



Photon Energy

PHOTON
ENERGY
GROUP

YADNARIE RENEWABLE ENERGY FACILITY

Proposed PV Ultra (Solar Cogeneration)
and Thermal Hydro Facility

VOLUME 1

PROJECT SUMMARY

For Photon Energy AUS SPV 4 Pty Ltd

225 Broadview Road, 4543 Birdseye Highway and
Lot 28 Pine Corner Road,
Cleve, South Australia



Acknowledgement of Country

Photon Energy acknowledges the Barngarla people as the Traditional Custodians of the land on which the renewable energy project is proposed to be developed and respects the Barngarla people’s spiritual relationship with their Country and acknowledge and pay respect to Elders past, present and emerging.

Prepared by
 MasterPlan SA Pty Ltd
 ABN 30 007 755 277, ISO 9001:2015 Certified

33 Carrington Street, Adelaide SA 5000
 Telephone: 8193 5600, masterplan.com.au



VERSION	AUTHOR	REVIEWER
Draft	Julie Jansen MasterPlan 22 August 2024	Michael Richardson, MasterPlan
Draft Rev A	Julie Jansen MasterPlan 29 August 2024 - minor edits	Photon Energy and RayGen
Draft Rev B	Julie Jansen MasterPlan 17 September 2024	
Final 1.0	Julie Jansen, MasterPlan 8 October 2024	Photon and RayGen
Final 1.1	Julie Jansen, MasterPlan 24 October 2024	
Final 1.2	Julie Jansen, MasterPlan 28 October 2024	

Contents

Glossary of Terms	6
Executive Summary	8
Introduction.....	8
Project Overview	8
Socio-Economic Benefits.....	9
1 Application Information	10
1.1 Applicant Details.....	10
1.2 Site Selection	10
1.3 Development Application Structure.....	11
1.4 Subject Land	13
1.5 Locality.....	17
1.6 Application Processes	18
1.7 Project Timing	22
2 Project Description	24
2.1 Project Technology and Overview of Development Elements.....	24
2.2 Water Provision	44
2.3 Transportation	45
3 Description of the Development Site And Locality	46
3.1 Visual Characteristics.....	46
3.2 Environmental Characteristics	48
4 Socio-Economic Effects	50
4.1 Economic Effects	50
4.2 Alignment with South Australian Energy Policy.....	50

4.3	Community Benefit Scheme	53
4.4	Summary of Project Benefits.....	53
5	Project Assessment	54
5.1	Land Use & Zoning	54
5.2	Ecological Assessment.....	62
5.3	Heritage	69
5.4	Acoustic	70
5.5	Visual Assessment	74
5.6	Glint and Glare	89
5.7	Traffic.....	92
5.8	Aviation.....	95
5.9	Fire Risk and Management	99
5.10	Hydrology	104
5.11	Construction Environmental Management Plan	107
5.12	Decommissioning or Replacement.....	108
5.13	Statement of Commitments	108
6	Social Assessment.....	109
6.1	Engagement Plan	109
6.2	First Round of Community Engagement	110
6.3	Stakeholder Engagement.....	112
6.4	Second Round of Community Engagement.....	113
7	Summary	118

Glossary of Terms

Abbreviations	
AEMO	Australian Energy Market Operator
DEM	Department for Energy and Mining
DO	Desired Outcome(s) of the PD Code
DTS/DPF	Deemed-to-Satisfy Criteria / Designated Performance Feature
EPA	Environment Protection Authority
EPBC	Environment Protection and Biodiversity Conservation Act 1999
ESCOSA	Essential Services Commission of South Australia
Flux	The rate of flow of reflected light onto the solar receiver.
Glare	A more continuous source of excessive brightness relative to the ambient lighting.
Glint	A momentary flash of light.
ha	Hectares
Heliostat	A ground mounted two-axis solar tracking mirror that reflects the sun onto the receiver. Heliostats arranged in a field of rows in front of the receiver to provide concentrated light for a RayGen PV Ultra system.
Km	Kilometres
kV	Kilovolt
m	Metres
MNES	Matters of National Environmental Significance
MV	Megavolt
MW	Megawatts
MWh	Megawatt hours
NVC	Native Vegetation Council
Ocular Safety Zone	Zones defined by a GHD study into glare from RayGen's solar receiver that define varying impacts on the viewers eye based on proximity and direction to the solar receiver.
On-sun	The heliostat mirrors are in a state where they are tracking the sun and reflecting the light into the receiver.
ORC	Organic Rankine Cycle Engine – A type of engine that generates electricity from a heat differential, typically used for waste heat and geothermal applications, this is a key part of RayGen's Thermal Hydro technology.
OTR	Office of the Technical Regulator

Abbreviations	
Park position	The position of a heliostat when it is not in use. In this position the heliostat mirrors point straight down to the ground.
PD Code	Planning and Design Code
PDI Act	Planning, Development and Infrastructure Act 2016
PDI Regs	Planning, Development and Infrastructure (General) Regulations 2017
Peak Flux	The maximum amount of light expected to be incident upon the solar receiver.
Photon Energy	Photon Energy AUS SPV 4 Pty Ltd
PLUS	Planning and Land Use Services
PM	Procedural Matters
PMST	Protective Matters Search Tool
PO	Performance Outcome(s) of the PD Code
PTES	Pit Thermal Energy Storage System
PV Ultra	Concentrating Solar Photovoltaic technology developed by RayGen.
RayGen	RayGen Resources Pty Ltd
Receiver	The photovoltaic solar generator that receives concentrated light from the heliostat field. The receiver is positioned atop a tower is required in the RayGen PV Ultra system.
SCAP	State Commission Assessment Panel
SPC	State Planning Commission
Standby	The heliostat mirrors are in a state where they are tracking the sun and reflecting light to a pre-determined position in space adjacent to the receiver.
TEC	Threatened Ecological Communities
Thermal Hydro	Thermal energy storage technology developed by RayGen that uses water storage. ponds and an Organic Rankine Cycle Engine to provide dispatchable solar electricity to the grid.
TNV	Technical and Numerical Variations of the PD Code



EXECUTIVE SUMMARY

Introduction
Project Overview
Socio-Economic Benefits

Executive Summary

Introduction

Photon Energy NV (Photon Energy), a global project developer, has developed a strategic partnership with RayGen Resources Pty Ltd (RayGen), with the objective of developing global renewable energy projects suitable for the roll-out of RayGen’s unique solar power and electricity storage technology.

Photon Energy propose to utilise RayGen’s technology for generation of solar power and energy storage at Yadnarie, west of Cleve on the Eyre Peninsula. The technology proposed and duration of electricity storage is new to the South Australian renewable energy sector and comprises RayGen’s proprietary PV Ultra (solar cogeneration) and Thermal Hydro (electro-thermal storage) technologies.

The development proposed by Photon Energy is a facility with 150 MW of solar generation, 90MW AC grid connection and at least 720 MW hours of storage (8 hours of dispatchable energy). Electricity will be supplied to the national electricity grid via a 90MW connection to the existing Yadnarie substation or 132kV overhead transmission line (opposite the subject land).

Project Overview

Table 1: Project Overview	
Applicant	Photon Energy AUS SPV 4 Pty Ltd (ACN 615 353 314)
Development Application	24017660
Proposed Development	<p>A solar generation and energy storage renewable energy facility, incorporating 150MW solar generation and 90MW ORC generation with 720 MW hours of storage (8 hours of dispatchable energy), with a 90MW grid connection to the Yadnarie substation or 132kV overhead transmission line and ancillary infrastructure.</p> <p>Constructed in stages: Stage 1: (50MW solar and 30MW ORC): Q3 2025 – Q3 2027 Stage 2: (additional 100MW solar and 60MW ORC): Q4 2027 – Q4 2029</p>
Property Location	<ul style="list-style-type: none"> • Street address: 225 Broadview Road, 4543 Birdseye Highway and Lot 28 Pine Corner Road, Cleve, SA 5640 • Section 44 Hundred of Yadnarie in the area named Rudall and Sections 46, 55, 56, 394 and 395 hundred of Yadnarie in the area named Cleve, in Certificate of Title Volume 5940 Folio 707. • Section 39, Hundred of Yadnarie, in the area named Cleve in Certificate of Title Volume 6205 Folio 513. • Section 28, Hundred of Yadnarie, in the area named Cleve, in Certificate of Title Volume 6274 Folio 890. <p>Subject land is shown on the Site Plan (Attachment A)</p>
Valuation No’s.	Valuation No: 9261687008

Table 1: Project Overview

	Valuation No: 9261691007 Valuation No: 9261683007
Land Type	Freehold
Local Government Area	District Council of Cleve
Subject Land - Area	1530 hectares (approximately)
Zoning	Rural Zone, Planning and Design Code (version 2024.9 dated 23 May 2024)
Land Use	Primary production – livestock grazing and cropping

Socio-Economic Benefits

A capital investment of approximately \$750 million is anticipated to develop the project, with an estimated \$80-100 million in on-site labour.

Photon Energy is proposing the deployment of RayGen technology for this project which consists of locally manufactured solar modules made in Melbourne, Australia.

The project will require approximately 250 people at the peak construction period. A large portion of the work is civil construction and where feasible and possible will employ local resources and companies. The completed project will require approximately 20 people for the ongoing maintenance and operation of the plant and equipment.

The project will increase availability of electricity in the market via the low-cost long duration storage. RayGen's solar-plus-storage will ensure that grid demands are met, even in cases where other generation in the electricity grid is shut down due to an unplanned event.

1

APPLICATION INFORMATION

- 1.1 Applicant Details
- 1.2 Site Selection
- 1.3 Development Application Structure
- 1.4 Subject Land
- 1.5 Locality
- 1.6 Application Processes
- 1.7 Project Timing

1 Application Information

1.1 Applicant Details

Applicant details

Applicant	Photon Energy AUS SPV 4 Pty Ltd
Registered ABN	49 615 353 314
Registered Address	Level 5, 219-241 Cleveland St Redfern NSW 2016

Application contact details

Project Manager	Ivar Houcke
Project Manager Email	ivar.houcke@photonenergy.com
Website	https://www.photonenergy.com
Phone	+612 8021 3383

Photon Energy AUS SPV 4 Pty Ltd is a subsidiary company of Photon Energy N.V., a worldwide group with global headquarters in The Netherlands. Photon Energy N.V., the holding company for Photon Energy Group, was founded in 2008. Photon Energy Group currently has renewable energy projects in 14 countries including Poland, Czech Republic, Slovakia, Germany, Italy, Hungary and Australia. Worldwide the company has more than 400 employees and a portfolio of projects of 700+ MWp.

The Australian office of the Photon Energy Group was established in 2012. In 2014 the first Australian project was undertaken and in 2016 four additional plants were commissioned.

The proposed development will be undertaken by Photon Energy AUS SPV 4 Pty Ltd referred to in this document as “Photon Energy”.

Photon Energy has developed a strategic partnership with RayGen Resources Pty Ltd (RayGen), with the objective of developing renewable energy projects utilising RayGen’s proprietary PV Ultra (solar cogeneration) and thermal hydro (electro-thermal storage) technologies. The technology proposed and scale of electricity storage is new to the South Australian renewable energy sector. RayGen’s solar-plus-storage technology has been developed in a commercial demonstration plant at Carwarp, near Mildura in Victoria.

1.2 Site Selection

Photon Energy identified the opportunity to partner with RayGen and undertook feasibility to develop the subject land with the solar-plus-storage technology.

During 2021, the initial feasibility investigations identified the following advantages of the Yadnarie site:

- Proximity of the Yadnarie substation and ElectraNet’s intention for upgrading of the substation with generation capacity, providing an opportunity for connection of a new renewable energy project;
- Planned upgrade of the high voltage transmission line on the Eyre Peninsula and specifically within the locality (now complete);
- Supportive host landholders;
- Supportive Council and Regional Development Authority;
- Sparse distribution of dwellings within proximity of the site;
- Sparse vegetation cover within the development site; and
- Uncomplicated transport access route.

Detailed grid investigation modelling in conjunction with identification of site layout constraints followed over a two year period. The collection of base information, including detailed site survey, land use assessment, flora and fauna desktop and site investigations were undertaken. In 2022 initial engagement with the community was undertaken.

Engagement with the State Government occurred during the investigation phase of the project, which included obtaining a certificate from the Office of the Technical Regulator (OTR) regarding the project’s capacity to safeguard the stability and reliability of the State’s electricity network. A submission of a Crown Sponsorship request was made to the Department for Energy and Mining (DEM) in late 2021. Endorsement by DEM of the project as essential infrastructure occurred in February 2022.

During 2022 and 2023 investigations were undertaken to identify a source of water for the project, along with potential additional land for the project. Further detailed flora and fauna assessment was undertaken, along with acoustic, landscape and visual, transport, aviation, cultural heritage, civil/hydrology and bushfire assessments. All these inputs further informed the design process, which occurred in conjunction with ongoing grid connection investigations.

The project proceeded to further design phases during 2024 and the preparation of a development application. This documentation details the investigations undertaken, the further engagement with the community which has occurred and an assessment of the merits of the site as selected.

1.3 Development Application Structure

This is volume one of four volumes comprising the development application for the Yadnarie renewable energy facility. The application comprises:

- Volume 1 – Project Summary
- Volume 2 – Technical Reports
- Volume 3 – Drawings, Maps and Figures
- Volume 4 – Draft Construction Environmental Management Plan

Volume 1 (this report) provides information regarding the subject land and locality, the development components, the application process, the strategic context for renewable energy development, along with an outline of the investigations and findings of the technical expert reports which address a range of social, environmental and economic impact of the project.

Volume 2 comprises a range of technical assessments have been undertaken to inform the project. All technical assessment reports are contained in Volume 2 – Technical Reports and include:

Volume 2 – Technical Reports		
Report Title	Author	Report Reference
Ecological Assessment	EBS Ecology	EX240519 Revision 6 dated 22/10/2024
Native Vegetation Clearance Data Report	EBS Ecology	EX240519 Revision 4 dated 22/10/2024
EPBC Self-assessment	EBS Ecology	EX240519 Revision 4 dated 22/10/2024
Preliminary Landscape Character and Probable Visual Effect Assessment	Wax Design and Dr Brett Grimm	Revision E dated 5 September 2024
Environmental Noise Assessment	Resonate	Ref: A220230RP1C Revision 2 dated 1 October 2024
Aviation Assessment	Aviation Projects	Ref: 107301-01 Rev 1.1 dated 03 July 2024
Heritage Assessment Summary	IHC	June 2024
Traffic Impact Assessment	MFY	22-0074 Rev B dated 3 October 2024
Bushfire Protection Assessment Report	AJL Solutions	Final Report dated 30 September 2024
Development Assessment Report	MasterPlan	52274REP05 dated 28 October 2024

Volume 3 comprises the plans and figures which describe the development visually, including plans of the project by Worley and comprise:

Worley Plans - Project No. 411010-00647		
Plan Reference	Revision	Description
AU02-00-Y-CI-DLP-WA-0001	0	Site Plan Existing Uses
AU02-00-Y-CI-DLP-WA-0002	0	Site Plan Natural Features
AU02-00-Y-CI-DLP-WA-0003	1	Site Plan Existing Contours
AU02-00-Y-CI-DLP-WA-0004	1	Site Plan Relief
AU02-00-Y-CI-DLP-WA-0005	0	Site Plan Demolition
AU02-00-Y-CI-DLP-WA-0006	1	Site Plan Proposed Development
AU02-00-Y-CI-DLP-WA-0022	0	Typical Substation Layout
AU02-00Y-CI-DLP-WA-0023	1	Laydown and Construction Area
AU02-00Y-CI-DLP-WA-0024	2	Site Plan - Admin and Control
AU02-00Y-CI-DLP-WA-0025	2	Access Points & Intersections
AU02-00Y-CI-DLP-WA-0026	1	Development Staging Plan
AU02-00-Y-PI-DLP-WA-0001	1	Typical Heliostat Field
AU02-00-Y-PI-DLP-WA-0002	1	Typical Power Block Plot Plan
AU02-00Y-PI-DEL-WA-0001	1	Heliostat Field Elevation

Worley Plans - Project No. 411010-00647		
AU02-00Y-PI-DEL-WA-0002	1	Power Block Elevation
AU02-00-Y-PI-DLP-WA-0027	1	Landscape Screening Plan
Greenway Architects		
Project No: 23042 – SD.01	P1	Overall Site Plan
Project No: 23042 – SD.02	P1	Concepts
Project No: 23042 – SD.03	P1	Site Plan
Project No: 23042 – SD.04	P1	Floor Plan
Project No: 23042 – SD.05	P1	Elevations - Office
Project No: 23042 – SD.06	P1	Elevations – Sheds
Project No: 23042 – SD.07	P1	Sections
Project No: 23042 – SD.08	P1	3D Views
Project No: 23042 – SD.09	P1	Office – 3D Cutaway
Project No: 23042 – SD.10	P1	Architectural Impression 01
Project No: 23042 – SD.11	P1	Architectural Impression 02
Project No: 23042 – SD.12	P1	Architectural Impression 03
Action Steel Pty Ltd		
ASI-2629 – S01, S02 & S03	A	(Shed) Assembly Building

Volume 4 is a draft Construction Environmental Management Plan (CEMP). The objective of the CEMP is to describe the potential environmental issues related to the proposed works and the measures which will be undertaken to manage or mitigate any detrimental impacts.

1.4 Subject Land

Located on the southern side of the Birdseye Highway, the proposed development is sited approximately equidistant between the townships of Cleve and Rudall (as shown on the Locality Plan – **Figure 4** and in **Attachment B**).

The subject land is located entirely within the District Council of Cleve.

The subject land comprises approximately 1530 hectares and is bounded by the Birdseye Highway to the north, Pine Corner Road to the west, Broadview Road (in part) to the east and Price Road to the south, as shown on **Figure 1** (extract below and in **Attachment A**).

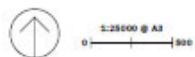
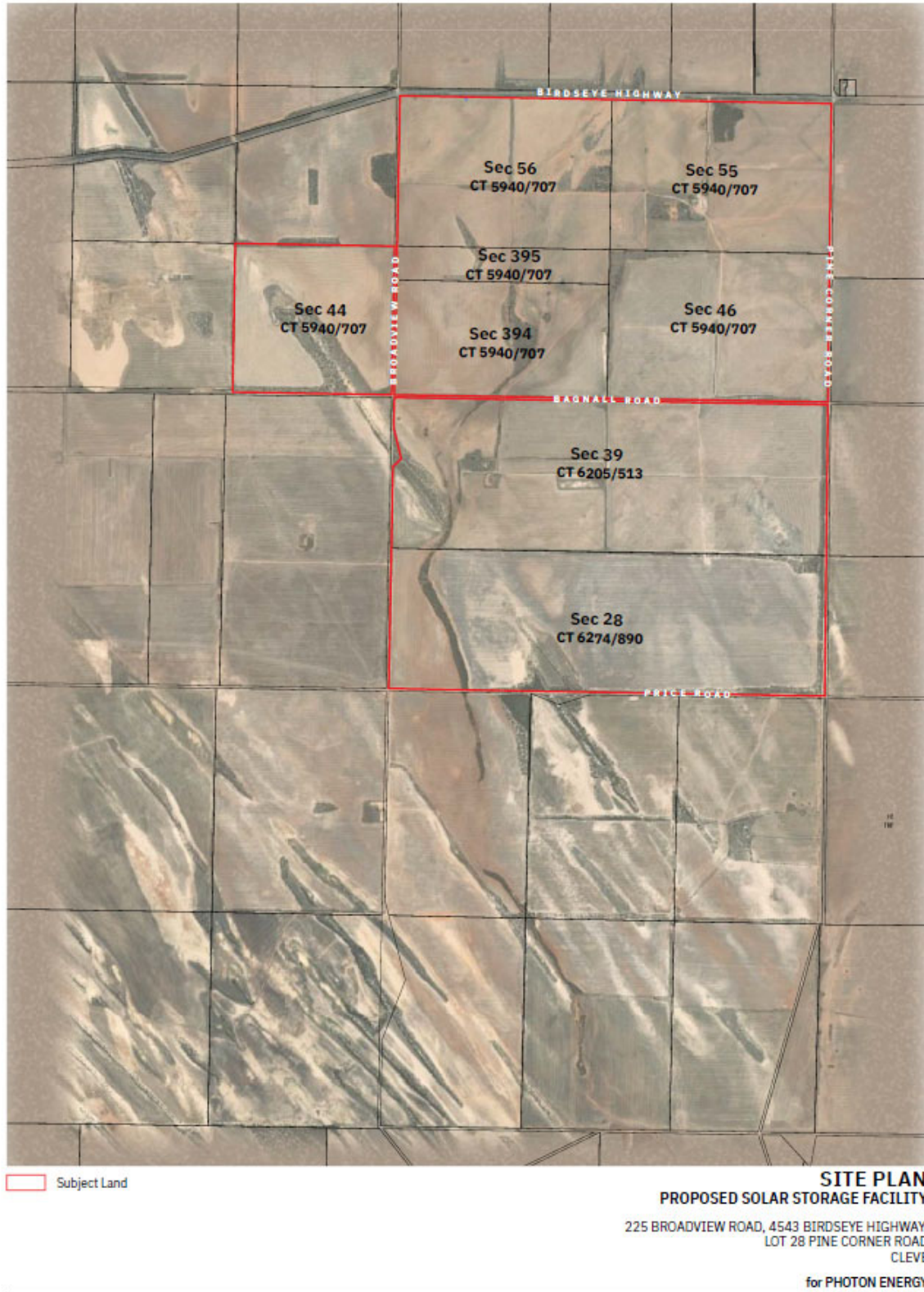
The subject land which will accommodate the development is addressed as 225 Broadview Road, 4543 Birdseye Highway and Lot 28 Pine Corner Road, Cleve. Legally the subject land incorporates:

- Section 39 Hundred of Yadnarie, in the area named Cleve in Certificate of Title Volume 6205 Folio 513;
- Section 44 Hundred of Yadnarie in the area named Rudall and Sections 46, 55, 56, 394 and 395 Hundred of Yadnarie in the area named Cleve, in Certificate of Title Volume 5940 Folio 707; and
- Section 28 Hundred of Yadnarie, in the area named Cleve, in Certificate of Title Volume 6274 Folio 890

Copies of the Certificates of Title are contained in **Attachment C**.

Currently, the subject land is utilised for cropping. The land comprises two dwellings, associated outbuildings and farm buildings.

Portion of the land is transversed by the 132kV electricity line with towers of approximately 65 metres in height. The Eyre Peninsula Link is a new double-circuit 132kV transmission line between Cultana and Port Lincoln via Yadnarie. The newly constructed transmission line (by Electranet) transverses the property adjacent to the former transmission line (now removed). Diagonally opposite the subject land is the Yadnarie sub-station. The transmission line and Yadnarie substation are illustrated in the photographs below.



MASTERPLAN.COM.AU
© MAY 2024 - 02 - 52076 - 051-0A



Figure 1: Subject Land



Figure 2: View of the subject land, including 132 kV transmission line and farm buildings. Looking in a south-western direction from Pine Corner Road.



Figure 3: View of Yadnarie substation infrastructure and 132kV transmission line as viewed from Pine Corner Road, across Birdseye Highway in a northerly direction.

The underlying character of the subject land is one of agricultural cropping with associated buildings, with areas of tree screening along road corridors and inland dunes that run northwest-southeast. The Landscape and Visual Impact Assessment by Wax Design and BGLA (as contained in Volume 2 of the development application documents) further describes the landscape character of the subject land as follows:

Pine Corner Road forms the eastern edge of the site and follows the underlying topography of the area.

The western edge of the project site is defined by Broadview Road and the tree screening that exists along the road corridor. The landscape character of Broadview Road forms a defined vegetative edge to the project site.

The project site is bisected centrally by a ridge that extends from the foothills of Poolalalie Hill Range through the eastern regional landscape and across the project site. The ridge creates a visual envelope that separates the project site to the northwest and southeast.

Across the southwestern section of the project site is a large prominent sand hill that runs northwest-southeast and fragments the site further.

Both topographic features rise to a height of between 20 and 30 metres in elevation. The form and height of the ridge and sandhill generate additional visual envelopes and visual fragmentation across the project site boundary as well as the broader locality.

The existing transmission line is evident within the field of view, as well as the infrastructure associated with the substation located on Birdseye Highway.

1.5 Locality

The locality of the development is characterised by primary production activities, particularly cropping and grazing, along with associated scattered dwellings and farm buildings. Agricultural infrastructure such as grain storage facilities are evident within the locality, as is the Yadnarie substation adjacent the major transport route through traversing the Eyre Peninsula (the Birdseye Highway).

The locality plan shown in Figure 4 illustrates the subject land and its proximity to both Cleve and Rudall. Furthermore, the Locality Plan illustrates the location of dwellings (sensitive receivers) within the vicinity of the proposed development. Shown as green dots on the plan, it is noted that there are 2 identified dwellings within 2 kilometres of the boundary of the subject land and an additional 12 dwellings within 5 kilometres. These dwellings are located around the subject land with the greatest number to the east between the boundary of the site and the township of Cleve.

The subject land and locality is located within a temperate climate. Temperatures throughout the summer are hot with warm nights, while winters are mild with cool nights. Both winters and summers are typically dry, with the area experiencing prolonged dry periods interspersed with brief, significant rainfall events. Cleve is the closest meteorological station to the subject land. The locality

experiences an average annual rainfall total of 398 millimetres (mm), spread throughout the year, but wettest between May and September (source: rainfall data for Cleve - Bureau of Meteorology ID 018014).

The locality is described in more detail in the Landscape and Visual Assessment by Wax Design and the Ecological Assessment Report by EBS Ecology.

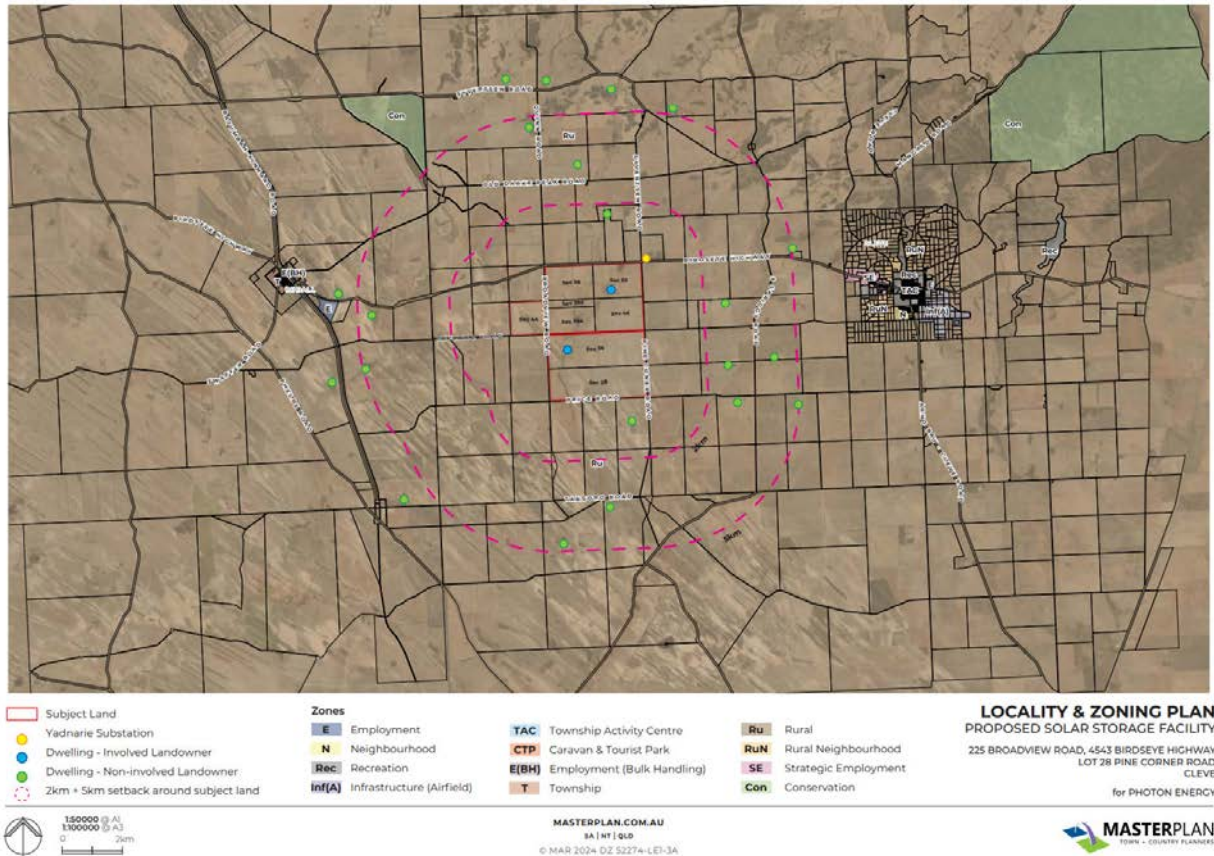


Figure 4: Locality Plan

1.6 Application Processes

1.6.1 Development Application Process

Crown Development

Yadnarie Renewable Energy Facility is being processed as a Crown Development pursuant to the *Planning, Development and Infrastructure Act 2016 (PDI Act)*. A development application for this project was submitted prior to the enactment of the *Hydrogen and Renewable Energy Act 2023 (HRE Act)*.

The application process for renewable energy projects such as this, which are deemed to be “essential infrastructure” is commonly referred to as a Crown Development.

The Department for Energy and Mining (DEM) by letter dated 16 February 2022 (and subsequent extensions of time dated 9 February 2023 and 5 February 2024 contained in Attachment D) have endorsed the project as “essential infrastructure”, which is commonly referred to as Crown sponsorship.

essential infrastructure means—

- (a) infrastructure, equipment, structures, works and other facilities used in or in connection with—*
 - (i) the generation of electricity or other forms of energy; or*
 - (ii) the distribution or supply of electricity, gas or other forms of energy; and*
- (b) water infrastructure or sewerage infrastructure within the meaning of the Water Industry Act 2012; and*
- (c) transport networks or facilities (including roads, railways, busways, tramways, ports, wharfs, jetties, airports and freight-handling facilities); and*
- (d) causeways, bridges or culverts; and*
- (e) embankments, walls, channels, drains, drainage holes or other forms of works or earthworks; and*
- (f) testing or monitoring equipment; and*
- (g) coast protection works or facilities associated with sand replenishment; and*
- (h) communications networks; and*
- (i) health, education or community facilities; and*
- (j) police, justice or emergency services facilities; and*
- (k) other infrastructure, equipment, buildings, structures, works or facilities brought within the ambit of this definition by the regulations;*

The development application 24017660 submitted on 18 June 2024, will be assessed in accordance with Section 131 of the *Planning, Development and Infrastructure Act 2016* (the PDI Act) as “crown development”.

The State Planning Commission (SPC) via the State Commission Assessment Panel (SCAP) will process the development application and make a recommendation to the Minister for Planning. The application will be subject to referral to relevant Government Agencies, the District Council of Cleve and notification to the public.

Office of the Technical Regulator

Electricity to be generated and stored by the development is to be distributed to the national grid. Photon Energy has provided the Office of the Technical Regulator with correspondence in relation to the proposed use of synchronous condensers to provide safety and security to the South Australian electricity system. The approach proposed by Photon Energy has been approved and a Certificate of Compliance by the Office of the Technical Regulator was issued on 8 December 2021 and updated on 5 October 2022 and 25 June 2024 (**Attachment E**).

Other Legislative Approvals

The proposed development may require a range of approvals, licences and permits under various State and Commonwealth legislation.

It is commonplace for renewable energy developments to concurrently seek approval in relation to the following pieces of legislation during the development approval process.

Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

The EPBC Act is Commonwealth Legislation that focuses on the protection of the environment, especially matters of national environmental significance. The submission and/or determination of an EPBC referral is independent of the development approval process.

The desktop assessment undertaken by EBS Ecology identified one threatened ecological community (TEC) as potentially occurring within the locality. Following the field assessment, it was confirmed that this TEC does not occur on the subject land.

A EPBC self-assessment has been undertaken by EBS Ecology to inform whether any Matters of National Environmental Significance (MNES) listed under the EPBC Act could be significantly impacted by the proposed development. This self-assessment concluded that an EPBC referral to the Minister for the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) is not required for the proposed development (refer Volume 2 of the development application documents for EPBC Self-assessment report by EBS Ecology). Photon Energy may undertake the referral process to confirm that the development is not a controlled action under the EPBC Act.

Aboriginal Heritage Act 1998

Photon Energy are aware of their duty of care pursuant to the *Aboriginal Heritage Act 1998*, as proponents of the development to address the likelihood of any impact on heritage. Approvals required pursuant to the Aboriginal Heritage Act 1998 are independent of the development approval process.

Native title does not exist at this location and a search of the AARD database has indicated that the Register of Aboriginal Sites and Objects (the Register) has no entries for Aboriginal sites within the project area (refer **Attachment F**). A desktop heritage assessment has been undertaken by Independent Heritage Consultants (IHC) (refer Volume 2 of the development application documents for IHC Desktop Heritage Assessment summary report by IHC). The heritage assessment determined that there were no known Aboriginal heritage sites within the project area. Considering the Aboriginal heritage context for the area, the environmental landforms, and the level of previous development, it was assessed that there is a low risk of works encountering unknown Aboriginal sites and objects in previously developed/ploughed areas, and a moderate risk in undeveloped/unploughed areas (i.e., seasonal creeks, creek margins, elevated sandy areas).

Native Title

The site area is part of the Barngarla Native Title Claim which has been determined. The Federal Court has determined that native title does not exist in this location.

Native Vegetation Act 1991

Native vegetation within the project area is protected under the *Native Vegetation Act 1991* and *Native Vegetation Regulations 2017*. Any proposed clearance of native vegetation in South Australia (unless exempt under the Regulations) is to be assessed against the Principles of Clearance under the Act and requires approval from the Native Vegetation Council (NVC). A net environmental benefit is generally conditional on an approval being granted.

This project is considered to comply with Division 5 of the *Native Vegetation Regulations 2017* which allows for the clearance of native vegetation in relation to specific activities as set out in Schedule 1, Parts 4, 5 or 6. This project fits within Part 6, section 34 (1) (b) whereby;

(1) Clearance of vegetation—

(a) incidental to the construction or expansion of a building or infrastructure where the Minister has, by instrument in writing, declared that the Minister is satisfied that the clearance is in the public interest; or

(b) required in connection with the provision of infrastructure or services to a building or proposed building, or to any place, provided that any development authorisation required by or under the Development Act 1993 has been obtained.

A Native Vegetation Data Report has been prepared by EBS Ecology (refer Volume 2 of the development application documents for this report by EBS Ecology) and is further discussed in Section 5.2 of this report.

National Parks and Wildlife Act 1972

Native plants and animals in South Australia are protected under the National Parks and Wildlife Act 1972. Under this Act, it is an offence to take a native plant or protected animal without approval. Conservation significant flora and fauna species listed on Schedules 7, 8, or 9 of the National Parks and Wildlife Act 1972 are known to or may occur within the proposed site of the development.

Landscape South Australia Act 2019

Under the Landscape South Australia Act 2019 (Landscape Act), landholders have a legal responsibility to manage declared pest plants and animals and prevent land and water degradation. This Act will have relevance in relation to the ongoing control of pest plant and animal species during construction and site remediation.

Aviation

An aviation impact assessment has been undertaken by Aviation Projects (refer Volume 2 of the development application documents for Aviation Assessment report) to determine any potential aviation impacts, including impacts associated with tall objects and solar glare, as the Project is approximately 9km west of Cleve aerodrome. This assessment notes that the proposed development does not require approval of the Civil Aviation Safety Authority and does not impact on the operation of Cleve Aerodrome. The findings of the aviation assessment are discussed in Section 5.8 of this report.

Defence Act 1903

There are no identified Defence Force land holdings within the locality of the proposed renewable energy facility.

Mining Act 1971

There are no active mining tenements or licences on the subject land. SA Government data indicates there are historic exploration licences for minerals/opals on the site and in the locality. There are several mineral exploration licences on the Eyre Peninsula. The status of these licences is continually being monitored and will be the subject of ongoing liaison with the licence holders as the project progresses to detailed design post development authorisation.

Petroleum and Geothermal Energy Act 2000

Petroleum Exploration Licence (PELA 691) is sited over the subject land and a substantial area of the Eyre Peninsula. The status of these licences is continually being monitored and will be the subject of ongoing liaison with the licence holder as the project progresses to detailed design post development authorisation.

1.7 Project Timing

A part of this development application, Photon Energy seeks a period of two years in which to substantially commence the proposed development from the operative date and substantial completion five years from the operative date of the development authorisation. The development is proposed to construct the development in stages:

Stage 1: (50MW solar and 30MW ORC): Q3 2025 – Q3 2027

Stage 2: (additional 100MW solar and 60MW ORC): Q4 2027 – Q4 2029

Photon Energy intends to commence construction of the project in the third quarter of 2025 and within two years of obtaining development authorisation. It is anticipated that construction of Stage 1 would take approximately 18 months to two years, with Stage 2 following and overall project completed by the end of 2029.

Table 4 outlines the likely timetable for construction and operation of the project.

Table 4: Project Timing	
Phase	Duration
Pre-construction, project planning, community engagement and development authorisation	3 years (end 1 st Quarter 2025)
Financial Close	3 rd Quarter 2025
Construction	Stage 1: 18 months (between 3 rd Quarter 2025 and 2 nd Quarter 2027) Stage 2: 18 months - two years (between 4 th Quarter 2027 and Quarter 4 2029)
Commissioning	Stage 1: 3 rd Quarter 2027 Stage 2: 4 th Quarter 2029
Operation	30 years
Maintenance	Ongoing
Decommissioning or replacement	At completion of project life

2

PROJECT DESCRIPTION

- 2.1 Project Technology and Overview of Development Elements
- 2.2 Water Provision
- 2.3 Transportation

2 Project Description

The subject land comprises approximately 1530 hectares. Only a portion of the land will be utilised for development infrastructure. The area of land that would accommodate the project infrastructure, including heliostats, towers, generators, access roads and a substation is estimated to be 810 hectares, plus the area of the construction compound and transmission lines.

2.1 Project Technology and Overview of Development Elements

The RayGen technology to be deployed in this project includes three proven technologies (shown illustratively in **Figure 5** and described by RayGen):

1. Solar Generation – PV Ultra: PV Ultra generates electricity and heated water from solar modules, operating at power density at 2,000 times higher than traditional solar panels.
2. Storage – Pit Thermal Energy Storage: A hot reservoir is heated by the PV Ultra system. The cold reservoir is cooled with an electric chiller, using electricity from PV Ultra or the grid.
3. Heat to power - Organic Rankine Cycle (ORC): the stored temperature difference is used to generate electricity using an Organic Rankin Cycle engine, optimised to operate as a thermal turbine below 100°C.

There are two cycles: the “charge” and “discharge” cycles.

The charge cycle comprises:

- A field of smart mirrors concentrates sunlight onto a raised PV Ultra receiver.
- PV Ultra receiver converts sunlight to power with 90% efficiency. One-third to electricity and two-thirds to heat using highly efficient, actively cooled photovoltaic modules.
- The generated heat is stored in a nearby water reservoir.
- The generated electricity is used to chill water to 0°C in a second reservoir or sold back to the grid.

The discharge cycle comprises:

- The insulated reservoirs maintain a temperature difference of 90°C, storing energy equivalent to a Pumped Hydro system with a height difference of 1,000m.
- The stored difference in temperature is used to drive a heat to power ORC engine.
- The engine provides the grid with synchronous, reliable and on-demand power.
- Electricity can also be stored from and returned to the grid on demand.

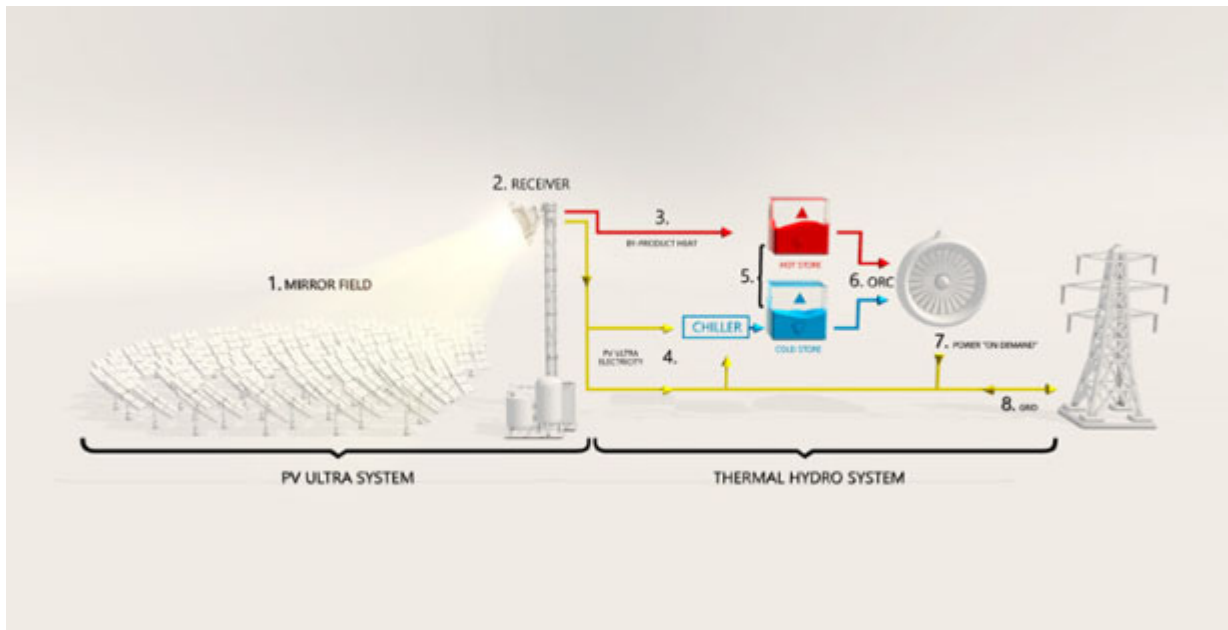


Figure 5: RayGen technology incorporating PV Ultra, Thermal Hydro System and connection to the electricity grid. (Source: RayGen)

The elements to be developed as part of the project include:

- Site area that is significantly less than the size of the subject land (of approximately 1530 hectares), taking account of the natural land features, infrastructure setbacks and retention of vegetation.
- 150 fields of rotational mirrors (heliostats) orientated north. Each field comprises 273 individual heliostats. Each heliostat is approximately between 2.6 and 5.6 metres above the ground and mounted on a steel post. Heliostat heights will vary throughout the day as they track the sun. Each field has one receiver mounted on a tower 45 metres high (approximately 42m to the top of the receiver plus height of lightning rod). The receiver faces the field of mirrors in a southward direction. Each receiver has electrical switchgear and water pumping infrastructure at the base of its tower. For every two fields, there is one inverter for a total of 75 inverters. The inverter is a 6m (20ft) shipping container-sized electrical device that converts DC power from the receivers to AC power ready for the grid.
- Three (3) thermal hydro pits units comprising:
 - 3 cold pits. Each pit/tank is up to 28,000 square metres with a height above ground level of 3.0 metres and up to 230,000 cubic metres capacity.
 - 3 hot pits. Each pit/tank is up to 28,000 square metres with a height above ground level of 3.0 metres and up to 230,000 cubic metres capacity.
 - Associated excavation, lining and covering of pits.
- Three (3) Thermal Hydro plants, each comprising:

- An Organic Rankine Cycle (ORC) engine and generator, with net capacity of 30MW
 - Heat Exchangers
 - Tanks
 - Various pumps
 - Large Chiller and Heat Pump units
 - Connecting pipework
 - Associated buildings.
-
- Three (3) waste heat pits, each comprising up to 10,000m² with a height above ground level of 3m and a capacity of up to 75,000m³.
 - Anhydrous ammonia is used as the working fluid in the ORC and chiller/heat pump plant.
 - Underground electrical cable reticulation on site.
 - Underground water reticulation
 - Switch yard/substation and connection via overhead transmission connection to the Yadnarie substation or existing 132kV transmission line.
 - Emergency venting of ammonia systems, elevated for personnel safety.
 - Ammonia handling and disposal systems to support maintenance of the process equipment and pipework.
 - Water treatment system with filtrate water stream potentially suitable for alternative uses.
 - Administration building, car parking, workshop and amenities
 - Operations, maintenance building and compound.
 - Security fencing around the site.
 - Internal access driveways.
 - Areas of landscape screening and revegetation.

RayGen's solar-plus-storage technology has been developed in a commercial demonstration facility at Carwarp, near Mildura in Victoria. The Carwarp site comprises 4MW of solar generation and 2.8MW of thermal storage capable of operating for about 17 hours (50MWh) and is illustrated in the photographs below.



Figure 6: RayGen commercial demonstration facility Carwarp, Victoria – Source photograph RayGen



Figure 7: Photograph of heliostats and receiver at RayGen site - Carwarp, Victoria.



Figure 8: Thermal Hydro pit and receiver at RayGen site - Carwarp, Victoria.



Figure 9: Thermal Hydro plant and equipment - RayGen site - Carwarp, Victoria.



Figure 10: View of heliostats, receivers and hydro thermal plant and equipment at RayGen site, Carwarp, Victoria.



Figure 11: RayGen commercial demonstration facility Carwarp, Victoria – Source photograph RayGen

Plans and details of the development proposed to be constructed at Yadnarie are contained within Volume 3 - Drawings, Maps and Figures of the development application documentation. The site layout of the project is shown in **Figure 12**.

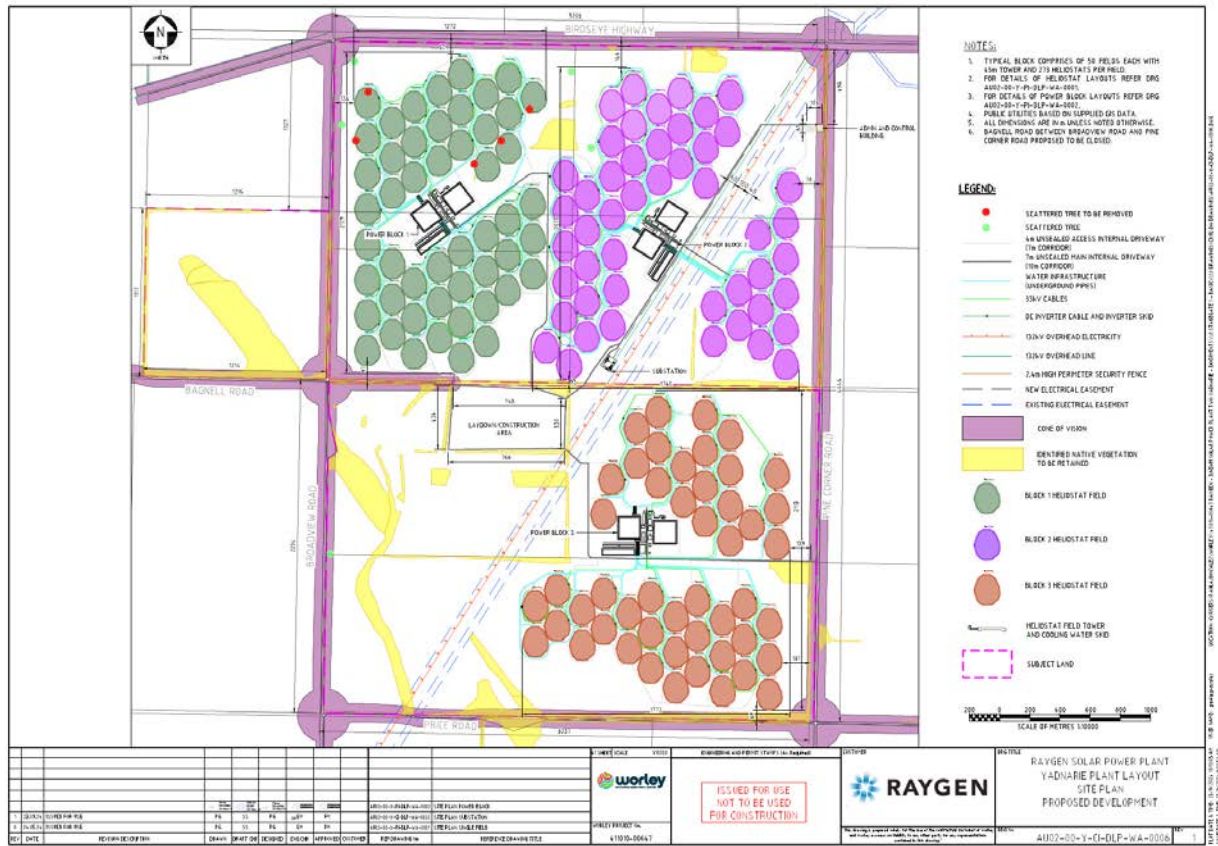


Figure 12: Site Layout Plan Proposed Development by Worley.

2.1.1 Heliostats

“Each heliostat consists of eight 2.2m x 1.1m silver mirror facets mounted to a central post that are positioned using a dual axis tracking system to ensure the reflected light is directed at the central receiver throughout the day. Each heliostat spans a total area of 19.36 m² and is formed to a slightly curved shape with a designated focal length for each row” (source RayGen. **Figure 13** shows typical views of a heliostat.

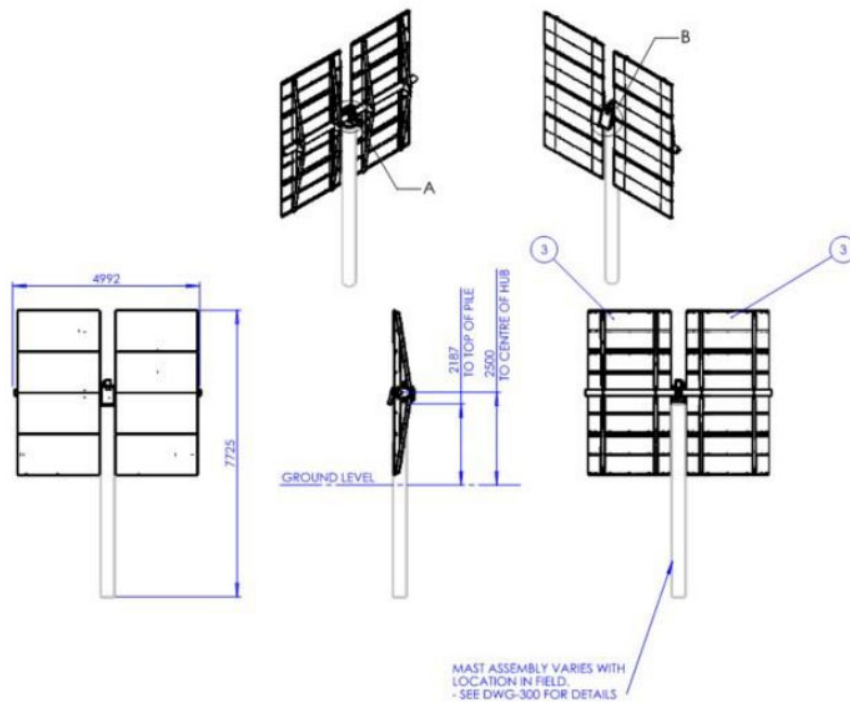


Figure 13: Typical arrangement of a heliostat (source RayGen)

“Heliostats of the PV Ultra system operate autonomously with four main operational states as follows:

- On sun – Heliostats targeted at the receiver.
- Standby – Heliostats targeted at different individual places in the sky above the receiver.
- Stow – Heliostat mirrors horizontal and pointed at the sky or ground, for a storm event.
- Park – Heliostat mirrors horizontal and pointed at the ground.

The typical positioning sequence for heliostats is park, then standby, then on sun with the reverse order during shut down. During on sun position heliostats are focused on the PV cells at the central receiver. During the transit period, heliostats move in a pre-defined path to minimise adverse light spill and glint observed by an observer on ground” (source RayGen).



Figure 14: Heliostat in park position (non-operational) with mirrors facing the ground at RayGen's Carwarp demonstration facility.



Figure 15: Heliostat in operation with mirrors facing the receiver at RayGen's Carwarp demonstration facility.

By design, the proposed development reflects and concentrates light. The three major sources of reflected light for the proposed development will be:

- Concentrated light from a heliostat
- Glint and glare from a heliostat (non-concentrated)
- Glare from the solar receiver

Several factors will determine the intensity and extent of each source of reflected light, including:

- The intensity of the sunlight.
- The distance and orientation of the heliostat or receiver aperture relative to the recipients viewing point.
- Time of day and seasonal variations defining position and angle of sunlight.
- Cloud cover.
- The level of particulate matter in the atmosphere (moisture, dust, smoke, etc.).
- The presence of screening (vegetation, buildings, fences, etc.) relative to recipient locations.

Direct reflected light from the front mirror face of a heliostat is concentrated due to the curvature of its mirrors. This curvature is important to achieving the required light concentration at the receiver for the system to operate efficiently.

The level of concentration of reflected light varies depending on the distance away from the heliostat. Maximum concentration is at the focal point.

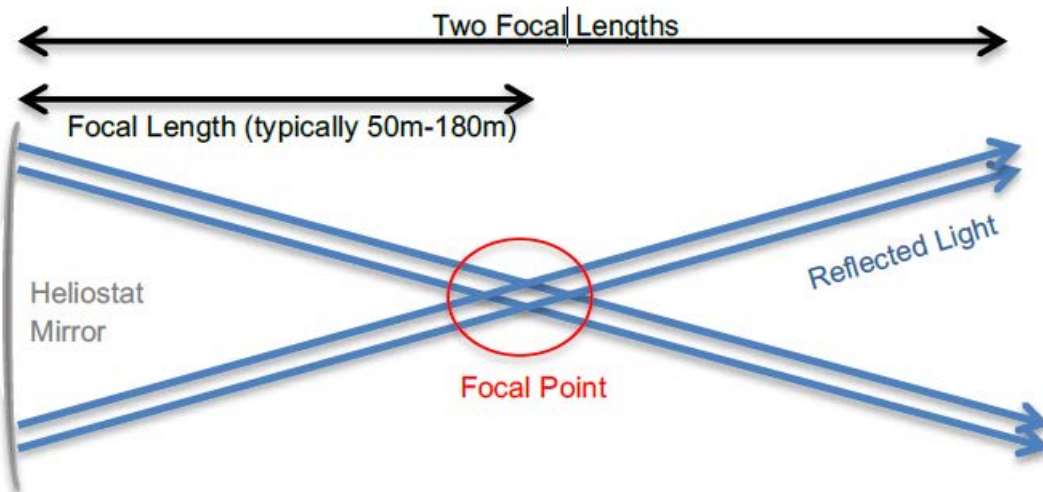


Figure 16: Reflected light paths from a single heliostat – Source RayGen

Figure 16 above illustrates that a concentrated beam from a heliostat becomes 'divergent' after the focal point. Then, after reaching a distance two focal lengths away from the mirror, the light is no longer concentrated and becomes just normal reflected sunlight.

Heliostats at the Yadnarie site will have a number of different focal lengths ranging between 50m and 206m depending on their location within the heliostat field. The ones at the front of the field, closer to the tower, have shorter focal lengths and the ones at the back of the field have longer focal lengths. A recipient of light within a range of two focal lengths of a particular heliostat would be subject to some degree of concentrated light. The intensity of this concentrated light drops off dramatically when the recipient moves away from the focal length. In addition, the shading and blocking interaction between neighbouring heliostats also dramatically reduces the likelihood of a recipient at ground level experiencing the full focus of a heliostat. The proposed development is designed with adequate boundary setbacks and/or control systems to mitigate any impact on any neighbouring land, sensitive receivers, or road users.

It is noted that although the heliostats can rotate and point due east or due west at the start and finish of each day, the angle of their reflections (concentrated light) is kept to a relatively narrow range to the north of the field during normal operation. This is very important when considering the likelihood of impacts of any concentrated light from heliostats.

Glint and glare from a heliostat (non-concentrated) can be in the form of a reflection off the front face or the edge of the heliostat. The reflection is off either glass or steel material. During the day when the system is operating, the heliostat is tracking on-sun and all light captured by the heliostat is directed towards the receiver. The back side of the heliostat (white in colour) is also facing away from the sun meaning that glint and glare is highly unlikely in this situation.

Glint and glare are likely to be seen by a viewer within the boundary of the site, when the heliostat is tracking to and from park position, to a standby or on-sun position. This occurs for only a very small percentage of the operating time. When in 'park' position (system not operating) the heliostat mirrors face down towards the ground further reducing the likelihood of glint and glare.

Assessments of the potential impacts of the concentrated light and glint and glare have been considered in the design of the plant and on sensitive receivers in various technical reports (traffic, aviation, visual impact, and bushfire), all of which are discussed in Section 5.6 of this report.

2.1.2 Receivers

"The PV Ultra receiver is the main component of the system and is a single unit canted 26 degrees from vertical, fixed to a tower 45 m above the ground. The receiver has three major surface elements which are used to concentrate light reflected from the heliostats located within the field. The primary and main component is a PV array with 441 powerful PV modules (arranged 21 x 21 for approximately 4.4 m²). The central array is surrounded by mirrored panels (flux modifiers) canted 69.5 degrees from the PV module surface. The flux modifiers have a width of 854 mm which effectively make an aperture dimensions of 2.75 m x 2.75 m. Aperture target are the outer geometry of the receiver which ensures maximum capture of reflected light from the heliostats. Inclusion of this aperture target makes the front face target aperture dimension of approximately 4.36 x 4.36 m" (Source:RayGen). **Figure 17** shows the typical arrangement of a receiver.

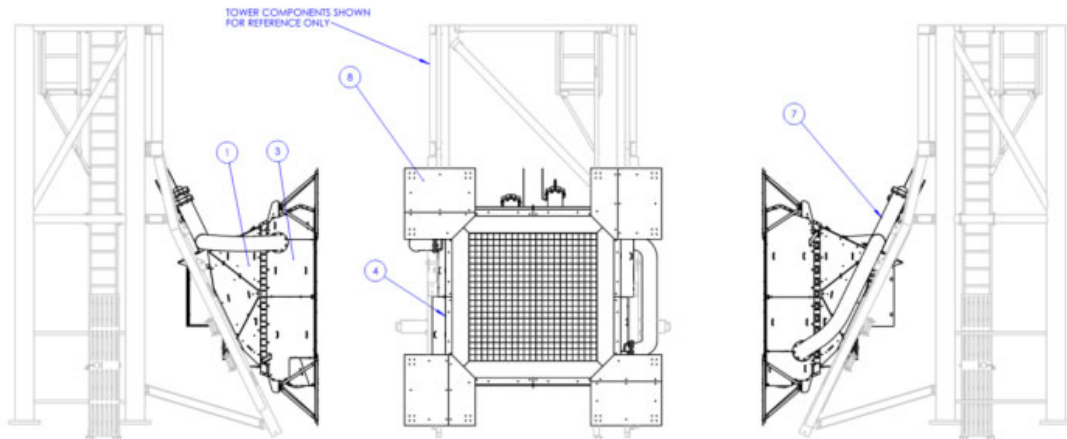


Figure 17: Typical arrangement of a PV Ultra receiver (source RayGen).



Figure 18: Photographs of receivers at RayGen's Carwarp demonstration facility. Photograph of non-operational receiver on left and operational receiver on right.

The solar receivers are designed to accept as much light as possible from the heliostats. Approximately 10% of this light will be reflected back as a diffuse (non-concentrated) reflection of light from its aperture. The result of this reflected light is a "halo" type effect around the aperture of

the receiver as shown in Figure 19 below. This “halo’ effect is not visible when the viewer is positioned to the north of the receivers.



Figure 19: Halo effect of receivers at RayGen's demonstration facility at Carwarp Victoria.

A map of the ocular safety zone for glare has been developed (for/by RayGen) to inform the siting of receivers, as illustrated in **Figure 20** below.

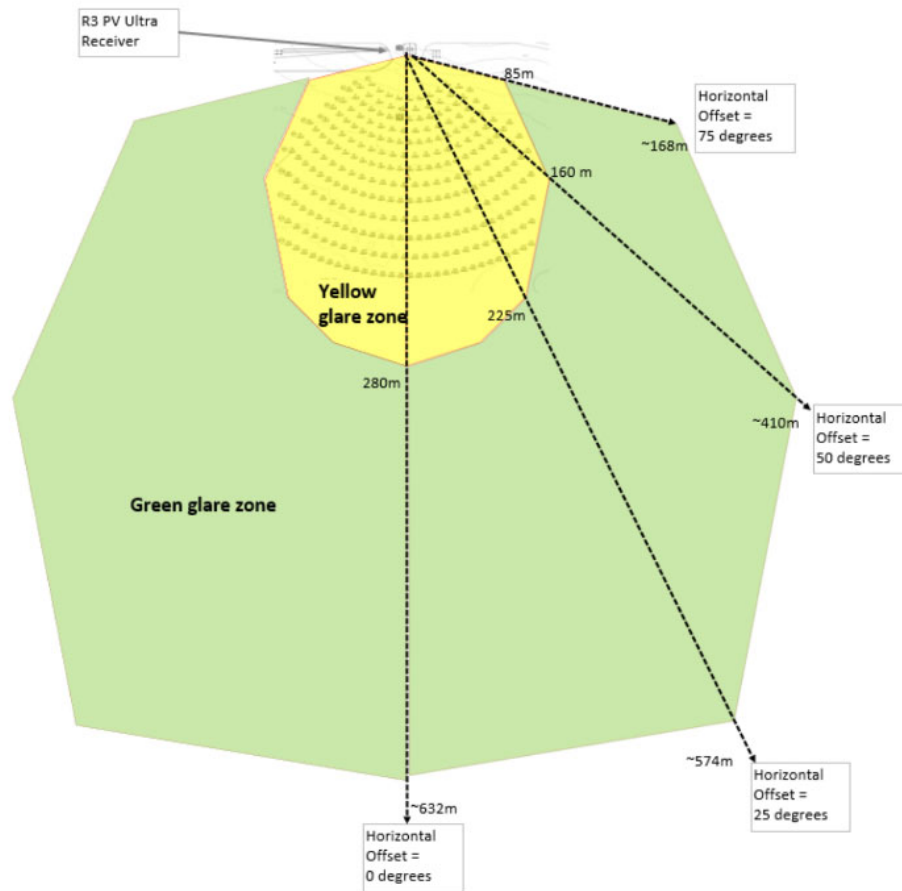


Figure 20: Map of ocular safety zone for glare from a receiver. Source RayGen.

The assessment characterised glare into three categories:

- Low potential for after image (temporary after image), also referred as green glare.
- Potential for after image (flash blindness), also referred as yellow glare.
- Potential for permanent eye damage (retinal burn), also referred as red glare¹.

The results of the assessment indicate that an observer at ground level will have potential for an after-image effect and glance blindness if they glance at receiver for a duration of 0.15 seconds when they are within the following distances:

- Up to 280 m from the receiver, directly in front.
- Up to 240 m if viewing from a 25-degree angle offset (left or right side) from directly in front of the receiver.

¹ The red glare zone is restricted to approximately 20m from the receiver face and does not reach ground level

- Up to 125 m if viewing from a 75-degree angle offset (left or right side) from directly in front of the receiver.

Assessments of the potential impacts of glare have been considered in the design of the development in various technical reports, particularly in the traffic, aviation, visual impact assessments, all of which are discussed in Section 5.6 of this report.

2.1.3 Hydro Pits

The project utilises water as the energy storage medium for the RayGen PV solar plus storage technology. The water is stored in lined and covered water reservoirs called “pits” (or Pit Thermal Energy Storage (PTES) system) and is used in closed loop piping networks within the site. Once the pits are filled there is minimal consumption of water by the plant. There is an ongoing water requirement for heliostat mirror cleaning and general maintenance. This demand is met via the collection of rainwater from buildings and the pit covers.

The proposed development comprises three cold and three hot pits. Each pit has a capacity of up to 230,000 cubic metres and is approximately 28,000 square metres. Depending on the site specific geotechnical conditions of each pit location, they will typically be excavated to a depth of approximately 15-20 metres below natural ground level and have external battered slopes of approximately 3 metres above the natural ground level. Pits are excavated with a balanced cut and fill, as required for the volume of storage.

Hot pits contain water between 70°C and 90°C and are insulated and lined on all sides, including the lid. The hot pit is treated to prevent growth of algae. Cold pits contain salt water between 0°C and 15°C, are lined and are provided with an insulated lid. Liners are durable, purpose-made, polymer materials designed for the life of the project. The volume of water in all pits is monitored to detect any leak which can be repaired on site.

Rainwater from the pit lids is collected for heliostat cleaning and fire water use on site.

The design of the pits is shown on the following cross section plan prepared by Worley which is included in Volume 3 – Drawing, Maps and Figures of the development application documents.

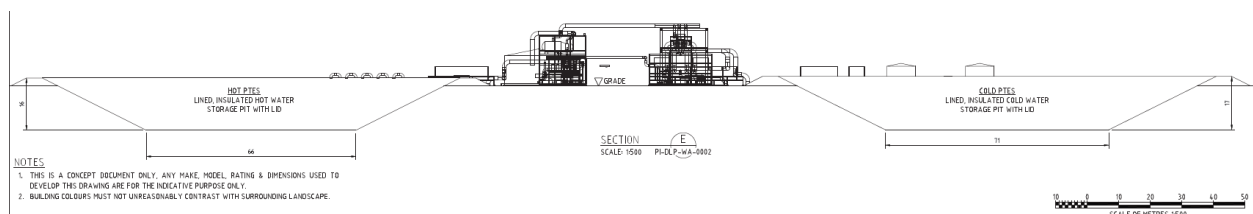


Figure 21: Typical cross section of hot and cold pits (source Worley)



Figure 22: Thermal Hydro pits, during construction at RayGen’s commercial demonstration facility - Carwarp, Victoria.



Figure 23: Photograph of a Thermal Hydro pit and receiver at RayGen demonstration facility - Carwarp, Victoria.

The battered slopes of the pits are proposed to be landscaped with native species to provide stabilisation and minimise erosion.

2.1.4 Power Plants

As part of the power plant generation, there is a range of infrastructure located adjacent each of the three hot/cold pits. As previously outlined, each of the three (3) thermal hydro plants, comprise:

- An Organic Rankine Cycle (ORC) engine and generator, with net capacity of 30MW
- Three (3) waste heat pits, each comprising up to 10,000 square metres with a height above ground level of 3.0 metres and a capacity of up to 75,000 cubic metres.
- Heat Exchangers
- Tanks
- Various pumps
- Large Chiller and Heat Pump units
- Connecting pipework
- Associated buildings.

The plant and equipment utilised in these power plants is standard industrial equipment that is utilised in a range of industrial applications.

The hot and cold water from the pits (PTES) pass through an Organic Rankine Cycle (ORC) engine that uses a closed loop Ammonia cycle and a generator to create electricity when required by the grid. In a simplified form, the cycle is shown diagrammatically below:

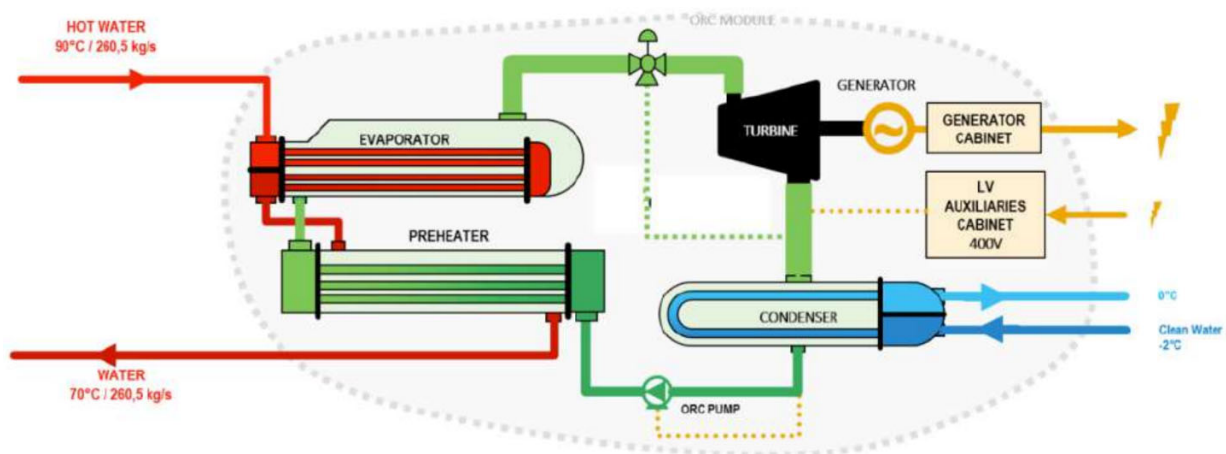


Figure 24: Simplified ORC cycle – source RayGen.

Anhydrous ammonia is used as the working fluid in the ORC and chiller/heat pump plant. Ammonia is selected as the working fluid for several reasons:

- is the most environmentally friendly refrigerant belonging to a group of natural refrigerants with an Ozone Depletion Potential (ODP) rating of 0 and a Global Warming Potential (GWP) rating of 0.
- is high efficiency due to its low boiling point and high specific heat capacity, allowing for smaller equipment and less electricity used to operate.
- There is a well-established safety record for use of ammonia as a refrigerant noting it is easily detected by its odour and by sensors at very low concentrations.
- Automated systems are in place to ensure that ammonia leaks are detected and controlled. The design limits the amount of ammonia that can be released from a single point.

Appropriate safety procedures will be incorporated as part of the site operations and included in the Operations Management Plan (including Emergency and Safety Plans) and will be further informed by the requirements of the Environment Protection Authority and SafeWork SA.

2.1.5 Substation and Transmission Line/Connection

Connection to the Yadnarie substation or existing 132kV transmission lines will occur via an onsite substation to be located centrally on the site, adjacent the transmission line corridor that traverses the subject land. A new easement for the transmission corridor from the substation to Yadnarie substation would be parallel to the existing transmission line easements at a width of approximately 41 metres.

The substation is shown on the Typical Substation plan by Worley (Volume 3 – Maps, Plans and Figures) and the image below and has an area of approximately 6,500 square metres with a fenced compound. The substation would comprise:

- switch room;
- one permanent 132kV -33kV substation with approximate dimensions of 75 metres by 86 metres;
- bunded area for storage of hazardous materials. Oil will be stored at the site for use in the transformers and associated components. Oil will be stored in concrete bunds, with an oil spill retention basin and an oil/water separator external to the concrete transformer bunds;
- 2.4-metre-high chain mesh fence will be provided surrounding the perimeter of the substation site; and
- low level security lighting will be installed, with additional flood lighting triggered by security sensors.



Figure 25: Photograph of a typical substation

2.1.6 Construction Compound

A laydown and construction compound is proposed within the subject land, south of the existing Bagnell Road unmade road corridor. The compound is approximately 28 hectares and will incorporate assembly and maintenance facilities for the development and include:

- an assembly building with associated amenities of approximately 1,750 square metres. It is noted that post construction the assembly building will form part of the ongoing operations and maintenance facilities for the development;
- assembly building to be finished of colour coated metal walling and roofing;
- temporary storage and logistics facilities;
- hard stand external storage areas;
- portable office and staff amenities;
- roof water will be captured in rainwater tanks for reuse on site.
- a septic system will be installed to treat wastewater produced from the amenities within the building, subject to Council environmental health standards; and
- 2.4-metre-high chain mesh fence will be provided surrounding the perimeter of the compound.

2.1.7 Administration

Principal site access for the development will be provided from Pine Corner Road. Adjacent the principal vehicle site entrance will be the administration and control buildings, comprising:

- principal office and staff amenities;
- workshop and storage building of approximately 268 square metres;
- machinery building of approximately 270 square metres;

- car parking for staff and visitors;
- roof water will be captured in rainwater tanks for reuse on site;
- septic system will be installed to treat wastewater produced from the amenities within the building, subject to Council environmental health standards;
- 2.4-metre-high chain mesh fence will be provided surrounding the perimeter of the compound; and
- landscaping adjacent the office building and to Pine Corner Road frontage.

Details of the administration and control area are illustrated on the plans prepared by Greenway Architects, which are included in Volume 3 – Maps, Plans and Figures of the development application documentation.

2.1.8 Internal Infrastructure

A series of internal driveways will be constructed connecting the proposed infrastructure, including:

- a principal internal driveway from Pine Corner Road that follows the existing electricity easement through the site and connects the administration and control area with the construction compound and the three power blocks;
- the principal internal driveway would have a corridor of 10 metres in width and an unsealed pavement of 7 metres;
- a series of secondary internal driveways with a corridor of 7 metres and an unsealed pavement of 4 metres would connect the heliostat fields;
- emergency access for bushfire purposes will be provided to Pine Corner Road and Broadview Road;
- a hardstand firebreak to a minimum width of 10 metres in the vicinity of the site that comprises infrastructure;
- underground water pipes connecting the receivers and power plants are designed to generally follow internal driveways;
- perimeter chain mesh (or similar) security fencing is proposed to a height of 2.4 metres around the site. Fencing is generally proposed internal to existing boundary vegetation or proposed supplementary landscaping.
- lighting is proposed on buildings and site compounds for safety and security purposes.

Receivers and ancillary infrastructure include footings and concrete pads. The tower supporting the receivers are designed to tilt 90° so that the system can be maintained from ground level. The associated area assigned for tower and receiver maintenance is approximately 5 metres in width and 50 metres in length.

The heliostats are pole driven and do not require footings. They are also self-powered and wireless and do not require cabling or associated trenching.

2.1.9 Revegetation and Landscaping

Additional screen landscaping and revegetation is proposed on the subject land. Extensive areas of existing boundary vegetation are proposed to be supplemented by new vegetation to minimise gaps in the existing visual screening of the land. The new landscape screening may incorporate mounding with planting to achieve a screen of vegetation to a height of up to approximately 8 metres. Exact siting of the additional screen vegetation will be part of detailed design and address visual screening, glare and hydrology considerations. In addition to the boundary screen landscaping, revegetation is proposed to the area to the south west of an existing dunal system adjacent to Price Road and Broadview Road. It is estimated that this revegetation area is approximately 50 hectares. All vegetation will utilise local native species. The area of screen landscaping and revegetation are shown on the Landscape Screening Plan by Worley (refer Volume 3 of the application documentation) and a typical cross section of the screen landscaping is shown on the extract below.

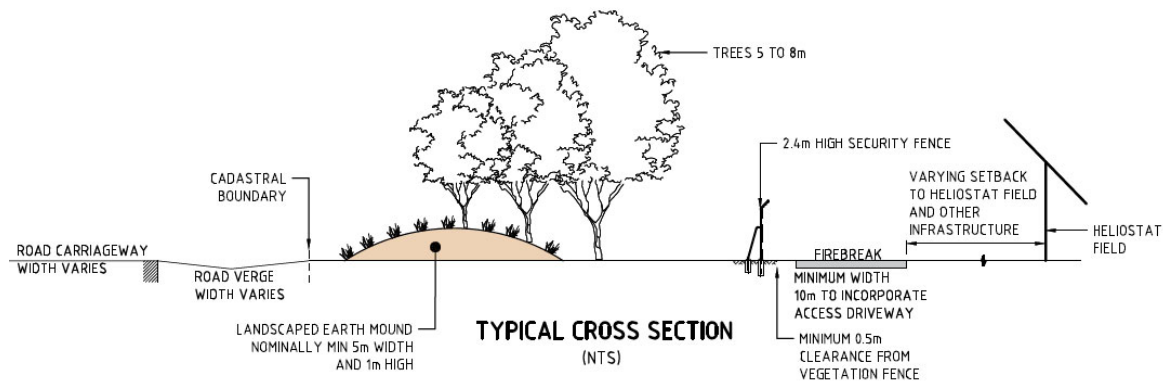


Figure 26: Typical cross section of proposed screen landscaping to boundaries (as required).

2.2 Water Provision

Water is the highly efficient and low-cost storage medium of RayGen’s technology to be applied to the proposed development. The water is stored in lined and covered water reservoirs called “pits” and is used in closed loop piping networks within the site. Once the pits are filled there is minimal consumption of water required for maintenance. There is a minor ongoing water requirement for heliostat mirror cleaning. This is to be covered by rainwater which is captured from buildings and the pit covers.

As previously outlined, the development comprises three sets of hydro-thermal pits:

- three cold and three hot pits;
- each pit is up to 28,000 square metres with a height above ground level of 3 metres;
- each pit has a capacity up to 230,000 cubic metres.

It is proposed to stage the development and therefore the requirement for water will be staged over the construction period (between 4 and 5 years for all stages). For Stage 1, the development will

incorporate one hot and one cold pit with a once off nominal requirement of 300ML, that is up to 150ML per pit. Water for Stage 1 will be sourced from the SA Water network utilising existing domestic water connections to the land, as agreed with SA Water. Filling of the pits will occur over a period of between 14 and 26 months, nominally during 2025/26. The site is on the end of this network so any offtake will be “last in last served” basis and would not affect the water pressure of other customers.

The water connections to the subject land currently comes from the Lock-Iron Knob network which is fed from the River Murray via the existing pipeline to Iron Knob. The water supply for the site is not connected to the network serving the Cleve township and will not impact pressure or supply in the township.

A further 600ML would be required for Stage 2, comprising the additional two hot and two cold pits. Water to fill the pits in Stage 2 is anticipated to be delivered via the new desalination plant on Eyre Peninsula once it is operational. Photon Energy would continue to investigate the option to access the aquifer in the area, in case the other water options become unfeasible.

2.3 Transportation

MFY (traffic and transport consultants) have considered various aspects of the project, including site access and vehicle movements during construction and operational phases, which is detailed in the Traffic Impact Assessment report included in Volume 2 of the development application documentation and further assessed in Section 5.7 of this report.

Access to the subject land for the purposes of construction and maintenance will be via Birdseye Highway and Pine Corner Road. The principal site access is proposed from Pine Corner Road. The access points will be designed to cater for Over-sized Over-mass (OSOM) vehicles and B-double vehicles.

Whilst the forecast traffic volumes are not predicted to impact the existing capacity on Pine Corner Road, it is proposed to provide an intersection treatment at the Pine Corner Road and Birdseye Highway intersection to provide improved traffic safety for existing road users and construction drivers accessing the development site. This treatment will continue to provide the improved safety following completion of construction.

3

DESCRIPTION OF THE DEVELOPMENT SITE AND LOCALITY

- 3.1 Visual Characteristics
- 3.2 Environmental Characteristics

3 Description of the Development Site And Locality

3.1 Visual Characteristics

Wax Design and BGLA have described the landscape character of the region in detail in the Landscape and Visual Impact Assessment, and this description includes:

North: The north edge of the regional landscape is defined by the undulating escarpment and foothills of the Poolalalie Hill Range. The range is formed by Poolalalie Hill, Mount Nield and Mount Shannan, which extend in an east-west direction, forming the northern edge of Cleve and the regional locality. The combination of landform and vegetation forms a complex landscape and visual character.

South: The southern regional landscape character is defined by the coastal plain of Dutton Bay and the sand hills of a large inland dunal system that runs from Minnipa in the north, southeast to the coast. The agricultural landscape is punctuated by belts of vegetation following the cadastral boundaries interspersed with arable cropping.

East: The eastern landscape character is defined by widely separated northeast-southwest ridgelines that extend across the low-lying landscape. In between the ridgelines are creeks with scattered trees and other belts of vegetation. The large fields and a lack of vegetation reduce the potential for screening. The resulting rural landscape is open, with views extending over several kilometres in all directions.

West: To the west, the landscape is defined by numerous low ridges formed by an extensive inland dunal system. The dunes typically reach an elevation of 5-6 metres above the surrounding landscape. The combination of vegetation and ridges forms a layered landscape character to the west. Running northeast-southwest across the project site and to the western regional landscape is a transmission line. The uniformity and frequency of the transmission lines create a defined infrastructure corridor that extends across the regional landscape character. The transmission line is visible above the vegetation in the locality.

These landscape features are illustrated in **Figure 27**.

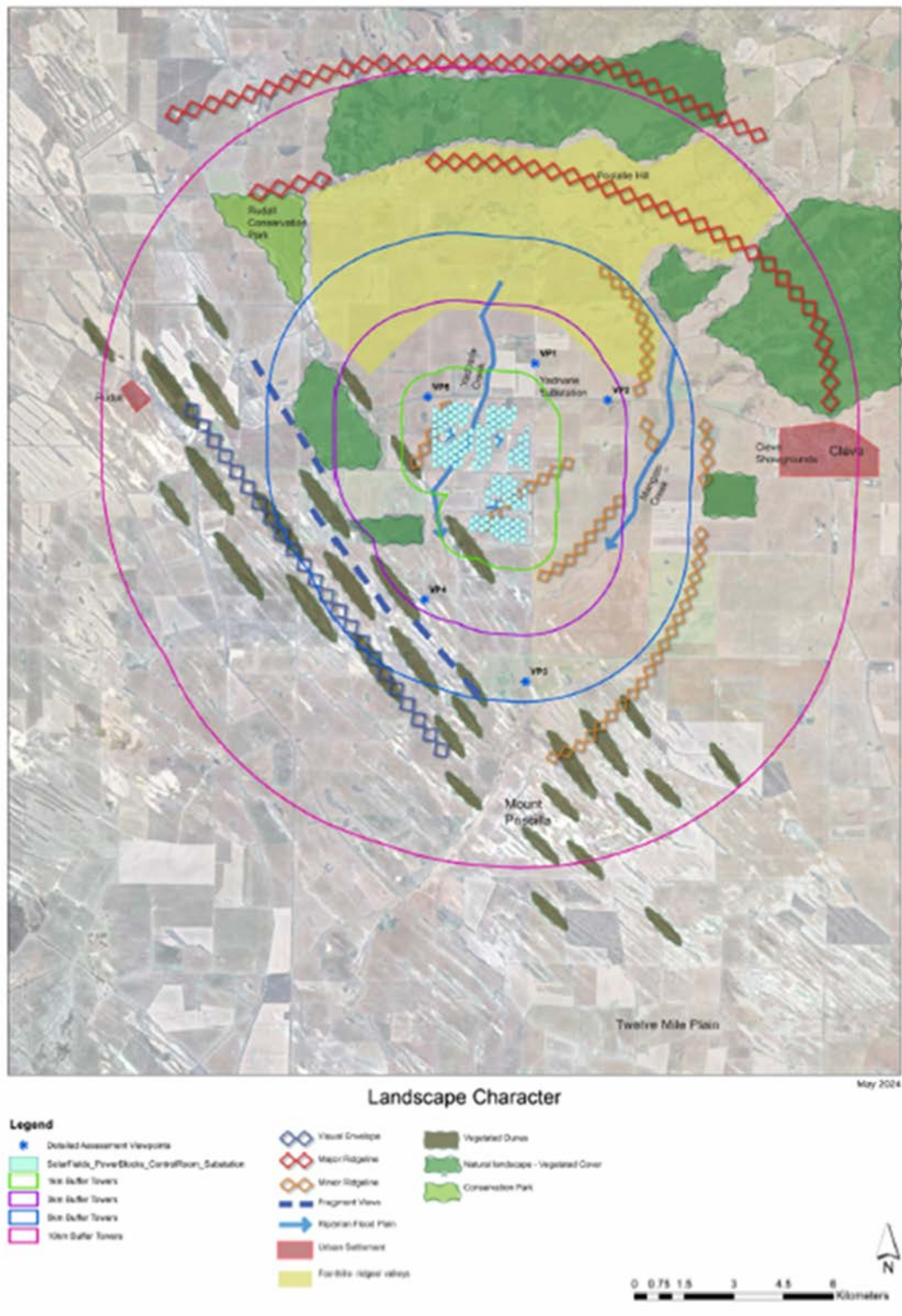


Figure 11: Landscape character mapping

Figure 27: Landscape characteristics: Source Wax Design and BGLA

3.2 Environmental Characteristics

EBS Ecology have undertaken both an ecological desktop and ecological field assessment between 2021 and 2023. The EBS Assessment of flora and fauna describes the locality as one consisting of cropping land, with scattered patches of native vegetation. A total of nine vegetation associations (VAs) totalling 149.816 hectares (ha) in varying condition (poor to good) along with eleven scattered trees (of five different species) were mapped across the subject land. In addition to the vegetation associations, EBS Ecology observed the following across the subject land:

- No threatened flora or fauna
- 36 fauna species, consisting of 32 bird species, three mammals, and one reptile. Six of these species were introduced.
- 144 plant species, of which 33 were introduced.
- Seven introduced plant species are declared plants under the Landscape SA Act.

Table 5: Vegetation Associations with the Project Area: Source EBS Ecology			
VA	Description	Area (ha) across the Project Area	Area (ha) Impacted
VA1	<i>Eucalyptus calycogona</i> and <i>e. socialis</i> ssp. <i>socialis mallee +/- melaleuca lanceolata</i>	28.122	2.915
VA2	<i>Enchylaena tomentosa</i> var. <i>tomentosa</i> , <i>sclerolaena diacantha</i> and <i>maireana brevifolia</i> low shrubland +/- <i>acacia notabilis</i>	2.144	0.577
VA3	<i>Eucalyptus socialis</i> ssp. <i>socialis. e. gracilis</i> and <i>e. phenax</i> ssp. <i>phenax mallee over melaleuca uncinata</i>	30.005	11.892
VA4	<i>Austrostipa</i> sp. and <i>rytidosperma</i> sp. grassland +/- <i>enchylaena tomentosa</i> var. <i>tomentosa</i> and <i>vittadinia cenicularis</i> var. <i>cervicularis</i>	8.173	1.425
VA5	<i>Eucalyptus porosa</i> open mallee over <i>enchylaena tomentosa</i> var. <i>tomentosa</i> and <i>maireana brevifolia</i>	10.699	10.575
VA6	<i>Eucalyptus porosa</i> Open Mallee over <i>Triodia irritans</i>	5.758	0.949
VA7	<i>Eucalyptus gracilis</i> and <i>E. incrassata</i> Mallee over <i>Callitris gracilis</i> +/- <i>Triodia irritans</i>	40.098	0.00
VA8	<i>Eucalyptus calycogona</i> +/- <i>E. oleosa</i> Mallee over <i>Melaleuca uncinata</i>	15.034	0.132
VA9	<i>Eucalyptus gracilis</i> and <i>E. oleosa</i> Mallee over mixed chenopod shrubs +/- <i>Melaleuca pauperiflora</i> ssp. <i>mutica</i>	9.784	4.961
TOTAL		149.816	33.425

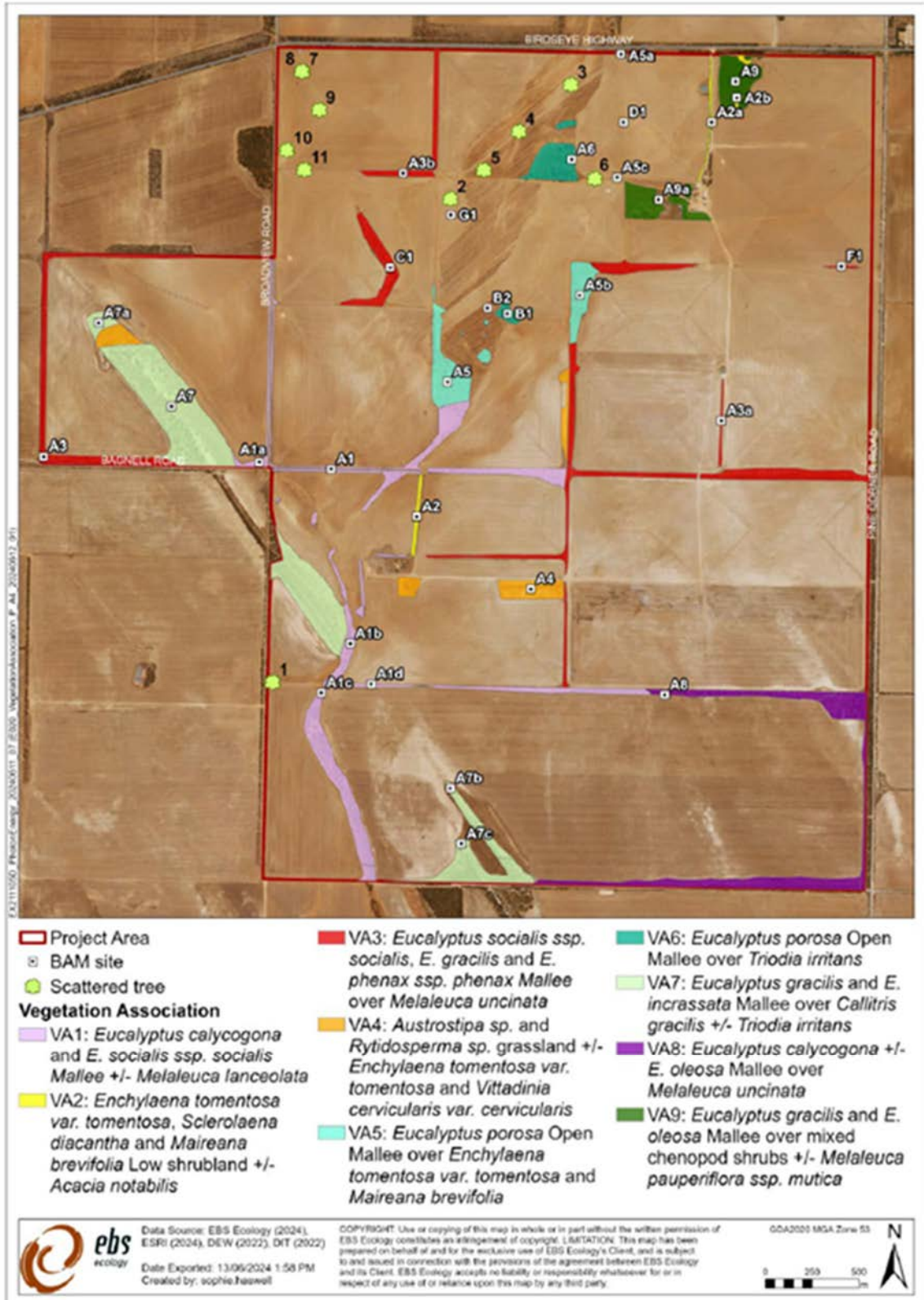


Figure 28: Vegetation associations within project area: Source EBS Ecology

4

SOCIO-ECONOMIC EFFECTS

- 4.1 Economic Effects
- 4.2 Alignment with South Australian Energy Policy
- 4.3 Community Benefit Scheme
- 4.4 Summary of Project Benefits

4 Socio-Economic Effects

4.1 Economic Effects

A capital investment of approximately \$750 million is anticipated to develop the Yadnarie renewable energy facility. Annual production of electricity is estimated to be 252,000MWh which equates to approximately 750,000 tonnes of CO₂ savings annually.

During peak construction the project is estimated to employ 250 workers, equating to an estimated \$80-100 million in on site labour for the life of the project. A large portion of the work is civil construction and where feasible and possible will employ local resources and companies. The completed project will require approximately 20 people for the ongoing maintenance and operation of the plant and equipment.

RayGen's solar-plus-storage technology provides medium-long duration grid scale storage to the grid. RayGen's technology offers dispatchable, synchronous generation and has a two-way operating philosophy enabling the system to store power from the grid during times of oversupply. The project will connect directly to the National Electricity Market.

The storage medium used for RayGen's technology is highly efficient and low cost, enabling dispatch of low-cost electricity to the grid. RayGen's unique technology uses water as a storage medium (with a closed loop system so no water loss occurs). Water is low-cost and non-toxic; and can easily be scaled to larger sizes. RayGen's technology has a lower capital cost of storage in comparison with lithium-ion batteries and will be cost-competitive with pumped hydro storage without the siting constraints.

RayGen is an Australian company and RayGen's solar module is manufactured in Hawthorn East, Melbourne in a 170MW per annum satellite-grade solar module manufacturing line.

4.2 Alignment with South Australian Energy Policy

The proposed development is directly aligned with the State Planning Policy relating to energy, that is, the provision of sustainable, reliable and affordable energy:

State Planning Policy 12 – Energy

The provision of sustainable, reliable and affordable energy is essential in meeting the basic needs of communities and ensuring the long-term supply of key services across South Australia. Industries and business rely on energy for their viability while households rely on it daily to support their lives, health and comfort. The production of energy and associated infrastructure also contributes significantly to the state's economy.

The policies which support the ongoing provision of sustainable, reliable and affordable energy, that is, the SPP 12, include:

- 12.1 *Development of energy assets and infrastructure (including ancillary facilities) where the impact on surrounding land uses, regional communities and the natural and built environment can be minimised.*
- 12.2 *Facilitate renewable sources of energy supply, such as solar and wind, at the local level.*
- 12.3 *Provide for strategic energy infrastructure corridors to support the interconnection between South Australia and the National Electricity Market.*
- 12.4 *Development in the vicinity of major energy infrastructure locations and corridors (including easements) is planned and implemented to maintain the safe and efficient delivery and function of the infrastructure.*
- 12.5 *Enable industries to reduce carbon emissions by supporting energy efficient urban and building designs.*
- 12.6 *Facilitate energy technologies that support a stable energy market and continued energy supply and do not adversely affect the amenity of regional communities.*

In addition to policies for renewable energy, the SASP contains SPP 5: Climate Change:

SPP 5: Climate Change

Climate change will impact all areas of our society. Our future prosperity, the livability of our cities and towns, the health and wellbeing of our communities and the resilience of our built and natural environment all depend on how well we adapt to and mitigate the impacts of climate change.

The objective of SPP 5 is to “provide for development that is climate ready so that our economy, communities and environment will be resilient to climate change impacts” (SASP). The South Australian Government Climate Change Action Plan 2021–2025 “describes government-led actions to help to build a strong, climate smart economy, further reduce greenhouse gas emissions, and support South Australia to adapt to a changing climate. Implementation of the Action Plan will deliver the Directions for a Climate Smart South Australia that was released in December 2019 and drive further progress towards statewide goals of reducing greenhouse gas emissions by more than 50% by 2030 and achieving net zero emissions by 2050” (Climate Change Action Plan). In 2017, South Australia produced a net 22.1 million tonnes of greenhouse gas emissions (GHGE), a 37% decrease on 2005.

The State “20-Year State Infrastructure Strategy (May 2020)” identifies that “the State leads Australia on utilising renewable energy, (including over 50 per cent electricity generation from renewable

sources), but reliability and affordability are a major issue. Infrastructure SA (ISA) supports initiatives to strengthen the network through a new interconnector to NSW on the basis that related initiatives to firm up power supply are put in place and the project is delivered on budget. It is also essential that gas generation capacity be maintained until grid-scale storage capacity is established.

The 20-Year State Infrastructure Strategy (May 2020) establishes the long-term vision for infrastructure development in South Australia and provide the framework to identify and prioritise the State's current and future infrastructure needs. Contained within the Infrastructure Plan there is extensive discussion regarding the State's energy market and the following identified future priorities:

Priority 30: Support Sufficient Firm Capacity or Dispatchable Power to Enable an Efficient and Reliable Energy Market in South Australia

Having sufficient firm capacity within the market is essential to ensure there is an efficient and reliable energy market through the transition to a decarbonised market. Firm capacity should not only limit price volatility in the spot market and enable an efficient contract market, but also provide other support measures that can help system strength and security. The South Australian Government has been active in supporting this through the grid-scale storage fund as well as triggering the Retailer Reliability Obligation. Any future intervention should be economically efficient to ensure that it does not put upward pressure on prices for consumers. An efficient market should have sufficient incentives for the market to make the necessary investments to provide sufficient firm capacity.

Priority 31: Support Additional Demand Response Measures

Demand response has the potential to be an efficient way to manage the peaky nature of the South Australian energy market and improve its reliability. Being able to reduce demand from the grid in a controlled way should reduce some volatility in the spot market and the need for standby generation. The long-term goal should be to promote a market for demand response to incentivise large industrial loads to reduce demand during peak periods. There is also the potential for residential loads to assist through the greater uptake of smart meters and appliances such (e.g. air-conditioners or pool pumps) that enable loads to be switched off for short periods during peaks. Home battery installations also have the potential to spread peak demand. It is noted that the South Australian Government has supported these initiatives through various schemes and this should continue, as should efforts to refine regulatory settings and market incentives.

Priority 32: Support Measures to Mitigate a Net Negative Demand from the Grid in an Efficient Way

The trend towards net negative demand on the grid as the amount of uncontrolled solar PV increases will create challenges as the grid is not designed to have zero demand. Measures are required to mitigate this issue while a longer term consideration of the grid

of the future plays out. Measures including but not limited to Virtual Power Plants and flexible loads such as hydrogen electrolyzers and managed electric vehicle charging should be explored and supported to help manage the flow of energy into the grid in a way that improves its reliability and reduces volatility.

The project will provide synchronous, on-demand generation to the grid using a flexible operating philosophy that enables power to be stored from the grid by becoming a large load during times of intermittent oversupply.

4.3 Community Benefit Scheme

In consultation with the District Council of Cleve and relevant stakeholders, Photon Energy would enter into a community benefit scheme to benefit the community across the Council area. The form of the scheme and its operation would be determined with the Council (and relevant stakeholders). The scheme would commence upon operation and continue for the life of the project.

4.4 Summary of Project Benefits

The proposed Yadnarie renewable energy facility has a range of benefits, including:

- A capital investment of \$750 million supporting the regional economy of the Eyre Peninsula.
- A two-way operating system enabling electricity generation and storage.
- The receivers are almost 2,000 times more powerful than traditional solar panels creating greater efficiency.
- The receivers contain no polysilicon;
- The project comprises medium-long duration grid scale storage with up to 8 hours of dispatchable energy.
- The use of water as a storage medium is highly efficient, as the water system is a closed loop system with no waste.
- Within the power plants the equipment used is standard industrial plant and equipment allowing servicing and maintenance by a range of traditional (and local) trades.
- Manufacturing of the receivers utilises Australian technology and is undertaken in Melbourne, Australia.
- The development has an ongoing employee demand for operations and maintenance, utilising a range of traditional trade skills

5

PROJECT ASSESSMENT

- 5.1 Land Use & Zoning
- 5.2 Ecological Assessment
- 5.3 Heritage
- 5.4 Acoustic
- 5.5 Visual Assessment
- 5.6 Glint and Glare
- 5.7 Traffic
- 5.8 Aviation
- 5.9 Fire Risk and Management
- 5.10 Hydrology
- 5.11 Construction Environmental Management Plan
- 5.12 Decommissioning or Replacement
- 5.15 Statement of Commitments

5 Project Assessment

5.1 Land Use & Zoning

The subject land has historically been utilised for dryland farming. Activities of cropping and/or grazing continue on the land. As outlined in the description of the locality, the land uses within the region are also principally primary production (grazing and cropping) and the storage and distribution of agricultural produce.

The townships of Cleve and Rudall provide residential areas, community, education, recreational and retail/commercial and industrial land uses supporting the farming community.

5.1.1 Planning and Design Code

The subject land is located within the Rural Zone of the Planning and Design Code (version 2024.9 dated 23 May 2024). A search of the Planning and Design Code notes the following Zone, Overlays and Technical and Numerical Variations apply to the subject land.

Table 6: Applicable Zone and Overlays for Subject Land			
	4543 Birdseye Hwy – S44, 46, 55, 56, 394 and 395	225 Broadview Rd – S39	Lot 28 Pine Corner Rd – S28
Zone: Rural	x	x	x
Dwelling Excision Overlay	x	x	x
Hazards (Bushfire – Regional) Overlay	x	x	x
Hazards (Flooding – Evidence Required) Overlay	x	x	x
Key Outback and Rural Routes Overlay	x		
Native Vegetation Overlay	x	x	x
Water Resources Overlay	x	x	x

5.1.2 Nature of the Proposed Use

Part 7 of the Planning and Design Code defines a renewable energy facility as:

Renewable Energy Facility: Means land and/or water used to generate electricity from a renewable source such as wind, solar, tidal, hydropower, biomass and/or geothermal.

This use may also include:

- (a) *any associated facility for the storage and/or transmission of the generated electricity;*
- (b) *any building or structure used in connection with the generation of electricity.*

Within the Rural Zone, a renewable energy facility is not an 'accepted' or 'deemed-to-satisfy', form of development. Renewable energy facilities are a 'restricted' form of development within the Rural Zone should either a Significant Landscape Protection Overlay or a Character Preservation Overlay apply to the subject land. Neither of these overlays apply to the subject land. Development of a renewable energy facility on the subject land within the Rural Zone is a 'performance based' form of development when assessed against the Planning and Design Code.

Table 3 - Applicable Policies for Performance Assessed Development of the Rural Zone do not specify policies applicable to development of a renewable energy facility, rather the development defaults to "All other Code Assessed Development", where all relevant policies of the Planning and Design Code are applicable.

In accordance with "Part 9.1 Referral Body: Environment Protection Authority" of the Planning and Design Code, "energy generation and storage facilities" is an activity of environmental significance which requires referral to the Environment Protection Authority (EPA). More specifically, "development involving an electricity generating plant (other than a battery storage facility or pumped hydroelectricity production works) using any other energy source (excluding fuel burning and solar photovoltaic) with a capacity to generate or store 30 megawatts (MW) or more", requires referral to the EPA. The proposed development proposes to generate 150MW solar and subsequently requires referral to the EPA as part of the application process.

5.1.3 Planning and Design Code Assessment

A detailed assessment of the merits of the renewable energy facility has been undertaken against the relevant provisions of Planning and Design Code (the Code) has been undertaken by MasterPlan. This Development Assessment Report is contained in Volume 2 of the application documents. This assessment concludes that the proposed development is not seriously at variance with the Code. The development has sufficient planning merit to warrant the granting of development authorisation when assessed against the relevant policies of the Code, for the reasons outlined below.

Renewable energy facilities are a form of development that the Desired Outcome (DO) of the Rural Zone envisages to support the economic prosperity of South Australia, as stated in DO1.

DO 1

A zone supporting the economic prosperity of South Australia primarily through the production, processing, storage and distribution of primary produce, forestry and the generation of energy from renewable sources.

Performance Outcome (PO) 1.1 of the Rural Zone anticipates a range of primary production and value adding activities on rural land. Designated Performance Feature (DPF) 1.1 identifies renewable energy facilities as a land use that is envisaged to satisfy PO 1.1.

PO 1.1

The productive value of rural land for a range of primary production activities and associated value adding, processing, warehousing and distribution is supported, protected and maintained.

DTS/DPF 1.1

Development comprises one or more of the following:

- (a) Advertisement
- ...
- (r) Renewable energy facility...

The Rural Zone contains specific policies relating to renewable energy facilities. Performance Outcome 9.1 seeks to ensure that renewable energy facilities do not fragment or displace existing primary production. The subject land on which the proposed development is proposed is approximately 1,530 hectares. Not all of this land is utilised for infrastructure for the development. It is estimated approximately 810 hectares would be utilised for the principal renewable energy infrastructure within the project (that is, heliostat fields, power plants and substation) Whilst the development would preclude land containing infrastructure from being cropped, some areas of the subject land, such as Section 44 to the west of Broadview Road will continue to be available for cropping.

Large areas of the land comprising infrastructure will continue to be available for grazing. RayGen's heliostats are pole driven steel posts which have a low impact on the surrounding land, allowing sheep grazing. RayGen has operational PV Ultra towers in Victoria which have supported sheep grazing since commencing operation in 2015 (as shown in **Figure 29**).



Figure 29: Sheep grazing at RayGen's renewable energy facility at Newbridge, Victoria.

PO 9.1

Renewable energy facilities and ancillary development minimises significant fragmentation or displacement of existing primary production.

In addition to the policies contained in the Rural Zone, the General Development Policies – Infrastructure and Renewable Energy Facilities incorporate specific policies to guide siting and design of renewable energy facilities.

DO1

Efficient provision of infrastructure networks and services, renewable energy facilities and ancillary development in a manner that minimises hazard, is environmentally and culturally sensitive and manages adverse visual impacts on natural and rural landscapes and residential amenity.

In relation to Desired Outcome 1 of the Infrastructure and Renewable Energy Facilities policies, the proposed development provides a new and highly efficient renewable energy facility that utilises solar-plus-storage technology to provide electricity to the national grid in a manner that assists with the stability of the South Australian electricity network. Inclusion of a new form of infrastructure in a rural environment will result in some visual impacts, however the locality is one that incorporates a range of infrastructure such as the Yadnarie substation, the existing 132kV transmission lines (with 65 metre towers) and large-scale bulk handling facilities. The landscape is predominantly rural agricultural and is not one of high natural landscape value.

The proposed development is adequately separated from the nearest townships of Cleve and Rudall so as to avoid adversely impacting on the residential amenity of people resident in those towns. Several non-involved dwellings have been identified within 5.0 kilometres of the subject land. A full and detailed assessment has been undertaken in relation to the potential impacts of the development, including visual and acoustic investigations, traffic movements and hazards and nuisance as part of the specialist technical reports which are contained in Volume 2 of the development application documentation.

The Infrastructure and Renewable Energy Facilities policies of the Code quoted below are satisfied or minimised in the following manner:

- Adequate setbacks from the boundaries of the property and adjacent non-involved dwellings/sensitive receivers to minimise visual impacts;
- Retention and utilisation of existing vegetation along boundaries and within road reserves, which are to be supplemented by additional planting to obscure views of infrastructure; and
- Receivers located to face in a southerly direction and not create a distraction to road users on Birdseye Highway.

General

PO 1.1

Development is located and designed to minimise hazard or nuisance to adjacent development and land uses.

Visual Amenity

PO 2.1

The visual impact of above-ground infrastructure networks and services (excluding high voltage transmission lines), renewable energy facilities (excluding wind farms), energy storage facilities and ancillary development is minimised from townships, scenic routes and public roads by:

- (a) utilising features of the natural landscape to obscure views where practicable.
- (b) siting development below ridgelines where practicable.
- (c) avoiding visually sensitive and significant landscapes.
- (d) using materials and finishes with low-reflectivity and colours that complement the surroundings.
- (e) using existing vegetation to screen buildings.
- (f) incorporating landscaping or landscaped mounding around the perimeter of a site and between adjacent allotments accommodating or zoned to primarily accommodate sensitive receivers.

PO 2.2

Pumping stations, battery storage facilities, maintenance sheds and other ancillary structures incorporate vegetation buffers to reduce adverse visual impacts on adjacent land.

PO 2.3

Surfaces exposed by earthworks associated with the installation of storage facilities, pipework, penstock, substations and other ancillary plant are reinstated and revegetated to reduce adverse visual impacts on adjacent land.

In relation to visual impact, Performance Outcome 9.3 and associated DPF 9.3 provides some guidance in relation to separation distances from ground mounted solar facilities. As far as applicable to the proposed development, the separation distances in DPF 9.3 would be satisfied and exceeded by the proposal.

PO 9.3

Amenity impacts of solar power facilities are minimised through separation from conservation areas and sensitive receivers in other ownership.

DTS/DPF 9.3

Ground mounted solar power facilities are set back from land boundaries, conservation areas and relevant zones in accordance with the following criteria:

Generation Capacity	Approximate size of array	Setback from adjoining land boundary	Setback from conservation areas	Setback from Township, Rural Settlement, Rural Neighbourhood, and Rural Living Zones ¹
50MW >	80ha +	30m	500m	2km
10MW < 50MW	16ha to < 80ha	25m	500m	1.5km
5MW < 10MW	8ha to < 16ha	20m	500m	1km
1MW < 5MW	1.6ha to < 8ha	15m	500m	500m
100kW < 1MW	0.5ha < 1.6ha	10m	500m	100m
< 100kW	< 0.5ha	5m	500m	25m

Notes: 1. Does not apply when the site of the proposed ground mounted solar power facility is located within one of these zones.

Performance Outcome 4.1 seeks to ensure renewable energy facilities do not adversely impact air transport safety. The Cleve airfield is located approximately 9.0 kilometres east of the subject land. An aviation assessment has been undertaken (refer Aviation Impact Assessment report in Volume 2 of the development documentation) which concludes that the proposed infrastructure does not impinge on airspace or aviation operations. In addition, the aviation assessment indicates that potential impact of glare from the solar receivers is geometrically possible for aircraft approaching the project from the south, however the glare experienced is not anticipated to inhibit or endanger VFR aircraft operations and could be mitigated by the use of sunglasses and/or sun visors.

Suitable separation is provided from Cleve, Rudall and non-involved stakeholder dwellings in the locality in terms of public safety and hazard minimisation. A detailed assessment bushfire hazards and management has been undertaken by consultants AJL Solutions as part of the project planning, so that measures to reduce the frequency, spread and impact of bushfires (i.e. rural fires, meaning bush, scrub, grass and crop fires) are (or can readily be) incorporated in the design. The measures incorporated in the project include vehicle access for emergency vehicles around the boundaries of the infrastructure, provision of water tanks and firefighting equipment, separation from vegetation, and management of vegetation in and around the infrastructure, including the heliostat fields. These measures satisfy the intent of PO 4.3. In addition to the bushfire assessment already undertaken, a detailed Emergency Operation Plan will be prepared prior to construction, as confirmed in the Statement of Commitments (refer Attachment G).

Hazard Minimisation

PO 4.1

Infrastructure and renewable energy facilities and ancillary development located and operated to not adversely impact maritime or air transport safety, including the operation of ports, airfields and landing strips.

PO 4.2

Facilities for energy generation, power storage and transmission are separated as far as practicable from dwellings, tourist accommodation and frequently visited public places (such as viewing platforms / lookouts) to reduce risks to public safety from fire or equipment malfunction.

PO 4.3

Bushfire hazard risk is minimised for renewable energy facilities by providing appropriate access tracks, safety equipment and water tanks and establishing cleared areas around substations, battery storage and operations compounds.

EBS Ecology have undertaken both desktop and field assessments of subject land. The development layout has been informed by the ecological assessment undertaken, with areas of high value vegetation retained and the majority of infrastructure sited on areas that are cleared farming land with minimal impact on native vegetation, as sought by Performance Outcome 5.1 and 9.1.

PO 5.1

Electricity infrastructure is located to minimise visual impacts through techniques including:

- (a) siting utilities and services:
 - i. on areas already cleared of native vegetation
 - ii. where there is minimal interference or disturbance to existing native vegetation or biodiversity
- (b) grouping utility buildings and structures with non-residential development, where practicable.

PO 9.1

Ground mounted solar power facilities generating 5MW or more are not located on land requiring the clearance of areas of intact native vegetation or on land of high environmental, scenic or cultural value.

The site of the proposed development has been selected due to its proximity and accessibility to the existing Yadnarie substation, as sought by Performance Outcome 7.1.

PO 7.1

Renewable energy facilities are located as close as practicable to existing transmission infrastructure to facilitate connections and minimise environmental impacts as a result of extending transmission infrastructure.

The appropriateness of the renewable energy facility against all of the relevant provisions of the Planning and Design Code is contained in the MasterPlan Development Assessment Report (refer Volume 2 of the application documentation). This assessment concludes that the land use has substantial planning merit, including:

- the development is of significant benefit via the generation of sustainable and stable electricity;
- the development will benefit the state by providing long duration storage of renewable energy for distribution into the national electricity grid at peak periods;
- renewable energy facilities are an envisaged land use within the Rural Zone;
- the site of the development is not located within a designated area of landscape character;
- the development will allow the retention of the principal and underlying land use of the locality, that is, primary production in the form of grazing and cropping;
- the proposal is unlikely to adversely impact on aerial agriculture application or aerial firefighting within the locality, as both of these activities are manageable around the proposed infrastructure;
- the development is unlikely to adversely affect safety of water or air transport;
- the development minimises native vegetation removal and incorporates areas of revegetation;
- the development incorporates suitable and adequate separation from townships and all non-associated (non-stakeholder) dwellings or other sensitive receivers;
- the development is designed to be compliant with EPA noise criteria for sensitive receivers;
- the development has appropriately designed vehicle access to cater for the nature and volume of traffic anticipated for the period of construction and then subsequently operation; and
- the development incorporates suitable techniques to manage potential impacts such as dust and noise.

The proposed renewable energy facility is a suitable form of development within the Rural Zone of the Planning and Design Code.

5.2 Ecological Assessment

EBS Ecology (EBS) has undertaken desktop and field assessment of the subject land between 2021 and 2023. EBS have prepared an Ecological Assessment Report, a Native Vegetation Data Report and an EPBC Self-Assessment Report, all of which are incorporated in Volume 2 of the application documentation.

EBS provided recommendations for the proposed Project to help avoid, minimise, or mitigate potential impacts to native vegetation, fauna habitat and flora and fauna species and communities. Informing the project design, the ecological assessment resulted in the majority of the project infrastructure being sited within cropped paddocks and areas of native vegetation retained in patches and along site boundaries wherever possible, thereby minimising clearance of native vegetation.

5.2.1 Matters of National Environmental Significance

EBS have prepared Environment Protection and Biodiversity Conservation (EPBC) Self-assessment report to inform whether any Matters of National Environmental Significance (MNES) listed under the Environment Protection and Biodiversity Conservation (EPBC) Act 1999 could be significantly impacted by the proposed Project.

The table below provides a summary of the potentially occurring Matters of National Environmental Significance (MNES) in the locality.

Table 8: Summary of Potential Matters of National Environmental Significance	
Matters of National Environmental Significance	Identified within the Search Area (5km Buffer)
World Heritage Properties	None
National Heritage Properties	None
Wetlands of International Importance	None
Great Barrier Reef Marine Park	None
Commonwealth Marine Area	None
Listed Threatened Ecological Communities	1
Listed Threatened Species	23 (11 flora and 12 fauna)
Listed Migratory Species	9
Other Matters Protected by the EPBC Act	
Commonwealth Lands	None
Commonwealth Heritage Places	None
Listed Marine Species:	15
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None

Table 8: Summary of Potential Matters of National Environmental Significance

Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles	None

The desktop investigations and field surveys undertaken as part of the assessment work completed on the Project, identified the following MNES, as “Likely” or “Known” to occur in the Project Area:

- One Threatened Ecological Community (TEC):
 - Eyre Peninsula Blue Gum (*Eucalyptus petiolaris*) Woodland – nationally Endangered.
- Five EPBC listed threatened flora:
 - *Acacia praemorsa* (Senna Wattle) – nationally Vulnerable;
 - *Acacia rheticarpa* (Neat Wattle) – nationally Vulnerable;
 - *Caladenia tensa* (Greencomb Spider-orchid) – nationally Endangered;
 - *Olearia pannosa ssp. pannosa* (Silver Daisy-bush) – nationally Vulnerable; and
 - *Pterostylis mirabilis* (Nodding Rufoushood) – nationally Vulnerable.
- Six EPBC listed threatened fauna (five birds and one mammal):
 - Australian Painted Snipe (*Rostratula australis*) – nationally Endangered;
 - Blue-winged Parrot (*Neophema chrysostoma*) – nationally Vulnerable;
 - Diamond Firetail (*Stagonopleura guttata*) – nationally Vulnerable;
 - Malleefowl (*Leipoa ocellata*) – nationally Endangered;
 - Sandhill Dunnart (*Sminthopsis psammophila*) – nationally Endangered; and
 - Southern Whiteface (*Aphelocephala leucopsis*) – nationally Vulnerable;
- One EPBC listed migratory species:
 - Fork-tailed Swift (*Apus pacificus*).

Ecological and vegetation assessment undertaken for the Project determined that of the MNES identified in the desktop assessment, two flora species (Greencomb Spider-orchid and Nodding Rufoushood) and five fauna species (Southern Whiteface, Malleefowl, Blue-winged Parrot, Diamond Firetail and Sandhill Dunnart) were assessed as possible or likely to occur in the Project Area, due to records and suitable habitat. These species were assessed as per the EPBC Act guidelines and criteria to determine if the proposed works would significantly impact on them.

The EPBC Act Self-assessment found that there will be no significant impact to any MNES resulting from the development of the proposed Project.

5.2.2 Threatened Ecological Communities

The flora and fauna assessment identified that there is one Threatened Ecological Communities (TEC) as potentially occurring within the locality. This TEC is the Eyre Peninsula Blue Gum (*Eucalyptus petiolaris*) Woodland (Endangered) has been identified via field survey within the locality but outside of the subject land.

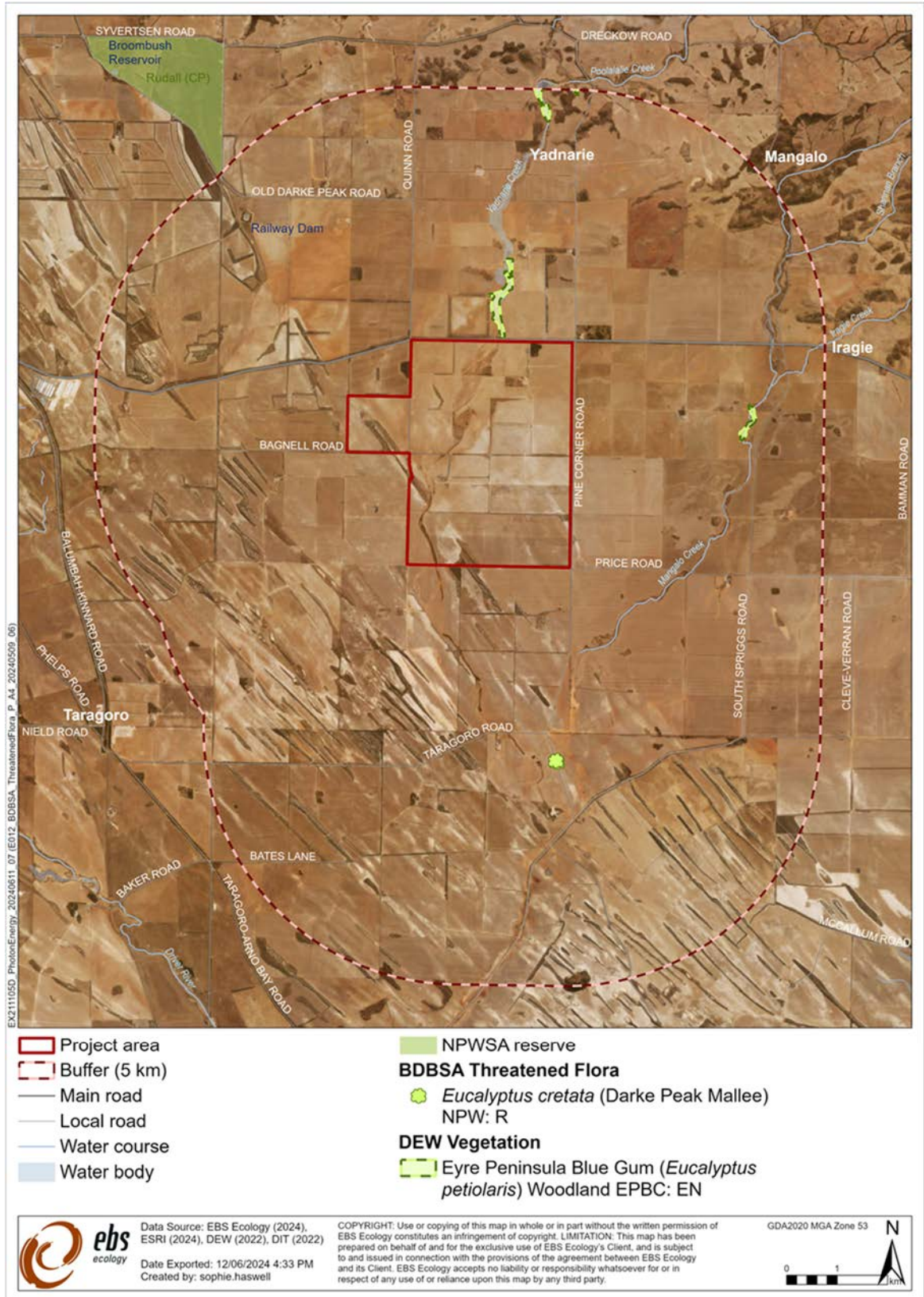


Figure 30: Location of threatened flora and Threatened Ecological Community. Source EBS Ecology Ecological Assessment report.

Threatened Flora

A total of 23 listed threatened flora species were identified by the Protected Matters Search Tool (PMST) and Biological Database of South Australia (BDBSA) as potentially occurring within 5 kilometres of the Project Area, consisting of 11 Nationally listed species (EPBC Act) and 1 State listed species (NPW Act). Of these identified species, none have been assessed as likely to occur within the Project Area. However, the following five species were assessed as possibly occurring due to suitable habitat within the Project Area, this includes:

- *Caladenia brumalis* (Winter Spider-orchid) – nationally and State Vulnerable
- *Caladenia tensa* (Greencomb Spider-orchid) – nationally Endangered
- *Pterostylis mirabilis* (Nodding Rufoushood) - nationally and State Vulnerable
- *Pterostylis sp. Hale* (R. Bates 21725) (Hale Dwarf Greenhood) – nationally Endangered and State Vulnerable
- *Pterostylis xerophila* (Desert Greenhood) – nationally and State Vulnerable.

The field surveys recorded 147 plant species the entire Project Area, of which 33 were introduced species. No species listed as threatened under the NPW Act and/or the EPBC Act were recorded within the Project Area during field surveys.

Threatened Fauna

The desktop assessment resulted in a total of 12 Nationally listed fauna species protected under the EPBC Act and one migratory species were identified as potentially occurring by the PMST within the locality. No threatened fauna records were identified in the BDBSA search. One species, Southern Whiteface (*Aphelocephala leucopsis*) were assessed as likely to occur within the Project Area. An additional five species were assessed as having possible occurrence within the Project Area:

- Blue-winged Parrot (*Neophema chrysostoma*) – nationally and State Vulnerable
- Diamond Firetail (*Stagonopleura guttata*) – nationally and State Vulnerable
- Grey Falcon (*Falco hypoleucos*) – nationally Vulnerable and State Rare
- Malleefowl (*Leipoa ocellata*) – nationally and State Vulnerable
- Sandhill Dunnart (*Sminthopsis psammophila*) – nationally Endangered and State Vulnerable.

A total of 36 fauna species (or evidence of) were observed within the Project Area or between sites during the field surveys. This included 32 bird species, three mammals, and one reptile. Four of these fauna species were introduced. Warrens of the European Rabbit (*Oryctolagus cuniculus*) were present in the centre of the Project Area. No species listed as threatened under the NPW Act or EPBC Act were recorded during field surveys.

5.2.3 Vegetation Associations

The survey identified and mapped nine vegetation associations across the Project Area across 149.816 ha of vegetation, as listed in Table 3 and shown in Figure 28.

The vegetation associations in the Project Area are mostly dominated by mallee community (139.500 ha), which consisted of numerous Eucalyptus species such as, *Eucalyptus calycogona* (Square-fruit Mallee), *E. socialis* (Beaked Red Mallee), *E. gracilis* (Yorrell), *E. phenax* (White Mallee), *E. incrassata* (Ridge-fruited Mallee) and *E. porosa* (Mallee box). The soil type influenced the variation in mallee, with inland sandy low dunes inhabiting open mallee over sclerophyllous shrubs over *Triodia irritans* (Spinifex). Clay loam flats gave way to mallee over chenopods shrubs such as *Enchylaena tomentosa* (Ruby Saltbush), *Salsola australis* (Buckbush) and *Atriplex spp.* (Saltbush).

Due to the clearance history of the area, these vegetation associations now exist as isolated patches within cropping land and along road reserves. Vegetation condition was mostly in poor to good condition across the subject land. All vegetation within the Project Area is impacted by threatening processes such as fragmentation and weed invasion. Larger, less fragmented patches of mallee were in better condition, with higher native plant species diversity and lower weed cover than other sites.

5.2.4 Summary of Ecological Assessment

EBS Ecology observed the following across the project area:

- No threatened flora or fauna.
- 36 fauna species were observed within the Project Area, consisting of 32 bird species, three mammals, and one reptile. Six of these species were introduced.
- The survey recorded 147 plant species across the entire Project Area, of which 33 were introduced. Seven introduced plant species are declared plants under the LSA Act.
- A total of 149.816 ha of native vegetation was surveyed, which included a total of nine Vegetation Associations (VAs) which were in varying condition (poor to good).
- Mallee was the dominant VA across the Project Area, totalling 139.50 hectares (ha) of the Project Area. Followed by *Austrostipa grasslands* (8.173 ha) and *Enchylaena tomentosa* and *Sclerolaena diacantha* shrubland (2.144 ha).

5.2.5 Native Vegetation Clearance

As illustrated on the current project layout, the majority of infrastructure is located within cropped paddocks and areas of native vegetation retained, thereby minimising vegetation clearance. A total of 33.425 ha of native vegetation and five scattered trees will be impact based on the site layout, as shown on **Figure 31** below.

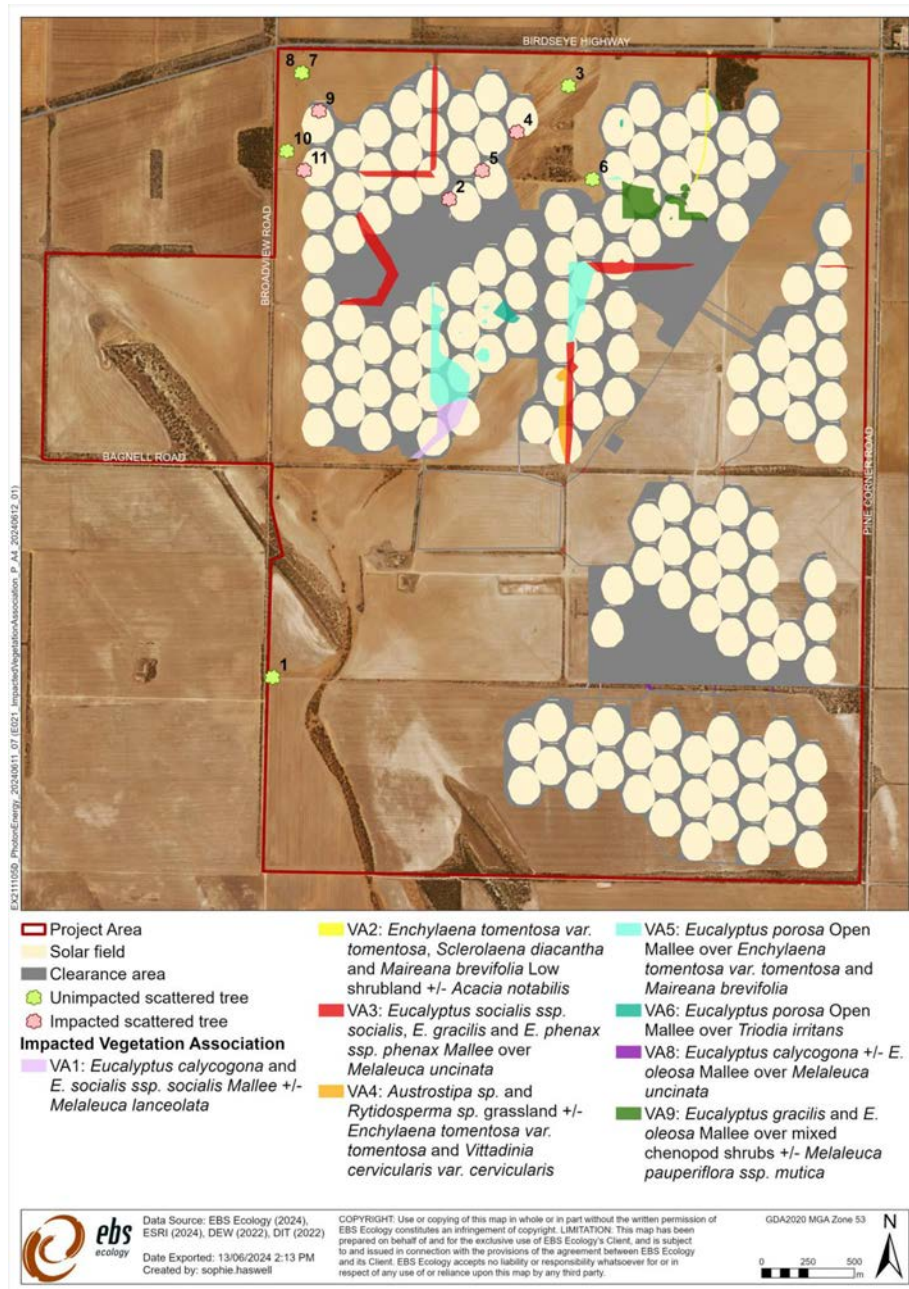


Figure 31: Impacted vegetation within the project area. Source EBS Ecology Ecological Assessment report.

In developing the site layout for the project, Photon Energy were aware of the application of the mitigation hierarchy applied by regulators (State Native Vegetation Council (NVC) and Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW)) to limit the amount of damage an action (the development) will have on the environment. The mitigation hierarchy is:

1. **Avoid** clearance of native vegetation wherever possible, and in particular avoid placement of infrastructure in areas deemed to be of high habitat quality for listed threatened species; and

2. **Minimise / mitigate** construction footprints by utilising existing cleared or disturbed areas (e.g., roads, easements, cleared land) as much as possible, and reduce the extent, duration and intensity of impacts (whether direct, indirect or cumulative).
3. **Rehabilitate or restore** ecosystems that will be degraded or impacted as a result of the Project, especially those areas which are subject to temporary construction impacts.
4. **Offset** any adverse impacts to native vegetation, ecosystems and species through implementation of a Significant Environmental SEB or EPBC Offset which outweighs the impact.

Photon Energy have considered the mitigation hierarchy through in excess of 6 principal design iterations. Numerous iterations of the layout occurred following the receipt of the ecological survey results and recommendations.

Following initial ecological surveys of the subject land and identification of constraints, it was evident that the project would need to be reduced in size (from an initial 300MW project) or additional land would be required. Photon Energy investigated additional land in the locality, which was then surveyed by EBS Ecology. These additional field investigations for land outside of the project boundaries found the presence of the Eyre Peninsula Blue Gum Woodland (EPBGW) Threatened Ecological Community. Subsequently, the additional land containing the EPBGW TEC was removed from the project area.

Photon Energy then requested EBS's further advice to highlight the high value vegetation so avoidance could be considered. This resulted in further design iterations and the majority of the infrastructure (heliostat fields, receiving towers, power plants and vehicle access) being located within cropped paddocks and in areas devoid of native vegetation.

The design of the project as submitted in the development application has reduced in size and now avoids structurally diverse woodlands, including the entirety of VA 7 (*Eucalyptus gracilis* and *E. incrassata* Mallee over *Callitris gracilis* +/- *Triodia irritans*). Further, under the current Project design, 116.391 ha of remnant vegetation and six scattered trees have been retained by positioning infrastructure in cropped paddocks, where possible.

To minimise impact on native vegetation, infrastructure has been placed in areas of more disturbed vegetation (e.g., VA 2 and VA 4), or vegetation with fewer habitat resources (i.e., upper storey vegetation, dense vegetation, and water sources). Where the clearance of more intact native vegetation has been deemed necessary (i.e., creating access points through contiguously tree-lined fence lines), micro-siting has been undertaken to select areas that are more disturbed or that contain vegetation in the poorest condition.

Restoration of vegetation will be permitted in the heliostat fields following the initial construction impact, including (re)generation of low grasses and shrubs under the installed heliostats and in alternate 'gap' corridors initially used for access. Rehabilitation of native vegetation is preferable for the projects to reduce dust accumulation on the heliostat mirror panels and associated maintenance.

In addition to the retention of areas of native vegetation, areas of the subject land which are currently devoid of vegetation are proposed to be landscaped/revegetated with indigenous native species. Additional/supplementary landscaping is to occur in areas adjacent to the site boundaries to provide amenity planting as a visual screening tool. An area of approximately 50 hectares adjacent Broadview Road and Price Road and to the south west of the undulating dunal system of Vegetation Association 1 (VA 1 *Eucalyptus calycogona* and *E. socialis* ssp. *Socialis* Mallee +/- *Melaleuca lanceolata*) is proposed to be revegetated with indigenous native species.

The Statement of Commitments (Attachment G of this report) further reinforces Photon Energy's commitment to protecting areas of native vegetation during the construction phase and the revegetation and screen landscaping.

Photon Energy have utilised cropping areas and avoided native vegetation as much as practical in the design of the project to address the mitigation hierarchy. Removal of approximately 33 hectares of vegetation is proposed and Photon Energy proposes to pay the offset value into the Native Vegetation Fund.

5.3 Heritage

The Barngarla people are the Traditional Custodians of the land on which the Yadnarie Renewable Energy Project is proposed to be developed.

5.3.1 Cultural Heritage

Photon Energy are engaging with Barngarla Determination Aboriginal Corporation (BDAC) in parallel with the development application. Arrangements are currently being finalised between Photon Energy and BDAC to undertake a cultural heritage survey of the subject land.

5.3.1.1 Aboriginal Heritage Act

Photon Energy are aware of their responsibility under the Aboriginal Heritage Act 1988 (AHA) to protect Aboriginal heritage sites. Should a previously unknown Aboriginal heritage site be discovered during works and cannot be avoided, Ministerial authorisation under section 23 of the AHA will be required.

5.3.1.2 Native Title

The Yadnarie renewable energy facility is within the Barngarla Native Title Claim Area. The Federal Court has made a determination in relation to native title and deemed that it does not exist at this location.

5.3.1.3 Desktop Assessment

As part of the project feasibility, a preliminary desktop assessment including a search of the AGD-AAR Taa Wika Register was undertaken, which indicates there are no known Aboriginal heritage sites

within the project area. The desktop heritage assessment has considered the Aboriginal heritage context for the area, the environmental landforms, and the level of previous development, and it was assessed that there is a low risk of works encountering unknown Aboriginal sites and objects in previously developed/ploughed areas, and a moderate risk in undeveloped/unploughed areas (i.e., seasonal creeks, creek margins, elevated sandy areas). The site layout has sought to minimise infrastructure within low-lying areas/seasonal creeks and the elevated dunes. A summary of the preliminary assessment undertaken by Independent Heritage Consultants (IHC) is contained within Volume 2 of the application documentation.

5.3.2 European Heritage

The subject land does not contain any places identified as State or Local Heritage significance. The SA Heritage Places database indicates that there are four State Heritage places within the District Council of Cleve, three of which (Sims Farm Homestead Ref 14383, Yeldulknie Cottage Ref 14199, Yeldulknie Weir Ref 14200) are all located to the east of Cleve township and well separated from the subject land. A fourth State Heritage Place is located near Darke Peake (JC Darke Memorial & Grave Ref 14197), which is located in excess of 30 km northwest of the subject land.

5.4 Acoustic

An environmental noise assessment of the proposed development has been undertaken by Resonate (acoustic engineers) to assess the potential for noise impacts on adjoining land.

Noise sources associated with the development include chillers, condensing units, pumps, turbines, turboexpander generators and electrical equipment such as, transformers and inverters. The potential noise emissions from the development have been assessed against the requirements of the Planning & Design Code and the South Australian Environmental Noise Policy.

5.4.1 Legislation and Policy Framework

Environmental noise emissions from the development should comply with the Environment Protection (Noise) Policy 2007 (Noise Policy). The noise goals in the Noise Policy are based on the zoning of the development and the closest noise affected premises. Figure 32 below illustrates the applicable land use zones of the Planning and Design Code and the location of nearest sensitive receivers.

Resonate identified a total of 24 noise sensitive receptors, which includes non-involved landowner dwellings within a 5-kilometre buffer around the subject land, and representative dwellings in the Cleve and Rudall townships.

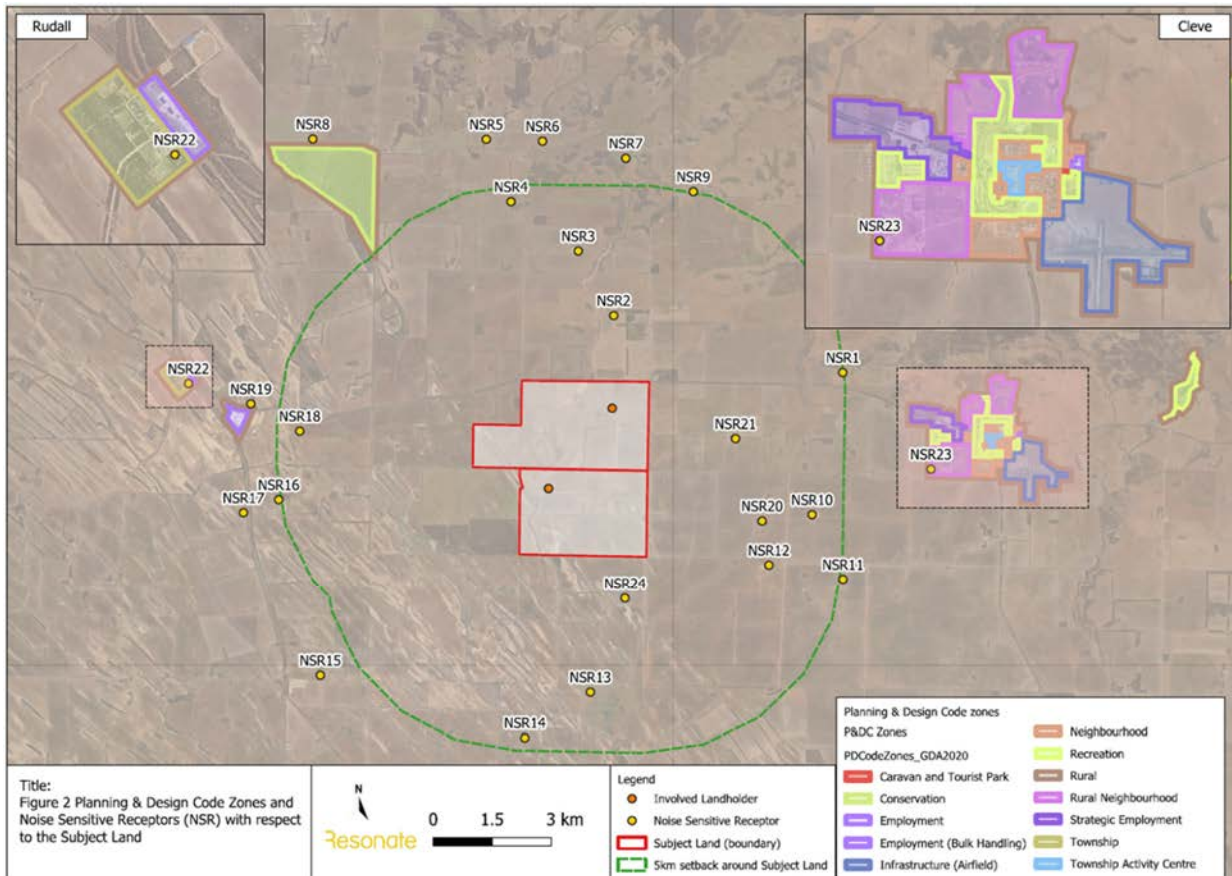


Figure 32: Land Use Zones and Location of Sensitive Receivers. Source Resonate

The subject land is located within the Rural Zone. The township of Rudall is principally within the Township Zone (and an Employment Zone) and the nearest sensitive receivers within the township of Cleve are located in the Rural Neighbourhood Zone.

The land uses primarily promoted by the zones are used to determine the environmental noise criteria with the indicative noise factors shown in Table 9 below.

Table 9 Excerpt from Noise Policy

Table 9 Excerpt from Noise Policy-Table 2 (subclause (1)b)		
Land use category	Indicative noise factor dB(A)	
	Day (7 am to 10 pm)	Night (10 pm to 7 am)
Rural living	47	40
Residential	52	45
Rural industry	57	50
Light industry	57	50
Commercial	62	55

Table 9 Excerpt from Noise Policy-Table 2 (subclause (1)b)

General industry	65	55
Special industry	70	60

Table 10 below illustrates the land uses which are primarily promoted in the relevant zones and the relevant criteria from the Noise Policy.

Table 10: Summary of Zones, Land Uses and Noise Policy Criteria

Location	Zone	Land use(s)	Criteria	
			Day (7 am to 10 pm)	Night (10 pm to 7 am)
Subject Land	Rural	Rural industry	N/A	N/A
NSR1 – NSR21, NSR24	Rural	Rural industry	52	45
NSR22	Township	Residential, Light industry, Commercial	52	45
NSR23	Rural Neighbourhood	Rural living	47	40

5.4.2 Methodology

Baseline noise monitoring was undertaken at two locations within the subject land from Monday, 17 July to Tuesday, 1 August 2023. The results indicate noise levels representative of a generally quiet rural environment.

Modelling of noise from the development was undertaken utilising SoundPlan Environmental Software and the Conservation of Clean Air and Water in Europe (CONCAWE) algorithms. Resonate obtained data on the plant and equipment proposed to be used within the development from manufacturer's data provided by RayGen, and estimates based on the design power and duty of proposed plant and measurements undertaken by Resonate of plant and equipment at RayGen's commercial demonstration facility in Carwarp, Victoria.

The noise assessment considers the two worst-case operational noise scenarios which are associated with the energy storage and power generation states of the plant. Resonate noted that noise sources associated with power storage and generation may operate at any time, while heliostat field pumps would operate during daylight hours only. During summer months, sunrise could occur before 7.00 am, which is within 'night time' hours in the Noise Policy. On this basis, Resonate only assessed night time scenarios, which are subject to lower noise criteria.

5.4.3 Assessment and Findings

The highest predicted operational noise level at each receptor is presented in Table 11 with respect to the relevant noise criteria and also indicates the distance from the closest subject land boundary to the noise sensitive receivers. The Resonate assessment demonstrates that operation of the Yadnarie Renewable Energy Facility is predicted to comply with the continuous noise requirements of the Noise EPP at all noise sensitive receptors surrounding the development.

Table 11: Predicted Operational Noise Levels and applicable Noise Policy Criteria

Prediction Location	Distance (km)	Predicted noise level - L _{aeq} (dB)		Noise Policy Criteria - L _{aeq} (dB)	
		Noise Sensitive Receptor	Closest distance to Subject land	Scenario 1 ²	Scenario 2
NSR1	4.9	19	26	52	45
NSR2	1.7	33	39	52	45
NSR3	3.3	26	32	52	45
NSR4	4.6	20	27	52	45
NSR5	6.2	14	23	52	45
NSR6	6.1	15	23	52	45
NSR7	5.7	16	24	52	45
NSR8	8.1	6	15	52	45
NSR9	5.0	18	25	52	45
NSR10	4.2	22	29	52	45
NSR11	5.0	18	25	52	45
NSR12	3.1	25	31	52	45
NSR13	3.5	23	30	52	45
NSR14	4.7	18	25	52	45
NSR15	5.9	12	21	52	45
NSR16	5.0	15	23	52	45
NSR17	6.0	12	21	52	45
NSR18	4.4	17	24	52	45
NSR19	5.7	13	22	52	45
NSR20	2.9	27	33	52	45

² Refer Acoustic report – Section 5.1.2. Scenario 1: operation during night including transformers, inverters, ORC fee pumps, ORC turbine, generator, PV pumps. Scenario 2: operation during night including above plus generator (in synchronous condenser mode).

Prediction Location	Distance (km)	Predicted noise level - L_{aeq} (dB)		Noise Policy Criteria - L_{aeq} (dB)	
		Noise Sensitive Receptor	Closest distance to Subject land	Scenario 1 ²	Scenario 2
NSR21	2.2	31	37	52	45
NSR22 – Representative receptor in Township Zone (Rudall)	7.3	6	16	52	45
NSR23 – Representative receptor in Township Zone (Cleve)	7.2	13	21	52	45
NSR24 – Most affected receptor in Rural Zone	1.1	35	40	52	45

The assessment by Resonate demonstrates that operation of the proposed development complies with the relevant environmental noise criteria of the Noise Environmental Protection (Noise) Policy at the nearest noise sensitive receptors surrounding the development. Resonate conclude that *“on this basis the proposed Yadnarie Renewable Energy Facility will be able to operate within the relevant noise provisions in the Planning & Design Code and Environmental Protection (Noise) Policy”*.

5.5 Visual Assessment

As outlined in Section 2.0 of this report, the technology to be deployed in this development, by design, reflects and concentrates light from the sun onto centralised solar receivers located on towers. The solar receiving towers are a distinct visual element, with the solar receivers on the top of the tower emitting a glare in a southerly direction.

5.5.1 Solar Receivers and Heliostats

The modules within RayGen’s receivers convert sunlight to power, so that the tower looks similar to a light tower on a sporting field which is on during the day. The visibility of this light has been the subject of consideration in the visual assessment (Landscape Character and Probable Visual Effect Assessment (LVIA) by Wax Design and BGLA), the Traffic Impact Assessment report by MFY and the Aviation Impact Assessment by Aviation Projects, to assess the potential impacts of glare from the receiving towers on the locality generally and specifically on road users and aircraft operations.

Wax describes the heliostats and receiving towers in Section 1 of the LVIA report based on their observations of the Carwarp demonstration plant, as follows:

Heliostat

The development form of the site is created by the heliostat fields, which create a fragmented visual effect with numerous individual panels facing towards the receivers. The varied orientation of the panels and the underlying topography create a fragmented and somewhat pixelated visual character.

While visually recognisable as infrastructure elements in the landscape, the visual effect has a non-rectilinear representation due to the way the panels respond to the underlying topography. The irregularity of the development form reduces the overall visual effect associated with the site.

The reflected dark blue and pale blue sky colours associated with the front surface of the solar panels are complementary to the dark vegetation colours of the existing landscape character.

During the summer months, it is anticipated that the contrast in visual character between the heliostats and the surrounding landscape will increase as the heliostats remain a deep blue colour and the landscape turns a lighter brown.

During the winter, the blue hues will complement the green arable landscape character of the rural land use, reducing the visual contrast.

The recessive light grey colour of the back of the heliostats will remain consistent all year round.

Solar Receiver

The solar receiver towers form notable visual elements within the landscape due to their height and level of brightness produced by the receivers.

The degree of visibility varies depending on the viewpoint and the orientation of the view relative to the development, noting that the receiver towers are located north of the heliostats and that the receivers face south.

Immediately north, there is very little reflected light, and the visibility is focused on the lattice tower and the power block infrastructure, which is similar to a transmission tower or telephone tower. From locations to the northeast and northwest of the development, the visual impact is produced by low levels of reflected light which spill from the receiver's shields.

The visibility and associated visual impact of the receiver towers increase to the east and west due to the level of reflection and the light spill from the sides of the receivers.

From locations south of the development, the visibility of the lattice tower relative to the receiver reduces, and the glare and brightness reflected from the receivers within the wider landscape increases.

Looking south towards the development, the glare and degree of brightness are experienced relative to the prevailing weather conditions. The brightness of the receiver is reciprocal to the sun's intensity and the sunlight being reflected.

In this regard, the brightness is experienced as part of the broader visual context that is generated by different weather conditions during the day and throughout the year.

While the receivers appear as bright points of light low in the sky, the brightness and intensity are relative to the sun, sun angle, weather, time of day and the location of the viewpoint.

The solar receiver towers in operation at the Carwarp demonstration facility are shown in the photographs below:



Figure 33 - Photograph of all four solar receiver towers and heliostat fields in operation at Carwarp demonstration facility, Victoria.



Figure 34 - Photograph of all four solar receiving towers in operation from an adjoining road (South West Angle Road approximately 2-3 km to the south) at Carwarp demonstration facility, Victoria.

5.5.2 Landscape Character

Wax Design and Dr Brett Grimm, referred to in this Volume 1 Project Summary report as “Wax”, were engaged by Photon Energy to assess the potential visual impact of the proposed Yadnarie renewable energy project. A copy of the “Landscape Character and Probable Visual Effect Assessment” (LVIA report) is contained within Volume 2 of the application documents.

The LVIA report describes the landscape character of the subject land, as follows:

The site covers approximately 1,530 hectares and is used for agricultural cropping. An existing transmission line runs northeast to southwest across the site. The 65 metres height of the transmission line towers provides a relative infrastructural reference.

Pine Corner Road forms the eastern edge of the site and follows the underlying topography of the area.

The western edge of the project site is defined by Broadview Road and the tree screening that exists along the road corridor. The landscape character of Broadview Road forms a defined vegetative edge to the project site. Taragoro Road forms the southern boundary.

The project site is bisected centrally by a ridge that extends from the foothills of Poolalalie Hill Range through the eastern regional landscape and across the project site. The ridge creates a visual envelope that separates the project site to the northwest and southeast.

Across the southwestern section of the project site is a large prominent sand hill that runs northwest-southeast and fragments the site further.

Both topographic features rise to a height of between 20 and 30 metres in elevation. The form and height of the ridge and sandhill generate additional visual envelopes and visual fragmentation across the project site boundary as well as the broader locality.

The existing transmission line is evident within the field of view, as well as the infrastructure associated with the substation located on Birdseye Highway.

A detailed assessment of the visual character of the locality is contained in the LVIA report, which is summarised in Section 3.1 of this report.

5.5.3 Methodology

The Landscape Character and Probable Visual Effect Assessment undertaken by Wax comprises of two assessments, firstly a landscape character assessment and secondly a visual impact assessment. The landscape character assessment described in the report considers the existing character of the landscape and the site locality.

The potential visual impact was assessed using the Grimke matrix methodology (described in detail in the report) and involves onsite assessments, GIS modelling, consultation with relevant stakeholders and interested parties, the preparation of photomontages and a detailed visual impact assessment to illustrate the predicted visual effect of the project within the defined locality. In addition to this methodology, Wax undertook a site inspection of the RayGen's commercial demonstration facility at Carwarp, near Mildura in Victoria.

Based on the Carwarp site investigation, a 10-kilometre site locality around the project was defined for assessment purposes. This locality is based on research and previous experience in defining thresholds for the degree and qualification of visual effects. The landscape character assessment and mapping within the report discusses existing character in relation to the local (0-3km), sub-regional (3-10km) and regional (>10km).

Wax also reviewed the extent of the site locality with the Zone of Theoretical Visual Influence (ZTVI) mapping, which provides a reference of the extent or the likely degree of visibility of the project in accordance with topography (excluding vegetation and built form screening). The viewpoints selected represent typical locations where the greatest probable degree of visual change that will be experienced as a result of the proposed development within the existing landscape.

The potential visual effect of the project has been assessed from 5 viewpoints, which represent typical views in the region. Key aspects of the existing landscape, such as relief, vegetation, built form and infrastructure, and cultural and scenic landscape values from a series of selected viewpoints were assessed to determine the visual effect. Photomontages have been prepared to illustrate the visibility of the project infrastructure from the 5 viewpoints.

Figure 35 illustrates the selected viewpoints and the local, sub-regional and regional areas around the proposed development site.

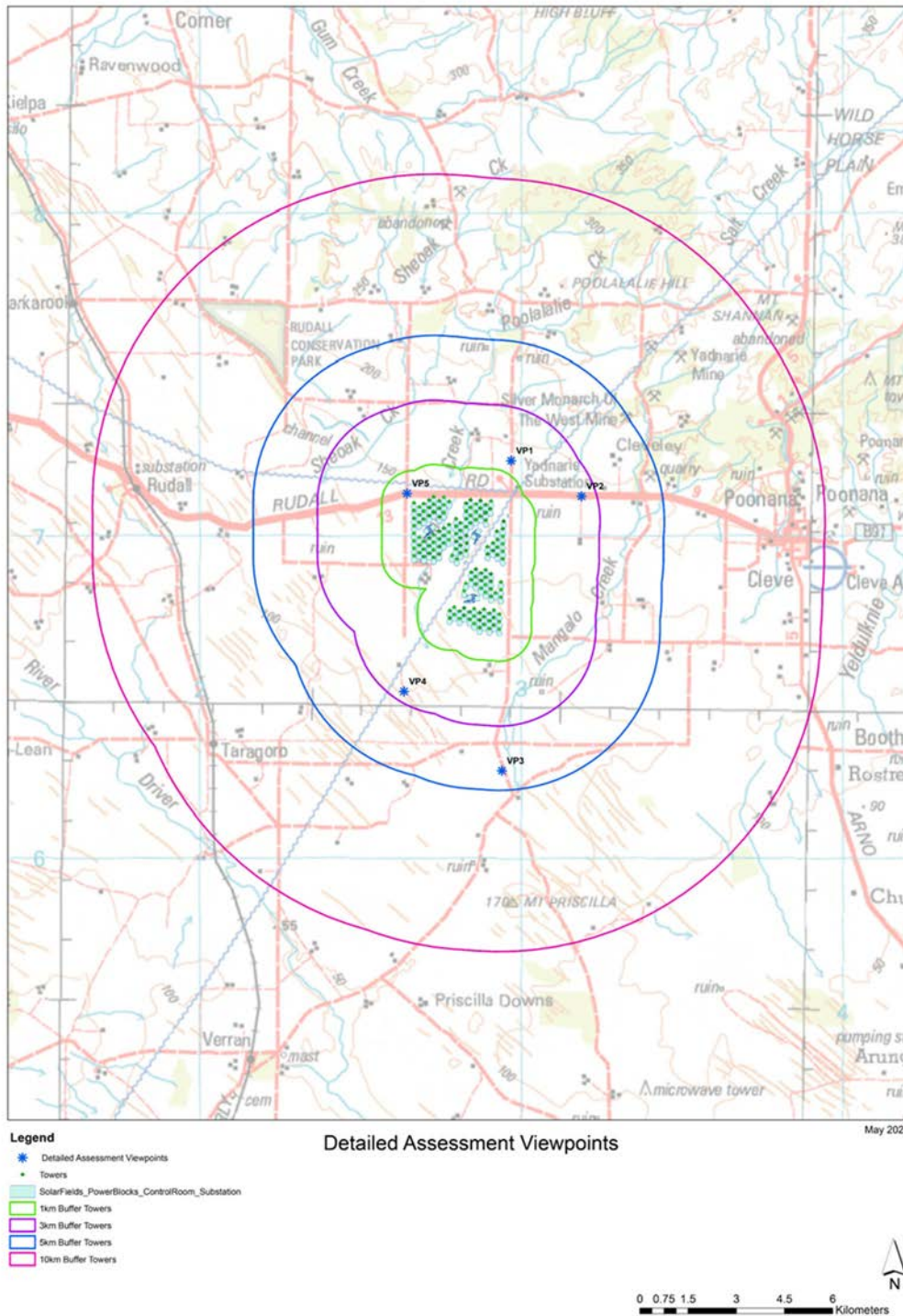


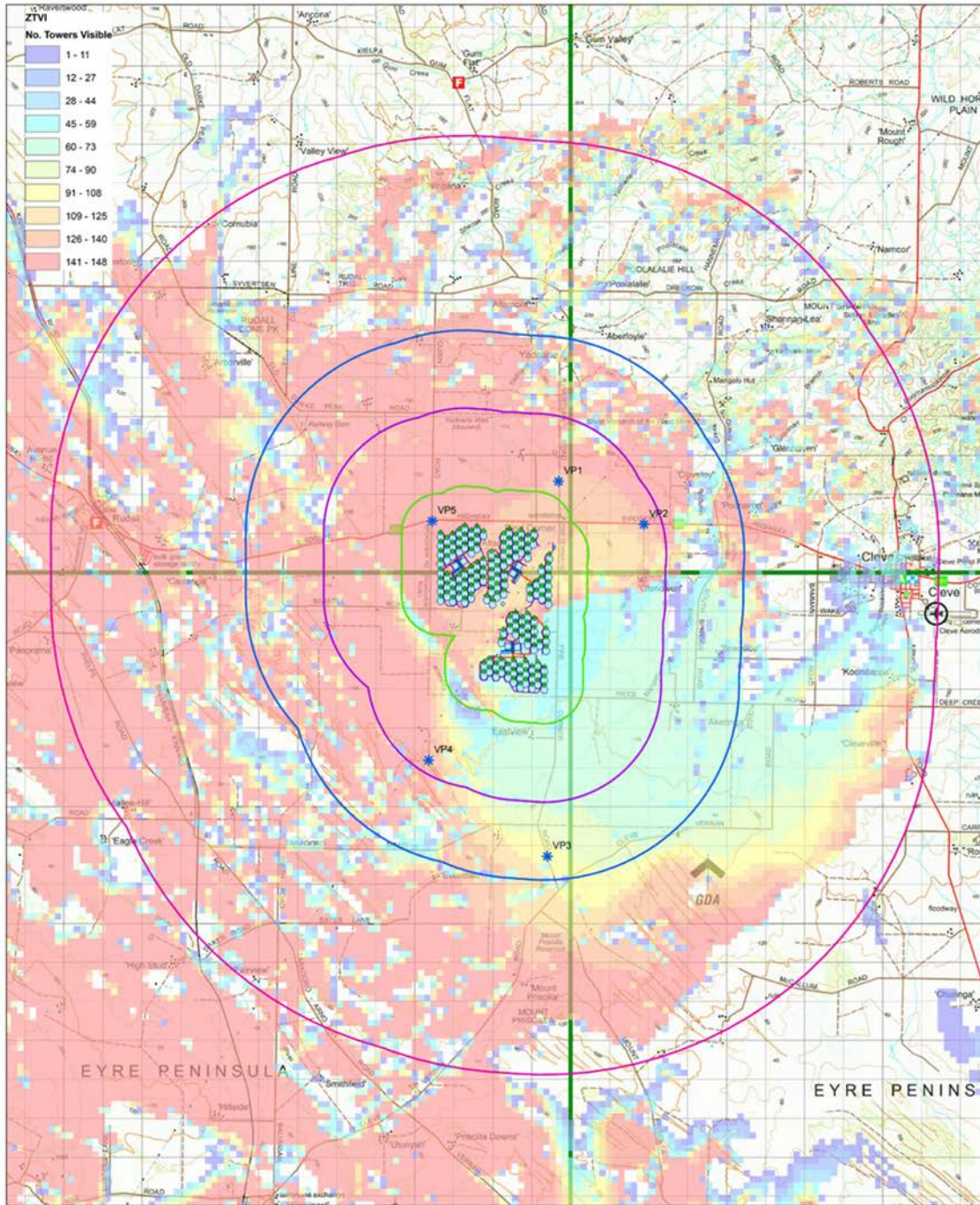
Figure 35: Viewpoint Locations as selected by Wax in LVIA report.

The Zone of Theoretical Visual Influence (ZTVI) mapping illustrates (Figure 36 below) where the project may be seen within the landscape. The mapping quantifies the visibility of the proposed development in the broader landscape.

The ZTVI mapping is developed in GIS using 10 metre contour data that has been provided around the project site. The ZTVI represents a 'worst case' scenario as it does not incorporate vegetation, built form or localised screening effects, which are assessed onsite.

The ZTVI indicates that the project will be visible in the broader regional landscape, with local ridgelines creating visual envelopes to the southwest and northeast.

An onsite assessment of the existing landscape and vegetation cover indicates a substantial amount of vegetation to the northwest and west. This vegetation will limit and, in some cases, screen the visibility of the proposed development, mitigating the potential visual impacts.



Zone of Theoretical Visual Influence (ZTVI)

May 2024



Legend

- Towers (45m height)
- ★ Detailed Assessment Viewpoints
- SolarFields_PowerBlocks_ControlRoom_Substation
- Access Roads_7m
- Cable Route 33kV_1m
- 1km Buffer Towers
- 3km Buffer Towers
- 5km Buffer Towers
- 10km Buffer Towers

ZTVI is based on 5 metre contour data with no vegetation or built form screening taken into consideration. Furthermore it is representative on the maximum height of the receptor towers (45 meter). This is representative of worse case scenario.



Figure 36: Zone of Theoretical Visual Influence (ZTVI) by Wax in LVIA report

5.5.4 Visual Impact Assessment and Findings

The visual impact assessment undertaken by Wax is discussed for each of the 5 selected viewpoints. Photomontages have been prepared to illustrate the visibility of the project infrastructure from each of the viewpoints, as shown in the extracts below.

Viewpoint 1 - VP01 Syvertsen Road (north – regional)

Viewpoint 1 is located to the north of the project on Syvertsen Road. The viewpoint illustrates the visual effect that will be experienced from the northern regional landscape. The visibility of the project is contained in a narrow field of view.



Figure 37: Photomontages – Viewpoint 1 - Syvertsen Road

From Viewpoint 1, two defined visual effects are created by the project. To the southwest, the potential visual effect of the heliostat fields is fragmented by existing belts of vegetation that run along the Birdseye Highway and associated field boundaries. The heliostats are seen as a distinct collection of infrastructure elements located behind belts of existing vegetation. The vegetation fragments the visual effect. Across this area to the southeast, the solar receivers are likely to be seen as prominent vertical elements within the landscape.

Viewpoint 2 - VP02 Birdseye Highway (northeast – sub-regional)

Viewpoint 2 is located on the Birdseye Highway. The viewpoint is representative of the eastern regional landscape and the visual effect associated with the northeastern and eastern locality. This viewpoint is also representative of the potential visual effects that will be experienced from the western edge of Cleve.



Figure 38: Photomontages – Viewpoint 2 - Birdseye Highway

The proposed infrastructure associated with the project creates a distinct visual effect to the northwest. The visual effects are created by the band of infrastructure elements formed by the horizontal spread of the heliostats across the landscape and the verticality of the solar receivers.

Viewpoint 3 - VP03 Pine Corner Road (south – local)

Viewpoint 3 is located to the south of the project site on Pine Corner Road. The viewpoint is representative of the landscape character and visual effects that will be experienced from the south.



Figure 39: Photomontages – Viewpoint 3 - Pine Corner Road

The visual impact to the southeast is defined by the visibility of the heliostats and solar receivers that are likely to be visible along the Pine Corner Road ridgeline. The ridgeline creates separated topographic orientations to the northwest and southeast, creating a defined viewshed that potentially screens a significant proportion of the heliostats and power blocks.

Viewpoint 4 - VP04 Broadview Road (southwest – sub-regional)

Viewpoint 4 represents the visual impact that will be experienced from the southwest. The viewpoint is located on Broadview Road and illustrates the visual impacts associated with the existing transmission line.



Figure 40: Photomontages – Viewpoint 4 - Broadview Road

The visual effect is created by the vertical form of the solar receivers positioned across the project site and visible from the wider locality.

Viewpoint 5 - VP05 Intersection of Birdseye Highway, Quinn Road and Broadview Road (northwest – local)

Viewpoint 5 is located on the intersection of Quinn Road, Broadview Road and Birdseye Highway. The viewpoint provides a direct view of the project within the western local landscape, particularly when travelling from the west.

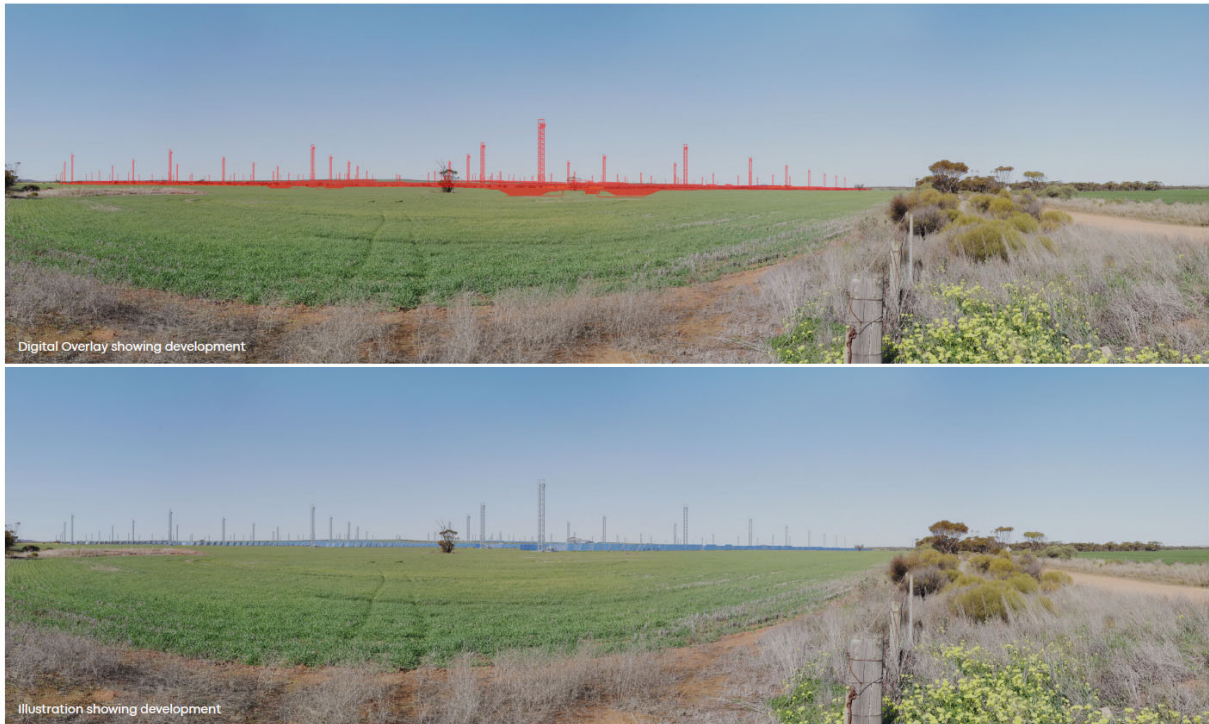


Figure 41: Photomontages – Viewpoint 5 - Intersection of Birdseye Highway, Quinn Road and Broadview Road

The visual impact associated with the project will be created by the heliostat fields located across the ground plain of the site, the numerous solar receivers that form vertical visual elements and the infrastructure form of the three power blocks.

Wax describes the visual impact in detail in Section 5.2 of the LVIA report (as quoted below).

The visual effects resulting from the project are likely to be experienced at a distances of 3 kilometres from the project site boundary. From locations 1 to 3 kilometres from the project, the visual effect has the potential to be pronounced as a result of the frequency, scale and visibility of the proposed infrastructure within the landscape, particularly with reference to the verticality of the solar receivers and the bands of infrastructure elements created by the heliostats arrays. The visual effect is described as moderate, increasing to substantial, with a percentage of visual change ranging from 30% to 38%.

The visual impact assessment demonstrates that the interpolated visual effect is consistent across the locality with similar degrees of visual change to the north, east, south and west. While the visual effect is described as moderate and visually prominent, existing landscape features, such as ridgelines, local landforms and belts of vegetation, mitigate the visual impacts.

To the northwest and southeast, the visual effects are reduced slightly, and the ridgeline along Pine Corner Road and vegetation screening to the west mitigate potential visual effects. However, the sensitivity of the underlying landscape to change is low due to the agricultural character.

Along the Birdseye Highway the heliostats and the lattice towers of the solar receiver appear as noticeable infrastructure elements due to their frequency and height. Across the local and sub-regional areas, the solar receivers are likely to remain visible.

South and east, the ridgeline associated with Pine Corner Road, screens a significant proportion of the project. The visibility of the project and the accompanying visual impacts are associated with the solar receivers. The ridgeline creates a visual envelope to the project area, limiting the number of visible solar receivers. Across the regional landscape character areas, the number of visible solar receivers increases due to the ridge that extends northeast-southwest between Cleve and Mount Priscilla.

To the west and southwest, the inland dunal system creates a complex visual character. The frequency and orientation of these dunal landforms fragment views of the project, reducing the number of solar receivers and heliostat fields that are visible.

At distances between 5 and 10 kilometres, the potential visibility of the project increases to the south and west. To the north and east, the visual effect is reduced by the broader landscape context, major ridgelines and back screening by existing landform and vegetation cover of Poolalalie Hill, and the project is likely to become a recessive visual element within the broader rural landscape of the locality.

The potential visual impact at distances greater than 10 kilometres from the project is likely to be slight to negligible. The project is likely to be seen as a distant visual effect created by the number of towers visible and the potential reflective quality from a southern broader landscape context.

Given the unique infrastructure character of the project, the visibility of the solar receivers and heliostat fields will vary depending on the relative viewpoint location and the time of day. At distances of between 1 and 3 kilometres, particularly from the south, east and west, the visual effect is likely to be caused by the solar receivers, forming brightly lit reflective infrastructure elements, creating glare in the landscape. The extent of this glare is illustrated in Figure 47.

The heliostat fields are likely to be visible as an infrastructure overlay across the rural landscape. The overlay of the heliostats will be punctuated by the receiver towers, creating a potential visual mass due to the frequency and concentration of the infrastructure elements across the project site.

The mirror panels of the heliostats are likely to be visible as a band of infrastructure that follows the underlying topography. The low profile of the heliostats means that local landforms and existing trees will screen and fragment the potential visual effect.

From locations to the north, the visual prominence of the heliostats will increase due to their colouration and orientation. The visual impact continues to increase with the elevation and topography of the ridge on the eastern edge of the site. While limiting the visual effect of the power blocks, the elevation and orientation of the ridgeline increase the visibility of the heliostats and receivers to the west and southwest.

Although the project is likely to result in a prominent degree of visual change, the defined visual character of the locality, the rural land use, and existing visual impacts from the substation upgrade mean that the Yadnarie Energy Project can be accommodated within the existing regional landscape character with moderate impacts on the immediate locality.

The retention of established vegetation on the project site and adjacent the boundaries aids in visually fragmenting the infrastructure elements of the project, reducing the visual effect. Wax have identified opportunities to increase tree planting along the property boundaries and supplement the dunal system landscape pattern would assist in visual integration of development. Wax identify that a screening height of 8-10 metres can be achieved with the local Mallee species.

Photon Energy have reviewed the recommendations in the LVIA report in relation to additional landscape treatments and supplementary and additional landscaping are illustrated on the Landscape Screening Plan which is part of the application documentation.

As stated in the conclusion of the LVIA report (quoted below), the visual impact of the development will have moderate impacts on the immediate locality but can be accommodated in the regional landscape.

The landscape and visual impact assessment indicates that the Yadnarie Renewable Energy Project will be developed in a modified rural landscape with a defined visual character. The topography of the Poolalalie Hill, Mount Priscilla and the local ridge line along Pine Corner Road create a visual envelope to the north, east and southeast of the project. To the west and southwest, the inland dunal system and the associated remnant vegetation create a distinct visual and landscape character that fragments the visibility of the project.

The landscape character of the locality, coupled with woodland areas and pockets of vegetation, creates a defined visual character. At distances greater than 5 kilometres, the visibility of the project is reduced, and the visual impacts across the broader rural effects become limited.

The potential visual effects are likely to be most notable from the northeast and southwest within the local to sub-regional locality. The number and spread of solar receivers and heliostats are likely to produce a moderate visual effect within the sub-regional locality with notable areas within the local 1-3 km distance, increasing to a substantial visual effect. The infrastructure associated with the project has the potential to appear in the landscape as prominent visual elements spread across the undulating landform of the project site.

To the northwest and southeast, the visual effects are reduced slightly, and the ridgeline along Pine Corner Road and vegetation screening to the west mitigate potential visual effects. However, the sensitivity of the underlying landscape to change is low due to the agricultural character.

Across the sub-regional landscape, local ridgelines, inland dunal systems and tree belts create defined visual screens that reduce and remove the visual effects of the project. The combination of topography and vegetation provides additional visual mitigation, and the degree of visual change is reduced, described as slight.

At distances of over ten kilometres within the regional locality, the degree of visual change reduces significantly and is described as negligible.

The associated infrastructure, power blocks, substations, and transmission lines will provide localised impacts to their immediate site localities. These visual effects will be limited to shorter distances (contained viewsheds). There will be no visual effect on the townships of Cleve and Rudall. Transient visual impacts will be experienced along the Birdseye Highway.

The visual assessment and visual effect interpolation mapping illustrate the relationship between distance and visual effect, the contained locality and the effect of local ridgelines and vegetation in reducing the visibility of the project in the wider locality. The visual effect is represented as bands of visual change radiating from the project. The existing landscape character means that topography and distance are the dominant variables in mitigating the visual effect.

Although the visual impact is likely to be moderate, the visual effects are contained within a defined locality. Consequently, the LVIA concludes that the Yadnarie Renewable Energy Project can be accommodated within the existing regional landscape character with moderate impacts on the immediate locality.

5.6 Glint and Glare

There are three potential sources of reflected light from the technology, namely:

- Concentrated light from a heliostat
- Glint and glare from a heliostat (non-concentrated)
- Glare from the solar receiver.

A detailed assessment of potential impacts of the technology in relation to glint and glare have been developed by/for RayGen. The findings have been incorporated into the design of the Yadnarie facility to minimise potential impacts of glint and glare.

5.6.1 Concentrated Light from a Heliostat

Direct reflected light from the front mirror face of a heliostat is concentrated due to the curvature of its mirrors. This curvature is important to achieving the required light concentration at the receiver for the system to operate efficiently.

The level of concentration of reflected light varies depending on the distance away from the heliostat. Maximum concentration is at the focal point. A concentrated beam from a heliostat becomes 'divergent' after the focal point. Then, after reaching a distance two focal lengths away from the mirror, the light is no longer concentrated and becomes just normal reflected sunlight.

Heliostats proposed within the Yadnarie project will have one of a number of different focal lengths ranging between 50 m and 206 m depending on their location within the heliostat field. The ones at the front of the field, closer to the tower, have shorter focal lengths and the ones at the back of the field have longer focal lengths. A recipient of light within a range of two focal lengths of a particular heliostat would be subject to some degree of concentrated light. The intensity of this concentrated light reduces dramatically when the recipient moves away from the focal length. The proposed development is designed with adequate boundary setbacks and control systems to mitigate any impact on any neighbouring land, sensitive receivers and road users.

5.6.2 Glint and Glare from a Heliostat (Non-Concentrated)

Glint and glare from a heliostat can be in the form of a reflection off the front face or the edge of the heliostat. The reflection is off either glass or steel material. During the day when the system is operating, the heliostat is tracking on-sun and all light captured by the heliostat is directed towards the receiver. The back side of the heliostat is also facing away from the sun meaning that glint and glare is highly unlikely in this situation.

Glint and glare are more likely to be seen by a viewer within boundaries of the site when the heliostat is tracking to and from park position, to a standby or on-sun position. This occurs for only a very small percentage of the operating time.

When in 'park' position (system not operating) the heliostat mirrors face down towards the ground further reducing the likelihood of glint and glare.

5.6.3 Glare from the Solar Receiver

The solar receivers are designed to accept as much light as possible from the heliostats. When in operation this will amount to a peak flux of about 900 suns. Approximately 10% of this light will be reflected back as a diffuse (non-concentrated) reflection of light from its aperture. In addition, a small percentage of the light will miss the receiver aperture all together, thus reflecting off the receiver housing or top of the tower. The result of this reflected light is a "halo" type effect around the aperture of the receiver as shown in Figure 19. This "halo" effect is not visible when the viewer is positioned to the north of the receivers.

Glare from the proposed RayGen technology was assessed in relation to the Carwarp development and the same elements of the technology will be implemented at Yadnarie. The results of the assessment indicate that an observer at ground level will have potential for an after-image effect and glance blindness if they glance at receiver for a duration of 0.15 seconds when they are within the following distances:

- Up to 280 m from the receiver, directly in front.
- Up to 240 m if viewing from a 25-degree angle offset (left or right side) from directly in front of the receiver.
- Up to 125 m if viewing from a 75-degree angle offset (left or right side) from directly in front of the receiver.

As discussed previously in this report, glare is characterised into three categories:

- Low potential for after image (temporary after image), also referred as green glare.
- Potential for after image (flash blindness), also referred as yellow glare.
- Potential for permanent eye damage (retinal burn), also referred as red glare.

The map of ocular safety zones developed by/for RayGen based on the analytical model is shown in **Figure 20**.

These safety zones have been incorporated into the design of the project, with all areas within the “yellow glare” zone being within the boundaries of the property.

Aviation Projects Aviation Impact assessment considered the potential impact of glare on aircraft operations in the locality of the project. In summary, the assessment notes that:

- The Project is not within the boundary of a certified aerodrome and CASA does not require an assessment of the Project for glare impacts.
- The FAA³ Final Policy on the review of solar installations does not affect the Project.
- The Project is located more than 6 km from any certified aerodrome and is not located where glare will impact on any air route or airway, and therefore is not affected by Civil Aviation Regulations Part 94.
- Aircraft operations in the immediate vicinity of the solar farm are anticipated to be infrequent and limited to aircraft potentially conducting low-level aerial application operations on neighbouring properties.
- Glare from receiving towers is geometrically possible for aircraft approaching the Project from the south, however the glare experienced from the Project is not anticipated to inhibit or endanger VFR aircraft operations in the vicinity of the project and could be mitigated by the use of sunglasses and/or sun visors. There are no aircraft operations likely to be conducted within the yellow glare zone of any receiving tower anywhere in the Project Area.

³ FAA: Federal Aviation Administration – U.S. Department of Transportation

As discussed in the Traffic Impact Assessment, MFY undertook an assessment of the potential impact of glare on road users. The assessment identified that all the heliostats adjacent the Birdseye Highway are outside the ocular safety zone for drivers on the Birdseye Highway. This is important as this route presents the highest risk for drivers associated with the proposal. Some of the heliostats and receivers on local roads are in locations where there is a low potential for after-image from glare (that is, within the green ocular safety zone), thus identifying a risk of distraction or the potential for an after image for drivers. An effective method to mitigate the risk of the after image or ocular damage is to ensure the driver does not have line of sight to the receiver is to provide an effective screen (mound/vegetation or similar). Minimising risk to drivers has been considered during the design phase of the development, and locations identified that would require new or additional screen landscaping along parts of Pine Corner Road, Price Road and Broadview Road.

5.7 Traffic

A Traffic Impact Assessment (TIA) has been prepared by MFY which details the impacts of the transport related activities associated with the development, along with an assessment of the potential safety implications such as driver distraction on the adjacent roads or impacts to existing road users. A copy of the Traffic Impact Assessment is contained with Volume 2 of the development application documents.

The TIA examines existing conditions in the locality of the site, an assessment of the likely access routes for over mass over size vehicles during the construction phase, an assessment of access points; and recommendations regarding access to the development site.

The greatest volume of heavy vehicle access will occur during the construction phase.

5.7.1 Existing Conditions

The subject land is bounded by Birdseye Highway to the north, Price Road to the south, Pine Corner Road to the east, and Broadview Road (in part) to the west. Birdseye Highway is an arterial road within the care and control of the Commissioner of Highways. It has a sealed two-lane carriageway.

Birdseye Highway is subject to a posted speed limit of 110 km/h and has a traffic volume in the order of 360 vehicles per day (vpd). It is gazetted for use by PBS Level 3B vehicles and also for most of the Over-sized Over-mass (OSOM) vehicle types.

Price Road, Pine Corner Road, and Broadview Road are unsealed roads within the care and control of the District Council of Cleve. The rural default speed limit of 100 km/h will be applicable to these roads albeit slower speeds are expected to be realised due to the road conditions. The traffic volumes on these roads are anticipated to be low in the order of 50 to 100 vpd.

5.7.2 Site Access

Access to the proposed renewable energy facility will be provided at two locations on Pine Corner Road. Broadview Road will be maintained in the event it is required during an emergency.

The principal access to the site is on Pine Corner Road, approximately 500 metres south of the intersection with Birdseye Highway. The Birdseye Highway/Pine Corner Road intersection will be upgraded to include basic right turn (BAR) and auxiliary left turn (AUL) treatments on Birdseye Highway for traffic entering Pine Corner Road. The facilities will be designed in accordance with Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections (ARGD-04A).

The access points will be designed to cater for OSOM vehicles and B-double vehicles during construction. There will be a requirement for up to 30 OSOM vehicles of various sizes to facilitate the construction of each stage during the construction period. Most of these vehicles will be low loaders with over-mass items. It is anticipated that these vehicles will require escort vehicles. OSOM vehicles will be able to use the existing OSOM routes, including Birdseye Highway, to access the site. Appropriate permits will be required where the route to the site detours from roads gazetted for the use of OSOM vehicles (for example, Pine Corner Road).

5.7.3 Traffic Impact Assessment

Stage 1 of the project will include the construction of Power Block 1 and associated infrastructure. Stage 1 will be constructed in 24 months and the following number of vehicles are estimated to access the site during the construction period:

- approximately 32,000 light vehicles;
- approximately 900 rigid vehicles;
- approximately 1,000 semi-trailer vehicles; and
- approximately 30 OSOM vehicles.

Based on a five-day work week, the average daily traffic generated by the development will equate to approximately 130 trips per day. It is estimated that there could be approximately 40 trips in one hour when drivers are travelling to and from work.

Stage 2 of the project will include the construction of Power Block 2 and 3 and associated infrastructure. Stage 2 will be constructed in 24 months and, therefore, will potentially generate twice the volume of traffic generated in Stage 1. Accordingly, Stage 2 of the construction could generate approximately 260 trips per day or 80 trips in one hour.

The above forecast volumes will have no impact on the existing capacity on Pine Corner Road and will not change its nature or function. Notwithstanding this, it is proposed to provide an intersection treatment at the Pine Corner Road/Birdseye Highway intersection to provide improved traffic safety for existing road users and construction drivers accessing the development site.

During the operational phase of the project, typical vehicles such as utility vehicles or vans, along with the occasional large vehicle (up to 19.0m semi-trailer) would utilise the site entrance on Pine Corner Road. Within the site, the principal internal driveways are typically 7 metres wide with a 10 metre clear width. Driveways which will provide access to specific equipment such as the heliostats and towers will have a 4 m wide carriageway within a 7 m wide clear width, although wider areas will be available to facilitate turning of vehicles where required. Emergency vehicle access is anticipated from Broadview Road and Bagnell Road.

5.7.4 Traffic Safety Assessment

As discussed in Section 5.6 above, the technology proposed to be deployed in the development will reflect light. MFY have undertaken an assessment of the glare from this reflection of light to understand if it would present a distraction to drivers. The assessment has been completed based on the principles in Austroads “Guide to Road Design – Part 6: Roadside Design, Safety and Barriers” (AGRD06) and “Guide to Road Design - Part 6B: Roadside Environment” (AGRD06B). This assessment is referred to as a ‘cone of vision assessment’.

The Traffic Impact Assessment report notes that:

The cone of vision assessment considers the location of the heliostats and the receivers with respect to a driver's general field of vision while driving. While AGRD06B does not stipulate that an object within the cone of vision will cause a distraction for drivers, removal of an object from the cone of vision will mitigate the risk of driver distraction.

The cone of vision relates to the angle of vision for drivers at any position along a road to the potential point of distraction. The speed of vehicles is also a factor in determining the potential distraction for drivers. Accordingly, the cone of vision has been assessed at the speed limit of the encompassing roads.

The assessment identifies that the receivers and heliostat fields will be located clear of drivers' cone of vision throughout the entirety of the development.

In addition to the cone of vision assessment, MFY have considered the impacts of ocular glare and the potential impact to a driver's vision. MFY assessed and identified areas where the glare zone could encroach into the cone of vision of drivers, albeit the risk of impact associated with the green glare zone is significantly lower than those associated with the yellow glare zone. Further the risk associated with the green glare zone decreases as the distance from the receiving towers and the angle to the driver increases.

MFY identified areas that some heliostats and receivers on local roads are in locations where the ocular safety zone extends into the cone of vision, thus identifying a risk of distraction or the

potential for an after image for drivers. The potential intrusions were only identified at the extremity of the low risk of after image (green) zone where the risk of any impact is low.

Having identified the areas of potential intrusion, Photon Energy and MFY discussed methods to mitigate the risk of after image. The effective method is to ensure the driver does not have line of sight to the receiver in those locations where the ocular safety zone extends into the cone of vision would be to provide an effective screen (mound/vegetation or similar). The height of the screen will depend on the levels of the road (at the driver position) and the receiver, the separation between the driver and the receiver and the location of the screen relative to the driver and the receiver. As noted by MFY, the extent of screening at each location will need to be accurately determined during detailed design. Photon Energy are committed to providing this screening and accordingly have illustrated on the Landscape Screening Plan the areas where additional or supplementary screening is proposed. This commitment is contained in the Statement of Commitments (Attachment G).

5.7.5 Summary and Findings

MFY conclude that the proposal will have minimal impact, particularly during the operational phase of the project and note:

The key safety elements of the proposal are to ensure the existing road network can satisfactorily cater for the heavy vehicle construction access requirements and that the receivers do not have safety implications for drivers.

Notwithstanding the relatively low heavy vehicle volumes which will access the site during the construction period each day, it is proposed to upgrade the Pine Corner Road/Birdseye Highway intersection to provide for safe turning movements and improve safety for existing drivers on the highway.

The reflection of light from the heliostats to the receiver has the potential to cause distraction for drivers. The proposal has therefore included a detailed cone of vision and ocular glare assessment to ensure that receivers will either be outside the risk zone for drivers' impact (as will be the case adjacent Birdseye Highway) or will be screened where required. The extent and the height of the screening will be confirmed during detailed design.

5.8 Aviation

5.8.1 Context

Aviation Projects undertook an aviation impact assessment of the proposed development to assess the potential aviation impacts associated with tall objects and solar glare and provide aviation safety advice in respect of relevant air safety regulations and procedures.

As shown in Figure 42, Cleve aerodrome (YCEE) is located approximately 9km west of the subject land. YCEE is a certified airport, operated by the District Council of Cleve and has two runways:

- Runway 08/26, sealed, 18 m wide and 1350 m long, with a runway strip width of 90 m.

- Runway 18/36, unsealed, 18 m wide and 895 m long, with a runway strip width of 60 m.

Aircraft operations at Cleve aerodrome are mostly made up of general aviation aircraft including low-capacity air transport operations (including RFDS medical retrieval flights), aerial agriculture, flight training, private and recreational aircraft. The aerodrome is generally not currently suitable for regular high-capacity air transport aircraft.

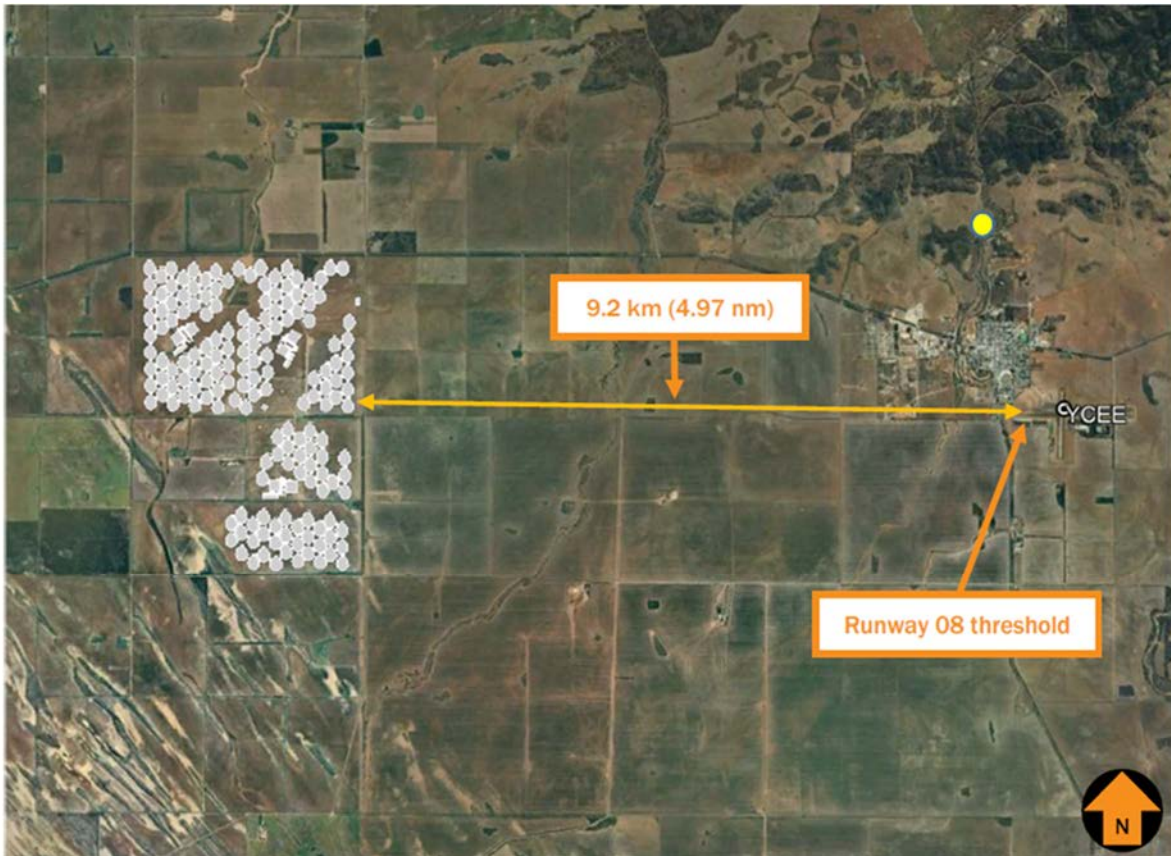


Figure 42: Location of Cleve Airport and Subject Land – Source: Aviation Projects

5.8.2 Methodology

The aviation assessment considers the potential aviation impacts associated with the Project and provided aviation safety advice in respect of relevant requirements of air safety regulations and procedures. Specifically, the aviation assessment was prepared with reference to the Civil Aviation Safety Regulations 1998, associated Manuals of Standards and other guidance material provided by CASA, the National Airports Safeguarding Framework (NASF). The analysis considered the potential aeronautical impact of the Project on the following items, in relation to tall objects associated with the Project:

- The operation of nearby certified aerodromes
- The operation of nearby aircraft landing areas (uncertified aerodromes)
- Grid and air route Lowest Safe Altitudes (LSALTs)

- Airspace protection
- Aviation facilities
- Radar installations
- Local aircraft operations.

In addition to the analysis of potential impact of tall objects, the aviation assessment considered the potential impact of glare from the receiving towers with reference to current regulations, along with a glare analysis tool (Sandia’s Solar Glare Hazard Analysis Tool – SGHAT). Aviation Projects summarise the relevant aviation policy and industry guidance in relation to the aviation solar glare in relation to Cleve aerodrome in Table 12.

Table 12: Aviation Solar Glare Policy Analysis Summary		
Policy/Regulation	Requirement	Project Result
FAA Final Policy (May 2021)	No yellow glare for an air traffic control tower at a federally obligated airport	Not applicable at Cleve aerodrome. No Impact to project
Part 139 MOS 2019 (aerodromes)	A solar installation installed within the boundary of a certified aerodrome must be reported to CASA prior to installation.	Project not within boundary of a certified aerodrome and not required to be reported to CASA No Impact on project
CAR 94	No hazard for aircraft operations at aerodrome, air route or airway	Not applicable to Project area No impact on Project.
NASF Guidelines	Guidance applicable for situations where lights are to be installed within a 6km radius of a known aerodrome.	Project not within 6 km of any aerodrome. (Solar glare not specifically referenced in NASF guidance)

In addition to this policy framework, Aviation Projects reviewed the solar glare analysis undertaken by/for RayGen in relation to the RayGen technology at the Carwarp commercial demonstration facility. The aviation assessment considered *“that although modelling was not undertaken for receptors above ground level, the distances identified in the ocular safety zones are appropriate for considering the potential glare impact to aircraft operations, noting that only aerial application aircraft operations are anticipated in the immediate vicinity of the Project area and will be operating at low-level”*.

5.8.3 Aerial Agriculture Application

The aviation assessment notes that it is possible that aerial application operations may be conducted in the vicinity of the Project Area, including on neighbouring properties and discusses the potential impacts as follows:

Aerial application operations including such activities as fertiliser, pest and crop spraying are generally conducted under day VFR below 500 ft AGL, usually between 6.5 ft (2 m) and 100 ft (30.5 m) AGL.

Due to the nature of the operations conducted, aerial agriculture pilots are subject to rigorous training and assessment requirements in order to obtain and maintain their licence to operate under these conditions.

The Project may cause a minor constraint for aerial application operations on neighbouring properties, particularly in the case of receiving towers installed close to the Project Area boundary. For operations close to the Project Area boundary, aerial application aircraft may need to change their operating procedures to avoid overflying the towers at low level to make their 180-degree turn if the spray pattern is conducted in line with the Project Area. Aerial agriculture operators conducting operations in the vicinity of the Project would conduct a risk assessment and would be aware of the Project configuration prior to commencing flight operations.

The Aerial Application Association of Australia (AAAA) has developed National Windfarm Operating Protocols (adopted May 2014) which provides advice and recommendations to wind farm developers intended to minimise impacts and disruption to aerial application operations by wind farm development.

Although not applicable to the Yadnarie Project, the AAAA specifies in relation to wind farm design that wind turbines should be installed at least 100 m from any boundary. Given the height of the receiving towers (compared with wind turbines) it is considered that the impacts to aerial application operations are significantly less, and placement of receiving towers anywhere in the Project Area would not cause any significant adverse impacts to aerial application operations.

Solar glare from the receiving towers may cause a distraction for aerial application pilots, however only when flying on a northerly heading when operating on the property immediately south of the Project. In sunny conditions, it is anticipated that pilots would be wearing sun glasses or visors, and the glare would not cause a significant impact.

5.8.4 Findings

Aviation Projects have undertaken a detailed assessment of the structures associated with the proposed renewable energy facility, particularly with reference to the receiving towers as “tall objects”. In conclusion the aviation assessment states:

- The Project satisfies General Development Policies for Infrastructure and Renewable Energy Facilities established in relation to airport safeguarding, established in the South Australian Planning and Design Code, made under the *Planning, Development and Infrastructure Act 2016*;
- The Project is located outside of and will not impact the obstacle limitation surface of Cleve aerodrome;
- The Project is located within the 10 nm MSA area of Cleve aerodrome. The maximum Project height will be at least 1045 ft below the 10 nm MSA protection surface and there will be no impact to instrument flight procedures established at Cleve aerodrome;
- The Project will not affect any grid or route LSALT;
- The Project will not affect any aviation Communication, Navigation and Surveillance Systems.

- The Project does not require obstacle lighting or marking in accordance with Part 139 MOS 2019 specifications;
- The Project maximum height is below 100 m AGL and there is no requirement to report the Project to CASA in accordance with CASR Part 139.165(1)(2);
- Due to being located within 30 km of an airport and at 45 m AGL, as-built details of the receiving towers should be provided to Airservices Australia.

In relation to solar glare, the aviation assessment concludes:

- The Project is not within the boundary of a certified aerodrome and CASA does not require an assessment of the Project for glare impacts;
- The FAA Final Policy on the review of solar installations does not affect the Project;
- The Project is located more than 6 km from any certified aerodrome and is not located where glare will impact on any air route or airway, and therefore is not affected by Civil Aviation Regulations Part 94;
- Aircraft operations in the immediate vicinity of the solar farm are anticipated to be infrequent and limited to aircraft potentially conducting low-level aerial application operations on neighbouring properties;
- Glare from receiving towers is geometrically possible for aircraft approaching the Project from the south, however the glare experienced from the Project is not anticipated to inhibit or endanger VFR aircraft operations in the vicinity of the project and could be mitigated by the use of sunglasses or sun visors. There are no aircraft operations likely to be conducted within the yellow glare zone of any receiving tower anywhere in the Project Area.

5.9 Fire Risk and Management

Fire risk associated with Yadnarie renewable energy facility is both bushfire and fire risk from construction and operation. The operational fire risk includes general development risk and technological risk.

5.9.1 Context – Bushfire

The Upper Eyre Peninsula is a bushfire-prone environment with people, assets and area of environmental sensitivity at risk during bushfires. The Yadnarie project area falls within the Eastern Eyre Peninsula (EEP) Fire Ban District (FBD). The Yadnarie renewable energy facility is proposed to be built within the 'Primary Response Zone' (PRZ) of the Cleve CFS Brigade. Cleve CFS Brigade is a member of the Eastern Eyre Peninsula (EEP) CFS Group.

A Bushfire Protection Assessment has been undertaken by consultants AJL Solutions as part of the project planning, so that the project can incorporate measures to reduce the frequency, spread and impact of bushfires (i.e. rural fires, meaning bush, scrub, grass and crop fires). There are three (3) possible ways in which rural fires may impact the Yadnarie site. Essentially, a rural fire in the

landscape approaching the site from outside the area, a rural fire emanating from within the site and an infrastructure fire within the site, which may then cause a rural fire to start on the site.

As with all developments such as the Yadnarie solar farm and energy storage facility, CFS will respond in the normal manner to all rural fires in or near the development with both ground-based firefighting resources (fire trucks) and, if required and available, aerial firefighting resources (firebombers). The management of rural fires in or near renewable energy facilities is almost identical to any rural fire. The only difference will be that if aerial firefighting resources attend, they will be made aware of the fact that there are multiple 45-metre solar receiver towers and numerous heliostats present. They will then treat the towers and heliostats much the same as any other elevated hazards or sensitive ground-based infrastructure such as solar panels and transmission lines.

5.9.2 Aerial Fire Fighting

Aircraft (firebombers) used for aerial firefighting in South Australia may be responded to anywhere in the State to uncontrolled bushfires and grassfires however, priority for response will be given to where the risks to 'human life' and 'community assets' are greatest. Therefore, the high-priority response areas are 'predefined' and are known as 'Primary Response Zones' (PRZ). The Upper Eyre Peninsula is outside the PRZ, an area of the state known as the 'Secondary Response Zone' (SRZ). Outside the PRZs or outside of the predetermined forecast fire weather criteria, a CFS Incident Controller may request the response of firebombers to rural fires. A request for an aircraft does not guarantee a response.

The elevated infrastructure associated with as proposed for Yadnarie (i.e., solar receiver towers) and pre-existing high-voltage transmission lines pose risks for aerial firefighting operations. However, with appropriate planning and management, the risks posed to aerial firefighting operations can be mitigated. The bushfire assessment states that the presence of a renewable energy facility, such as the proposed Yadnarie facility, will not universally exclude the use of aerial firefighting resources.

5.9.3 Bushfire Assessment Methodology

The Bushfire Protection Assessment report by AJL Solutions addresses the potential of a rural fire approaching the Yadnarie site from the surrounding landscape. The assessment contains extensive analysis of fire history, the environment and climate, potential bushfire sources, CFS resources and firefighting methodologies. In preparing the assessment report, AJL Solutions reviewed the Victorian Country Fire Authority (CFA) guidelines for the design and construction of renewable energy facilities in Victoria, namely: 'Design Guidelines and Model Requirements Renewable Energy Facilities V4'. South Australia does not currently have an equivalent guideline document, it is understood that the SA Country Fire Service will utilise the CFA Guidelines when assessing renewable energy facilities in South Australia.

The Victorian CFA Guidelines comprise extensive guidance regarding fire breaks, firefighting water supply, and firefighting vehicle access. Whilst the SA Planning and Design Code comprises generic policies for development within Bushfire Overlays, the CFA guidelines are more specific to

renewable energy facilities. The CFA 'Design Guidelines and Model Requirements for Renewable Energy Facilities' include the following model requirements:

Emergency Vehicle (Fire Truck Access)

- *Construction of a minimum four (4) metre perimeter road within the perimeter fire break.*
- *Roads must be of all-weather construction and capable of accommodating a vehicle of fifteen (15) tonnes (e.g., no compacted earth).*
- *Constructed roads should be a minimum of four (4) metres in trafficable width with a four (4) metre vertical clearance for the width of the formed road surface. Ensure any fencing along access routes allows for width of fire vehicles.*
- *The average grade should be no more than 1 in 7 (14.4% or 8.1°) with a maximum of no more than 1 in 5 (20% or 11.3°) for no more than fifty (50) metres.*
- *Dips in the road should have no more than a 1 in 8 (12.5% or 7.1°) entry and exit angle.*
- *Roads must incorporate passing bays at least every 600 metres, which must be at least twenty (20) metres long and have a minimum trafficable width of six (6) metres. At least one passing bay must be incorporated where roads are less than 600 metres long.*
- *Road networks must enable responding emergency services to access all areas of the facility, including fire service infrastructure, buildings, battery energy storage systems and related infrastructure, substations and grid connection areas.*
- *Provision of at least two (2) but preferably more access points to each part of the facility. The number of access points must be informed through a risk management process, in consultation with CFA.*

Firefighting Water Supply

- *Water access points must be clearly identifiable and unobstructed to ensure efficient access.*
- *Static water storage tank installations must comply with AS 2419.1-2021: Fire hydrant installations – System design, installation, and commissioning.*
- *The static water storage tank(s) must be an above-ground water tank constructed of concrete or steel.*
- *The static water storage tank(s) must be capable of being completely refilled automatically or manually within 24 hours.*
- *The static water storage tanks must be located at vehicle access points to the facility and must be positioned at least ten (10) metres from any infrastructure (solar panels, wind turbines, battery energy storage systems, etc.).*
- *The hard-suction point must be provided, with a 150mm full bore isolation valve...equipped with a Storz connection, sized to comply with the required suction hydraulic performance.*
- *The hard-suction point must be positioned within four (4) metres to a hardstand area and provide a clear access for emergency services personnel.*

- *An all-weather road access and hardstand must be provided to the hard-suction point. The hardstand must be maintained to a minimum of 15 tonne GVM, eight (8) metres long and six (6) metres wide or to the satisfaction of the CFA (CFS in SA).*
- *The road access and hardstand must be kept clear at all times.*
- *The hard-suction point must be protected from mechanical damage (e.g., bollards) where necessary.*
- *Where the access road has one entrance, an eight (8) metre radius turning circle must be provided at the tank.*
- *An external water level indicator must be provided to the tank and be visible from the hardstand area.*
- *Signage indicating 'Fire Water' and the tank capacity must be fixed to each tank.*
- *Signage must be provided at each vehicle entrance to the facility, indicating the direction to the nearest static water tank(s).*
- *The fire protection system for solar energy facilities must incorporate at least one (1) x 45,000L static water tank for every 100 ha. For example, a 500-ha site requires a minimum of five (5) x 45,000L static water tanks.*

Fire Detection and Suppression Equipment

Suitable fire detection and suppression equipment must be provided:

- *For on-site buildings and structures, according to the requirements of the National Construction Code.*
- *For storages of dangerous goods, according to the requirements of any Australian Standards for storing and handling of dangerous goods.*
- *For electrical installations, a minimum of two (2) suitable fire extinguishers must be provided within 3m-20m of each PCU.*
- *In all vehicles and heavy equipment, each vehicle must carry at least a nine (9)-litre water stored-pressure fire extinguisher with a minimum rating of 3A, or other firefighting equipment as a minimum when on-site during the Fire Danger Period.*

Fire Breaks

A fire break must be established and maintained around:

- *The perimeter of the facility, commencing from the boundary of the facility or from the vegetation screening inside the property boundary.*
- *The perimeter of control rooms, electricity compounds, substations and all other buildings onsite. The width of fire breaks must be a minimum of 10m, and at least the distance where radiant heat flux (output) from the vegetation does not create the potential for ignition of on-site infrastructure.*

Adoption of these model requirements (as applicable) will be incorporated into the Fire Management Plan and/or Emergency Management Plan prepared for the development prior to

construction. These management plans will be developed in accordance with the SA CFS. This commitment is included in Attachment G - Statement of Commitments.

5.9.4 Fire Risk During Construction

Existing land uses and human activity already pose some level of risk of generating a bushfire event during the fire danger season; however, the construction phase of the project has the potential to increase bushfire risks primarily by increasing the level of activity in the region, specifically in relation to:

- increasing the volume of human activity and vehicle accessing the area;
- the use of heavy earthmoving machinery
- increasing the potential for vehicles to drive through dry grass;
- storage and use of flammable fuels and materials; and
- the use of grinders and welding equipment.

Increased activity on grassland vegetation during construction, could potentially result in accidental ignition. The increased bushfire risk on the surrounding areas during construction and operation of the plant, is not considered to be more prevalent than any other development application or existing general activity (for example farming, contracting or other construction).

The potential of increased risk can be managed and mitigated by the physical bushfire mitigation measures (particularly new access driveways that improve emergency vehicle access), appropriate training, communication and management practices are put into place in accordance with the recommendations incorporated in the Fire Management Plan of the Statement of Commitments.

5.9.5 Fire Risks During Operation

A fire emanating from within the site may occur as a result of general fire ignition sources (vehicles, power tools etc) or from operational infrastructure. Fires from operational infrastructure may include:

- Ignition caused by concentrated light⁴ incident upon flammable material.
- Electrical fire in the control / inverter rooms or other buildings containing electrical equipment.
- Ammonia fire in the Thermal Hydro central infrastructure area.

The main approaches to mitigation of technological fire risk are:

⁴ Concentrated light' refers to the light generated when heliostats are focused at the same point on the receiver – concentrating the sunlight they have collected. This is generated only when the facility is staffed and operational.

- Specific training on Ammonia related fire risks and fire management to be included in site inductions, training and site signage for the operating facility, in addition to designing the plant to meet appropriate Australian Standards for Ammonia use and handling.
- Software Parameters in Control systems – employing heliostat control software that disallows heliostats to focus concentrated light in any location other than the solar receiver, as well as controls that prevent a single heliostat from focusing light on the ground for any period of time. This includes tracking paths, fail safe modes, self-power and high tracking speed to ensure risk of ignition from heliostats is eliminated.
- Layout Design/Management – appropriate layout design measures (setbacks to site boundaries) are incorporated to ensure that any light leaving the site has passed through the respective focal point and diverged back into dilute light.
- Dangerous goods would incorporate the following management measures:
 - All materials that are flammable and combustible should be stored in a secure and enclosed area away from the site office or any electrical infrastructure.
 - An area of cleared land of all vegetation including grasses of no less than 20m shall be maintained surrounding the storage enclosure.
 - All fuels and hazardous materials must be identifiable as required by the South Australian Dangerous Substances Act 1979 and South Australian Dangerous Substances (General) Regulation 2017 for storage and labelling.
- Storage and handling of Anhydrous ammonia to be carried out in accordance with "AS 2022 Anhydrous Ammonia - Storage and Handling".
 - Ammonia leak detection and alarm system to be implemented in the power block area.
 - Firefighting measures for Anhydrous ammonia to include measures outlined in "AS 2022 Anhydrous Ammonia - Storage and Handling".

Mitigation controls in relation to fire will be incorporated into the Fire Management Plan and the intent of this plan is contained in the Statement of Commitments (Attachment G) and draft CEMP (Volume 4 of the development application documentation).

5.10 Hydrology

5.10.1 Natural Features

Cleve has an average annual rainfall of 398 mm. Evaporation consistently exceeds the mean monthly rainfall, signifying a water limited environment.

Yadnarie renewable energy facility project area is in the headwaters of Driver River, which drains into Spencer Gulf via an intermittent coastal swamp about 12 kilometres south-west from Arno Bay. The main creek systems of the area are Yadnarie Creek and Mangalo Creek.

Soil mapping of the locality indicates that soils within the area are variable, with hard red-brown texture soils and shallow soils on rock dominating in the upper catchment and calcareous soils and sands in the lower plains.

5.10.2 Hydrology Assessment

A hydrological assessment was undertaken by Worley to inform the design and siting of the development.

Yadnarie Creek is the main drainage feature on the site which conveys water from the upper catchment to the south before entering the Driver River. Watercourses through the site and further to the south are not well defined, with flows only appearing to occur following large events.

The assessment noted that there was limited information available on hydraulic behaviours and streamflow in the locality, however, satellite imagery of a significant rainfall event that occurred on the 22 January 2022 provided valuable information to understand the local rainfall-runoff characteristics during large events. On the 22 January 2022 the Yadnarie catchment received between 100-150mm, which equates to 1% AEP for a 24 hour period. Satellite imagery was analysed to determine the extent of flood before and after the rainfall event on 22 January 2022 and was utilised, along with other assessment, to understand the rainfall-runoff characteristics of the area.

Worley note that due to the steeper terrain of upper catchment area of Yadnarie Creek, flows are mostly constrained to the channel until the Birdseye Highway. Once water travels through the causeway, flows spread as the terrain becomes more gentle and there is no defined channel. Tributaries to the east of Yadnarie Creek also contribute flows through the project area, with the gentle gradient and lack of a defined channel spreading the flow through a wide area. Flow depth is generally low, less than 0.25m in the 1% AEP through this area. Figure 43 below illustrates the maximum flood depth (1% AEP) through the subject land.

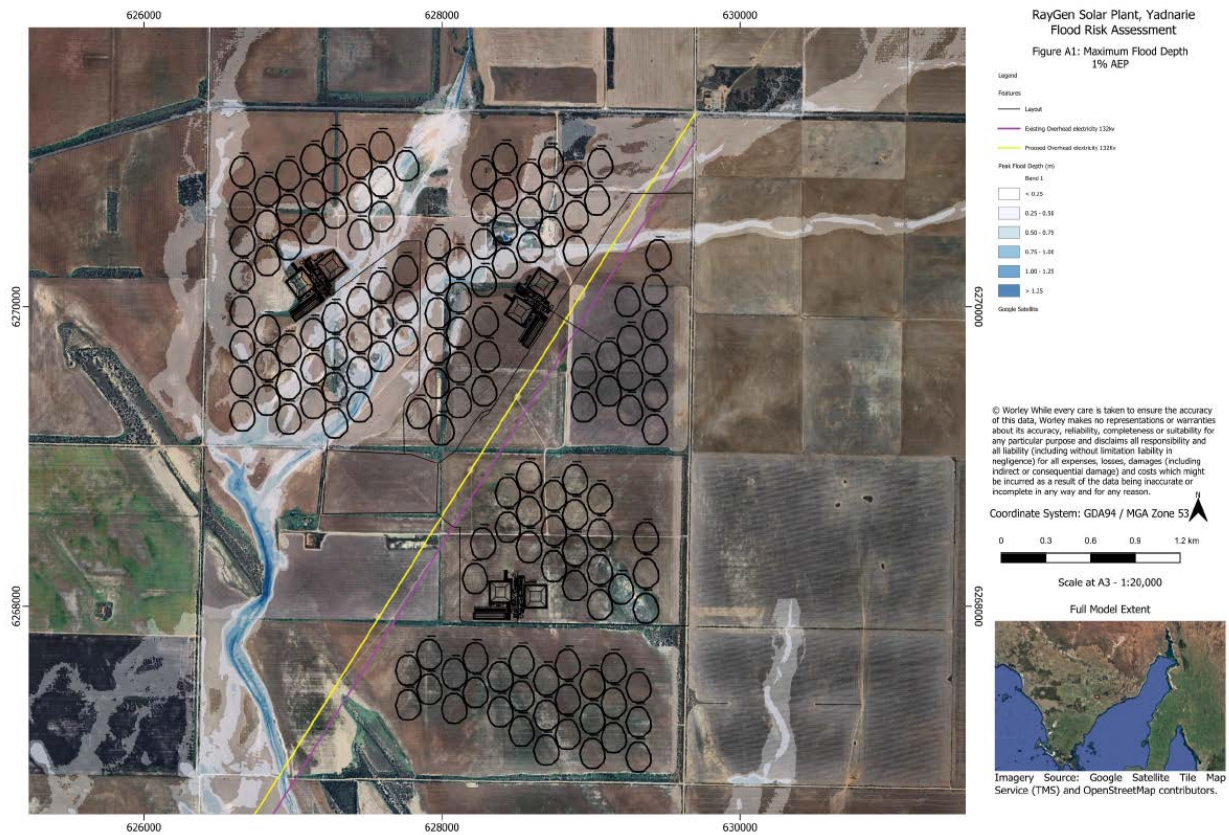


Figure 43: Flood Risk Assessment – Maximum Flood Depth 1% AEP. Source Worley.

5.10.3 Findings and Recommendations

The peak flood depth through the project area is generally low, with depth generally less than 250mm and flood velocity also generally low. Some localised areas comprising heliostats within Block 1 and Block 2 may experience greater flood depths and higher velocity in a 1% AEP. On average, the heliostat fields have a hazard vulnerability classification that would make the area unsafe for vehicles, children and the elderly during a 1% AEP flood event. Infrastructure such as the administration and control area, the construction laydown area and the substation are located outside of the hazard areas.

Worley have identified that risk associated with peak flood levels could typically be mitigated by adoption of a standard design freeboard of 300mm. During detailed engineering design of the project, incorporation of a 300mm freeboard for infrastructure associated within the higher risk heliostat fields (i.e.. pump skids, inverters) would be utilised. Posts of the heliostats within the higher risk flood areas would be appropriately designed to withstand the velocity of water. The height of the heliostat mirrors in a parked position would not impede the flow of water at the depths projected. The recommendation regarding the inclusion of freeboard for infrastructure within the higher risk heliostat fields is included in the Statement of Commitments (refer Attachment G).

Flood hazard for the internal access driveways and power blocks is generally safe for vehicles and people. Worley have identified several locations that the internal access driveways cross drainage lines and have recommended that a culvert of similar be included in the final design. This recommendation is included in the Statement of Commitments (refer Attachment G).

The hydrology assessment has identified that there is potential for debris blockage associated with the proposed security fence that crosses Yadnarie Creek. It is recommended that the security fence be located with a setback of 150 metres from the northern (Birdseye Highway) boundary within the area that it crosses Yadnarie Creek. In addition, mitigation measures such as a fence which collapses under debris build up that would allow flood water to move through the site will be investigated for incorporation in the final engineering design, and this design feature is included in the Statement of Commitments (refer Attachment G).

The development will alter topography and flood behaviour on the site, however the hydrology assessment notes that it will not alter the flow of floodwater outside of the boundaries of the subject land. The findings of the hydrology assessment will be utilised for micro-siting and detailed design of infrastructure during detailed engineering design of the project.

5.11 Construction Environmental Management Plan

A draft CEMP has been prepared and is contained in Volume 4 of the development documentation. The draft Construction Environmental Management Plan (CEMP) incorporates the necessary environmental controls during both construction and operation to address potential identified risks.

The draft CEMP covers the following aspects, in accordance with the findings of the investigative studies undertaken in the preparation of this application:

- construction traffic management;
- location and extent of site earthworks;
- soil and water management;
- emissions including dust and noise control;
- hazardous substance and fuel storage and handling;
- waste storage, handling and disposal;
- fire prevention;
- weed control and site restoration.

A final version of the CEMP and additional management plans will be prepared during the detailed construction phase of the project.

5.12 Decommissioning or Replacement

At the end of its economic life, all equipment will either be replaced with comparable new equipment (if/as required), or the renewable energy facility will be decommissioned.

New approvals would be sought, if or as required, at the time of replacement of components.

Decommissioning would generally involve dismantling or removal of all above ground equipment, and may involve removal of buried cables or other infrastructure below ground surface, and land will be rehabilitated. Access tracks may be retained depending on the landowners' wishes and future land use. Any overhead power lines no longer required will be removed.

A decommissioning plan would be prepared and submitted to the relevant authority for approval, if/as required, prior to decommissioning commencing. The proponent is responsible for the decommissioning of the renewable energy facility. This is a legally binding obligation that will be tied to the land regardless if the parties involved in the development alter over time.

5.13 Statement of Commitments

The development application incorporates a "Statement of Commitments", which relates to the overall project management and specific measures to be addressed during final design and pre-construction planning, construction, operation, and decommissioning. The Statement of Commitments forms part of this development application and is included as Attachment G.

6

SOCIAL ASSESSMENT

- 6.1 Engagement Plan
- 6.2 First Round of Community Engagement
- 6.3 Stakeholder Engagement
- 6.4 Second Round of Community Engagement

6 Social Assessment

6.1 Engagement Plan

Photon Energy prepared an Engagement Plan (as contained in **Attachment H**) to outline the interaction with the community and key stakeholders to inform the decision-making processes of the project.

As outlined in the Engagement Plan, Photon Energy are committed to honouring the Clean Energy Council's Best Practice Charter for development of renewable energy projects and associated infrastructure. These best practice charter principles are:

- Engage respectfully with the local community, including Traditional Owners of the land, to seek their views and input before finalising the design of the project and submitting a development application;
- Provide timely information and be accessible and responsive in addressing the local community's feedback and concerns throughout the lifetime of the development;
- Be sensitive to areas of high biodiversity, cultural and landscape value in the design and operation of projects;
- Minimise the impacts on highly productive agricultural land where feasible, and explore opportunities to integrate continued agricultural production into the project;
- Consult the community on the potential visual, noise, traffic and other impacts of the development, and on the mitigation options where relevant;
- Support the local economy by providing local employment and procurement opportunities wherever possible;
- Offer communities the opportunity to share in the benefits of the development, and consult them on the options available, including the relevant governance arrangements;
- Commit to using the development to support educational and tourism opportunities where appropriate;
- Demonstrate responsible land stewardship over the life of the development and welcome opportunities to enhance the ecological and cultural value of the land;

At the end of the project's design or permitted life we will engage with the community on plans for the responsible decommissioning, or refurbishment/repowering of the site.

The Engagement Plan was prepared in accordance with IAP2⁵ foundations of engagement. As identified in the Engagement Plan, the purpose of the engagement is:

To provide further and more detailed information to the community prior to the lodgement of a formal development application for the project, and to gain feedback regarding the various phases of the proposed renewable energy project at Yadnarie.

Utilising the IAP2 Public Participation Spectrum, the overall level of participation is “Consult” extending potentially to “Involve” with key stakeholders.

6.2 First Round of Community Engagement

In November 2021 a media release by Photon Energy announced the proposed project in South Australia. This media release was reported in on-line renewable energy news sites and was the first publicly available information regarding the project, albeit that no specific location was included in this information.

During late 2021 and early 2022, Photon Energy provided confidential briefings to the District Council of Cleve. These briefings outlined the project area and the extent of the proposed development and allowed open dialogue to commence regarding the opportunities and constraints that the project would have within the Cleve community.

The community of Cleve were informed of the project in February and March of 2022. This first round of community engagement incorporated the distribution of project information via newsletters, direct mail-outs, media releases/articles, information posters/leaflets in businesses in Cleve, the establishment of the project website (which at the time was addressed as: <https://www.photonenergy.com/en/photon-energy/yadnarie-solar-farm.html>) and community open days.

Two (2) community drop-in sessions were held at the Cleve District Hall, Cleve on 2 and 3 March 2022. Information was provided on the project via a range of topic-based posters and a short video on the RayGen technology. Members of the project team were available to have detailed discussions with members of the community.

The attendance record for the drop-in sessions showed a total of 25 people attending, however there were additional people who attended that did not sign the attendance record. It is estimated that between 30 and 40 people attended the two (2) sessions. Attendees included interested members of the community, adjoining land owners, staff and elected members of the District Council of Cleve, Members and member elect of State Parliament.

⁵ IAP2 – International Association for Public Participation

The response from the community who attended the drop-in sessions were overwhelmingly positive to the project. Common comments and questions on the project included:

- The investment and jobs would be positive for the community and region.
- Happy for the project to commence straight away.
- Interest in the construction timeframe.
- Opportunities that would be available for local employment.
- Interest in the technology to be employed in the project.
- Potential impacts of recent flooding events as evident across the Birdseye Highway.
- Questions regarding protection of creek lines, vegetation and cultural heritage.

The Eyre Peninsula Advocate newspaper reported on the project and the community engagement in an online article on 10 March 2022.

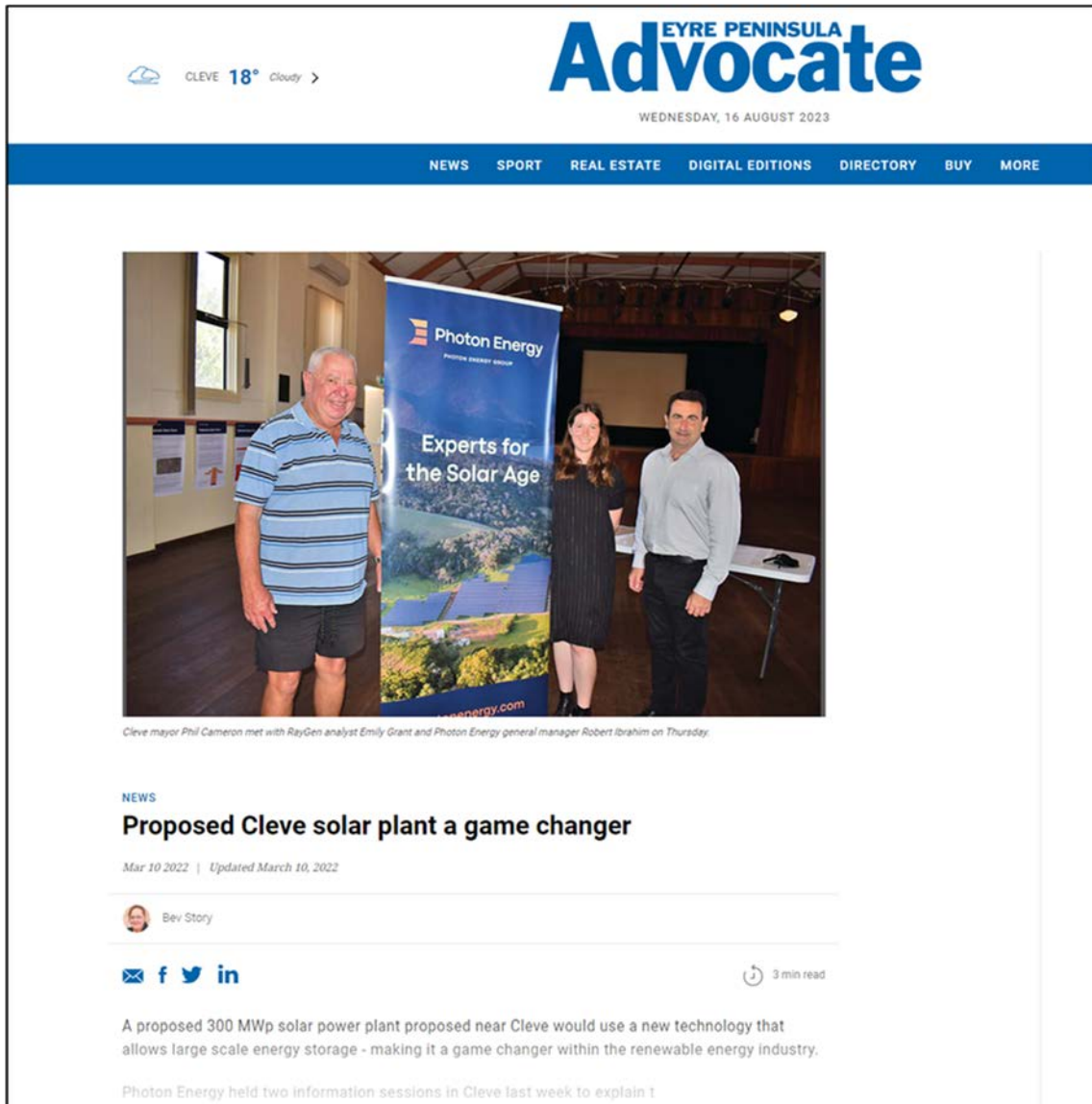


Figure 44: Extract of online article from Eyre Peninsula The Advocate newspaper 10 March 2022 regarding the project and community engagement.

6.3 Stakeholder Engagement

Following the introduction of the project to the community in 2022, Photon Energy and its development partner RayGen undertook detailed investigations to inform the project design. An extensive amount of these investigations was undertaken by technical experts in the fields of noise, traffic, visual assessment, bushfire, aviation, cultural heritage, flora and fauna, land use planning, hydrology and civil engineering. During the investigations to inform the design and the preparation of the development application, the technical experts have consulted with a range of government agencies, including:

- District Council of Cleve staff and Elected Members
- Environment Protection Authority (EPA)
- Department for Infrastructure and Transport (both Planning and Transport divisions)
- Department for Environment and Water (including Native Vegetation division)
- Department for Energy and Mining
- Department for Aboriginal Affairs and Reconciliation
- SA Water Corporation
- SafeWork SA
- Office of the Technical Regulator
- Country Fire Service
- Civil Aviation Safety Authority

Regional Development Australia Eyre Peninsula.

Photon Energy have engaged directly with primary stakeholders including the owners and occupiers of land within the project site and owners and occupiers of land immediately adjacent the project site.

Engagement is ongoing with Barngarla Determination Aboriginal Corporation (BDAC).

Local members of Parliament, including State Member for Flinders, Sam Telfer MP and Federal Member for Grey – Rowan Ramsey MP have also been consulted during the first and second rounds of community engagement.

6.4 Second Round of Community Engagement

A second round of community and stakeholder engagement was undertaken during July and August 2024 to provide the community with updated information on the project. Information was disseminated via a range of channels, including:

Direct personal contact to primary stakeholders;

- Correspondence to landowners in the locality (via mail and/or email);
- Contact with attendees from the first round of consultation (via email addresses provided);

- Printed flyers (**refer Attachment I**) distributed to local businesses;
- Printed flyer available at the District Council of Cleve;
- Advertisements in The Advocate newspaper (print and digital) on 25 July, 1 August and 8 August 2024 (**refer Attachment J**);
- Letters and personal contact with Members of Parliament and Regional Development Authority;
- Community Information Drop-In Session at Cleve District Hall on Thursday 8th August 2024;
- Briefing with District Council of Cleve;
- Photon Energy dedicated project website - <https://photonenergy.com.au/landing-page/yadnarie-solar-and-energy-storage-project>.

The Community Information Drop-in Session provided interested members of the community with information regarding the project and its technology, the site and layout, along with updates on a range of findings from the technical assessments that have been undertaken. The information was presented in a range of posters (refer **Attachment K**), Lego illustrating the project elements, photomontages, and a video and virtual reality headset of the RayGen commercial demonstration facility at Carwarp, Victoria. The Community Information Drop-in Session was attended by approximately 30-40 people, some of whom are illustrated in the photographs below.



Figure 45: Community Drop-in Session in Cleve on 8th August 2024



Figure 46: Virtual reality headset in use at Community Drop-in Session in Cleve on 8th August 2024



Figure 47: Project Team members from Photon Energy, RayGen, and MasterPlan at the Community Drop-in Session in Cleve on 8th August 2024

The response from the community who attended the drop-in session, and local stakeholders, continued to be positive to the project during the second round of community engagement. Common comments and questions on the project included:

- Interest in the technology to be employed in the project;
- Interest in the comparison of the technology proposed for this project with the Sundrop Farm concentrated solar development near Port Augusta;
- Interest in the access and provision of water for the project, including where will the water come from;
- Question regarding the timing to commence and complete the project;
- Comments on water flows/flooding events across the Birdseye Highway;
- Questions relating to site selection, particularly on productive agricultural land;
- Interest in cultural heritage and engagement with Barngarla;
- Questions regarding the extra volume of traffic through the town of Cleve;
- Question relating to peak employment numbers and use of local contractors;
- Opportunities that would be available for local employment;
- Options for workforce accommodation;
- Question regarding glare;
- Interest in visual appearance of the project;
- Risk of fire/bushfire impacts;
- Question on noise of plant and equipment;
- Interest in the source of the plant and equipment to be used and the prefabrication/assembly proposed on site.

A feedback form was available for people attending the Community Information Drop-in Session to complete. This feedback form was also forwarded to people who provided contact email addresses. There has been no feedback received via the feedback form.

The Eyre Peninsula Advocate newspaper printed an article regarding the project in the newspaper on 15 August 2024, as shown below:



Photon Energy general manager Robert Ibrahim and Michael Richardson chat with Regional Development Australia Eyre Peninsula chairman Bryan Trigg in Cleve. (Bev Story: 424544_02)



Photon Energy general manager Robert Ibrahim with Michael Richardson. (424544_01)

Plant would shore up power supply

BEV STORY

A proposed solar power plant planned for near Cleve would provide more certainty to the region's electricity supply.

Photon Energy general manager Robert Ibrahim said it had scaled back the Yadrarie Renewable Energy Facility, but hoped to be ready to submit a development application with the state government later this year.

"We have resized the project to 90MW with eight hours of storage," Mr Ibrahim said.

That would allow the project to use water from the nearby existing SA Water supply.

Initially planned to be 300MW, Photon Energy had hoped to start construction in late 2023.

Photon Energy had scaled the project back

to fit on the property it had an option signed to buy, using an available volume of water, and the increased demand for non-coal-fired energy meant the project was now viable.

Mr Ibrahim said electricity from the plant would go back into the energy market, and would be produced for a cost comparable with wind and solar energy.

The solar farm's technology was developed by Australian company RayGen Resources and called PV ultra and thermal hydro technologies - and would use a combination of mirrors and water to generate power and heat.

Small photovoltaic or PV panels on a tower are heated from hundreds of mirrors at ground level.

Mr Ibrahim said it was possible the plant would be built in two stages, with about 200

workers needed in the construction phase.

He said as well as people with specialised skills, the construction would need people with other traditional skills such as mechanical, electrical and refrigeration, as well as unskilled labour.

"The idea is to make sure as coal-fired stations are powered down, we have enough energy to meet needs."

He said the big advantage this plant had was its ability to store power, which would allow it to put in energy into the market at any time, including at night and when there was not wind.

He hoped that construction could start in the third quarter of 2025.

Photon Energy already has a smaller 4mW plant operating at Carwarp, per Mildura.

"We are excited and still committed to the

project," he said.

"We are quite energy conscious of the whole energy market in Australia. We are also comparable with energy storage that is out there."

Regional Development Australia Eyre Peninsula chairman Bryan Trigg was enthusiastic about the project.

"It will shore up our power supply," he said.

"It can smooth out the supply of power."

Mr Trigg said that was also important in terms of large-scale projects proposed for Eyre Peninsula, such as Cape Hardy and the Renascor Graphite Mine.

He said while some water was needed in the construction phase, once the plant's tanks were filled up, it did not actually use any more.

That meant it would not be a burden on Eyre Peninsula's already stretched water supply.

Figure 48: Extract of online article from the Eyre Peninsula The Advocate newspaper 15 August 2024 regarding the project and community engagement.

Photon Energy has sought to understand the views of the Cleve community prior to the submission of a comprehensive development application. As the project progresses Photon Energy will continue to work through identified issues with interested parties and provide updates to the community.

7

SUMMARY

7 Summary

The generation of renewable energy from the Photon Energy proposed facility will provide stable and affordable electricity over the long term. RayGen's solar-plus-storage technology provides medium-long duration grid scale storage to the grid. RayGen's technology offers dispatchable, synchronous generation and has a two-way operating philosophy enabling the system to store power from the grid during times of oversupply.

Development of the proposed PV Ultra (solar cogeneration) and Thermal Hydro (electro-thermal storage) technologies at Yadnarie is a renewable energy facility which is appropriate land use within the Rural Zone and has substantial merit, including:

- the development is of significant benefit via the generation of sustainable and stable electricity;
- the development will benefit the state by providing storage of renewable energy for distribution into the national electricity grid at peak periods;
- renewable energy facilities are an envisaged land use within the Rural Zone;
- the development incorporates substantial separation from townships and all non-associated (non-stakeholder) dwellings or other sensitive receivers;
- the site of the development is not located within a designated area of landscape character;
- the development will allow the retention of the principal and underlying land use of the locality, that is, primary production in the form of grazing and cropping on adjoining land and the capacity for co-located grazing activities on the subject land;
- the proposal is unlikely to adversely impact on aerial agriculture application or aerial firefighting within the locality, as both of these activities are manageable around the proposed infrastructure;
- the development is unlikely to adversely affect safety of air transport;
- substantial areas of native vegetation are retained, and areas of revegetation and landscaping proposed.
- the development is designed to be compliant with EPA noise criteria for sensitive receivers;
- the development can be designed to suitably manage potential impacts such as traffic movements, dust, noise and vibration during the construction phase.

The proposed Yadnarie Renewable Energy Facility is a suitable form of development on the subject land that connects directly to the national electricity grid on the Eyre Peninsula and will positively impact energy affordability in South Australia.

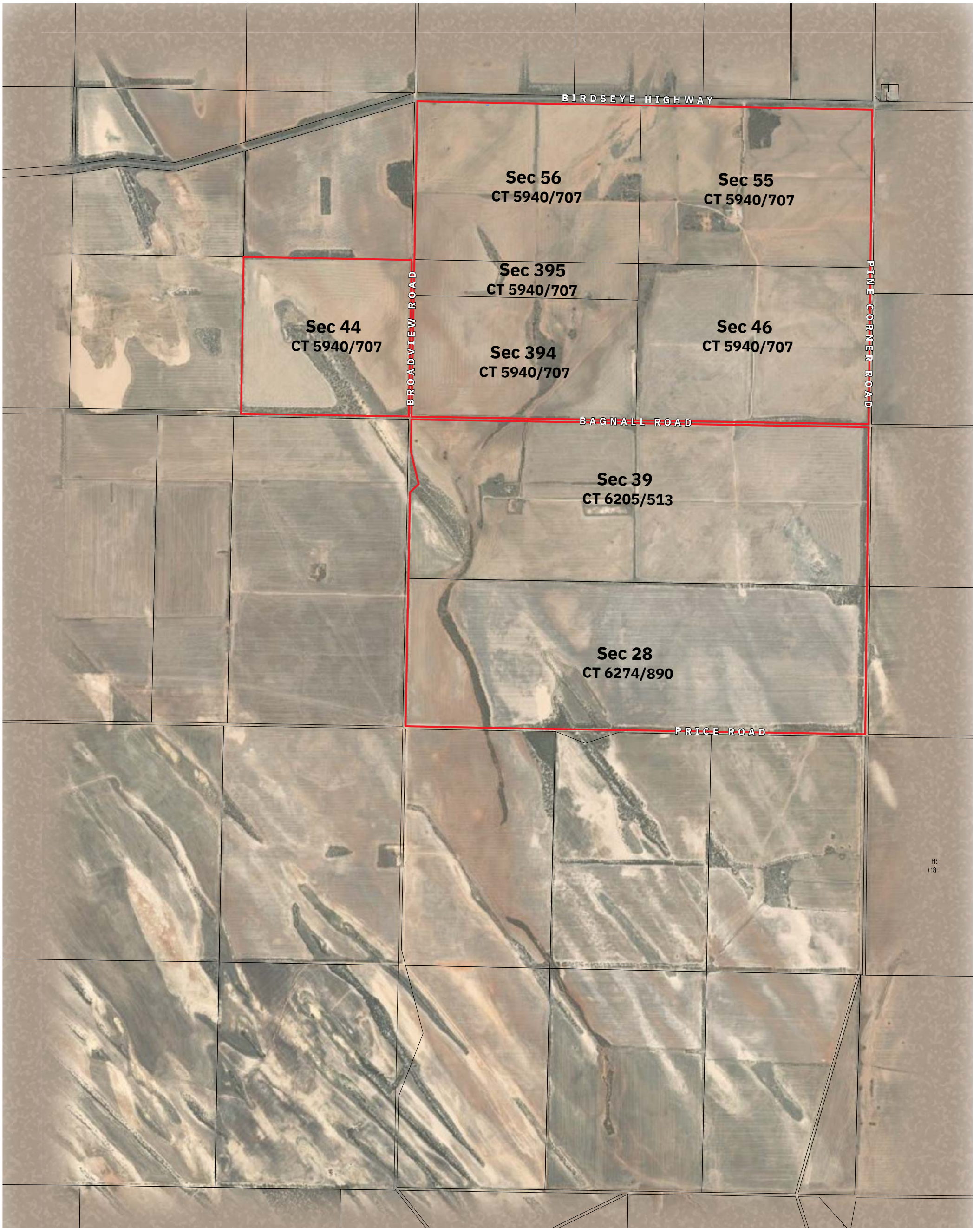
Prepared for Photon Energy by MasterPlan SA Pty Ltd


- Attachment A:** Site Plan by MasterPlan.
- Attachment B:** Locality Plan by MasterPlan.
- Attachment C:** Certificates of Title.
- Attachment D:** Department for Energy and Mining – Crown Sponsorship Correspondence
- Attachment E:** Certificate of Compliance by the Office of the Technical Regulator.
- Attachment F:** AARD response.
- Attachment G:** Statement of Commitments
- Attachment H:** Engagement Plan
- Attachment I:** Community Engagement Flyers
- Attachment J:** Community Engagement Advertisements – The Advocate
- Attachment K:** Community Engagement Posters

28 October 2024

A

SITE PLAN

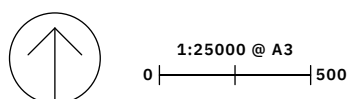


 Subject Land

SITE PLAN
PROPOSED SOLAR STORAGE FACILITY

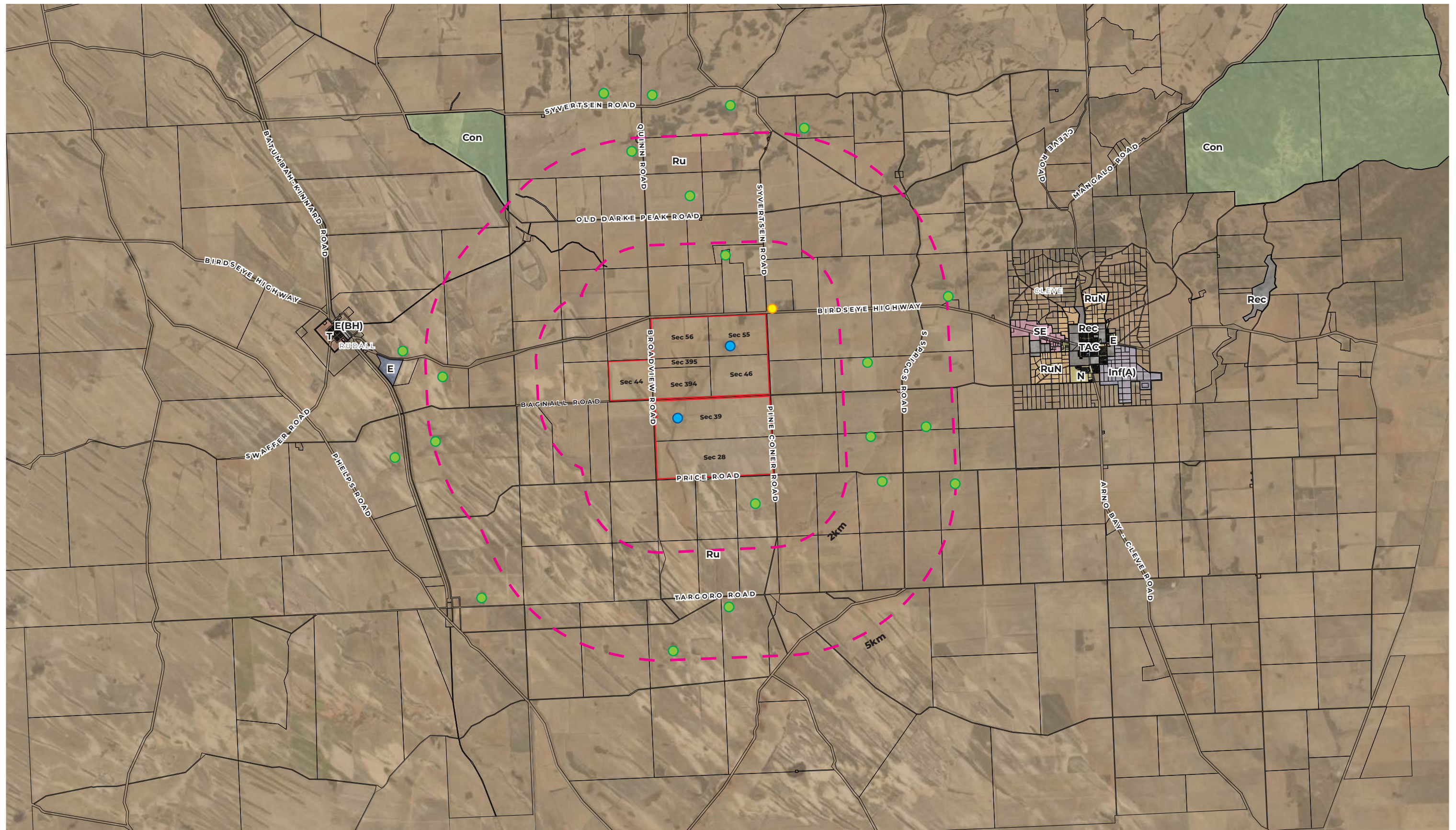
225 BROADVIEW ROAD, 4543 BIRDSEYE HIGHWAY,
LOT 28 PINE CORNER ROAD
CLEVE

for PHOTON ENERGY



B

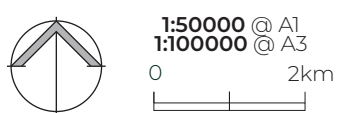
LOCALITY PLAN



- Subject Land
- Yadnarie Substation
- Dwelling - Involved Landowner
- Dwelling - Non-involved Landowner
- 2km + 5km setback around subject land

- Zones**
- E Employment
 - N Neighbourhood
 - Rec Recreation
 - Inf(A) Infrastructure (Airfield)
 - TAC Township Activity Centre
 - CTP Caravan & Tourist Park
 - E(BH) Employment (Bulk Handling)
 - T Township
 - Ru Rural
 - RuN Rural Neighbourhood
 - SE Strategic Employment
 - Con Conservation

LOCALITY & ZONING PLAN
PROPOSED SOLAR STORAGE FACILITY
 225 BROADVIEW ROAD, 4543 BIRDSEYE HIGHWAY
 LOT 28 PINE CORNER ROAD
 CLEVE
 for PHOTON ENERGY





CERTIFICATES
OF TITLE



The Registrar-General certifies that this Title Register Search displays the records maintained in the Register Book and other notations at the time of searching.



Certificate of Title - Volume 6205 Folio 513

Parent Title(s) CT 5928/337
Creating Dealing(s) TG 12842005
Title Issued 05/04/2018 Edition 2 Edition Issued 02/12/2019

Estate Type

FEE SIMPLE

Registered Proprietor

R & K QUINN SUPERANNUATION PTY. LTD. (ACN: 634 243 422)
OF 34 THIRD STREET CLEVE SA 5640

Description of Land

SECTION 39
HUNDRED OF YADNARIE
IN THE AREA NAMED CLEVE

Easements

SUBJECT TO EASEMENT(S) OVER THE LAND MARKED C ON F252834 TO TRANSMISSION LESSOR CORPORATION OF 1 UNDIVIDED 2ND PART (SUBJECT TO LEASE 9061500) AND ELECTRANET PTY. LTD. OF 1 UNDIVIDED 2ND PART (TG 12842005)

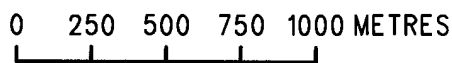
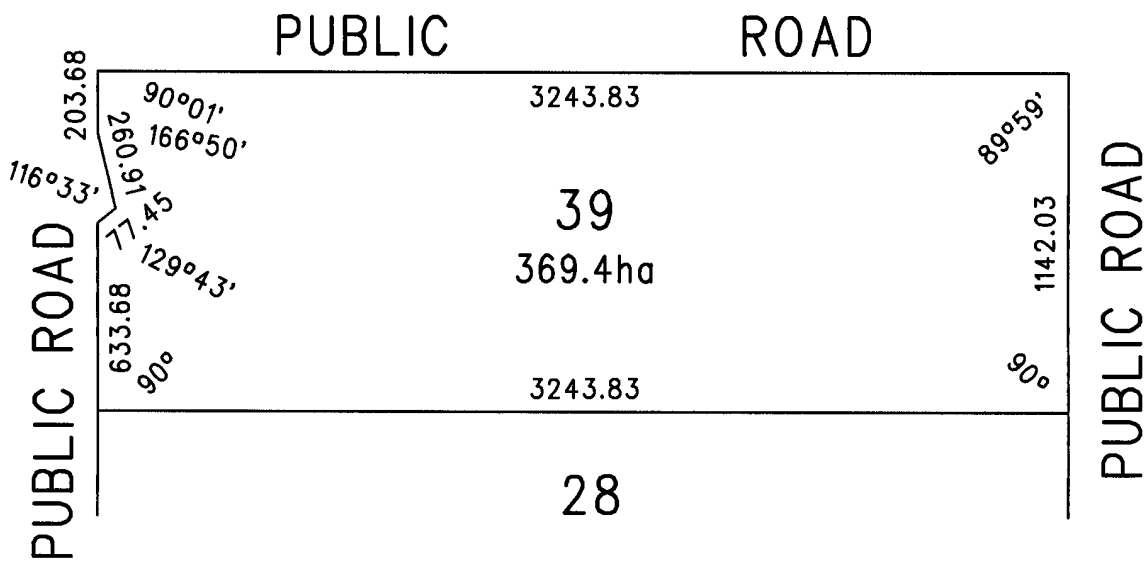
SUBJECT TO EASEMENT(S) WITH LIMITATIONS OVER THE LAND MARKED E ON F252834 TO TRANSMISSION LESSOR CORPORATION OF 1 UNDIVIDED 2ND PART (SUBJECT TO LEASE 9061500) AND ELECTRANET PTY. LTD. OF 1 UNDIVIDED 2ND PART EXPIRING ON 23/05/2065 (GU 2777288)

Schedule of Dealings

NIL

Notations

Dealings Affecting Title	NIL
Priority Notices	NIL
Notations on Plan	NIL
Registrar-General's Notes	NIL
Administrative Interests	NIL



Certificate of Title

Title Reference: CT 6205/513
Status: CURRENT
Parent Title(s): CT 5928/337
Dealing(s) Creating Title: TG 12842005
Title Issued: 05/04/2018
Edition: 2

Dealings

Lodgement Date	Completion Date	Dealing Number	Dealing Type	Dealing Status	Details
14/11/2019	02/12/2019	13206050	TRANSFER	REGISTERED	R & K QUINN SUPERANNUATION PTY. LTD. (ACN: 634 243 422)
14/11/2019	02/12/2019	13206049	DISCHARGE OF MORTGAGE	REGISTERED	12541997
07/06/2016	27/06/2016	12541997	MORTGAGE	REGISTERED	QUINN RURAL PTY. LTD. (ACN: 102 736 818)



The Registrar-General certifies that this Title Register Search displays the records maintained in the Register Book and other notations at the time of searching.



Certificate of Title - Volume 5940 Folio 707

Parent Title(s) CL 929/38, CL 1248/12
Creating Dealing(s) RLG 10213020
Title Issued 17/05/2005 Edition 7 Edition Issued 02/12/2019

Estate Type

FEE SIMPLE

Registered Proprietor

R & K QUINN SUPERANNUATION PTY. LTD. (ACN: 634 243 422)
OF 34 THIRD STREET CLEVE SA 5640

Description of Land

SECTION 44
HUNDRED OF YADNARIE
IN THE AREA NAMED RUDALL

SECTIONS 46, 55, 56, 394 AND 395
HUNDRED OF YADNARIE
IN THE AREA NAMED CLEVE

Easements

NIL

Schedule of Dealings

Dealing Number	Description
2772967	LEASE COMMENCING ON 25/5/1966 AND EXPIRING ON 24/5/2065 OF AN EASEMENT OVER PORTION AS TO THE SHARES SPECIFIED THEREIN (SUBJECT TO LEASE 9061500 OF THE INTEREST OF TRANSMISSION LESSOR CORPORATION)

Notations

Dealings Affecting Title NIL

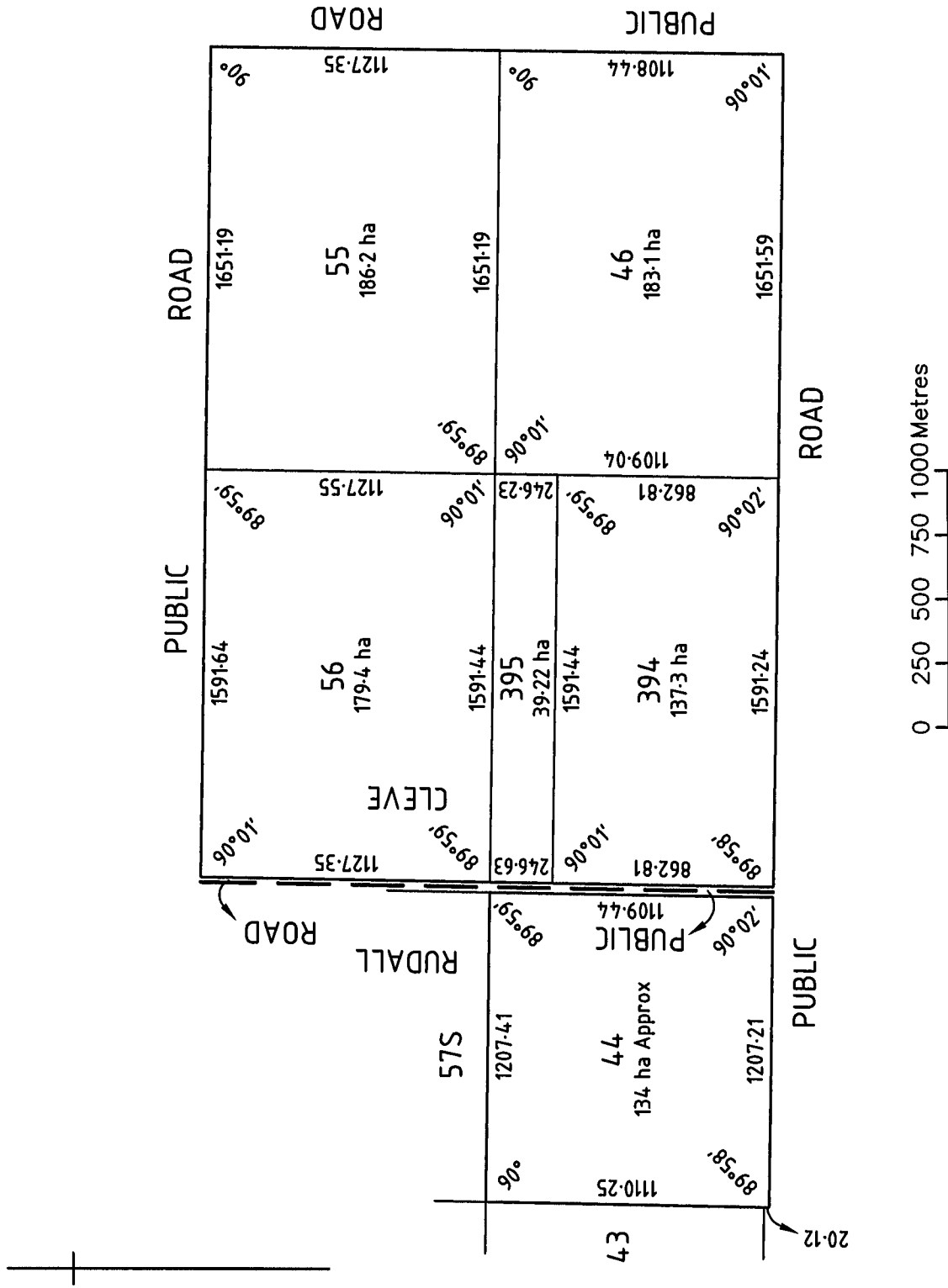
Priority Notices NIL

Notations on Plan NIL

Registrar-General's Notes

APPROVED FX252834

Administrative Interests NIL



Certificate of Title

Title Reference: CT 5940/707
Status: CURRENT
Parent Title(s): CL 929/38, CL 1248/12
Dealing(s) Creating Title: RLG 10213020
Title Issued: 17/05/2005
Edition: 7

Dealings

Lodgement Date	Completion Date	Dealing Number	Dealing Type	Dealing Status	Details
14/11/2019	02/12/2019	13206104	TRANSFER	REGISTERED	R & K QUINN SUPERANNUATION PTY. LTD. (ACN: 634 243 422)
14/11/2019	02/12/2019	13206103	DISCHARGE OF MORTGAGE	REGISTERED	12541994
13/04/2018	16/04/2018	12906663	TITLE REPAIR - NEW EDITION	REGISTERED	RBQ HOLDINGS PTY. LTD. (ACN: 149 275 721) 11564646
07/06/2016	27/06/2016	12541994	MORTGAGE	REGISTERED	QUINN RURAL PTY. LTD. (ACN: 102 736 818)
16/05/2011	25/05/2011	11582047	CHANGE OF ADDRESS	REGISTERED	RBQ HOLDINGS PTY. LTD.
08/04/2011	04/05/2011	11564646	TRANSFER	REGISTERED	RBQ HOLDINGS PTY. LTD.
09/07/2007	31/07/2007	10746602	TRANSFER	REGISTERED	YADNARIE NOMINEES PTY. LTD. (ACN: 071 601 164)
09/07/2007	31/07/2007	10746601	TRANSFER	REGISTERED	NEVILLE WAYNE BARTEL, LESLEY MARGARET BARTEL
07/03/2007	10/04/2007	10656433	DISCHARGE OF MORTGAGE	REGISTERED	8189888
16/10/1996	01/11/1996	8189888	MORTGAGE	REGISTERED	
25/05/1966	25/05/1966	2772967	LEASE CREATING EASEMENT/RIGHT OF WAY	REGISTERED	

REAL PROPERTY ACT, 1886



South Australia

The Registrar-General certifies that this Title Register Search displays the records maintained in the Register Book and other notations at the time of searching.



Certificate of Title - Volume 6274 Folio 890

Parent Title(s) CT 6214/633
Creating Dealing(s) TG 13853294
Title Issued 05/09/2022 **Edition** 1 **Edition Issued** 05/09/2022

Estate Type

FEE SIMPLE

Registered Proprietor

ROBERT MICHAEL QUINN
KAREN JOY QUINN
OF PO BOX 196 CLEVE SA 5640
WITH NO SURVIVORSHIP

Description of Land

SECTION 28
HUNDRED OF YADNARIE
IN THE AREA NAMED CLEVE

Easements

SUBJECT TO EASEMENT(S) OVER THE LAND MARKED C TO TRANSMISSION LESSOR CORPORATION OF 1 UNDIVIDED 2ND PART (SUBJECT TO LEASE 9061500) AND ELECTRANET PTY. LTD. OF 1 UNDIVIDED 2ND PART (TG 12997501)

SUBJECT TO EASEMENT(S) OVER THE LAND MARKED G ON F257706 TO DISTRIBUTION LESSOR CORPORATION (SUBJECT TO LEASE 8890000) (TG 13853294)

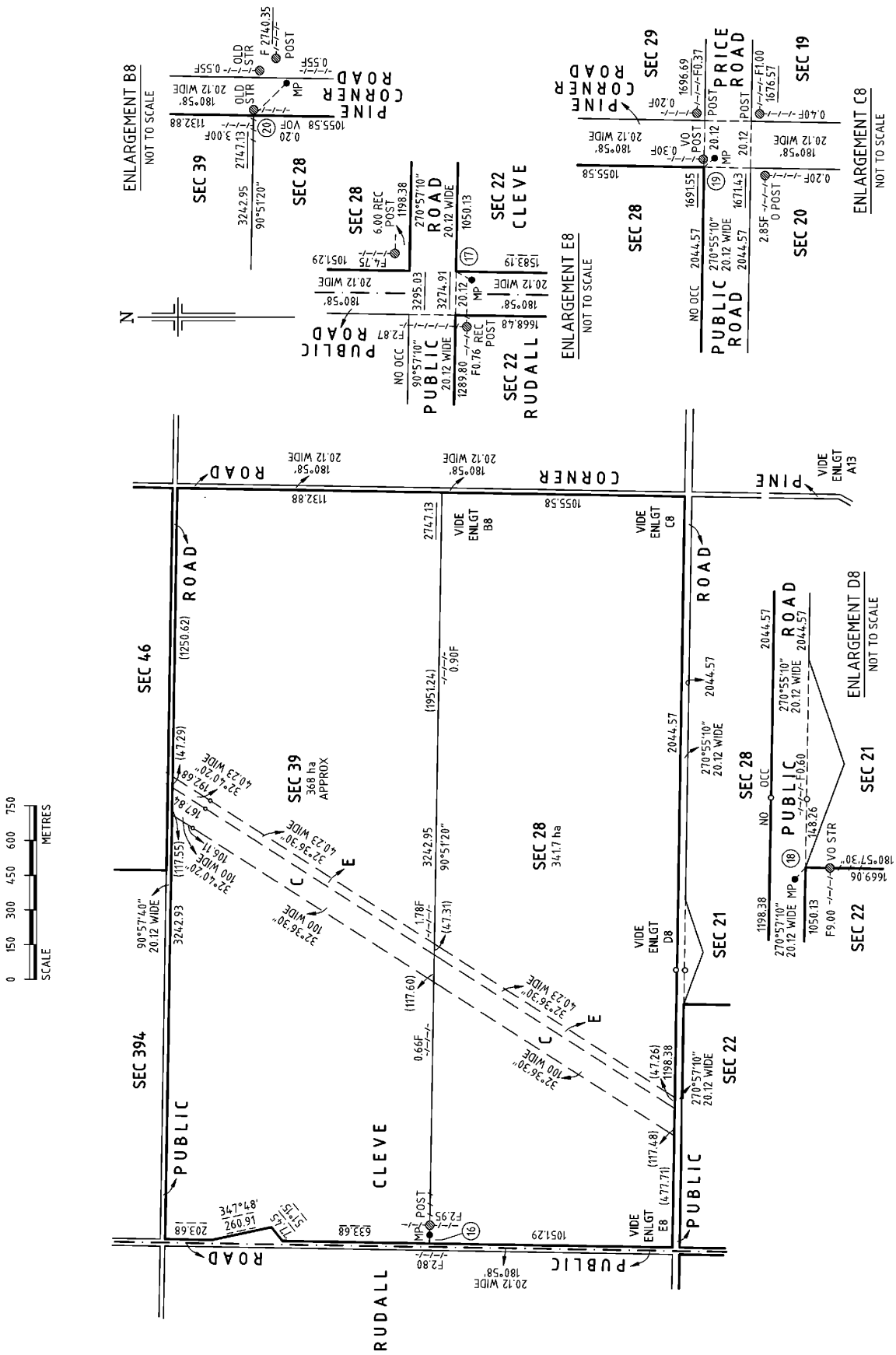
SUBJECT TO EASEMENT(S) WITH LIMITATIONS OVER THE LAND MARKED E TO TRANSMISSION LESSOR CORPORATION OF 1 UNDIVIDED 2ND PART (SUBJECT TO LEASE 9061500) AND ELECTRANET PTY. LTD. OF 1 UNDIVIDED 2ND PART EXPIRING ON 23/05/2065 (GU 2777288)

Schedule of Dealings

NIL

Notations

Dealings Affecting Title	NIL
Priority Notices	NIL
Notations on Plan	NIL
Registrar-General's Notes	NIL
Administrative Interests	NIL



SURVEY INFORMATION IS DERIVED FROM FILED PLAN 252834

Certificate of Title

Title Reference: CT 6274/890
Status: CURRENT
Parent Title(s): CT 6214/633
Dealing(s) Creating Title: TG 13853294
Title Issued: 05/09/2022
Edition: 1

Dealings

No lodged Dealings found.

D

DEPARTMENT FOR
ENERGY AND MINING
CROWN SPONSORSHIP
CORRESPONDENCE



**Government
of South Australia**

Department for
Energy and Mining

Our Ref: DEMC22/00045

Mr Robert Ibrahim
General Manager – Energy
Photon Energy Engineering Australia Pty Ltd
Suite 204, 55 Grafton Street
Bondi Junction NSW 2022

Via email: robert.ibrahim@photonenergy.com / juliej@masterplan.com.au

Dear Mr Ibrahim

CROWN SPONSORSHIP FOR YADNARIE SOLAR ENERGY AND STORAGE FACILITY

Thank you for your letter of 22 December 2021 requesting Crown sponsorship under section 131 of the *Planning, Development and Infrastructure Act 2016* to assist with Photon Energy Australia's (Photon) proposed Yadnarie Solar Energy Generation and Storage Facility Project (the project).

The project has been considered by the South Australian Department for Energy and Mining (DEM) with input from the Department of Infrastructure and Transport, the Attorney-General's Department, the Department for Environment and Water, and the Environment Protection Authority. In principle, the project is supported, recognising the possible environmental and community issues that will need to be addressed through the development assessment process.

On balance, the development of Photon's proposed project has the potential to benefit South Australia and can be considered essential infrastructure. Accordingly, I, as Chief Executive of DEM, will support the development and specifically endorse the Development Application to construct the project, comprising 300MW solar generation, 150MW grid connection, 3.6 gigawatt hours of storage (and 24 hours of dispatchable energy) as a development of 'essential infrastructure' under section 131(2)(c) of the *Planning, Development and Infrastructure Act 2016*.

It is the responsibility of Photon to prepare all documentation as required by the relevant Act. This includes all costs in the preparation, lodgement and assessment of the Development Application and any other subsequent action in relation to this Application.

Chief Executive

Address Level 12, 11 Waymouth Street, Adelaide 5000 | GPO Box 320 Adelaide SA 5001 | DX452

Tel (+61) 08 8429 3216 | Email DEM.OCE@sa.gov.au | www.energymining.sa.gov.au | ABN 83 768 683 934





**Government
of South Australia**

Department for
Energy and Mining

A certificate from the Office of the Technical Regulator must also accompany your Development Application to ensure that your project meets either Real Inertia or Fast Frequency Response criteria to safeguard the stability and reliability of the state's electricity network.

A development application must then be submitted to the DEM Growth and Low Carbon Division (glc@sa.gov.au) who will lodge it with the State Commission Assessment Panel (SCAP). These lodgement documents can be provided in electronic form or made available via download link. Any development fee levied by SCAP is the responsibility of Photon.

It is also a requirement that you contact Mrs Mary Lewitzka, Industry Analyst – Clean Energy Infrastructure, on (08) 8429 3515 or via email: mary.lewitzka@sa.gov.au prior to the lodgement of your Development Application to ensure all relevant statutory requirements are met.

DEM makes no representations and gives no warranties in relation to the outcome of the Development Application or time that it takes to secure a planning outcome. It is the responsibility of Photon to obtain all other statutory approvals, licences, connection agreements and permits from relevant authorities, manage community expectations and to fund the project. The South Australian Government makes no commitment to purchase any product or service related to the project.

If the Development Application has not been received electronically, by mail or in person by the SCAP within 12 months from the date of this letter, my support for this Crown sponsorship under section 131(2)(c) of the *Planning, Development and Infrastructure Act 2016* will lapse.

Yours sincerely

A handwritten signature in black ink, appearing to be 'PH' followed by a large loop.

Paul Heithersay
CHIEF EXECUTIVE

16/02/ 2022





**Government
of South Australia**

Department for
Energy and Mining

Our Ref: DEMC22/00045

Mr Robert Ibrahim
General Manager – Energy
Photon Energy Engineering Australia Pty Ltd
Suite 204, 55 Grafton Street
Bondi Junction NSW 2022

Via email: robert.ibrahim@photonenergy.com / juliej@masterplan.com.au

Dear Mr Ibrahim

EXTENSION TO CROWN SPONSORSHIP FOR YADNARIE SOLAR ENERGY AND STORAGE FACILITY

Thank you for your letter of 16 January 2023 requesting an extension for a further 12 months of the previously granted Crown sponsorship under section 131 of the *Planning, Development and Infrastructure Act 2016* to assist with Photon Energy Australia's (Photon) proposed Yadnarie Solar Energy Generation and Storage Facility Project (the project).

In principle, the project continues to be supported, recognising the possible environmental and community issues that will need to be addressed through the development assessment process.

On balance, the development of Photon's proposed project has the potential to benefit South Australia and can be considered essential infrastructure. Accordingly, I, as Chief Executive of DEM, continue to support the development and specifically endorse the Development Application to construct the project, comprising 300MW solar generation, 150MW grid connection, 3.6 gigawatt hours of storage (and 24 hours of dispatchable energy) as a development of 'essential infrastructure' under section 131(2)(c) of the *Planning, Development and Infrastructure Act 2016*.

It is the responsibility of Photon to prepare all documentation as required by the relevant Act. This includes all costs in the preparation, lodgement and assessment of the Development Application and any other subsequent action in relation to this Application.

A certificate from the Office of the Technical Regulator must also accompany your Development Application to ensure that your project meets either Real

Chief Executive

Address Level 12, 11 Waymouth Street, Adelaide 5000 | GPO Box 320 Adelaide SA 5001 | DX452

Tel (+61) 08 8429 3216 | Email DEM.OCE@sa.gov.au | www.energymining.sa.gov.au | ABN 83 768 683 934





**Government
of South Australia**

Department for
Energy and Mining

Inertia or Fast Frequency Response criteria to safeguard the stability and reliability of the state's electricity network.

A development application must then be submitted to the DEM Growth and Low Carbon Division (glc@sa.gov.au) who will lodge it with the State Commission Assessment Panel (SCAP). These lodgement documents can be provided in electronic form or made available via download link. Any development fee levied by SCAP is the responsibility of Photon.

It is also a requirement that you contact Mrs Mary Lewitzka, Industry Analyst – Clean Energy Infrastructure, on (08) 8429 3515 or via email: mary.lewitzka@sa.gov.au prior to the lodgement of your Development Application to ensure all relevant statutory requirements are met.

DEM makes no representations and gives no warranties in relation to the outcome of the Development Application or time that it takes to secure a planning outcome. It is the responsibility of Photon to obtain all other statutory approvals, licences, connection agreements and permits from relevant authorities, manage community expectations and to fund the project. The South Australian Government makes no commitment to purchase any product or service related to the project.

If the Development Application has not been received electronically, by mail or in person by the SCAP within 12 months from the date of this letter, my support for this Crown sponsorship under section 131(2)(c) of the *Planning, Development and Infrastructure Act 2016* will lapse.

Yours sincerely



Paul Heithersay PSM
CHIEF EXECUTIVE

9/12/2023





Government
of South Australia

Department for
Energy and Mining

Our Ref: 2024D006284

Mr Robert Ibrahim
General Manager – Energy
Photon Energy Engineering Australia Pty Ltd
Level 5, 219-241 Cleveland Street
Redfern NSW 2016

Via email: robert.ibrahim@photonenergy.com / juliej@masterplan.com.au
Cc mary.lavelle@sa.gov.au

Dear Mr Ibrahim

EXTENSION TO CROWN SPONSORSHIP FOR YADNARIE SOLAR ENERGY AND STORAGE FACILITY

Thank you for your letter of 11 January 2024 requesting an extension for a further 12 months of the previously granted Crown sponsorship under section 131 of the *Planning, Development and Infrastructure Act 2016* to assist with Photon Energy Australia's (Photon) proposed Yadnarie Solar Energy Generation and Storage Facility Project (the project).

In principle, the project continues to be supported, recognising the possible environmental and community issues that will need to be addressed through the development assessment process.

On balance, the development of Photon's proposed project has the potential to benefit South Australia and can be considered essential infrastructure. Accordingly, I, as Chief Executive of DEM, continue to support the development and specifically endorse the development application to construct the project, comprising 300MW solar generation, 150MW grid connection, 3.6 gigawatt hours of storage (and 24 hours of dispatchable energy) as a development of 'essential infrastructure' under section 131(2)(c) of the *Planning, Development and Infrastructure Act 2016*.

It is the responsibility of Photon to prepare all documentation as required by the relevant Act. This includes all costs in the preparation, lodgement and assessment of the development application and any other subsequent action in relation to this Application.

A certificate from the Office of the Technical Regulator must also accompany your development application to ensure that your project meets

Chief Executive

Address Level 12, 11 Waymouth Street, Adelaide 5000 | GPO Box 320 Adelaide SA 5001 | DX452

Tel (+61) 08 8429 3216 | Email DEM.OCE@sa.gov.au | www.energymining.sa.gov.au | ABN 83 768 683 934





Government
of South Australia

Department for
Energy and Mining

either Real Inertia or Fast Frequency Response criteria to safeguard the stability and reliability of the state's electricity network.

The Crown and essential infrastructure pathways transitioned into the Development Application Processing (DAP) system on 9 November 2023. It is now the responsibility of the Proponent to lodge a Development Application directly into the DAP.

Given these changes to the process, you must first email a copy of the application comprising introductory email and all lodgement documents, to DEM's Business Services dem.BusinessServices@sa.gov.au (please cc mary.lavelle@sa.gov.au).

Once the application is confirmed to be consistent with the Crown sponsorship, a verification email will be sent, and you may then lodge the development application into DAP, including a copy of verification email, nominating the Crown Agency as co-applicant and share DAP access with your state agency contact.

These lodgement documents can be provided in electronic form or made available via download link. Any fee levied by DAP is the responsibility of Photon Energy.

It is a requirement that you contact Mary Lavelle (DEM), Industry Analyst, on 08 8429 3515 or via email at mary.lavelle@sa.gov.au prior to the lodgement of the development application to ensure all relevant statutory requirements are met.

DEM makes no representations and gives no warranties in relation to the outcome of the development application or time that it takes to secure a planning outcome. It is the responsibility of Photon Energy to obtain all other statutory approvals, licences, connection agreements and permits from relevant authorities; manage community expectations; and to fund the project. The Government of South Australia makes no commitment to purchase any product or service related to the project.

The development application should be received electronically, by mail or in person by the DAP within 12 months from the date of this letter, otherwise my support for this Crown sponsorship under section 131(2)(c) of the *Planning, Development and Infrastructure Act 2016* will lapse.

Yours sincerely



Paul Heithersay PSM
CHIEF EXECUTIVE

5/2/2024



E

CERTIFICATE OF COMPLIANCE



Ref: D20149479

8th December 2021

Robert Ibrahim
General Manager - Energy
Photon Energy Engineering Australia Pty Ltd
204/55 Grafton Street
Bondi Junction NSW 2022
robert.ibrahim@photonenergy.com

**Energy and Technical
Regulation**

**Office of the
Technical Regulator**

Level 8, 11 Waymouth Street
Adelaide SA 5000

GPO Box 320
Adelaide SA 5001

Telephone: 08 8226 5500
Facsimile: 08 8226 5866

www.sa.gov.au/otr

Dear Robert,

RE: Yadnarie RayGen Technology Project

The development of the Yadnarie RayGen Technology Project has been assessed by the Office of the Technical Regulator (OTR) under section 122 of the *Planning, Development and Infrastructure Act 2016*.

The *Planning, Development and Infrastructure (General) Regulations 2017* prescribe if the proposed development is for the purposes of the provision of electricity generating plant with a generating capacity of more than 5 MW that is to be connected to the State's power system – a certificate from the Technical Regulator is required, certifying that the proposed development complies with the requirements of the Technical Regulator in relation to the security and stability of the State's power system.

In making a decision on your application, our office has taken the following information into account:

- Yadnarie Office of Technical Review Letter DRAFT_SAB
- Yadnarie Office of Technical Review Letter DRAFT V2
- A meeting between the OTR and Photon Energy on 29th November 2021
- 2021119 – RayGen – OTR presentation vS
- Yadnarie Office of Technical Review Letter FINAL V3

After assessing the information provided, I advise that approval is granted for the proposed generator on the following conditions:

- A minimum of 396MW.s of real inertia is provided by the synchronous machines
- The synchronous machines will have the capability to operate as a synchronous condenser

Energy and Technical Regulations



- The connection point will not exceed 150MW

It should be noted that should there be a change in the generating capacity of the proposal, connection capacity or should the proponent subsequently decide not to construct the synchronous machines as outlined in the Development Application (DA) and agreed to in this certificate, the proponent is advised that they must apply for a variation to the DA. Any such variation will require the proponent to obtain a new certificate from the OTR. If a certificate is not obtained, formal referral to the OTR will be required during the DA assessment process. Any formal referral may be subject to referral fees applicable at the time.

Should you have any questions regarding this matter, please do not hesitate to call Mark Burns on (08) 8429 2707.

Yours sincerely

A handwritten signature in blue ink, appearing to read 'R J Faunt'.

Rob Faunt
TECHNICAL REGULATOR



Ref: 2022D099298

5 October 2022

Robert Ibrahim
General Manager - Energy
Photon Energy Engineering Australia Pty Ltd
204/55 Grafton Street
Bondi Junction, NSW, 2022
robert.ibrahim@photonenergy.com

Energy and Technical
Regulation

Office of the
Technical Regulator

Level 8, 11 Waymouth Street
Adelaide SA 5000

GPO Box 320
Adelaide SA 5001

Telephone: 08 8226 5500
Facsimile: 08 8226 5866

www.sa.gov.au/otr

Dear Mr Ibrahim,

RE: Yadnarie RayGen Technology Project

The development of the Yadnarie RayGen Technology Project has been assessed by the Office of the Technical Regulator (OTR) under section 122 of the *Planning, Development and Infrastructure Act 2016*.

The *Planning, Development and Infrastructure (General) Regulations 2017* prescribe if the proposed development is for the purposes of the provision of electricity generating plant with a generating capacity of more than 5 MW that is to be connected to the State's power system – a certificate from the Technical Regulator is required, certifying that the proposed development complies with the requirements of the Technical Regulator in relation to the security and stability of the State's power system.

In making a decision on your application, our office has taken the following information into account:

- Your letter dated 1st September 2022
- Meetings with Mr Mark Burns of my office

After assessing the information provided, I advise that approval is granted for the proposed Yadnarie RayGen Technology Project on the condition that 479.5MW.s of real inertia is provided by the synchronous machines.

It should be noted that should there be a change in the generating capacity of the proposal, or should the proponent subsequently decide not to construct the synchronous machines as outlined in the Development Application (DA) and agreed to in this certificate, the proponent is advised that they must apply for a variation to the DA. Any such variation will require the proponent to obtain a new certificate from the OTR. If a certificate is not obtained, formal referral to the OTR will be required during the DA assessment process. Any formal referral may be subject to referral fees applicable at the time.



Should you have any questions regarding this matter, please do not hesitate to call Mark Burns on (08) 8429 2707.

Yours sincerely

A handwritten signature in blue ink, appearing to read 'R J Faunt'.

Rob Faunt
TECHNICAL REGULATOR



Ref: 2024D070142

25 June 2024

Robert Ibrahim
Photon Energy Engineering Australia Pty Ltd
204/55 Grafton Street
Bondi Junction NSW 2022
robert.ibrahim@photonenergy.com

Energy and Technical
Regulation

Office of the
Technical Regulator

Level 8, 11 Waymouth Street
Adelaide SA 5000

GPO Box 320
Adelaide SA 5001

Telephone: 08 8226 5500
Facsimile: 08 8226 5866

www.sa.gov.au/otr

Dear Robert,

RE: Yadnarie RayGen Technology Project

The development of the Yadnarie RayGen Technology Project has been assessed by the Office of the Technical Regulator (OTR) under section 122 of the *Planning, Development and Infrastructure Act 2016*.

The *Planning, Development and Infrastructure (General) Regulations 2017* prescribe if the proposed development is for the purposes of the provision of electricity generating plant with a generating capacity of more than 5 MW that is to be connected to the State's power system – a certificate from the Technical Regulator is required, certifying that the proposed development complies with the requirements of the Technical Regulator in relation to the security and stability of the State's power system.

In deciding on your application, I have taken the following information into account:

- Yadnarie Office of Technical Review Letter_v2 updated 240527.pdf.
- Yadnarie Office of Technical Review Letter_v3 240619.pdf.

After assessing the information provided, I advise that approval is granted for the proposed generator on the following conditions:

- A minimum of 349.8MW.s of real inertia is provided by the synchronous machines.
- The synchronous machines will have the capability to operate as a synchronous condenser.
- 10.6MW of fast frequency response is provided by the site major loads, being the 39MW chiller or 39MW heat pump.



It should be noted that should the proponent subsequently decide not to construct the synchronous machines as outlined in the Development Application (DA) and agreed to in this certificate, the proponent is advised that they must apply for a variation to the DA. Any such variation will require the proponent to obtain a new certificate from the OTR. If a certificate is not obtained, formal referral to the OTR will be required during the DA assessment process. Any formal referral may be subject to referral fees applicable at the time.

Should you have any questions regarding this matter, please do not hesitate to call Mark Burns on (08) 8429 2707.

Yours sincerely

A handwritten signature in blue ink, appearing to read 'R J Faunt'.

Rob Faunt
TECHNICAL REGULATOR

F

AARD RESPONSE

7 TAA WIKA RESULTS

ABORIGINAL HERITAGE SITES



Thank you for the search request dated 15 May 2023. The search was based on the spatial file or coordinates provided. The search area is centred on the suburb of CLEVE. Your reference is 4780.

I advise that the central archive, which includes the Register of Aboriginal Sites and Objects (the Register), administered by Aboriginal Affairs and Reconciliation (AAR), has no entries for Aboriginal sites at this location.

The applicant is advised that sites, objects or remains may exist in the proposed development area, even though the Register does not identify them. All Aboriginal sites and objects are protected under the *Aboriginal Heritage Act 1988* (the Act), whether they are listed in the central archive or not. Land within 200 metres of a watercourse (for example the River Murray and its overflow areas) in particular, may contain Aboriginal sites and objects.

Pursuant to the Act, it is an offence to damage, disturb or interfere with any Aboriginal site, object or remains (registered or not) without the authority of the Premier. If the planned activity is likely to damage, disturb or interfere with a site, object or remains, authorisation of the activity must be first obtained from the Premier under Section 23 of the Act. Section 20 of the Act requires that any Aboriginal sites, objects or remains, discovered on the land, need to be reported to the Premier. Penalties apply for failure to comply with the Act. It should be noted that this Aboriginal heritage advice has not addressed any relevant obligations pursuant to the *Native Title Act 1993*.

Please be aware in this area there are Aboriginal groups/organisations/traditional owners that may have an interest. These may include:

Barnjarla Determination Aboriginal Corporation

Chairperson: Jason Bilney

Address:

Telephone:

Email: barnjarlaContactOfficer@gmail.com

Contact Officer:

Telephone:

Email: bdac.clo@gmail.com

If you require further information, please contact the Aboriginal Heritage Team on telephone (08) 8303 0738 or send to our generic email address AAR.HeritageSites@sa.gov.au

Yours sincerely,

HERITAGE INFORMATION TEAM
ABORIGINAL AFFAIRS & RECONCILIATION

26 May 2023

Aboriginal Affairs and Reconciliation | Date: Fri May 26 2023 14:13:24 GMT+0930 (ACST)
Level 16, 30 Wakefield Street | GPO Box 464 Adelaide SA 5001
Tel (+61) 08 8303 0738 | www.agd.sa.gov.au | ABN 15 088 976 178



STATEMENT OF COMMITMENTS

Statement of Commitments

The Statement of Commitments (Commitments) relate to overall project management and specific measures that will be taken in respect of the Project, during final design and pre-construction planning, construction, operation and decommissioning.

The Statement of Commitments will be updated as needed to address the planning authority's conditions of development authorisation (if granted). Implementation of the Commitments and the performance of the project's environmental management system will be subject to periodic reviews and corrective action if/as required. Photon Energy will work with all stakeholders during compliance reviews.

1 General and Administrative Commitments

Issue	Commitment	Timing
Scope of development	Photon Energy will carry out the development in accordance with the information contained within development application and in compliance with the conditions of development authorisation.	Ongoing
Minimising harm to the environment	Photon Energy will implement all practicable measures to prevent and minimise any harm to the environment that may result from the construction, commissioning, operation, maintenance and decommissioning of the development.	Ongoing
Statutory requirements	Photon Energy will ensure compliance with all relevant environmental requirements and ensure that all necessary approvals, licences and permits are obtained and are kept up to date as required throughout the life of the development. Copies of these documents will be maintained at the Site Office and Environmental Management Plans (EMP's) will include measures to ensure compliance.	Ongoing
Decommissioning	A draft decommissioning and rehabilitation plan would be prepared and submitted to the relevant authority for approval (if/as required) prior to commissioning of the renewable energy facility. This plan would outline anticipated decommissioning processes required for the removal of installed infrastructure.	Prior to commissioning
	At the end of its economic life, all equipment will either be replaced with comparable new equipment, or the renewable energy facility will be decommissioned. Replacement may be subject to new approvals.	Prior to decommissioning

Issue	Commitment	Timing
	A final decommissioning and rehabilitation plan will be prepared and submitted to the relevant authority for approval prior to the decommissioning works commencing. This plan will include relevant technical reports required to inform the methodology for decommissioning to minimise environmental harm and impact on the amenity of the community within the locality or as may be affected.	Prior to decommissioning
	Decommissioning would involve dismantling or removal of all above-surface equipment, and site rehabilitation. Footings of infrastructure may be retained at a level below the ground surface, as acceptable to the land owner. Access tracks may be retained depending on the land owners' wishes. Any overhead infrastructure (e.g. transmission lines) no longer required will be removed.	During decommission

2 Community Consultation

Issue	Commitment	Timing
Notice of construction activities	<p>Photon Energy will ensure that the local community and businesses are advised of construction activities that could cause disruption prior to those activities occurring.</p> <p>Communication methods may include those detailed within the Community Engagement Plan and if appropriate within the final Construction Environmental Management Plan (CEMP).</p> <p>Information will include:</p> <ul style="list-style-type: none"> • details of traffic disruptions and controls; • construction of temporary detours; and • work approved to be undertaken outside standard construction hours, particularly noisy works. 	Prior to disruptive works.
Periodic project updates	<ul style="list-style-type: none"> • The following will be updated to local media providers and/or social media: periodic updates of work progress, consultation activities, and planned work schedules when significant changes in noise or traffic impacts are expected. 	As required

Issue	Commitment	Timing
<p>Periodic project updates on project website</p>	<p>Photon Energy will maintain a project website until construction ends. The website may contain:</p> <ul style="list-style-type: none"> • periodic updates of work progress, consultation activities, and planned work schedules when significant changes in noise or traffic impacts are expected. The website will indicate the date of the latest update and expected frequency of updates; • a description of the relevant approval authorities and their areas of responsibility; • project reports and plans that are publicly available for download; • contact names and phone numbers of relevant communications staff; and • method to submit concerns/complaints electronically. 	<p>Ongoing until construction is complete</p>
<p>Construction noise communication requirements</p>	<p>Prior to the commencement of construction, neighbours to the development site will be informed of the construction works, the nature and duration of components of the construction phase, the potential impacts and contact details for registering complaints or enquires.</p> <p>Photon Energy (and its construction contractor) will provide information on noise and other potential impacts as part of the ongoing community consultation to ensure adequate community awareness and notice of expected construction noise.</p> <p>Consultation may include:</p> <ul style="list-style-type: none"> • regular community information newsletters providing details of the construction plan and duration; • a site notice board in a community location(s) providing copies of the newsletters, updated construction programme details, contact details of the project team members, and an ability to 	<p>Prior to construction commencing and as required</p>

Issue	Commitment	Timing
	<p>register for email updates of the newsletter;</p> <ul style="list-style-type: none"> • a feedback mechanism for the community to submit questions to the construction team and for the construction team to respond; • regular updates on the construction activities to local authorities to assist in complaint management if necessary; and • contact details of the project manager and/or site 'environmental representative'. 	
Complaints management	<p>Prior to construction commencing, Photon Energy will ensure the following is available:</p> <ul style="list-style-type: none"> • a postal and email address to which written complaints can be sent; and • a telephone contact line. <p>Photon Energy will keep record of a Complaints Register for a period of at least four years after the complaint was made. This will include:</p> <ul style="list-style-type: none"> • the date and time of the complaint; • whether the complaint was via mail, email, telephone or in person; • any personal details provided (if any) or a note if no details were provided; • the nature of the complaint; • any action(s) taken by Photon Energy in relation to the complaint, including follow-up; and • if no action was taken in relation to the complaint, the reason(s) why. <p>The Complaints Register will be made available for inspection upon request of the planning authority or other relevant government agency.</p>	Prior to construction commencing and ongoing

3 Design and Miscellaneous Measures

Issue	Commitment	Timing
Project layout	The Yadnarie Renewable Energy Facility is based upon the layout shown in the application documents. Micro-siting of individual infrastructure elements may occur during detailed design, however any micro-siting changes will be consistent with the development authorisation, otherwise a variation will be sought. Adjustment will consider relevant sensitivities of the location.	Prior to construction commencing
	Water reticulation infrastructure will be located alongside access tracks wherever practicable to minimise site disturbance.	During construction
	All buildings within the development will incorporate the collection of roof water.	Prior to construction commencing
	Wastewater systems would be designed in accordance with Council requirements. Approvals will be obtained prior to installation.	Prior to construction commencing
	Photon Energy will confirm the design of the construction and layout facility as part of the final design and prior to construction commencing.	During engineering design
	If the project contractor seeks to utilise a temporary concrete batching plant on site, the contractor will be required to obtain necessary approvals/licenses required.	Prior to construction commencing
	Permanent tracks will be located and designed so that they will not exacerbate erosion. Edges of tracks will be allowed to revegetate to prevent erosion and to reduce visibility.	Prior to construction commencing
Hydrology	Identification of infrastructure within heliostat fields that may be subject to inundation in a 1%AEP flood event that will require a 300mm freeboard.	During engineering design
	Incorporate culverts or similar infrastructure within internal driveways that cross drainage lines as required.	During engineering design
	Locate the security fence adjacent Birdseye Highway with a setback of 150m within the area that crosses Yadnarie Creek.	During engineering design and construction
	Investigate the inclusion of a fence that collapses under debris build up that would allow flood water to move through the site within the area of Yadnarie Creek (adjacent Birdseye Highway).	During engineering design

Issue	Commitment	Timing
Visual impact measures	<p>Measures to mitigate the visual impact of the project will include:</p> <ul style="list-style-type: none"> • buildings to be constructed in light grey or similar muted tones • underground cabling will be used throughout the subject land wherever practical; • areas of existing native vegetation (as identified on application plans) will be preserved; • earthworks will be restored as soon as practical following the completion of construction; • trenches will be backfilled as soon as practical • exposed surfaces (walls) of the hot and cold pits will be vegetated with local native species 	During construction
	<p>Visual screen planting will be undertaken in accordance with the approved screen landscaping plan, including:</p> <ul style="list-style-type: none"> • supplementary planting adjacent the boundaries of the site • to the southwest of the dunal range adjacent Price Road and Broadview Road • adjacent the administration and control building <p>A landscape management plan will be prepared to manage the establishment and maintenance of newly established landscape areas.</p>	During construction
Glare	Screen landscaping to the boundaries to be developed prior to the operation of the development in the locations identified by the Traffic Impact Assessment report by MFY.	During construction
Aviation safety	Final details of the height and location of the solar receiver towers will be provided to CASA, Department of Defence, AirServices Australia, the Aerial Agricultural Association of Australia, local aerial agricultural operators, CFS/aerial firefighting operators.	Before erection of the solar receiver towers

Issue	Commitment	Timing
	Overhead transmission lines and/or supporting poles associated with the Project that are located where they could adversely affect aerial application operations will be identified in consultation with local aerial agriculture operators and marked in accordance with Part 139 ⁶ Manual of Standards (MOS) Chapter 8 Division 10 section 8.110 (7) and section 8.110 (8) where applicable.	Before erection of the overhead transmission line
Dangerous Goods	All fuels and hazardous materials must be identifiable as required by the South Australian Dangerous Substances Act 1979 and South Australian Dangerous Substances (General) Regulation 2017 for storage and labelling.	During construction and operation
	Storage and handling of Anhydrous ammonia to be carried out in accordance with "AS 2022 Anhydrous Ammonia - Storage and Handling".	In place prior to bringing ammonia onto the site, then ongoing
	Ammonia leak detection and alarm system to be implemented in the Power Block Areas.	In place prior to bringing ammonia onto the site, then ongoing
Mining Licences	Photon Energy will continue to monitor the status of mineral exploration licences on the Eyre Peninsula and if/as required, liaise with the licence holders.	Ongoing
Petroleum and Geothermal Licences	Photon Energy will continue to monitor the status of Petroleum Exploration Licence (PELA 691) and liaise with the licence holder.	Post development authorisation and Ongoing

⁶ Civil Aviation Authority, Part 139 (Aerodromes) Manual of Standards 2019, dated 10 February 2024

4 Cultural Heritage

Issue	Commitment	Timing
Aboriginal Heritage	Photon Energy will facilitate a cultural heritage survey of the site with the Barngarla Determination Aboriginal Corporation (BDAC)	Prior to construction commencing
	Photon Energy will undertake construction in accordance with the South Australian Aboriginal Heritage Act (1988), which establishes site reporting requirements during construction so that the works does not “damage, disturb or interfere” with an item, object of site of Aboriginal Heritage.	During construction
	Photon Energy will ensure staff undertaking construction are appropriately inducted to be aware of the risks and have idea of how to identify Aboriginal cultural materials. An appropriate stop work procedure will be included in the CEMP.	Prior to construction commencing and during construction

5 Flora and Fauna Mitigation Measures

Issue	Commitment	Timing
Native Vegetation	Photon Energy will submit and obtain approval for the clearance of native vegetation as required by the Native Vegetation Act 1991.	Prior to construction commencing
	Photon Energy will ensure that areas of native vegetation to be retained on site are suitably identified for protection during construction.	During construction
	Photon Energy will supplement areas of existing native vegetation adjacent the boundaries of the site and within the subject land with supplementary landscaping/revegetation with local indigenous native species.	During construction
Management Plans	Photon Energy will develop a Weed Management Plan/Rehabilitation Plan.	Prior to construction
	Photon Energy will develop a final Construction Environmental Management Plan (CEMP) which incorporates best practice environmental management measures including: <ul style="list-style-type: none"> vehicles and equipment should be cleaned to ensure they are free of plant material and soil, to reduce the dispersal of exotic flora species into, out of, and within the project area Control of declared and environmental weeds found within the site 	Prior to construction

Issue	Commitment	Timing
	<ul style="list-style-type: none"> Minimise the construction footprint e.g. along access roads, in turn-around areas and around towers Staff training to ensure they are aware of the threatened flora and fauna species and ecological communities present and potentially present; and the potential and actual impacts of construction, operation and maintenance of the proposed renewable energy facility on flora and fauna species and habitats. 	

6 Fire Mitigation Measures

Issue	Commitment	Timing
Project Design		
	In consultation with the CFS, Photon Energy will identify the appropriate size and location of static water points onsite	During final design
	Photon Energy will install agreed static water storage tanks (as appropriate) in the form of above ground water tank constructed of concrete or steel.	During construction
	Photon Energy to incorporate heliostat control software that disallows heliostats to focus concentrated light in any location other than the solar receiver, as well as controls that prevent a single heliostat from focusing light on the ground for any period of time. This includes tracking paths, fail safe modes, self-power and high tracking speed to ensure risk of ignition from heliostats is eliminated.	During final design and operation
Fire Management Plan	<p>In consultation with the CFS, Photon Energy will prepare Fire Management Plan and/or Emergency Operation Plan with reference to the Victorian Country Fire Authority Guidelines – Design Guidelines and Model Requirements – Renewable Energy Facilities 2023 V4 (CFS Guidelines) that addresses the following:</p> <p>(a) Activities to be undertaken during the Fire Danger Season are appropriate under the Fire and Emergency Services Act 2005 and Fire and Emergency Services Regulations 2021 - Division 5 - Fire Prevention of the regulations.</p> <p>(b) Staff, contractors and site visitors to be informed of fire response procedures that</p>	During final design/Prior to construction

Issue	Commitment	Timing
	<p>follow identified legislative requirements, policies and procedures</p> <p>(c) Works during the fire danger season to have appropriate permits from Local Government, (District Council of Cleve).</p> <p>(d) Construction and operational works follow appropriate Work Health and Safety requirements.</p> <p>(e) Principal Contractor to ensure there is a bushfire survival plan for personnel at the site.</p> <p>(f) Facilitate a high standard of communication with landowners, relevant stakeholders and the community regarding daily activities through community liaison groups or similar.</p> <p>(g) Primary contact person for the community to contact with concerns, questions or issues to be established.</p> <p>(h) Ensure all contractors:</p> <ul style="list-style-type: none"> • Are appropriately briefed and understand their legal obligations in relation to managing bushfire risks. • Have appropriate procedures, safe work practices, contingency plans, for storage and operation of all equipment, chemicals and flammable materials (in accordance with relevant Australian Standards) that may contribute to bushfires. • Have appropriate “initial” suppression equipment available on site i.e. fire extinguishers or firefighting equipment in vehicles. • Carry emergency communications equipment. <p>(i) Vehicles should keep to the tracks whenever possible.</p> <p>(j) Restrict areas of travel of low clearance vehicles with catalytic converters on high fire danger days.</p> <p>(k) Restrict smoking to prescribed areas.</p> <p>(l) Consider a policy of “essential work only” on declared Catastrophic Fire Danger Days.</p> <p>(m) Provide appropriate bushfire training for contractors and staff.</p>	

Issue	Commitment	Timing
	<p>(n) Ensure all building construction is in line with the Minister's Specifications of building in Bushfire risk areas (if/as required).</p> <p>(o) Ensure appropriate bunding for flammable fuels and oils</p> <p>(p) Ensure all access roads and tracks are identified on plan and provided to the CFS</p> <p>(q) Establish emergency assembly areas.</p> <p>(r) Ensure all environmental risks of construction have been considered and approved by relevant authority.</p> <p>(s) Maintain security fencing around infrastructure to prevent public access.</p> <p>(t) Ensure adequate access to water for CFS, and/or for sprinklers, and the provision of onsite static water supplies.</p> <p>(u) Consider early fire/smoke detection systems, in built fire protection systems, remote alarming and notification systems to report potential bushfire risks from any mechanical or electrical failures within buildings.</p>	
	<p>Ensure that the Fire Management Plan incorporates the following for the operation phase of the project:</p> <ul style="list-style-type: none"> • Invite local CFS brigades on regular site familiarisation tours. • Communicate to community the bushfire risk mitigation works undertaken. • Provide site plans to CFS marking assets, access points, tracks, firebreaks, hazards and water points once facility is constructed. • Undertake regular inspections and maintain records of all infrastructure • Ensure suitable firefighting equipment is available onsite or readily accessible • Ensure staff and contractors are trained in firefighting equipment and have appropriate personal protective clothing. • Ensure the maintenance of vegetation fuel load within heliostat fields • Ensure all access roads and tracks are maintained for emergency vehicle access. 	<p>Prior to commission and ongoing</p>

Issue	Commitment	Timing
Dangerous Goods	All materials that are flammable and combustible should be stored in a secure and enclosed area away from the site office or any electrical infrastructure.	During construction and ongoing
	An area of cleared land of all vegetation including grasses of no less than 20m shall be maintained surrounding the storage enclosure.	During construction and ongoing
	Firefighting measures for Anhydrous ammonia to include measures outlined under "AS 2022 Anhydrous Ammonia - Storage and Handling".	During construction and ongoing
	Ensure specific training on Ammonia related fire risks and fire management to be included in site inductions, training and site signage for the operating facility, in addition to designing the plant to meet appropriate Australian standards for Ammonia use and handling.	During construction and ongoing

7. Acoustics

Issue	Commitment	Timing
Acoustic characteristics	Noise levels at the noise sensitive receivers in the vicinity of the development must meet the requirements of the EPA's Noise Environmental Protection (Noise) Policy.	Ongoing
Post Construction monitoring	Photon Energy to monitor installed infrastructure to ensure compliance with relevant environmental noise criteria of the Noise Environmental Protection (Noise) Policy.	Post construction and prior to commissioning

8 Traffic Management

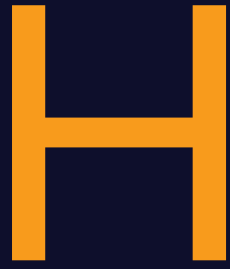
Issue	Commitment	Timing
Infrastructure Deed	Photon Energy will enter into an Infrastructure Deed with the District Council of Cleve (if/as required) in relation to upgrade of local roads (specifically Pine Corner Road) proposed to be utilised during construction of the project	Prior to development authorisation
Intersection Upgrade	Photon Energy in consultation with the Commissioner of Highways, upgrade the Birdseye Highway/Pine Corner Road intersection to include basic right turn (BAR) and auxiliary left turn (AUL) treatments on Birdseye Highway for traffic entering	Final Design and prior to construction

Issue	Commitment	Timing
	Pine Corner Road. The facilities will be designed in accordance with Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections (ARGD-04A).	
Traffic Management Plan	<p>Photon Energy will prepare a Traffic Management Plan once development authorisation is obtained. This Traffic Management Plan would incorporate:</p> <ul style="list-style-type: none"> • detailed design of the Birdseye Highway/Pine Corner Road intersection in consultation with the Commissioner of Highways • Preconstruction assessments of road pavements and infrastructure along access route to assess the required upgrading or likely rehabilitation. • Undertake further consultation with stakeholders and community • Details of noise and dust mitigation. 	Prior to construction
Decommissioning	Photon Energy will prepare a Traffic Management Plan for the decommissioning of the development	Post economic life of the development

9 Socio-Economic

Issue	Commitment	Timing
Employment	Photon Energy will compile a business register for local and regional businesses to register interest in providing a range of goods and services. Local companies and businesses with the requisite skills and experience will be employed on the project, wherever possible.	Prior to construction
Workforce accommodation	Photon Energy will consult with District Council of Cleve (and other Local Government within the region) to develop a strategy to accommodate workers required for the construction phase of the project.	Prior to construction
Community Benefit Scheme	A community benefit scheme will be developed in consultation with the District Council of Cleve and relevant stakeholders, to benefit the community across the Council area. The form of the scheme and its operation would be determined with the Council (and relevant stakeholders)	Commence in the first financial year post commissioning of the development (unless otherwise agreed with Council/stakeholders and continue for the life of the project.

Issue	Commitment	Timing
Aboriginal participation plan	Liaise with the Barngarla Determination Aboriginal Corporation (BDAC regarding a Participation Plan to provide opportunities to first nations people during the construction and operational phase of the project.	During design and commissioning of the development



ENGAGEMENT PLAN

COMMUNITY AND STAKEHOLDER ENGAGEMENT PLAN

YADNARIE RENEWABLE ENERGY PROJECT

For Photon Energy



Photon Energy

July 2024



Prepared by
MasterPlan SA Pty Ltd
ABN 30 007 755 277, ISO 9001:2015 Certified
33 Carrington Street, Adelaide SA 5000
Telephone: 8193 5600, masterplan.com.au



July 2024

Acknowledgement of Country

Photon Energy acknowledges the Barngarla people as the Traditional Custodians of the land on which the renewable energy project is proposed to be developed, and respects the Barngarla people's spiritual relationship with their Country and acknowledge and pay respect to Elders past, present and emerging.



CONTENTS

1.0	CONTEXT TO THE ENGAGEMENT PLAN.....	1
1.1	Who is Photon Energy.....	1
1.2	Yadnarie Renewable Energy Project.....	1
1.3	Planning Processes.....	6
1.4	Why Prepare an Engagement Plan.....	6
2.0	PURPOSE OF THE ENGAGEMENT.....	9
3.0	ORBITS OF PARTICIPATION.....	11
4.0	LEVEL OF PARTICIPATION.....	12
5.0	STAKEHOLDER AND COMMUNITY MAPPING.....	15
6.0	TECHNIQUE SELECTION.....	21
6.1	Media Releases.....	21
6.2	Project Website.....	21
6.3	Newsletter.....	21
6.4	Community Drop-In Session (Open House).....	21
6.5	Workshops.....	21
6.6	Direct Communication.....	22
7.0	EFFECTIVE ENGAGEMENT.....	23
7.1	Closing the Loop.....	24
8.0	TIMING & TASKS.....	24
8.1	Task List.....	25



1.0 CONTEXT TO THE ENGAGEMENT PLAN

1.1 Who is Photon Energy

Photon Energy AUS SPV 4 Pty Ltd (ACN 615 353 314) is a subsidiary company of Photon Energy N.V a worldwide group with global headquarters in The Netherlands. Photon Energy N.V., the holding company for Photon Energy Group, was founded in 2008. Photon Energy Group and currently has renewable energy projects in Poland, Czech Republic, Slovakia, Germany, Italy, Hungary and Australia. In 2020, the company company's proprietary portfolio reached 74.7MWp.

The Australian office of the Photon Energy Group was established in 2012. In 2014 the first Australian project was undertaken and in 2016 four (4) additional plants were commissioned.

The proposed development will be undertaken by Photon Energy AUS SPV 4 Pty Ltd referred to in this document as "Photon Energy".

Photon Energy has developed a strategic partnership with RayGen Resources Pty Ltd (RayGen), with the objective of developing global renewable energy projects suitable for the roll-out of RayGen's unique solar power and electricity storage technology.

Photon Energy propose to deploy RayGen's technology for generation of solar power and energy storage at Yadnarie, west of Cleve on the Eyre Peninsula. The technology proposed and scale of electricity storage is new to the South Australian renewable energy sector and comprises RayGen's proprietary PV Ultra (solar cogeneration) and Thermal Hydro (electro-thermal storage) technologies.

The development proposed by Photon Energy is a facility with 150MW of solar generation, 90MW grid connection and 720 Megawatt hours of storage, equivalent to 8 hours of dispatchable energy. Electricity will be supplied to the national electricity grid via a connection to the existing Yadnarie substation (opposite the subject land) or existing 132kV transmission lines.

1.2 Yadnarie Renewable Energy Project

A capital investment of approximately \$750 million is anticipated to develop the project, with an estimated \$80-100 million in on-site labour.

Photon Energy are is proposing the deployment of RayGen technology for this project which consists of a locally manufactured modules and a water storage component.

Local manufacturing: The solar module component of RayGen's technology is manufactured in Australia. RayGen currently has a 100MWp.a. facility in Victoria. RayGen will require an additional manufacturing capacity to meet the demand of the 150MW solar project.



Local construction: The project will require approximately 250 people on average over the term of the project construction. A large portion of the work is civil construction and where feasible and possible will employ local resources and companies. The completed project will require approximately 30 people for the ongoing maintenance and operation of the plant and equipment.

Low-cost storage: The project will increase availability of solar in the market by enabling low-cost storage in an area that is often curtailed by renewables during the day. The South Australian Energy Solution Document, June 2020, states that “*South Australians ... are painfully aware of the economic and social costs of a disorderly transition*”. RayGen’s solar-plus-storage will ensure that grid demands are met, even in cases where other generation in the electricity grid is shut down due to an unplanned event.

Retain value of agricultural land: RayGen’s solar-plus-storage technology enables dual land with agriculture, such as sheep grazing. RayGen’s PV Ultra towers have been operating in Newbridge, Victoria, since 2015, with sheep grazing underneath.



Figure 1: RayGen technology operating at Carwarp, Victoria

The RayGen technology to be employed in this project includes three proven technologies (shown illustratively in Figure 1 and described by RayGen):

1. Solar Generation – PV Ultra: PV Ultra generates electricity and heated water from solar modules, operating at power density at 4,000 times higher than traditional solar panels.
2. Storage – Pit Thermal Energy Storage: A hot reservoir is heated by the PV Ultra system. The cold reservoir is cooled with an electric chiller, using electricity from PV Ultra or the grid.
3. Heat to power - Organic Rankine Cycle (ORC): the stored temperature difference is used to generate electricity using an Organic Rankin Cycle engine, optimised to operate as a thermal turbine below 1,000C.



There are two (2) cycles, the “charge” and “discharge” cycles.

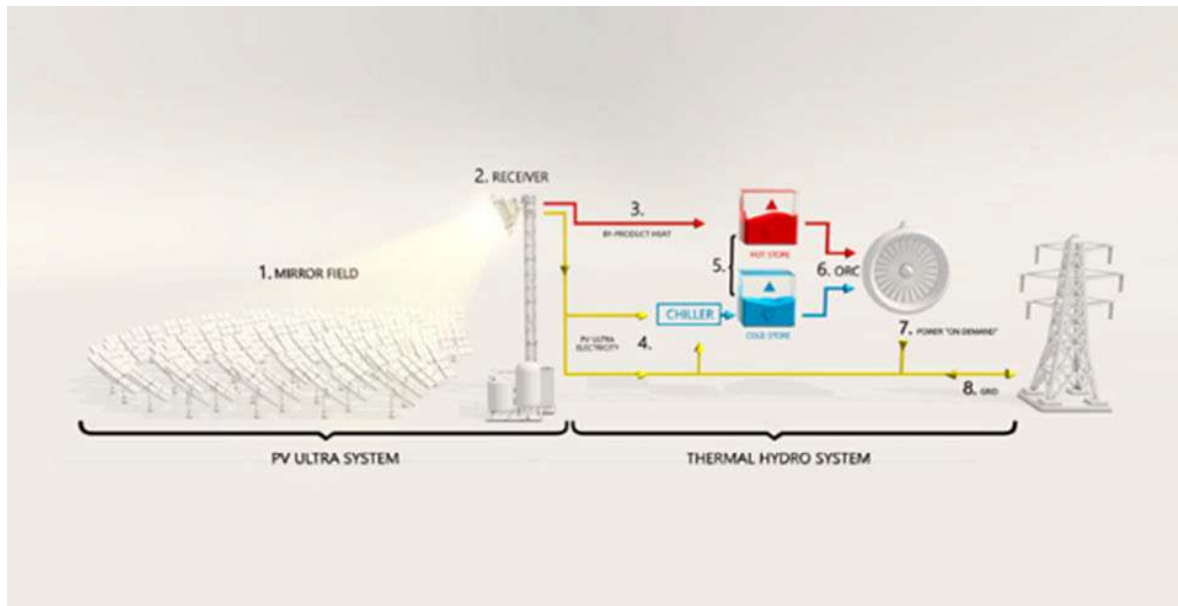


Figure 2: RayGen technology incorporating PV Ultra, Thermal Hydro System and connection to the electricity grid. (Source: RayGen)

The elements to be developed as part of the project include:

- Site area that is significantly less than the size of the subject land (of approximately 1,530 hectares), taking account of the natural land features, infrastructure setbacks and retention of vegetation.
- 150 fields of rotational mirrors (heliostats) orientated north. Each field comprises 273 individual heliostats. Each heliostat is approximately between 2.6 and 5.6 metres above the ground and mounted on steel posts. Heliostat heights will depend on site-specific factors. Each field has one receiver mounted on a tower 40-45 metres high. The receiver faces the field of mirrors in a southward direction. Each receiver has electrical switchgear and water pumping infrastructure at the base of its tower. For every two fields, there is one inverter for a total of 75 inverters. It is a 20ft container shipping container sized electrical device that converts DC power from the receivers to AC power ready for the grid.
- Three (3) thermal hydro pits units comprising:
 - 3 cold pits. Each pit/tank is 28,000 square metres with a height above ground level of 3.0 metres and 230,000 cubic metres capacity.
 - 3 hot pits. Each pit/tank is 28,000 square metres with a height above ground level of 3.0 metres and 230,000 cubic metres capacity.



- Three Thermal Hydro plants, each comprising:
 - An Organic Rankine Cycle (ORC) engine and generator, with net capacity of 30MW.
 - Heat Exchangers.
 - Tanks.
 - Various pumps.
 - Large Chiller and Heat Pump units.
 - connecting pipework.
 - Electrical infrastructure including switch rooms and transformers.
- Underground electrical cable reticulation on-site.
- Switch yard and connection via overhead transmission connection to the Yadnarie substation.
- Operations and maintenance building and compound.
- Temporary construction compound.
- Security fencing around the site.
- Internal access roads.



Figure 3: View of heliostats, receivers and hydro thermal plant and equipment at RayGen site, Carwarp, Victoria.

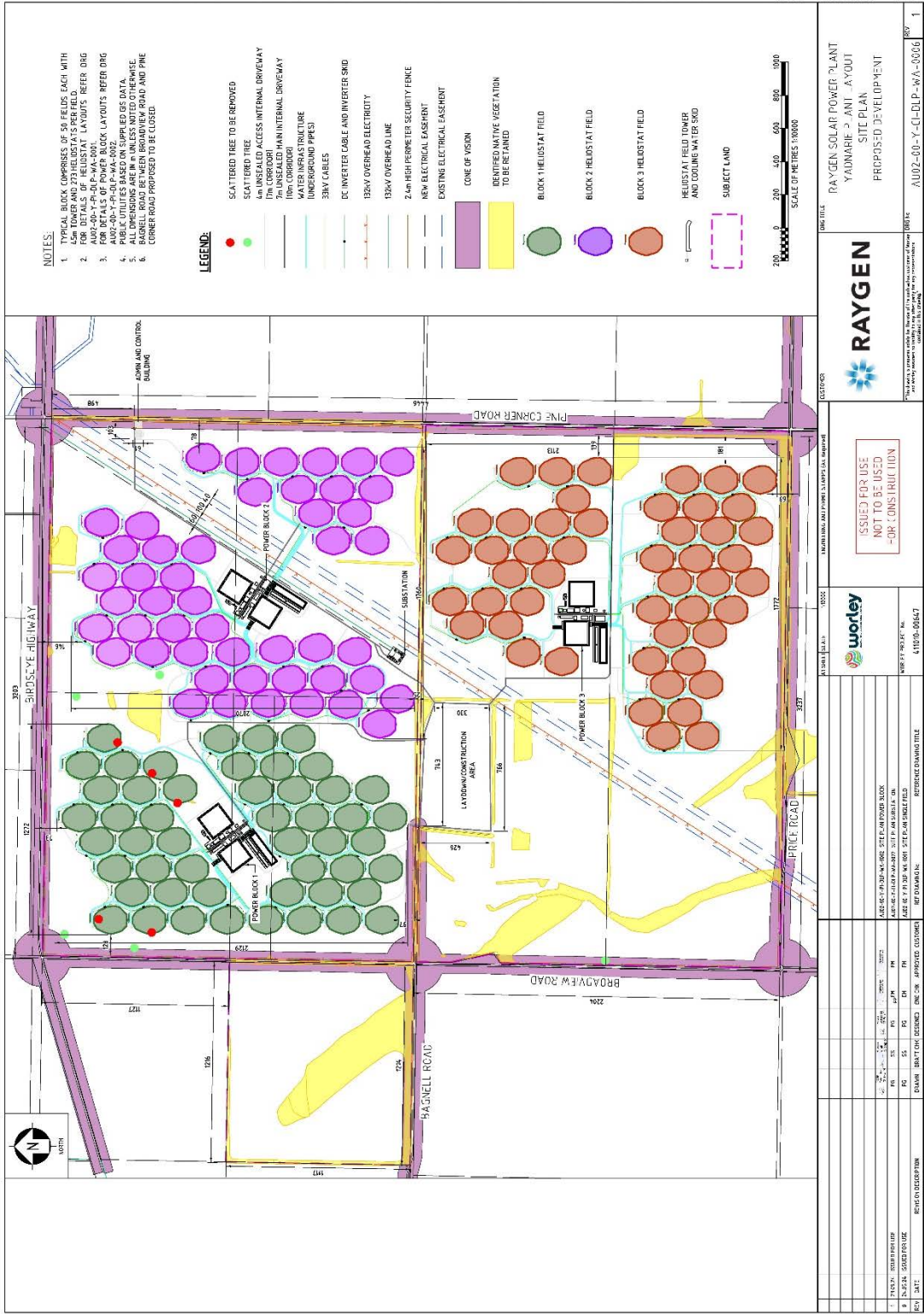


Figure 4: Site Development Layout



1.3 Planning Processes

Large scale renewable energy projects in South Australia are generally assessed as “essential infrastructure” pursuant to the State planning system. The South Australian planning system is governed by the *Planning, Development and Infrastructure Act 2016* (‘PDI Act’), with planning policy contained in the Planning and Design Code (‘the Code’). Planning policy in the Planning and Design Code provides guidelines for renewable energy development.

Over recent years, there are numerous large scale renewable energy projects in South Australia that have received State Government sponsorship as “essential infrastructure”. The process followed for these larger scale renewable energy projects is often referred to as Crown Development (public infrastructure), pursuant to Section 131 of the *Planning, Development and Infrastructure Act 2016*.

Section 131 provides for the development applications to be assessed by the State Planning Commission (via the State Commission Assessment Panel - SCAP). A report is then prepared for the Minister for Planning, who will then make a decision on the development application.

The Crown Development application process is illustrated **below**.

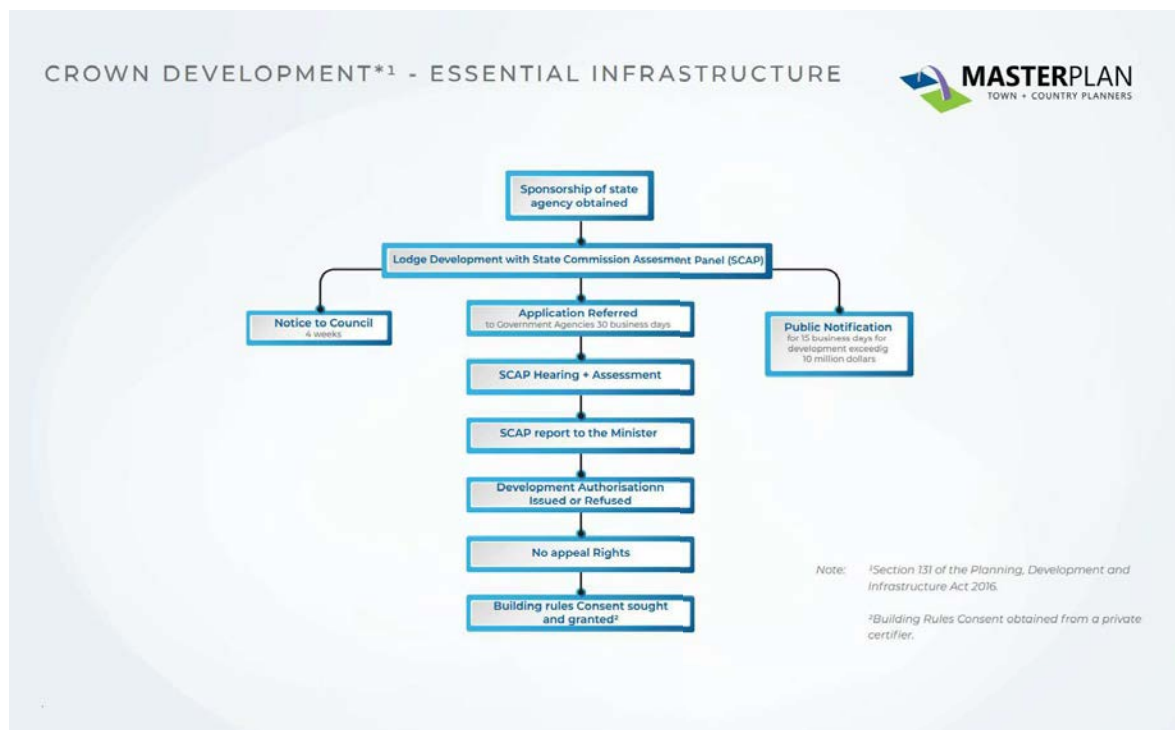


Figure 5: Essential Infrastructure Flowchart by MasterPlan

1.4



Why Prepare an Engagement Plan

Photon Energy have prepared this Engagement Plan to outline the process through which it will interact with a community to inform the decision-making processes of the Yadnarie renewable energy project.

Photon Energy are committed to honouring the Clean Energy Council's¹ Best Practice Charter for development of renewable energy projects and associated infrastructure.

These best practice charter principles are:

- We will engage respectfully with the local community, including Traditional Owners of the land, to seek their views and input before finalising the design of the project and submitting a development application.
- We will provide timely information, and be accessible and responsive in addressing the local community's feedback and concerns throughout the lifetime of the development.
- We will be sensitive to areas of high biodiversity, cultural and landscape value in the design and operation of projects.
- We will minimise the impacts on highly productive agricultural land where feasible, and explore opportunities to integrate continued agricultural production into the project.
- We will consult the community on the potential visual, noise, traffic and other impacts of the development, and on the mitigation options where relevant.
- We will support the local economy by providing local employment and procurement opportunities wherever possible.
- We will offer communities the opportunity to share in the benefits of the development, and consult them on the options available, including the relevant governance arrangements.
- We commit to using the development to support educational and tourism opportunities where appropriate.
- We will demonstrate responsible land stewardship over the life of the development and welcome opportunities to enhance the ecological and cultural value of the land.
- At the end of the project's design or permitted life we will engage with the community on plans for the responsible decommissioning, or refurbishment/repowering of the site.

This Engagement Plan has been prepared in accordance with IAP2² foundations of engagement.

¹ The Clean Energy Council is Australia's renewable energy association.

² IAP2 – International Association for Public Participation



1.5 First Round of Community Engagement

In November 2021 a media release by Photon Energy announced the proposed project in South Australia. This media release was reported in on-line renewable energy news sites and was the first publicly available information regarding the project, albeit that no specific location was included in this information.

During late 2021 and early 2022, Photon Energy provided confidential briefings to the District Council of Cleve. These briefings outlined the project area and the extent of the proposed development and allowed open dialogue to commence regarding the opportunities and constraints that the project would have within the Cleve community.

The community of Cleve were informed of the project in February and March of 2022. This first round of community engagement incorporated the distribution of project information via newsletters, direct mail-outs, media releases/articles, information posters/leaflets in businesses in Cleve, the establishment of the project website (which at the time was addressed as: <https://www.photonenergy.com/en/photon-energy/yadnarie-solar-farm.html>) and community open days.

Two (2) community drop-in sessions were held at the Cleve District Hall, Cleve on 2 and 3 March 2022. Information was provided on the project via a range of topic-based posters and a short video on the RayGen technology. Members of the project team were available to have detailed discussions with members of the community.

The attendance record for the drop-in sessions showed a total of 25 people attending, however there were additional people who attended that did not sign the attendance record. It is estimated that between 30 and 40 people attended the two (2) sessions. Attendees included interested members of the community, adjoining land owners, staff and elected members of the District Council of Cleve, Members and member elect of State Parliament.

The response from the community who attended the drop-in sessions were overwhelmingly positive to the project. Common comments and questions on the project included:

- The investment and jobs would be positive for the community and region.
- Happy for the project to commence straight away.
- Interest in the construction timeframe.
- Opportunities that would be available for local employment.
- Interest in the technology to be employed in the project.
- Potential impacts of recent flooding events as evident across the Birdseye Highway.
- Questions regarding protection of creek lines, vegetation and cultural heritage.

The Eyre Peninsula Advocate newspaper reported on the project and the community engagement in an online article on 10 March 2022.




CLEVE 18° Cloudy >

EYRE PENINSULA Advocate

WEDNESDAY, 16 AUGUST 2023

NEWS SPORT REAL ESTATE DIGITAL EDITIONS DIRECTORY BUY MORE




Cleve mayor Phil Cameron met with RayGen analyst Emily Grant and Photon Energy general manager Robert Ibrahim on Thursday.

NEWS

Proposed Cleve solar plant a game changer

Mar 10 2022 | Updated March 10, 2022

 Bev Story

[✉](#) [f](#) [t](#) [in](#) [🕒](#) 3 min read

A proposed 300 MWp solar power plant proposed near Cleve would use a new technology that allows large scale energy storage - making it a game changer within the renewable energy industry.

Photon Energy held two information sessions in Cleve last week to explain t

Figure 6: Extract of online article from the Advocate newspaper regarding the project and community engagement.

The purpose of this engagement plan is to build upon the first round of engagement undertaken and plan for engagement through the planning and approval phase and the construction phase of the project.

2.0 PURPOSE OF THE ENGAGEMENT

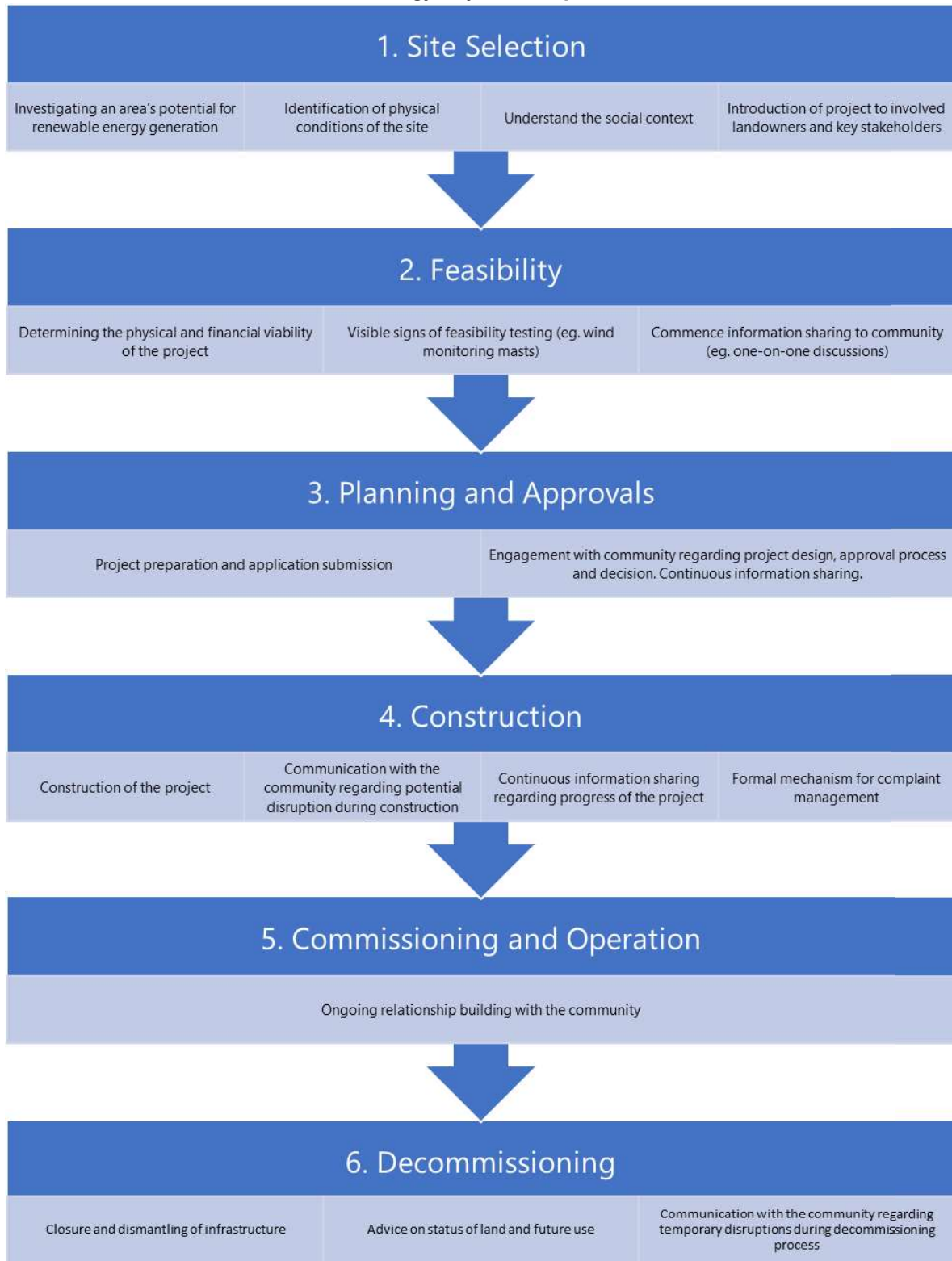
The purpose of the engagement is:

To provide further and more detailed information to the community prior to the lodgement of a formal development application for the project, and to gain feedback regarding the various phases of the proposed renewable energy project at Yadnarie.

A large-scale renewable energy project, such as the proposal by Photon Energy at Yadnarie is likely to comprises the following phases, and engagement with the community is to occur during each phase.



Renewable Energy Project Development Phases





The key aims of the engagement process are:

4. To allow Photon Energy to provide a greater level of detail in respect of the project and proponent to the community and key stakeholders, including provision of information about:
 - the proponent;
 - the scope of the project;
 - the reason for the project;
 - the location of the project;
 - the proposed timeframe;
 - regulatory approval processes;
 - supporting investigations;
 - potential impacts of the project (environmental and amenity);
 - management controls; and
 - future engagement processes.
5. To allow Photon Energy to consult and involve government agencies, including the District Council of Cleve, the Environment Protection Authority (EPA), Department for Infrastructure and Transport (both Planning and Transport divisions); Department for Environment and Water; and SafeWork SA, in respect of the project.
6. To provide the community and key stakeholders with an initial opportunity to provide feedback to the project team in respect of the project and to provide a communication channel directly to Photon Energy.
7. To undertake direct, in-person engagement with key affected parties, including:
 - identified owners and occupiers of land within and adjacent to the project site (primary stakeholders); and
 - occupiers of land in the area more generally (secondary stakeholders).
8. To communicate the next steps in the process and further opportunities for the community and stakeholders to have input into the process.

3.0 ORBITS OF PARTICIPATION

The identified stakeholders at the time of preparation of this plan are as listed as follows. Further stakeholders may be added as the engagement progresses. A register of stakeholders will be prepared and maintained through all phases of the project, from site selection/feasibility through to commissioning/operation. An updated register of stakeholders would be required for the decommissioning phase of the project.

Primary Stakeholders:

- Owners and occupiers of land within the project site.
- Owners and occupiers of land immediately adjacent the project site.



Secondary Stakeholders:

- Owners and occupiers of land in wider community. The extent of these landowners and occupiers maybe defined by the Zone of Visual Influence.
- Community of the District Council of Cleve
- District Council of Cleve staff and Elected Members.
- Bargala First Nations Group.
- Government Agencies.

Tertiary Stakeholders:

- State Member for Flinders, Sam Telfer MP.
- State Member for Giles, Edward Hughes MP.
- Federal Member for Grey – Rowan Ramsey MP.
- Regional Development Australia Eyre Peninsula.
- Eyre Peninsula Local Government Association (EPLGA).

4.0 LEVEL OF PARTICIPATION

Utilising the IAP2 Public Participation Spectrum, as shown below, the overall level of participation is “Consult” extending potentially to “Involve” with key stakeholders.

INCREASING IMPACT ON THE DECISION					
	INFORM	CONSULT	INVOLVE	COLLABORATE	EMPOWER
PUBLIC PARTICIPATION GOAL	To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.	To obtain public feedback on analysis, alternatives and/or decisions.	To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.	To place final decision making in the hands of the public.
PROMISE TO THE PUBLIC	We will keep you informed.	We will keep you informed, listen to and acknowledge concerns and aspirations, and provide feedback on how public input influenced the decision.	We will work with you to ensure that your concerns and aspirations are directly reflected in the alternatives developed and provide feedback on how public input influenced the decision.	We will look to you for advice and innovation in formulating solutions and incorporate your advice and recommendations into the decisions to the maximum extent possible.	We will implement what you decide.

© IAP2 International Federation 2018. All rights reserved. 20181112_v1

Figure 4: Source - IAP2 International Federation.



Public Participation Goal

Consult: To obtain public feedback on analysis, alternatives and/or decisions.

Promise to the Public

We will keep you informed, listen to and acknowledge concerns and aspirations, and provide feedback on how public input influenced the decision.

The engagement is for the purpose of informing the community about the project and seeking their feedback. Whilst the feedback received will be carefully considered and regard will be had in the ongoing process of project implementation, the engagement process will have limited influence over the core elements of the project including site selection and project scope. The influence of feedback will be greater in terms of guiding investigations and potential mitigations of impacts identified by the community and stakeholders.

Information

High-level information on the project will be disseminated via multiple channels. Key information areas will include:

- Proponent information and background.
- Technology proposed to be utilised.
- Project Scope.
- Project Location.
- Project Lifecycle.
- Project Cost.
- Impact Overview:
 - Environmental.
 - Economic.
 - Social.
- Regulatory Processes and Timeframes.
- Construction, Operation and Decommissioning.

Information would be disseminated via a range of channels, including:

- Photon Energy (or dedicated project) website.
- Local media – print, radio, TV.
- Social Media.
- Council distribution channels (website, social media, community news).



- Printed collateral.
- Local community groups.
- Direct Contact – landowners and occupiers (primary and secondary)
- Direct contact – Identified Key Stakeholders (including the District Council of Cleve, Members of Parliament, Government Agencies).



5.0 STAKEHOLDER AND COMMUNITY MAPPING

The following table provides a summary of the stakeholders and level of participation anticipated during various phases of the project. The level and form of engagement is a matter for ongoing review and adaptation as the project progresses through the phases and the level of interest from various stakeholders becomes more apparent. Decommissioning is not included in the engagement mapping, as it will be the subject of a future and separate engagement plan at the appropriate time.

STAKEHOLDER	LEVEL OF INTEREST IN THE PROJECT (I.E., HIGH, MEDIUM OR LOW)	NATURE OF INTEREST IN THE PROJECT AND/OR THE POTENTIAL IMPACT OF THE PROJECT	STAKEHOLDER NEEDS/EXPECTATIONS FOR ENGAGEMENT IN THE PROJECT	PHASE OF PROJECT	LEVEL OF ENGAGEMENT (I.E., INFORM, CONSULT, INVOLVE, COLLABORATE)	ENGAGEMENT TECHNIQUE
District Council of Cleve	High	<p>Represent and disseminate information to the community</p> <p>Economic development</p> <p>Road closure process</p> <p>Owner and operator of Cleve Airport</p> <p>Infrastructure requirements and provision/deeds associated with the construction of the project</p> <p>Commenting as a referral agency as part of the development application</p>	<p>Direct consultation to ensure Council is aware of the progress of the project through its phases. Provide Council with suitable consultation information that can be made available to the community.</p> <p>Information provided for community dissemination needs to be easy to interpret with visual information and clearly state how and when feedback can be provided to Photon Energy.</p> <p>Information should be accessible in hard copy and online.</p> <p>Discussion and preparation of road closure survey plans, infrastructure agreements if/as required.</p> <p>Direct consultation.</p>	<p>Feasibility Planning and Approval</p> <p>Construction</p> <p>Operation</p>	<p>Involve and Collaborate</p>	<p>Feasibility & Planning and Approval</p> <ul style="list-style-type: none"> Meeting/briefing with Council staff Briefing with Elected Members Provision of information (newsletters, media releases etc) that can be shared via Council website, facebook, community news or other techniques as deemed appropriate by Council <p>Construction</p> <ul style="list-style-type: none"> Meetings/briefings and provision of information for distribution to the community via various channels
Department for Energy and Mining	High	<p>Representing State Government strategic policy for renewable energy projects.</p> <p>Agency of the Crown for sponsorship of the development application.</p>	<p>Direct consultation.</p>	<p>Feasibility Planning and Approval</p>	<p>Involve</p>	<p>Feasibility & Planning and Approval</p> <ul style="list-style-type: none"> Meeting/briefing – direct liaison with relevant Officer. Provision of development details and technical investigations as available and relevant at the various phases.
Planning and Land Use Services, Department for Trade and Investment	High	<p>Government Agency that would process and assess the development application and make a recommendation to State Commission Assessment Panel (SCAP) and Minister. Ensure that the planning and approval phase is undertaken in accordance with legislative requirements.</p> <p>Responsible for engagement required via legislation (Planning, Development and Infrastructure Act 2016) as part of the development application.</p>	<p>Direct consultation.</p>	<p>Feasibility Planning and Approval</p>	<p>Involve</p>	<p>Feasibility & Planning and Approval</p> <ul style="list-style-type: none"> Meeting/briefing – direct liaison with relevant Officer. Provision of development details and technical investigations as available and relevant at the various phases.
Environment Protection Authority	High	<p>Referral agency as part of development application to assess the appropriateness of the project in terms of noise, air quality, stormwater management and general environmental considerations.</p>	<p>Direct consultation on noise matters.</p>	<p>Feasibility Planning and Approval</p> <p>Operation</p>	<p>Consult</p>	<p>Feasibility & Planning and Approval</p> <ul style="list-style-type: none"> Meeting/briefing – direct liaison with relevant Officer. Provision of development details and technical investigations as available and relevant at the various phases.
Department for Infrastructure and Transport	High	<p>Commissioner of Highways: Development regarding development adjacent designated (state) road – Birdseye Highway and proposed intersection alterations at Pine Corner Road.</p> <p>Ensure site access is suitable.</p> <p>Ensure vehicle movements during construction are appropriate.</p>	<p>Direct consultation on transportation and access arrangements.</p>	<p>Feasibility Planning and Approvals</p> <p>Construction</p>	<p>Collaborate with regard to vehicle access design if/as required.</p>	<p>Feasibility:</p> <ul style="list-style-type: none"> Meeting/briefing – direct liaison with relevant Officer. <p>Planning and Approvals:</p> <ul style="list-style-type: none"> Meeting/discussions during preparation of the traffic impact assessment report Formal consultation on traffic impact assessment report as part of the development application. <p>Construction:</p> <ul style="list-style-type: none"> Direct liaison regarding the preparation and approval of a traffic management plan for



STAKEHOLDER	LEVEL OF INTEREST IN THE PROJECT (I.E., HIGH, MEDIUM OR LOW)	NATURE OF INTEREST IN THE PROJECT AND/OR THE POTENTIAL IMPACT OF THE PROJECT	STAKEHOLDER NEEDS/EXPECTATIONS FOR ENGAGEMENT IN THE PROJECT	PHASE OF PROJECT	LEVEL OF ENGAGEMENT (I.E., INFORM, CONSULT, INVOLVE, COLLABORATE)	ENGAGEMENT TECHNIQUE
Department for Environment and Water	Medium	Various agencies within the Department, including Landscape SA Board would have a level of interest in the environmental assessment and impacts of the project. Depending on the site and scope of the project, these agencies may be referral agencies as part of the development application.	Direct consultation on environmental impacts.	Feasibility Planning and Approvals	Consult	<p>the project. This engagement and TMP would outline consultation required and methodology for engagement with a variety of parties during the construction phase</p> <ul style="list-style-type: none"> Review and approval of detailed plans on intersection upgrade <ul style="list-style-type: none"> Feasibility & Planning and Approval Provision of development details and technical investigations as available and relevant at the various phases.
Eyre Peninsula Landscape Board	Medium	Interest in the environmental assessment and impacts of the project.	Direct consultation on environmental impacts.	Planning and Approvals Construction Operation	Consult	<ul style="list-style-type: none"> Feasibility & Planning and Approval Provision of development details and technical investigations as available and relevant at the various phases.
Aviation <ul style="list-style-type: none"> DC Cleve as operator of the Cleve Airport Civil Aviation Authority Aerial operators CFS - Aviation 	Medium	Interest in the impact on the efficiency and safety of aerial operations.	Direct consultation on aviation impacts	Feasibility Planning and Approvals Construction	Consult/Involve	<ul style="list-style-type: none"> Feasibility & Planning and Approval Meeting/briefing - direct liaison with relevant Council Officer, CFS (local branch and aviation units), aerial agriculture operators. Provision of development details and technical investigations as available and relevant at the various phases. <p>Construction:</p> <ul style="list-style-type: none"> Provision of technical information to CAA, including notification of tall structures during construction if/as required.
Country Fire Service (CFS)	Medium	CFS interested in impacts of project on capacity to fight bushfires from air and on ground. Interested in fire management associated with the project.	Direct consultation on bushfire/fire impacts and management	Feasibility Planning and Approvals Construction Operation	Consult/Involve	<ul style="list-style-type: none"> Feasibility & Planning and Approval Meeting/briefing - direct liaison with relevant Officer. Provision of development details and technical investigations as available and relevant at the various phases. <p>Construction:</p> <ul style="list-style-type: none"> direct briefing with local CFS <p>Operation:</p> <ul style="list-style-type: none"> site induction to local CFS
SafeWork	High	Interested in management of hazardous materials (ammonium) on the site.	Direct consultation on method for storage of hazardous materials and information on licensing the facility.	Planning and Approval Construction Operation	Consult/Involve	<ul style="list-style-type: none"> Feasibility & Planning and Approval Meeting/briefing - direct liaison with relevant Officer. Provision of development details and technical investigations as available and relevant. <p>Construction:</p> <ul style="list-style-type: none"> direct liaison, as required via licence. <p>Operation:</p> <ul style="list-style-type: none"> direct liaison, as required via licence conditions (if/as required)
State Member of Parliament State Member for Flinders, Sam Teller MP	Medium	Development within Flinders electorate and interest in representing views of the community and economic development for the region.	Direct consultation to ensure Hon member is aware of the project and has information available for members of the community/electorate during various phases of the project.	Feasibility Planning and Approval Construction Operation	Consult	<ul style="list-style-type: none"> Feasibility & Planning and Approval Meeting/briefing Provision of consultation material that will be available to the public (in soft and hard formats) so that information can be shared



STAKEHOLDER	LEVEL OF INTEREST IN THE PROJECT (I.E., HIGH, MEDIUM OR LOW)	NATURE OF INTEREST IN THE PROJECT AND/OR THE POTENTIAL IMPACT OF THE PROJECT	STAKEHOLDER NEEDS/EXPECTATIONS FOR ENGAGEMENT IN THE PROJECT	PHASE OF PROJECT	LEVEL OF ENGAGEMENT (I.E., INFORM, CONSULT, INVOLVE, COLLABORATE)	ENGAGEMENT TECHNIQUE
Federal Member of Parliament Rowan Ramsey, Federal Member for Grey	Medium	Development within Federal electorate of Grey and interest in representing views of the community and economic development for the region.	Direct consultation to ensure Hon member is aware of the project and has information available for members of the community/electorate during various phases of the project.	Feasibility Planning and Approval Construction Operation	Consult	<ul style="list-style-type: none"> via Electorate website or other techniques as deemed appropriate by Member. Invitation to community consultation event. <p>Construction:</p> <ul style="list-style-type: none"> Direct correspondence regarding construction phase – timing and implications for road works, vehicle movements etc <p>Feasibility & Planning and Approval:</p> <ul style="list-style-type: none"> Meeting/briefing Provision of consultation material that will be available to the public (in soft and hard formats) so that information can be shared via Electorate website or other techniques as deemed appropriate by Member. Invitation to community consultation event. <p>Construction:</p> <ul style="list-style-type: none"> Direct correspondence regarding construction phase – timing and implications for road works, vehicle movements etc
Regional Development Australia Whyalla Eyre Peninsula	Medium	Development within RDA area and interest in economic development for the region.	Direct consultation.	Feasibility Planning and Approval Construction Operation	Consult	
Eyre Peninsula Councils DC Tumber Bay DC Franklin Harbour DC Elliston DC Lower Eyre Peninsula City of Whyalla City of Port Lincoln	Low – medium	Development is adjacent the Council area and is likely to have a level of interest to the regional community as people travel through the region.	Information on the project – planning and approval phase Information on any impacts on road network during construction ie. - Details on intersection upgrade - Over size loads - Volume of vehicle movement	Planning and Approval Construction	Inform	<p>Planning and Approval:</p> <ul style="list-style-type: none"> Provision of consultation material that will be available to the public (in soft and hard formats) so that information can be shared via Council website or other techniques as deemed appropriate by Council <p>Construction:</p> <ul style="list-style-type: none"> Direct notification of construction phases and traffic movements
Landowners/Occupiers – Involved	High	As landowners/occupiers they will have a high level of interest in all phases of the project.	Direct consultation	Feasibility Planning and Approval Construction Operation	Involve	<p>Feasibility & Planning and Approval</p> <ul style="list-style-type: none"> Ongoing direct meetings/briefing Provision of project development information Provision of copies of community information Invitation to community consultation event <p>Construction:</p> <ul style="list-style-type: none"> Direct notification of construction phases, timing and traffic movements



STAKEHOLDER	LEVEL OF INTEREST IN THE PROJECT (I.E., HIGH, MEDIUM OR LOW)	NATURE OF INTEREST IN THE PROJECT AND/OR THE POTENTIAL IMPACT OF THE PROJECT	STAKEHOLDER NEEDS/EXPECTATIONS FOR ENGAGEMENT IN THE PROJECT	PHASE OF PROJECT	LEVEL OF ENGAGEMENT (I.E., INFORM, CONSULT, INVOLVE, COLLABORATE)	ENGAGEMENT TECHNIQUE
Landowners/Occupiers – Adjacent the project site	High	The adjacent landowners/occupiers will be interested in the impacts of the project.	Direct consultation to ensure adjacent owners/occupiers are aware of the progress of the project through its phases. Information provided needs to be easy to interpret with visual information and clearly state how and when feedback can be provided to Photon Energy. Information should be accessible in hard copy and online.	Feasibility Planning and Approval Construction Operation	Consult – listen to and acknowledge concerns and aspirations and provide feedback.	<p>Feasibility & Planning and Approval</p> <ul style="list-style-type: none"> Ongoing direct meetings/briefing Provision of project development information Provision of copies of community information Invitation to community consultation event <p>Construction:</p> <ul style="list-style-type: none"> Direct notification of construction phases, timing and traffic movements
Community within the Locality – Landowners and Occupiers that are not immediately adjoining the project boundaries but are likely to be interested in the ongoing development. These interested parties are considered to be those within the ZTVI	Medium	Interest in the project and its potential impacts	Information on the project to ensure owners/occupiers in the locality are aware of the progress of the project through its phases. Information provided needs to be easy to interpret with visual information and clearly state how and when feedback can be provided to Photon Energy. Information should be accessible in hard copy and online.	Feasibility Planning and Approval Construction Operation	Inform – provide information with balanced and objective information to assist in understanding the project	<p>Feasibility & Planning and Approval</p> <ul style="list-style-type: none"> Public advertisement and media releases. Information on project website. Newsletters/project updates Information on Council websites (if Council in agreement to host information). Capacity for any member of the public to attend the community drop-in information event. <p>Construction:</p> <ul style="list-style-type: none"> Publication of information of construction phases, timing and traffic movements
Barnjala First Nations Group	Medium	Interest in the project and its potential impacts on undocumented built heritage and archaeological features of heritage significance.	A desktop heritage assessment report has determined that there is a low risk of works encountering the remains of undocumented built heritage and archaeological features of heritage significance in previously developed/ploughed areas and moderate risk in undeveloped/unploughed areas (seasonal creeks, creek margins, elevated sandy areas). Site discovery by Independent Heritage Consultants (IHC) has been undertaken to further inform management of undocumented heritage items. Management of the site in line with the requirements of the Heritage Places Act 1993 which protects all historic heritage and archaeological features.	Feasibility Planning and Approval Construction Operation	Inform – Consult – provide information with balanced and objective information to assist in understanding the proposed development.	<p>Feasibility – Planning and Approval</p> <ul style="list-style-type: none"> Direct invitation to attend community information event and provision of supporting material Provide information regarding desktop heritage assessment and development application details. This information may include the draft CEMP regarding management of site and actions in relation to Heritage Places Act 1993 during construction <p>Construction & Operation</p> <ul style="list-style-type: none"> Direct discussion/ongoing meeting with local first nations community as required should any historic and archaeological features be discovered during construction – all in accordance with legislative requirements
Wider Community of Cleve District Council of Cleve	Low - Medium	Interest in the project.	Information on the project to ensure people in the district are aware of the progress of the project through its phases. Information provided needs to be easy to interpret with visual information and clearly state how and when feedback can be provided to Photon Energy. Information should be accessible in hard copy and online.	Feasibility Planning and Approval Construction Operation	Inform – provide information with balanced and objective information to assist in understanding the proposed development.	<p>Feasibility – Planning and Approval</p> <ul style="list-style-type: none"> Public advertisement and media releases. Information on project website. newsletters/project updates Information on Council websites (if Council in agreement to host information). Capacity for any member of the public to attend the community drop-in information event. <p>Construction:</p> <ul style="list-style-type: none"> Information on project website.



STAKEHOLDER	LEVEL OF INTEREST IN THE PROJECT (I.E., HIGH, MEDIUM OR LOW)	NATURE OF INTEREST IN THE PROJECT AND/OR THE POTENTIAL IMPACT OF THE PROJECT	STAKEHOLDER NEEDS/EXPECTATIONS FOR ENGAGEMENT IN THE PROJECT	PHASE OF PROJECT	LEVEL OF ENGAGEMENT (I.E., INFORM, CONSULT, INVOLVE, COLLABORATE)	ENGAGEMENT TECHNIQUE
Community Groups and Sporting Groups		Interest in the project	Information on the project to ensure people in the district are aware of the progress of the project through its phases. Information provided needs to be easy to interpret with visual information and clearly state how and when feedback can be provided to Photon Energy. Information should be accessible in hard copy and online.	Feasibility Planning and Approval Construction Operation	Inform	<ul style="list-style-type: none"> newsletters/project updates – particularly on phases of construction, interruptions to road users/increased levels of traffic. <p>Operation:</p> <ul style="list-style-type: none"> Provide/make available contact details for onsite management via website/social media; onsite notices; information on Council's community noticeboard/website
Schools Cleve Area School	Low	Interest in the project	Information on the project to ensure people in the district are aware of the progress of the project through its phases. Information provided needs to be easy to interpret with visual information and clearly state how and when feedback can be provided to Photon Energy. Information should be accessible in hard copy and online.	Construction	Inform	<p>As above.</p> <p>Construction:</p> <ul style="list-style-type: none"> Provide direct correspondence to targeted community groups (to be further identified) that maybe directly affected by traffic interruptions, such as, but not limited to the local school
Road Users - Transport Company - Grain Industry (Viterra and T-Ports)	Low-medium	Interest in the project. Potential impacts on school bus due to road upgrades, heavy vehicle traffic during construction.	Accessible and timely information regarding potential impacts on road/traffic impacts.	Construction	Inform	<p>As above</p>
Ferry – Wallaroo and Lucky Bay Ferry Operator	Low-medium	Interest in the project and its potential impacts on road network, including impact of intersection upgrade on Birdseye Hwy and Pine Corner intersection and other local roads; and volume of traffic during construction.	Information on the project construction phases and timing.	Planning and Approval Construction	Inform	<p>Construction:</p> <ul style="list-style-type: none"> Information on project website. newsletters/project updates – particularly on phases of construction, interruptions to road users/ increased levels of traffic
Flinders Ports	Low-medium	Interest in the project and its potential implications of transportation of materials to and from the site during construction phase.	tbc	Construction	tbc	Construction
Infrastructure/Utility Providers.	Low	Interest in the project and its potential implications of transportation of materials to and from the site during construction phase.	tbc	Construction	tbc	Construction
Other Energy Industry Stakeholders – to be further identified but likely to include: Police, Ambulance, SES, Hospital, local doctors, transport services, accommodation services, retail/food outlets	Low	Interest in the ongoing provision of infrastructure and any implications of the project.	Information on the implications of the proposed development on infrastructure.	Feasibility	Inform	Direct consultation as required
	Low	Interest in the ongoing provision of infrastructure and any implications of the project.	Information on the project construction phases and timing.	Construction	Inform	<p>Construction:</p> <ul style="list-style-type: none"> Provide direct correspondence to targeted community groups (to be further identified) that maybe directly affected by traffic interruptions, such as, but not limited to the local school and services.



Community and Service Groups

Adelaide Women's & Children's Auxiliary
 Cleve & Pt Neill Novita
 County Fire Service - Cleve
 County Fire Service - Darke Peak
 County Fire Service - Gum Flat
 County Fire Service - Mangalo
 County Fire Service - Rudall
 County Fire Service - Wharminda
 County Women's Association - Arno Bay
 County Women's Association - Darke Peak
 County Women's Association - Rudall
 Darke Peak Hotel Social Club
 Darke Peak Playgroup
 Eyre Peninsula Field Days Inc.
 Lions Club of Cleve District Inc.
 National Trust - Cleve
 Neighbourhood Watch and Road Safety Group
 Quilters and Embroiderers
 Roses on Eyre
 SA Ambulance - Cleve & Districts
 State Emergency Service - Cleve & Districts
 Women in Agriculture and Business - Mangalo
 Women in Agriculture and Business - Rudall/
 Taragora

Agricultural Bureau - Arno Bay
 Agricultural Bureau - Crossville
 Agricultural Bureau - Rudall
 Agricultural Bureau - Roberts/Verran
 Agricultural Bureau - Tuckey
 Arno Bay Estuary Group
 Arno Bay Hall Committee
 Arno Bay Hotel Social Club
 Arno Bay Playgroup
 Arno Bay Progress Association
 Arno Bay Shack Owners Association
 Arno Bay St John Ambulance
 Arno Bay & District Boat Ramp Committee
 Cleve AH&F Society
 Cleve Area School Governing Council
 Cleve Art Group
 Cleve District Hospital Auxiliary
 Cleve Districts Tourism & Development Group
 Cleve Hotel Social Club
 Cleve Ministers Fraternd
 Cleve Playgroup & Lil' Gym
 Cleve & Districts Probus Group

Sport & Recreation Clubs

Arno Bay Bowling Club
 Arno Bay Darts Association
 Arno Bay Dirt Circuit Club
 Arno Bay Sporting Bodies Association
 Arno Bay Squash Club
 Arno Bay Tennis Club
 Arno Bay Yacht Club
 Cleve Basketball Association
 Cleve Bowling Club
 Cleve Darts Club
 Cleve Golf Club
 Cleve Sporting Bodies
 Cleve Tennis Club
 Cleve & Districts Table Tennis Club
 Darke Peak Cricket Club

Darke Peak Darts Association
 Darke Peak Golf Club
 Darke Peak Sporting Bodies & Swimming
 Pool
 Darke Peak Tennis Club
 Eastern Eyre Cricket Association
 Eastern Eyre Football Association
 Eastern Eyre Netball Association
 Eastern Eyre Softball Association
 Eastern Ranges Football & Netball Club
 Gym Works - Cleve Community Gym
 Mangalo Tennis Club
 Rana Dance Studio
 Rudall Cricket Club
 Rudall Tennis Club
 Ports Football and Netball Club



6.0 TECHNIQUE SELECTION

As outlined in **Section 5.0** the engagement will involve a variety of techniques. The techniques proposed to inform and consult with the community include:

6.1 Media Releases

Provision of information at various phases of the project by targeted media releases. This information could be distributed via mainstream print/radio media and social media.

6.2 Project Website

Update established project website to provide a key platform for the provision of up-to-date information on the project. The updated website is: <https://photonenergy.com.au/landing-page/yadnarie-solar-and-energy-storage-project>

The project website would include a link to a web survey and feedback sheet.

6.3 Newsletter

Preparation and dissemination of easy-to interpret project information during the various phases of the project. Written material can be mailed directly, emailed or provided to the public at various locations (Council, library, community venues, retail outlets) and can be made available on the project website. The newsletters can be utilised as a regular status report and provide information on upcoming events (community drop-in session) and a means of requesting feedback.

6.4 Community Drop-In Session (Open House)

A community drop-in session (or sessions) is an opportunity for any member of the public to attend an open house at their convenience. The community information session would provide multiple displays where members of the community can review information and discuss specific topics with project staff.

Feedback sheets will be provided for community members to either fill in while attending or take away and return.

An option for an online discussion group will be explored if feedback received is that people are unable to attend a community drop-in session due to distance or other reasons.

6.5 Workshops

If the community drop-in sessions do not garner sufficient attendance and feedback, targeted workshops could be undertaken, using a variety of channels to identify and invite attendees. Such workshops would deploy a range of engagement techniques to allow participants the opportunity to provide input and feedback into the process.



6.6 Direct Communication

One-on-one or one-on-some meetings with directly affected stakeholders including local and peak body representatives. Notes of meetings taken by project team members.

In addition to widely informing the community of the project, the goal of the engagement is to gather feedback on the various phases of the project, at the appropriate time.

PROJECT PHASE	ENGAGEMENT TECHNIQUE	FEEDBACK TECHNIQUE
Site Selection	<ul style="list-style-type: none"> • Direct Communication (initial formal verbal and written communication) • Formal briefing/meeting with Key Stakeholders 	<ul style="list-style-type: none"> • Verbal Feedback • Records/notes of meetings • Formal correspondence received
Feasibility	<ul style="list-style-type: none"> • Direct communication (written and verbal) • Meetings/briefings with key stakeholders, community groups, government agencies • Media - social, print, radio. Include media releases; interviews; • Project website • Project newsletter • Information Flyer • Community information session(s) 	<ul style="list-style-type: none"> • Verbal Feedback • Records/notes of meetings • Feedback register <ul style="list-style-type: none"> - direct correspondence - feedback via website - Feedback via social media • Formal survey (online and/or hard copy)
Planning and Approvals	Project updates prior to submission of a development application via: <ul style="list-style-type: none"> - Website - Social media - Newsletters - Print media 	<ul style="list-style-type: none"> • Verbal Feedback • Records/notes of meetings • Feedback register <ul style="list-style-type: none"> - direct correspondence - feedback via website - Feedback via social media - Feedback sheets - Formal survey
	During the development application phase there will be regulatory consultation, which is outside of the engagement undertaken by Photon Energy. However, promotion of the regulatory consultation processes and timeframes should form part of the project updates via the techniques listed above.	Written and verbal submissions to the relevant planning authority.
Construction	Project updates prior to construction commencing and as the project proceeds via: <ul style="list-style-type: none"> - Website - Social media - Newsletters - Print media - Direct messages - Direct communication 	<ul style="list-style-type: none"> • Direct communication with project managers • Feedback/complaints forms



PROJECT PHASE	ENGAGEMENT TECHNIQUE	FEEDBACK TECHNIQUE
Commissioning and Operation	Project updates via: <ul style="list-style-type: none"> - Website - Social media - Newsletters - Print media 	<ul style="list-style-type: none"> • Direct communication with operation managers • Feedback/complaints forms
Decommissioning	Methodology for informing the community during decommissioning phase would involve the preparation of a further engagement plan given the time that would elapse between the implementation of this plan and decommissioning.	

To obtain public feedback on analysis, alternatives and/or decisions, the qualitative written and verbal feedback from the community will be recorded in the form of:

- records of the community workshop;
- structured feedback sheets (replicated in a web survey);
- open submissions; and
- feedback received via a feedback line.

7.0 EFFECTIVE ENGAGEMENT

PRINCIPLES	HOW DOES YOUR ENGAGEMENT APPROACH/ACTIVITIES REFLECT THIS PRINCIPLE IN ACTION?
Engagement is genuine	<p>The following techniques are incorporated in the engagement plan to provide suitable opportunity to participate in the engagement:</p> <ul style="list-style-type: none"> • Suitable time is allocated to participate in consultation activities and provide feedback. • Representatives of the project team are available to discuss the project • Ability to provide feedback via: <ul style="list-style-type: none"> - Personal contact via phone or at community information session - Electronically via project website or direct email - Via written correspondence or survey <p>Consultation material is provided directly to those most affected</p>
Engagement is inclusive and respectful	<p>The variety of engagement techniques are suitable for the identified stakeholder groups, with a number of opportunities to be informed and provide feedback. Comments and feedback are appropriately recorded and considered. Engagement techniques are adaptable during the engagement period.</p>
Engagement is fit for purpose	<p>Engagement incorporates a variety of techniques to ensure the community of interest and the wider community are aware of the project and ability to provide feedback. The engagement is of an appropriate scale and form to reflect the likely impact of the project. The engagement information is presented in a manner which allows for ease of interpretation:</p> <ul style="list-style-type: none"> - Clearly presented information in a graphical form, in addition to written material.



PRINCIPLES	HOW DOES YOUR ENGAGEMENT APPROACH/ACTIVITIES REFLECT THIS PRINCIPLE IN ACTION?
	<ul style="list-style-type: none"> - Information available in hard copy and electronically. - Ability for people to speak to a representative of the project team in person via phone or at a community information session. <p>Information is available from a range of sources i.e. project website, Council website, and hard copies from Council office, library, community venues.</p>
Engagement is informed and transparent	<p>Engagement material is available in a variety of forms including letters, leaflets/fact sheets and posters with easy-to-understand graphics including plans.</p> <p>The engagement material appropriately identifies the scope of the project and what can and cannot be influenced.</p> <p>Feedback is reviewed, summarised and considered in the engagement report which forms part of the development application documentation.</p>
Engagement is reviewed and improved	<p>Feedback provided via the various sources is monitored during the engagement period. Appropriate endeavours will be made to obtain feedback on engagement processes during consultation events and/or following the conclusion of the consultation period. Feedback will be reviewed and analysed for areas of improvement as part of the engagement report and closing the loop.</p>

7.1 Closing the Loop

HOW WILL YOU RESPOND TO PARTICIPANTS?	WHO'S RESPONSIBLE?	WHEN WILL YOU REPORT BACK?
<p>A feedback register will be kept of comments received by (all) various techniques i.e., personal communication, email, website, surveys etc.</p> <p>Every endeavour will be made to obtain contact details of all attendees at the community information session and those providing feedback in person, so that they can be kept informed of the engagement outcomes and the progress of the project.</p> <p>A summary of issues/key theses will be prepared and provided to the community that have provided feedback.</p>	Photon Energy	As soon as practical post-consultation during the feasibility phase of the project and prior to lodgement of the development application.
Endeavour to obtain feedback on the engagement process via an evaluation survey, which will inform the Engagement Plan.	Photon Energy	As above.
Prepare the Engagement Report. This report would be incorporated into the development application project summary and be available to the community and stakeholders.	Photon Energy	As above

8.0 TIMING & TASKS

The timing of the engagement will be based on the timing of the project phases, commencing with the direct engagement as part of the feasibility phase. The principal engagement with the community will occur following initial feasibility but prior to the planning and approvals phase.



The engagement should occur once technical investigations to inform the project have been prepared, so that the information disseminated to the public as part of the community information sessions is detailed, but not finalised. For engagement to be genuine, there needs to be an opportunity for the community to express views and have input into the project prior to the complete development application being prepared and submitted.

A draft outline of the timeframe for the feasibility phase is set out as follows:

	ITEM	TIMEFRAME
1	Finalise stakeholder and community engagement plan	Q2 2024
2	Initial stakeholder contact undertaken	Q3 2024
3	Engage with stakeholders	Q3 2024
4	Community Drop-in Session	Q3 2024
5	Community and stakeholder engagement summary report prepared	Q3 2024
6	Close the Loop	Q3 2024

8.1 Task List

Pre-engagement tasks associated with the engagement during the feasibility phase will generally include:

- Finalise stakeholder list.
- Identify date and venue for community drop-in session.
- Prepare posters and presentation information for display and distribution at information/drop-in session.
- Advertise the information session via the local newspaper and other sources, which may include social media, project website and Council website, and other identified distribution channels.
- Direct invitation by letter to affected owners and occupiers of land to attend the drop-in information session and make comment.
- Direct invitation by letter to identified key stakeholders to attend a drop-in information session and make comment.

1.0 DATE AND VENUE				
	Description of Task	Responsibility	Deadline – Week Commencing	Comment
1.1	Identify Venue	MasterPlan	10 June 2024	Venue - Cleve District Hall
1.2	Book Venue (drop-in sessions)	MasterPlan	10 June 2024	Hire form completed and sent to DC Cleve on 16 August 2023
1.3	Confirm equipment required and available	MasterPlan	10 June 2024	Venue information is on the hire form and the same venue has been used previously. - Number of tables



				<ul style="list-style-type: none"> - Display boards – if none available – use blue tack or similar on walls - Tea/coffee – urn and cups etc available
--	--	--	--	---

2.0 STAKEHOLDER IDENTIFICATION				
	Description of Task	Responsibility	Deadline – Week Commencing	Comment
2.1	Identify stakeholders	MasterPlan	1 July 2024	
2.2	Collate parties that have been directly engaged	As above	1 July 2024	Confirm names and addresses of adjoining non-involved landowners from Council Utilise previous email addresses received at Round 1 consultation
2.3	Identify adjoining occupiers other interested parties	As above		
2.4	RDA, EPLGA, Members of Parliament	As above		

3.0 CORRESPONDENCE – ADVERTISEMENTS, NOTICES, LETTERS AND WEBSITE				
	Description of Task	Responsibility	Deadline - Week Commencing	Comment
3.1	Letters and short project information sheet	MasterPlan	Draft - 1 July 2024 Post letters and handout – 22 July	Create a "Fact Sheet" with project information
3.2	Newspaper Advert	MasterPlan	Advertising proof by Friday 19 July	Eyre Peninsula Advocate – printed weekly and available on Thursdays. Publication dates - 25th July and 1 August. Project website will need to be active prior to advert ie. website address and phone numbers etc ready by publication date
3.3	Draft presentation information - posters	MasterPlan		Confirm format of info
3.4	Project Website	Photon	Prior to first newspaper ad	Update information on website
3.5	Council Community Newsletter	MasterPlan	tbc	Provide info to Council with 2 weeks lead time



3.0 CORRESPONDENCE – ADVERTISEMENTS, NOTICES, LETTERS AND WEBSITE				
3.6	Social Media	MasterPlan – Photon and/or Council	22 July & 29 July	Concurrent with first newspaper ad
3.7	Project Information Sheet Distribution	MasterPlan	22 July	Printed versions of handout distributed to local businesses in Cleve
3.8	Media Release	RayGen	29 July	Media release – for article in paper on 1st August or 8th August.

4.0 CONSULTATION DISPLAY INFORMATION				
	Description of Task	Responsibility	Deadline – Week Commencing	Comment
4.1	Plans and technical information for display	MasterPlan,	Draft 1 July	Posters for display at Community Drop-in Session based on Round 1 posters with updated plans and outcome of consultant investigations
4.2	Review of Posters	Photon & RayGen	Week of 8 July	
4.3	Posters - finalise	MasterPlan	Week of 15 July	In house – MP Production – based on 1 st round format
4.4	Print posters	MasterPlan	Week of 29 July	Printing – in house only
4.5	Fact or Info Sheet for Distribution	MasterPlan	Prepared - Week of 8 July Distributed Week of 22 July	This will be the same as the flyer/project sheet distributed via mail to interested parties
4.6	Feedback sheet/survey	Photon - tbc	From 22 July until end of week of 5 August	Electronic version via Photon Yadnarie website

Julie Jansen RPIA (Fellow)
BA, BA(Hons), GDURP, IAP2

11 July 2024

I

COMMUNITY
ENGAGEMENT FLYERS

Yadnarie Renewable Energy Facility

Project Update & Community Information Session

The Project

Photon Energy is proposing to construct a solar power generation and energy storage development approximately 7 kilometres west of Cleve (Yadnarie).

Since introducing this solar power generation and energy storage development to the community in 2022, Photon Energy and its development partner RayGen have undertaken detailed investigations to inform the project design. Photon Energy, RayGen and the stakeholders are committed to the project and anticipate submitting a comprehensive development application during the 3rd quarter of 2024.

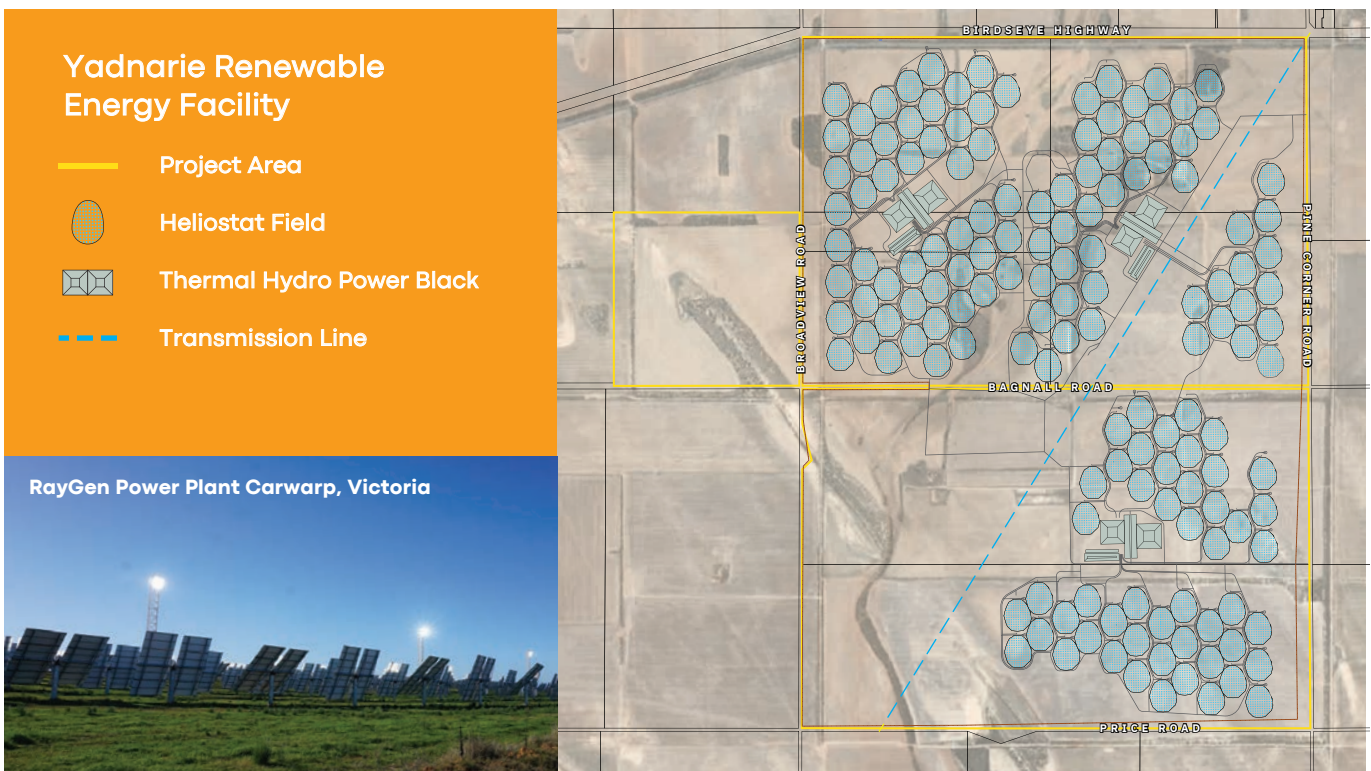
Photon Energy would like to provide an update on the project to the Cleve community and we are holding a Community Information Session. The details of the Community Information Session are located at the bottom of this page.

What is being proposed?

The Yadnarie renewable energy facility is an important project that will provide long term energy storage to South Australia once operational. The development proposes to utilise RayGen's unique proprietary PV Ultra (solar cogeneration) and Thermal Hydro (electro-thermal storage) technology, comprising 150MW of solar generation, 90MW grid connection and at least 720 Megawatt hours of storage, equivalent to 8 hours of dispatchable energy.

Location of the Project

The Yadnarie project is located between Cleve and Rudall on land south of the Birdseye Highway and southwest of Yadnarie substation. The subject land comprises some 1530 hectares and is bounded by the Birdseye Highway to the north, Pine Corner Road to the west, Broadview Road (in part) to the east and Price Road to the south. The site and project layout are shown on the plan below:



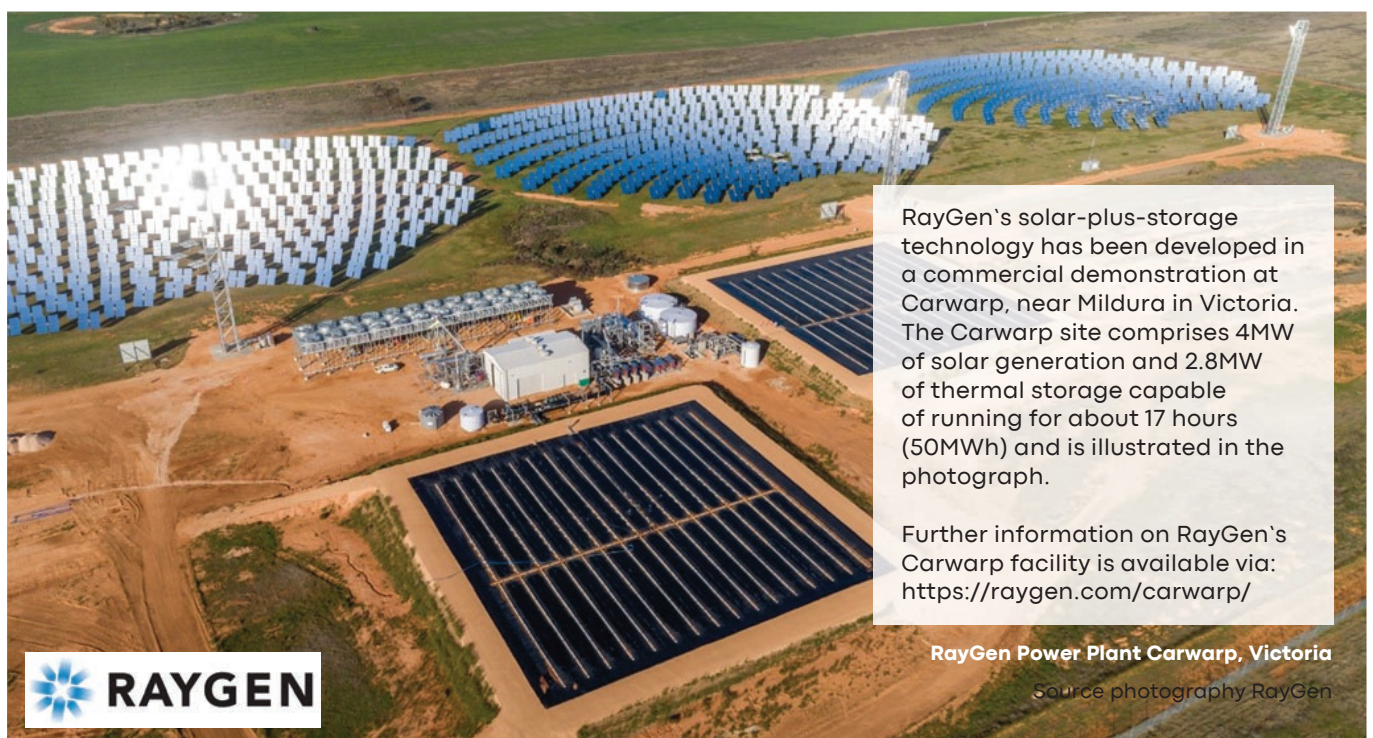
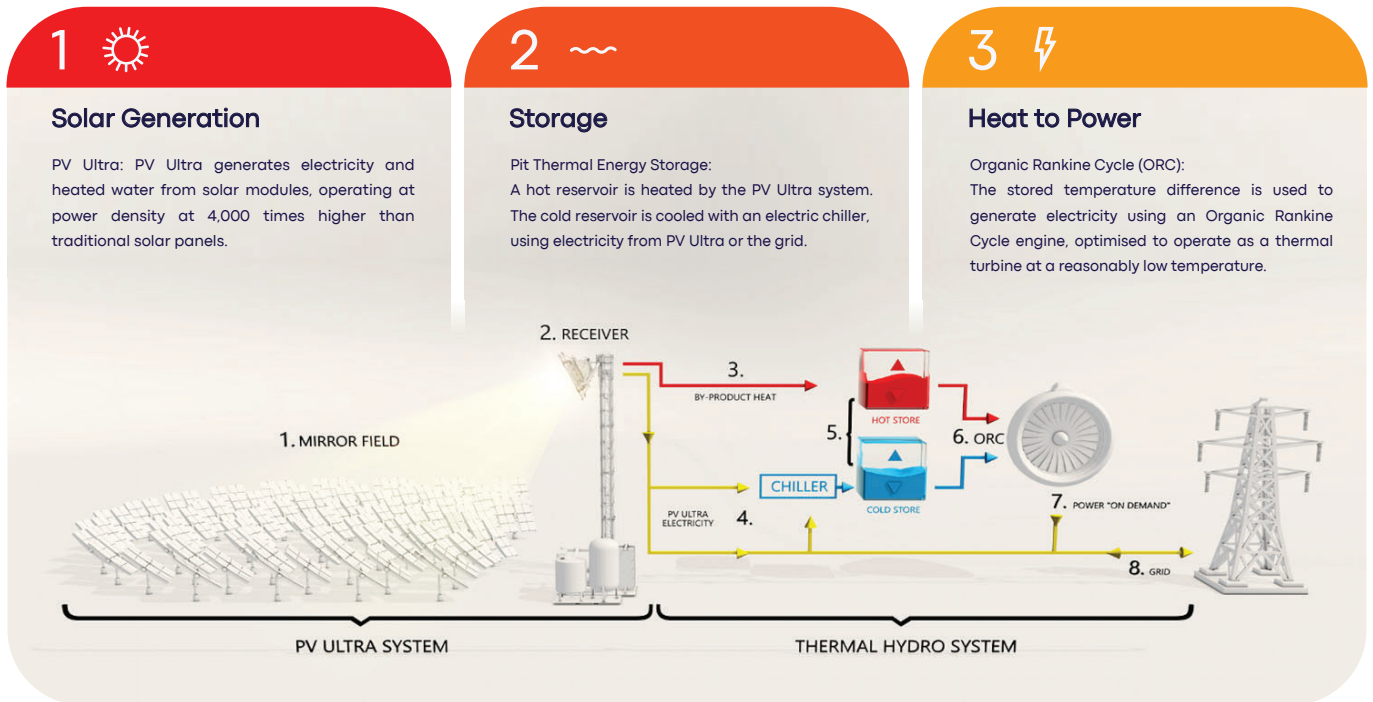
Community Information Session

Thursday 8th August 2024 between 3.00 pm and 7.00 pm
At Cleve District Hall, 20 Main Street, Cleve

Community Information Session

This information session is an open-house format. Please call in at a time convenient to view project information on display and talk with members of the project team. We would like to discuss this exciting project with you and obtain your feedback.

How does it work?



Further Information

If you're unable to attend the Community Information Session and/or you would like further information, it can be obtained via the project website: <https://photonenergy.com.au/yadnarie> or contacting Photon Energy.

Contact Us

If you would like to learn more about this project, please don't hesitate to get in touch.

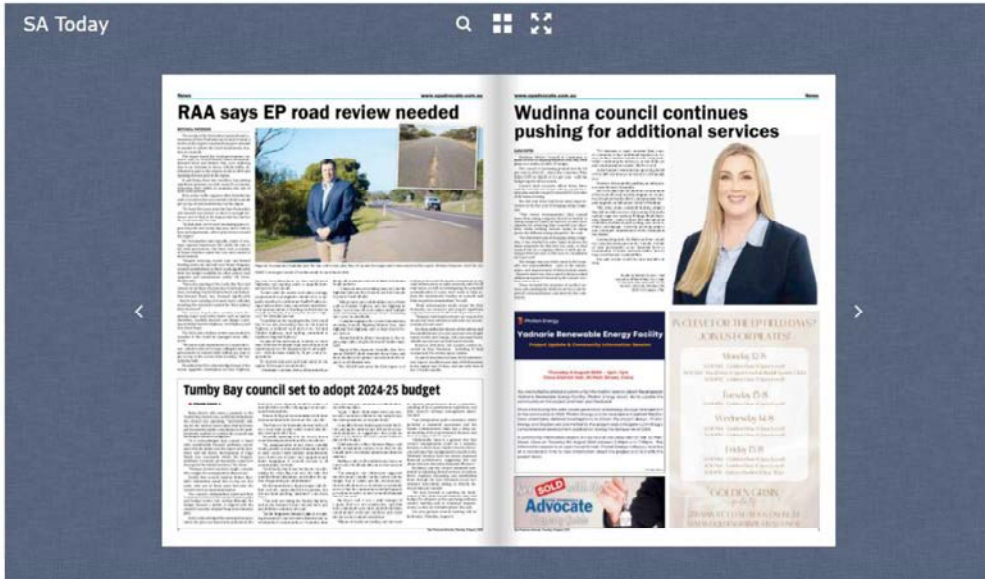
+61 2 8021 3383

yadnarie@photonenergy.com

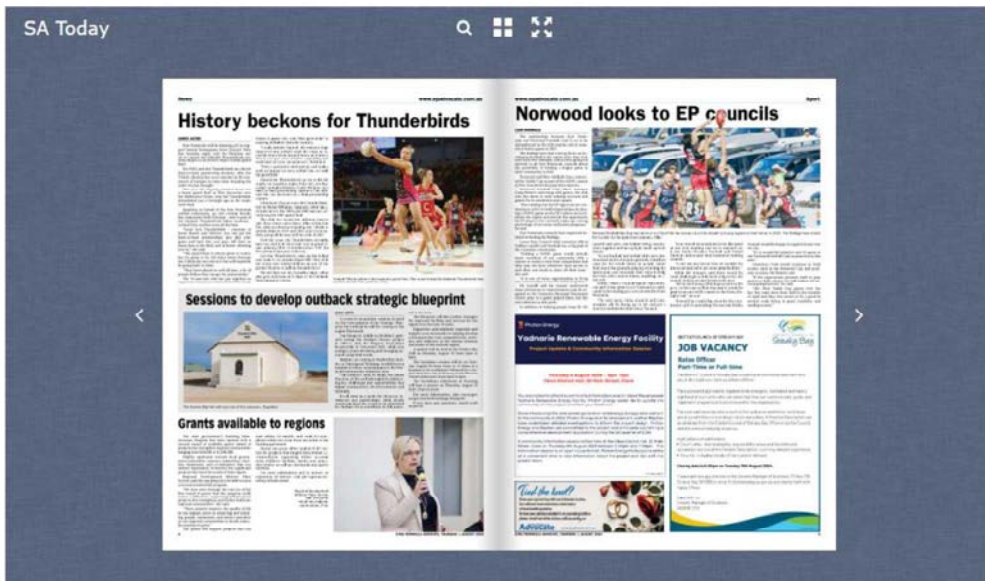


COMMUNITY
ENGAGEMENT
ADVERTISEMENTS

EYRE PENINSULA ADVOCATE CLEVE – 8TH AUGUST 2024



EYRE PENINSULA ADVOCATE CLEVE – 1ST AUGUST 2024



EYRE PENINSULA ADVOCATE CLEVE – 25TH JULY 2024



K

COMMUNITY
ENGAGEMENT
POSTERS

Yadnarie Renewable Energy Facility

Who is Photon Energy?

Photon Energy Group is a worldwide group with global headquarters in The Netherlands, founded in 2008.

Photon Energy Group currently has renewable energy projects in Poland, Czech Republic, Slovakia, Germany, Italy, Hungary and Australia. As of June 2024, the company proprietary was 132.8 MWp.

The Australian office of the Photon Energy Group was established in 2012 and since that time the company has commissioned 5 renewable energy projects.

Yadnarie Renewable Energy Facility is proposed to be developed with its strategic partner RayGen Resources Pty Ltd (RayGen).

Who is RayGen?

RayGen is an Australian company that has developed a world-leading next-generation solar and long-duration storage technology, capable of providing reliable, dispatchable electricity to the South Australian electricity grid day and night.

RayGen's solution consists of proprietary high-efficiency solar modules that uniquely generate both electricity and

heat, coupled with a closed-loop, water-based long-duration energy storage system.

The technology has been developed in Australia and RayGen's solar modules are manufactured in Melbourne. A demonstration facility at Carwarp, Victoria, has been operating since 2022.



RayGen's PV Ultra



RayGen's operational site at Carwarp, Victoria

Yadnarie Renewable Energy Facility

Ecology

The assessment undertaken by EBS has informed the design of the proposed renewable energy facility. Layout of infrastructure proposed for the development has utilised cropping land and retained the majority of areas of higher quality vegetation, including those on dunes and adjacent road boundaries, albeit there will result in some impact on vegetation.

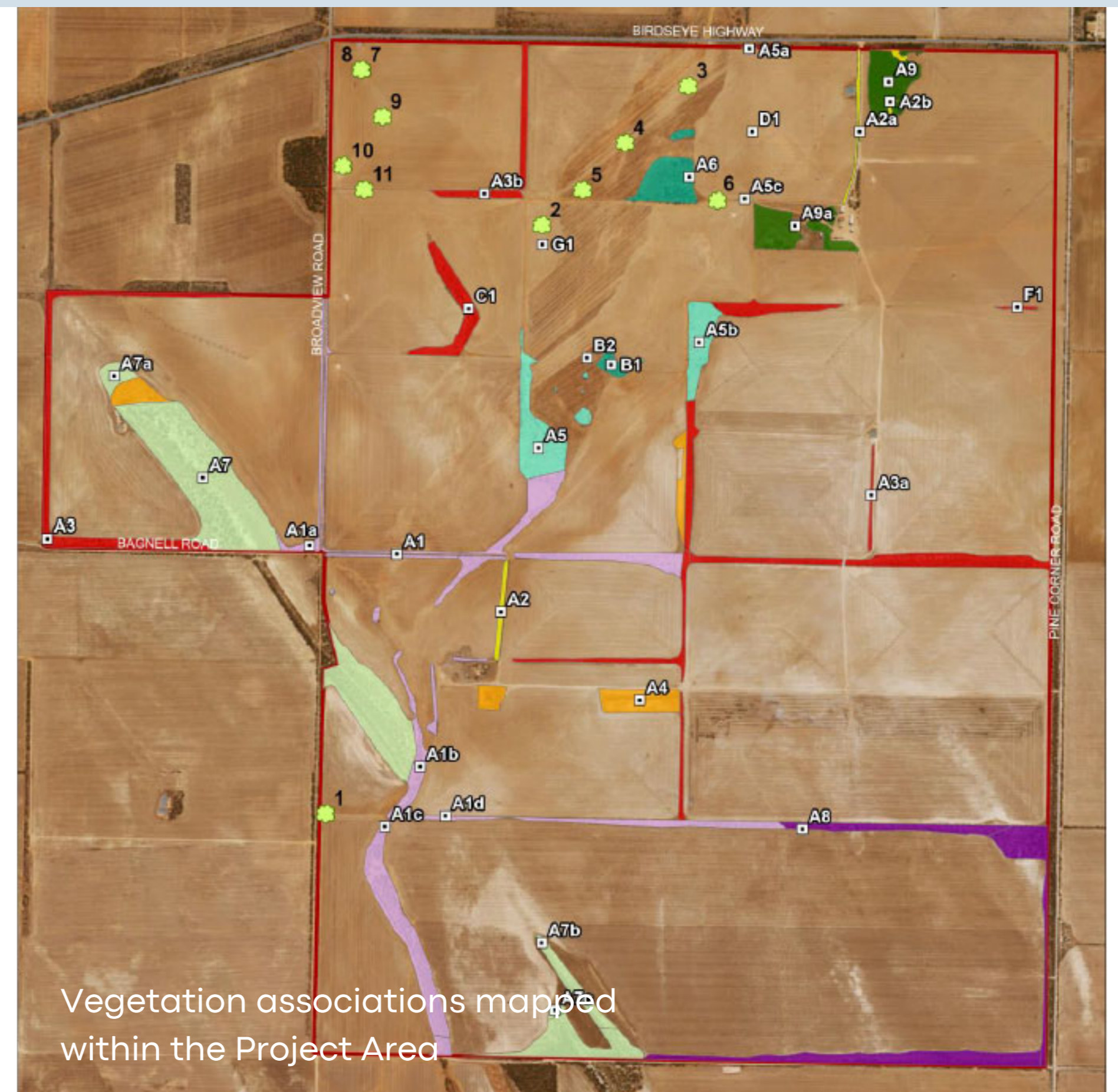
EBS have assessed Matters of National Environmental Significance (MNES) and determined that the development would not significantly impact any MNES. Clearance of native vegetation will be referred to and assessed by the Native Vegetation Council as part of the development application process.

	Description	Area (ha) across the Project Area	Area (ha) impacted
VA1	<i>Eucalyptus calycogona</i> and <i>E. socialis</i> ssp. <i>socialis</i> Mallee +/- <i>Melaleuca lanceolata</i>	28.122	2.915
VA2	<i>Enchylaena tomentosa</i> var. <i>tomentosa</i> , <i>Sclerolaena diacantha</i> and <i>Maireana brevifolia</i> Low shrubland +/- <i>Acacia notabilis</i>	2.144	0.577
VA3	<i>Eucalyptus socialis</i> ssp. <i>socialis</i> , <i>E. gracilis</i> and <i>E. phenax</i> ssp. <i>phenax</i> Mallee over <i>Melaleuca uncinata</i>	30.005	11.892
VA4	<i>Austrostipa</i> sp. and <i>Rytidosperma</i> sp. Grassland +/- <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> and <i>Vittadinia cervicalis</i> var. <i>cervicularis</i>	8.173	1.425
VA5	<i>Eucalyptus porosa</i> Open Mallee over <i>Enchylaena tomentosa</i> var. <i>tomentosa</i> and <i>Maireana brevifolia</i>	10.699	10.575
VA6	<i>Eucalyptus porosa</i> Open Mallee over <i>Triodia irritans</i>	5.758	0.949
VA7	<i>Eucalyptus gracilis</i> and <i>E. incrassata</i> Mallee over <i>Callitris gracilis</i> +/- <i>Triodia irritans</i>	40.098	0.00
VA8	<i>Eucalyptus calycogona</i> +/- <i>E. oleosa</i> Mallee over <i>Melaleuca uncinata</i>	15.034	0.132
VA9	<i>Eucalyptus gracilis</i> and <i>E. oleosa</i> Mallee over mixed chenopod shrubs +/- <i>Melaleuca pauperiflora</i> ssp. <i>mutica</i>	9.784	4.961
TOTAL		149.816	

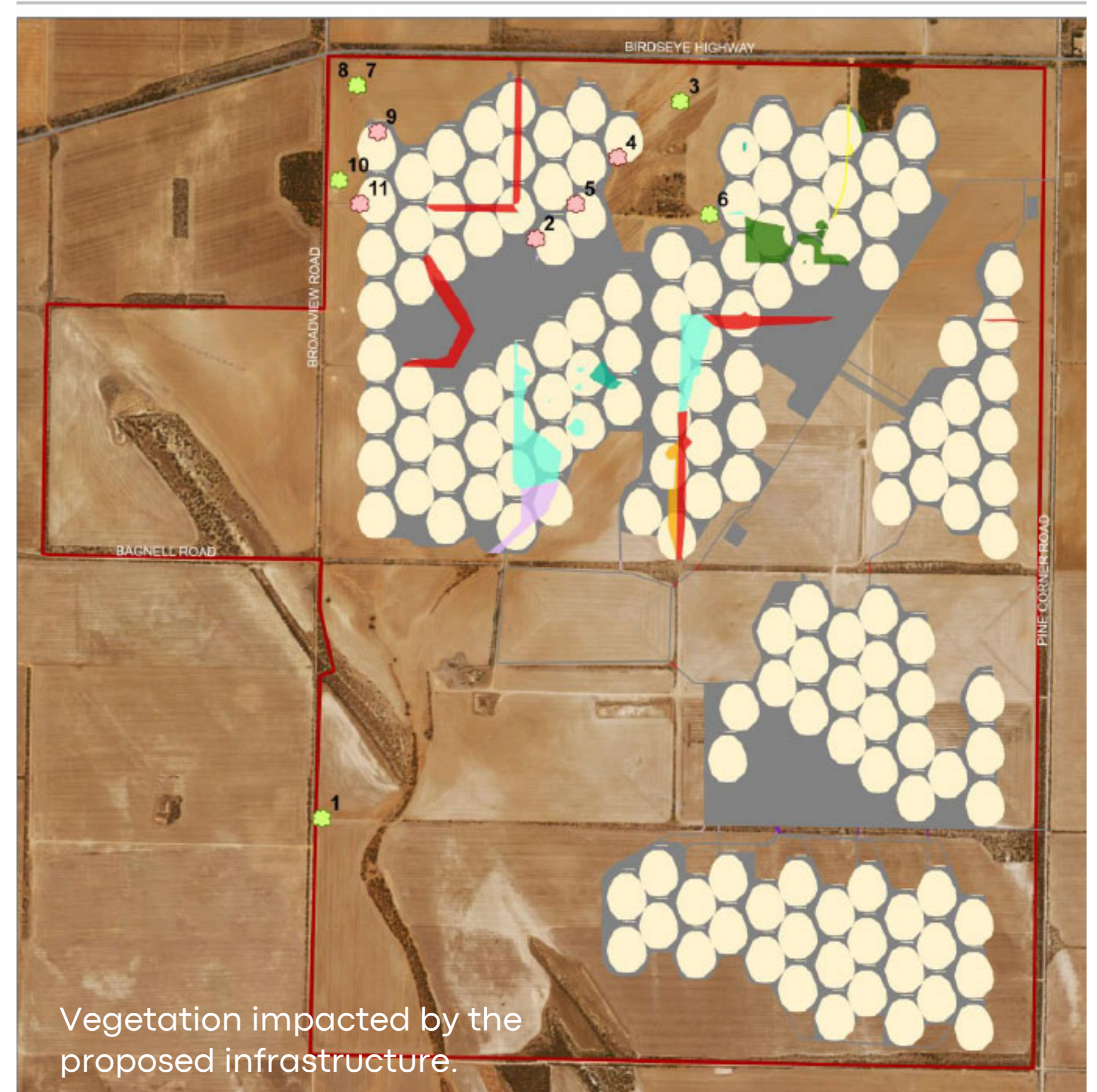
EBS Ecology (EBS) has undertaken desktop and field assessment of the subject land and the locality (approximately 10 kilometres radius) between 2021 and 2023. The majority of the subject land consists of cropping land, with scattered patches of native vegetation.

EBS Ecology observed the following across the subject land:

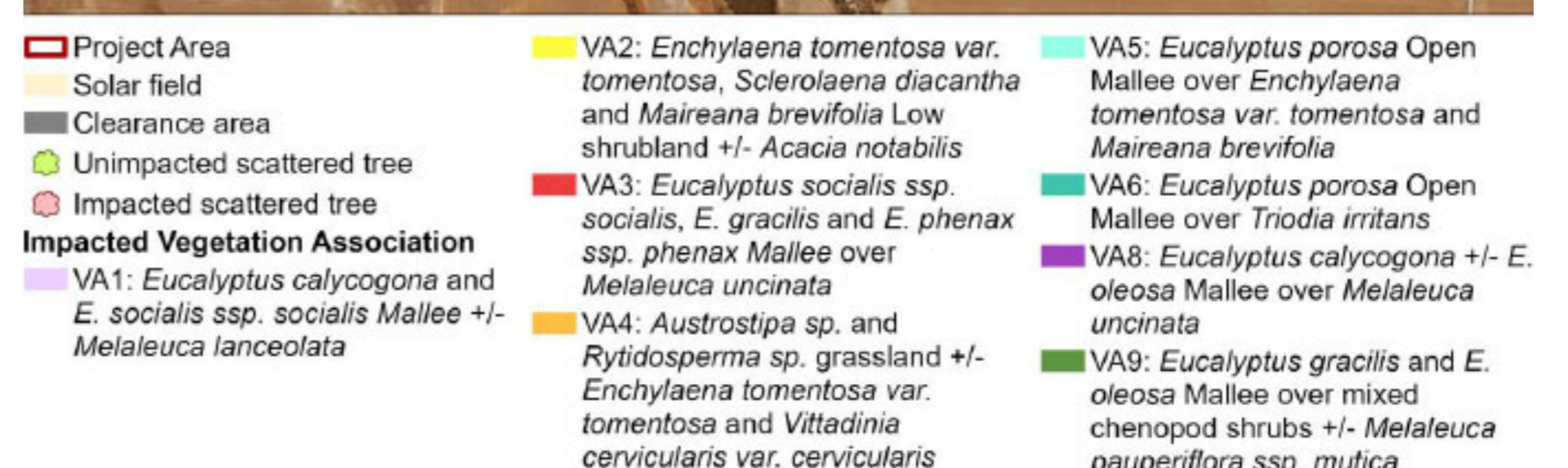
- No threatened flora or fauna.
- 36 fauna species, consisting of 32 bird species, three mammals, and one reptile. Six of these species were introduced.
- surveys recorded 144 plant species, of which 33 were introduced. Seven introduced plant species are declared plants under the LSA Act.
- A total of 11 scattered trees consisting of five different species.
- A total of nine Vegetation Associations (VA) were in varying condition (moderate to good).



Vegetation associations mapped within the Project Area



Vegetation impacted by the proposed infrastructure.



Yadnarie Renewable Energy Facility

Planning and Design Code

The subject land is located within the Rural Zone of the Planning and Design Code.

In addition to the Zone, the subject land is contained in several Overlays and Technical and Numerical variations.

Overlays

- Dwelling Excision.
- Hazards (Bushfire - Regional).
- Hazards (Flooding - Evidence Required).
- Key Outback and Rural Routes.
- Native Vegetation.
- Water Resources.

Zone

- Rural

Variations

- Minimum Site Area is 40 hectares

Nature of Proposed Use

Part 7 of the Planning and Design Code defines renewable energy facility as:

Renewable Energy Facility

Means land and/or water used to generate electricity from a renewable source such as wind, solar, tidal, hydropower, biomass and/or geothermal.

This use may also include:

- (a) any associated facility for the storage and/or transmission of the generated electricity;
- (b) any building or structure used in connection with the generation of electricity.

Within the Rural Zone, a renewable energy facility is not an 'accepted' or 'deemed-to-satisfy', form of development. Renewable energy facilities are a 'restricted' form of development within the Rural Zone should either a Significant Landscape Protection Overlay or a Character Preservation Overlay apply to the subject land. Neither of these overlays apply to the subject land. Development of a renewable energy facility on the subject land within the Rural Zone is a 'performance assessed' form of development.

In accordance with the Planning and Design Code, "energy generation and storage facilities" are an activity of environmental significance which requires referral to the Environment Protection Authority (EPA). More specifically, "development involving an electricity generating plant (other than a battery storage facility or pumped hydroelectricity production works) using any other energy source (excluding fuel burning and solar photovoltaic) with a capacity to generate or store 30 megawatts (MW) or more", requires referral to the EPA. The development proposes to generate 150MW solar and subsequently requires referral to the EPA as part of the application process.

Yadnarie Renewable Energy Facility

Development Application

Development Application Process

Yadnarie Renewable Energy Facility requires a development authorisation pursuant to the Planning, Development and Infrastructure Act 2016 (PDI Act).

The State Planning Commission (SPC) via the State Commission Assessment Panel (SCAP) will process the development application and make a recommendation to the Minister for Planning. Council will not determine the development application but will be provided the opportunity to make comment as a referral agency.

Technical reports associated with the project are currently being finalised and the lodgement of a comprehensive development application is anticipated in 3rd quarter 2024.

Crown Sponsorship

In accordance with Section 131(2)(c) of the Planning, Development and Infrastructure Act 2016 (the PDI Act), Photon Energy are proposing to develop electricity infrastructure, with the electricity proposed to be generated by the PV Ultra (solar) and Thermal Hydro facilities, to be distributed to the national grid. The provision of electric connection point to the national electricity grid accords with Section 131 of the PDI Act, as "essential infrastructure".

Crown sponsorship for the proposal has been obtained from the Department for Energy and Mining (DEM).

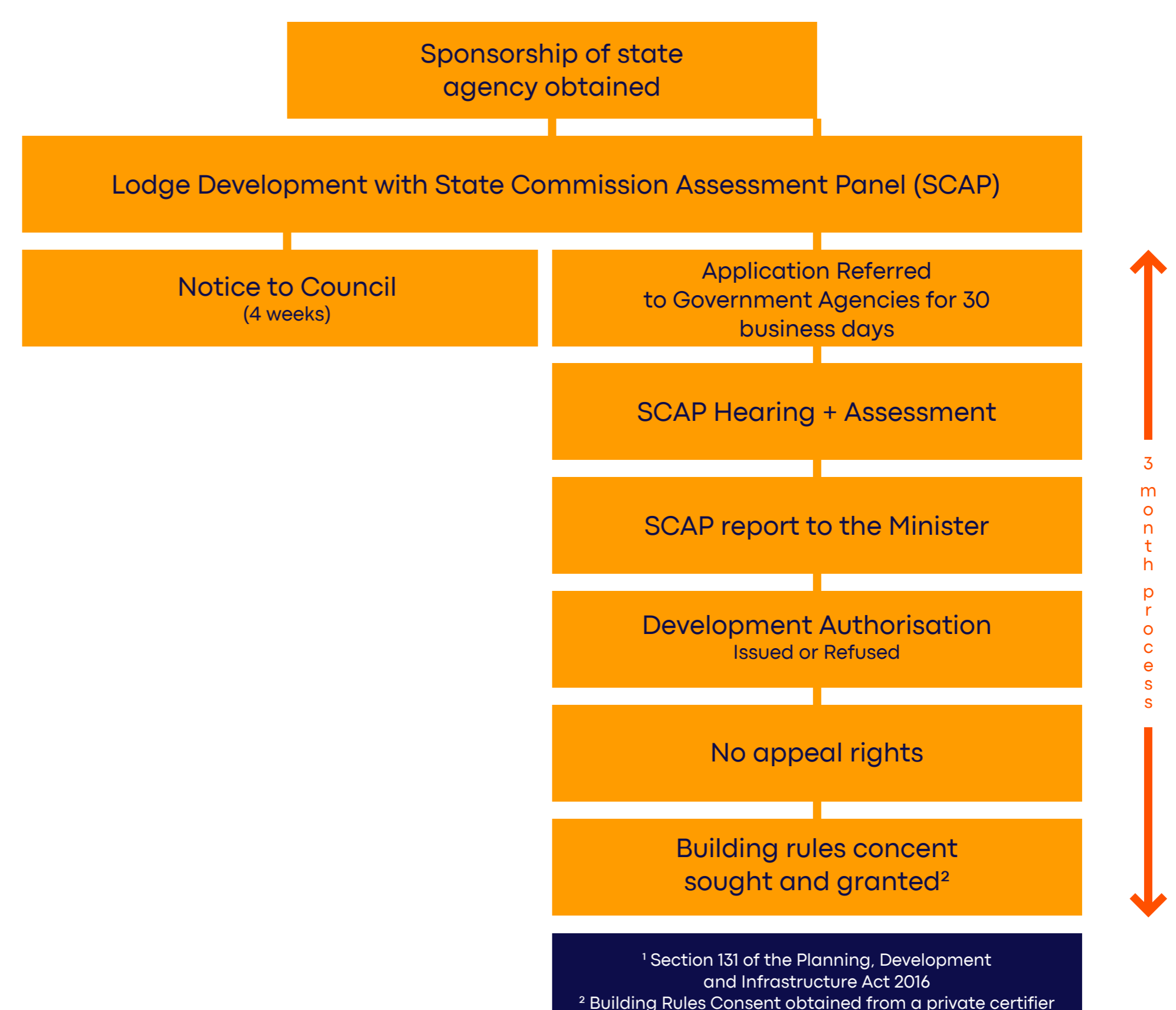
Public Notification & Submissions

The State Commission Assessment Panel will undertake a formal public consultation process as part of the development application process. The Commission is required by public notice to invite interested persons to make written submissions when the development cost exceeds \$10 million.

A notice of an application is published on the SA planning portal and in a newspaper circulating generally in the area of the State that is relevant to the proposed development.

The notification period is at least 15 business days for written submissions. Written submissions will be considered as part of the assessment by the Commission. An opportunity would be made available to any interested person who has made a written submission to the Commission to make a verbal submission at a meeting of the State Commission Assessment Panel.

Crown Development¹ Essential Infrastructure Process



Yadnarie Renewable Energy Facility

Project Benefits

Socio-Economic

Local Manufacturing

The solar module component of RayGen's technology is manufactured in Melbourne. RayGen has a 170MW per annum satellite-grade solar module manufacturing line in Hawthorn East.

Low Cost Storage

The project will increase availability of electricity in the market by enabling low-cost storage.

RayGen's solar-plus-storage will ensure that grid demands are met, even in cases where other generation in the electricity grid is shut down due to an unplanned event.

Local Construction

The project will require approximately 250 people on average over the term of the project construction. A large portion of the work is civil construction and where feasible and possible will employ local resources and companies. The completed project will require approximately 20 people for the ongoing maintenance and operation of the plant and equipment.

Retain Value of Agricultural Land

RayGen's solar-plus-storage technology enables dual land use with agriculture, such as sheep grazing. RayGen's technology has been operating in Newbridge, Victoria, since 2015, with sheep grazing around the heliostats.



RayGen site at Newbridge, Victoria

Yadnarie Renewable Energy Facility

Project Benefits

Investment

A capital investment of approximately \$750 million is anticipated to develop the project, with an estimated \$80-100 million in on site labour.

Grid Stability

The generation of renewable energy from Yadnarie Renewable Energy Facility will provide stable and affordable electricity over the long term.

RayGen's solar-plus-storage technology provides medium-long duration grid scale storage. RayGen's technology offers dispatchable, synchronous generation and has a two-way operating philosophy enabling the system to store power from the grid during times of oversupply. The project will connect directly to the National Electricity Market (NEM) on the Eyre Peninsula, to free capacity on the grid. This project will impact energy affordability in South Australia in two ways:

1

The storage medium used for RayGen's technology is highly efficient and low cost, enabling dispatch of low-cost electricity to the grid. RayGen's unique technology uses water as a storage medium (with a closed loop system so no water waste occurs). Water is low-cost and non-toxic; and can easily be scaled to larger sizes. RayGen's technology has a lower capital cost of storage in comparison with lithium-ion batteries and will be cost-competitive with pumped hydro storage.

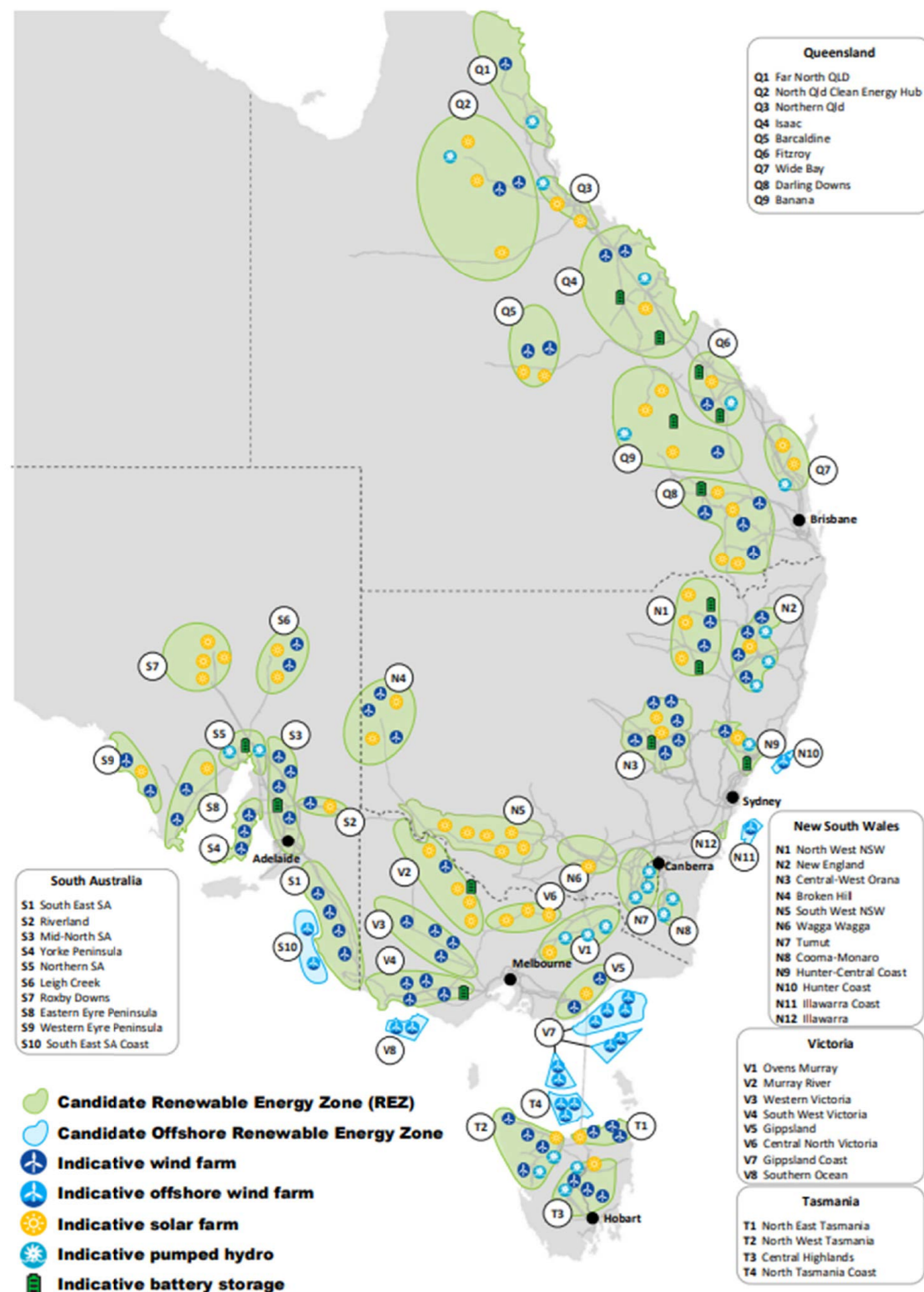


2

The project will provide synchronous, on-demand generation to the grid using a flexible operating philosophy that enables power to be stored from the grid during times of intermittent oversupply.

Yadnarie Renewable Energy Facility

Renewable Energy South Australia



- ▶ The Australian Energy Market Operator (AEMO) has identified that with coal retiring, renewable energy connected with transmission and distribution, firmed with storage and backed up by gas-powered generation is the lowest-cost way to supply electricity to homes and businesses as Australia transitions to a net zero economy:
- ▶ Low-cost renewable energy will take advantage of the abundant wind, solar and hydro resources that Australia has to offer.
- ▶ Firming technology like pumped hydro, batteries, and gas-powered generation will smooth out the peaks and fill in the gaps from that variable renewable energy.
- ▶ New transmission and modernised distribution networks will connect these new and diverse low-cost sources of generation to our towns, cities and industry.
- ▶ Upgraded power systems will be capable of running, at times, entirely on renewable energy.

Source: Australian Energy Market Operator (AEMO) 2024
Integrated System Plan for the National Electricity Market

One key feature of the national electricity system is the new 900km high-voltage transmission interconnector between Robertstown, in South Australia's mid-north, and Wagga Wagga, in New South Wales. The South Australian section of the interconnector, known as Project EnergyConnect, from Robertstown to the SA Border commenced in February 2022 and is now complete.

Project EnergyConnect is anticipated to reduce power bills for residential and business customers in South Australia and New South Wales, lower wholesale electricity costs in both states, improve network and energy security and support Australia's energy transformation towards a low carbon emissions future. It would also unlock renewable generation development and allow greater market exports, and unlock much needed Renewable Energy Zones.

Yadnarie Renewable Energy Facility

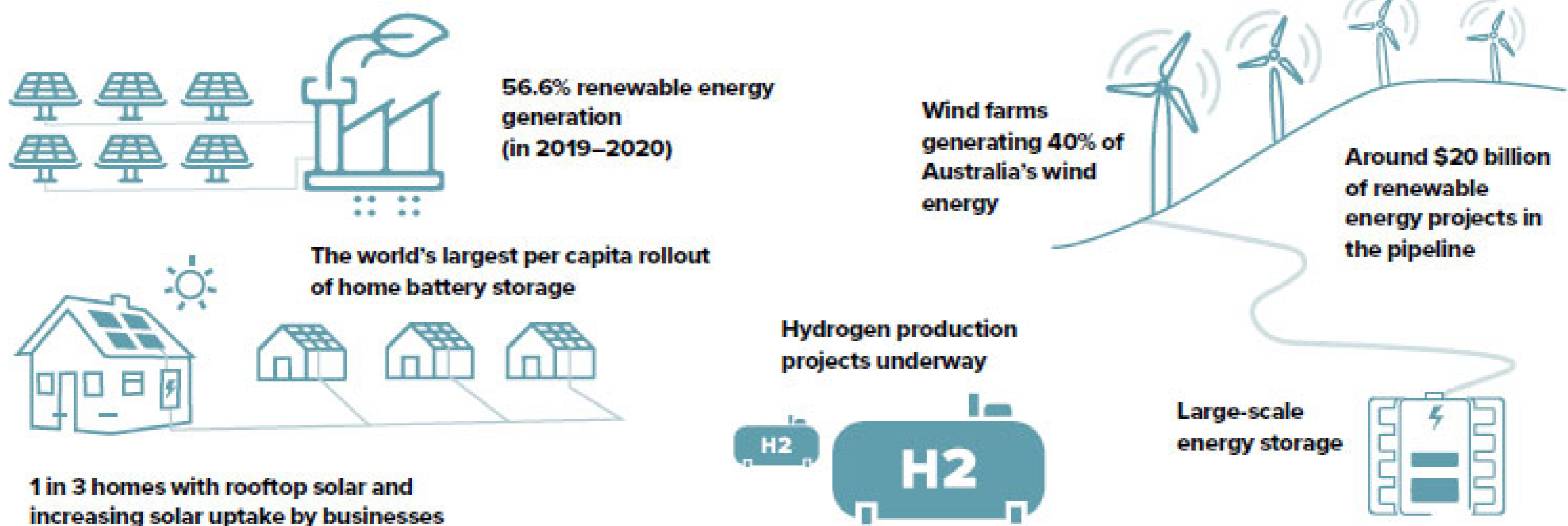
Renewable Energy South Australia

On 31 May 2022, the South Australian Parliament declared a climate emergency, committing to restoring a safe climate by transforming the economy to net zero emissions.

A key objective of the South Australian Government's Climate Change Action Plan is to accelerate the renewable energy economy.

South Australia has world-class renewable energy resources, including abundant wind resources and outstanding solar capacity. The Climate Change Action Plan¹ anticipates new technologies, markets and opportunities in the next five years. The South Australian government is open to these new opportunities.

South Australia currently has ...



South Australia's transformation to a net zero emissions economy and a national and international exporter of clean energy could mean achieving a level of renewable energy that is more than 500% of the current local grid demand by 2050. The actions of the Climate Change Action Plan include:

Actions 2021–25

1.1. Drive the continued development of renewable energy and energy storage	The government will continue to unlock investment in, and support growth of, renewable electricity generation and storage, to enable South Australia to become a 100% net renewable energy generator by 2030.
1.2. Fast-track construction of a new South Australia to New South Wales high capacity electricity interconnector	The government is fast-tracking a new interconnector between South Australia and New South Wales to improve energy security, enable increased energy export and facilitate the transition to low emissions energy sources.
1.3. Implement <i>South Australia's Energy Solution</i>	The government will implement the critical energy and smart technology actions in <i>South Australia's Energy Solution</i> to allow South Australians to move to secure and affordable 100% net renewable energy. This will allow rooftop solar to increase substantially while addressing grid security and resilience.
1.4. Implement energy demand management and productivity programs	The government will implement a range of policies and projects to manage electricity demand and improve energy efficiency to align with wind and solar generation and new modes of energy storage and to reduce costs. This includes the <i>Retailer Energy Productivity Scheme</i> that sets annual targets for energy retailers to deliver energy productivity activities to households and businesses from 2021.
1.5. Increase renewable electricity generation in remote communities	Renewable energy will be integrated into the <i>Remote Area Energy Supply Scheme</i> , to reduce diesel consumption and emissions and to ensure a safe, reliable and cost-effective supply is available in remote South Australian towns.

¹ South Australian Government Climate Change Action Plan 2021-2025

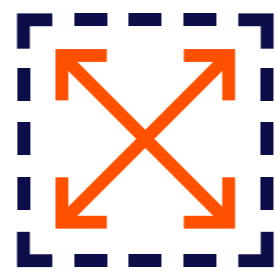
² AEMO – Australian Energy Market Operator

Yadnarie Renewable Energy Facility

What is being proposed?



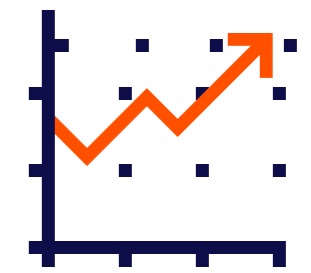
Location
Yadnarie, South Australia



Size
1,530 ha¹



Construction Period
Q3 2025 – Q4 2029²



Capacity
150 MWp DC



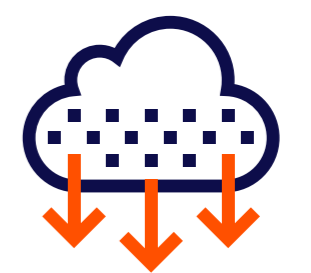
Storage Capacity
≥720MWh³



Grid Connection
90 MWp



Annual Production
252,000 MWh



Annual CO₂ Saving
750,000 t

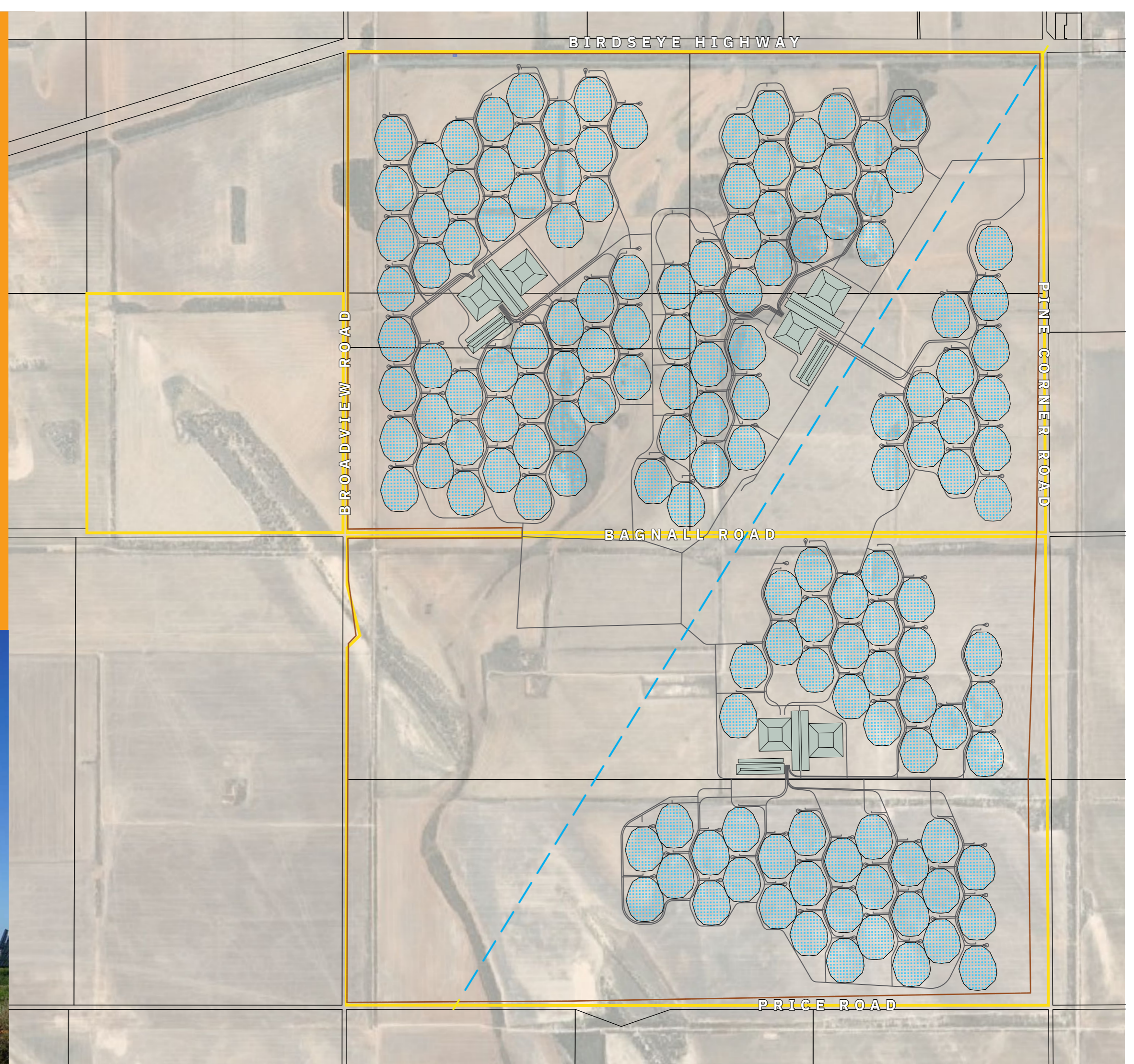
¹ Approximately 1,530ha overall site area.
² Stage 1 (50MWp): Q3 2025 – Q3 2027, Stage 2 (additional 100MWp): Q4 2027 – Q4 2029
³ At least 720 Megawatt hours, equivalent to 8 hours of dispatchable energy

Site Layout

Yadnarie Renewable Energy Facility

-  Project Area
-  Heliostat Field
-  Thermal Hydro Power Black
-  Transmission Line

RayGen Power Plant Carwarp, Victoria



Yadnarie Renewable Energy Facility

Elements of the Project

The elements to be developed as part of the project include:

Heliostats

- 150 fields of rotational mirrors (heliostats) orientated north.
- Each field comprises approximately 273 individual heliostats.
- Each heliostat is approximately between 2.6 and 5.6 metres above the ground and mounted on steel posts.

Receivers

- Each receiver is approximately 40- 45m high.
- There is one receiver per field of 273 heliostats.
- The receiver faces the field of heliostats and a southerly direction.



Energy Storage

- Hydro Thermal Pits: three cold and three hot pits.
- Each pit is 28,000 square metres with a height above ground level of 3.0 metres
- Each pit has a capacity of up to 230,000 cubic metres
- All pits are insulated and covered. They only need to be filled once with no ongoing water requirements.



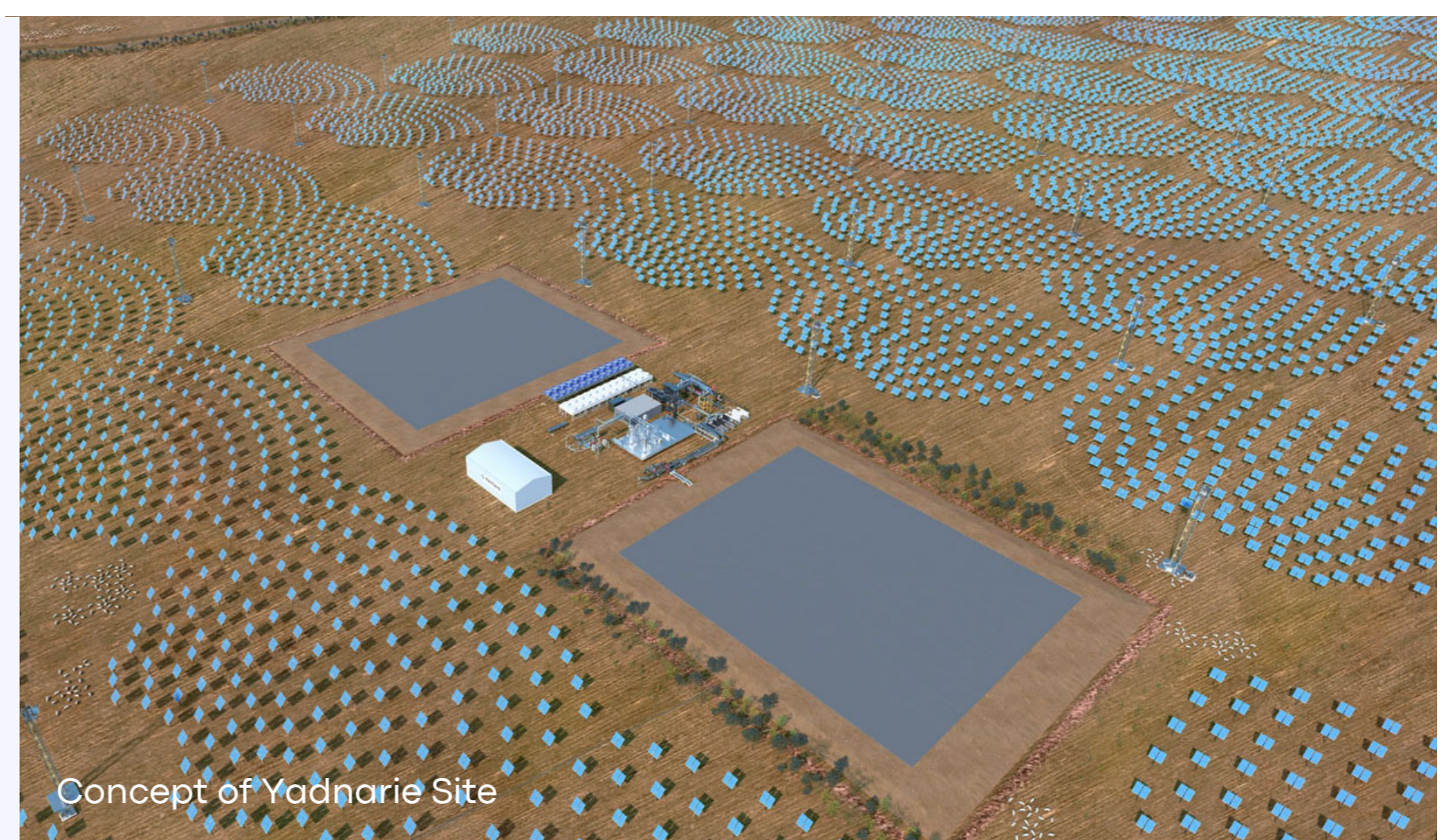
Yadnarie Renewable Energy Facility

Elements of the Project

The elements to be developed as part of the project include:

Organic Rankine Cycle Engine: Three units of Organic Rankine Cycle (ORC) engine, each with net capacity of 25MW.

- Heat Exchangers
- Tanks
- Various pumps
- Large Chiller and Heat Pump units
- Connecting pipework
- Electrical infrastructure including switch rooms and transformers



An Organic Rankine Cycle engine (ORC) is a heat to power turbine, proven in 3.2GW of deployments globally. The ORC is similar to a steam turbine, but with a working fluid that boils below 100°C. A heat source 'boils' the working fluid, generating pressure from vapourisation that can be used to spin a turbine (generating electricity). A cold source then cools the working fluid back into a liquid, for the cycle to begin again.

In RayGen's system, the ORC uses a pressurised ammonia, and the hot and cold are sourced from the water reservoirs.

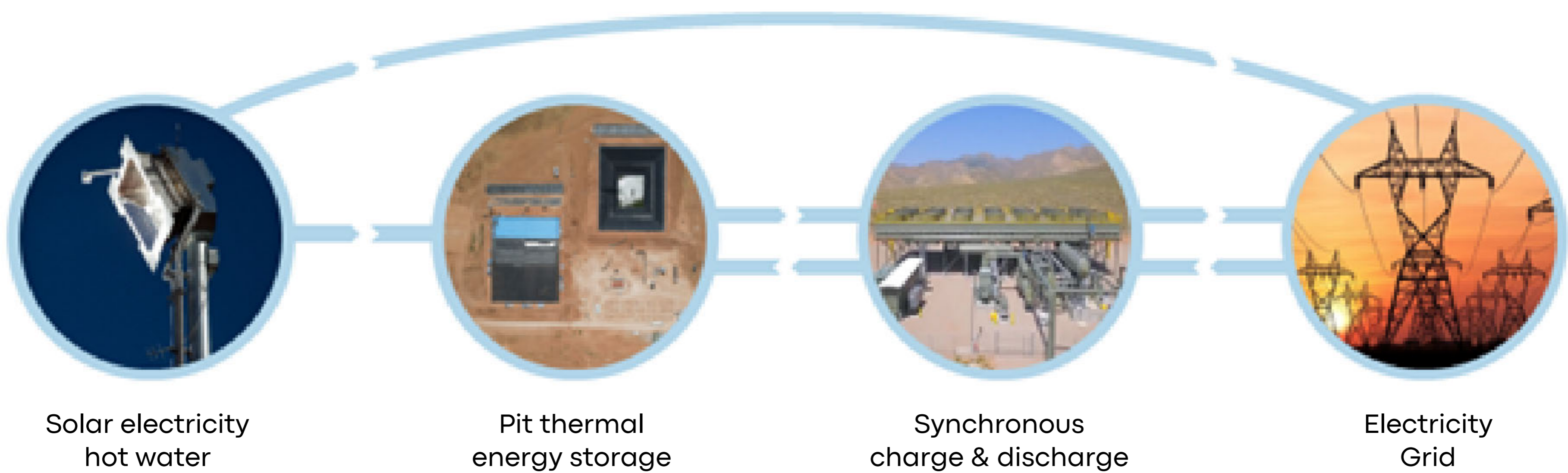
Ancillary Buildings & Infrastructure:

- Substation
- Underground electrical cable reticulation on site
- Connection via overhead connection to the Yadnarie substation; or to the existing 132kV overhead electricity line.
- Operations and maintenance building and compound.
- Construction compound.
- Security fencing around the site.
- Internal access roads.



Yadnarie Renewable Energy Facility

How does it work?


1


Solar Generation

PV Ultra: PV Ultra generates electricity and heated water from solar modules, operating at power density at 4,000 times higher than traditional solar panels.

2

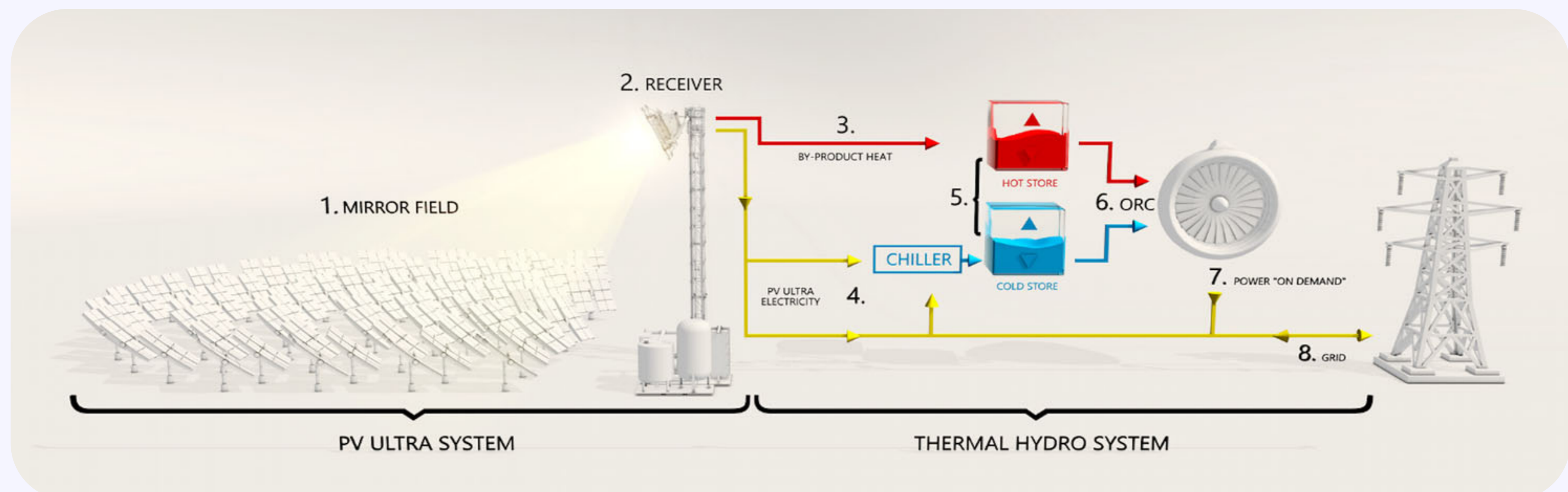

Storage

Pit Thermal Energy Storage: A hot reservoir is heated by the PV Ultra system or a heat pump. The cold reservoir is cooled with an electric chiller, using electricity from PV Ultra or the grid.

3


Heat to Power

Organic Rankine Cycle (ORC): the stored temperature difference is used to generate electricity using an Organic Rankine Cycle engine, optimised to operate as a thermal turbine below 100°C.



There are two cycles, the "charge" and "discharge" cycles.

The charge cycle comprises:

- A field of smart mirrors concentrates sunlight onto a raised PV Ultra receiver.
- PV Ultra receiver converts sunlight to power with 90% efficiency. One-third to electricity and two-thirds to heat using highly efficient, actively cooled photovoltaic modules.
- The generated heat is stored in a nearby water reservoir.
- The generated electricity is used to chill water in a second reservoir or sold back to the grid.

The discharge cycle comprises:

- The insulated reservoirs maintain a temperature difference of 90°C, storing energy equivalent to a Pumped Hydro system with a height difference of 1,000m.
- The stored difference in temperature is used to drive a heat to power ORC engine.
- The engine provides the grid with synchronous, reliable and on-demand power.
- Electricity can also be imported from and returned to the grid on demand.

Yadnarie Renewable Energy Facility

Traffic

MFY Traffic and Transport consultants have considered various aspects of the project, including site access, vehicle movements during construction and operational phases, and the potential for driver distraction from the heliostats and receivers.

Construction Traffic

Access to the site is proposed from Pine Corner Road. The access points will be designed to cater for Over-sized Over-mass (OSOM) vehicles and B-double vehicles during construction. There will be a requirement for up to 30 oversize overmass (OSOM) vehicles of various sizes to facilitate the construction of each stage. Most of these vehicles will be low loaders with overmass items. It is anticipated that these vehicles will require escort vehicles.

OSOM vehicles will be able to use the existing OSOM routes, including Birdseye Highway to access the site. Appropriate permits will be required where the route to the site detours from roads gazetted for the use of OSOM vehicles (for example, Pine Corner Road).

Stage 1 of the project will include the construction of Power Block 1 and associated infrastructure. Stage 1 will be constructed in 24 months and the following number of vehicles are estimated to access the site during the construction period:

- approximately 32,000 light vehicles;
- approximately 900 rigid vehicles;
- approximately 1,000 semi-trailer vehicles; and
- approximately 30 OSOM vehicles.

Based on a five-day work week, the average daily traffic generated by the development will equate to approximately 130 trips per day. It is estimated that there could be approximately 40 trips in one hour when drivers are travelling to and from work.

Stage 2 of the project will include the construction of Power Block 2 and 3 and associated infrastructure. Stage 2 will be constructed in 24 months and, therefore, will potentially generate twice the volume of traffic generated in Stage 1. Accordingly, Stage 2 of the construction could generate approximately 260 trips per day or 80 trips in one hour.

The above forecast volumes will have no impact on the existing capacity on Pine Corner Road and will not change its nature or function. Notwithstanding this, it is proposed to provide an intersection treatment at the Pine Corner Road/Birdseye Highway intersection to provide improved traffic safety for existing road users and construction drivers accessing the development site.

Driver Distraction

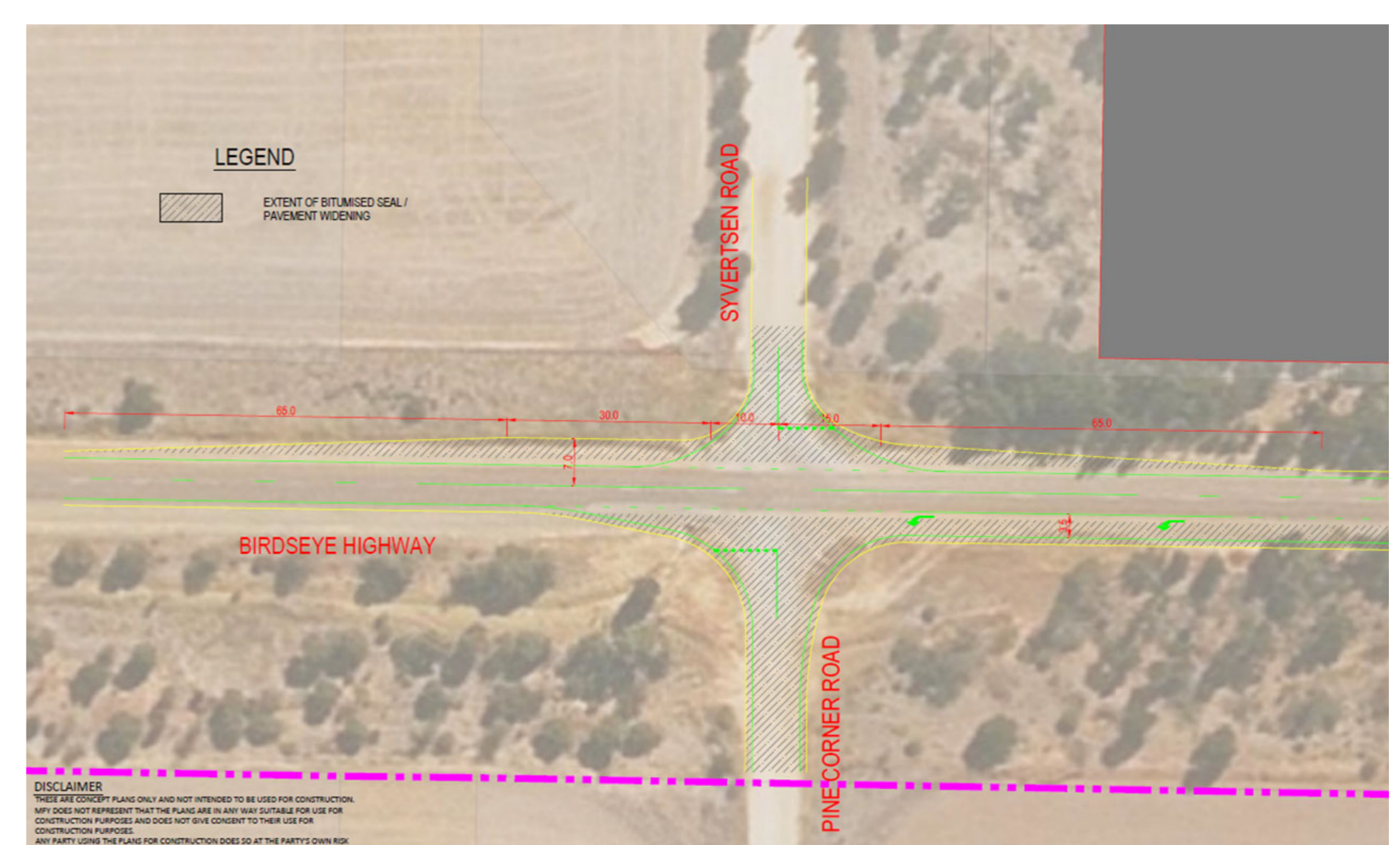
MFY traffic consultants undertook an assessment of the potential impact of glare from light reflected between the heliostat and the receiver.

The glare from this reflection of light has been assessed to understand if it would present a distraction to drivers and is presented as a "cone of vision" assessment, that is, the location of the heliostats and the receivers with respect to a driver's general field of vision while driving.

The assessment identified that all of the heliostats adjacent the Birdseye Highway are outside the glare mapped zone for drivers on the Birdseye Highway. This is important as this route presents the highest risk for drivers associated with the proposal.

Some of the heliostats and receivers on local roads are in locations where there is a low potential for after-image from glare (that is, within the green ocular safety zone), thus identifying a risk of distraction or the potential for an after image for drivers.

An effective method to mitigate the risk of the after image or ocular damage is to ensure the driver does not have line of sight to the receiver, by providing an effective screen (mound/vegetation or similar). Minimising risk to drivers has been considered during the design phase of the development, and locations identified that would require new or additional screen landscaping along parts of Pine Corner Road, Price Road and Broadview Road.



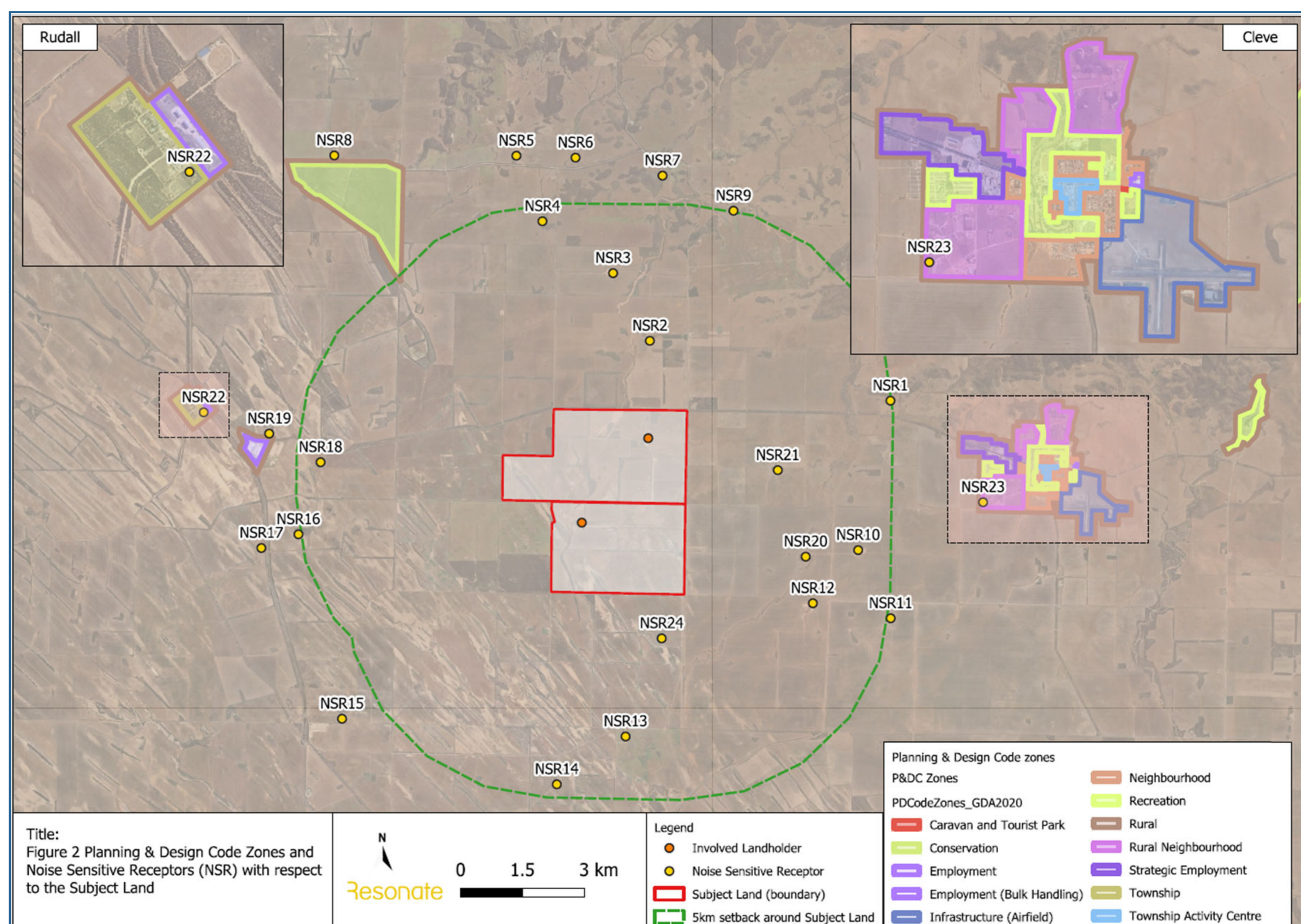
BAR Treatment (Solar Farm Access Road)
Traffic Design (Preliminary)

Source: MFY

Yadnarie Renewable Energy Facility

Noise

An environmental noise assessment of the proposed development has been undertaken by Resonate (acoustic engineers) to assess the potential for noise impacts on adjoining land. Resonate identified a total of 24 noise sensitive receptors, which includes non-involved landowner dwellings within a 5-kilometre buffer around the subject land, and representative dwellings in the Cleve and Rudall townships.



Noise sources associated with the development include chillers, condensing units, pumps, turbines, turboexpander generators and electrical equipment such as, transformers and inverters. The potential noise emissions from the development have been assessed against the requirements of the Planning & Design Code and the South Australian Environmental Noise Policy.

Modelling of noise from the proposed development was undertaken utilising manufacturer's data, and estimates based on the design power and duty of proposed plant, and measurements undertaken by Resonate of plant and equipment at RayGen's commercial demonstration facility at Carwarp, Victoria. The assessment by Resonate demonstrates that operation of the power plant is predicted to comply with the continuous noise requirements of the Noise Environmental Protection (Noise) Policy at all noise sensitive receptors surrounding the development.

Yadnarie Renewable Energy Facility

Bushfire

The Upper Eyre Peninsula is a bushfire-prone environment. The Yadnarie project area falls within the Eastern Eyre Peninsula (EEP) Fire Ban District (FBD). The proposed facility is to be built within the 'Primary Response Zone' (PRZ) of the Cleve CFS Brigade. Cleve CFS Brigade is a member of the Eastern Eyre Peninsula (EEP) CFS Group.

A bushfire assessment has been undertaken by consultants AJL Solutions as part of the project planning, so that the project can incorporate measures to reduce the frequency, spread and impact of bushfires (ie. rural fires, meaning bush, scrub, grass and crop fires).

The renewable energy facility will be designed with adequate vehicle access for CFS vehicles to and within the proposed facility, along with firebreaks from vegetation. In addition, the site will accommodate firefighting water supply and infrastructure. Fuel loads in and around the heliostat fields will be managed by vegetation control, including the use of sheep grazing.

A detailed emergency management plan will be prepared for the site and this will be prepared in consultation with the CFS.

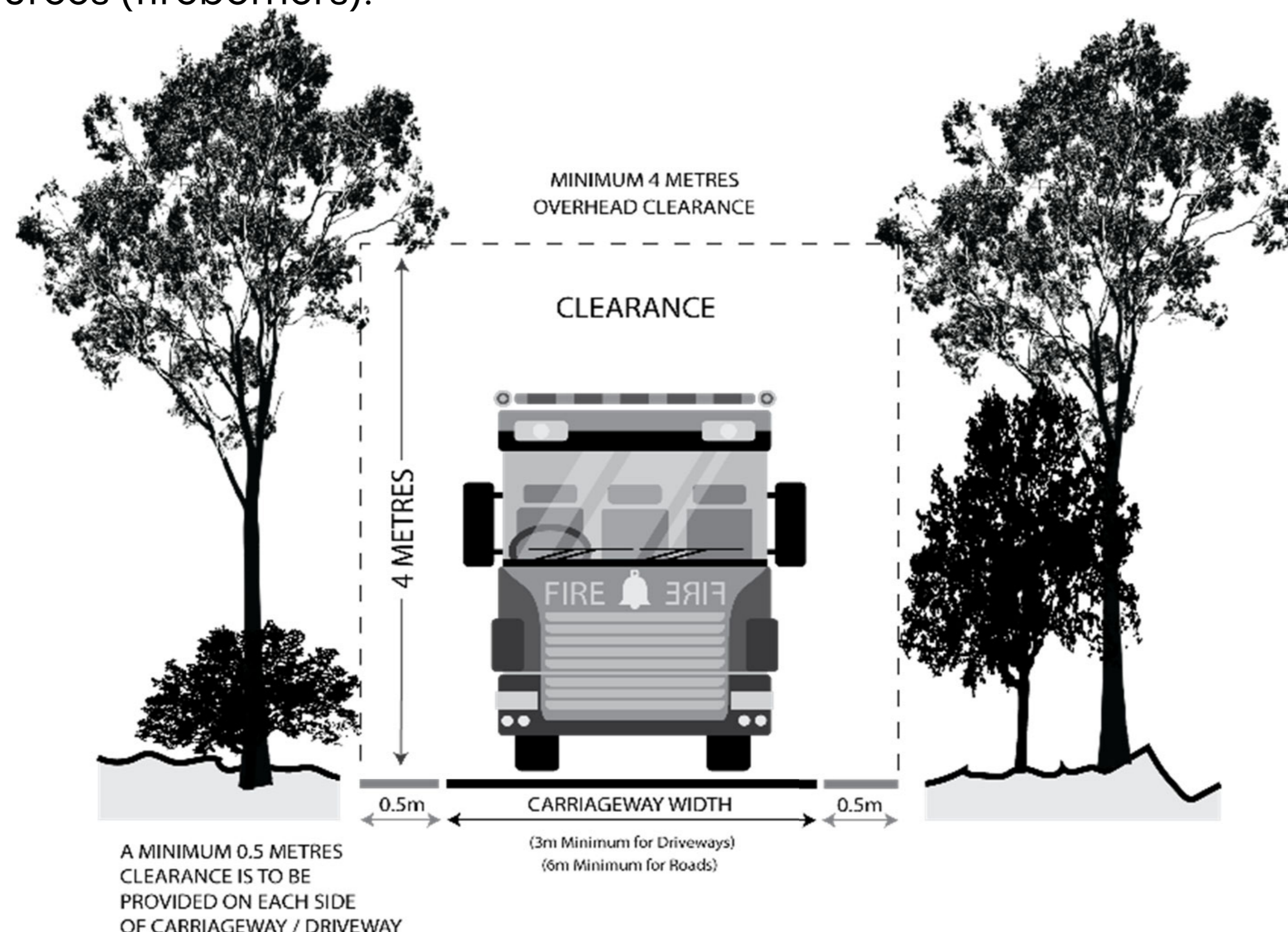
CFS Response

As with all developments such as the Yadnarie solar farm and energy storage facility, CFS will respond in the normal manner to all rural fires in or near the development with both ground-based firefighting resources (fire trucks) and, if required and available, aerial firefighting resources (firebombers).

The management of rural fires in or near a solar farm is almost identical to any rural fire. The only difference will be that if aerial firefighting resources attend, they will be made aware of the fact that there are multiple 45-metre receiver towers and numerous heliostats present. They will then treat the towers and heliostats much the same as any other elevated hazards or sensitive ground-based infrastructure such as solar panels and transmission lines.

Aircraft (firebombers) used for aerial firefighting in South Australia may be responded to anywhere in the State to uncontrolled bushfires and grassfires however, priority for response will be given to where the risks to 'human life' and 'community assets' are greatest. Therefore, the high-priority response areas are 'predefined' and are known as 'Primary Response Zones' (PRZ). The Upper Eyre Peninsula is outside the PRZ, an area of the state known as the 'Secondary Response Zone' (SRZ). Outside the PRZs or outside of the predetermined forecast fire weather criteria, a CFS Incident Controllers may request the response of firebombers to rural fires. A request for an aircraft does not guarantee a response.

The elevated infrastructure associated with as proposed for Yadnarie (i.e., many receiver towers) and pre-existing high-voltage transmission lines pose risks for aerial firefighting operations. However, with appropriate planning and management, the risks posed to aerial firefighting operations can be mitigated, such that the presence of a renewable energy facility as proposed for Yadnarie, will not universally exclude the use of aerial firefighting resource.



Yadnarie Renewable Energy Facility

Cultural Heritage

Acknowledgement of Country

Photon Energy and RayGen acknowledge the Barngarla people as the Traditional Custodians of the land on which the renewable energy project is proposed to be developed, and respects the Barngarla people's spiritual relationship with their Country and acknowledge and pay respect to Elders past, present and emerging.



The Yadnarie renewable energy facility is within the Barngarla Native Title Claim Area. The Federal Court has made a determination in relation to native title and deemed that it does not exist at this location. Photon Energy are seeking to liaise with the Barngarla Determination Aboriginal Corporation (BDAC).

As part of the project feasibility, a preliminary desktop assessment including a search of the AGD-AAR Taa Wika Register, which indicates there are no known Aboriginal heritage sites within the project area. A desktop heritage assessment has considered the Aboriginal heritage context for the area, the environmental landforms, and the level of previous development, and it was assessed that there is a low risk of works encountering unknown Aboriginal sites and objects

in previously developed/ploughed areas, and a moderate risk in undeveloped/unploughed areas (i.e., seasonal creeks, creek margins, elevated sandy areas). The site layout has sought to minimise infrastructure within low-lying areas/seasonal creeks and the elevated dunes.

Photon Energy are aware of their responsibility under the Aboriginal Heritage Act 1988 (AHA) to protect Aboriginal heritage sites. Should a previously unknown Aboriginal heritage site be discovered during works and cannot be avoided, Ministerial authorisation under section 23 of the AHA will be required.

Yadnarrie Renewable Energy Facility

Landscape & Visual Impact Assessment

WAX Design in association with Brett Grimm Landscape Architect (BGLA) have assessed the potential visual impact of the proposed renewable energy facility. The assessment evaluates the existing landscape character and the degree of visual change that is likely to result from the proposed development within the regional locality (10 kilometres).

The potential visual impact is assessed using the Grimke matrix methodology that involves onsite assessments, GIS modelling, the preparation of photomontages and a detailed visual impact assessment to illustrate the predicted visual effect of the project within the defined locality. In addition to this methodology, Wax Design and BGLA undertook a site inspection of the RayGen Carwarp project, near Mildura in Victoria. They observed that the visual effect of infrastructure of the RayGen technology is predominantly caused by the receiver towers, which form brightly lit reflective objects within the landscape. These elements appear like bright lights, similar to sports field lights. The mirrors of the heliostats appear as a fragmented collection of infrastructure elements.

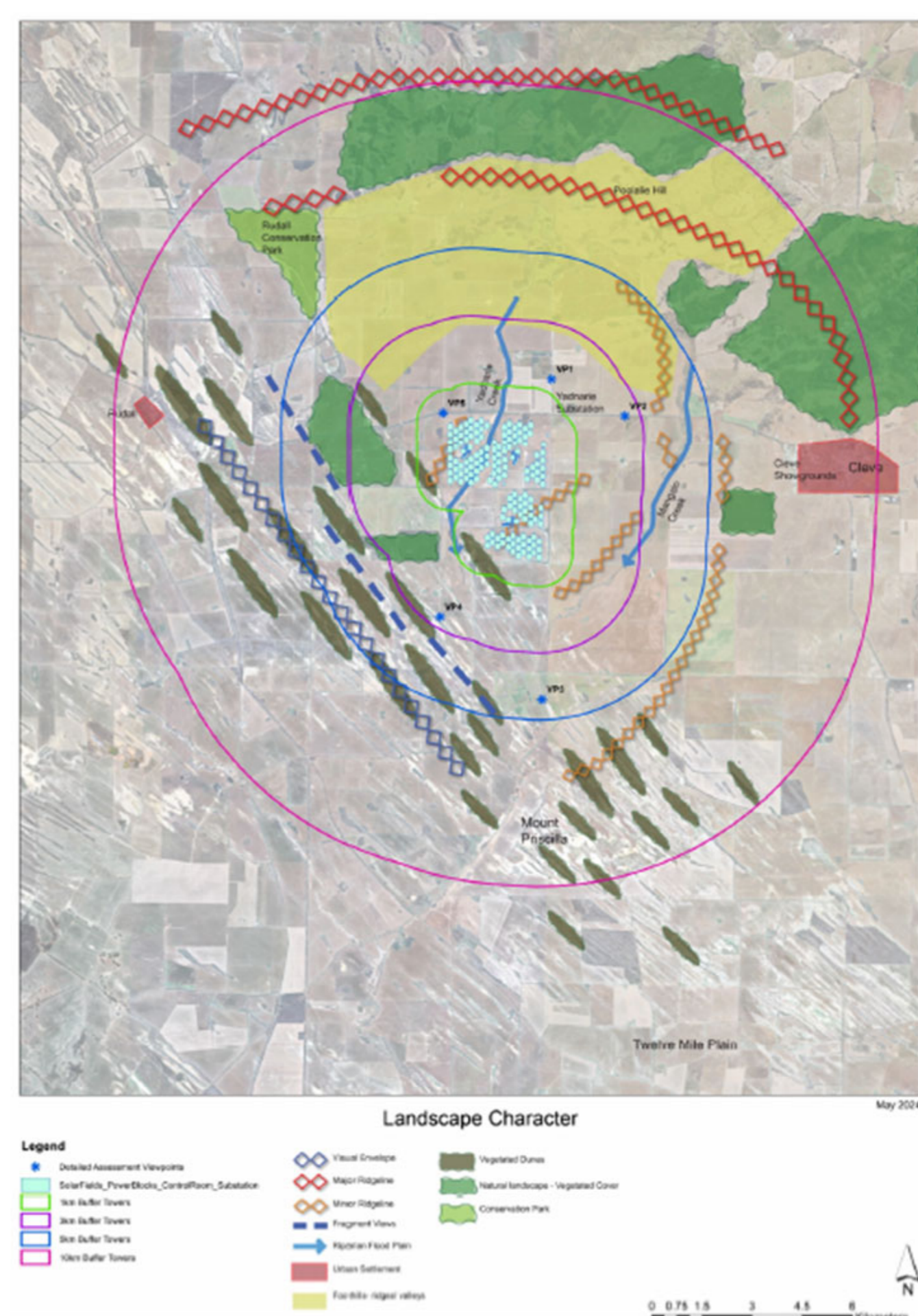
Wax Design and BGLA have examined the visual effect of the frequency and quantity of the project's receivers (150 receivers). To assess the impact, they have examined the landscape character of the region, which they describe from the north, south, east and west as follows:

North: The north edge of the regional landscape is defined by the undulating escarpment and foothills of the Poolalalie Hill Range. The range is formed by Poolalalie Hill, Mount Nield and Mount Shannan, which extend in an east-west direction, forming the northern edge of Cleve and the regional locality. The combination of landform and vegetation forms a complex landscape and visual character.

South: The southern regional landscape character is defined by the coastal plain of Dutton Bay and the sand hills of a large inland dunal system that runs from Minnipa in the north, southeast to the coast. The agricultural landscape is punctuated by belts of vegetation following the cadastral boundaries interspersed with arable cropping.

East: The eastern landscape character is defined by widely separated northeast-southwest ridgelines that extend across the low-lying landscape. In between the ridgelines are creeks with scattered trees and other belts of vegetation. The large

fields and a lack of vegetation reduce the potential for screening. The resulting rural landscape is open, with views extending over several kilometres in all directions.



West: To the west, the landscape is defined by numerous low ridges formed by an extensive inland dunal system. The dunes typically reach an elevation of 5-6 metres above the surrounding landscape. The combination of vegetation and ridges forms a layered landscape character to the west. Running northeast-southwest across the project site and to the western regional landscape is a transmission line. The uniformity and frequency of the transmission lines create a defined infrastructure corridor that extends across the regional landscape character. The transmission line is visible above the vegetation in the locality.

The potential visual effect of the project has been assessed from 5 viewpoints, which represent typical views in the region. Key aspects of the existing landscape, such as relief, vegetation, built form and infrastructure, and cultural and scenic landscape values from a series of selected viewpoints were assessed to determine the visual effect. Photomontages have been prepared to illustrate the visibility of the project infrastructure from the 5 viewpoints.

Yadnarie Renewable Energy Facility

Visual Impact Assessment

Viewpoint 1 - VP01 Syvertsen Road (north – regional)

Viewpoint 1 is located to the north of the project on Syvertsen Road. The viewpoint illustrates the visual effect that will be experienced from the northern regional landscape. The visibility of the project is contained in a narrow field of view.



Viewpoint 2 - VP02 Birdseye Highway (northeast – sub-regional)

Viewpoint 2 is located on the Birdseye Highway. The viewpoint is representative of the eastern regional landscape and the visual effect associated with the northeastern and eastern locality. This viewpoint is also representative of the potential visual effects that will be experienced from the western edge of Cleve.



Yadnarie Renewable Energy Facility

Visual Impact Assessment

Viewpoint 3 - VP03 Pine Corner Road (south – local)

Viewpoint 3 is located to the south of the project site on Pine Corner Road. The viewpoint is representative of the landscape character and visual effects that will be experienced from the south.



Viewpoint 4 - VP04 Broadview Road (southwest – sub-regional)

Viewpoint 4 represents the visual impact that will be experienced from the southwest. The viewpoint is located on Broadview Road and illustrates the visual impacts associated with the existing transmission line.



Yadnarie Renewable Energy Facility

Visual Impact Assessment

Viewpoint 5 - VP05 Intersection of Birdseye Highway, Quinn Road and Broadview Road (northwest – local)

Viewpoint 5 is located on the intersection of Quinn Road, Broadview Road and Birdseye Highway. The viewpoint provides a direct view of the project within the western local landscape, particularly when travelling from the west.



Digital Overlay showing development



Illustration showing development

The landscape and visual assessment notes that the visual effects resulting from the project. From locations 1 to 3 kilometres from the project, the visual effect has the potential to be pronounced because of the frequency, scale and visibility of the proposed infrastructure within the landscape, particularly with reference to the verticality of the solar receivers and the bands of infrastructure elements created by the heliostat arrays. The visual effect is described as moderate and visually prominent, however existing landscape features, such as ridgelines, local landforms and belts of vegetation, mitigate the visual impacts.

Wax Design and BGLA have recommended that new landscape screening occur in areas around the boundaries of the site. Based on this recommendation, Photon Energy are preparing a landscape screening plan that illustrates areas to incorporate new planting to supplement existing boundary and road reserve vegetation that currently exists. The new/supplementary landscaping will incorporate the use of local indigenous plant species that will grow to a height of approximately 6-8 metres.

Yadnarie Renewable Energy Facility

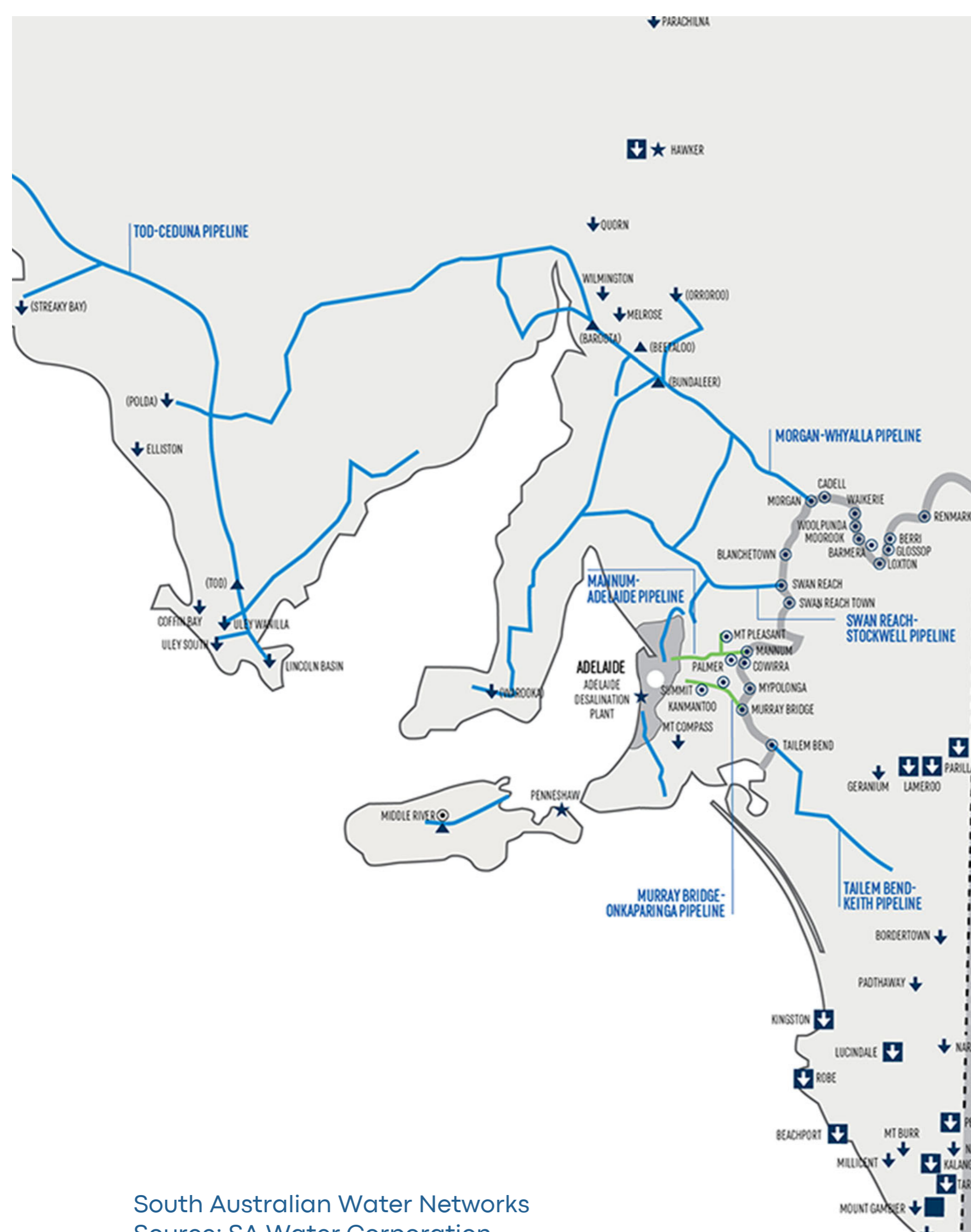
Water

How much water is needed?

- The energy storage medium for this technology is water.
- The water requirement is a once off need for 300ML for Stage 1.
- The water is stored in lined and covered water reservoirs called “pits” and is used in closed loop piping networks within the site.
- Once the pits are filled there is no consumption of water by the plant.
- There is a minor ongoing water requirement for heliostat mirror cleaning. Rainwater which is captured from buildings and the pit covers will be used for cleaning.

Where will we get water from?

- For Stage 1. This will come off the SA Water network over a period of approximately 24 months. Nominally from the end of 2025.
- It would use the existing domestic water connections to the land.
- The water to the site currently comes from the Lock-Iron Knob network which is fed from the River Murray via the existing pipeline to Iron Knob.
- The project site is on the very end of this network so any offtake will be “last in last served” basis and would not affect the water pressure of other customers.
- The water for supply for the site is not connected to the network serving the Cleve township and will not impact pressure or supply in the township.
- A further 600ML would be needed for Stage 2 – this would be constructed in the future and the water would most likely be delivered via the new desal plant once it is up and running.



South Australian Water Networks
Source: SA Water Corporation

Alternative Water Option

- Photon Energy are currently working with SA Water in regard to the water requirements of the project taking into account the current water challenges affecting the region.
- Photon Energy are currently investigating drilling for water and accessing the aquifer in the area in case the other water options become unfeasible.

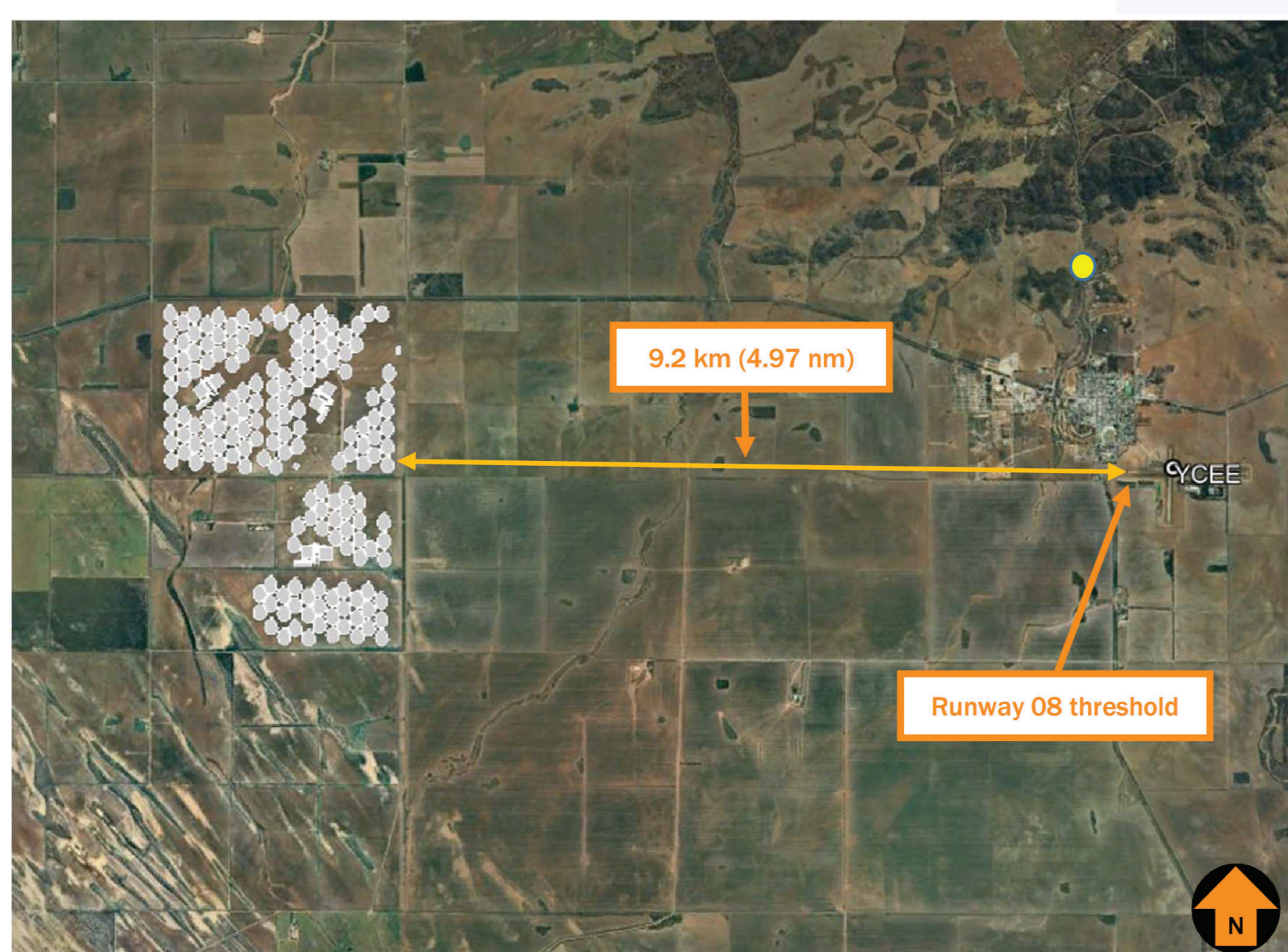
Yadnarie Renewable Energy Facility

Aviation

Cleve Aerodrome

Cleve aerodrome (YCEE) is located approximately 9km west of the subject land. YCEE is a certified airport, operated by the District Council of Cleve and has two runways:

- Runway 08/26, sealed, 18 m wide and 1350 m long, with a runway strip width of 90 m
- Runway 18/36, unsealed, 18 m wide and 895 m long, with a runway strip width of 60 m



Aviation Impact Assessment

A detailed aviation impact assessment has been undertaken by Aviation Projects to assess the potential aviation impacts associated with tall objects and solar glare.

- In relation to the proposed infrastructure of the project, the aviation impact assessment concludes that the development would not have an adverse impact on Cleve aerodrome or aviation safety, as it is:
 - outside of controlled airspace
 - will not interfere with an aircraft landing area and will have not impact to instrument flight procedures
 - is located outside of and will not impact on any Obstacle Limitation Surface (OLS) of Cleve aerodrome
 - will not impact aviation communication.

The highest element of the proposed development is the receivers, which are approximately 40-45 metre in height. Because these structures are below 100m (AGL), there is no statutory requirement to report the structures to the Civil Aviation Safety Authority (CASA) and no requirement for lighting or marking of the receivers.

Yadnarie Renewable Energy Facility

Glare

The modules atop RayGen's receivers convert sunlight to electricity, so that the tower looks similar to a light tower on a sporting field which is on during the day. This light is only visible during the day.

In developing the RayGen Ultra PV system on other sites, including the operational Newbridge and Carwarp sites in Victoria, the question of glare from the receivers has been considered.

The siting and orientation of the receivers is an important consideration to minimise any potential glare. In this project the receivers are orientated to the south, away from Birdseye Highway and substantially separated from non-involved dwellings. An assessment of glare has been undertaken in relation to both road users and aircraft.

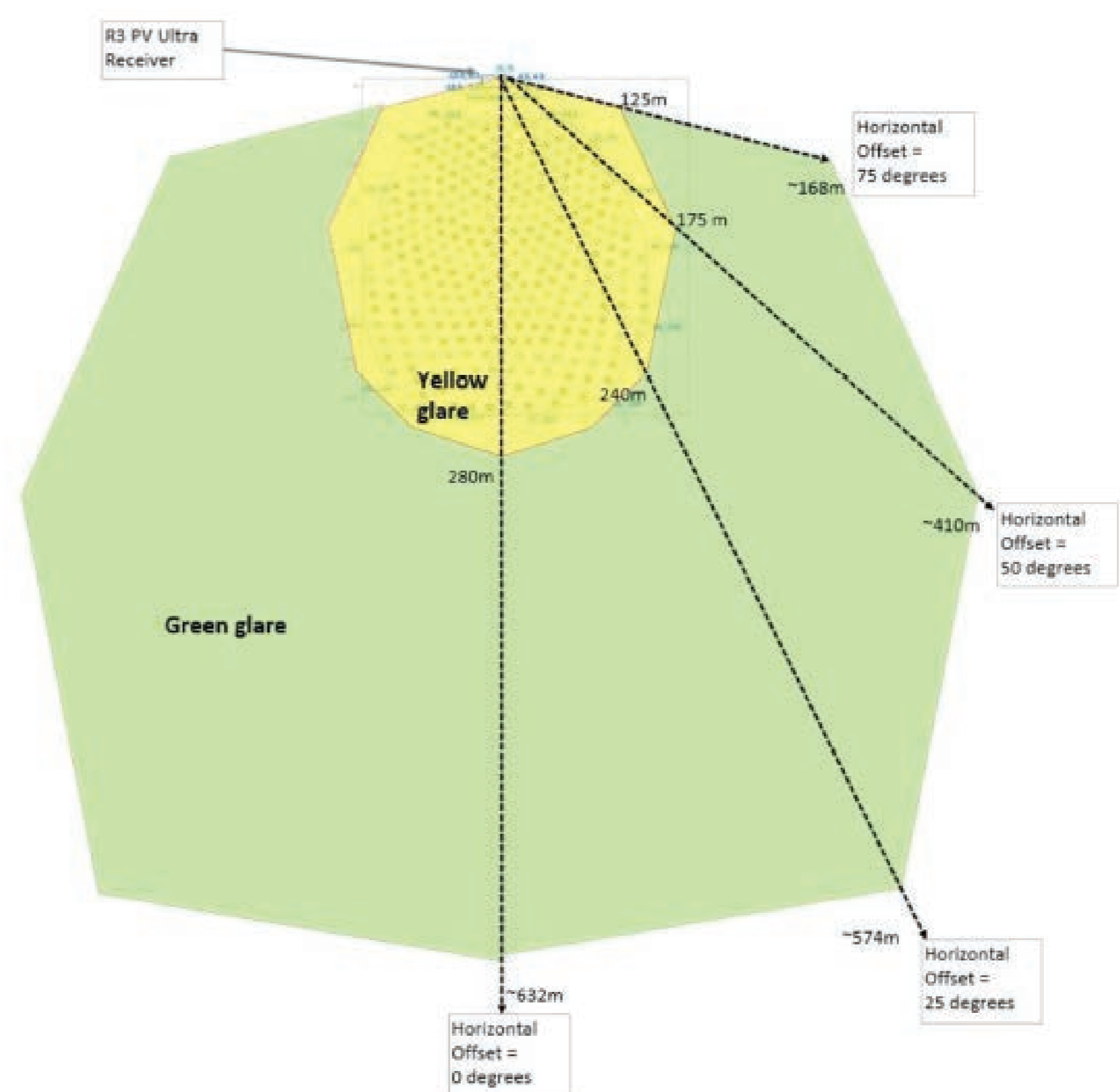
Glare from the proposed RayGen technology was assessed by GHD in relation to the Carwarp development and the same elements of the technology will be implemented at Yadnarie.

The results of the GHD assessment indicate that an observer at ground level will have potential for an after-image effect and glance blindness if they glance at receiver for a duration of 0.15 seconds when they are within the following distances:

- Up to 280 m from the receiver, directly in front.
- Up to 240 m if viewing from a 25-degree angle offset (left or right side) from directly in front of the receiver.
- Up to 125 m if viewing from a 75-degree angle offset (left or right side) from directly in front of the receiver.

The assessment characterised glare into three categories:

- Low potential for after image (temporary after image), also referred as green glare.
- Potential for after image (flash blindness), also referred as yellow glare.
- Potential for permanent eye damage (retinal burn), also referred as red glare.



The map of ocular safety zones developed by GHD based on the analytical model (illustrated above). These safety zones have been incorporated into the design of the project.

Aviation Projects assessment of the potential impact of glare on aircraft notes that:

- The Project is not within the boundary of a certified aerodrome and Civil Aviation Safety Authority (CASA) does not require an assessment of the Project for glare impacts.
- The Project is located more than 6 km from any certified aerodrome, and is not located where glare will impact on any air route or airway.
- Aircraft operations in the immediate vicinity of the development are anticipated to be infrequent and limited to aircraft potentially conducting low-level aerial application operations on neighbouring properties.
- Glare from receiving towers is geometrically possible for aircraft approaching the Project from the south, however the glare experienced from the Project is not anticipated to inhibit or endanger VFR aircraft operations in the vicinity of the project and could be mitigated by the use of sunglasses and/or sun visors.
- There are no aircraft operations likely to be conducted within the yellow glare zone of any receiving tower anywhere in the Project Area.