Large-fruit Groundsel	VU	cr			PMST	Largely confined to Themeda grasslands on loamy clay soils derived from basalt near Melbourne, west to Skipton area. Also known from auriferous ground near Stawell. (Walsh and Entwisle 1999).	Highly unlikely – no recent records and species habitat is not present at the study site
Senecio psilocarpus	Swamp Fireweed, Smooth-fruited Groundsel	VU				PMST	Rare in Victoria, restricted to a herb-rich few winter-wet swamps south and west from c. Ballarat, growing on volcanic clays or peat soils (Walsh and Entwisle 1999).	Highly unlikely – no recent records and species habitat is not present at the study site
Swainsona murrayana	Slender Darling-pea, Slender Swainson, Murray Swainson-pea	VU	en			PMST	Found in grassland, herbland and open Black-box woodland, often in depressions. Usually found in seasonally inundated flats and around lakes.	Highly unlikely – no recent records and species habitat is not present at the study site

Scientific Name	Common Name	EPBC	FFG	Count of Sightings	Last Record	Source	Habitat	Likelihood of occurrence
Swainsona plagiotropis	Red Darling-pea, Red Swainson-pea	VU	en			PMST	Rare species, apparently restricted to a few sites in north-central Victoria (mostly between Bendigo and the Murray River) where it grows in grassland on heavy red soils and is now almost confined to roadside remnants. (Walsh and Entwisle 1999).	Unlikely – no recent records and minimal suitable habitat present at the study site

Appendix C

NVRR

Native vegetation removal report

This report provides information to support an application to remove, destroy or lop native vegetation in accordance with the *Guidelines for the removal, destruction or lopping of native vegetation*. The report **is not an assessment by DELWP** of the proposed native vegetation removal. Native vegetation information and offset requirements have been determined using spatial data provided by the applicant or their consultant.

Date of issue: **14/06/2024**
Time of issue: **12:41 pm**

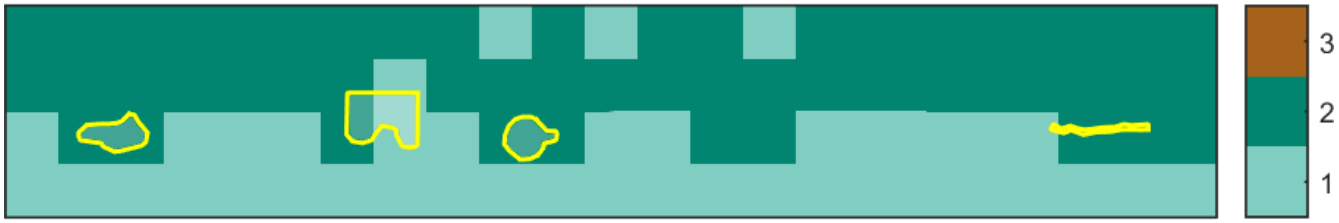
Report ID: GHD_2024_021

Project ID	12579414_DELWP_NVR_TaturaGDA1994

Assessment pathway

Assessment pathway	**Intermediate Assessment Pathway**
Extent including past and proposed	0.150 ha
Extent of past removal	0.000 ha
Extent of proposed removal	0.150 ha
No. Large trees proposed to be removed	0
Location category of proposed removal	Location 2 The native vegetation is in an area mapped as an endangered Ecological Vegetation Class (as per the statewide EVC map). Removal of less than 0.5 hectares of native vegetation in this location will not have a significant impact on any habitat for a rare or threatened species.

1. Location map



Offset requirements if a permit is granted

Any approval granted will include a condition to obtain an offset that meets the following requirements:

General offset amount[1]	0.062 general habitat units
Vicinity	Goulburn Broken Catchment Management Authority (CMA) or Greater Shepparton City Council
Minimum strategic biodiversity value score[2]	0.307
Large trees	0 large trees

NB: values within tables in this document may not add to the totals shown above due to rounding

Appendix 1 includes information about the native vegetation to be removed

Appendix 2 includes information about the rare or threatened species mapped at the site.

Appendix 3 includes maps showing native vegetation to be removed and extracts of relevant species habitat importance maps

1 The general offset amount required is the sum of all general habitat units in Appendix 1.

2 Minimum strategic biodiversity score is 80 per cent of the weighted average score across habitat zones where a general offset is required

Next steps

Any proposal to remove native vegetation must meet the application requirements of the Intermediate Assessment Pathway and it will be assessed under the Intermediate Assessment Pathway.

If you wish to remove the mapped native vegetation you are required to apply for a permit from your local council. Council will refer your application to DELWP for assessment, as required. **This report is not a referral assessment by DELWP.**

This *Native vegetation removal report* must be submitted with your application for a permit to remove, destroy or lop native vegetation.

Refer to the *Guidelines for the removal, destruction or lopping of native* vegetation (the Guidelines) for a full list of application requirements This report provides information that meets the following application requirements:

- The assessment pathway and reason for the assessment pathway
- A description of the native vegetation to be removed (met unless you wish to include a site assessment)
- Maps showing the native vegetation and property
- The offset requirements determined in accordance with section 5 of the Guidelines that apply if approval is granted to remove native vegetation.

Additional application requirements must be met including:

- Topographical and land information
- Recent dated photographs
- Details of past native vegetation removal
- An avoid and minimise statement
- A copy of any Property Vegetation Plan that applies
- A defendable space statement as applicable
- A statement about the Native Vegetation Precinct Plan as applicable
- An offset statement that explains that an offset has been identified and how it will be secured.

Authorised by the Victorian Government, 8 Nicholson Street, East Melbourne.

For more information contact the DELWP Customer Service Centre 136 186

www.delwp.vic.gov.au

Appendix 1: Description of native vegetation to be removed

All zones require a general offset, the general habitat units each zone is calculated by the following equation in accordance with the Guidelines:

General habitat units = extent x condition x general landscape factor x 1.5, where the general landscape factor = 0.5 + (strategic biodiversity value score/2)

The general offset amount required is the sum of all general habitat units per zone.

Native vegetation to be removed

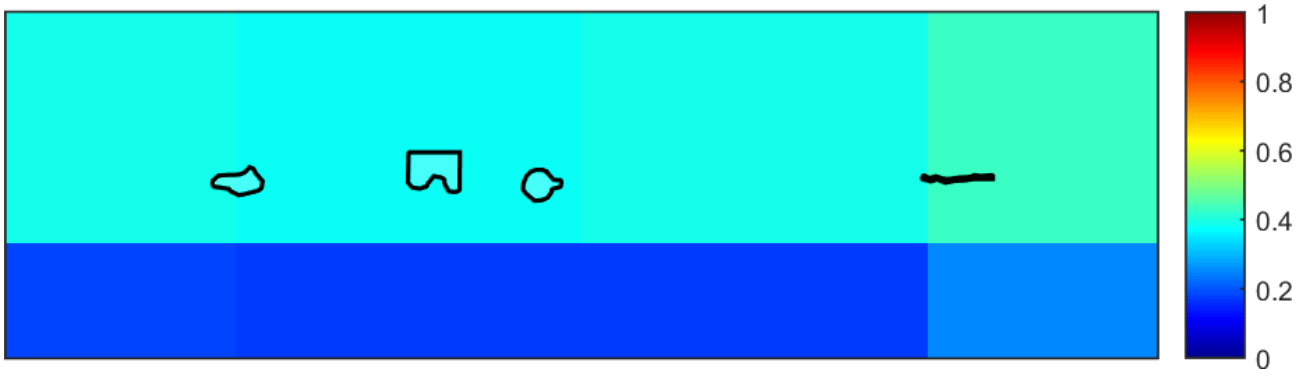
Information provided by or on behalf of the applicant in a GIS file							Information calculated by EnSym					
Zone	**Type**	**BioEVC**	**BioEVC conservation status**	**Large tree(s)**	**Partial removal**	**Condition score**	**Polygon Extent**	**Extent without overlap**	**SBV score**	**HI score**	**Habitat units**	**Offset type**
1-A	Patch	vriv0803	Endangered	0	no	0.400	0.010	0.010	0.427		0.004	General
2-A	Patch	vriv0803	Endangered	0	no	0.400	0.072	0.072	0.380		0.030	General
3-A	Patch	vriv0803	Endangered	0	no	0.400	0.035	0.035	0.384		0.015	General
4-A	Patch	vriv0803	Endangered	0	no	0.400	0.033	0.033	0.380		0.014	General

Appendix 2: Information about impacts to rare or threatened species' habitats on site

This is not applicable in the Intermediate Assessment Pathway.

Appendix 3 – Images of mapped native vegetation

2. Strategic biodiversity values map



3. Aerial photograph showing mapped native vegetation

4. Map of the property in context

Yellow boundaries denote areas of proposed native vegetation removal.

Appendix D

Native Vegetation Credit Register

Report of available native vegetation credits

This report lists native vegetation credits available to purchase through the Native Vegetation Credit Register.

This report is **not evidence** that an offset has been secured. An offset is only secured when the units have been purchased and allocated to a permit or other approval and an allocated credit extract is provided by the Native Vegetation Credit Register.

Date and time: 07/06/2024 03:15

Report ID: 24803

What was searched for?

General offset

General habitat units	Strategic biodiversity value	Large trees	Vicinity (Catchment Management Authority or Municipal district)	
0.083	0.307	0	CMA	Goulburn Broken
			or LGA	Greater Shepparton City

Details of available native vegetation credits on 07 June 2024 03:15

These sites meet your requirements for general offsets.

Credit Site ID	GHU	LT	CMA	LGA	Land owner	Trader	Fixed price	Broker(s)
BBA-1145	1.033	52	Goulburn Broken	Mitchell Shire	No	Yes	No	Ethos
BBA-2865	17.021	0	Goulburn Broken	Greater Shepparton City	Yes	Yes	No	VegLink
TFN-C2008	0.548	0	Goulburn Broken	Greater Shepparton City	No	Yes	No	Contact NVOR
VC_CFL-2355_03	8.817	88	Goulburn Broken	Greater Shepparton City	Yes	Yes	No	VegLink
VC_CFL-2636_01	0.262	0	Goulburn Broken	Strathbogie Shire	Yes	Yes	No	Bio Offsets, VegLink
VC_CFL-2636_01	0.292	0	Goulburn Broken	Strathbogie Shire	Yes	Yes	Yes	VegLink
VC_CFL-3075_01	9.571	89	Goulburn Broken	Greater Shepparton City	Yes	Yes	No	VegLink
VC_CFL-3790_01	3.559	1	Goulburn Broken	Campaspe Shire	Yes	Yes	No	VegLink

These sites meet your requirements using alternative arrangements for general offsets.

Credit Site ID	GHU	LT	CMA	LGA	Land owner	Trader	Fixed price	Broker(s)

There are no sites listed in the Native Vegetation Credit Register that meet your offset requirements when applying the alternative arrangements as listed in section 11.2 of the Guidelines for the removal, destruction or lopping of native vegetation.

These potential sites are not yet available, land owners may finalise them once a buyer is confirmed.

Credit Site ID	GHU	LT	CMA	LGA	Land owner	Trader	Fixed price	Broker(s)
VC_CFL-3701_01	10.574	18	Goulburn Broken, North Central	Greater Bendigo City	Yes	Yes	No	Bio Offsets
VC_CFL-3747_01	11.546	332	Goulburn Broken	Mansfield Shire	Yes	Yes	No	VegLink

LT - Large Trees *CMA - Catchment Management Authority* *LGA - Municipal District or Local Government Authority*

Next steps

If applying for approval to remove native vegetation
Attach this report to an application to remove native vegetation as evidence that your offset requirement is currently available.

If you have approval to remove native vegetation
Below are the contact details for all brokers. Contact the broker(s) listed for the credit site(s) that meet your offset requirements. These are shown in the above tables. If more than one broker or site is listed, you should get more than one quote before deciding which offset to secure.

Broker contact details

Broker Abbreviation	Broker Name	Phone	Email	Website
Abezco	Abzeco Pty. Ltd.	(03) 9431 5444	offsets@abzeco.com.au	www.abzeco.com.au
Baw Baw SC	Baw Baw Shire Council	(03) 5624 2411	bawbaw@bawbawshire.vic.gov.au	www.bawbawshire.vic.gov.au
Bio Offsets	Biodiversity Offsets Victoria	0452 161 013	info@offsetsvictoria.com.au	www.offsetsvictoria.com.au
Contact NVOR	Native Vegetation Offset Register	136 186	nativevegetation.offsetregister@delwp.vic.gov.au	www.environment.vic.gov.au/native-vegetation
Ecocentric	Ecocentric Environmental Consulting	0410 564 139	ecocentric@me.com	Not avaliable
Ethos	Ethos NRM Pty Ltd	(03) 5153 0037	offsets@ethosnrm.com.au	www.ethosnrm.com.au
Nillumbik SC	Nillumbik Shire Council	(03) 9433 3316	offsets@nillumbik.vic.gov.au	www.nillumbik.vic.gov.au
TFN	Trust for Nature	8631 5888	offsets@tfn.org.au	www.trustfornature.org.au
VegLink	Vegetation Link Pty Ltd	(03) 8578 4250 or 1300 834 546	offsets@vegetationlink.com.au	www.vegetationlink.com.au
Yarra Ranges SC	Yarra Ranges Shire Council	1300 368 333	biodiversityoffsets@yarraranges.vic.gov.au	www.yarraranges.vic.gov.au

For more information contact the DEECA Customer Service Centre 136 186 or the Native Vegetation Credit Register at nativevegetation.offsetregister@delwp.vic.gov.au

Attachment 2

Native Vegetation Removal Report (NVRR)

Native vegetation removal report

This report provides information to support an application to remove, destroy or lop native vegetation in accordance with the *Guidelines for the removal, destruction or lopping of native vegetation*. The report **is not an assessment by DELWP** of the proposed native vegetation removal. Native vegetation information and offset requirements have been determined using spatial data provided by the applicant or their consultant.

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Time of issue: **12:41 pm**

Report ID: GHD_2024_021

Project ID	12579414_DELWP_NVR_TaturaGDA1994

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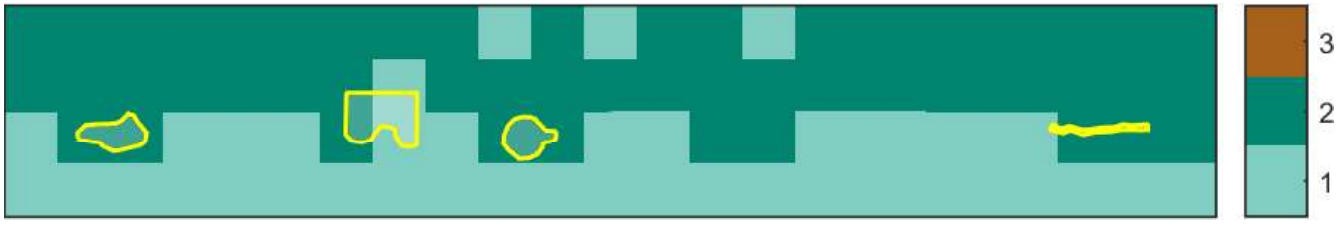
Extent of past removal	0.000 ha
Extent of proposed removal	0.150 ha
No. Large trees proposed to be removed	0
Location category of proposed removal	Location 2 The native vegetation is in an area mapped as an endangered Ecological Vegetation Class (as per the statewide EVC map). Removal of less than 0.5 hectares of native vegetation in this location will not have a significant impact on any habitat for a rare or threatened species.

1. Location map



Offset requirements if a permit is granted

Any approval granted will include a condition to obtain an offset that meets the following requirements:

General offset amount[1]	0.062 general habitat units
Vicinity	Goulburn Broken Catchment Management Authority (CMA) or Greater Shepparton City Council
Minimum strategic biodiversity value score[2]	0.307
Large trees	0 large trees

NB: values within tables in this document may not add to the totals shown above due to rounding

Appendix 1 includes information about the native vegetation to be removed

Appendix 2 includes information about the rare or threatened species mapped at the site.

Appendix 3 includes maps showing native vegetation to be removed and extracts of relevant species habitat importance maps

1 The general offset amount required is the sum of all general habitat units in Appendix 1.

2 Minimum strategic biodiversity score is 80 per cent of the weighted average score across habitat zones where a general offset is required

Next steps

Any proposal to remove native vegetation must meet the application requirements of the Intermediate Assessment Pathway and it will be assessed under the Intermediate Assessment Pathway.

If you wish to remove the mapped native vegetation you are required to apply for a permit from your local council. Council will refer your application to DELWP for assessment, as required. **This report is not a referral assessment by DELWP.**

This *Native vegetation removal report* must be submitted with your application for a permit to remove, destroy or lop native vegetation.

Refer to the *Guidelines for the removal, destruction or lopping of native* vegetation (the Guidelines) for a full list of application requirements This report provides information that meets the following application requirements:

- The assessment pathway and reason for the assessment pathway
- A description of the native vegetation to be removed (met unless you wish to include a site assessment)
- Maps showing the native vegetation and property
- The offset requirements determined in accordance with section 5 of the Guidelines that apply if approval is granted to remove native vegetation.

Additional application requirements must be met including:

- Topographical and land information
- Recent dated photographs
- Details of past native vegetation removal
- An avoid and minimise statement
- A copy of any Property Vegetation Plan that applies
- A defendable space statement as applicable
- A statement about the Native Vegetation Precinct Plan as applicable
- An offset statement that explains that an offset has been identified and how it will be secured.

Authorised by the Victorian Government, 8 Nicholson Street, East Melbourne.

For more information contact the DELWP Customer Service Centre 136 186

Disclaimer
This publication may be of assistance to you but the State of Victoria and its employees do not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for any error, loss or other consequence which may arise from you relying on any information in this publication.

Obtaining this publication does not guarantee that an application will meet the requirements of Clauses 52.16 or 52.17 of the Victoria Planning Provisions and Victorian planning schemes or that a permit to remove native vegetation will be granted.

Notwithstanding anything else contained in this publication, you must ensure that you comply with all relevant laws, legislation, awards or orders and that you obtain and comply with all permits, approvals and the like that affect, are applicable or are necessary to undertake any action to remove, lop or destroy or otherwise deal with any native vegetation or that apply to matters within the scope of Clauses 52.16 or 52.17 of the Victoria Planning Provisions and Victorian planning schemes.

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Appendix 1: Description of native vegetation to be removed

All zones require a general offset, the general habitat units each zone is calculated by the following equation in accordance with the Guidelines:

General habitat units = extent x condition x general landscape factor x 1.5, where the general landscape factor = 0.5 + (strategic biodiversity value score/2)

The general offset amount required is the sum of all general habitat units per zone.

Native vegetation to be removed

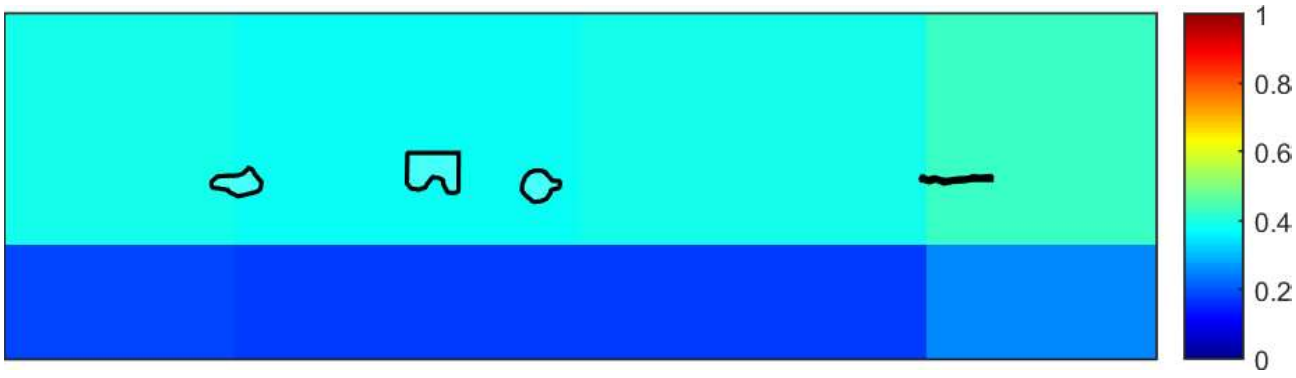
Information provided by or on behalf of the applicant in a GIS file							Information calculated by EnSym					
Zone	**Type**	**BioEVC**	**BioEVC conservation status**	**Large tree(s)**	**Partial removal**	**Condition score**	**Polygon Extent**	**Extent without overlap**	**SBV score**	**HI score**	**Habitat units**	**Offset type**
1-A	Patch	vriv0803	Endangered	0	no	0.400	0.010	0.010	0.427		0.004	General
2-A	Patch	vriv0803	Endangered	0	no	0.400	0.072	0.072	0.380		0.030	General
3-A	Patch	vriv0803	Endangered	0	no	0.400	0.035	0.035	0.384		0.015	General
4-A	Patch	vriv0803	Endangered	0	no	0.400	0.033	0.033	0.380		0.014	General

Appendix 2: Information about impacts to rare or threatened species' habitats on site

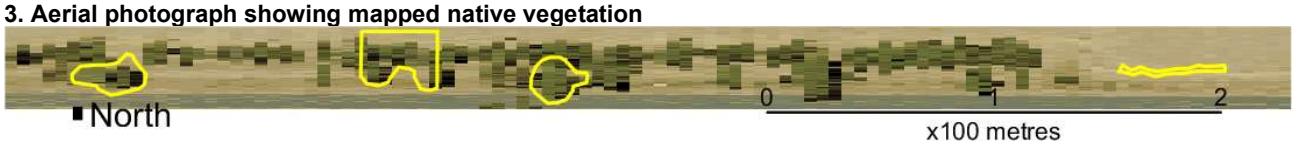
This is not applicable in the Intermediate Assessment Pathway.

Appendix 3 – Images of mapped native vegetation

2. Strategic biodiversity values map



3. Aerial photograph showing mapped native vegetation

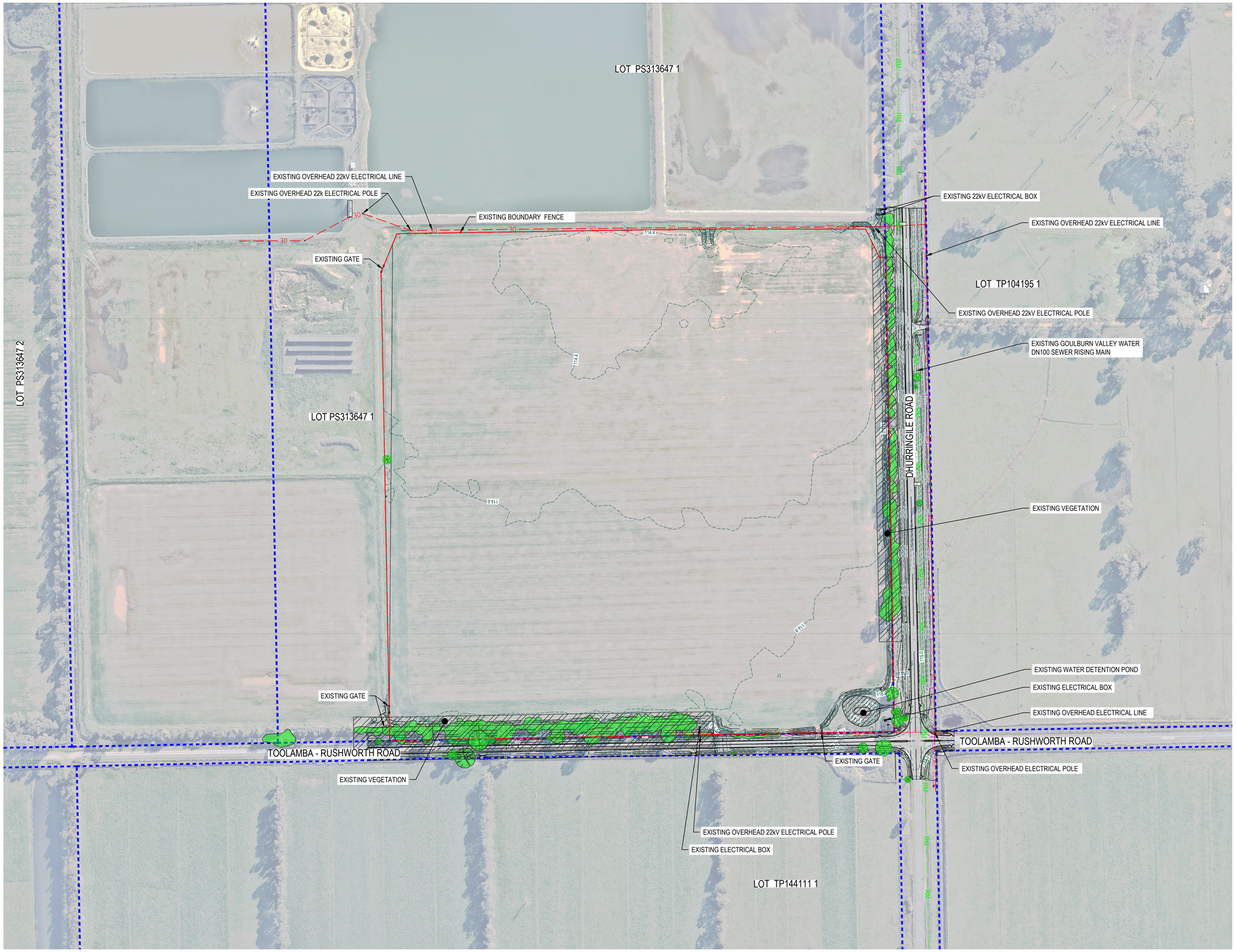


4. Map of the property in context

Yellow boundaries denote areas of proposed native vegetation removal.

Attachment 3

Development Plans



PLAN
SCALE 1:2000

LEGEND

- EXISTING LOT BOUNDARY
- SITE BOUNDARY (AREA = 245,745 m²)
- EXISTING POND
- EXISTING VEGETATION TO REMAIN
- EXISTING FENCE
- EXISTING MAJOR CONTOURS
- EXISTING MINOR CONTOURS
- EXISTING OVERHEAD ELECTRICAL POST
- EXISTING GATE
- EXISTING OVERHEAD 22kV ELECTRICITY
- EXISTING SEWER RISING MAIN
- EXISTING TELECOMMUNICATIONS

NOTES:

1. SITE AREA UNDERSTOOD TO BE PREVIOUSLY USED AS LINED EVAPORATION AN FOR POST-TREATMENT WASTEWATER EVAPORATION.

ADVERTISED PLAN

Rev	Description	Checked	Approved	Date
P03	CONCEPT DESIGN UPDATE	A.V.	M.G.	19.06.24
P02	CONCEPT DESIGN	M.G.	A.V.	19.10.23
P01	DRAFT CONCEPT DESIGN	M.G.	A.V.	10.10.23

Author M. PAÑA **Drafting Check** D. KOKOTOVIC
Designer M. JARING **Design Check** M. GOODE

0 20 40 60 80 100m
SCALE 1:2000 AT ORIGINAL SIZE

N

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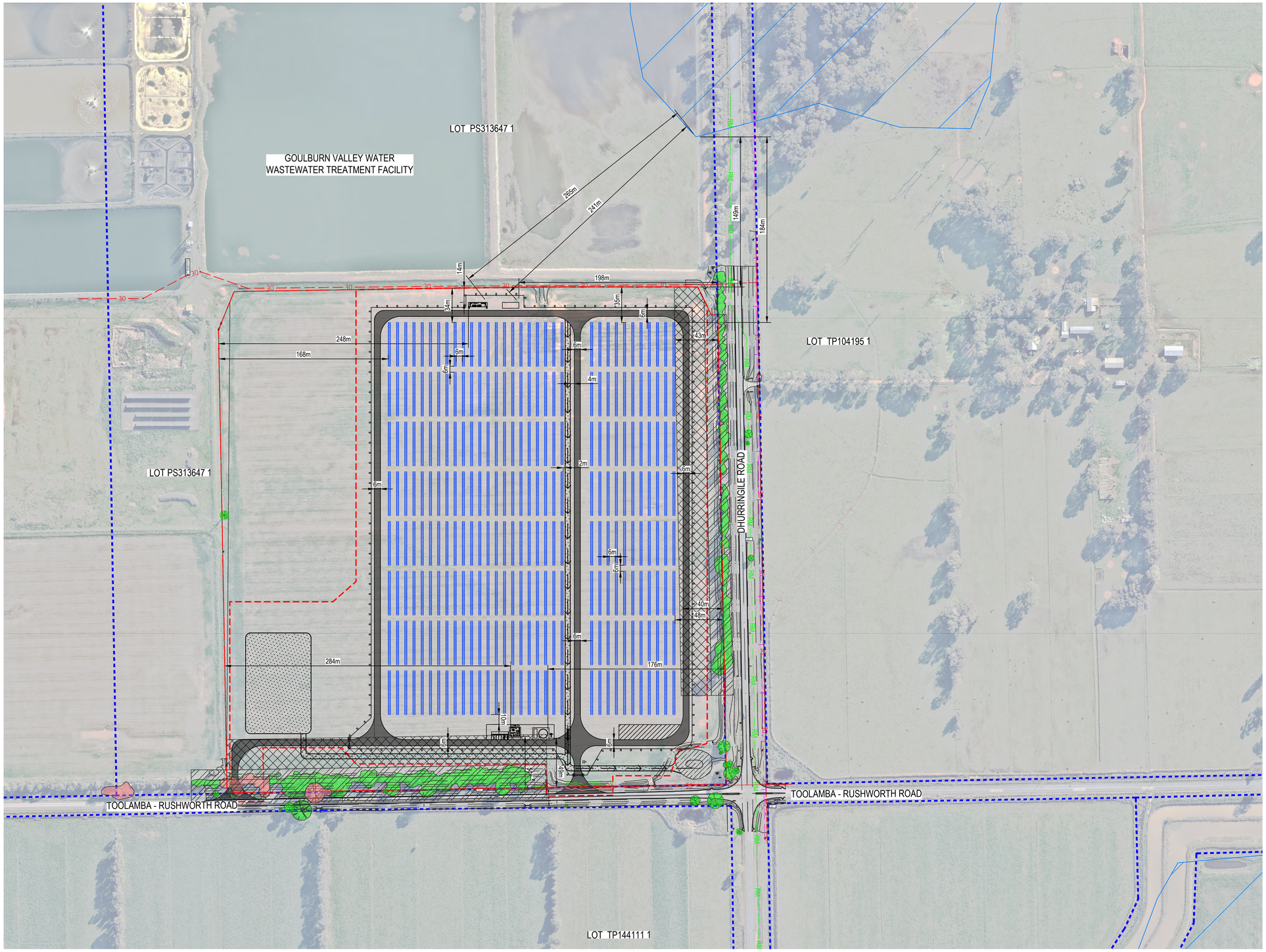
Project No. 12579414

Client GOULBURN VALLEY WATER
Project GVW SOLAR FARM
Status IN DEVELOPMENT

Drawing Title TATURA
EXISTING CONDITIONS PLAN

Size A1
Drawing No. 12579414-GHD-00-00-DRG-CI-00010
Rev P03

Plot Date: 19 June 2024 - 10:50 PM Plotted by: Maya Paña File Name: C:\12d\SW\data\P-00-12D-001\31-12579414 - GVW SOLAR FARM_2742\CADD\Drawings\12579414-GHD-00-00-DRG-CI-00010.dwg



LEGEND

- EXISTING LOT BOUNDARY
- SITE BOUNDARY (AREA = 245,745 m²)
- EXISTING FENCE
- PROPOSED UNSEALED ROADS
- STORMWATER DETENTION AREA
- EXISTING POND
- 30m VEGETATION BUFFER ZONE
- EXISTING VEGETATION ZONE
- EXISTING NATIVE VEGETATION TO BE CLEARED
- EXISTING VEGETATION TO REMAIN
- LSIO - LAND SUBJECT TO INUNDATION OVERLAY

ADVERTISED PLAN

PLAN
SCALE 1:2000

Rev	Description	Checked	Approved	Date
P01	CONCEPT DESIGN UPDATE	A.V.	M.G.	19.06.24

Author M. PAÑA **Drafting Check**
Designer A. VAN EEDEN **Design Check** M. GOODE

0 20 40 60 80 100m
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www.ghd.com

Project No. 12579414

Client GOULBURN VALLEY WATER
Project GVW SOLAR FARM
Status IN DEVELOPMENT

Drawing Title TATURA
LSIO OVERLAY
AND VEGETATION
REMOVAL PLAN

Size A1
Drawing No. 12579414-GHD-00-00-DRG-CI-00011
Rev P01

Plot Date: 19 June 2024 - 10:52 PM Plotted by: Maya Paña
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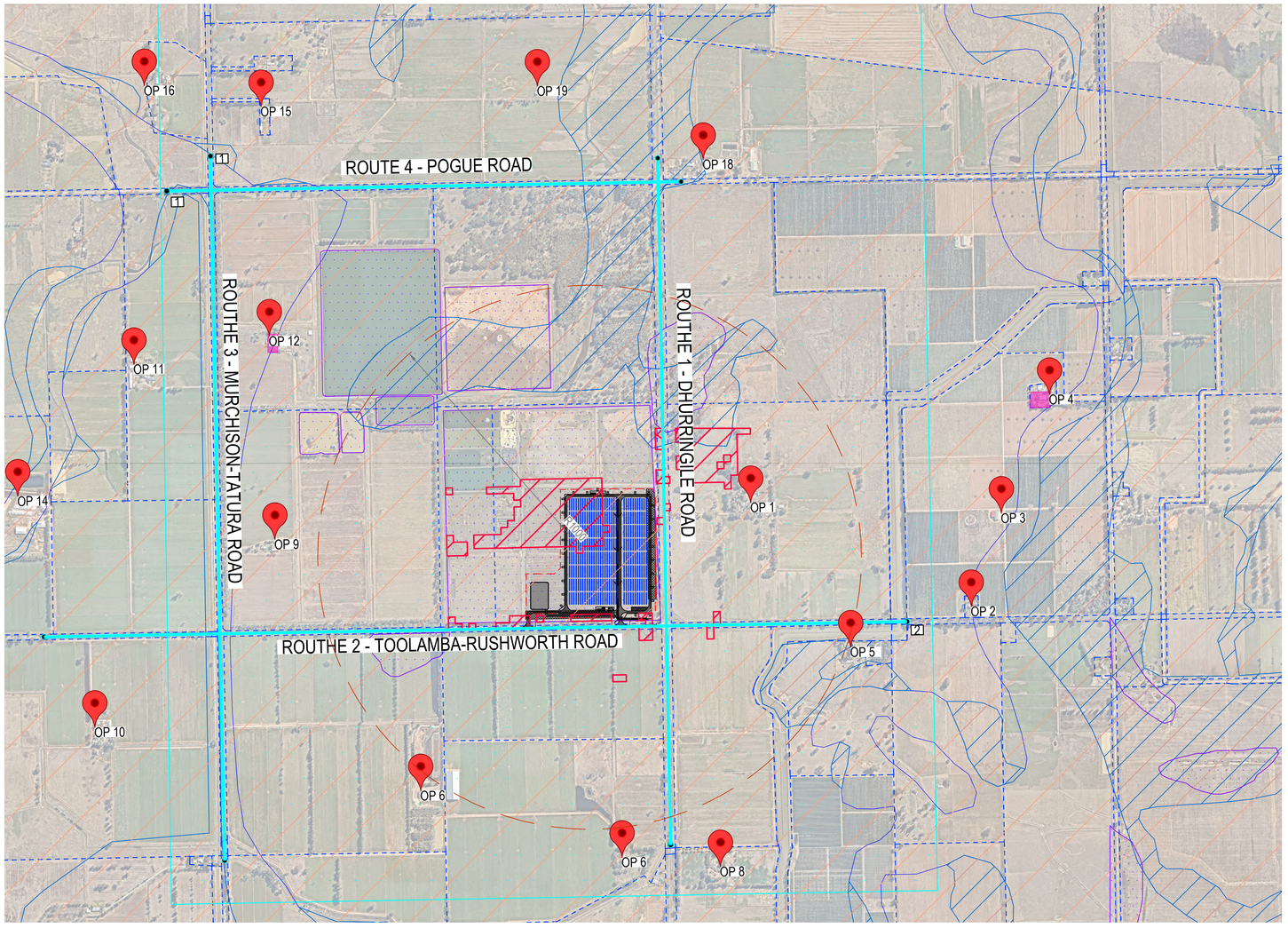
ADVERTISED
PLAN



PLAN
SCALE 1:10000

LEGEND

- EXISTING LOT BOUNDARY
- SITE BOUNDARY (AREA = 245,745 m²)
- EXTENT OF WORKS / PROJECT AREA (AREA = 187,496 m²)
- INDICATIVE SOLAR PANEL
- PROPOSED FENCE
- EXISTING FENCE
- PROPOSED UNSEALED ROADS
- EXISTING VEGETATION TO BE CLEARED
- EXISTING POND
- EXISTING VEGETATION TO REMAIN
- HERITAGE OVERLAYS
- SCO - SPECIFIC CONTROLS OVERLAY
- LSIO - LAND SUBJECT TO INUNDATION OVERLAY
- EVC - ECOLOGICAL VEGETATION CLASS
- WETLAND OVERLAY
- FLOODWAY OVERLAY
- OP XX — OBSERVER POINT (REFER TO GHD 12579414-RPT_GOULBURN VALLEY SOLAR FARMS TATURA SOLAR GALRE ASSESSMENT REPORT FOR DETAILS

Rev	Description	Checked	Approved	Date
P01	CONCEPT DESIGN UPDATE	M.G.	A.V.	19.06.24

Author M. PAÑA Drafting Check
Designer A. VAN EEDEN Design Check M. GOODE

0 100 200 300 400 500m
SCALE 1:10,000 AT ORIGINAL SIZE

N

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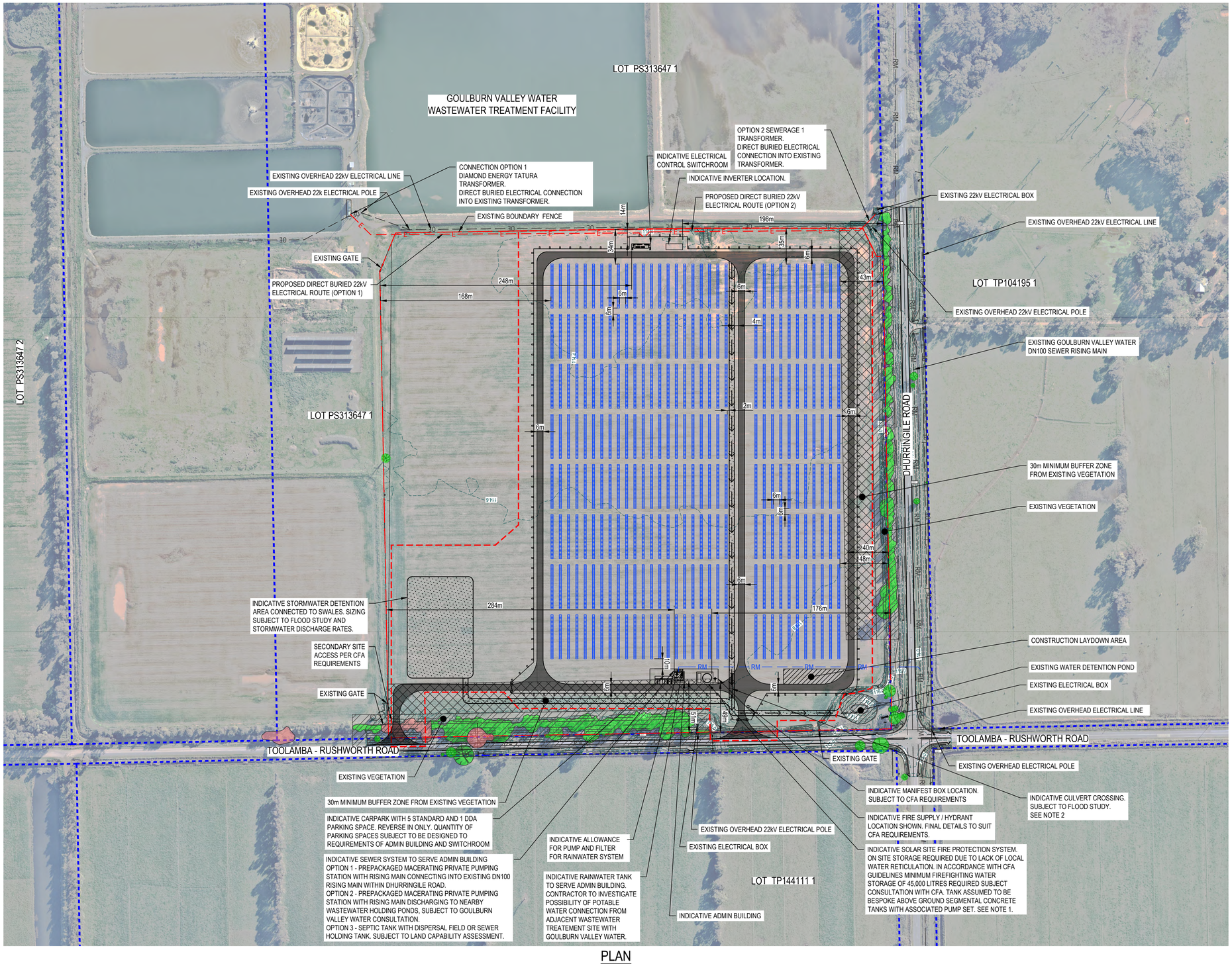
Project No. 12579414

Client GOULBURN VALLEY WATER
Project GVW SOLAR FARM
Status IN DEVELOPMENT

Drawing Title TATURA SITE OVERLAYS AND CONTEXT

Size A1
Drawing No. 12579414-GHD-00-00-DRG-CI-00012
Rev P01

Plot Date: 19 June 2024 - 10:36 PM Plotted by: Maya Paña
File Name: C:\12d\SW\data\P-00-12D-001\31-12579414 - GVW SOLAR FARM_2742\CADD\Drawings\12579414-GHD-00-00-DRG-CI-00012.dwg



PLAN
SCALE 1:2000

LEGEND

- EXISTING LOT BOUNDARY
- SITE BOUNDARY (AREA = 245,745 m²)
- EXTENT OF WORKS / PROJECT AREA (AREA = 187,496 m²)
- 30m VEGETATION BUFFER ZONE
- EXISTING POND
- EXISTING VEGETATION TO REMAIN
- EXISTING FENCE
- EXISTING MAJOR CONTOURS
- EXISTING MINOR CONTOURS
- EXISTING OVERHEAD ELECTRICAL POST
- EXISTING GATE
- PROPOSED GATE
- PROPOSED FENCE
- INDICATIVE SOLAR PANEL
- INDICATIVE INVERTER
- PROPOSED SWALE
- PROPOSED HYDRANT
- PROPOSED UNSEALED ROADS
- EXISTING NATIVE VEGETATION TO BE CLEARED
- PROPOSED ELECTRICAL LINES
- PROPOSED SEWER RISING MAIN
- EXISTING OVERHEAD 22KV ELECTRICITY
- EXISTING SEWER RISING MAIN
- EXISTING TELECOMMUNICATIONS

NOTES:

1. REFERENCE CFA GUIDELINES "DESIGN GUIDELINES AND MODEL REQUIREMENTS - RENEWABLE ENERGY FACILITIES V4.
2. CONTRACTOR TO INCLUDE CULVERTS FOR 10% AEP FOR DRAIN CROSSINGS.

ADVERTISED PLAN

Rev	Description	Checked	Approved	Date
P03	CONCEPT DESIGN UPDATE	A.V.	M.G.	19.06.24
P02	CONCEPT DESIGN	M.G.	A.V.	19.10.23
P01	DRAFT CONCEPT DESIGN	M.G.	A.V.	10.10.23

Author M. PAÑA Drafting Check D. KOKOTOVIC
Designer M. JARING Design Check M. GOODE

0 20 40 60 80 100m
SCALE 1:2000 AT ORIGINAL SIZE

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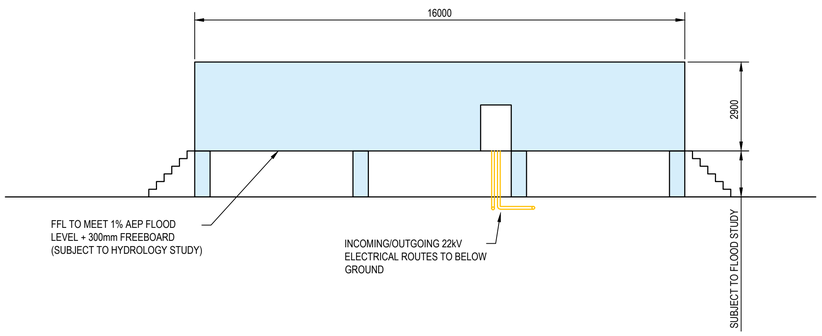
Project No. 12579414

Client GOULBURN VALLEY WATER
Project GVW SOLAR FARM
Status IN DEVELOPMENT

Drawing Title TATURA
SITE LAYOUT PLAN

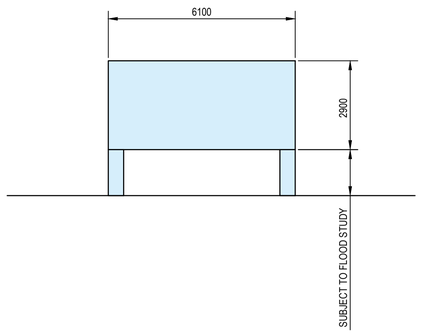
Size A1
Drawing No. 12579414-GHD-00-00-DRG-CI-00100
Rev P03

Plot Date: 19 June 2024 - 10:53 PM Plotted by: Maya Paña
File Name: C:\12d\SW\data\P-00-12D-001\31-12579414 - GVW SOLAR FARM_2742\CADD\Drawings\12579414-GHD-00-00-DRG-CI-00100.dwg



CONTROL ROOM - INDICATIVE ELEVATION

SCALE 1:100



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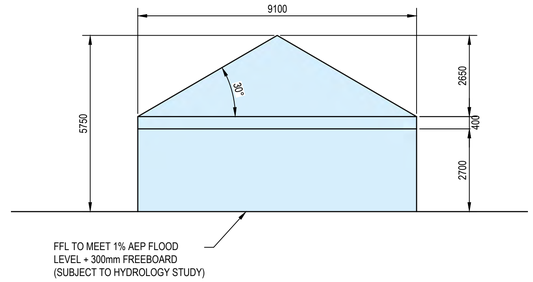
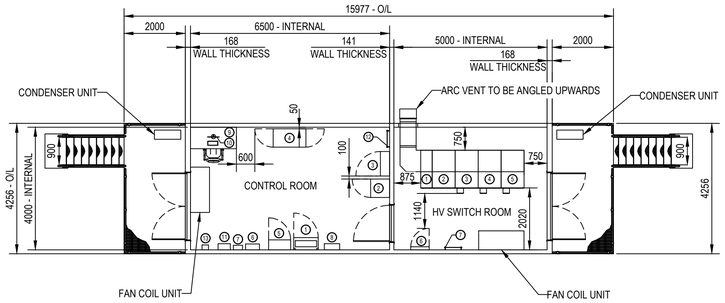


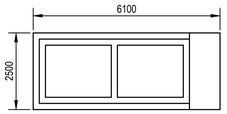
ADMIN BUILDING - INDICATIVE ELEVATION

SCALE 1:100



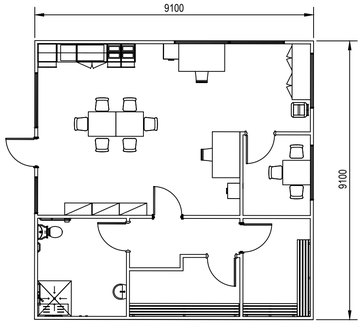
CONTROL ROOM / HV SWITCHROOM - INDICATIVE LAYOUT

SCALE 1:100



INVERTER - INDICATIVE LAYOUT

SCALE 1:100



ADMIN BUILDING - INDICATIVE LAYOUT

SCALE 1:100

CONTROL ROOM

SL NO	EQUIPMENT DESCRIPTION	MOUNT TYPE	SIZE (mm)			APPROX MASS (Kg)
			W	D	H	
1	400/230 V AC DISTRIBUTION BOARD	FLOOR	800	400	2075	250
2	BATTERY & CHARGER	FLOOR	600	620	1400	213
3	SCADA RTU	WALL	800	300	1000	60
4	SCADA COMMUNICATIONS RACK	FLOOR	599	1069	1991	250
5	POWER PLANT CONTROLLER - PPC	WALL	720	325	1125	60
6	FIRE INDICATION PANEL - FIP	WALL	450	192	650	30
7	SECURITY PANEL	WALL	300	150	400	15
8	HVAC	WALL	500	200	500	25
9	DESK		1500	700	730	20
10	SOLAR FARM SCADA CLIENT	DESK				
11	APAM EMCS HMI	WALL	400	200	400	-
12	EARTH BAR - COPPER	WALL	570	6.3	50	5
13	AC CONTROLLER - HARDWIRED	WALL				-

HV SWITCH ROOM

SL NO	EQUIPMENT DESCRIPTION	MOUNT TYPE	SIZE (mm)			APPROX MASS (Kg)
			W	D	H	
1	22kV SWITCHBOARD INCOMER SW - 630A	FLOOR	375	1230	2100	130
2	22kV SWITCHBOARD METERING	FLOOR	750	1230	2100	300
3	22kV SWITCHBOARD MAIN SOLAR FARM CB - 630A	FLOOR	750	1230	2100	410
4	22kV SWITCHBOARD SPARE CB - 630A	FLOOR	750	1230	2100	410
5	22kV SWITCHBOARD AUXILIARY TX CB - 630A	FLOOR	750	1230	2100	410
6	METERING PANEL - 22kV INCOMER	WALL	600	100	615	25
7	EARTH BAR - COPPER	WALL	570	6.3	50	5

ADVERTISED PLAN

Rev	Description	Checked	Approved	Date
P01	CONCEPT DESIGN UPDATE	M.G.	A.V.	19.06.24

Author J. DE LA TORRE **Drafting Check**

Designer A. VAN EEDEN **Design Check** M. GOODE

0 1 2 3 4 5m

SCALE 1:100 AT ORIGINAL SIZE

N

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Project No. 12579414

Client GOULBURN VALLEY WATER

Project GVW SOLAR FARM

Status IN DEVELOPMENT

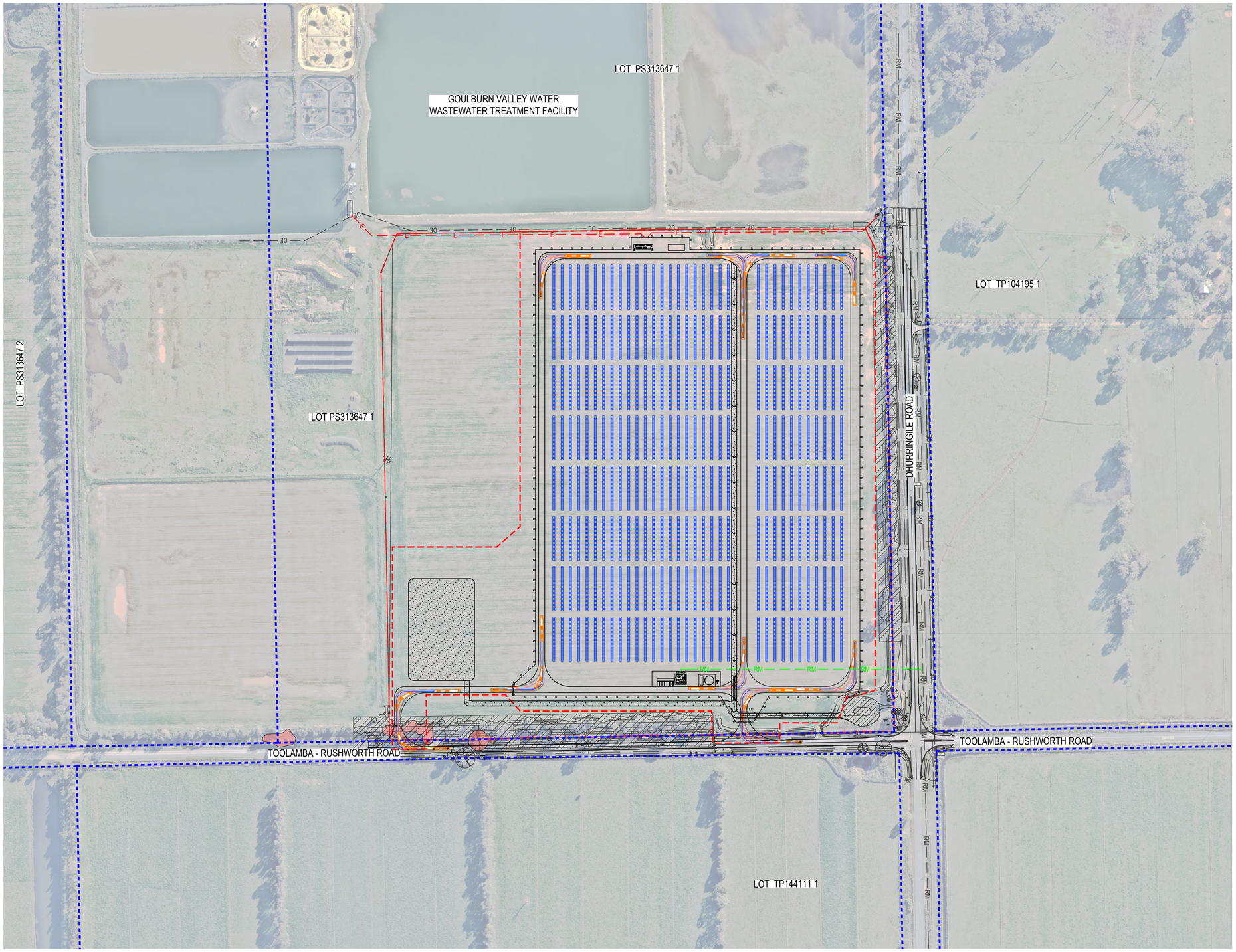
Drawing Title TATURA ELEVATIONS

Size A1

Drawing No. 12579414-GHD-00-00-DRG-CI-00105

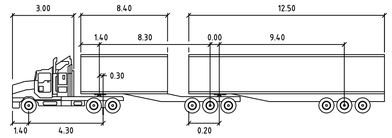
Rev P01

Plot Date: 19 June 2024 - 9:47 PM Plotted by: Maya Paña File Name: C:\12d\SW\data\P-00-12D-001\31-12579414 - GVW SOLAR FARM_2742\CADD\Drawings\12579414-GHD-00-00-DRG-CI-00105.dwg



PLAN
SCALE 1:2000

ADVERTISED PLAN



B-DOUBLE 26M

meters

Tractor Width	: 2.50	Lock to Lock Time	: 6.0
Trailer Width	: 2.50	Steering Angle	: 22.2
Tractor Track	: 2.50	Articulating Angle	: 70.0
Trailer Track	: 2.50		

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WARNING

SERVICES SHOWN ON THIS DRAWING ARE APPROXIMATE ONLY. THE EXACT LOCATION IS TO BE CONFIRMED ON SITE BY CONTRACTOR PRIOR TO COMMENCEMENT OF WORKS.

Rev	Description	Checked	Approved	Date
P02	CONCEPT DESIGN UPDATE	A.V.	M.G.	19.06.24
P01	DRAFT CONCEPT DESIGN	M.G.	A.V.	19.10.23

Author M. PAÑA **Drafting Check** D. KOKOTOVIC
Designer M. JARING **Design Check** M. GOODE

0 20 40 60 80 100m
SCALE 1:2000 AT ORIGINAL SIZE

N

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Project No. 12579414

Client GOULBURN VALLEY WATER
Project GVW SOLAR FARM
Status IN DEVELOPMENT

Drawing Title TATURA SWEPT PATH PLAN

Size A1
Drawing No. 12579414-GHD-00-00-DRG-CI-00300
Rev P02

Plot Date: 19 June 2024 - 10:55 PM Plotted by: Maya Paña
File Name: C:\12d\SW\data\P-00-12D-001\31-12579414 - GVW SOLAR FARM_2742\CADD\Drawings\12579414-GHD-00-00-DRG-CI-00300.dwg

NOTE:

1. DESIGN DETAILS ARE TBC. INFORMATION SHOWN IS FOR THE PURPOSE OF INFORMATION FOR TENDERING ONLY.
2. SYSTEM PROTECTIONS AND SETTINGS WOULD BE DESIGNED AND SET BASED ON POWERCOR REQUIREMENTS.

PV ARRAY

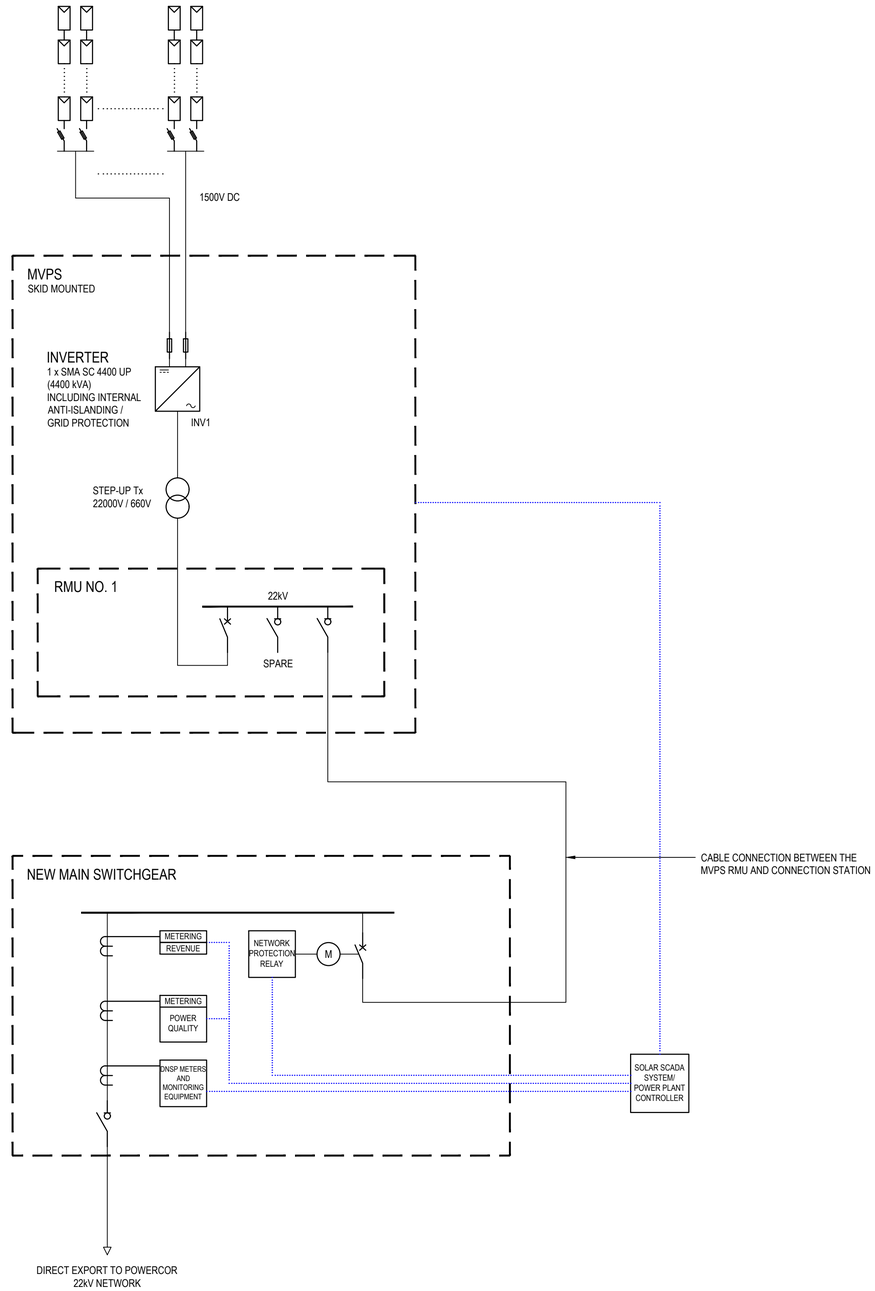
TOTAL SIZE = 5.23 MWp

EXACT STRING LENGTHS AND NO. STRING TBC
COMBINER BOXES WITH FUSES AND SURGE PROTECTION

MV POWER STATION

TOTAL SIZE = 4.4 MW (AC)

DC: AC RATIO = 1.19



ISSUED FOR PRELIMINARY CONCEPT STUDY

Rev	Description	Checked	Approved	Date
P02	CONCEPT DESIGN UPDATE	S.D	M.G.	19.06.24
P01	ISSUED FOR INFORMATION	M.G.	S.D.	27.09.23

Author J. ARELLANO **Drafting Check**
Designer A. JOSE **Design Check** S. FONSEKA

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www.ghd.com

Project No. 12579414

Client GOULBURN VALLEY WATER

Project GVW SOLAR FARM

Status IN DEVELOPMENT

Drawing Title TATURA
SINGLE LINE DIAGRAM

Drawing No. 12579414-GHD-00-00-DRG-EL-00002

Size A1

Rev P02

Plot Date: 19 June 2024 - 10:58 PM Plotted by: Maya Paña

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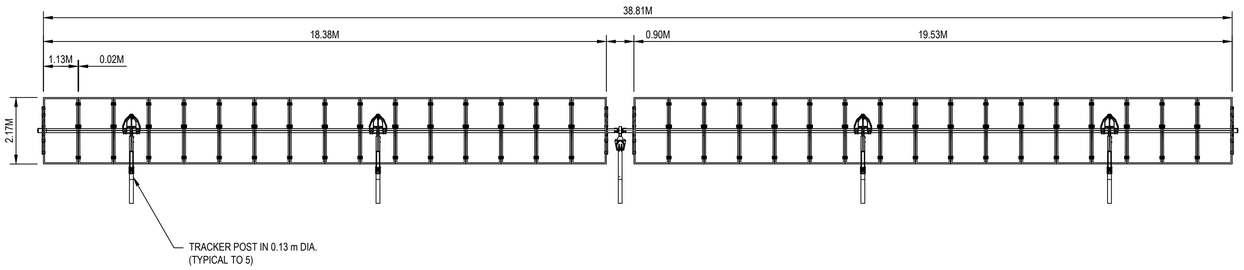
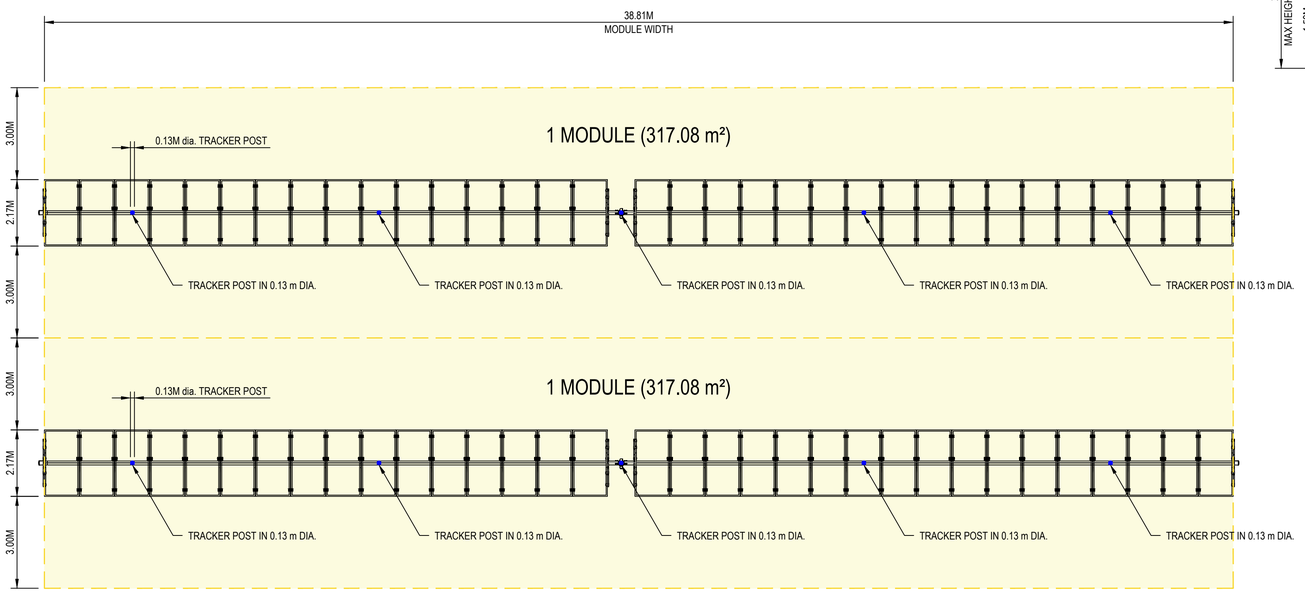
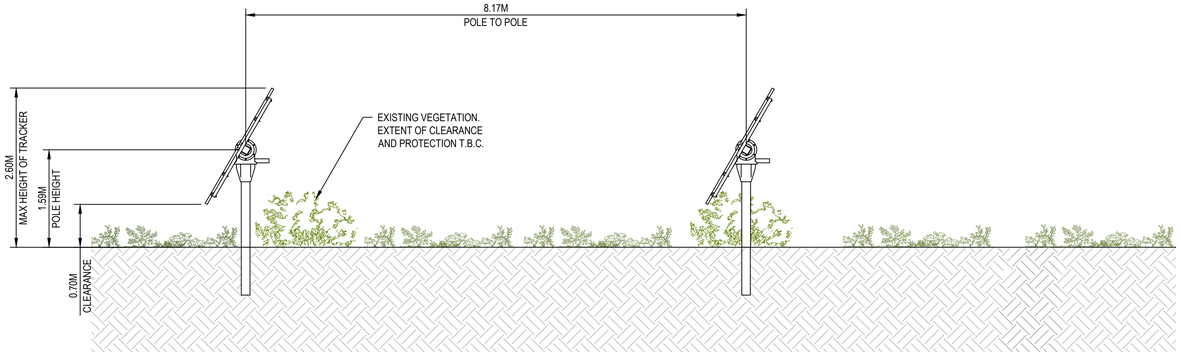
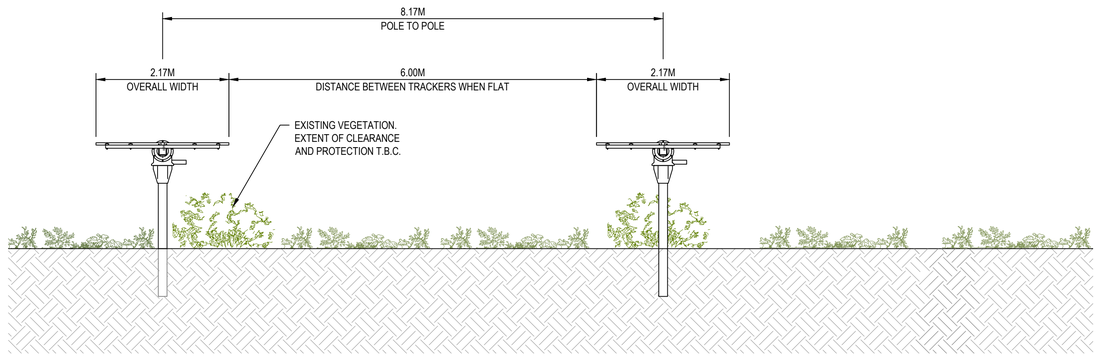
ADVERTISED
PLAN





1 TYPICAL MODULE ELEVATION & PLAN
SCALE 1 : 100





2 TRACKER TYPICAL ARRANGEMENT
SCALE 1 : 50

AS PER MODULE OF 317.08 m²

TOTAL TRACKER POSTS FOOTPRINT (5 x POST) = 0.066 m²

OVERALL PANEL AREA = 85 m² = 27%

TOTAL NUMBER OF TRACKER MODULE = 264

TOTAL TRACKER TRACKER AREAS = 264 x 317.08 m² = 83,709.12 m²

OVERALL PANEL AREA (ABOVE GROUND CANOPY 264 x 0.066 m² = 17.424 m²

Rev	Description	Checked	Approved	Date
P02	CONCEPT DESIGN UPDATE	S.D	M.G.	19.06.24
P01	ISSUED FOR INFORMATION	M.G.	S.D.	27.09.23

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Project No. 12579414

Client GOULBURN VALLEY WATER

Project GVW SOLAR FARM

Status IN DEVELOPMENT

Drawing Title TATURA
SOLAR TRAKER DETAIL

Drawing No. 12579414-GHD-00-00-DRG-EL-00003

Size A1

Rev P02

Plot Date: 19 June 2024 - 10:59 PM Plotted by: Maya Paña

File Name: C:\12d\SW\data\P-00-12D-001\31-12579414 - GVW SOLAR FARM_2742\CADD\Drawings\12579414-GHD-00-00-DRG-EL-00003.dwg

Attachment 4

Noise Assessment

Tatura Solar Farm

Noise Assessment

Goulburn Valley Water

PO Box 185 Shepparton 3632

Prepared by:

SLR Consulting Australia

SLR Project No.: 640.031305.00001

29 May 2024

Revision: 01

Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
01	29 May 2024	BF	SD	SD

Basis of Report

This report has been prepared by SLR Consulting Australia (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Goulburn Valley Water (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of the Client. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.

Executive Summary

This technical report has been prepared as part of the Goulburn Valley Water 5 MW Tatura Solar Farm planning application submission on behalf of Goulburn Valley Water (GVW).

SLR Consulting Pty Ltd (SLR) has been engaged by GVW to conduct a noise assessment to support the Planning Application of the proposed solar farm.

The Project is located within the Tatura wastewater management facility, approximately 2.5 km south of the township of Tatura. Ten noise sensitive receivers were identified within 1.5 km of the Project.

The predicted noise levels at the receivers were assessed against the various requirements of the EPA (EP Act, EP Regulations and Noise Protocol limits and GED).

Compliance is achieved at all assessed receivers with a significant margin of compliance.

Table of Contents

Tables in Text

Figures in Text

1.0 Introduction

Goulburn Valley Water (GVW) is proposing to develop a 5 MW solar farm located at their Tatura wastewater management facility (WMF).

SLR Consulting Pty Ltd (SLR) has been engaged by GVW to conduct a noise assessment to support the Planning Application of the proposed solar farm.

2.0 Project Area

The proposed site is on PUZ1 (Service & Utility) zoned land within the Tatura WMF, located approximately 2.5 km south of the township of Tatura.

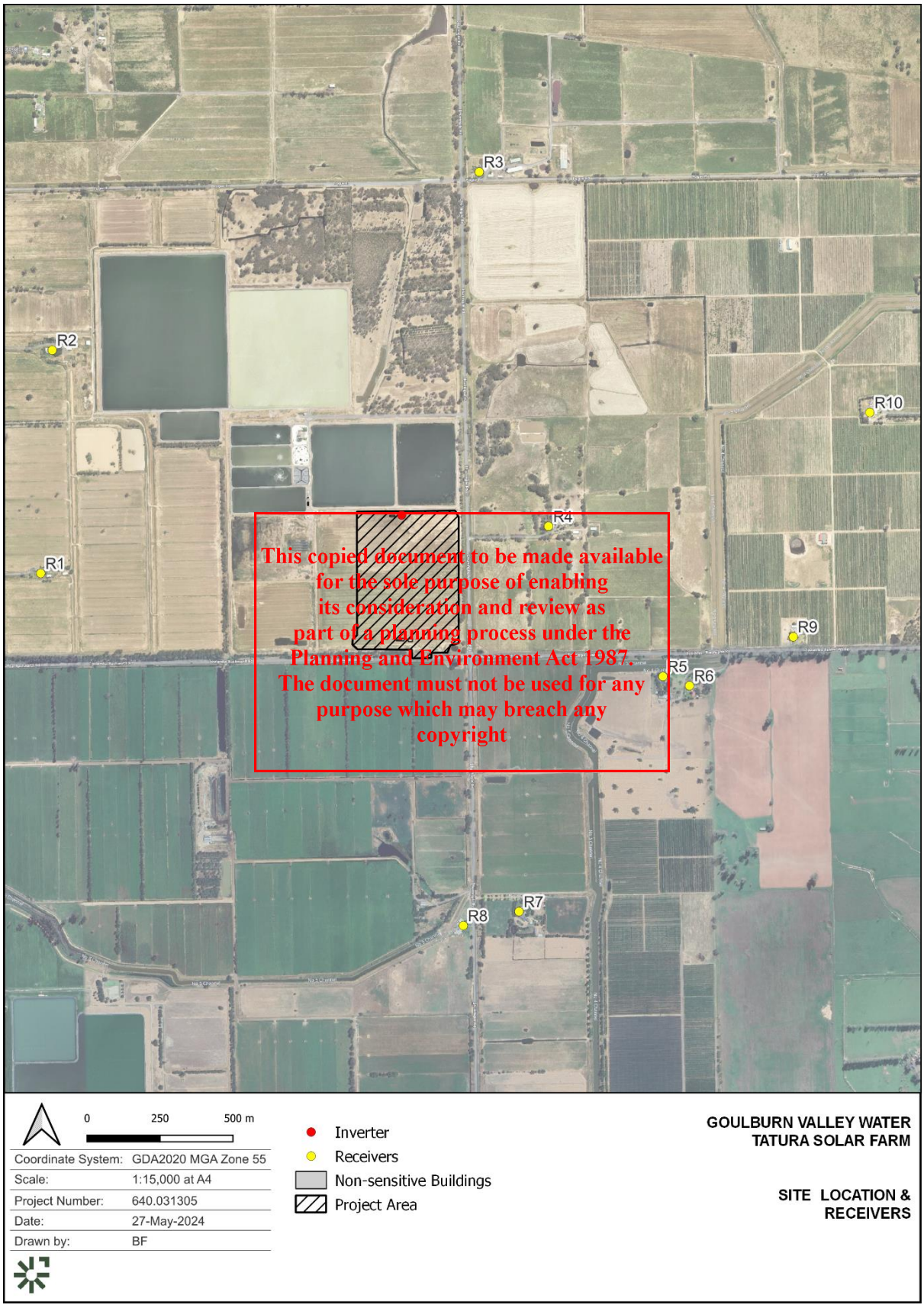
The 5 MW solar farm consists of a SMA 4400 inverter which feeds into either the existing transformer located at the Biogas Generator operated by Diamond Energy located 200 m north west of the proposed site or the existing Sewerage 1 Transformer on the north east boundary of the proposed site.

Ten noise sensitive receivers were identified within a 1.5 km radius of the site boundary. **Figure 1** shows the identified receivers with respect to the project area and **Table 1** summarises the receiver locations (UTM coordinates in GDA 2020 Zone 55) and the distance to the proposed inverter location.

Table 1 Noise Sensitive Receivers

Receiver ID	Address	Land Use Zone	Easting (m)	Northing (m)	Distance to Inverter (m)
R1	Murchison-Tatura Rd (south)	PUZ1	340968	5961190	1,250
R2	Murchison-Tatura Rd (north)	PUZ1	341007	5961955	1,330
R3	1140 Pogue Rd	FZ	342472	5962566	1,210
R4	680 Toolamba-Rushworth Rd	FZ	342709	5961352	500
R5	725 Toolamba-Rushworth Rd	FZ	343102	5960837	1,050
R6	723 Toolamba-Rushworth Rd	FZ	343193	5960805	1,150
R7	895 Dhurringile Rd	FZ	342608	5960031	1,420
R8	890 Dhurringile Rd	FZ	342417	5959982	1,420
R9	700 Toolamba-Rushworth Rd	FZ	343549	5960973	1,410
R10	760 Bayunga Rd	FZ	343811	5961742	1,640

Figure 1 Project Area and Nearby Sensitive Receivers



3.0 Victorian Regulations

3.1 General Environmental Duty

The general environmental duty (GED) is at the centre of the Environment Protection Act 2017 (EP Act), and it applies to all Victorians. GED states that a person who is engaging in an activity that may give rise to risks of harm to human health or the environment from pollution or waste must minimise those risks, so far as reasonably practicable.

The concept of minimising risks of harm to human health and the environment, so far as reasonably practicable, requires the person:

- to eliminate risks of harm to human health and the environment so far as reasonably practicable; and
- if it is not reasonably practicable to eliminate risks of harm to human health and the environment, to reduce those risks so far as reasonably practicable.

Under the Act, harm, in relation to human health or the environment, means an adverse effect on human health or the environment (of whatever degree or duration) and includes:

- an adverse effect on the amenity of a place or premises that unreasonably interferes with or is likely to unreasonably interfere with enjoyment of the place or premises; or
- a change to the condition of the environment to make it offensive to the senses of human beings; or
- anything prescribed to be harm for the purposes of the Act or the regulations.

Harm may arise due to the cumulative effect of harm arising from an activity combined with harm arising from other activities or factors.

To determine what is (or was at a particular time) reasonably practicable in relation to the minimisation of risks of harm to human health and the environment, regard must be had to the following matters:

- the likelihood of those risks eventuating,
- the degree of harm that would result if those risks eventuated,
- what the person concerned knows, or ought reasonably to know, about the harm or risks of harm and any ways of eliminating or reducing those risks,
- the availability and suitability of ways to eliminate or reduce those risks,
- the cost of eliminating or reducing those risks.

In the assessment of noise impacts with reference to GED, consideration must first be given to eliminating risks so far as reasonably practicable, and then to reducing those risks so far as reasonably practicable.

3.2 Regulated Noise Criteria

Certain types of noise within Victoria are regulated. The following sections provide an overview of how regulated noise is assessed in Victoria.

3.2.1 EP Act 2017

In Victoria, the EP Act prescribes that a person must not, from a place or premises that are not residential premises—

- emit an unreasonable noise; or
- permit an unreasonable noise to be emitted

Unreasonable noise means noise that—

- is unreasonable having regard to the following—
    - its volume, intensity, or duration
    - its character
    - the time, place, and other circumstances in which it is emitted
    - how often it is emitted
    - any prescribed factors, or
- is prescribed to be unreasonable noise

For the purposes of the above definition, 'frequency spectrum' is a prescribed factor.

The EP Act prescribes that, noise emitted from commercial, industrial and trade premises is prescribed to be aggravated noise if:

- in the case of noise emitted during the day period, the effective noise level exceeds the lower of the following:
    - 75 dBA
    - the noise limit plus 15 dB, and
    - in the case of noise emitted during the evening period, the effective noise level exceeds the lower of the following:
    - 70 dBA
    - the noise limit plus 15 dB, and
    - in the case of noise emitted during the night period, the effective noise level exceeds the lower of the following—
    - 65 dBA
    - the noise limit plus 15 dB.

3.2.2 EP Regulations and Noise Protocol 2021

The Environmental Protection Regulations 2021 (EP Regulations) support the EP Act by providing clarity and further detail for duty holders on how to fulfil their obligations. Regulations are used to deal with matters in detail and may contain their own penalties for breaches.

In Victoria, noise emissions from commercial, industrial and trade premises are not permitted to be unreasonable or aggravated, and are subject to the provisions of the Regulations, and the "*Noise limit and assessment protocol for the control of noise from commercial, industrial and trade premises and entertainment venues*", EPA Publication 1826.4 (the Noise Protocol).

The Noise Protocol presents the methodology for determining the noise limit (maximum allowable level of noise emitted from a premise) when measured in a noise sensitive area. Noise sensitive areas are defined in the Regulations as that part of the land within the boundary of a parcel of land that is within 10 m of the outside of the external walls of a place where people generally sleep (homes, dormitories, hotels, hospitals, correctional facilities etc.), schools (including childcare centres) and tourist establishments in rural areas (campgrounds, caravan parks, etc.).

Table 2 presents the assessment periods prescribed by the Regulations**.**

Table 2 Definitions of Day, Evening and Night Periods

Period	Day	Time
Day	Monday to Saturday (except public holidays)	7 am – 6 pm
Evening	Monday to Saturday Sunday and public holidays	6 pm – 10 pm 7 am – 10 pm
Night	Monday to Sunday	10 pm to 7 am

Rural Method – Noise Limits

The Noise Protocol noise limits for receivers in a rural environment take into consideration both influence of the zoning map categories (and changes in zoning categories), the background noise, and the distance between the zoning boundary and receiver (where different zones apply).

The generating zone is PUZ1 (Service & Utilities) and the receiving zone for receivers R1 and R2 is PUZ1 and the remaining receivers is FZ (Farming Zone).

Project Specific Noise Limits

The receivers are deemed to be not located in background relevant areas, therefore the project specific noise limits are the distance-adjusted[1] levels shown in **Table 3**:

Table 3 Project Specific Noise Limits

Receiver	Receiver Zone	Zone Level D/E/N, dBA	Distance Adjustment, dBA	Noise Limit, D/E/N, dBA
R1 and R2	PUZ1	50/45/40	0	50/45/40
R3	FZ	48/43/38	0	48/43/38
R4	FZ	48/43/38	-2	46/41/36
R5 to R10	FZ	48/43/38	-6 to -9	45/37/32
Note: the noise limits for the day/evening and night periods are the highest of the *distance adjusted limit* and the *base noise limit* in rural areas (45/37/32 dBA for day/evening/night respectively). The base noise limit is defined in Reg 118(2)(b).				

[1] The distance adjustment is determined in accordance with Clause 20 of the Noise Protocol:

a. If the noise generator and receiver are covered by the same contiguous zone, the distance adjustment is 0 dB

b. If the noise generator and receiver are not located in land use zones with the same zone code subtract 1 dB for every 100 m of receiver distance.

Protocol Assessment

The effective noise level is determined for noise from commercial, industrial and trade premises, as a 30-minute equivalent sound pressure level ($L_{Aeq, 30min}$) adjusted for character, including tonality, intermittency, and duration, where relevant.

The adjusted noise level is compared with the noise limit to determine whether or not the premises complies with the Noise Protocol.

As the proposed solar farm is potentially able to operate during sunlight hours (day and evening), applicable worst-case limits for the current assessment are during the evening period.

3.2.3 Low frequency noise guidelines

EPA Publication 1996 *"Noise guidelines: Assessing low frequency noise"* (LFNG) provides guidance for acoustic consultants and other qualified professionals who assess low frequency noise (10Hz – 160Hz).

Frequency spectrum is a prescribed factor under the EP Act and subordinate legislation. The assessment of frequency spectrum applies to noise from commercial, industrial and trade premises only.

Low frequency noise emitted from commercial, industrial and trade premises should be assessed by comparing its frequency spectrum to the relevant threshold levels. Specifically, Z-frequency weighted (unweighted or linear) measurements in one-third octave bands from 10 Hz to 160 Hz are compared with low frequency threshold levels.

The threshold levels are not set limits. Rather, they are levels that indicate a potential risk of problematic low frequency noise. The disturbance from low frequency noise depends on the:

- noise level,
- characteristics that can increase annoyance with the noise, for example, tonality, frequency modulation,
- baseline noise levels in the absence of the noise of concern.

Table 4 details the outdoor noise threshold criterion to be used for outdoor measurements. The noise threshold level for outdoor low frequency is based on the assumed façade noise reductions given in Downey and Parnell (2017).

Table 4 Outdoor One-third Octave Low Frequency Noise Threshold Levels

Outdoor one-third octave low frequency noise threshold levels													
One-third Octave band (Hz)	10	12.5	16	20	25	31.5	40	50	63	80	100	125	160
Leq (dB)	92	89	86	77	69	61	54	50	50	48	48	46	44

4.0 Noise Modelling

A 3D noise model was constructed within the modelling software SoundPLAN 8.2 and used to predict noise levels at the nearby sensitive receivers.

Noise modelling was conducted using the ISO 9613-2[2] algorithms incorporated in the noise modelling software. The ISO 9613-2 algorithm predicts the A-weighted sound pressure levels under meteorological conditions favourable to propagation from sources of known sound power levels. This enhanced propagation is equivalent to downwind propagation or a moderate ground-based temperature inversion. The model also includes attenuation due to air absorption, ground attenuation and shielding.

4.1 General Modelling Assumptions

The following general assumptions are made based on best-practice modelling method to suit the project:

- The reflection-order of other buildings was set to three (3), indicating that the noise model allowed for three (3) reflections off façades.
- The inverter source height was set to 3.2 m.
- Receivers were set 1.5 m above ground level.
- All equipment is assumed to be in operation for the entire 30 minute assessment period.
- Ground topography within 2 km of the proposed site was sourced from publicly available 1 second digital elevation data (approx. 30 m spatial) from Geoscience Australia.
- Ground absorption is modelled by a single number parameter between 0 (hard – reflective) and 1 (soft – absorptive). Bodies of water were modelled as hard ground, all other ground surfaces were modelled with a ground absorption parameter of 0.6, suitable for rural farmland.

4.2 Sound Power Levels

The primary noise producing item in the solar farm is the inverter. Noise data, including the 1/3 octave spectrum of the SMA 4400 inverter was provided by the original equipment manufacturer (OEM). **Table 5** shows the noise spectrum and overall A-weighted sound power level. Note that the inverter was modelled with the 1/3 octave data but is summarised in **Table 5** as octaves for convenience.

Table 5 Noise Spectrum – Sound Power Level

Item	Octave Band Centre Frequency, Hz -linear weighting, dBZ									dBA
	31.5	63	125	250	500	1k	2k	4k	8k	
Inverter	91	91	92	92	87	85	83	88	82	**93**

[2] ISO 9613-2:1996 *Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation*

5.0 Results

5.1.1 Noise Characteristics

The Noise Protocol contains provisions for adjustments for undesirable noise characteristics such as tonality, impulsiveness and intermittency. If one or more of these characteristics are present at the receiver, then an adjustment is applied to the overall level.

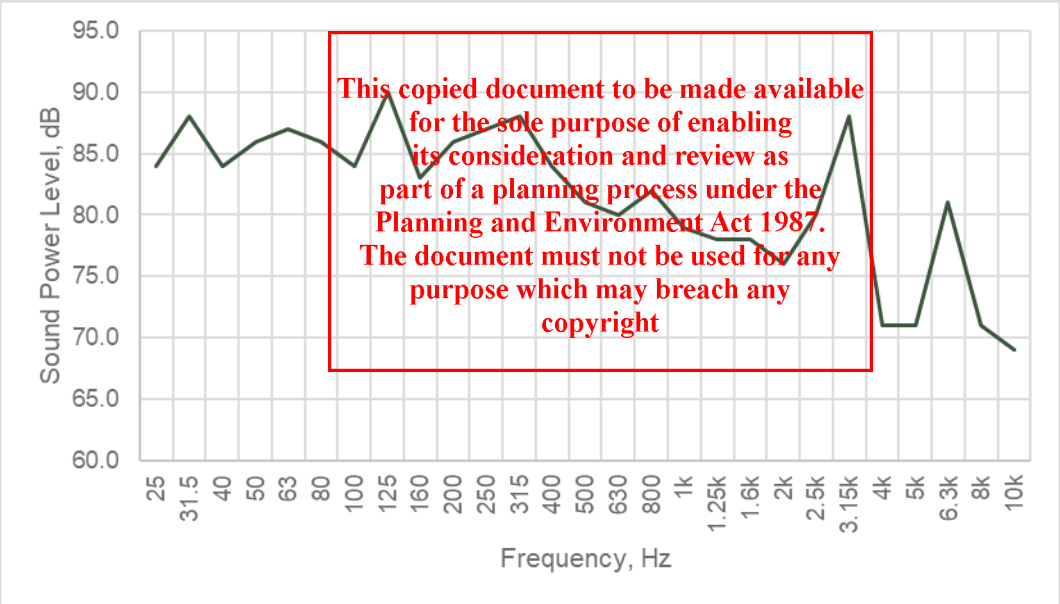
The following outlines the noise characteristics and discusses whether the adjustments are relevant to this assessment.

Tonality

Data provided by the OEM suggests that the inverter fan has tonal characteristics. Tones are shown at 125 Hz, 3.15 kHz and 6.3 kHz, as shown in **Figure 2**.

Tonality is judged (subjectively) at the receiver in context with the ambient environment. Given the propagation distances to the receivers (generally of the order of 1 km) and the relatively low levels of predicted noise, it is expected that tonal characteristics of the inverter will not be distinguishable at the closest noise sensitive receivers.

Figure 2 Inverter Sound Power Spectrum



Impulsiveness

The impulsiveness characteristic refers to a dominant sudden pressure peak, or series of peaks, or a single burst with multiple pressure peaks whose amplitude decays with time or a sequence of bursts. Noise due to inverter is not impulsive in nature.

Intermittency

Intermittency is present when the noise increases in level rapidly, and by at least 5 dB, on at least two occasions during a 30 minute period and maintains the higher level for at least one-minute. The inverter cooling fan is expected to cycle up and down as required to cool the unit. However the noise from the inverter cooling system is expected to be relatively constant over the entire day and is therefore not considered intermittent.

Therefore, no characteristic adjustments have been applied to the following results.

5.2 Noise Protocol Assessment Results

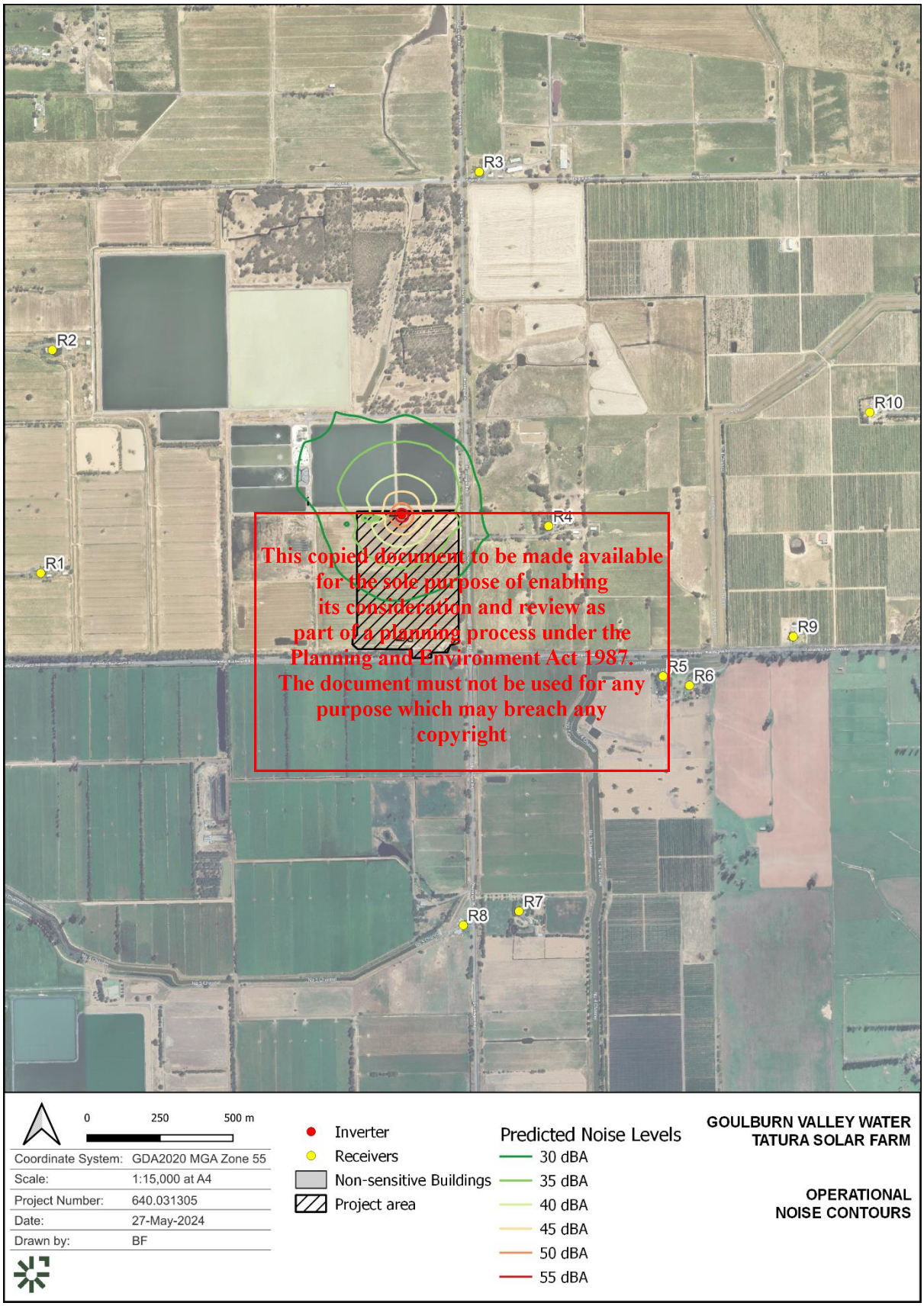
The predicted noise level at the identified receivers within 1.5 km of the project site are presented in **Table 6**. A noise contour plot of this scenario is shown in **Figure 3**.

Compliance with the day and evening time criteria is demonstrated at all receivers.

Table 6 Noise Assessment Results

Receiver	Predicted Noise Level, dBA	Noise Limit		Margin of Compliance, dBA	
		Day	Evening	Day	Evening
R1	<15	50	45	39	34
R2	<15	50	45	40	35
R3	<15	48	43	38	33
R4	21	46	41	25	20
R5	<15	45	37	33	25
R6	<15	45	37	34	26
R7	<15	45	37	37	29
R8	<15	45	37	37	29
R9	<15	45	37	37	29
R10	<15	45	37	37	29

Figure 3 Operational Noise Contours



5.3 Low Frequency Noise

The EPA guideline for low frequency noise (LFN) considers the one-third octave bands ranging from 10 Hz to 160 Hz. The OEM provided noise spectra for their units between 25 Hz to 10 kHz.

The Noise Guidelines: *Assessing Low Frequency Noise* (Publication 1996) adopts a low frequency threshold level as a screening tool to identify the potential risk of problematic low frequency noise.

Table 7 shows the predicted low frequency noise levels at the most exposed receiver R4, compared with the low frequency noise threshold. No exceedances of the LFN thresholds are predicted. The incomplete supplier data and limitations of modelling low frequency noise with ISO9613 algorithm should be acknowledged, however the assessment is consistent with SLR's expectation that low-frequency noise is unlikely to be an issue for the solar farm.

Table 7 Low Frequency Noise Assessment Results

	Frequency, Hz												
	10	12.5	16	20	25	31.5	40	50	63	80	100	125	160
LFN Threshold	92	89	86	77	69	61	54	50	50	48	48	46	44
Predicted LFN at R4 (Leq)	-	-	-	-	19	23	19	21	22	21	14	20	13
Margin of Compliance	**-**	**-**	**-**	**-**	**50**	**38**	**35**	**29**	**28**	**27**	**34**	**26**	**31**

6.0 Summary

This noise assessment was prepared as part of the planning application for the proposed 5 MW Tatura Solar Farm. This report presents applicable noise criteria, assessment methodology and results that show compliance with the day and evening time noise goals.

Compliance is achieved at the closest noise sensitive receivers with a significant margin of compliance.

Making Sustainability Happen