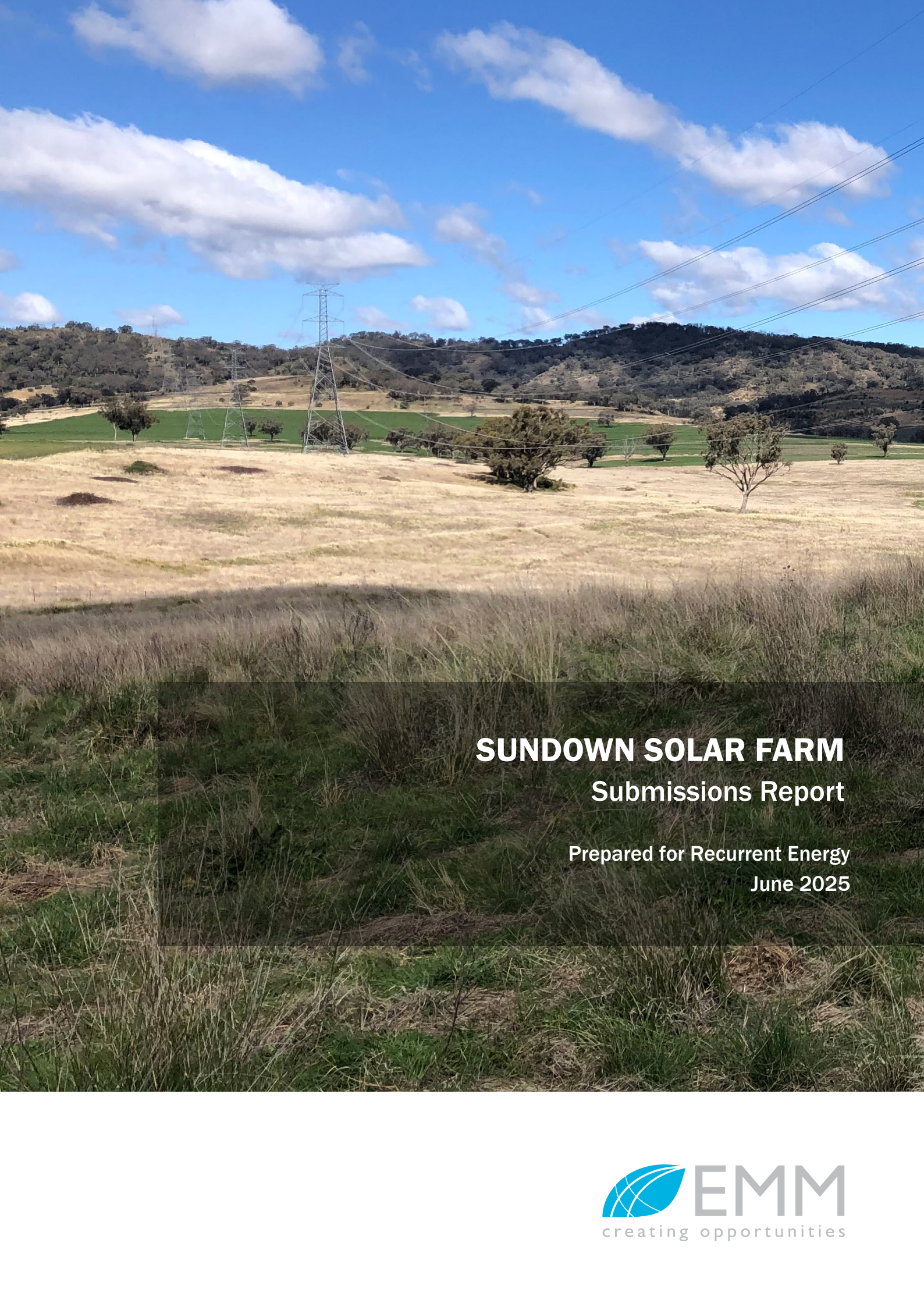




SUNDOWN SOLAR FARM

Submissions Report

Prepared for Recurrent Energy
June 2025

Sundown Solar Farm

Submissions Report

Recurrent Energy

E231160 Submissions Report

June 2025

Version	Date	Prepared by	Reviewed by	Comments
V1	20 January 2025	Mary-Anne Siebert Samantha Hayes Sigrid Pembroke	Paul Freeman	Draft for Recurrent Energy comment
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V3	13 June 2025	Mary-Anne Siebert	Paul Freeman	Final, addressing DPHI comments

Approved by



Paul Freeman

Associate Director

13 June 2025

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ABN: 28 141 736 558

Executive Summary

ES1 Introduction

Recurrent Energy (the Applicant), formerly known as Sundown Solar Pty Ltd, proposes to develop the Sundown Solar Farm (the project), which is a large-scale solar photovoltaic (PV) electricity generation facility and associated battery energy storage system (BESS).

The project comprises the following key components:

- construction and operation of a large-scale solar farm with a generation capacity of approximately 360 MW (AC)
- construction and operation of a BESS with up to four-hour storage capacity of approximately 150 MW (AC).

The project is located at Spring Mountain, approximately 30 kilometres (km) east of Inverell in the Inverell Shire Council local government area (LGA), and in the New England Tablelands region of northern NSW (Figure 1.1). The project is located within the New England Renewable Energy Zone (REZ). The project will be accessed from the Gwydir Highway, Spring Mountain Road and Sturmans Road (Figure 1.2).

The project site is zoned RU1 – Primary Production under the *Inverell Shire Local Environmental Plan 2012* (Inverell LEP) and is currently and has historically been used for farming (cropping and grazing). The surrounding land is used for farming.

Construction of the project is anticipated to be 21 months. The project will operate for approximately 35 years. During the operations, the site will also be used for sheep grazing. At the end of the project life the site will be decommissioned and returned for agricultural use.

This project is considered State Significant Development (SSD) within the *Environmental Planning and Assessment Act 1979* (EP&A Act) and is referred to SSD-8911. The project seeks development consent approval under Part 4, Division 4.7 of the EP&A Act. As part of the approval process the Environmental Impact Statement (EIS) was prepared to assess the potential impacts of the project and provide adequate mitigation measures. This EIS was publicly exhibited from 7 July 2023 to 3 August 2023.

ES2 Submissions received

Following the public exhibition of the EIS, 153 submissions were received on the project. This comprised 13 submissions received from Government agencies including Inverell Shire Council, seven from special interest groups and 133 submissions from the community.

This submissions report responds to the matters raised in the submissions, in accordance with section 59(2) of the Environmental Planning and Assessment Regulation 2021 (EP&A Regulation).

Submissions from Government agencies related to the specific agency focus (e.g. the Department of Environment Biodiversity and Conservation Division for ecology aspects and Transport for NSW for roads and traffic considerations). The submission from Inverell Shire Council raised issues relating to traffic, waste, decommissioning and a community benefits fund.

There were a range of issues raised by special interest groups and community submissions. The community was most interested in the traffic impacts of the project, particularly the roadworks that will be required to be undertaken on Spring Mountain Road to facilitate access to the project.

Submitters also asked about the potential agricultural impacts of the project and how the project will mitigate loss of agricultural productivity. Other issues raised included potential dust and noise impacts from construction activities, biodiversity impacts, potential for bushfire and local economic effects.

ES3 Project refinements

Since the EIS was placed on exhibition, the development footprint has been revised in response to concerns regarding the potential biodiversity impacts and in particular, fragmentation of habitat. This design revision has reduced the development footprint from approximately 651 hectares (ha) to approximately 525 ha (i.e. a 20% decrease) and the overall disturbance footprint from approximately 729 ha to approximately 612 ha (i.e. a 17.5% decrease).

ES4 Updated assessments mitigation and management

In order to respond to the issues raised by Government agencies, Council, special interest groups and the community, some of the technical assessments presented in the exhibited EIS have been updated. To provide further clarification regarding specific environmental aspects, additional assessments (to those included within the EIS) have been prepared. These updated and additional assessments are appended to this submissions report.

A summary of the updated and additional assessment and their outcomes is provided as Table ES1. The mitigation measures for the project have been reviewed and updated where needed to incorporate stakeholder feedback and address the findings and recommendations of updated assessments (Appendix C).

The Applicant has also refreshed and enhanced the project's stakeholder engagement program and completed additional community engagement since the EIS.

Table ES1 Summary of results of updated assessments

Updated or additional assessment	Key outcomes
Biodiversity Development Assessment Report (BDAR)	Changes to the project layout have resulted in further surveys for threatened species being undertaken and a revised BDAR has been prepared. The surveys did not record additional threatened species within the disturbance footprint for the project. The updated BDAR is at Appendix O.
Soil, Land and Agriculture Assessment	A Soil, Land and Agriculture Assessment was undertaken to show the potential impact to agricultural productivity in the locality and region. The assessment concluded that the project-related impacts to agriculture will be minor, temporary, and limited to the development footprint. The temporary impacts to agriculture are considered a negligible impact in the context of the gross commodity values and land use coverage of the agricultural industries operating within the Inverell Shire. Agrisolar is proposed for the site. The agricultural impact assessment provides a robust framework for the implementation of agrisolar. The Soil, Land and Agriculture Assessment is at Appendix D.
Land-Use Conflict Risk Assessment (LUCRA)	A LUCRA has been prepared to determine whether the project is compatible with other land-uses. The LUCRA shows that, with the implementation of the proposed mitigation measures, no significant land use conflict risk will result from the construction and operation of the project. The LUCRA is at Appendix E.
Addendum Noise Impact Assessment	Further noise modelling was undertaken in order to determine the anticipated construction noise at the non-associated residence on the access road. The Addendum Noise Impact Assessment is at Appendix L.

Updated or additional assessment	Key outcomes
Groundwater Supply Options and Impact Assessment	A Groundwater Supply Options and Impact Assessment was completed to determine options for sourcing water during construction and operation. This assessment shows that up to ~50% of the water required for the construction phase could be reliably sourced from an existing onsite groundwater bore (GW971316) and that the remaining requirement could be sourced from offsite sources and trucked to site. The Groundwater Supply Options and Impact Assessment is at Appendix K.
Over size over mass (OSOM) assessment	An OSOM assessment was undertaken to make sure that the transport route could accommodate the largest vehicle to access the site. The assessment concluded that with minor mitigation measures the identified OSOM route is generally suitable for the OSOM vehicles proposed for the project. The OSOM assessment is at Appendix F.
Strategic design of the proposed upgrade to the Gwydir Highway/Spring Mountain Road intersection	The strategic design of the proposed intersection considers the safe turning to/from the Gwydir Highway to the access road and the design has appropriately considered signage, lane width and school bus stops. The Gwydir Highway/Spring Mountain Road intersection strategic design is at Appendix H.
Access road options	Three potential access road options were assessed. The assessment considered a number of criteria including safety, constructability, compliance with applicable guidelines and the potential to provide a long-term benefit to the local community. The assessment concluded that the Spring Mountain Road/Sturmans Road access road proposed in the EIS remains the most feasible from safety, constructability, accessibility and community benefit perspectives. The assessment of access road options is at Appendix G.
Contamination assessment	A contamination assessment in the form of a Preliminary Site Investigation (PSI) was prepared in accordance with State Environmental Planning Policy (Resilience and Hazards) 2021. The assessment concluded that overall there is a low risk of the site being contaminated, and made recommendations to handle potential contamination risk. The PSI is at Appendix P.

ES5 Conclusion

This report provides responses to the submissions provided on the proposed Sundown Solar Farm project. Technical assessments have been updated as necessary and additional assessments completed in response to issues. These assessments make sure that the environmental impacts of the project are fully understood and can be appropriately managed and mitigated. Where relevant, the mitigation measures put forward in the EIS for the project have been revised in response to the issues raised and the updated assessment findings.

There is a critical need to develop large-scale, renewable energy projects to respond to the accelerated energy transition of the National Electricity Market (NEM). The Sundown Solar Farm project will assist in achieving this transition and is therefore in the public interest for its approval.

Following on from submissions received during the approval process, the preparation of additional assessments and implementation of revised mitigation, management and offsetting measures will ensure that there are no significant long-term impacts from the project on the local environment.

The project has been designed to avoid and minimise impacts where possible. Iteration to the design of the project has occurred throughout the submissions response process in response to the issues raised.

The project is considered to be justified, in the public interest and approvable, as:

- it is suitably located due to several factors, notably its location within the New England REZ. The project area is favourable for the construction and operation of a solar and battery project due to the available solar resource, physical conditions (flat to gently undulating topography and predominantly cleared, agricultural land), and relatively few neighbours living within close proximity of the site. Further, the project's proximity to a 330 kV transmission line means that there will be infrastructure within the immediate area with the capacity to export the electricity generated by the project to the grid
- the design of the project has been an iterative design and environmental assessment process to ensure impacts have been avoided and minimised as much as possible. This has included refining the design in consultation with and NSW Government agencies, registered Aboriginal parties and the local community
- the project will not result in significant biophysical, social or economic impacts, and the EIS and Submissions Report have concluded that any residual impacts can be appropriately managed and/or offset in accordance with NSW Government policy
- the project's benefits will contribute to energy security and reliability in NSW by diversifying the State's energy mix and helping to prepare for the retirement of large-scale coal-fired power generation. It aligns with Commonwealth and NSW Government electricity policies and strategies and regional plans, it will provide ongoing economic benefits for the local economy within the Inverell Shire LGA and more broadly, the regional economy within the New England region.

TABLE OF CONTENTS

Executive Summary	ES.1
1 Introduction	1
1.1 The project	1
1.2 Project life and operations	1
1.3 Environmental impact statement	2
1.4 Key terminology	2
1.5 Project components	2
1.6 Purpose of this report	6
2 Analysis of submissions	7
2.1 Summary of submissions	7
2.2 Response methodology	8
2.3 Categorisation of issues	8
2.4 Summary of matters raised in special interest group submissions	9
2.5 Summary of matters raised in community submissions	10
2.6 Origin of public submissions	11
3 Actions taken since EIS exhibition	14
3.1 Project refinements	14
3.2 Further technical assessments	16
3.3 Consultation	18
3.4 Associated landowners	25
4 Responses to Government agency and Council submissions	26
4.1 Introduction	26
4.2 Department of Primary Industries Agriculture	26
4.3 Biodiversity, Conservation and Science Directorate	31
4.4 Transport for NSW	35
4.5 Heritage NSW	41
4.6 Department of Primary Industries Fisheries	51
4.7 Department of Planning and Environment Water	52
4.8 Department of Planning and Environment Hazards	52
4.9 Fire and Rescue NSW	53
4.10 Inverell Shire Council	54
5 Responses to special interest group and community submissions	59

5.1	Roads and traffic	59
5.2	Agriculture and land resources	67
5.3	Noise and vibration	69
5.4	Biodiversity	72
5.5	Heritage	76
5.6	Fire/hazards	76
5.7	Water	78
5.8	Dust	80
5.9	Health	81
5.10	Social	83
5.11	Visual impact	86
5.12	Waste management and resource efficiency	86
5.13	Decommissioning and rehabilitation	87
5.14	Cumulative impacts	88
5.15	The project	90
5.16	Procedural matters	92
5.17	Other matters	93
6	Updated project justification	96
	Abbreviations	100

Appendices

Appendix A	Summary of submissions	B.1
Appendix B	Government Agency submissions	B.1
Appendix C	Updated mitigation measures table	C.1
Appendix D	Soil, land and agriculture assessment	D.1
Appendix E	Land-use conflict risk assessment	E.1
Appendix F	Over-size over-mass assessment	F.1
Appendix G	Access road options assessment	G.1
Appendix H	Intersection design - Gwydir Highway/Spring Mountain Road	H.1
Appendix I	Interim construction traffic management plan	I.1
Appendix J	Traffic count data	J.1
Appendix K	Groundwater supply options impact assessment	K.1
Appendix L	Addendum noise impact assessment	L.1
Appendix M	Consultation with registered Aboriginal parties	M.1
Appendix N	Culturally modified trees	N.1
Appendix O	Revised biodiversity development assessment report	O.1
Appendix P	Preliminary site investigation	1

Tables

Table ES1	Summary of results of updated assessments	2
Table 1.1	Key terminology	2
Table 2.1	Summary of submissions received	7
Table 2.2	Summary of matters raised in special interest group submissions	9
Table 2.3	Summary of matters raised in public submissions	10
Table 3.1	Agency consultation during the submissions phase	19
Table 3.2	Community engagement during submissions phase	22
Table 4.1	LUCRA probability table	29
Table 4.2	Railway level crossings	40
Table 4.3	AHIMS site details	41
Table 4.4	Waste types and proposed management	56
Table 4.5	Agencies requiring no detailed response	58
Table 5.1	Project traffic during peak construction stage	59
Table 5.2	Assessment of suitable koala habitat within the disturbance footprint	73
Table 5.3	Aquatic desktop assessment	75

Figures

Figure 1.1	Regional context	4
Figure 1.2	Conceptual site layout (revised)	5
Figure 2.1	Origin of community submissions	12
Figure 2.2	Breakdown of source of community submissions	13
Figure 3.1	Comparison of disturbance footprints	15
Figure 4.1	LSC classes within the project footprint	28
Figure 4.2	Railway level crossings on the haulage route	40
Figure 4.3	AHIMS search results	43
Figure 4.4	Landforms and archaeological features	45
Figure 4.5	Site boundaries of archaeological features	46
Figure 5.1	Alternative access options	62

Photographs

Photograph 4.1	SSF-OS10 showing erosion from water run-off and the depth of soil	47
Photograph 4.2	Ochre resource (northern) on Jesse Creek (SSF-OR1)	48
Photograph 4.3	Ochre resource (southern) on a tributary to Jesse Creek (SSF-OR2)	49

Plates

Plate 4.1	Proposed bus stop sign	38
Plate 4.2	Existing fingerboard sign on the eastbound approach to the Gwydir Highway/Spring Mountain Road intersection	38
Plate 4.3	Advanced intersection warning sign to be installed on the eastbound approach to the Gwydir Highway/Spring Mountain Road intersection	39
Plate 5.1	Warning sign for presence of livestock	64

1 Introduction

1.1 The project

Recurrent Energy (the Applicant), formerly known as Sundown Solar Pty Ltd, proposes to develop the Sundown Solar Farm (the project), which is a large-scale solar photovoltaic electricity generation facility and associated battery energy storage system (BESS).

The project is located at Spring Mountain, approximately 30 kilometres (km) east of Inverell in the Inverell Shire local government area (LGA), and in the New England Tablelands region of northern NSW (Figure 1.1). The site will be accessed from the Gwydir Highway, Spring Mountain Road and Sturmans Road (Figure 1.2).

The project comprises the: construction and operation of a large-scale solar farm with a generation capacity of approximately 360 MW (AC) and the construction and operation of a BESS with up to four-hour storage capacity of approximately 150 MW (AC).

The electricity generated from the project will contribute to the national electricity grid via a new onsite substation connected to the existing Transgrid 330 kilovolt (kV) transmission line that traverses the site.

The project is located within the New England Renewable Energy Zone (New England REZ) and is in proximity to locality of one wind and two solar farms that are operational.

The Sundown Solar Farm project will also contribute to the overall storage capacity and reliability of the NEM and supports State and Commonwealth greenhouse gas emission reduction commitments by facilitating renewable energy input into the grid network.

The key objective of the project is to deliver up to 360 MW of much needed renewable energy into NSW. In doing so, the project will play an important part in achieving the objectives of the New England REZ. It will also provide significant economic stimulus to the region through both construction-phase and operational-phase via employment opportunities and associated social and economic benefits.

The project area comprises of three privately owned lots; Lot 148 DP 753299 (Glen Eisle), Lot 141 DP 753305 (Spring Valley) and Lot 1, DP 1064358 (Newstead). The site is zoned RU1 – Primary Production under the *Inverell Shire Local Environmental Plan 2012* (Inverell LEP) and is currently and has historically been used for cropping and grazing. The project area also includes the access road (Spring Mountain Road and Sturmans Road).

The project area comprises an area of approximately 2,097 hectares (ha) (total of all project area Lots). The development footprint comprises an area of approximately 525 ha and the disturbance footprint covers an area of approximately 612 ha. This is further explained in Table 1.1.

1.2 Project life and operations

Construction of the project is anticipated to take 21 months (including site establishment, installation and commissioning). The project will operate for approximately 35 years. Throughout its operational life, certain components and technologies may be replaced and/or upgraded, however such works are unlikely to be intensive. Sundown Solar Farm will operate 24 hours a day, 7 days a week and be monitored remotely, with regular infrastructure maintenance undertaken onsite. During the operations, the site will also be used for sheep grazing (use of land for solar farm and grazing is referred to as agrisolar). At the end of the project life the site will be decommissioned and returned to agricultural use.

1.3 Environmental impact statement

This project is considered State significant development (SSD) within the *Environmental Planning and Assessment Act 1979* (EP&A Act) and is referred to SSD-8911. The project seeks development consent approval under Part 4, Division 4.7 of the EP&A Act. As part of the approval process the Environmental Impact Statement (EIS) was prepared to assess the potential impacts of the project and provide adequate mitigation measures.

The EIS for the project was publicly exhibited from 7 July 2023 to 3 August 2023.

Following the public exhibition of the EIS, 152 submissions were received by DPHI. These submissions included 13 from Government agencies, 1 from Inverell Shire Council, 7 from special interest groups and 133 from members of the community.

This submissions report responds to the matters raised in these submissions, in accordance with section 59(2) of the Environmental Planning and Assessment Regulation 2021 (EP&A Regulation).

1.4 Key terminology

The key terminology applied throughout the EIS is outlined in Table 1.1

Table 1.1 Key terminology

Terminology	Description
The project	The Sundown Solar Farm. This refers to all elements that comprise the project for which approval is sought.
The site	The area proposed to be developed as Sundown Solar Farm. This includes the area used for the solar farm and associated infrastructure and the access road.
Project area	Comprises the three lots on which the project will be developed. The project area comprises the development footprint as well as the areas that will remain undeveloped. The project area comprises an area of approximately 2,097 ha.
Development footprint	The extent of surface area within the project area that will comprise project-related infrastructure (such as the PV panels, BESS, substation, switch room, internal access roads etc). The development footprint comprises an area of approximately 525 ha.
Disturbance footprint	The extent of surface area within the project area that will be disturbed to facilitate the construction of the project plus the extent of surface area associated with the access road that will be disturbed to facilitate the construction of the access road and associated intersection. The disturbance footprint comprises an area of approximately 612 ha (including approximately 13 ha associated with the access road).

1.5 Project components

The project will comprise the following key components:

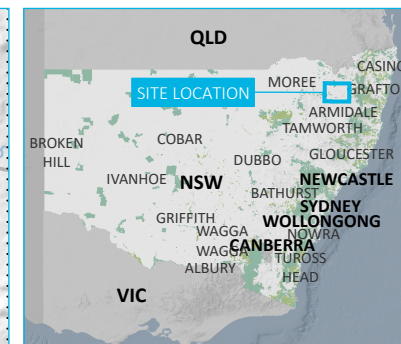
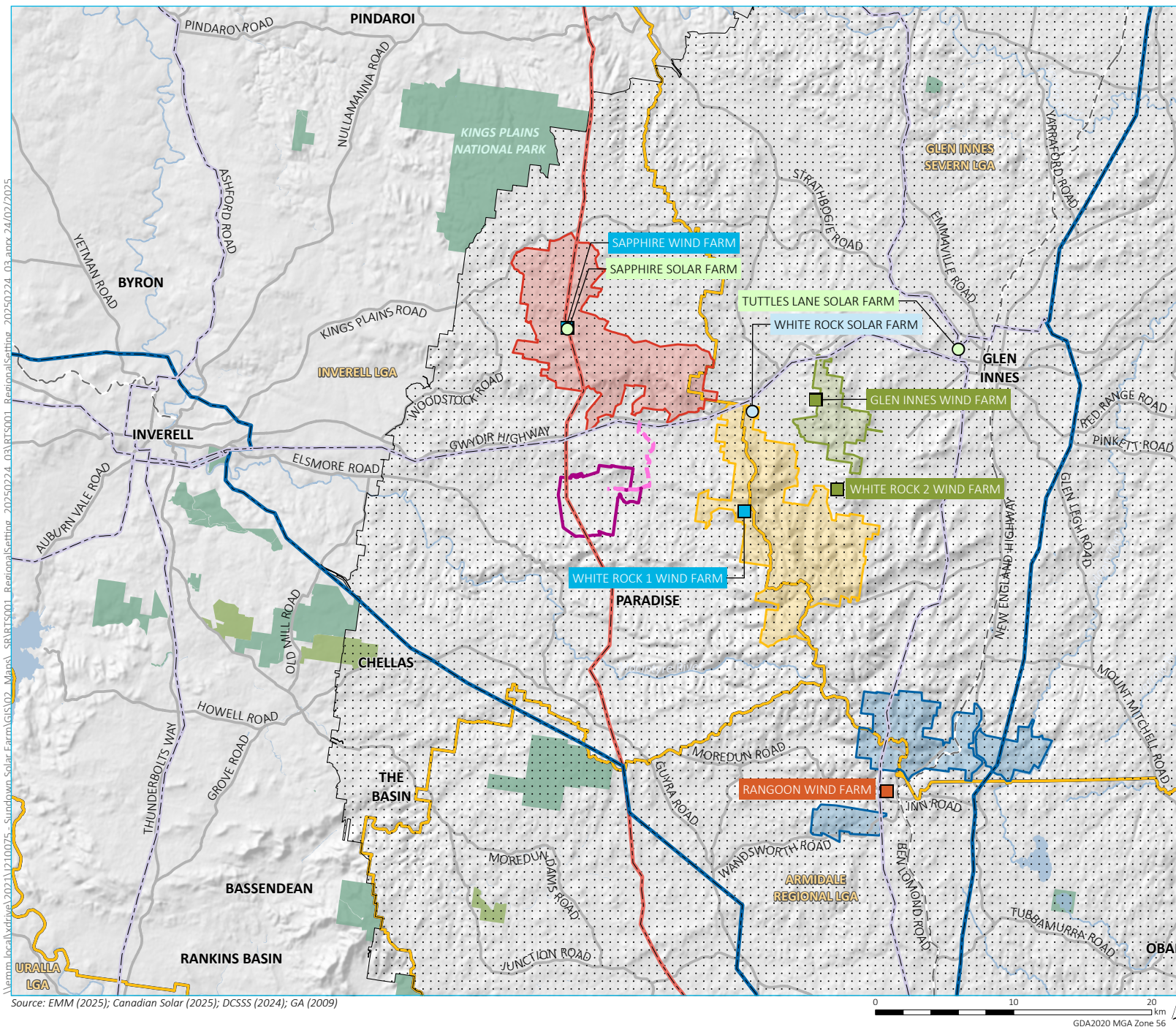
- a network of approximately 660,000 PV panels and associated mounting infrastructure with a generation capacity of approximately 360 MW (AC)
- a 150 MW (AC) battery BESS (4-hour duration)
- 330 kV onsite substation
- electrical collection and conversion systems, including inverter and transformer units, switchyard and control room

- underground and aboveground cables
- a management hub, including demountable offices and amenities and equipment sheds
- onsite watercourse crossings
- security fencing
- temporary laydown areas (during construction and decommissioning)
- parking and internal access roads
- site lighting
- firefighting infrastructure.

The Sundown Solar Farm will connect to the electricity network via the existing 330 kV Transgrid powerline.

The project will also include the upgrade of the access road and Gwydir Highway/Spring Mountain Road intersection.

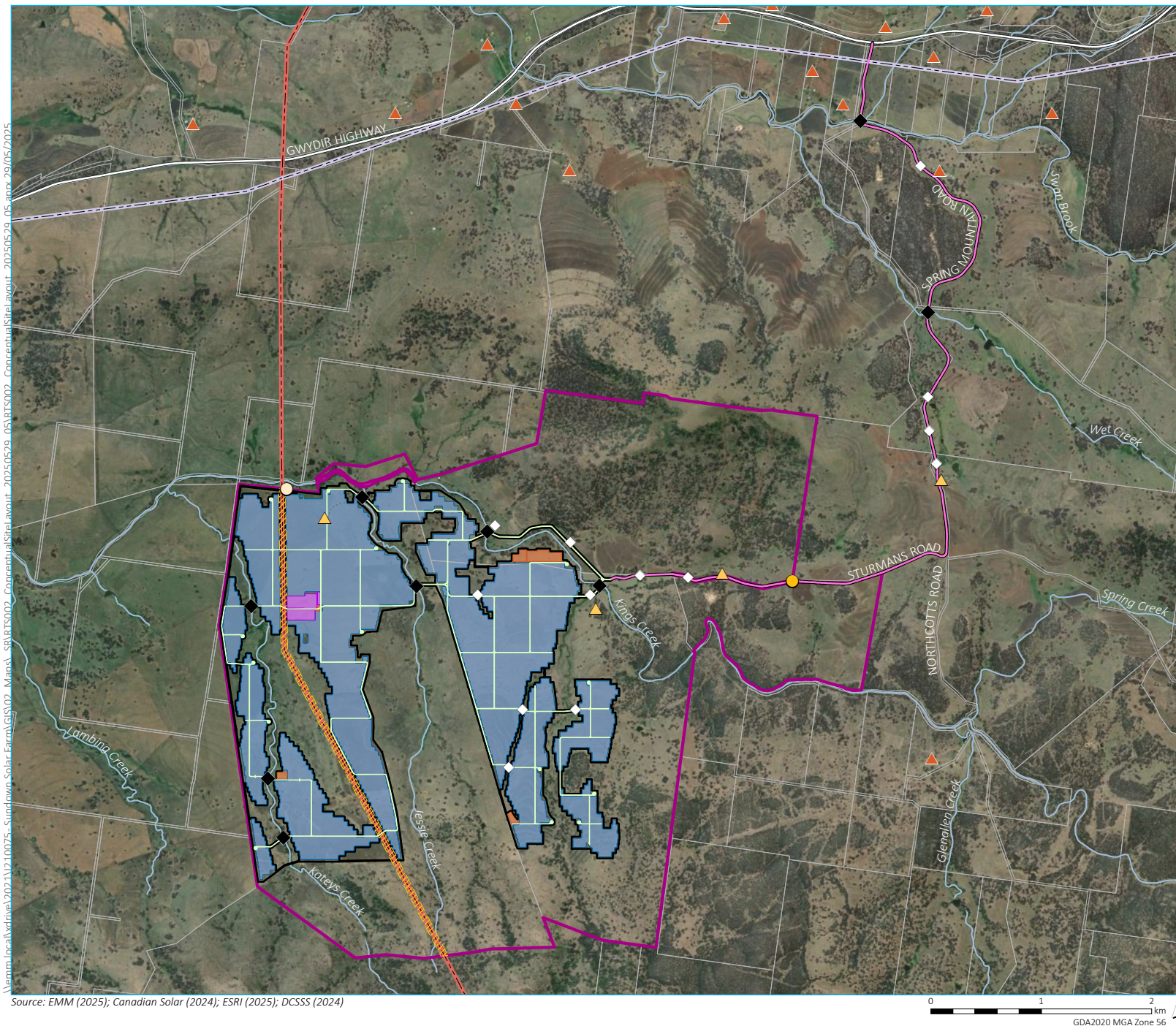
The conceptual site layout is shown in Figure 1.2. A detailed description of the project is provided in Chapter 3 of the EIS (EMM 2023).



- KEY**
- Proposed Sundown Solar Farm (Project area)
 - Access road
 - New England Renewable Energy Zone
 - Solar development
 - Operational
 - Approved
 - Wind development
 - Operational
 - Approved
 - In planning
 - Electricity transmission line
 - 330 kV
 - 132 kV
 - 66 kV
 - Existing environment
 - Rail line
 - Major road
 - River
 - Named waterbody
 - NPWS reserve
 - State forest
 - Local government area

Regional setting

Sundown Solar Farm
Submissions Report
Figure 1.1



- KEY**
- Proposed Sundown Solar Farm (Project area)
 - Disturbance footprint
 - Development footprint
 - 330 kV OHL easment (60 m)
 - Internal access road
 - External access road
 - BESS/switchroom/substation
 - Construction and laydown
 - Potential PV area
 - Sensitive receiver
 - ▲ Associated property
 - ▲ Non-associated property
 - Potential water crossing
 - ◆ Named watercourse
 - ◇ Drainage line
 - Emergency access/egress point
 - Primary
 - Secondary
 - Existing overhead transmission line
 - Armidale to Dumaresq (330 kV)
 - Glen Innes to Inverell (132 kV)
 - Existing environment
 - Major road
 - Minor road
 - - - Vehicular track
 - Named watercourse
 - Cadastral boundary

Conceptual site layout

1.6 Purpose of this report

The Applicant received correspondence from DPHI on 4 August 2023 requiring responses to the matters raised in the submissions to the EIS (EMM 2023).

Accordingly, this submissions report has been prepared in accordance with the *State Significant Development Guidelines – Preparing a Submissions Report* (DPHI 2022) (the Submissions Report Guidelines). The purpose of this report is to consider and respond to submissions made on the project by Government agencies, Inverell Shire Council, special interest groups and the community.

This report also describes the additional stakeholder and community engagement activities that the Applicant has, and will continue to, carry out post EIS lodgement. Following the ongoing engagement with the local community, project landowners, Government agencies and other stakeholders, the Applicant has undertaken additional assessments and has refined the proposed project design.

Following lodgement of this submissions report, DPHI will prepare its assessment report, considering the submissions received, and the project's design response to these submissions. The NSW Independent Planning Commission (IPC) will be the consent authority for the project under section 4.5(a) of the EP&A Act by operation of section 2.7 of the State Environmental Planning Policy (Planning Systems) 2021, as more than 50 submissions in objection to the project were received.

2 Analysis of submissions

2.1 Summary of submissions

During the public exhibition of the EIS, 153 submissions were received by DPHI.

A submissions register is provided in Appendix A of this report. The submissions register includes submitter details and a summary of the issues raised in the submission. A summary of submission types, including the total number of submissions which supported, objected to, or commented on the project, is provided in Table 2.1.

The submissions are available to view on the NSW Government's Major Projects website at:

<https://www.planningportal.nsw.gov.au/major-projects/projects/sundown-solar-farm>.

Table 2.1 Summary of submissions received

Source	Object	Support	Comment	Total
Government agencies and local council	-	-	13	13
Special interest groups	5	1	1	7
Community	127	4	2	133
Total	132	5	16	153

2.1.1 Government agencies and Council

The following Government agencies and Council provided advice on the project:

- Biodiversity, Conservation and Science Directorate (BCD) (now Conservation Programs, Heritage and Regulation Groups (CPHR))
- Department of Primary Industries (DPI) Agriculture
- Transport for NSW (TfNSW)
- DPI Fisheries
- Heritage NSW (now DCCEEW Heritage)
- DPE Water (now NSW DCCEEW – Water)
- DPHI Hazards
- Crown Lands
- Fire and Rescue NSW
- NSW Rural Fire Service
- Mining, Exploration & Geoscience Geological Survey NSW
- Inverell Shire Council
- Transgrid.

2.1.2 Special interest groups

The following special interest groups provided a submission on the project:

- Tro-Pacific Pty Ltd (support)
- Elsmore Rural Fire Brigade (comment)
- Gwymac Landcare Inc (object)
- Responsible Energy Development for New England (ReD4NE) (object)
- Save our Woodlands (object)
- Save our Surroundings (SOS) (object).
- Yass Landscape Guardians Inc (object).

2.2 Response methodology

All submissions received were collated and categorised based on the submitter, as follows:

- Government agencies and LGAs
- special interest groups
- community submissions.

The submissions were then reviewed, and the key issues raised in each submission identified and categorised.

2.3 Categorisation of issues

Matters raised in the submissions have been classified as one of the following five broad categories in accordance with the submissions report guidelines:

- The project (such as the project study area, the physical layout and design, key uses and activities, timing).
- Procedural matters (such as the level of quality of engagement, compliance with the Secretary's Environmental Assessment Requirements (SEARs), identification of relevant statutory requirements).
- The environmental, social or economic impacts of the project (such as amenity, air, biodiversity, heritage).
- The justification and evaluation of the project as a whole (such as consistency of the project with Government plans, policies or guidelines).
- Issues that are beyond the scope of the project assessment (such as broader policy issues) or not relevant to the project (categorised as 'other matters' in this report).
- Issues in this report are grouped into themes, and represented as a summary of what the issue relates to, rather than a word-for-word replication of issues in submissions.

2.4 Summary of matters raised in special interest group submissions

Seven submissions were received from special interest groups. Five of these submissions objected to the project, one supported the project and one submission provided comment (Table 2.1).

A list of key matters raised in the special interest group submissions is provided in Table 4.1 and in the submissions register.

Table 2.2 Summary of matters raised in special interest group submissions

Key matters raised	Quantity	Where addressed in this report
The environmental, social, or economic impacts of the project		
Roads and traffic	4	Section 5.1
Biodiversity	3	Section 5.4
Agriculture and land resources	3	Section 5.2
Fire and hazards	3	Section 5.6, Section 5.9
Waste management and resource efficiency	3	Section 5.12
Decommissioning and rehabilitation	3	Section 5.13,
Social (impacts on local services)	2	Section 5.10
Water	2	Section 5.7
Social (shortage of local skilled workforce)	1	Section 5.10.7
Social (health, safety and wellbeing)	1	Section 5.10.4
Social (property value/insurance costs)	1	Section 5.10.5
Noise	1	Section 5.3
Aboriginal heritage	1	Section 5.5
Cumulative impacts	1	Section 5.14
The project		
Unsuitable project location	1	Section 5.15.2
Design	1	Section 5.15.4
Procedural matters		
Community engagement during EIS phase	1	Section 5.16.3
Community benefit fund	1	Section 5.16.1
Other matters		
National economy	2	Section 5.17.1
Not supportive of renewable energy projects	1	Section 5.17.4

2.5 Summary of matters raised in community submissions

A total of 133 community submissions were received. 127 of these submissions objected to the project, four supported the project and two provided general comment (Table 2.1).

A list of key matters raised in the public submissions is provided in Table 2.3 and in the submissions register (Appendix A).

Table 2.3 Summary of matters raised in public submissions

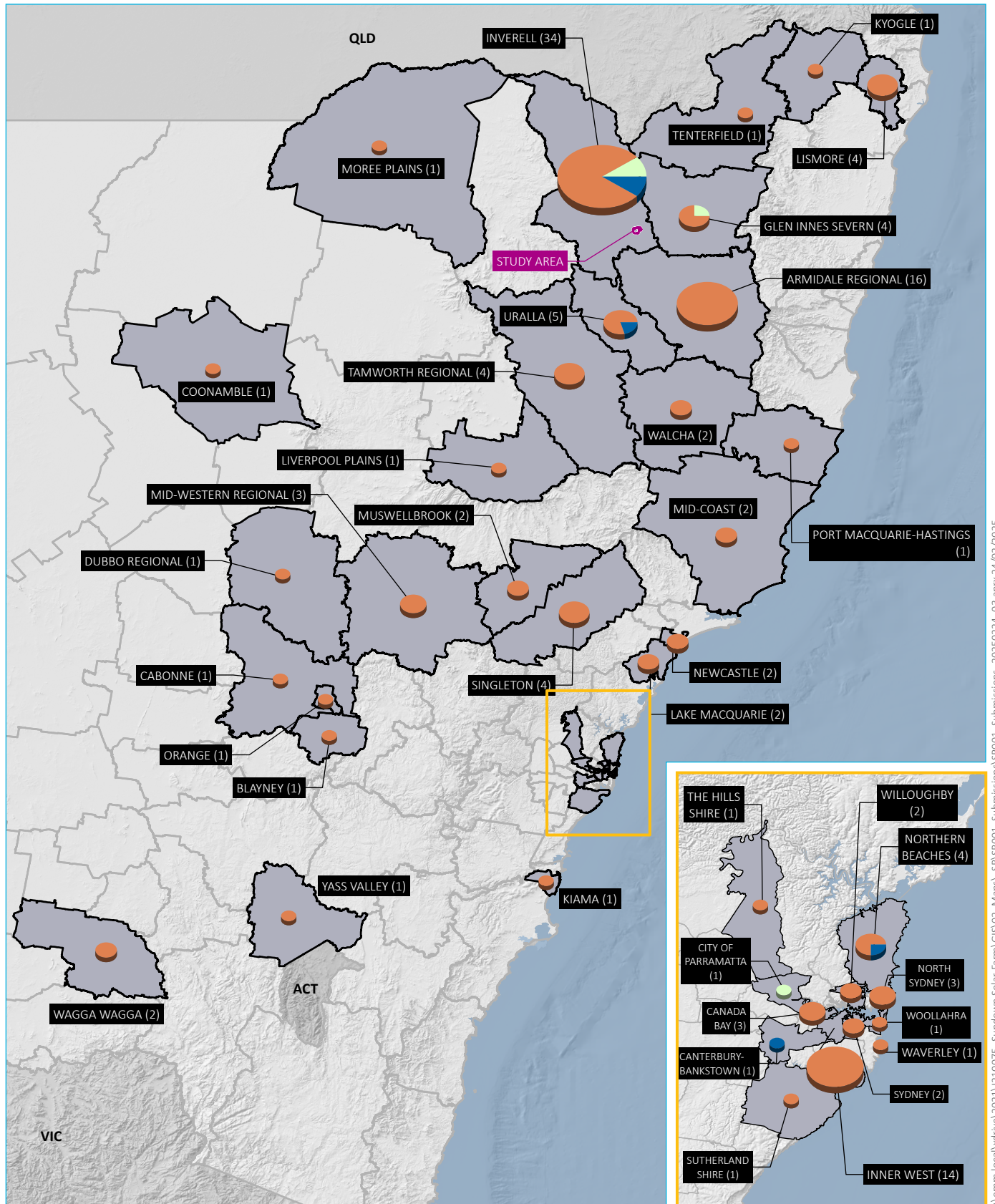
Key matters raised	Quantity	Where addressed in this report
The environmental, social, or economic impacts of the project		
Roads and traffic	86	Section 5.1
Agriculture and land resources	74	Section 5.2
Social (health, safety and wellbeing (HSW))	60	Section 5.9, Section 5.10
Noise and vibration	47	Section 5.3
Water	46	Section 5.7
Dust	37	Section 5.8
Biodiversity	32	Section 5.4
Social (impacts on local services)	33	Section 5.10
Fire and hazards	28	Section 5.6, Section 5.9
Local economic impacts	22	Section 5.10
Social (change in land use)	21	Section 5.10.9
Cumulative impacts	17	Section 5.14
Decommissioning and rehabilitation	10	Section 5.13
Social (property value/insurance costs)	8	Section 5.10.5, Section 5.10.6
Visual/landscape character	6	Section 5.11.1
Waste management and resource efficiency	3	Section 5.12
Aboriginal heritage	2	Section 5.5
The project		
Unsuitable project location	20	Section 5.15.2
Design	4	Section 5.15
Procedural matters		
Community engagement during EIS phase	37	Section 5.16.3
Legislation, planning and policy	5	Section 5.16.4
Other matters		
Not supportive of renewable energy projects	15	Section 5.17.4
National economy	5	Section 5.17.1

2.6 Origin of public submissions

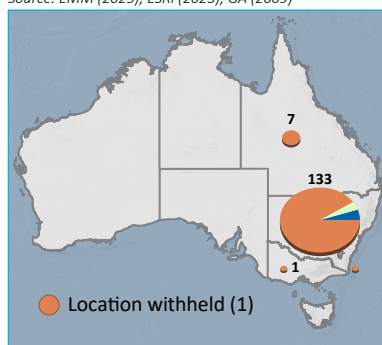
Public submissions came from 68 different suburbs. Of these submissions:

- 58% originated within 100 km from the project boundary
- 33% originated from the regional area (5–100 km from the project boundary)
- 8% originated from the local area (less than 5 km from the project boundary)
- 1% did not disclose a location.

The origin of public submissions is shown in Figure 2.1 and the breakdown of submissions is shown in Figure 2.2.



Source: EMM (2025); ESRI (2023); GA (2009)



KEY

Project area

Local government area - no submission provided

Local government area - submission provided

Submission type

LGA name (Total number of submissions in area)

Support

Object

Comment

Origin of submissions

Sundown Solar Farm
Submissions Report
Figure 2.1

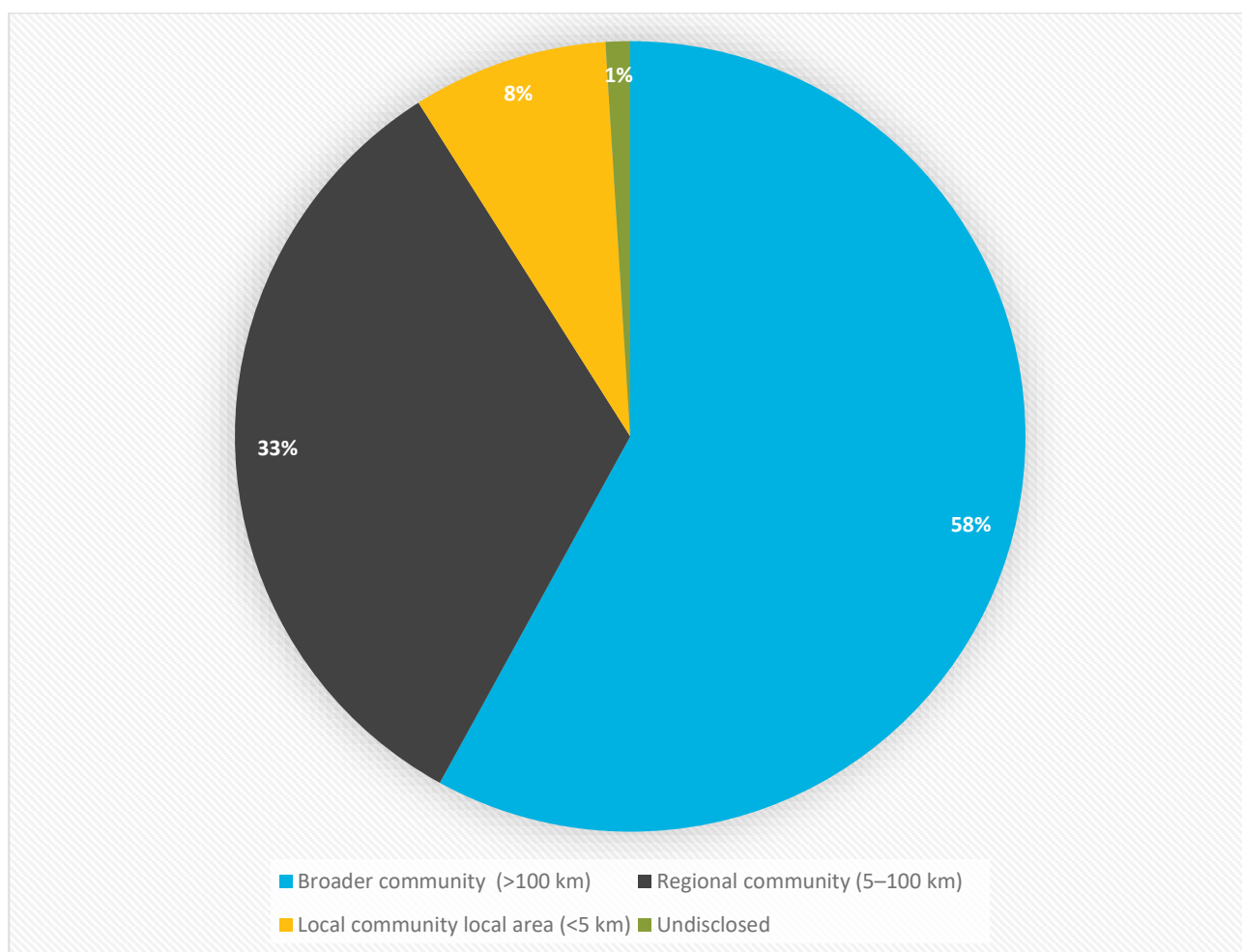


Figure 2.2 Breakdown of source of community submissions

3 Actions taken since EIS exhibition

3.1 Project refinements

3.1.1 Development footprint

In order to protect listed species under the *Biodiversity Conservation Act 2017*, the initial development footprint in the EIS included several small areas solar arrays within the project area. BCD's view was that avoiding these small areas will result in the creation of 'islands' of retained habitat and will still require impact between these areas from installation of cabling. Consequently, BCD asked the Applicant to revise the development footprint to avoid habitat fragmentation and thus reduce inconsequential impacts.

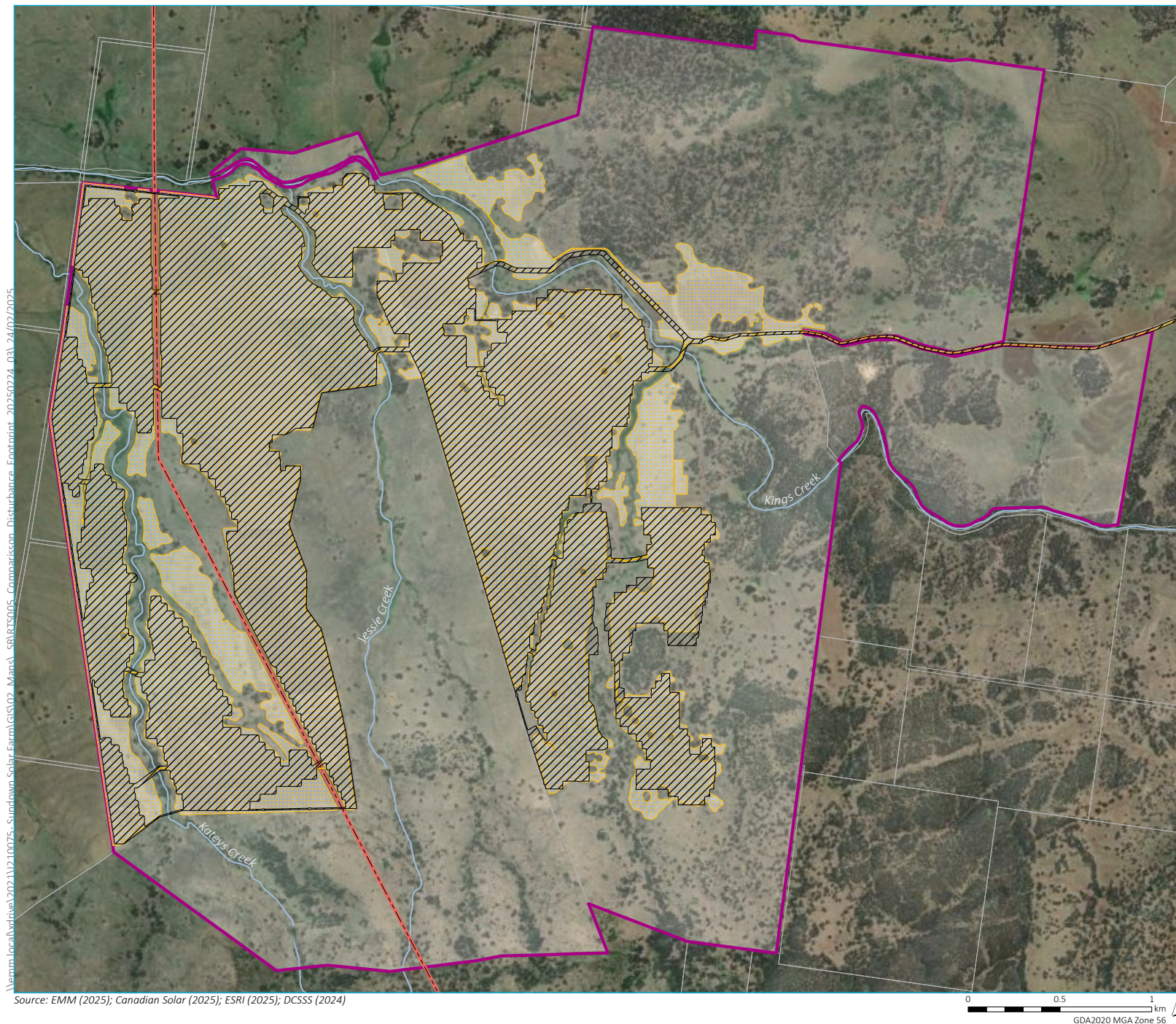
The Applicant has also excluded other areas in the north, east and west of the project site which contain significant biodiversity values.

In response to the request from BCD, the development footprint has been revised to exclude small fragmented islands and to include the addition of perimeter fencing to clearly delineate the project footprint and create a secure and safe working environment.

Minor refinements have also been made to small sections of the Spring Mountain Road portion of the access road, to allow the two over-size-over-mass vehicle movements to safely access the site.

The EIS disturbance footprint and revised disturbance footprint areas are provided in Table 1.1 and compared in Figure 3.1. These revisions have resulted in a reduction to the overall development footprint from approximately 651 ha to approximately 525 ha and the overall disturbance footprint from approximately 729 ha to approximately 612 ha.

The changes to the development footprint has necessitated further ecology surveys and consideration of offset liabilities. The Biodiversity Development Assessment Report (BDAR) that was presented in the EIS has been updated in response to the development footprint refinements (Appendix O).



- KEY**
- Proposed Sundown Solar Farm (Project area)
 - Final disturbance footprint
 - EIS disturbance footprint
 - Existing environment
 - 330 kV transmission line
 - Minor road
 - Vehicular track
 - Named watercourse

Comparison of EIS and final disturbance footprint

Sundown Solar Farm
Submissions Report
Figure 3.1

3.2 Further technical assessments

In response to submissions received from Government agencies, revised and additional technical assessments were undertaken for agriculture, biodiversity, traffic and construction water supply.

3.2.1 Agriculture

DPI Agriculture requested that a level 3 detailed Agricultural Impact Assessment be undertaken for the project (Section 4.2). It also asked for the inclusion of a Land-use Conflict Risk Assessment (LUCRA), preparation of a soil survey and land soil capability (LSC) class verification consistent with the requirements of Appendix A of the *Large-Scale Solar Energy Guideline* (DPHI 2022) specifically with regard to inspection density.

A Soil, Land and Agricultural Assessment has been undertaken in accordance with the request. The assessment has confirmed that there is no prime LSC class 1 agricultural land (i.e. and verified the categorisation of other LSC class land within the disturbance footprint). The assessment also details how agrisolar will be implemented for the project and a framework to minimise the impact to agricultural production. The Soil, Land and Agricultural Assessment is attached at Appendix D.

3.2.2 Biodiversity

The BDAR has been revised as a result of matters raised by BCD in relation to the project footprint and the minor refinements made to the design of the access road.

The revised BDAR considers the change in impacts to threatened species and the effect on the biodiversity offset strategy for the project.

3.2.3 Traffic and transport

TfNSW raised matters in relation to the classified road network, particularly the design of the Gwydir Highway/Spring Mountain Road intersection and road safety. The Applicant has updated the strategic design of the proposed access road intersection (Appendix H) in response to issues raised about road safety at the intersection. An over size over mass (OSOM) assessment report has also been prepared for the delivery of the substation components to the site and to confirm that the transport route is appropriate for the delivery. (Appendix F).

The Applicant has also prepared an interim Construction Traffic Management Plan (CTMP – Appendix I) to outline proposed management and mitigation measures to minimise safety risks to residents, school bus service users, livestock and other road users to address matters raised by TfNSW and Inverell Shire Council. Included in this CTMP is a commitment to undertake a road dilapidation report prior to and after construction and procedures for minimisation and ongoing management of construction related damage to roads, bridges and causeways as requested by Council.

3.2.4 Water supply

In the EIS, the Applicant identified that the construction water demand will be from an external supplier (trucked in) and that options to utilise existing infrastructure (e.g. onsite groundwater bores) will be investigated.

Since the EIS was exhibited, a groundwater supply options impact assessment has been undertaken to determine if water could be sourced by alternative means.

The groundwater supply options impact assessment is provided in Appendix K. The assessment shows that up to 50% of construction water could be sourced from an existing bore within the project area, with the remaining 50% supplied by an external supplier or on site from additional bores. The assessment also confirms that the volume of water extracted will not impact other water users or groundwater dependent ecosystems. Use of onsite resources will be used where possible. Further information is provided in Section 5.7.1.

3.2.5 Contamination assessment

The EIS included a Land and Rehabilitation Assessment which identified that agricultural activities have occurred on and near the development footprint and concluded that no potentially contaminated locations were present.

To eliminate any ambiguity of the presence/absence of contamination risks on site, a preliminary site investigation (PSI) was prepared (Appendix P).

The objectives of the PSI were to:

- identify potential sources of contamination and determine contaminants of potential concern (CoPC) within the disturbance footprint
- evaluate the risk that any soil contamination may pose to human health and the environment
- outline options for further investigation and appropriate measures for management or remediation (if required).

The scope of the PSI was based on the requirements of the National Environmental Protection Council, National Environment Protection (Assessment of Site Contamination) Measure 1999, and with consideration to the SEARs and the State Environmental Planning Policy (Resilience and Hazards) 2021.

The assessment included a desktop review of available information as well as a site inspection to assess current and historical potential contamination sources.

A conceptual site model (CSM) identified potentially contamination source-pathway-receptor linkages at the following source areas, presenting a moderate contamination risk:

- disused above ground storage tank
- empty chemical container storage area.

The following recommendations are made in the PSI with regards to making the disturbance footprint suitable for the proposed development:

- Prior to construction commencing, targeted sampling is recommended in areas where a moderate contamination pathway risk has been identified within the disturbance footprint to assess risk and inform appropriate disposal and remediation measures during construction.
- A construction environmental management plan (CEMP) should be developed and implemented to address the contamination sources identified in the CSM with a low risk.

- An unexpected finds protocol for managing potential and/or identified contamination should be prepared by an appropriately qualified contamination consultant and form part of the overall CEMP.

These recommendations will form part of the mitigation measures for the project.

3.3 Consultation

Engagement for the EIS was undertaken in accordance with the requirements of the *Undertaking Engagement Guidelines for State Significant Projects* (DPIE 2021) and the project SEARs. Table 5.1 of the EIS (EMM 2023) and Section 3.3 of this report demonstrates engagement is consistent with the community participation objectives in the guideline.

Stakeholder engagement on the project reflects the importance the Applicant places on this aspect of its business. During the submissions phase, the project's stakeholder engagement program was revised and further consultation was undertaken.

This has included concentrating on the near neighbours to the project which may be most impacted by construction. Face to face briefings have been held with Inverell Shire Council, Glen Innes Severn Shire Council and community members. Other virtual meetings have been held with DPHI and Inverell Shire Council during the submissions phase.

Written correspondence and project updates have been provided to affected landowners. The project website has been updated with up to date information on the project and contact details to respond to enquiries. An overview of the engagement activities carried out during and after the public exhibition of the EIS is provided in the following sections.

3.3.1 Government agency consultation

Engagement with key regulatory stakeholders has continued post exhibition of the EIS and is summarised below.

Table 3.1 **Agency consultation during the submissions phase**

Agency	Engagement method and dates	Matters discussed
DPHI	Meetings Telephone calls Emails August 2023 October 2023 May-December 2024 May 2025	The Applicant has kept DPHI updated on the status of the Submissions Report and the progression of additional assessments undertaken. DPHI has been interested in understanding the residual issues for the project, including the access road matters, biodiversity matters and registered Aboriginal party (RAP) consultation. Regular meetings have been held with DPHI throughout the submissions stage of the project. The Applicant has also interacted with DPHI in relation to content and categorising of submissions and the response methodology.
TfNSW	Emails Meeting Telephone calls October 2023 December 2023 October 2024 February 2025 May 2025	TfNSW has been consulted on the approach to addressing its advice on the project. This has resulted in additional assessments being undertaken for OSOM movements and the design of the Gwydir Highway/Spring Mountain Road intersection. The Applicant met with TfNSW to discuss the intersection design and traffic matters more generally. TfNSW was interested in knowing how the design interacts with the travelling stock route (Crown Lands) and the operation of the shuttle bus service to take workers to and from site. An updated intersection design was shared with TfNSW in October 2024. TfNSW provided comments on the intersection design, asking if sight lines had been fully considered in the design. TfNSW was also consulted with regarding the aquation of the small portion of Crown Lands to enable the modification of the Gwydir Highway/Spring Mountain Road intersection.

Agency	Engagement method and dates	Matters discussed
BCD	Face-to-face meetings Telephone calls Emails September 2023 October 2023 December 2023 January 2024 March 2024 May 2024 August 2024 October 2024 December 2024	BCD has been consulted on several occasions to confirm survey requirements for listed species, particularly, the survey requirements for Eastern Pygmy Possum. BCD's advice has been critical in ensuring surveys are undertaken appropriately and efficiently and to ensure compliance with the Biodiversity Assessment Method (BAM). As a result, surveys for Eastern Pygmy Possum have been undertaken during the submissions phase, in order to accurately assess the potential impacts to habitat and calculate offset credit liabilities. The Applicant provided a survey plan prior to undertaking the surveys which was endorsed by BCD. BCD was also consulted on the requirement to undertake surveys for Barking Owls, given the survey requirements were updated and released during the submissions phase. BCD was satisfied with the level of survey effort already undertaken for owls. BCD was further consulted on the minor changes to the project layout the survey requirements associated with this change. The revised BDAR has documented these matters as well as assessing the revised development footprint that avoids habitat fragmentation where possible (refer to Section 3.1.1).
DPI Agriculture	Telephone calls Email Meeting August 2023 October 2023	The Applicant consulted with DPI Agriculture to discuss the content of its advice and to discuss the proposed approach to addressing issues relating to agriculture in general and the potential sterilisation of agricultural land in the region. As a result, a Level 3 Agricultural Impact Assessment has been developed, which details management and mitigation measures to minimise the agricultural impacts of the project.
Heritage NSW	Letters Telephone calls Emails October 2023 November 2023 March 2024 April 2024 June 2024 September 2024 December 2024	Heritage NSW was consulted in relation to the requests made in its advice, in particular the method of presenting information about culturally modified trees. Heritage NSW agreed to receive photographs of trees instead of sketches of the trees. A subsequent field study undertaken to record the scar trees found that part of a scar tree (SSF-ST7) was not in its previously recorded location and had been inadvertently removed. Heritage NSW was able to provide advice on the matter and ran an investigation into the significance of the missing piece of the scar tree. Heritage NSW has subsequently provided a warning letter to the Applicant and advised no further action will be taken in relation to the matter.

Agency	Engagement method and dates	Matters discussed
Crown Lands	Telephone calls Emails February 2024 September 2024 October 2024 December 2024 February 2025	Crown Lands was kept up to date on the project and was consulted about the revised intersection design as the intersection crosses a travelling stock reserve (TSR). Crown Lands acknowledged receipt of the information. In response, Crown Lands provided advice on the tenure of the road and the TSR going forward.
Transgrid	Face-to-face meeting Telephone calls Emails January 2024	Transgrid was consulted to discuss the type of transformer that will be used to inform the OSOM assessment. Transgrid acknowledged the contact and provided commentary on the transformer, suggesting the use of two smaller transformers in place of one large transformer for ease of transport.
Inverell Shire Council	Meetings Telephone calls Emails Letters Site visit October 2023 November 2023 January 2024 February 2024 April 2024 July 2024 October 2024 November 2024 December 2024 April 2025 May 2025 June 2025	The Mayor and Councillors of Inverell Shire Council were briefed on the project during the submissions phase. The briefing covered the key issues raised in submissions in relation to the access road, the employment effects in the region and the various mitigation measures that will be put in place to minimise impacts. Inverell Shire Council officers have been consulted on several occasions to discuss issues raised in its submission. In particular, Council officers have been kept up to date on plans for the project and the various elements which have the potential to effect Council and its assets. This has included the design of the access road, a Council owned road (classified as a local road), and the proposed upgrades which may include but are not limited to; road widening, upgrading cattle grids, partial sealing for dust control, and the proposed intersection upgrade. In addition, Council officers have been provided with an update on community consultation, workforce accommodation options, the potential shuttle bus pick-up and drop-off locations and its strategy for waste management during construction of the project. As part of this consultation, Council has requested details of the proposed community benefits contribution in the form of a VPA for the project. There have been offers and discussions regarding the VPA in line current NSW State Government's Energy Policy Framework including the Benefit Sharing Guideline. The Applicant and Council will continue conversations regarding the options for the VPA. Council was also consulted regarding the small portion of Crown Lands required to enable the upgrade of the Gwydir Highway/Spring Mountain Road intersection.

Agency	Engagement method and dates	Matters discussed
Glen Innes Severn Shire Council	Meeting February 2024	The Mayor and Councillors of Glen Innes Severn Shire Council and executive leaders were provided with updates on the project. Council was interested in knowing about the construction stage of the project and the potential effect on infrastructure within its local government area. Council asked to be kept up to date on the project in the future.

3.3.2 Community consultation

Chapter 5 of the EIS discussed the engagement undertaken during the EIS stage. Since the lodgement of the EIS, the Applicant has continued to engage with the community in relation to the project. A summary of community consultation undertaken during the submissions stage is provided in Table 3.2. The Applicant plans to undertake further consultation in July 2025 with local stakeholders, including Inverell emergency service providers, Inverell Rural Fire Service, Inverell Chamber of Commerce, schools and community groups.

Table 3.2 Community engagement during submissions phase

Group/community member	Engagement method and dates	Matters discussed
The Honourable Barnaby Joyce MP – Member for New England	Email Telephone call January 2024 February 2024	An update was provided on the project and the assessments that were being undertaken, the approval process and made an invitation to attend a briefing on the project.
Adam Marshall MP – Member for Northern Tablelands	Meeting Email Telephone call January 2024 February 2024	Adam Marshall MP was consulted and provided with an update on the project. In particular, the agricultural impacts of the project were discussed. Mr Marshall was interested in knowing how the potential social impacts will be addressed, as well as the traffic impacts and regional employment effects.

Group/community member	Engagement method and dates	Matters discussed
Associated landowners	Meetings Telephone call Email October 2023 February 2024 May – June 2024 February 2025 June 2025	Associated landowners currently residing within the project area have been consulted regularly in relation to the project during the submissions phase to keep them generally updated on the progress of the Submissions Report and the various assessments that have been undertaken. Landowners have been supportive of the additional assessments and have provided access to the land to allow ecology and heritage assessments to be undertaken. In February 2025, the Applicant sent emails to landowners (including associated landowners). The email contained a letter and project newsletter, and the objective was to provide a project update, invite stakeholders to join the project's engagement register to receive future updates and to invite feedback. In June 2025, the Applicant entered into a neighbour agreement with the owner of Menari which is located on the access road. This property was previously listed as R15 in the EIS. R15 becomes an associated property and excluded from impact assessments. Prior to this, a site visit was held to discuss the potential impacts and mitigation. The movement of stock across Spring Mountain Road was also discussed and resolved.
Non-associated landowners	Meetings Letters Emails January 2024 February 2024 March-November 2024 February 2025	All non-associated landowners within 4 km of the project were provided written updates on the progress of the project and invitations were made to all landowners to attend face-to-face meetings. One landowner (the owner of residence R14) met with the Applicant to discuss the project and discussed the effects of upgrading the access road near the property, the movement of livestock and the road design elements, including cattle grids and creek crossings. In February 2025 the Applicant sent emails to landowners within 2 km of the project area. The email contained a letter and project newsletter, and the objective was to provide a project update, invite stakeholders to join the project's engagement register to receive future updates and to invite feedback.
Swan Vale residents	Letter Telephone calls February 2024 May-November 2024 January 2025 February 2025	All residents within 4 km of the project were provided with a written update on the project and an invitation to a project briefing. Further updates were provided to with local residents in telephone calls. In February 2025 the Applicant sent emails to landowners within 2 km of the project area. The email contained a letter and project newsletter, and the objective was to provide a project update, invite stakeholders to join the project's engagement register to receive future updates and to invite feedback.
GWYMAC Landcare	Meeting Email Letters January 2024 February 2024 November 2024 February 2025	The Applicant met with GWYMAC Landcare in Inverell. The discussion also covered potential project-related impacts related to dust, traffic safety, biodiversity, agricultural and water supply. GWYMAC also asked about potential benefits for the local community. Further updates provided via telephone call and email. In February 2025 the Applicant sent an email update to GWYMAC Landcare. The email contained a letter and project newsletter, and the objective was to provide a project update, invite stakeholders to join the project's engagement register to receive future updates and to invite feedback.

Group/community member	Engagement method and dates	Matters discussed
Inverell Chamber of Commerce	Email January 2024 February 2025	The Applicant provided the Inverell Chamber of Commerce with general updates on the project.
Broader community	Website Project email Project hotline Email Letter Newsletter January 2024 February 2025	The Applicant updated the project website (www.sundownsolarfarm.com.au) to include: • a revised project update • frequently asked questions • a dedicated project hotline (1800 319 690) • a dedicated email address (admin@sundownsolarfarm.com.au). The following types of emails were received and responded to as applicable: • coordination of the February 2024 project briefings • promotional emails from business offering potentially relevant services (including plant/equipment hire, engineering and fencing) • individuals requesting employment • associated landowner requesting further information. Telephone calls to the project hotline were mostly in relation to expressing interest in employment opportunities for labouring work on solar farms or in relation to providing products/services to solar farms.

3.4 Associated landowners

The three host landowners (for Lot 148 DP 753299, Lot 141 DP 753305 and Lot 1 DP 1064358) are associated with the project and are therefore considered associated landowners.

Since the EIS was exhibited, a neighbour agreement has been executed with the resident at 'Menari' (located at Lot 142 DP753305; 489 Spring Mountain Road, Spring Mountain NSW 2360). The agreement means that this neighbour has also become an associated landowner to the project (during the construction, operation and decommissioning phases of the project).

The following are the broad impacts that have been accepted within the neighbour agreement with the owner of Menari:

- All impacts on the property and all dwellings located on the property resulting from:
 - any use of the access road by any vehicles travelling to and from the Sundown Solar Farm Site at the property
 - the carrying out of the roadworks and the Agreed Works on the Property, including construction traffic, noise, visual impacts, dust and vibration related impacts
 - the construction, operation and decommissioning of the Sundown Solar Farm, including any visual, noise, vibration, dust, traffic, or social impacts.

4 Responses to Government agency and Council submissions

4.1 Introduction

A submissions register is provided in Appendix B, which summarises the advice received from Government agencies. Copies of the responses received from Government agencies and Council are provided as Appendix B.

The matters raised by each of these agencies have been addressed in the sections below.

The Government agency submissions that required no detailed responses are summarised in Table 4.5.

4.2 Department of Primary Industries Agriculture

A copy of the submission from DPI Agriculture is provided in Appendix B. The key issues raised in the submission are outlined below.

4.2.1 Agricultural impact assessment

Prepare a Level 3 detailed agricultural impact assessment consistent with the requirements of the *Large-Scale Solar Energy Guideline 2022*.

A level 3 detailed Agricultural Impact Assessment has been prepared for the project consistent with the requirements of the *Large-Scale Solar Energy Guideline* (DPHI 2022). The assessment took into consideration the findings of the land and soil report in the EIS and fieldwork was undertaken to comply with survey requirements under the guideline. The Soil, Land and Agricultural Assessment concluded that the project-related impacts to agriculture will be minor, temporary, and limited to the development footprint. The project will occupy:

- approximately 3 ha (or 0.01%) of the land and soil capability (LSC) class 2 lands in the Inverell Shire LGA
- approximately 303 ha (or 0.14%) of the LSC class 3 lands in the Inverell Shire LGA.

With the implementation of agrisolar at the site, the temporary impacts to agriculture are considered negligible in the context of the gross commodity values and land use coverage of the agricultural industries operating within the Inverell Shire LGA. A framework for the implementation of agrisolar is included in the Soil, Land and Agricultural Assessment, which will generally cover:

- Livestock rotation - During the detailed design phase prior to construction commencing, the project will consider design measures to enable the efficient movement of sheep between sections of the solar farm to facilitate rotational grazing.
- Flock security - The security fencing around the disturbance area will be maintained to ensure successful sheep containment and predation mitigation.
- Water supply - A clean and reliable water supply will be available for the sheep and regularly checked for contamination and cleanliness. Water points will be easily accessible in each paddock.
- Shelter - The solar arrays will provide adequate shelter to protect sheep from extreme weather conditions.
- Animal welfare - A regular health program will be established by the grazier, including vaccinations, deworming, and hoof care.

- Stocking density - Overstocking will be avoided to prevent pasture degradation and ensure that there is enough forage for all sheep. The grazier will adjust stocking density based on seasonal variations in pasture growth.
- Forage management - The grazier will be required to monitor the nutritional content of the forage and adjust the flock's diet as needed and consider supplementing with hay or other feed during times of low forage quality.
- Grazing rotation - A rotational grazing system will be implemented to prevent overgrazing and promote healthy pasture growth by divide the grazing area into paddocks and rotating the sheep among them to allow for rest and recovery of the pasture.
- Pasture management - The pasture will be monitored for issues, such as invasive weeds or soil erosion. Reseeding or overseeding pastures with suitable forage to maintain nutritional value will be considered as needed.
- Groundcover - Maintenance of groundcover at a minimum of 70% to prevent soil erosion. Following approval, management practices will be implemented to re-establish vegetation and grazing on the land post construction and during operation of the facility.
- Stocking rates - the grazier will have flexibility to manage stock numbers as required to avoid overstocking, which can lead to an increase in dirt and dust on solar panels and the sheep's wool, and understocking which can result in unmanaged vegetation growth.
- Environmental sustainability - Wherever practicable, the project will practice sustainable land management to ensure the long-term health of the ecosystem and will consider conservation practices that promote biodiversity and soil conservation.

Given the nature and scale of the established agricultural industries within the region and wider State, there will be a negligible impact to critical mass thresholds of agricultural enterprises needed to attract and maintain investment in agricultural industries and infrastructure.

4.2.2 Soil survey and LSC class verification

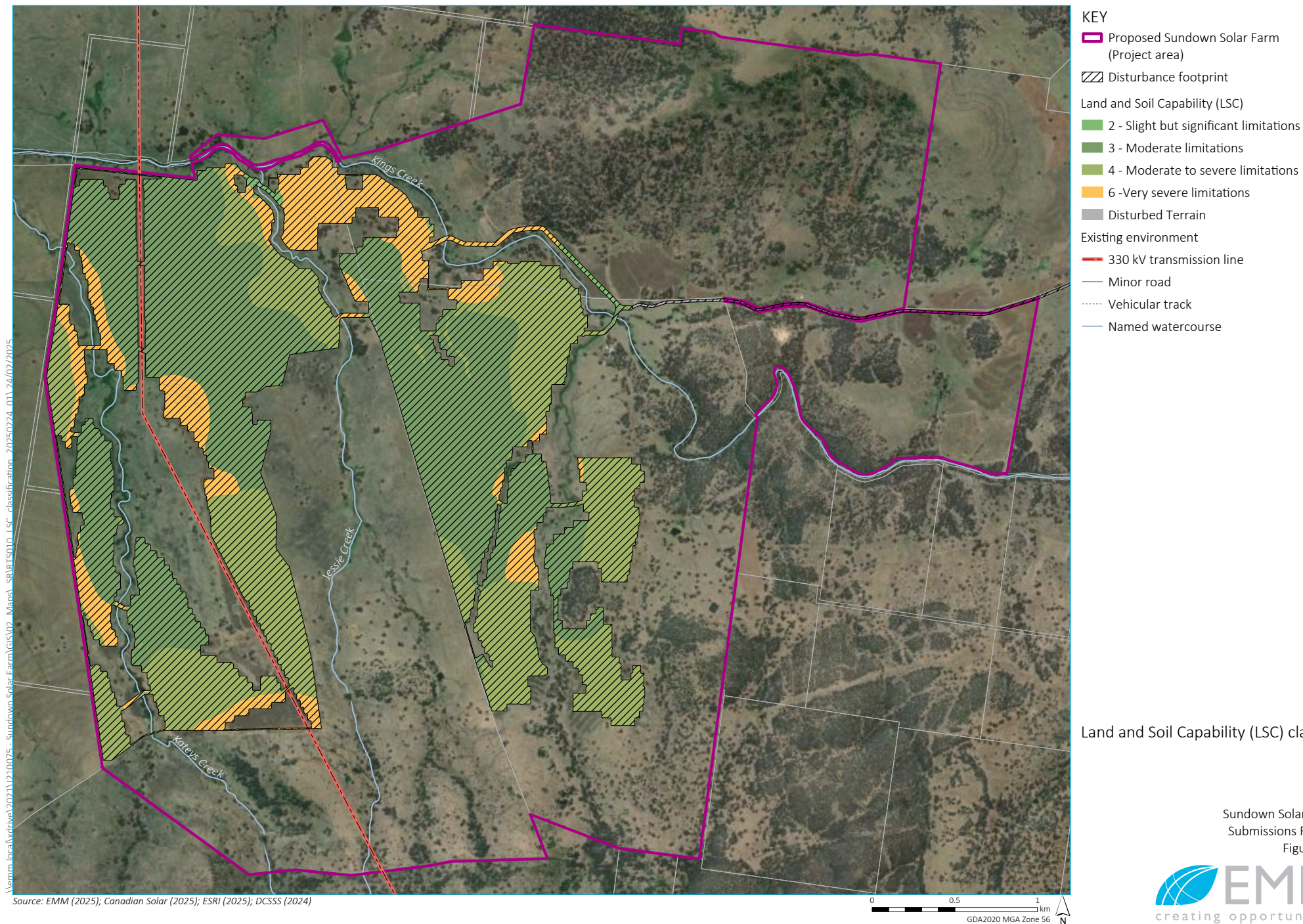
Prepare a soil survey and land soil capability (LSC) class verification consistent with the requirements of Appendix A of the Large-Scale Solar Energy Guideline 2022 specifically with regard to inspection density.

A soil survey and LSC class verification has been undertaken consistent with the requirements of Appendix A of the *Large-Scale Solar Energy Guideline 2022* specifically with regard to inspection density (soil was surveyed at a rate of 1 site every 5 to 25 ha, with 30 sites in total). The findings are included in the Soil, Land and Agricultural Assessment (Appendix D).

The soil survey indicated that the disturbance footprint comprises two dominant soil mapping units; Soil Unit 1: Vertosols – covering approximately 423 ha and Soil Unit 2: Dermosols – covering 176 ha.

Figure 4.1 shows the LSC verification of the disturbance footprint which comprises four LSC classes:

- LSC class 2: very high capability land – covering approximately 3 ha (~0.5% of the disturbance footprint).
- LSC class 3: high capability land – covering approximately 303 ha (~50% of the disturbance footprint).
- LSC class 4: moderate capability land – covering approximately 209 ha (~35% of the disturbance footprint).
- LSC class 6: low capability land – covering approximately 84 ha (~14% of the disturbance footprint).



4.2.3 Land Use Conflict Risk Assessment

Prepare a Land Use Conflict Risk Assessment (LUCRA) to assess impacts on adjoining properties and nearby agricultural land uses for both construction and operational phases.

EMM has prepared a LUCRA (Appendix E) in accordance with the *Land Use Conflict Risk Assessment Guide* (DPI 2011).

DPI defines the LUCRA as a system to identify and assess the potential for land use conflict to occur between neighbouring land uses (DPI 2011). The LUCRA assists with the assessment of the possibility for and potential level of future (Project-related) land use conflict between different parties. DPI has identified that land use conflicts occur when one land user is perceived to infringe upon the rights, values or amenity of another (DPI 2011).

The LUCRA Guideline risk ranking matrix defines a risk ranking from 1-25 with a score of 1 representative of the lowest risk and a score of 25 representative of the highest risk. Risk rankings are calculated by determining the probability of the potential conflict (as defined in Table 4.1) and identifying the consequences of the potential conflict, which include:

- Level 1: Severe
- Level 2: Major
- Level 3: Moderate
- Level 4: Minor
- Level 5: Negligible.

Table 4.1 LUCRA probability table

Level	Descriptor	Description
A	Almost certain	Common or repeating occurrence
B	Likely	Known to occur, or 'it has happened'
C	Possible	Could occur, or 'I've heard of it happening'
D	Unlikely	Could occur in some circumstances, but not likely to occur
E	Rare	Practically impossible

Source: DPI 2011.

In preparing the LUCRA, potential conflicts have been considered associated with land use, including potential for conflict as a result of:

- changes to the spread and distribution of weeds and increased presence of pest animals
- removal of agricultural land and subsequent reduction in productivity
- amenity impacts during construction and operation (e.g. noise, vibration, dust, visual and traffic)
- impacts to neighbouring agricultural operations, property values, council rates and local infrastructure and services
- increased soil erosion and impacts to surface water resources
- risks associated with the Project (e.g. security, safety, health and fire).

Under the unmitigated scenario (i.e. without the implementation of the proposed management strategies), the risk ranking matrix identified potential for ten high-risk conflicts (i.e. those with a risk ranking score of 10 or greater). Through the implementation of the proposed management strategies described, the number of high-risk conflicts have all reduced to scores below 10 (i.e. there are no conflicts have been identified as high-risk after the implementation of proposed management strategies).

Performance targets have been proposed to ensure that the proposed methods of control identified within the LUCRA continue to be effective at addressing the identified potential conflicts. The risk of each potential environmental impact was rated and evaluated. For agricultural impacts, the removal of land from agricultural production was considered the greatest risk.

However, the project is not anticipated to impact agricultural production at adjoining properties, and agrisolar is being proposed for the Sundown Solar Farm, which will minimise this risk. The Soil, Land and Agriculture Assessment and the LUCRA shows that, with the implementation of the proposed mitigation measures, no significant land use conflict risk exists in relation to the project in terms of agricultural impacts to the locality and the region.

4.2.4 Cumulative impacts

Prepare an assessment of the cumulative impact of the proposed development and other large scale renewable energy developments on land mapped as LSC Classes 2 to 4 in the LGA and the region.

The Soil, Land and Agricultural Assessment includes an assessment of the cumulative impact of the proposed development and other large-scale renewable energy developments on land mapped as LSC Classes 2 to 4 in the LGA and the region (Appendix D). The assessment discusses the potential cumulative impacts of the Sundown Solar Farm within the New England REZ, considering the project's proximity to existing and proposed renewable energy developments.

Currently, there are three operational renewable energy projects within the broader region; White Rock Wind Farm, White Rock Solar Farm, and Sapphire Wind Farm, with others approved but not yet developed.

The combined footprint of these projects and the Sundown Solar Farm is estimated to impact approximately 3,000 ha within the Inverell Shire and Glen Innes Severn LGAs, constituting 0.4% of agricultural land in these areas. The majority of the projected impact is expected to fall on land classified as LSC 4, 5 or 6, thereby minimising the impact to prime agricultural land.

Sundown Solar Farm will incorporate sheep grazing into its operations (agrisolar), thereby further reducing the impacts on the extent of agricultural land not being used for agriculture. While there may be some localised changes in productivity and agricultural support services, the overall cumulative impact on agriculture in the region is expected to be low, given the scale and nature of existing agricultural industries in the affected LGAs.

On a broader scale, the cumulative risk to agricultural land and productivity across NSW due to large-scale solar development is estimated to be very low. Even with significant expansion in solar generation in accordance with Australian Energy Market Operator (AEMO) estimates, the proportion of land required for solar farms will be 0.06% of all rural land.

4.2.5 Management plans

Should the proposed development be approved NSW DPI Agriculture requests that the following be included in the conditions of consent:

- The preparation of a Grazing Management Plan in consultation with NSW Local Land Services to detail appropriate grazing practices such as stocking rates, groundcover management and biosecurity arrangements.
- The preparation of a Decommissioning and Rehabilitation Plan which details the measures required to return the site to the pre-development condition or better to enable agricultural operations to be undertaken including the removal of all below ground infrastructure to a depth of 500 mm.
- The preparation of a Pest and Weed Management Plan which addresses the operational phase of the facility.

The Applicant will prepare management plans in accordance with its conditions of consent. The Applicant has committed to the implementation of agrisolar in its operations, and has developed a framework for sheep grazing with a range of actions to address stocking rates, groundcover management and biosecurity arrangements. Examples of potential grazing practices are outlined in the Soil, Land and Agricultural Assessment (Appendix D).

Following the completion of operations, the site will be decommissioned to so that it is safe, stable and non-polluting. All infrastructure including above and below ground will be decommissioned and removed to a depth of 500 mm unless otherwise agreed with the landowner. The land will be restored to its pre-existing use and LSC class.

Mitigation measures for managing weeds, biosecurity and pest animals will be detailed in the Biodiversity Management Plan for the project.

4.3 Biodiversity, Conservation and Science Directorate

A copy of the submission from BCD (now Conservation Programs, Heritage and Regulation Groups (CPHR)) is provided in Appendix B. The key issues raised in the submission are outlined below.

4.3.1 Biodiversity Development Assessment Report

4.3.2 Revised development footprint

Revise the proposed development footprint to:

- Ensure all project areas and components are connected and include all connections in the assessment.
- Limit the creation of small, unviable 'islands' of retained habitat.
- Further avoid and minimise impacts to woodland areas of the box gum woodland CEEC.

Since submission of the EIS, the Applicant has changed the type of solar panels proposed for the project, to panels with a greater capacity. This has enabled a redesign in the site layout to allow a reduced disturbance footprint, thereby reducing impacts on biodiversity (Figure 1.2).

The layout has also been optimised to now limit the creation of unviable islands of retained habitat. Also, small sections of the Spring Mountain Road portion of the access road have been refined. This has necessitated the revision of the BDAR (Appendix O).

4.3.3 Box Gum Woodland

The consent authority note the proposal is likely to have a Serious and Irreversible Impact on the Box Gum Woodland CEEC.

Revise the BDAR to include additional and appropriate measures to minimise impacts on the Box Gum Woodland CEEC such as revegetation to improve connectivity between avoided areas and within riparian corridors.

Most of the woodland patches and derived native grassland (DNG) areas have been avoided, recognising that most of the native woodland identified in the study area aligns with Box Gum Woodland Critically Endangered Ecological Communities (CEEC), which is a Serious and Irreversible Impact (SII) entity and is critically endangered under both NSW *Biodiversity Conservation Act 2016* (BC Act) and Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

A decision was made to exclude several eastern paddocks on the Newstead property from the project to avoid impacts on Box Gum Woodland including associated DNGs. These paddocks are ideally suited to solar development based on topography and proximity to the existing powerline connection. These paddocks were included in earlier iterations of the project design, however, have now been excluded within the current design to reduce impacts to the Box Gum Woodland.

The exclusion of these areas from the project reduces the generation capacity of the project by approximately 33 MW (DC) but avoids over 177 ha of DNG, more than 30 ha of woodland and at least 63 hollow-bearing trees, representing habitat for:

- Box Gum Woodland CEEC
- known records of Bluegrass (69 records, 1,650 individuals) and Austral Toadflax (one record, one individual)
- threatened woodland fauna known to occur in the study area
- hollow-dependent fauna.

The DNG avoided by the project represents relatively better-quality grassland compared with DNG in the western paddocks on the Newstead property and compared with the DNG on the Glen Eisle property, i.e. avoids 590_DNG_MOD (vegetation integrity score = 20.1) preferentially over 590_DNG_LOW (vegetation integrity score = 17.8) and 590_DNG_V_LOW (vegetation integrity score = 9.1).

The BDAR has been updated to include revegetation measures to improve connectivity between avoided areas and within riparian corridors.

4.3.4 Scattered trees

The assessor revises the vegetation mapping to address scattered trees within derived native grassland (DNG) areas, and ensure all woodland areas are included in the appropriate vegetation zone.

Update Table 4.2 of the BDAR to include a new condition class for scattered trees in DNG areas that are not otherwise mapped as woodland, and a description of the DNG “very low” class.

Table 4.2 of the BDAR has been updated to include a new condition class for scattered trees in DNG areas that are not otherwise mapped as woodland. A condition and description has also been added for DNG “very low” class.

4.3.5 Species presence

Revise the BDAR to determine presence of candidate threatened flora species in all areas of suitable habitat either by undertaking targeted survey, assuming presence or by obtaining an expert report.

Review the species polygons for Bluegrass and Austral Toadflax after addressing recommendation 4.1.

Bluegrass and Austral Toadflax were identified during field survey and were mainly recorded within areas of DNG; however, these species were also recorded in localised areas within cultivation paddocks in between cultivation events (i.e. after harvest and before ploughing, or in paddocks where cultivation activities ceased for several years due to drought). The occurrences of Bluegrass and Austral Toadflax recorded are patchily distributed and are largely concentrated in the vicinity of watercourses, fence lines and roadsides, possibly where there is less frequent cultivation or less intense/regular disturbance, or where the ground cover is better protected from other agricultural activities by fence infrastructure.

In total, 246 Bluegrass records were identified in the general study area representing over 3,300 plants; and 906 Austral Toadflax records in the study area representing over 21,000 plants.

Bluegrass and Austral Toadflax are assessed by area. Species polygons were prepared for Bluegrass and Austral Toadflax to measure the area of suitable habitat within the disturbance footprint. Assumptions applied to the preparation of the species polygons are described in this BDAR. In total, the species polygon for each species is 125.94 ha and 130.58 ha respectively, reflecting the large areas of DNG within the disturbance footprint. The species polygons also include small areas of cultivated land.

The preparation of species polygons for Bluegrass and Austral Toadflax considers that the project impacts on cultivated land (i.e. non-native vegetation) where threatened species have been recorded will result in prescribed impacts on threatened species. In accordance with Section 8.6 of the BAM, the retirement of biodiversity credits may be used with other conservation measures to mitigate prescribed impacts of a development on threatened species.

As such the species polygons for Bluegrass and Austral Toadflax include cultivated land within 30 m of a known threatened species record. These areas have been assigned a PCT reflecting the vegetation that would have occurred historically so that these areas can be entered into the BAM calculator (BAM-C).

4.3.6 Impacts associated with road widening

Clarify the likely biodiversity impacts of the proposed access road upgrades and confirm whether any tree removal is required for the proposed road widening.

The design of the proposed access road upgrade does not require the removal of trees. The impacts of the removal of trees across the project has been assessed and are presented in the updated BDAR.

4.3.7 Mitigation measures

Revise the BDAR to include additional details on the proposed mitigation measures to accord with the BAM.

Mitigation measures are detailed in Section 6.4 of the BDAR. The guidelines for mitigating and managing impacts on biodiversity values are outlined in Section 8.4.1 and Section 8.4.2 of the *Biodiversity Assessment Method* (DPIE 2020).

The BDAR has been updated and the mitigation measures have considered the guidelines stipulated in the BAM.

4.3.8 Data inconsistencies

Review the data inconsistencies referenced in this response.

The BDAR has been revised to consider the project refinements and to consider the matters raised by BCD in its submission. This has included a review of data inconsistencies reference in the BCD submission. The inconsistencies have been rectified and are presented in the revised BDAR.

4.3.9 Matters of National Environmental Significance

Provide additional information in relation to the assessment of impacts to Matters of National Environmental Significance as outlined in this letter to enable the Bilateral Assessment to be completed for this project.

Revise the BAM-C for the assessment to account for EPBC Act threatened ecological communities.

The consent authority notes the above will result in duplication of credits for zones input into the BAM-C. Should development consent be granted, the conditions should only list the offset obligation for the EPBC Act threatened ecological communities

Since the EIS was exhibited, further survey work has been undertaken. The BDAR has been revised to consider the project refinements and to consider the matters raised by BCD in its submission. The Matters of National Environmental Significance (MNES) identified in the BDAR have been further considered in the revised BDAR.

Key avoidance measures implemented for the project include the following:

- Several eastern paddocks on the Newstead property were excluded from the project that included high quality grassland and woodland – retains 177 ha of DNG (i.e. habitat for threatened flora species) and 30 ha of woodland (i.e. habitat for threatened fauna species).
- Designing the disturbance footprint to avoid areas with a high density of threatened species records:
 - avoidance of around 812 records representing over 19,400 plants of Austral Toadflax from the disturbance footprint. This represents avoidance of approximately 92% of all the plants recorded since 2018
 - avoidance of 225 records representing over 2,900 plants of Bluegrass from the disturbance footprint. This represents avoidance of approximately 89% of the plants recorded since 2018.
- Avoiding 210 of 240 hollow bearing trees recorded in the study area.
- Designing the disturbance footprint with a buffer between all significant watercourses within the study area to protect aquatic habitat.

4.4 Transport for NSW

A copy of the submission from TfNSW is provided in Appendix B. The key issues raised in the submission are outlined below.

A traffic survey was completed in June 2021 at the Gwydir Highway/Spring Mountain Road intersection to determine the peak hours. A full breakdown of traffic counts is required to clearly demonstrate the peak periods.

An intersection traffic survey was undertaken between 2 to 4 June 2021 at Gwydir Highway/Spring Mountain Road intersection. The intersection was surveyed between 7:00 am to 9:00 am (AM peak hours), as well as between 4:00 pm to 6:00 pm (PM peak hours). The peak hours for Gwydir Highway/Spring Mountain Road intersection were found to be 7:30 am to 8:30 am and 4:00 pm to 5:00 pm.

Vehicle movements associated with the construction and operation of the project will look to avoid these peak hours. Specifically, to reduce potential congestion at the intersection, deliveries will be scheduled outside of these peak times where possible.

The full results of the June 2021 traffic count at the Gwydir Highway/Spring Mountain Road intersection are attached in Appendix H.

Sundown Solar is in consultation with the White Rock Wind Farm regarding potential cost sharing of the upgrade of the Gwydir Highway/Spring Mountain Road intersection. Provide details about the consultation undertaken with Goldwind Australia in relation to potential cost sharing of the upgrade of the Gwydir Highway/Spring Mountain Road intersection, to better understand potential cumulative traffic impacts.

Goldwind Australia has approval to construct an alternative transmission line as part of the White Rock Wind Stage 2 project. Goldwind Australia is required to install a basic left turn (BAL) treatment and a Basic Right Turn (BAR) treatment at the Gwydir Highway/Spring Mountain Road intersection. The approval for these works was granted on 31 May 2017, however the works have not commenced.

The Gwydir Highway/Spring Mountain Road intersection is proposed to be upgraded to facilitate the project. The Applicant has consulted with Goldwind Australia to ask for its construction schedule and timing. Goldwind Australia has to date not been able to provide a definitive date for commencement of construction.

In the absence of this information, it is assumed that the construction schedules of the projects will not overlap and cumulative traffic impacts are not anticipated. The Applicant will continue to consult with Goldwind Australia regarding the respective construction schedules, and the potential cumulative traffic impacts.

4.4.1 Transport of construction workforce

Provide further detail regarding shuttle bus numbers and sizes, shuttle bus pick-up and drop-off locations and the location for shuttle bus parking during the day.

Specify how the maximum vehicle numbers (for shuttle buses, heavy and light vehicles) will be enforced during the peak construction period. Specify who is responsible for enforcing these limits, the methods that will be used to monitor compliance, the procedure for non-compliance and the review procedure.

Details of the shuttle bus service for construction workers are outlined in the interim Construction Traffic Management Plan (CTMP) (Appendix I). Shuttle buses will pick up and drop off workers in Inverell and Glen Innes.

During the peak construction period, the following maximum daily vehicle numbers will generally apply:

- 100 heavy vehicle trips per day
- 100 light vehicle trips per day
- 14¹ shuttle bus trips per day.

Compliance with vehicle movements will be managed closely under the CTMP. The requirement for enforcement, monitoring and review of the CTMP is outlined in the interim CTMP.

In general, the construction contractor will be responsible for construction scheduling and vehicle movements as well as the implementation of the CTMP. The CTMP includes procedures for actioning non-compliances as well as ongoing reviews.

4.4.2 Over-size over-mass vehicles

Provide an over-size over-mass vehicle (OSOM) assessment.

It is anticipated there will be two OSOM vehicle trips required to transport the transformer to site. An OSOM assessment was undertaken (Appendix F) and concludes the identified OSOM route is suitable for the OSOM vehicles proposed for the project.

EnergyCo is currently upgrading a commonly-used OSOM route from the Port of Newcastle to the Central-West Orana Renewable Energy Zone (CWO REZ) to ensure it is suitable for OSOM movements. The portion of the Sundown Solar Farm OSOM route between the Port of Newcastle and Dubbo aligns with this upgraded route. The Applicant will consult with relevant councils responsible for the major townships that are on the route north of Dubbo (i.e. Coonabarabran, Narrabri, Moree and Inverell), where minor and temporary changes to the roadside street furniture, landscaping and car parking may be required to facilitate the passage of the OSOM vehicles through these areas.

¹ 25 seat buses were proposed in the Traffic Impact Assessment.

4.4.3 Intersection design

Revise the design of the Gwydir Highway/Spring Mountain Road intersection upgrade to ensure that safe intersection sight distance (SISD) complies with Austroads Guide to Road Design (AGRD) Part 4A – Table 3.2.

Confirm whether the property access at 3018 Gwydir Highway, opposite Spring Mountain Road, has been closed and moved approximately 50 m to the west.

Ensure that the design of the Gwydir Highway/Spring Mountain Road intersection upgrade includes a requirement to seal Spring Mountain Road for a minimum of 10 m from the edge of Gwydir Highway, to prevent loose gravel tracking onto the highway.

Ensure that the design of the Gwydir Highway/Spring Mountain Road intersection upgrade shows the location of the proposed bus stop facilities.

Provide information on the proposed measures to prevent conflict between the users of the school bus stop and project-related vehicles.

Replace the existing fingerboard sign on the eastbound approach the Gwydir Highway/Spring Mountain Road intersection with an Advance Intersection Warning Sign.

Ensure the design of the intersection upgrade is to scale, provides detail on:

- legal property boundaries including the existing road reserve boundaries
- existing and proposed ground levels
- existing and proposed lane configurations
- existing and proposed lane widths
- new lane lengths
- typical cross sections
- conceptual drainage details
- proposed signage
- impacts to utilities and/or signage.

In consultation with TfNSW and Inverell Shire Council, the concept design of the Gwydir Highway/Spring Mountain Road intersection upgrade was revised to ensure compliance with safe intersection sight distance (SISD) requirements (Appendix H).

The original access (the eastern access) to 3018 Gwydir Highway, opposite Spring Mountain Road is no longer used, instead, a new access has been constructed approximately 50 m to the west of the original access. This new (western) access provides improved site distance and has replaced the original access. The occupants of 3018 Gwydir Highway have confirmed that the eastern access is no longer in use. The concept design of the Gwydir Highway/Spring Mountain Road intersection upgrade shows the location of the new (western) property access at 3018 Gwydir Highway.

The design includes sealing Spring Mountain Road for a minimum of 10 m from the edge of Gwydir Highway, to prevent loose gravel tracking onto the highway.

Mitigation measures for ensuring the safety of school bus users are outlined in the interim CTMP. The design of the Gwydir Highway/Spring Mountain Road intersection upgrade has been revised to include the installation of school bus stops. School bus stop signs will be installed on the southern and the northern sides of Gwydir Highway (Plate 4.1) and a pedestrian refuge area on the southern side of Gwydir Highway. The pedestrian refuge area on the northern side of Gwydir Highway will be relocated to the east of the driveway at 3081 Gwydir Highway to allow better sight distance to the right for vehicles exiting from this property).



Plate 4.1 **Proposed bus stop sign**

The design of the Gwydir Highway/Spring Mountain Road intersection upgrade has been revised to retain the existing fingerboard sign (Plate 4.2) on the eastbound approach the Gwydir Highway/Spring Mountain Road intersection, noting that the existing finger board sign is over 200 m west of the intersection. An Advance Intersection Warning Sign (Plate 4.3) will be installed located approximately 80 to 100 m west of the intersection.



Plate 4.2 **Existing fingerboard sign on the eastbound approach to the Gwydir Highway/Spring Mountain Road intersection**



Plate 4.3 **Advanced intersection warning sign to be installed on the eastbound approach to the Gwydir Highway/Spring Mountain Road intersection**

4.4.4 Rail impacts

Advise if the construction haulage route will intersect either of the following local railway corridors:

- Biniguy to Inverell.
- Glen Innes to Wallangarra.
- Advise if the construction haulage route will intersect any non-CRN railway corridors.

The construction haulage route does not intersect any active rail lines or crossings related to either of the Biniguy to Inverell Glen Innes to Wallangarra rail corridors. The construction haulage route does, however, intersect the disused Main Northern rail line in Glen Innes. As the line is disused, there are no rail crossings at this location.

As outlined in the OSOM assessment eight railway level crossings have been identified along the OSOM haulage route from Port of Newcastle to the site, as shown in Figure 4.2 and Table 4.2.

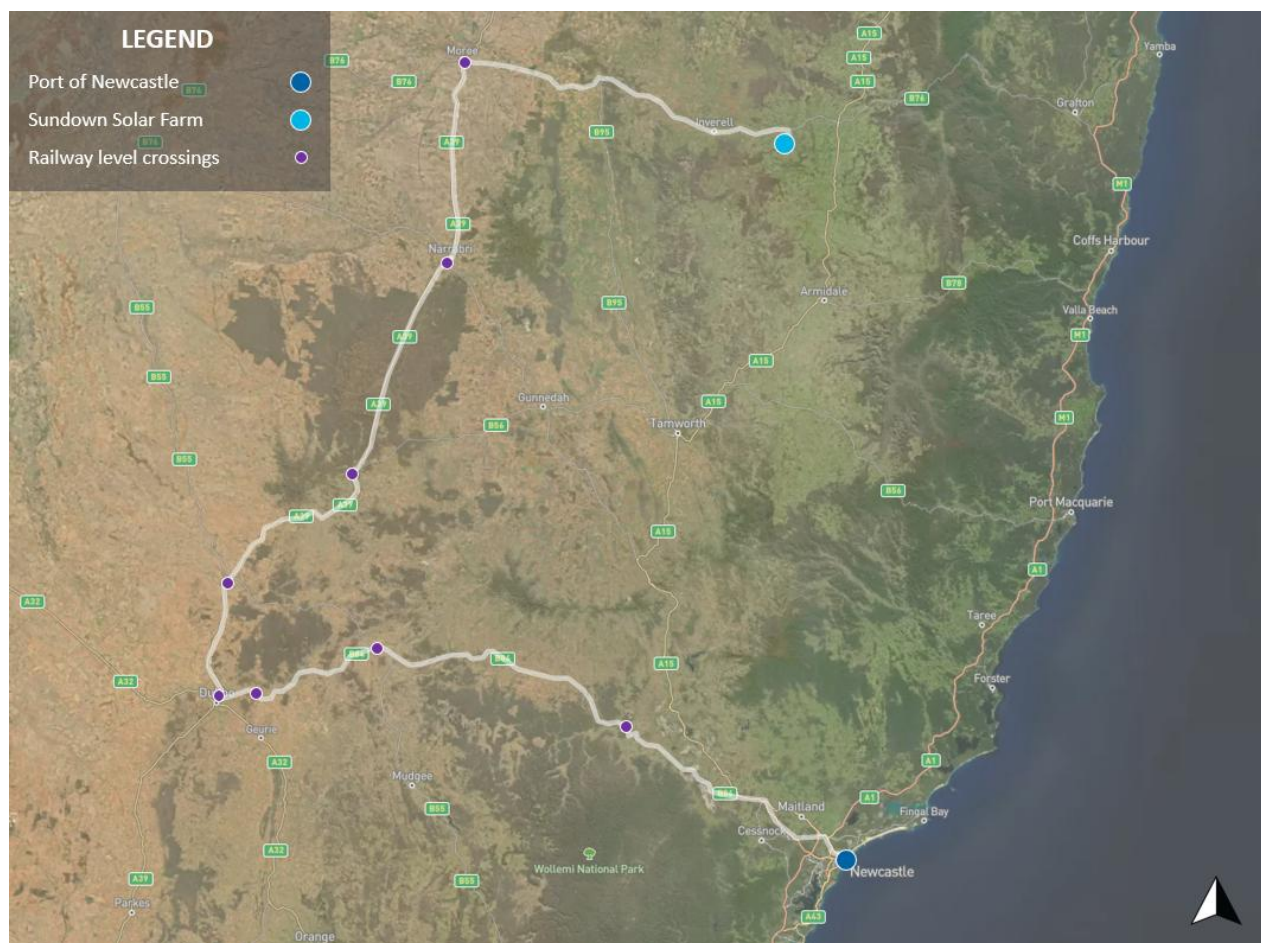
Railway level crossings with a conditional access condition permit OSOM vehicles to pass through at speeds greater than 35 km/h without contacting the relevant railway authority in the area. If it is likely that the OSOM vehicle will travel at speeds below 35 km/h through the railway level crossing, the relevant railway authority in the area will need to be contacted.

Restricted railway level crossings cannot be accessed at all without prior approval from the relevant railway authority.

Table 4.2 **Railway level crossings**

Location	Restricted railway level crossing?	OSOM vehicle travel speed likely to be greater than 35 km/h?
Merriwa Road (Golden Highway) near Mangoola Road, Denman	Conditional access	Yes
Sullivan Street (Golden Highway) near Wargundy Street, Dunedoo	Conditional access	No
Dunedoo Road (Golden Highway) near Lesslies Road, Ballimore	Conditional access	Yes
Boothenba Road near Newell Highway, Dubbo	No	Yes
Newell Highway near Mahers Hill Road, Gilgandra	No	Yes
Namoi Street near White Street, Coonabarabran	No, railway line appears to be disused	Yes
Newell Highway near Old Turrawan Road, Narrabri	No	Yes
Alice Street (Gwydir Highway) near Lou Swan Way (Newell Highway), Moree	Conditional access	No

As shown in Table 4.2, two railway level crossings have been identified (at Sullivan Street, Dunedoo and Alice Street, Moree) where the OSOM vehicle may potentially travel at speeds lower than 35 km/h. The Australian Rail Track Corporation (ARTC) will be contacted prior to the OSOM travelling across these railway crossings.



Source: MetroMap.

Figure 4.2 **Railway level crossings on the haulage route**

4.5 Heritage NSW

A copy of the submission from Heritage NSW is provided in Appendix B. The key issues raised in the submission are outlined below.

4.5.1 Consultation with registered Aboriginal parties

The last consultation recorded in the ACHAR is dated September 2022. Provide evidence that consultation was kept continuous.

Sundown Solar has continued to maintain regular communication with registered Aboriginal parties (RAPs), in accordance with the *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW 2010).

As there has been no change to the project that warrants the revision of the Aboriginal Cultural Heritage Assessment Report (ACHAR), communication with RAPs has been limited to project status updates, which have occurred in October 2023, April 2024 and July 2024. In July 2024 correspondence was provided to RAPs to advise that scarred tree SSF-ST7 may have been impacted and that Heritage NSW had been informed of the matter. Further correspondence was provided to RAPs in June 2025 to provide a general project update.

EMM and Sundown Solar will continue to consult with RAPs during the response to submission phase. A copy of the consultation log is provided as Appendix M.

4.5.2 AHIMS information

Please provide an updated Aboriginal Heritage Information Management System (AHIMS) search, as the AHIMS search is greater than 12 months old at the time of submission.

Please update the ACHAR to include all relevant AHIMS site numbers.

The original AHIMS search was conducted on 4 May 2021. EMM conducted further searches on 3 September 2024 and 30 May 2025. The 2025 search identified 50 sites in the search area, 38 of which were the sites previously identified by EMM during the ACHA survey. The remaining 12 sites are located outside of the project area.

All 50 sites are shown in Figure 4.3.

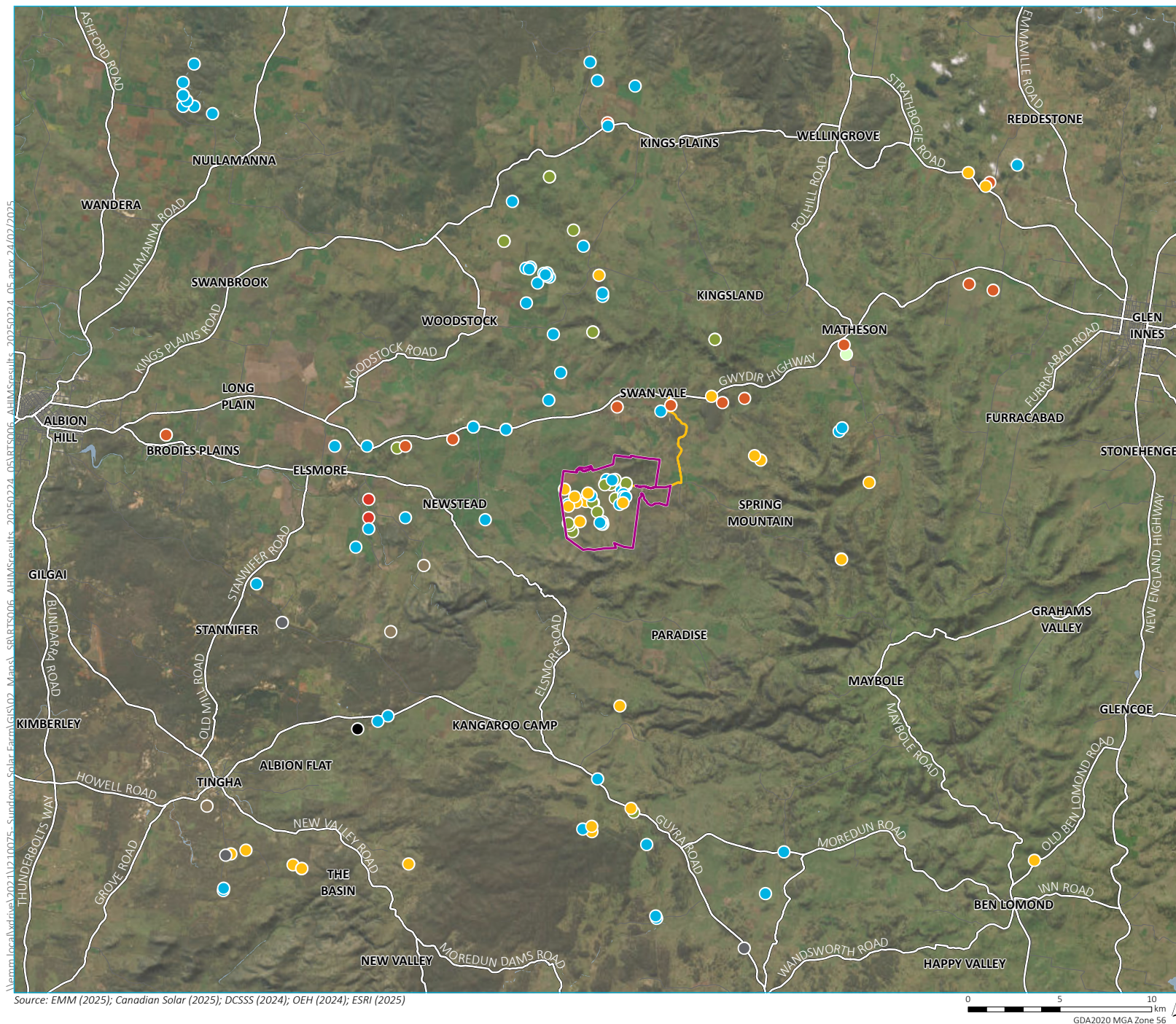
The AHIMS reference numbers of the 38 project-related AHIMS are detailed in Table 4.3 and Figure 4.3.

Table 4.3 AHIMS site details

AHIMS number	Site name	AHIMS number	Site name
11-6-0170	SSF-IF1	11-6-0180	SSF-OS6
11-6-0178	SSF-IF2	11-6-0186	SSF-OS7
11-6-0179	SSF-IF3	11-6-0187	SSF-OS8
11-6-0191	SSF-IF4	11-6-0162	SSF-OS9
11-6-0190	SSF-IF5	11-6-0163	SSF-OS10
11-6-0189	SSF-IF6	11-6-0164	SSF-OS11
11-6-0171	SSF-IF7	11-6-0165	SSF-OS12
11-6-0172	SSF-IF8	11-6-0207	SSF-OS13
11-6-0173	SSF-IF9	11-6-0188	SSF-ST1

AHIMS number	Site name	AHIMS number	Site name
11-6-0174	SSF-IF10	11-6-0193	SSF-ST2
11-6-0175	SSF-IF11	11-6-0195	SSF-ST3
11-6-0176	SSF-IF12	11-6-0194	SSF-ST4
11-6-0177	SSF-IF13	11-6-0196	SSF-ST5
11-6-0206	SSF-IF14	11-6-0197	SSF-ST6
11-6-0182	SSF-OS1	11-6-0169	SSF-ST7 ²
11-6-0183	SSF-OS2	11-6-0168	SSF-ST8
11-6-0184	SSF-OS3	11-6-0192	SSF-ST9
11-6-0185	SSF-OS4	11-6-0166	SSF-OR1
11-6-0181	SSF-OS5	11-6-0167	SSF-OR2

² Since the EIS exhibition period, a portion of SSF-ST7 was impacted. This has been reported to Heritage NSW on 6 March 2024 and an update was provided to RAPs on 30 July 2024. The matter is now resolved.



KEY

Proposed Sundown Solar Farm
(Project area)

Access road (widened road
from 4 to 8.7 m)

AHIMS (by site type)

- Aboriginal resource (ochre)
- Aboriginal resource and gathering
- Artefact scatter
- Bora/ceremonial
- Burial
- Ceremonial ring
- Culturally modified tree
- Grinding groove
- Isolated find
- Ochre quarry
- PAD
- Rock engraving
- Rockshelter with art or deposit

Existing environment

- Major road
- Minor road

AHIMS search results

Sundown Solar Farm
Submissions Report
Figure 4.3

4.5.3 Mapping

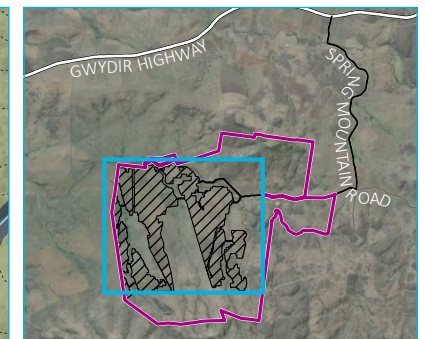
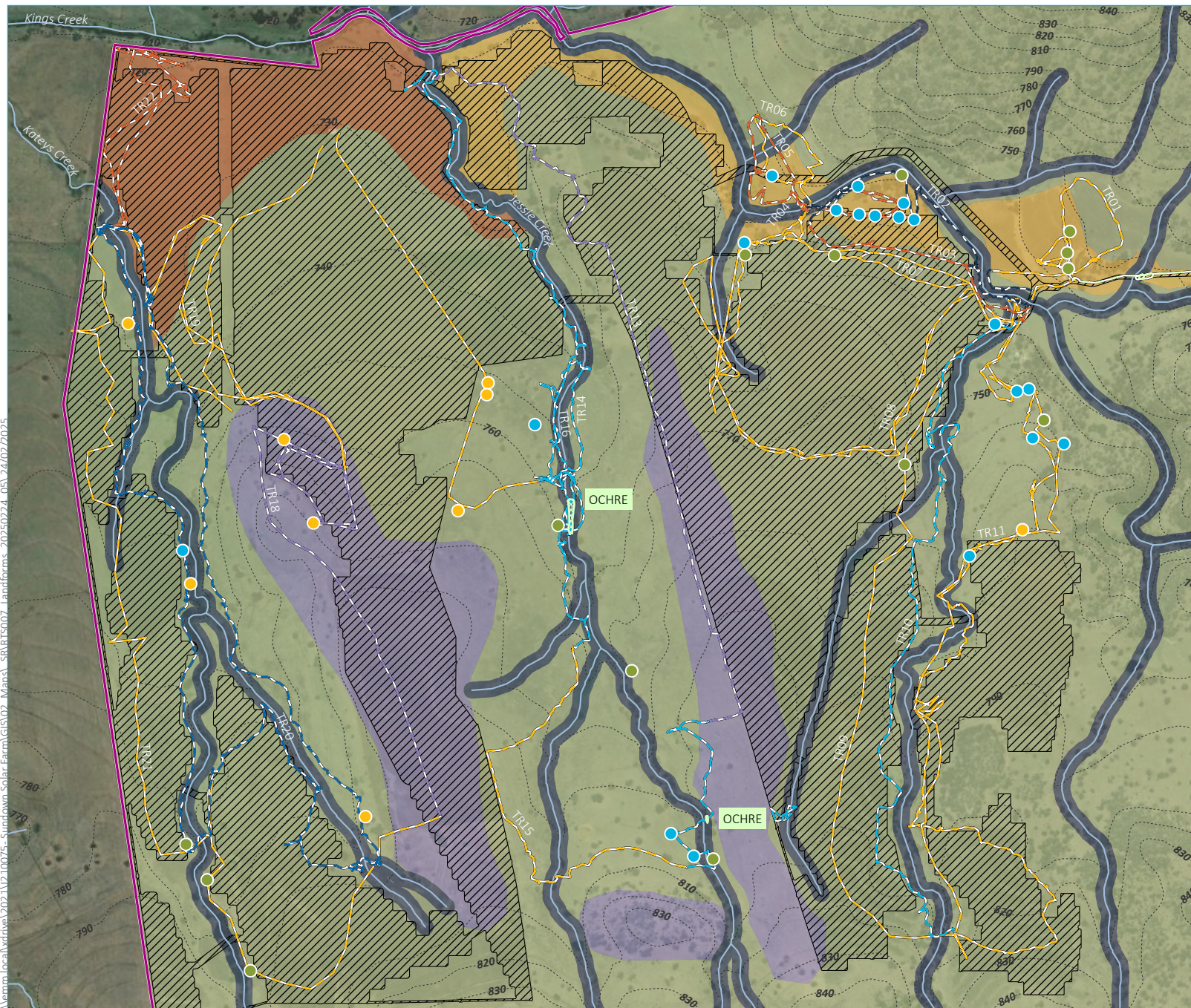
Please provide additional mapping to clarify the survey transects and their relationship with the project boundary, project infrastructure, PV arrays, and landforms.

Please update mapping to include site boundaries of artefact scatters.

The Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW 2010) guidelines requires that a 'description' of landforms within the project area is provided.

The landforms relating to the Sundown Solar Farm are described in sections 5, 7.5 and 10 of the ACHAR and are presented in Figure 4.4. This includes the project boundary, access road, conceptual site layout and is overlaid with the pedestrian survey transects and targeted access road survey.

The site boundaries of the two large artefact scatters (SSF-OS10 and SSF-OS12) are presented in Figure 4.5. All other artefact scatters comprised only 2 to 4 artefacts and were constrained to an area of 5 m² or less. The indicative extent of the two ochre resources is also shown.

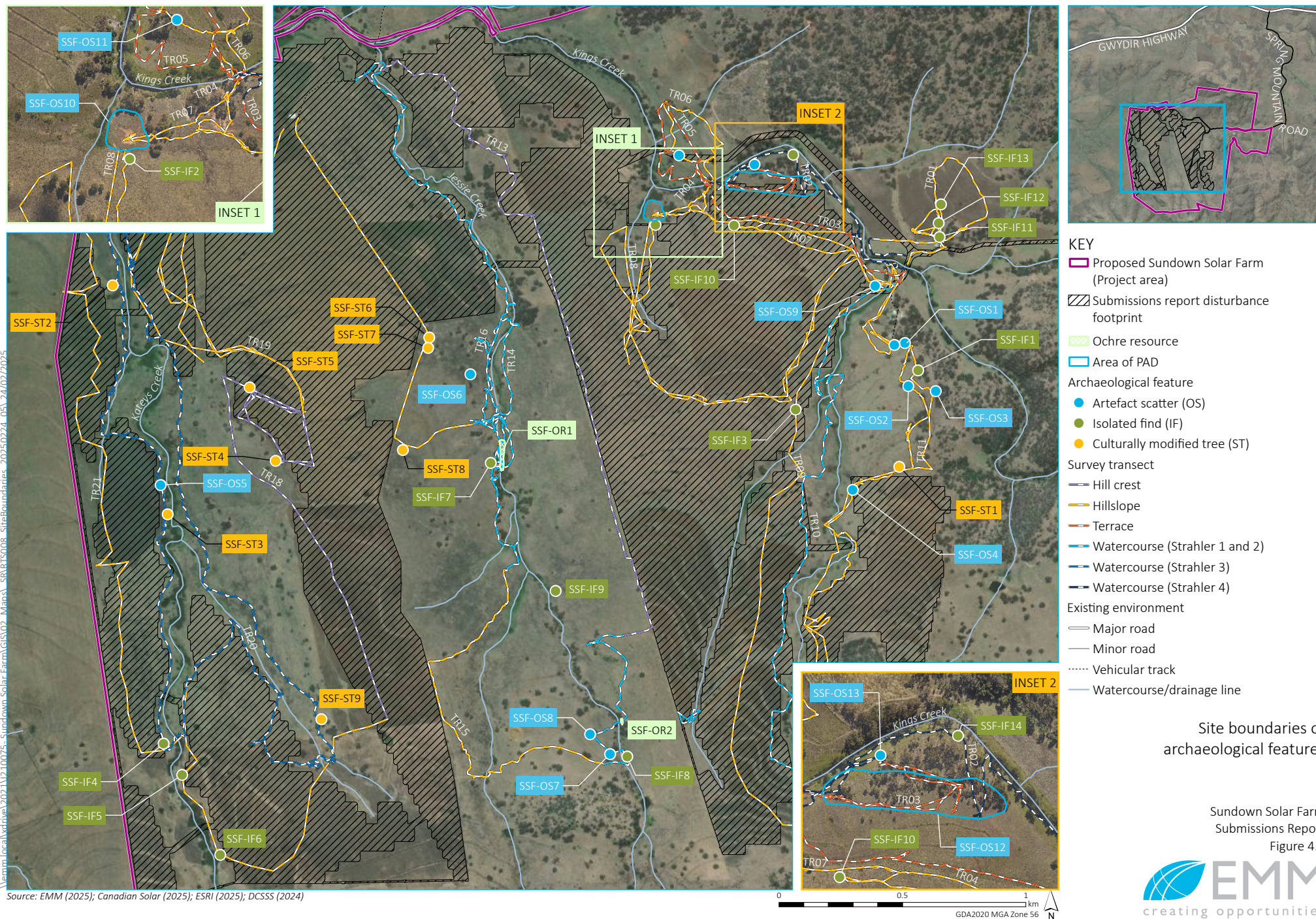


- KEY**
- Proposed Sundown Solar Farm (Project area)
 - Submissions report disturbance footprint
 - Ochre resource
 - Archaeological feature**
 - Artefact scatter (OS)
 - Isolated find (IF)
 - Culturally modified tree (ST)
 - Survey transect**
 - Hill crest
 - Hillslope
 - Terrace
 - Watercourse (Strahler 1 and 2)
 - Watercourse (Strahler 3)
 - Watercourse (Strahler 4)
 - Landform**
 - Crest
 - Depression
 - Simple slope
 - Terrace
 - Waning lower slope
 - Existing environment**
 - Watercourse/drainage line
 - Topographic contour (10 m interval)

Landforms and archaeological features

Sundown Solar Farm
Submissions Report
Figure 4.4





4.5.4 Potential archaeological deposits

Provide further information on the likelihood of potential archaeological deposits to be present in other sections of the project area, namely in the landform associated with SSF-OS10 and above the ochre sources along Jessie Creek.

Artefact scatter SSF-OS10 was identified on an eroding terrace to the south of Kings Creek (Photograph 4.1). This area was not subject to test excavation as no ground surface disturbance is proposed in this location. However, subsurface testing was undertaken at an adjacent area to the east (SSF-OS12). Test excavation at SSF-OS12 focussed on the terrace landform adjacent the large terrace area beside Kings Creek where the highest density of surface artefacts were identified within the project footprint.

During desktop assessment for the ACHAR, no archaeological studies for solar and wind farms in the local area had included sub-surface testing so comparative data to assess the likelihood of potential archaeological deposits in the project area was limited.

The ACHAR prepared for the proposed Inverell Solar Farm development (ERM 2022) near Inverell identified an artefact scatter (#11-6-0160) that was subsequently subject to test excavation. Test pits were dug across a terrace area within 60 to 155 m of Spring Creek to depths of up to 30 cm. No artefacts were recovered. It was concluded that artefacts at the subject site are limited to the surface deposit identified as #11-6-0160. These results support the findings of the predictive model and subsequent test excavation undertaken at SSF-OS12.

It is predicted that subsurface deposits at SSF-OS10, where soil of sufficient depth is present will be of similar densities to the findings at SSF-OS12. Specifically, very low densities that are consistent with the low artefact densities observed on the surface. Additional mapping provided in the inset in Figure 4.5 provides a predictive outline of the extent of PAD at SSF-OS10.



Photograph 4.1 SSF-OS10 showing erosion from water run-off and the depth of soil

Note: Artefacts were identified on scalded areas and it is predicted that subsurface artefacts will be present in low densities and at shallow depths, similar to SSF-OS12.

The ochre sites that were identified in the banks of Jesse Creek and its southern tributary, occurred at varying depths along the banks of the creek line where erosion has exposed them (Photograph 4.2 and Photograph 4.3). RAPs identified the sites as being culturally significant.

It is likely that the ochre resource extends further along Jesse Creek than has been identified but is obscured by vegetation or is inaccessible. It is not possible to determine the extent of the ochre deposit to the west and east (away from the creek) as it is not visible on the surface. However, the solar array footings are far enough away from the creek (a minimum of 350 m) and shallow enough that they are unlikely to impact the ochre or any PAD directly above it.

Few to no artefacts were identified on the surface above these two ochre sources and while there appears to be a substantial depth of soil, based on the test excavation that was undertaken within the impact area beside Kings Creek, if subsurface artefacts are present, they are likely to be shallow and in very low densities. Given that the ochre rich sections of Jesse Creek and its tributary are 350 m outside the project footprint, no further investigations are proposed.



Photograph 4.2 **Ochre resource (northern) on Jesse Creek (SSF-OR1)**



Photograph 4.3 Ochre resource (southern) on a tributary to Jesse Creek (SSF-OR2)

4.5.5 Scarred trees

Include sketches of scarred trees, showing the location and shape of scar, location of features (e.g. tool marks), and overall condition of the tree and scar.

The Applicant received advice on 22 September 2023 from Heritage NSW, that scaled photos will suffice rather than sketches. Scaled photos of each of the nine scarred trees identified within the ACHAR are provided as Appendix N.

It is noted that none of the nine scarred trees was predicted to be impacted by the project. However, since the EIS exhibition period, a portion of SSF-ST7 was inadvertently impacted as it could not be found on site. This was reported to Heritage NSW (now DCCEEW Heritage) on 6 March 2024 and an update was provided to RAPs on 30 July 2024. DCCEEW Heritage undertook an investigation into the matter.

On 16 December 2024, the Applicant received a letter from DCCEEW Heritage which summarised its investigation. The investigation found that breach of the *National Parks and Wildlife Act 1974* (NPW Act) had occurred. DCCEEW decided that a formal warning was sufficient in this instance and would not take further action.

The Applicant has made sure landowners are aware of the recorded Aboriginal sites and their responsibilities under the NPW Act.

4.5.6 Aboriginal Cultural Heritage Management Plan

Heritage NSW recommends the preparation of an ACHMP is required as a condition of consent, and that the ACHMP is approved by DPHI prior to any development activities occurring within the project area.

The ACHAR and ACHMP must take into consideration secondary impacts (e.g. road grading, road widening, public road upgrades, compaction, erosion) and long-term conservation options to areas of PAD and artefact sites within and adjacent to the project area. Avoidance of ACH does not denote its long-term conservation and protection. Provisions should include regular (e.g. annual, bi-annual) monitoring of the sites and if secondary impacts are present (e.g. erosion) then PADs should be subject to test excavations so that areas of conservation value and moderate to high significance are adequately avoided and protected

As outlined in section 13.2.1 of the ACHA, a Heritage Management Plan will be prepared in consultation with RAPs and implemented for the project. The management of any secondary impacts will be integrated into the proposed Aboriginal cultural heritage management plan (ACHMP). This will include identification of potential project elements with identified cultural materials and potential archaeological deposits, and methods to both further investigate and where necessary mitigate them.

Specifically, approach and methods of surface collection and archaeological excavation will be included in the ACHMP to manage this issue. The ACHMP will also include a suitable program of post-excavation analysis and reporting of any works undertaken and identification of the long term repository of any recovered cultural materials.

Secondary impacts to Aboriginal sites were considered in the ACHA. This relates primarily to the upgrade of Spring Mountain Road and Sturmans Road and the upgrade of the Gwydir Highway/Spring Mountain Road intersection. None of the previously recorded Aboriginal cultural heritage sites will be impacted by these activities.

A targeted survey of the access road was undertaken in 2022 with the RAPs (see ACHAR section 8.5.1). As part of this survey, the ~9 km route of the access road was driven with the RAPs. Areas deemed to have sensitivity (i.e. in proximity to creeks and AHIMS sites) were inspected on foot and photographed. No sensitive sites were observed and therefore it was confirmed with the RAPs that no sites are likely to occur within the proposed road alignment. The ACHMP will recommend a pre-construction survey of the access road prior to construction.

To ensure the long-term conservation and protection of all culturally modified trees, the ACHAR includes a commitment to passive management which may involve the installation of fencing around the scarred trees prior to construction or the sites being demarcated by at least one high visibility peg, stake or other marker to alert persons to their location to ensure they are not inadvertently harmed during the operation of the project.

Mitigation measures for potential erosion and compaction impacts associated with the construction and operation of the project have been assessed in the *Land and Rehabilitation Assessment: Sundown Solar Farm* (Appendix F of the EIS) prepared by EMM (2023). Table 7.1 of the *Land and Rehabilitation Assessment: Sundown Solar Farm* sets out management measures to cover erosion and sediment control; soil preservation; dispersive subsoils; any cut and fill activities and drainage and landform design. These management measures, in combination with permanent fencing, will ensure conservation of Aboriginal sites during the construction and operation of the project.

The ACHMP will include provisions for regular monitoring of the scar trees and artefact sites outside the project footprint, and which have not been subject to surface collection as per section 13.2.4 of the ACHAR.

The ACHMP will include a requirement to re-survey the access road prior to construction. The ACHMP and any proposed investigations/mitigations will be developed in consultation with the RAPs.

4.6 Department of Primary Industries Fisheries

A copy of the submission from DPI Fisheries is provided in Appendix B. The key issues raised in the submission are outlined below.

4.6.1 Waterway crossings

The project will involve the construction of temporary waterway crossings or permanent waterway crossings over waterways which are Key Fish Habitat. The construction of waterway crossings should be in accordance with DPI Fisheries Guideline document: *Why Do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings*. This is to ensure that the works are designed and constructed in accordance with best management practice and with minimal impact on the aquatic environment within the immediate vicinity of the proposed works.

As stated in the EIS (Table 6.40), the project will require works within waterfront land, including upgrades of existing road crossings and/or establishing new crossings over watercourses within the project area. These works will be undertaken in accordance with *Why Do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings*.

4.6.2 Riparian buffer zones

DPI Fisheries policy advocates the use of terrestrial buffer zones as per the *Policy and Guidelines for Fish Habitat Conservation and Management (Update 2013)* available on the Department's website at <http://www.dpi.nsw.gov.au/fisheries/habitat/publications/policies,-guidelines-and-manuals/fish-habitat-conservation> which states that "NSW DPI will generally require riparian buffer zones to be established and maintained for developments or activities in or adjacent to TYPE 1 or 2 habitats or CLASS 1–3 waterways." The department anticipate that adequate riparian buffer zones will be maintained adjacent to the watercourses as part of this project.

Vegetated riparian zones which provide suitable buffering between proposed project infrastructure and watercourses have been identified based on the requirements of the *Water Management Act 2000* and consistency with *Controlled activities – Guidelines for riparian corridors on waterfront land* (DPE 2022), with the aim of ensuring no more than minimal harm will occur to waterfront land including the associated aquatic environment.

The BDAR presented in the EIS (EMM 2023) describes key fish habitat (KFH) in the vicinity of the project as extending along Kings Creek and Swan Brook (both Class 1 major KFH) and Kateys Creek (Class 3 minimal KFH). Other local watercourses are categorised as 2nd or 1st order streams. The value of aquatic habitats for threatened aquatic species are limited to marginal habitat for selected species only, with no known occurrences of species. All watercourses are degraded to some degree and impacted by agricultural land use in the surrounding area. Existing riparian corridors are limited in width and in generally poor condition.

The proposed vegetated riparian zones provide an opportunity for the establishment and protection of riparian vegetation and buffers to the watercourses to an extent that represents a significant improvement on existing conditions. This is considered to achieve a reasonable balance between development constraint and environmental outcomes, given the relatively low value aquatic habitat present.

4.7 Department of Planning and Environment Water

A copy of the submission from DPE Water (now DCCEEW – Water) is provided in Appendix B. The key issues raised in the submission are outlined below.

4.7.1 Guidelines for controlled activities on waterfront land

Works within waterfront land need to be in accordance with the *Guidelines for Controlled Activities on Waterfront Land*.

As outlined in the EIS (Table 4.3), works within waterfront land will generally be undertaken in accordance with the *Guidelines for Controlled Activities on Waterfront Land*, including the construction and maintenance of stormwater and drainage infrastructure.

4.8 Department of Planning and Environment Hazards

A copy of the submission from DPE Hazards is provided in Appendix B.

The submission from DPE Hazards outlines that the Applicant has demonstrated that:

- avoidable risks have been avoided
- the risks from a major hazard have been reduced by separation to residents
- consequences of the more likely events are contained within the site boundaries
- there is no existing high-risk installation nearby.

The submission from DPE Hazards identifies that the proposed development meets the qualitative risk criteria in the Department's *Hazardous Industry Advisory Paper No. 4, 'Risk Criteria for Land Use Safety Planning'* and that the project has been designed with hazard and risk in mind. The Applicant appreciates the validation comments made by DPE Hazards.

4.8.1 Battery storage restriction

DPE Hazards recommends that a condition of consent is included requiring that the total battery storage associated with the development must not exceed a total delivery capacity of 150 MW.

The Applicant has confirmed that the BESS will have a total delivery capacity of 150 MW for a four-hour duration.

4.8.2 Fire safety study

DPE Hazards recommends that a condition of consent is included requiring the applicant to prepare a fire safety study for the battery storage.

The Applicant will prepare a fire safety study prior to commencing construction of the BESS. The fire safety study will:

- be consistent with the Department's Hazardous Industry Planning Advisory Paper No. 2 'Fire Safety Study' guideline
- be consistent with Fire and Rescue NSW's Fire Safety Guideline Technical Information – Large scale external lithium-ion battery energy storage systems – Fire safety study consideration

- describe the final design of the battery storage
- consider the operational capability of local fire agencies and the need for the facility to achieve an adequate level of on-site fire and life safety independence
- include reasonable worst-case fire scenario to and from the battery storage and the associated fire management
- identify measures to eliminate the expansion of any fire incident including:
 - adequate fire safety systems and water supply
 - separation and/or compartmentalisation of battery units
 - strategies and incident control measures specific to the battery storage design.

The fire safety study will be prepared in consultation with Fire and Rescue NSW and will include written confirmation that the study meets the requirements of Fire and Rescue NSW as required by the Department's Hazardous Industry Planning Advisory Paper No. 2 'Fire Safety Study' guideline.

4.8.3 Storage and handling of dangerous goods

DPE Hazards recommends that a condition of consent is included requiring the applicant to store and handle all chemicals, fuels and oils used on-site in accordance with the requirements of all Australian Standards and the NSW EPA's *Storing and Handling of Liquids: Environmental Protection – Participants Handbook*, if the chemicals are liquids.

It is anticipated that during both construction and operation phases, there will be a low need for storage of chemicals, fuels and oils.

Construction contractors will be responsible for maintenance and refuelling of their equipment and will not need to store fuel and oils on site.

If required, the Applicant will store and handle all chemicals, fuels and oils used in accordance with the requirements of all Australian Standards (including AS 1940) and the NSW EPA's *Storing and Handling of Liquids: Environmental Protection – Participants Handbook*, if the chemicals are liquids. In the event of an inconsistency between these, the most stringent requirements will prevail to the extent of the inconsistency.

The Applicant will include procedures for the management and storage of chemicals onsite, which will detail handling measures and safe storage, separation distances and emergency response protocols.

4.9 Fire and Rescue NSW

A copy of the submission from Fire and Rescue NSW is provided in Appendix B. The key issues raised in the submission are outlined below.

4.9.1 Fire safety study

Develop a Fire Safety Study in accordance with the requirements of Hazardous Industry Planning Advisory Paper (HIPAP) No.2.

The Applicant will prepare a fire safety study prior to commencing construction of the BESS.

The fire safety study will be prepared in consultation with Fire and Rescue NSW. The study will include written confirmation from Fire and Rescue NSW that it meets the requirements of Fire and Rescue NSW as required by the *Hazardous Industry Planning Advisory Paper No. 2 'Fire Safety Study'* (DPE 2011).

4.9.2 Emergency plan

Develop:

- A comprehensive emergency plan for the site in accordance with HIPAP No.1, informed by the findings of the fire safety study.
- An Emergency Services Information Package (ESIP) in accordance with Fire and Rescue NSW fire safety guideline – *Emergency services information package and tactical fire plans*.
- An Emergency Responders Induction Package is developed for the site in consultation with, and to the satisfaction of Fire and Rescue NSW prior to commissioning of the site.

The Applicant will prepare and implement a comprehensive emergency plan in accordance with HIPAP No.1, informed by the findings of the fire safety study. It will also prepare and implement an Emergency Services Information Package (ESIP) in accordance with Fire and Rescue NSW fire safety guideline – *Emergency services information package and tactical fire plans*.

An Emergency Responders Induction Package will be prepared for the site in consultation with, and to the satisfaction of Fire and Rescue NSW prior to commissioning of the site. The Emergency Response Induction package will inform first responders of site-specific features and safety measures to ensure they are able to undertake their duties effectively in accordance with agency specific Standard Operational Guidelines. The format of the Emergency Response Induction package will be such that it can be readily shared across all agencies.

4.10 Inverell Shire Council

A copy of the submission from Inverell Shire Council is provided in Appendix B. The key issues raised in the submission are outlined below.

4.10.1 Roads and traffic

Council will like the following conditions to be required as conditions of consent:

- The final design of the upgrades to Spring Mountain Road and Sturmans Road being approved by Council.
- Independent road dilapidation reporting pre and post construction, for all local and state roads.
- Ongoing and regular measures to restore and reinstate road damage resulting from construction of the project.
- Council being able to review and provide input into the Traffic Control Plan and the Construction Traffic Management Plan.

Consultation with the Inverell Shire Council in relation to the upgrade of the access road has continued during the submission phase (Section 3.3). Inverell Shire Council has provided its in-principle approval to the upgrades to the proposed upgrade of Spring Mountain Road and Sturmans Road.

To finalise the design of the intersection, the Applicant will:

- provide the final design of the upgrades to Spring Mountain Road and Sturmans Road to Inverell Shire Council and TfNSW for approval
- undertake independent road dilapidation reporting of Spring Mountain Road and Sturmans Road pre and post construction and restore and reinstate road damage resulting from construction of the project, as applicable
- consult with Inverell Shire Council and TfNSW with regards to the interim CTMP (Appendix I).

4.10.2 Waste management

To assess the capacity for the Inverell waste depot to accept and process the waste generated during the construction and operation of the project, Council requires further information about the types and volumes of waste to be generated. Accordingly, Council requests that the applicant prepares a detailed waste management plan.

Council requests that DPHI impose conditions to ensure that the owner of the development at the time of decommissioning is required to restore the land to its pre-development land capability and that all project-related infrastructure and waste is removed and recycled/disposed as applicable.

Council advised that Inverell Waste Depot may have limited capacity to receive waste from the project. To assist Council to assess the depot's capacity to receive the waste, the Applicant will prepare a waste management protocol in consultation with the Council.

The protocol will outline the waste management strategy for all phases of the project including decommissioning, and will require that waste is managed in accordance with the NSW *Protection of the Environment Operations Act 1997* (POEO Act), the NSW *Waste Avoidance and Resource Recovery Act 2001* and the following hierarchy, which is listed in order of preference:

- reduce waste production
- recover resources
- dispose of waste appropriately.

As a construction contractor has not yet been selected, the expected volumes of waste to be generated during the construction period are not yet known. The types of waste and the proposed disposal methods are outlined in Table 4.4 which identifies that a majority of the waste types should be able to be recycled.

The Applicant has consulted with the Inverell Shire Council during the EIS and the submission phase regarding waste management and will continue to consult with the Council on this issue to ensure waste is appropriately managed.

Table 4.4 **Waste types and proposed management**

Waste type	Segregated on site?	Proposed disposal	Reuse/recycle/landfill
Construction phase			
Electric waste (e.g. power drills or nail guns)	Yes	Inverell waste depot	Recycle
Cardboard	Yes	Inverell waste depot	Recycle
Scrap metal	Yes	Inverell waste depot	Recycle
Undamaged wood pallets	Yes	Re-use on site or return to supplier	Reuse
Damaged wood pallets	Yes	Inverell waste depot	Recycle
Timber offcuts (e.g. wood separators to prevent damage to PV modules)	Yes	Inverell waste depot	Recycle
Cleared vegetation	Yes	Inverell waste depot	Recycle
Hazardous waste (e.g. waste oil, rags, filters and drums, septic wastewater, etc.)	Yes	Collected by a licenced waste contractor for disposal at a licenced facility.	Licenced waste facility
Excess building materials (e.g. scrap metal, plastic, masonry, gravel/sand etc.)	Yes	Inverell waste depot	Recycle
Domestic-type waste from construction staff (e.g. food wrapping, putrescible waste etc.)	Yes	Inverell waste depot	Landfill
Domestic-type recyclable waste from construction staff (e.g. drink containers etc.)	Yes	Inverell waste depot	Recycle
Operation phase (35 years)			
Damaged PV panels	Yes	Collected by a specialised recycler for recycling	Recycle
Domestic-type waste from construction staff (e.g. food wrapping, putrescible waste etc.)	Yes	Inverell waste depot	Recycle
Domestic-type recyclable waste from construction staff (e.g. drink containers etc.)	Yes	Inverell waste depot	Recycle
Waste from onsite toilets (septic)	Yes	Collected by a licenced waste contractor for disposal at a licenced facility	Licenced waste facility
Waste oils and lubricants (including rags, filters and drums)	Yes	Collected by a licenced waste contractor for disposal at a licenced facility	Licenced waste facility
Damaged or faulty components that have been replaced	Yes	Collected by a specialised recycler for recycling	Recycle
Waste batteries (i.e. electric waste)	Yes	Inverell waste depot	Recycle

Waste type	Segregated on site?	Proposed disposal	Reuse/recycle/landfill
Decommissioning phase ³			
Metal (e.g. fencing, posts, steel piles, copper in conductors and cabling)	Yes	Inverell waste depot	Recycle
PV panels	Yes	Collected by a specialised recycler for recycling	Recycle
Non-recyclable components	Yes	Collected by a licenced waste contractor for disposal at a licenced facility	Landfill
Transformer	Yes	Collected by a specialised recycler for recycling	Recycle
BESS components	Yes	Collected by a specialised recycler for recycling	Recycle
Batteries (i.e. electric waste)	Yes	Collected by a specialised recycler for recycling	Recycle

4.10.3 Community benefit fund

Council requests that DPHI imposes an appropriate condition of consent in regard to "community enhancement". For example, "prior to commencing construction, or other timeframe agreed by the Planning Secretary, the Applicant must enter into a Voluntary Planning Agreement (VPA) with Council in accordance with Division 7.1 of Part 7 of the EP&A Act".

The EIS states that (Section 2.10.2):

Sundown Solar will establish a community benefits fund which will allocate funds annually for community-based projects. The details of the fund are yet to be determined but will likely be managed through a committee comprising representatives from the project owner, Inverell Shire Council and the local community.

The Applicant has been corresponding with Inverell Shire Council to make an offer to enter into a VPA. The offer aligns with the recommendations in the *Large Scale Solar Guideline* as well as Council's *Renewable Energy - Community Benefit Sharing Framework Policy*. The VPA will confirm that funds will be provided to the Inverell Shire Council over the operation of the project.

The terms will be agreed prior to the determination of the project.

4.10.4 Submissions by community members

Inverell Shire Council's submission included four submissions from community members. The issues raised in these submissions included water impacts, impacts to livestock, fire risk, the access road and traffic impacts. While these submissions are not counted in the total number of submissions received by DPHI, the issues have been considered and are addressed in Chapter 5 of this report.

³ As the decommissioning is not scheduled for 35 years after commissioning, options for using a specialised solar farm recycling service would be investigated toward the end of the project life. It is expected that solar panel recycling technology will have advanced by this time.

4.10.5 Agency submissions not requiring a detailed response

The agency submissions that required no further detailed consideration are summarised in Table 4.5.

Table 4.5 Agencies requiring no detailed response

Agency	Comments
Crown Lands	Crown Lands noted that part of Sturmans Road is currently Crown road, being an existing formed road and maintained by Inverell Council. It stated that it will transfer management of this section of Crown road to Inverell Council in line with the remaining Sturmans Road. Crown Lands noted the consultation with the Applicant regarding access off Gwydir Highway onto Spring Mountain Road and that the access road may include a small intrusion into Travelling Stock Reserve (Crown reserve 67474, Lot 7301 DP 1165765). Crown Lands noted that a permit will be required to enable construction of the turning into Spring Mountain Road. Crown Lands noted that it will continue to work with the Applicant, and stated that no further response was needed.
Mining, Exploration & Geoscience (MEG) – Geological Survey of NSW (GSNSW)	MEG-GSNSW has reviewed the Environmental Impact Statement for the Sundown Solar Farm and has no concerns to raise regarding potential resource sterilisation.
NSW Rural Fire Service	NSW Rural Fire Service noted the Bushfire Risk assessment. NSW Rural Fire Service supports the recommendations of that bushfire report – Table 2 ‘Summary of bushfire protection recommendations for Sundown Solar Farm Project’ and considers that they should be included in any approval granted.
Transgrid	Transgrid advised that a scoping study has been completed and that further consultation will continue directly with the Applicant.

5 Responses to special interest group and community submissions

As outlined in Section 2.5, seven special interest groups and 133 community members made submissions. As key matters raised in special interest group submissions and community submissions were similar in nature, a combined response to issues is summarised in the following sections.

5.1 Roads and traffic

5.1.1 Construction traffic

As per the EIS, the overall construction period is anticipated to be 21 months. The peak period for vehicles will be when deliveries of the panels, inverters and batteries are being made. This is peak period is anticipated to be approximately ten months. Project-related traffic volumes during the peak construction stage are the same as reported in the EIS, as outlined in Table 5.1. The volumes shown are conservative and represent a worst-case scenario based on the following assumptions:

- Deliveries will be made using 19 m semi-trailers⁴.
- 75% of the construction workforce will use the shuttle bus and 25% will use their own light vehicles⁵.
- Shuttle buses carry 20 passengers per trip and each light vehicle carries 1 person per trip⁶.
- Approximately 50% of the construction workforce will travel from Inverell and 50% will travel from Glen Innes.

Table 5.1 Project traffic during peak construction stage

	Daily		Peak hour	
	Trips	Movements	Trips	Movements
Light vehicles	100	200	80	160
Shuttle buses	8	16	8	16
Heavy vehicles	100	200	8	16
Total	208	416	96	192

Traffic modelling of the Gwydir Highway/Spring Mountain Road intersection demonstrates that the level of service (LOS – a qualitative measure used to describe operating conditions) of this intersection will remain good, at LOS A, and will still have over 90% spare capacity to accommodate any additional traffic.

⁴ If 26 m B-doubles are used instead of 19 m trucks, the heavy vehicle numbers would be commensurately lower.

⁵ The light vehicle volumes assume no car pooling. Car pooling would be encouraged in order to reduce light vehicle traffic volumes.

⁶ Note, the EIS assumed use of 25-seater shuttle buses.

5.1.2 Suitability of the access road

Issue: An alternate access road to the solar farm might be more suitable.

Some submitters suggested that an alternate access road route might be more suitable instead of using Spring Mountain Road and Sturmans Road.

In the EIS the Biodiversity section (Section 6.1) identified that two access road options were considered at early design phase:

- Spring Mountain/Sturmans Road
- an alternate route via a private road west of Spring Mountain Road.

The EIS identified that the alternative route via a private road will involve the clearing of additional threatened species and therefore the existing Spring Mountain/Sturmans Road is preferred.

In addition to the biodiversity considerations in the EIS, a more detailed assessment of the accessibility of potential access road routes was undertaken (Appendix G).

The access road options study found that the Spring Mountain Road/Sturmans Road option is the most suitable to accommodate the project.

Three access road options against a number of criteria including but not limited to safety, compliance with applicable guidelines and the potential to provide a long-term benefit to the local community. The three options evaluated were:

- Option 1 (the proposed route): Gwydir Highway, then Spring Mountain Road, then Sturmans Road.
- Option 2/Option 2A: Gwydir Highway, then Inverness Road, then a new road to be constructed through a private property, meeting the site at its northern boundary.
- Option 3: Gwydir Highway (at number 3958 Gwydir Highway), then an unnamed public road to the site access, named as 'substation access track' for this project.

The options are shown in Figure 5.1.

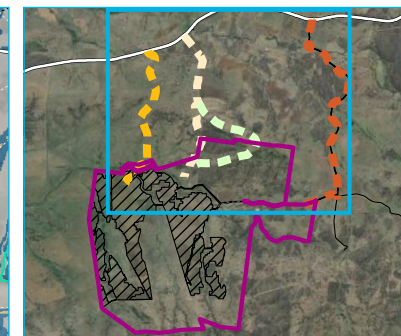
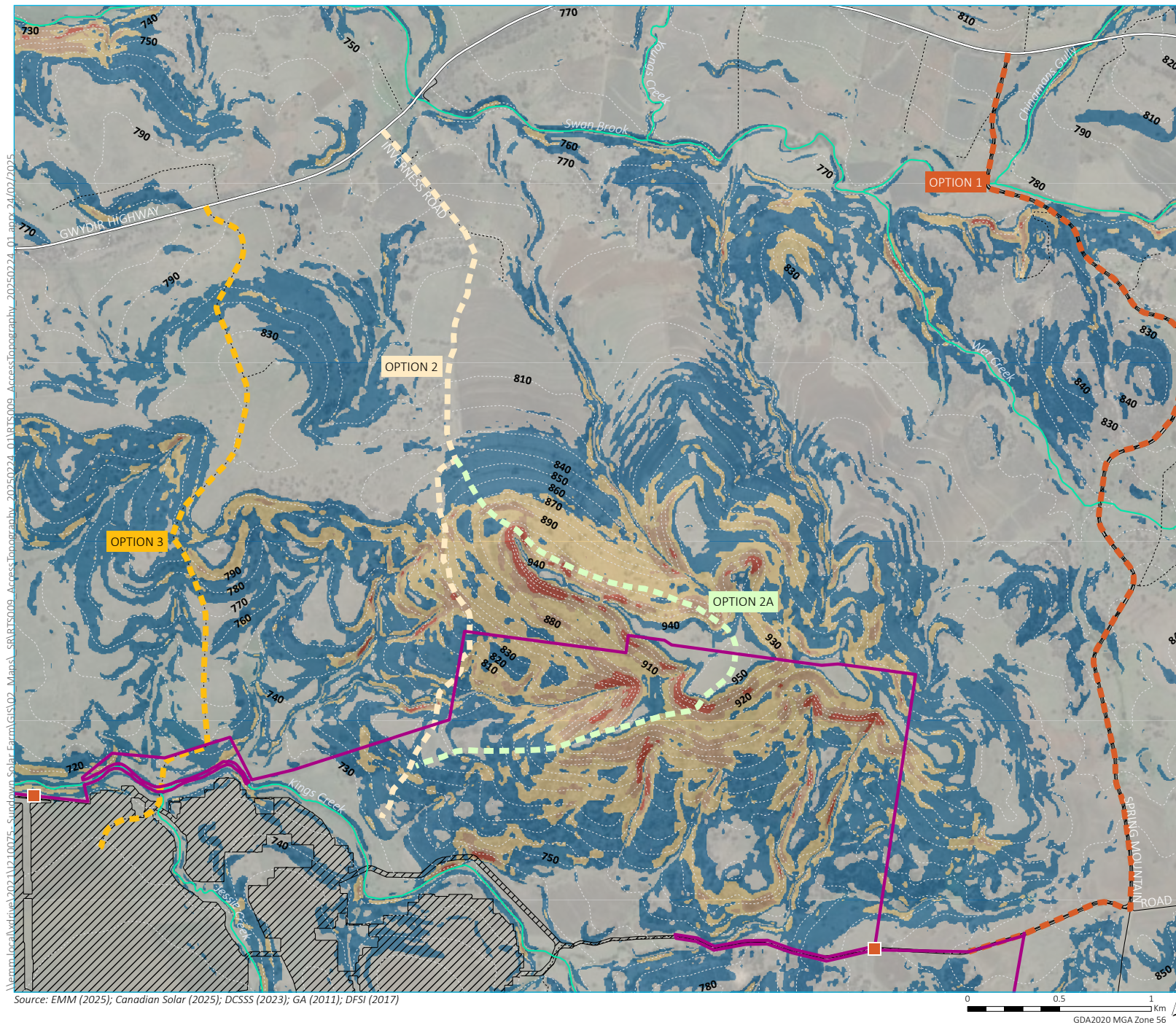
The assessment shows that Option 1, the proposed access road, is the most suitable option as it improves safety of existing road infrastructure, provides suitable infrastructure for heavy vehicle movements and results in long term community benefits.

It will comprise an upgrade of the existing Gwydir Highway/Spring Mountain Road intersection, Spring Mountain Road and Sturmans Road and the associated water crossings. Notably, the Gwydir Highway/Spring Mountain Road intersection upgrade will rectify the existing non-conforming sight distance to the left. These upgrades will considerably improve the long-term safety and accessibility of road users in the local community.

The other options were considered not favourable from engineering and environmental perspectives, due to the presence of steep gradients which make the routes unsafe for heavy vehicle access. Most of Option 2/2A will require the construction of a new road on the alignment of a private access track, its potential upgrade will not provide the long-term safety and accessibility benefits that Option 1 will, as members of the general public will not have access to using it.

Option 3 is also not suitable for use due to the presence of uneven topography, potentially steep gradients and non-conforming sight distance on Gwydir Highway to the right. The angle of the road from the highway turnoff is approximately 45 degrees, which will make manoeuvring of heavy vehicles difficult. As with Option 2/2A, the upgrade of Option 3 will not bring any ongoing public benefit.

The EIS as well as the road options assessment considered alternative options to access the site. The preferred option is using the existing access from Gwydir Highway to Spring Mountain Road/Sturmans Road (Option 1 within Figure 5.1).



- KEY**
- Proposed Sundown Solar Farm (Project area)
 - Disturbance footprint
 - Emergency exit point
 - Proposed access route
 - Option 1: Spring Mountain Road/ Sturmans Road
 - Option 2: Inverness Road
 - Option 2a: Inverness Road
 - Option 3: Substation access track, off 3,598 Gwydir Hwy
- Slope (degrees)**
- 0- 5
 - 5- 10
 - 10- 15
 - 15- 20
 - > 20
- Existing environment**
- Major road
 - Minor road
 - Vehicular track
 - Named watercourse
 - Topographic contour (10 m)

Alternative access options

Sundown Solar Farm
Submissions Report
Figure 5.1

5.1.3 Road safety

Issues:

- Increase in safety risk for road users, as a result of project-related construction traffic.
- Project-related construction traffic may impact safety and accessibility of the school bus stop on Gwydir Highway.

The potential impacts on school bus users associated with the construction phase of the project will be limited to heavy vehicles, as construction staff travelling in shuttle buses will be arriving and departing from the site outside of school bus operating hours.

The existing speed limit of the access route is 100 km/h, which is the default speed of regional roads in NSW. However, during the construction of the access road, temporary traffic restrictions will be implemented in accordance with the CTMP. The CTMP will include a driver code of conduct which will require project traffic to drive to local climate conditions that may affect road safety such as fog, dust and wet weather, and ensure speed restrictions are maintained.

The school bus stop on the Gwydir Highway Spring Mountain Road intersection will be upgraded with school bus signs to warn heavy vehicle drivers of student drop-off and pick-up areas, and a pedestrian refuge on the southern and northern sides of the Gwydir Highway/Spring Mountain Road intersection. The Applicant will consult with the school bus operator so that construction deliveries could be scheduled to not conflict with the times of the school bus. The controls will be described in the CTMP.

5.1.4 Access to local properties

Issue: Impacts to accessing local properties as a result of project-related traffic during the construction period.

During the construction of the access road, access to local properties may be temporarily impacted due to roadworks. Traffic controls will be implemented by the construction contractor in order to maintain access for residents. The contractor will provide the construction schedule to the residents so they are fully informed of the schedule and the traffic controls that will apply while the access road is upgraded. The controls will be described in the CTMP.

5.1.5 Amenity of neighbouring homes

Issue: Decrease in amenity of the homes and gardens adjacent to the access road, as a result of project-related traffic during the construction period.

It is acknowledged that project-related traffic, unmitigated, may result in temporary amenity impacts to neighbouring homes, lifestyles and gardens.

Unmitigated, activities associated with the peak construction period are likely to influence the amenity of the immediate surrounds. The proposed mitigation measures outlined in the EIS and in this Submissions Report, are expected to adequately mitigate the potential for amenity impacts. The effectiveness of these measures will be periodically reviewed to assess effectiveness and determine the need for additional measures.

A 24-hour community information line (1800 319 690) is available for members of the community to make an enquiry or lodge a complaint about the project. In addition, the project website (www.sundownsolarfarm.com.au) is kept up-to-date with the latest project information. Members of the public can make enquires via the webpage or via the community information line. All enquiries and complaints will be addressed in a timely manner.

5.1.6 Livestock movement

Issues:

- Increase in project-related traffic will impact the ability to safely and conveniently keep and move livestock.
- Impacts to cattle grids as a result of project-related traffic during the construction of the access road.

From time-to-time project-related and nearby landowners will need to move livestock across Spring Mountain Road and transport livestock from site. In order to limit impacts during the construction stage, the site construction manager will have regular direct contact with nearby landowners to identify stock crossing locations and schedules. Operation of heavy vehicles on the access road will be restricted to accommodate these periods.

The Applicant will install warning signs along the access road to warn the construction workforce and delivery drivers of the potential presence of livestock. An example warning sign is provided as Plate 5.1.



Plate 5.1 Warning sign for presence of livestock

The Applicant will install stock-proof fencing within the project site and along the access road, as required, in consultation with project-related and nearby landowners. The Applicant has also committed to installing new cattle grids on the access road, which has been discussed with Council.

Depending on the final design of the cadastral alignment associated with the widening of Spring Mountain Road at the Gwydir Highway intersection, there may be a small intrusion into a Travelling Stock Reserve (Crown reserve 67474, Lot 7301 DP 1165765). If required, measures will be put in place to minimise impacts to stock movements, such as revisions to construction scheduling. This will be identified in consultation with landholders and is included in the CTMP.

The construction contractor will consult with local landowners in relation to scheduling so that potential impacts to agricultural practices are minimised.

5.1.7 Road maintenance

Issue: Impacts to the condition of the access road as a result of project-related traffic.

The road upgrades will comprise widening the road to 8.7 m, upgrading the water crossings and replacing the existing cattle grids, as applicable. These upgrades have been discussed and agreed in-principle with Council.

To ensure the upgraded road and water crossings are maintained in a reasonable condition, the Applicant will engage a suitably qualified traffic engineer to conduct an independent road dilapidation assessment prior to commencement of construction and on completion of the access road upgrade.

The construction contractor appointed by the Applicant will implement a road maintenance program for the access road (including the associated water crossings) during the construction phase of the project. The program will require bi-monthly route inspections to identify any serviceability or safety concerns. It will also require that repair is undertaken as applicable, such as regrading to repair potholes or road corrugations, to ensure the road remains trafficable.

The road maintenance program will be prepared in consultation with Inverell Shire Council and its effectiveness will be reviewed during the construction and operation periods. The project-related dilapidation repair works will be undertaken at no expense to Council.

5.1.8 Water crossings

Issue: Impacts to water crossings as a result of project-related traffic.

The project will comprise an upgrade to eight water crossings along the access road. (Figure 1.2). The water crossings will be designed and constructed to meet all applicable standards, including *Guidelines for watercourse crossings on waterfront land* (DoPI 2012) and *Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings* (Fairfull, S. and Witheridge, G. 2003).

5.1.9 Design standards

Issue: The proposed upgrade to the access road does not meet Austroads design standards.

There was concern raised that the proposed upgrade to the access road does not meet the applicable Austroads design standards insofar as the design standard requires that a road carrying 150 to 500 vehicles per day should have a width of at least 7.2 m and should be sealed.

The proposed road upgrade meets the width requirement as the proposed width is 8.7 m. However, the proposed road upgrade does not include sealing for the entire length of the access road (only specific sections). The increase in vehicles is temporary and following construction of the project, traffic will return to current levels or similar (i.e. less than 50 vehicle trips per day). Therefore sealing the entire road is not warranted in this instance which has been agreed with Inverell Shire Council.

The road pavement treatment will be agreed in consultation with the Inverell Shire Council which is likely to include portions of Spring Mountain Road to be sealed to mitigate dust and noise impacts to sensitive receptors.

5.1.10 Traffic impacts to wildlife

Issue: The increase in traffic may impact wildlife.

Construction will occur during standard daytime construction hours. Therefore the risk to wildlife on the access road is negligible. Subject to agreement with Inverell Shire Council, the CTMP will include a requirement that the construction contractor installs warning signs along the access road to warn motorists of the potential presence of wildlife.

5.1.11 Traffic impacts during decommissioning

Issue: The EIS does not provide enough information about traffic impacts during the decommissioning stage.

The project has 35-year life span. The volume of traffic during the decommissioning phase is expected to be significantly lower than the construction phase. Limited traffic impacts are expected during the decommissioning phase, as the upgraded access road infrastructure will be in place to handle decommissioning traffic. The project owner will consult with Council and neighbouring landowners prior to and during the decommissioning stage of the project to determine the most appropriate ways to manage traffic impacts during this stage.

It is also noted that in 35 years' time, the road network and traffic volumes in the locality are subject to change. It is therefore considered that the EIS and TIA provide a suitable level of detail regarding traffic impacts during the decommissioning stage.

5.1.12 Construction hours

Issue: The construction period needs to allow for an extra hour to allow traffic to get to and leave site.

In accordance with the Interim Construction Noise Guideline (ICNG), the project construction work will be restricted to standard construction hours (i.e. 7:00 am to 6:00 pm Monday to Friday and 8:00 am to 1:00 pm on Saturdays), including delivery of plant and equipment. Exceptions to these hours may be required on limited occasions. Inverell Shire Council and surrounding landowners will be notified of any exceptions prior to any works being undertaken.

Vehicles may use the access road immediately outside of these hours in order to ensure construction workers are onsite on time. Construction worker traffic will be minimised by the use of the shuttle bus service.

The interim CTMP includes a driver code of conduct. The driver code of conduct outlines restrictions to the construction hours as well as guidance on driving behaviours to minimise the generation of noise and dust along access road.

A 24-hour community information line (1800 319 690) is available for members of the community to make an enquiry or lodge a complaint about the project. In addition, the project website (www.sundownsolarfarm.com.au) is kept up-to-date with the latest project information. Members of the public can make enquires via the webpage or via the community information line. All enquiries will be addressed in a timely manner.

5.1.13 Traffic risk assessment

Issue: the Traffic Impact Assessment (TIA) asserts there is a risk assessment contained in Section 6.4 of TIA however, Section 6.4 does not address the risks of using these access roads.

In the EIS TIA Section 6.4, the anticipated increase in traffic on the access road as a result of the project was described, and it detailed the risk minimisation measures, including the required upgrade (i.e. road widening) to accommodate the increase in traffic during the construction period.

The risks associated with construction traffic have been thoroughly assessed in the EIS. Appropriate mitigation measures have been described in the TIA in order to minimise risks. This includes the development of the interim CTMP (Appendix I) which includes requirements for implementing driver code of conduct and traffic control measures during the construction period.

5.2 Agriculture and land resources

5.2.1 Loss of agricultural productivity

Issues:

- Loss of prime agricultural land as a result of the project.
- The project has the potential to contaminate soil and impact agricultural productivity.

The agricultural impacts of the project are described and assessed in the Soil, Land and Agriculture Assessment (Appendix D).

The assessment shows that there is no prime agricultural land in the project site (i.e. no LSC class 1 land). Approximately half of the disturbance footprint is graded LSC class 4, 5 or 6, which is not considered suitable for high-impact agricultural land uses such as cultivated cropping or intensive grazing. Therefore, the use of the land for renewable energy (with or without co-existent grazing) will not remove significant amounts of high-quality agricultural land from intensive primary production.

The footprint of the solar farm is estimated to comprise less than 0.1% of the farming land in the Inverell Shire and Glen Innes Severn LGAs. Even considered cumulatively with the other approved solar farms in the region, this only increases to 0.4% of the farming land in these LGAs.

The project's impacts on agricultural land will be mitigated by the implementation of agrisolar at the site, allowing sheep to continue to graze within portions of the project footprint.

No project-related constraints are anticipated on the current or future agricultural productivity of neighbouring properties. At the end of the project's operational life the infrastructure will be removed and the land will be returned to pre-project productive capacity.

The co-existence of renewable energy land use and grazing land uses enables the project landowners to diversify their income streams during times of climatic and economic uncertainty, creating a stronger and more sustainable local and regional economy.

The project is a temporary and reversible change of land use. Decommissioning and rehabilitation of the site will aim to meet rehabilitation objectives in order to return the development footprint to its pre-project agricultural productivity.

The activities on site during construction and operation are unlikely to contaminate the soil. This is generally due to the minor nature of soil intrusion during the installation of the panels. Construction laydown areas will be implemented with erosion and sediment controls to ensure contamination risks are limited. If fuel and chemical require to be handled and stored at the site, this will occur in strict accordance with relevant guidelines. The CEMP will include procedures for response to potential pollution events.

5.2.2 Soil erosion and sedimentation

Issue: Increased risk of soil erosion and sedimentation as a result of the project.

It is anticipated that the development footprint will only require minimal site preparation and civil works (such as grading/levelling and compaction). No large areas of reshaping or excavation are anticipated, aside from digging of cable trenches and formation of level pads for the substation and BESS.

The Applicant has committed to appropriate drainage, erosion and sediment controls installed and maintained in accordance with *Managing Urban Stormwater: Soils and Construction* (Landcom 2004) and *Managing Urban Stormwater: Soils and Construction – Volume 2A* (Landcom 2008).

The erosion and sediment controls to be implemented during construction and operation will effectively avoid and mitigate potential impacts on soil resources. These measures are outlined in section 5.2.1 of the Soil, Land and Agricultural Assessment and during the construction phase include the following:

- The project should use the existing landform and not endeavour to undertake broad-scale re-contouring of the existing ground levels.
- Solar arrays are typically pole mounted, with the poles being supported on a driven or screw pile, so that there is minimal excavation required other than for electrical cabling.
- Construction areas should be progressively revegetated with grass and pasture species as installation of solar panels proceeds across the site.
- At locations where earthworks are necessary, such as for cable trenching, localised erosion and sediment controls will be placed in accordance with the Landcom (2004) guidelines.
- Preservation and stabilisation of drainageways and minimisation of the extent and duration of any surface disturbance will be prioritised during construction.
- All areas disturbed during construction that are not in active use for over three months should be sown with grass and pasture species with starter fertiliser to provide stabilising ground cover and a healthy topsoil to provide long term protection against erosion.

These measures will be included within the CEMP.

5.2.3 Biosecurity

Issue: The project has potential to result in biosecurity impacts.

As per Section 4.2, the project will include agrisolar in its operations and will develop a framework for sheep grazing. Examples of potential grazing practices are outlined in the Soil, Land and Agricultural Assessment.

To manage the potential transfer of weeds and pathogens to and from the project site, appropriate wash down facilities will be available to clean vehicles and equipment prior to arrival and when leaving the project site.

Weed management protocols will be implemented as detailed within a Biodiversity Management Plan, such as measures for the identification, management and ongoing monitoring of weeds on-site. If areas of potential biosecurity hazard are identified within the site, measures will be put in place within the project site, particularly during vegetation clearing for construction.

Sheep grazing will help to control weed levels while maintaining a dual-purpose land use throughout the life of the project by provide productive grazing land.

The Applicant will manage pest animals, weeds and biosecurity aspects in accordance with its Biodiversity Management Plan.

5.2.4 Impacts to livestock

Issue: The project has potential to impact the safety of livestock.

Livestock safety is unlikely to be significantly impacted.

The project has a short term construction program. The use of existing local roads for site access will include strict controls to manage traffic and livestock interactions.

Construction and operations will operate in accordance with the Interim CTMP (Appendix I), to minimise dust generation and disturbance to livestock.

The Applicant has committed to fencing properties on the access roads to limit the risk of livestock interacting with project traffic. The Applicant will have a telephone line available for local residents to discuss the upcoming construction schedule and be able to discuss livestock movement with the construction manager.

5.3 Noise and vibration

5.3.1 Construction noise

Issue: Project-related noise during the construction period may impact nearby residents/farm employees.

Noise impacts during the construction of the project were described in Section 6.6 and Appendix H of the EIS. The noise assessment was updated in order to respond to submissions (Appendix L).

The most audible activities during the construction period are those associated with the upgrade of the access road and the most likely receivers to be impacted are the residents living closest to the access road. The upgrade to the access road is expected to take around nine months in total.

Construction noise levels associated with the upgrade of the intersection and access road (Spring Mountain Road and Sturmans Road) are predicted to exceed the background +10 dB(A) noise management levels (NMLs) under the *Interim Construction Noise Guideline* (ICNG) at three assessment locations. Predicted noise levels at all other assessment locations satisfy the NMLs.

However, the ICNG highly noise affected level of 75 dB(A) will not be exceeded at any assessment location. In addition, the predicted construction traffic noise levels will remain below the *Road Noise Policy* (RNP) (DECCW 2011) criteria.

The following mitigation measures will be implemented during construction to minimise noise impact:

- Prior to construction of the access road, all residents within 1 km of the access road and solar farm site will receive advanced notification of upcoming construction works detailing work activities, time periods over which these will occur, impacts and mitigation measures. Validation of predicted construction noise (prior to commencement of construction) will also be undertaken and, where applicable, a review of proposed mitigation measures will be undertaken.
- Construction work limited to standard construction hours (i.e. 7:00 am to 6:00 pm Monday to Friday and 8:00 am to 1:00 pm on Saturdays), including delivery of plant and equipment. Exceptions to these hours may be required on limited occasions. Regulatory authorities (including the Inverell Shire Council) and surrounding landowners will be notified of any exceptions prior to any works being undertaken.
- Select quieter equipment or reduced equipment fleet, where practical.
- Ensure the importance of minimising noise and vibration is reinforced at toolbox meetings.
- Ensure the following mitigation measures are undertaken for residents on Spring Mountain Road.
- Written notification to advise of upcoming works, at least five days prior to the start of works. The notification will outline proposed activities, time periods over which the activities will occur, impacts and mitigation measures.
- Verification of the background noise level and construction noise.

Of note, the noise modelling represents the noise levels experienced at the outside of each receptor (dwelling). Therefore the modelling results represent the noise levels that will be experienced by a person working in a paddock.

Further, it is important to note that the construction activity will move from location to location along the access road and will be temporary, meaning that noise impacts will be limited to the times when activities are being undertaken in the immediate vicinity of each residence (i.e. no more than a few days at each residence).

A 24-hour community information line (1800 319 690) is available for members of the community to make an enquiry or lodge a complaint about the project. In addition, the project website (www.sundownsolarfarm.com.au) is kept up-to-date with the latest project information. Members of the public can make enquiries via the webpage or via the community information line. All enquiries and complaints will be addressed in a timely manner.

5.3.2 Road traffic noise

Issues:

- During the construction period, noise on Spring Mountain Road may increase from 39 dB(A) to 50 dB(A) and noise on Sturmans Rd may increase from 20 dB(A) to 30 dB(A).
- The noise and vibration impact assessment assumes a baseline of 50 traffic movements per day on the access road, however there is only about 10 (some submissions say 16) (mainly light vehicles).

It is recognised that the local area is a quiet rural environment and that the baseline traffic using the access road is minimal. The road noise assessment considered the impact of construction traffic on Spring Mountain Road and Sturmans Road. The relevant noise criterion for Spring Mountain Road and Sturmans Road is 55 dB(A) in accordance with the *Road Noise Policy* (NSW Government) which is the policy that must be applied when undertaking road noise assessments in NSW.

The Noise and Vibration Impact Assessment (NVIA) showed that construction traffic associated with the project will result in noise levels of 50 dB(A) at Spring Mountain Road and 30 dB(A) at Sturmans Road. These levels comfortably meet the relevant road traffic noise criteria of 55 dB(A) at all local roads proposed to be used for the project.

As workers need to attend site and deliveries are required during road traffic and potential noise is unavoidable. The noise impacts experienced at each residence will be different based on the distance from the residence to the road.

The Applicant recognises that heavy vehicle movements are currently uncommon for these roads and there will be a slight increase in heavy vehicle movements for the short construction period. As above, the NIVA confirmed that the noise levels from road traffic will be below the noise criteria. The construction contractor will be responsible for ensuring that road traffic noise is minimised. This will be achieved through the management and mitigation measures outlined in Section 5.3.1 and the requirements outlined in the interim CTMP (Appendix I).

The NVIA used the long-term traffic count volumes that were used in the traffic impact assessment. A movement is a one-way vehicle movement. Therefore the NVIA has considered 25 light vehicles trips a day on the access roads of Spring Mountain Road and Sturmans Road (i.e. 25 vehicles resulting in 50 movements). The difference represents a small amount of traffic in context and does not affect the outcomes of the road noise assessment.

5.3.3 Operational noise

Issue: Panels will cause a low-level hum which may impact the wellbeing of residents and animals.

During operations the solar farm will not be audible at any nearby residences – specifically, the noise modelling undertaken showed that the noise produced by the solar farm will be less than 30 dB at all nearby dwellings, or not more than normal background rural noise levels. In terms of low frequency noise impacts, the inverters will create a low hum similar to the sound of an air conditioner which will only be heard if the receiver is within the same property as the solar farm.

In practice, local residents will not be able to hear the inverters, given the distance between the solar farm and residences and the intervening topography which will shield any potential for low frequency noise.

5.3.4 Vibration impacts

Issues:

- Project-related vibration during the construction period will be unacceptable to nearby residents.
- Project-related vibration during the construction period may impact privately owned buildings/structure at nearby properties.
- Project-related vibration during the construction period may be unacceptable to livestock on adjacent properties.

Vibratory impacts to privately owned buildings/structures on nearby properties are not anticipated. As outlined in EIS (section 6.7), the nearest non-associated residence to the access road (R14) is located approximately 50 m from the closest proposed access road upgrade activities. This residence is outside of the safe working distance for cosmetic damage⁷.

Vibration impacts to livestock are not anticipated. This is because the use of vibratory rollers in the construction of the access road upgrades will be strictly controlled and limited. Neighbouring landowners will be consulted prior to the commencement of construction and regularly during construction to take into consideration landowners which have stock in paddocks and design the construction activities and choice of equipment to result in minimal vibration impacts to livestock.

Nonetheless during Stage 1 of construction (i.e. access road widening works), vibration levels at assessment locations may exceed the levels for human comfort⁸ if the size of the vibratory roller used to construct the access road is greater than 6 tonnes. Therefore the Applicant has committed to not use vibratory rollers when constructing the access road near residence R14 (i.e. no vibratory rollers to be used within 100m of the residence, static mode only).

The proposed mitigation measures are outlined in the EIS (Table 6.29) are considered adequate to manage vibration issues, such as:

- wherever practicable, ensure that vibration intensive activities are undertaken outside of the safe working distances. Where this is not practicable:
 - limit vibration intensive works to the least sensitive times of the day, in consultation with residents
 - undertake vibration monitoring to ensure compliance with DIN-4150 criteria

⁷ Cosmetic damage as defined in British Standard BS 7385.

⁸ Human comfort as defined in British Standard BS 6472-1.

- if ongoing works are required, and where monitoring has confirmed actual vibration levels are nearing the DIN-4150 criteria, consider installation of a monitoring system to warn operators when vibration levels are approaching the cosmetic damage criteria (e.g. flashing light, audible alarm, etc).

5.4 Biodiversity

5.4.1 Habitat loss

Issues:

- The project may result in habitat loss and land degradation.
- Proposed tree clearing will also destroy the ecological communities including threatening koala and bird habitats which are important to the biodiversity in the area.
- The project may result in impacts to biodiversity including loss of native vegetation and habitat.
- Destruction of six significant ecological communities and serious threat to eight threatened species.

Habitat loss for the project is associated with the clearing of land for construction and includes clearing of 4.08 ha of woodland, which includes 3.86 ha of Box Gum Woodland TEC (BC Act) of which 1.84 ha represents Box Gum Woodland TEC (EPBC Act)..

Around 137.4 ha of DNG will be cleared. This represents clearing of 137.4 ha of Box Gum Woodland derived grassland (BC Act) of which 23.34 ha is Box Gum Woodland derived grassland (EPBC Act). The majority (approximately 99.7%) of the DNG clearing is low condition grassland that does not exceed offset thresholds set by the BAM.

The DNG includes habitat for Bluegrass and Austral Toadflax. The species polygon prepared to measure the area of suitable habitat for Bluegrass is conservative as it exceeds the area of suitable habitat occupied by the species. The species polygon for Bluegrass is also mostly represented by low condition grassland.

The project proposes to clear 30 of the 240 hollow-bearing trees recorded that provides hollow bearing resources for fauna and 48 scattered trees.

Avoidance and minimisation strategies implemented by the project are driven by the following key biodiversity values identified:

- Box Gum Woodland
- habitat for Bluegrass and Austral Toadflax
- mature trees with hollows suitable for fauna use, including predicted threatened species.

Most of the woodland patches and DNG areas have been avoided, recognising that most of the native woodland identified in the study area aligns with Box Gum Woodland, which is an SAIL entity and is critically endangered under both BC Act and EPBC Act.

A decision was made to exclude several eastern paddocks on the Newstead property from the project to avoid impacts on Box Gum Woodland including associated DNG. These paddocks are ideally suited to solar development based on topography and proximity to the existing powerline connection. These paddocks were included in earlier iterations of the project design.

The exclusion of these areas from the project reduces the generation capacity of the project by 33 MW (DC) but avoids over 177 ha of DNG, more than 30 ha of woodland and at least 63 hollow-bearing trees, representing habitat for:

- Box Gum Woodland

- known records of Bluegrass (69 records, 1,650 individuals) and Austral Toadflax (1 record, 1 individual)
- threatened woodland fauna known to occur in the study area
- hollow-dependent fauna.

The project avoids:

- 502 records representing over 18,700 plants of Austral Toadflax from the disturbance footprint. This represents avoidance of approximately 94% of all the plants recorded since 2018
- 245 records representing over 3,700 plants of Bluegrass from the disturbance footprint. This represents avoidance of almost all of the plants recorded since 2018
- 206 of 240 (approximately 86%) hollow bearing trees recorded in the study area
- 62 Bluegrass plants and 1,098 Austral Toadflax plants occurring along the private access road.

The platypus (*Ornithorhynchus anatinus*) is not listed as threatened or endangered under the BC Act or EPBC Act. Notwithstanding, a habitat assessment of Kings Creek was undertaken. The construction of culverts on Kings Creek will be designed so that impacts to aquatic species are minimised.

5.4.2 Koalas

Issue: Proposed tree clearing will also destroy the ecological communities including threatening koala and bird habitats which are important to the biodiversity in the area.

An assessment of potential koala habitat was presented in the EIS (Section 5.4.4(v)(d) of the BDAR). An assessment of suitable koala habitat within the disturbance footprint is detailed in Table 5.2.

Table 5.2 Assessment of suitable koala habitat within the disturbance footprint

PCT	PCT associated with koalas in Threatened Biodiversity Data Collection (TBDC)	Koala use trees present?	Woodland extent within disturbance footprint [including scattered trees] (ha)	DNG extent within disturbance footprint (ha)
PCT 84 – Rough-barked Apple – red gum – box riparian tall woodland (wetland) of the Brigalow Belt South Bioregion and Nandewar Bioregion	Yes	Present	0.23	-
PCT 510 – Blakely's Red Gum – Yellow Box grassy woodland of the New England Tableland Bioregion	Yes	Present	2.58	84.75
PCT 571 – Ribbon Gum – Rough-barked Apple – Yellow Box grassy woodland of the New England Tableland Bioregion and NSW North Coast Bioregion	Yes	Present	0.19	-
PCT 590 – White Box grassy woodland on the Inverell basalts mainly in the Nandewar Bioregion	Yes	Present	2.19	52.65
Total			5.18	137.40

Surveys efforts completed for the project applicable to koalas included:

- 4 hours of spotlighting over 4 nights (4.2 km cumulative length of transects)
- all accessible woodland habitat surveyed by detection dogs over four days (see Appendix H of EIS BDAR)
- incidental surveys during other spotlighting surveys
- 15 hours spotlighting between stag watching locations.

Koala was not detected during surveys and are only expected to occur in the locality in low densities.

Considering this, the project is unlikely to have a direct impact on Koala habitats or prescribed impacts with respect to habitat connectivity. No additional assessments or mitigation measures regarding koalas is required.

5.4.3 Impacts to aquatic biodiversity

Issues:

- There are sightings of platypus in Kings Creek, which are critically endangered.
- Installation of concrete culverts may impact the movement of Murray cod and trout.
- Changes to water availability/movement may impact ducks and waterhen.

Aquatic habitat was assessed in the EIS (Section 5.5 of the BDAR). Aquatic environments within the study area comprise:

- several small existing farm dams that will have supported past agricultural use
- first to fourth order watercourses. The main watercourses that intersect the disturbance footprint are Jessie Creek, Kateys Creek, Kings Creek and Swan Brook.

A desktop review of background information was undertaken and included the following resources:

- Key fish habitat mapping – key fish habitats have been defined in NSW by DPI and include habitats that are important for the maintenance of fish populations, the survival of threatened aquatic species, and the sustainability of fishing industries (DPI 2021).
- Fish community status map of NSW – represents the overall condition of fish communities based on a number of NSW DPI Fisheries datasets (DPI 2015).
- Threatened fish distributions – indicative distribution maps for threatened aquatic species in NSW, modelled using records from the last 20 years (DPI 2016-2021).
- Commonwealth Protected Matters Search Tool (PMST) (DCCEEW 2023) for threatened fish that are MNES.

The results of the desktop assessment are summarised in Table 5.3.

Table 5.3 Aquatic desktop assessment

Data source	Jessie Creek (2nd order)	Kateys Creek (3rd order)	Kings Creek (4th order)	Swan Brook (4th order)
Freshwater fish community status	Not classified	Not classified	Poor	Poor
Key fish habitat	No	Yes	Yes	Yes
Threatened fish distributions	None	Southern Purple Spotted Gudgeon (<i>Mogurnda adspersa</i>)	Southern Purple Spotted Gudgeon (<i>Mogurnda adspersa</i>) Murray-Darling Basin population of Eel Tailed Catfish – (<i>Tandanus tandanus</i>)	Southern Purple Spotted Gudgeon (<i>Mogurnda adspersa</i>) Murray-Darling Basin population of Eel Tailed Catfish – (<i>Tandanus tandanus</i>)
Threatened aquatic communities	None	None	None	None

Aquatic habitat was inspected by EMM as part of habitat assessments for the study area. Farm dams recorded include a combination of online and offline waterbodies. None of the farm dams observed contained well-established fringing aquatic vegetation or wetland habitat with vegetation representing flooded grassland.

Kings Creek and Swan Brook are the only waterways that were observed to have permanent flow. The second and third order tributaries (Kateys Creek, Jessie creek and an unnamed second order stream) were dry during site inspections in May and August 2021 but were flowing after significant rainfall towards the end of 2021. Swan Brook could only be accessed at the crossing along Spring Mountain Road.

Kings Creek was thus the focus of aquatic habitat assessments. It is a degraded waterway, impacted by agricultural land use in the surrounding area. The majority of the creek frontage within the study area is lined intermittently by a narrow gallery forest of River Oak over a grassy understorey.

The project proposes to establish new waterway crossings as well as upgrade existing crossings. The crossings will typically be implemented as either bed level or culvert crossings and will preserve riparian corridors. Disturbance of the riparian corridor will be limited and is unlikely to change habitat connectivity values within the study area. Watercourse crossings will typically be implemented as either bed level or culvert crossings, with crossing upgrades proposed along the Sturmans Road and Spring Mountain Road crossings where there are existing bridges:

- Kings Creek at western extension of Sturmans Road – low level bridge.
- Swan Brook at Spring Mountain Road – high level multi-cell box culvert system.
- Unnamed 2nd order watercourse at Sturmans Road – small box culvert.

As potential habitat for threatened fish occurs in Kings Creek and Swan Brook, assessments of significance have been prepared for Southern Purple Spotted Gudgeon and Eel-tailed Catfish in accordance with section 220ZZ of the FM Act. These assessments indicate that no significant impact on these species is likely to occur as a result of the project due the marginal value of the aquatic habitats, the limited disturbance works expected in association with construction/upgrade of the crossings and the limited duration of the works.

In addition, the platypus (*Ornithorhynchus anatinus*) is not listed as threatened or endangered under the BC Act or EPBC Act. Notwithstanding, the construction of culverts on Kings Creek will be designed so that impacts to aquatic species are minimised.

Murray cod, trout, ducks and waterhen were not observed during the site inspection and are not listed as threatened or endangered on the database searches listed above.

5.5 Heritage

5.5.1 Aboriginal cultural heritage Impacts

Issue: The project may result in impacts to Aboriginal cultural heritage

An Aboriginal cultural heritage assessment report (ACHAR) was prepared for the project and was included within the EIS (EMM 2023).

This involved an archaeological survey which was conducted in September 2021 with Registered Aboriginal Parties (RAPs). The archaeological survey identified the presence of 36 previously unrecorded sites within the project area, comprising artefact scatters, isolated finds and scarred trees.

The survey also identified the presence of two ochre resource areas within the project area. One of the proposed temporary laydown areas was identified as having potential archaeological deposit (PAD). To further characterise the significance and extent of the PAD, EMM undertook a 3-day test excavation in June 2022, with RAPs. The test excavation determined there is a low-density artefact scatter across the area of PAD.

Avoidance of Aboriginal cultural heritage values was a key consideration in the project refinement process. Consequently, 26 of the 36 cultural heritage sites recorded in the disturbance footprint will be avoided (including all nine scarred trees). Since the EIS was exhibited, it was discovered that a fallen tree branch which is associated with scarred tree ST7 had been removed. An investigation was undertaken by Heritage NSW and the Applicant has received a warning letter in relation to the matter. The remaining 10 cultural heritage sites will be salvaged prior to commencement of construction. The two ochre resource areas will also be avoided.

An Aboriginal cultural heritage management plan (ACHMP) will be developed for the project in consultation with DPHI, RAPs and Heritage NSW. The ACHMP will include details of the management and mitigation of known Aboriginal sites and will outline the protocol for management of unanticipated finds.

5.6 Fire/hazards

5.6.1 Fire risk

Issues:

- Project-related activities may increase the risk of bushfire in the area, particularly the presence of solar panels and batteries, and/or the improper installation of the project components.
- The Preliminary Hazard Analysis (PHA) did not adequately assess fire risks to neighbouring properties.

Less than 20% of the development footprint is mapped as bushfire prone land (EIS Figure 6.32). The potential impacts of fire and explosions have been assessed and are described in the preliminary hazard analysis (PHA - EIS Section 6.9 and Appendix K) and the bushfire assessment (EIS Section 6.10).

The PHA assessed potential project-related hazards including the risk of fire and explosion, and concluded that the project is not considered to be potentially hazardous within the meaning of the State Environmental Planning Policy (Resilience and Hazards) 2021. The PHA found the project is located in a suitable area with considerable separation distance to sensitive receptors and in an area without any other hazardous developments in the vicinity of the project site. It is therefore not expected to have significant offsite hazard impacts.

The mitigation measures relating to bushfire and hazards outlined in the EIS will minimise the risk, of significant hazards during the operation of the project.

The bushfire assessment for the project recommended that asset protection zones are implemented across the site and buildings onsite provide for minimum ember protection consistent with BAL 12.5 construction standards. There will be firefighting equipment and firefighting water tanks installed onsite. Bushfire risk can be suitably controlled with the implementation of standard management practice. Firefighting infrastructure will be installed on site and comply with the *Planning for Bushfire Protection* (RFS 2019) guideline and will include a dedicated water tank and fire-fighting equipment.

A Bushfire Management Plan and Emergency Response Plan (ERP) will be prepared for the project which will include specific measures and procedures to prevent ignition from project activities.

5.6.2 Contamination

Issues:

- Damaged or degraded solar panels may leach heavy metals and contaminate the soil and/or water.
- Failure of the BESS may result in soil and/or water contamination in the local area.
- Inadequate storage or handling of chemicals may result in soil and/or water contamination in the local area.
- Contamination of the local/regional water supply, which will impact agricultural activities, biodiversity, and downstream recreational activities.

The *Solar Energy Guideline Frequently Asked Questions* (DPHI 2024) provides the following information on whether solar panels contaminate the soil (page 4):

The metals in solar panels (including lead, cadmium, copper, indium, gallium and nickel) cannot be easily released into the environment. This is because metals such as cadmium telluride (CdTe) or cadmium sulfide (CdS) are enclosed in thin layers between sheets of glass or plastic within the solar panel. Because of this, the use of metals in solar panels has not been found to pose a risk to the environment.

To readily release contaminants into the environment, solar panels would need to be ground to a fine dust.

The Applicant is a subsidiary of Canadian Solar, which is one of the largest solar panel manufacturers in the world. Canadian Solar's products are built to withstand a range of environmental conditions and are made from robust materials. Regular checks will be undertaken to ensure that if any panels are damaged, they are removed as soon as possible and safely taken from site. Accordingly, the risk of soil contamination associated with the presence of solar panels is negligible therefore not considered an issue.

As described in the EIS (Section 6.9), the BESS has stringent safety measures incorporated into its design to reduce the risk of fire and the release of chemicals. The PHA (Appendix K of the EIS) determined that the risk of the BESS catching fire and/or releasing chemicals was considered to be very low. Accordingly, the risk of project-related contamination as a result of BESS failure is very low.

The Applicant will undertake a Fire Safety Study prior to construction. The study will include an assessment of how used fire-fighting water will be managed to prevent contamination.

Contamination of soil or water as a result of the project is not expected. All chemicals, fuels and oils will be stored and handled in accordance with the requirements of all Australian Standards (including AS 1940) and the NSW EPA's *Storing and Handling of Liquids: Environmental Protection – Participants Handbook*, as applicable.

The project will not cause water pollution as defined under section 120 of the *Protection of the Environment Operations Act 1997*. To enable this, a range of mitigation measures will be put in place to manage drainage and soil erosion and run-off from the disturbance area.

It is expected that adverse impacts to watercourses and riparian corridors will be avoided as the development footprint preserves vegetated riparian zone widths recommended in DoI (2018). Where instream works are proposed (i.e. construction or upgrade of watercourse crossings), these works will be designed and constructed to consider local hydraulic conditions, minimise local flooding impacts, and be consistent with relevant guidelines comprising *Guidelines for watercourse crossings on waterfront land* (DoPI 2012) and *Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings* (Fairfull, S. and Witheridge, G. 2003).

This risk of project activities resulting in the contamination of the local or regional water supply is therefore not significant.

5.6.3 Accessibility of emergency services via road and air

Issues:

- During the road upgrade there may be impacts to the accessibility of emergency services needing to use the road to access a property neighbouring the project site.
- The presence of wind farms in the general vicinity may impact the ability for fire-fighting aircraft to conduct aerial water bombing during a fire.

Concern was raised that construction traffic and roadworks may impact the ability of emergency services to respond in a timely manner, via road, to an emergency at a property near the project site.

As outlined in the bushfire risk assessment completed for the project (Appendix L of the EIS) the site will be designed and constructed to allow safe and unobstructed access to category 1 firefighting vehicles, including the presence of an alternative access point for emergency situations if necessary.

During construction of the access road, traffic management measures will be implemented to ensure safe and unimpeded access of emergency vehicles in the event of an emergency. This requirement will be included in the CTMP.

Access road construction will make sure access for safe and unobstructed passage by a category 1 firefighting vehicle is maintained.

The Sundown Solar Farm is unlikely to affect the current ability for aerial water bombing. There are two operational wind farms in the region, White Rock Wind Farm is approximately 4 km east of the project and Sapphire Wind Farm is approximately 3 km north of the project (Figure 1.1). The local RFS will be aware of the presence of these windfarms and will have measures in place to minimise potential impediments to fire-fighting aircraft.

5.7 Water

5.7.1 Water demand and supply options

Issues:

- The project will use vital water supply in an already drought affected area.
- The proximity to the Great Artesian Basin and underground aquifers necessitates a stringent water assessment to prevent accidental contamination and preservation of water resources.
- The project will impact the amount of water available for local/regional agricultural activities, biodiversity, and downstream recreational activities.

The project will not have a high demand for water. Over the construction period the water demand is conservatively estimated to be 75 megalitres (ML), and over the 35-year operation period, the demand is conservatively estimated to be 475 kilolitres (KL).

The EIS described the water supply options, which were to identify source options at the project site (e.g. onsite bores or farm dams) and, obtaining water from external sources (e.g. Council resources).

Since the EIS was exhibited, the Applicant has assessed the impact of sourcing water from groundwater which included the potential use of an existing onsite bore and the potential for additional bores at the project site (Appendix K).

The assessment determined that up to ~50% of the water required for the construction phase could be sourced from an existing onsite groundwater bore (referred to as bore GW971316).

The assessment identified that no landowner bores will be impacted if this bore was used; as the closest privately owned bore is about 2 km north of the project boundary and drawdown was modelled to propagate a maximum 650 m from each bore.

To use the existing onsite bore (GW971316) for water supply for the project, the existing approval for use approval would need to be amended from stock and domestic purposes to commercial usage. Water usage rights will also need to be secured for the Inverell Basalt Groundwater Source on the water market via temporary or permanent trades.

The assessment identified that the remaining ~50% of the water could be sourced, either by:

- trucking residual water to site, or
- abstracting groundwater from an additional two proposed (onsite) bores to cumulatively abstract the additional volumes.

i Additional onsite bores

The water supply options assessment (Appendix K) identified that the remaining water requirements could be obtained from additional onsite bores.

Under an SSD approval for the project, bores can be installed under miscellaneous works. However, water allocations will need to be secured on the water market for groundwater sources they extract from.

The bores will be located within existing highly disturbed areas (i.e. land that has been used for cropping) and within proposed project infrastructure placement areas. For the purposes of drawdown assessment, the additional bores were also located near high potential groundwater dependent ecosystems (GDEs) as a conservative and worst-case scenario; in reality, additional bores will be located as far as practical away from high potential GDEs to minimise potential impacts.

Therefore, given the low volume and short duration of abstraction impacts to the Great Artesian Basin and local aquifers and local agricultural activities are not anticipated.

ii Trucking additional water to site

There is a Council-owned standpipe located on the northern side of Ring Street, Inverell. Council has confirmed that this standpipe would provide adequate volumes of water as the secondary resource for the project during construction. Council also confirmed that this standpipe could be used by the project – noting that costs for the water and transportation would be the responsibility of the Applicant.

Based on the above, the project will have adequate water resources for construction and operation. The majority of the water will be obtained from the existing onsite bore and the remainder will be sourced from additional bores or trucked from Council resources.

5.7.2 Water for dust suppression

Issue: The proposed 75 ML is an inadequate amount to suppress dust during construction phase.

The 75 ML of water required over construction period will mostly be used for dust suppression, with other minor uses including site amenities, fire protection and washing of plant and equipment.

Based on comparisons with other solar projects, 75 ML over the construction period is a reasonable estimate for the water demand for a construction project of this magnitude.

5.8 Dust

Issues:

Project-related dust may impact:

- the amenity, health and wellbeing of local residents and the health of livestock
- the ability for farms to effectively apply pesticide
- the ability for nearby residents to grow crops, vegetable gardens, grass and other plants
- the quality of drinking water
- the ability for farms to meet the required carbon objectives, where applicable.

It is acknowledged that the construction activities have the potential to create dust. The primary source of dust will be vehicle movements on unsealed roads, during the upgrade of the access road and earthworks during the construction of the solar farm. Residents living close to the access road are likely to be most impacted by dust when the access road upgrade occurs.

The nature of the ground disturbance at the solar farm will be minor as the piles are small excavations. The solar farm and access road will be constructed in stages, with each section completed before starting on the next section. This will limit the amount of exposed disturbance at any time. The construction laydown areas and internal access roads will be gravelled, to reduce the potential for significant dust generation onsite.

Measures to minimise project-related dust impacts are described in the EIS (Table 6.38 and Table 6.47) and in the interim CTMP (Appendix I). These measures include, but are not limited to:

- use of a water cart on unsealed areas, as required
- restriction of traffic speeds on the access road
- sealing the section of access road nearest R14 (as agreed with Council)
- a policy to ensure disturbed areas are revegetated/covered as soon as practicable
- requirement to ensure vehicle loads are secured
- dust suppression measures will take into consideration weather conditions
- stabilise pavements with polymer, cement or similar wherever practicable.

Dust mitigation measures similar to the above will also form part of the CEMP.

Further, the access road is currently unsealed. The upgraded road will be gravelled, thereby reducing the amount of dust generation. Similarly, the use of shuttle buses will reduce the volume of private vehicles travelling to and from the site each day, thereby minimising potential dust generation.

With the implementation of the proposed dust mitigation and management measures, no significant dust impacts are expected at properties adjacent the access road.

Residential rainwater tanks on nearby properties are unlikely to be affected by construction dust given the implementation of mitigation measures outlined in the EIS and CTMP. The mitigation measures will ensure significant impacts to livestock from dust will not occur.

It is also unlikely that project-related dust will affect the ability of local farms to meet carbon objectives (and/or to effectively apply weedicide) during the period that it will take to construct the access road and solar farm.

A 24-hour community information line (1800 319 690) is available for members of the community to make an enquiry or lodge enquiries about the project. In addition, the project website (www.sundownsolarfarm.com.au) is kept up-to-date with the latest project information. Members of the public can make enquiries via the webpage or via the community information line. All enquiries and complaints will be addressed in a timely manner.

5.9 Health

5.9.1 Electromagnetic fields

Issue: The project may impact human health via exposure to project-related electromagnetic fields.

The Hazard and Risk Section of the EIS (Section 6.9 of the EIS) PHA undertaken for the EIS (Appendix K of the EIS) concluded that electromagnetic fields (EMFs) created from the project will not exceed the International Commission on Non-Ionising Radiation Protection (ICNIRP) reference level for exposure to the general public at any location within the development footprint. Further it concluded that the impact on the general public (including neighbouring agricultural workers) in surrounding areas will be negligible.

The design and typical exposure levels to EMFs for the proposed project infrastructure has been assessed against the *Guidelines for limiting exposure to time-varying electric, magnetic and electromagnetic fields* (ICNIRP 1998). Several controls to reduce the potential for EMFs have been identified and implemented in the project design, including standard solar PV plant characteristics such as inverters housed in shipping containers or steel cabinets.

5.9.2 Transport of hazardous material

Issue: The presence of project-related trucks transporting hazardous material may impact human/biodiversity/livestock health in the event of an incident.

The project will not require significant quantities of hazardous material to be transported to site. Hazardous materials will be transported, stored, handled and disposed of in accordance with applicable standards. Chemicals will be stored in containers that are in a sound condition and can safely contain the chemicals. Hazardous materials will be stored and handled in accordance with AS1940-2004: *The storage and handling of flammable and combustible liquids*. The transformers will be transported to the site via an OSOM vehicle with escort. The OSOM route has been assessed as being suitable for trafficability and safety (Appendix F).

Construction traffic, including the transport of hazardous material will be managed in accordance with the interim CTMP

5.9.3 Impacts to livestock health and wellbeing

Issue: The project may impact the health and wellbeing of livestock.

Impacts to the health and wellbeing of livestock are not anticipated during any stage of the project. The impact assessment criterion for noise, vibration, and air quality are designed for the protection of human health and wellbeing and is considered to also afford for the protection of livestock. Accordingly, as the project will comply with the criteria established by these policies and guidelines, impacts to the wellbeing of livestock are not anticipated.

Furthermore, livestock are able to acclimatise to noise levels and also have the ability to move away from noise sources, for example traffic noise during construction, to other areas of the paddock.

5.9.4 Heat island effect

Issue: Solar farms may create heat islands which may impact the local microclimate (typically in the form of transferring heat from the development to local properties).

At the time of preparing this report, the evidence to support the claim that solar farms create heat islands is inconclusive.

Desktop research found two public studies conducted on the effects of solar farms on weather patterns. A 2013 conference paper by Fthenakis and Yu titled *Analysis of the potential for a heat island effect in large solar farms*, analysed 18 months of detailed data from a 1 MW section of a solar farm in North America. The researchers concluded that a heat island effect on similar scale solar farms are unlikely to occur, as on most days the solar array completely cooled at night, and that “access roads between solar fields allow for substantial cooling, and therefore, increase of the size of the solar farm may not affect the temperature of the surroundings.”

The only available research which concluded that solar developments may have an impact on weather patterns was by Lu and Smith in their paper *Impacts of Large-Scale Sahara Solar Farms on Global Climate and Vegetation Cover* (2020). However, the researchers were investigating the impact of giant solar farms in the Sahara covering 20% or 50% of the total desert. The results from this study are not applicable to the Sundown Solar Farm as it is on non-desert land.

On a more domestic level, the *Large-scale Solar Energy Guidelines* state what where a ‘solar farm energy project is located adjacent to a horticultural or cropping activity, the solar array should be setback from the property boundary by at least 30 m to mitigate any heat island effect’ (page 35). The Sundown Solar Farm has been designed to satisfy this requirement as it includes a setback of at least 30 m between the solar arrays and the boundary of any adjacent private properties. Accordingly, it is considered that the project will not significantly impact neighbouring properties with heat island effects.

5.10 Social

5.10.1 Local health services

Issue: The project may impact the availability of health services for locals.

Some community members raised concern about the lack of existing health care services in the area. There was concern that the influx of project-related workers will exacerbate this problem.

The solar farm site has two hospitals and a number of general practitioner clinics within an hour's drive (in Glen Innes and Inverell). The Hunter New England Central Coast Primary Health Network currently has Federal government funding to establish a health hub in Glen Innes, which will potentially encompass general practitioner care, allied health, aged care, disability, and primary care services.

It is intended to source as much of the construction workforce as possible from Inverell and Glen Innes and wider New England area. The peak construction workforce is estimated at 400 people for a duration of 14 months, which is equivalent to 2% of the population of wider Inverell and Glen Innes area. If most of the construction workforce is sourced from the local area then additional demand for health services from visiting workers will be unlikely to be materially different from current demands.

As outlined in Table 7.1 of the Social Impact Assessment (EMM 2023), the Applicant will provide an advanced notice to health care services in Inverell and Glen Innes regarding ramping up of construction activities and potential influx of construction workers.

5.10.2 Local schools

Issue: The project may impact the ability for local schools to service the needs of the community.

Some members of the public raised concern that the influx of project-related workers may increase the number of students in local schools, potentially resulting in a shortage of teachers.

It is intended to source as much of the construction workforce from the New England area, and where possible from Glen Innes and Inverell. As discussed in the Social Impact Assessment (EMM 2023), Glen Innes and Inverell both have a range of primary, secondary and pre-schooling facilities, where it is likely that any children of the local construction workforce already attend. If most of the construction workforce is sourced from the local area then additional demand for school facilities from visiting workers will be unlikely to materially increase.

5.10.3 Community cohesion

Issue: The project may reduce community cohesion as associated landowners receive the benefits of the project and the non-associated landowners do not.

The Applicant recognises that associated landowners stand to more directly financially benefit as a result of hosting the project compared to non-associated landowners. The project will provide wider community benefits by way of upgrading the Gwydir Highway/Spring Mountain Road intersection and Spring Mountain Road and Sturmans Road. Watercourse crossings will be installed as well as new cattle grids.

The Applicant remains committed to the development of a community benefit sharing program to benefit local residents and the broader regional community, aimed at building and supporting local projects and initiatives. The Large-Scale Solar Guideline provides guidance on setting up community benefits agreements and to this end, a voluntary planning agreement (VPA) is being negotiated with Inverell Shire Council, which will provide funding for the local community.

5.10.4 Safety and security

Issue: The presence of project-related workers during construction could impact the safety and security of residents living near the access road and/or the project site.

As with any development, the safety and security of residents living near the access road could potentially be compromised because of:

- the temporary increase in vehicle numbers potentially resulting in an increased risk of a traffic accident
- the temporary increase in workers in the area potentially resulting in an increased risk of unauthorised entry onto private property by construction workers (or anyone).

To manage this risk the following mitigation measures will be implemented:

- The project site will be secured from public access.
- The project disturbance area will be clearly marked to ensure workers do not inadvertently access private properties.
- All operators of project-related vehicles will need to comply with the driver code of conduct outlined in the interim CTMP.
- As mobile phone reception is limited in some areas in and around the project, nearby residents will be given the UHF number as a back-up means of communication with the construction contractor.
- Construction workforce behaviour will be managed through the implementation of the CEMP, which will encourage positive workforce behaviour.
- The use of the shuttle bus service will ensure that the workforce leaves the site in a timely manner and that workers do not linger at the site at the end of the day.

5.10.5 Property values

Issue: The project will decrease the property values of nearby landholdings.

Property values are based on and influenced by a range of factors, including but not limited to supply and demand, interest rates, the local economy, demographics, and the property's location. Projects with high levels of impacts, where NSW Government environmental assessment criteria are exceeded, may decrease the value of properties that are directly impacted.

Construction impacts associated with the Sundown Solar Farm will be temporary and are therefore considered unlikely to have a lasting impact on the amenity of the locality. The residual impacts associated with the ongoing operation of the project (i.e. after the implementation of proposed management and mitigation measures) are predicted to be minimal. Further, the project will provide the long-term benefit of an upgraded intersection and access road.

5.10.6 Insurances

Issue: The proponent may not have adequate insurance coverage to protect neighbouring properties against project-related damage caused by fires or other hazards.

In Australia, renewable energy projects have not affected the ability of near neighbours to obtain cost competitive insurance premiums. In the case of damage arising from an act occurring inside of the facility, the facility operator will have its own insurance policy to call upon, including public liability coverage.

Nonetheless, it is noted that issues regarding public liability insurance or indemnities are not matters that are properly the subject of conditions under planning legislation. Management of potential project-related risks associated with fire and hazards are discussed in Section 5.6.

5.10.7 Shortage of local skilled workforce

Issue: Existing shortages of a skilled workforce from local towns moving to solar project and other renewable projects, leaves locals without a key workforce to attend to their day to day operations

The average construction workforce throughout the period will be 100 full time equivalent workers during the access road construction and site establishment, rising to 400 workers during the construction of the solar farm and falling to around 75 workers during the commissioning stage.

It is anticipated that the majority of the construction workforce will be drawn from the region where possible and from outside of the region as necessary.

The project will bring new job and upskilling opportunities to the region and will offer an opportunity to diversify the existing regional employment industry sectors.

5.10.8 Tourism

Issue: The presence of the project may impact the tourism appeal of the local area.

There is a perception that the presence of a solar farm will negatively impact tourist numbers and the amount of time tourists are likely to stay in the local area. While the future preferences of tourists are difficult to predict, there is no tangible reason to conclude that there will be a net negative impact on local tourism as a result of the project.

Due to variances in local topography and the presence of mature vegetation, the EIS Visual Impact Assessment (Section 6.5 and Appendix G of the EIS) determined that the project will not result in significant visual impacts to any viewpoints. Tourists travelling along the Gwydir Highway may experience transitory and distant views of project infrastructure. However, as it is assumed that the focus of these motorists will be in line with their direction of travel, any potential views of the project are not considered to be significant.

No significant negative impacts on tourism are expected from the project, due primarily to its location within a rural agricultural setting and approximately 30 km west of Glen Innes and 30 km east of Inverell.

Further, it is anticipated that the construction workforce will be sourced from the region and therefore the effect on short-term accommodation in regional towns is not predicted to be significant.

5.10.9 Change in land use

Issue: The proposed change in land use from agriculture to renewable energy is not acceptable.

Approximately half of the disturbance footprint is LSC class 4, 5 or 6, and is therefore not considered suitable for high-impact agricultural land uses such as cultivated cropping or intensive grazing. Therefore, the use of the land for renewable energy (with or without co-existent grazing) will not remove significant amounts of high-quality agricultural land from intensive primary production.

The footprint of the solar farm is estimated to comprise less than 0.1% of the farming land in the Inverell Shire and Glen Innes Severn LGAs. Even considered cumulatively with the other approved solar farms in the region, this only increases to 0.4% of the farming land in these LGAs.

The co-existence of renewable energy land use and grazing land uses enables the project landowners to diversify their income streams during times of climatic and economic uncertainty, creating a stronger and more sustainable local and regional economy.

The project is a temporary and reversible change of land use. A project decommissioning and rehabilitation plan will be prepared prior to the end of the project's operational life and will feature rehabilitation objectives and strategies for returning the development footprint to its pre-project agricultural productivity.

5.11 Visual impact

5.11.1 Visual amenity

Issue: There is potential for the project to result in visual amenity impacts.

Due to variances in local topography and the presence of mature vegetation, the EIS Visual Impact Assessment (Section 6.5 and Appendix G of the EIS) determined that the project will not result in significant visual impacts to any viewpoints. The assessment determined that the project may result in slight/moderate visual impacts to the Newstead Station Group. However, based on the calculated magnitude of change and evaluations of significance assigned to each of the eight viewpoints, no landscaping is warranted in association with any of the viewpoints.

Based on the height of the solar panels, the presence of the undulating landscape, the presence of mature vegetation and the separation distances between the project and other renewable energy projects in the area, there is limited potential for combined views of the project and other renewable energy developments.

Motorists travelling along the Gwydir Highway may experience transitory and distant views of project infrastructure. However, as it is assumed that the focus of these motorists will be in line with their direction of travel, any potential views of the project are not considered to be significant.

5.12 Waste management and resource efficiency

5.12.1 Solar panel recycling

Issue: Damaged solar panels are not able to be recycled.

The ability to feasibly recycle solar panels is an emerging issue. It is anticipated that damaged solar panels (and other components) from the project will be sent to a suitably-equipped recycling facility such as in Thomastown, Victoria. It is understood that a similar recycling facility is planned for Dubbo, which could service the needs of the project during the operation of the solar farm. It is understood that a 97% recovery rate (by weight) for each panel recycled could be achieved.

Decommissioning is not scheduled for 35 years after commencement of operations and it is expected that solar panel recycling technology will have advanced by this time.

5.12.2 Waste management

Issue: The project does not adequately address construction, operation or decommissioning waste management.

The Applicant will prepare a waste management protocol in accordance with its conditions of consent. The protocol will outline the waste management strategy for all phases of the project including decommissioning, and will require that waste is managed in accordance with the NSW *Protection of the Environment Operations Act 1997* (POEO Act), the NSW *Waste Avoidance and Resource Recovery Act 2001* and the following hierarchy, which is listed in order of preference:

- reduce waste production
- recover resources
- dispose of waste appropriately.

The protocol will include the existing mitigation measures outlined in the EIS (Table 6.48) in relation to reducing the volumes of waste.

As part of the decommissioning and rehabilitation, the Applicant will reuse, resell or recycle all dismantled and decommissioned infrastructure and equipment, unless contractually agreed with the landowners.

5.13 Decommissioning and rehabilitation

5.13.1 Responsibility for decommissioning and waste management

Issues:

- There is no specific plan for the project's decommissioning and rehabilitation, including commitments, timelines and responsibilities.
- There is no guarantee the project owner will ensure the project site will be properly decommissioned and rehabilitated. Without the imposition of a rehabilitation bond, the project owner could walk away from project at the end of operations.
- Decommissioning will remove the above-ground infrastructure and leave the below-ground infrastructure in place. This will impact the potential productivity of the land post-decommissioning.

Consistent with contemporary consent conditions issued for large scale solar farm developments in NSW, it is anticipated that any consent for the project will include conditions requiring that the Applicant to be decommission the project and rehabilitate the site within a specific period and to the satisfaction of DPHI.

As part of the decommissioning, the Applicant will reuse, resell or recycle all dismantled and decommissioned infrastructure and equipment, unless contractually agreed with the landowners (i.e. underground cables deeper than 600 mm) and if it does not cause harm to the environment and farming activities post operation. Structures and equipment that cannot be reused or recycled will be disposed of at an approved waste management facility.

Once decommissioned, the land within the development footprint can be rehabilitated to its current use if required thereby allowing for either continuation of renewable energy generation or a return to agricultural production. The development footprint will be returned to its pre-existing land use, namely suitable for grazing of sheep and cattle, or another land use as agreed by the project owner and the landholder at that time.

There is no regulatory requirement nor precedent for solar farm developers to provide a decommissioning bonds or rehabilitation bonds. Though the costs of the decommissioning/ rehabilitation are to be a burden of the project owner with no cost to be borne by the Inverell Shire Council or the local community.

5.14 Cumulative impacts

5.14.1 Context

Sundown Solar Farm is one of several proposed, approved and developed projects in the Inverell Shire/Glen Innes Severn LGAs. Others include the Sapphire Wind and Solar Farm, White Rock 1 and White Rock 2 Wind Farms, Glen Innes Wind Farm, Tuttles Lane Solar Farm and Rangoon Wind Farm. The location of these projects is shown in Figure 1.1 and the cumulative impacts of these projects are described in the EIS (Table 2.2 Cumulative Impact Assessment).

5.14.2 Cumulative amenity impacts

Issue: There is potential for the project to result in cumulative dust, biodiversity, noise, vibration and general amenity impacts that will impact the rural lifestyle of the region.

The cumulative dust, noise, vibration and general amenity impacts of this project and nearby projects are not considered to be significant and are described in the EIS (Table 2.2 Cumulative Impact Assessment).

The project's construction schedule is unlikely to overlap with other approved renewable energy projects yet to be developed. The nearest approved project is the White Rock Wind Farm Stage 2 which is approximately 4 km away at its closest point to the Sundown Solar Farm and is unlikely to be developed at the same time as the project. Given the distance and the lack of schedule overlap, it will be unlikely that cumulative dust, noise and vibration impacts will result in the locality.

As discussed earlier, the biodiversity impacts of the project have been minimised as far as possible through design. Residual impacts will be offset in accordance with the *Biodiversity Conservation Act 2016* to result in no net loss to biodiversity values of the region.

5.14.3 Cumulative traffic impacts

Issue: There is potential for the project to result in cumulative traffic impacts within the region.

The construction of the alternative transmission line for White Rock Wind Farm Stage 2 will involve generation of construction traffic at the Gwydir Highway/Spring Mountain Road intersection and on Spring Mountain Road.

No cumulative traffic impacts are expected as it is understood that the construction of this wind farm will not be at the same time as the project. The Applicant will continue to consult with Goldwind Australia to manage scheduling of construction works and to avoid/minimise cumulative impacts at the Gwydir Highway/Spring Mountain Road intersection.

The Sapphire Solar Farm is located approximately 10 km north of the Sundown Solar Farm site, and will be accessed via a road leading to an intersection with the Gwydir Highway approximately 8 km east of Spring Mountain Road. The construction of the much smaller Sapphire Solar Farm many kilometres away is unlikely to have unacceptable cumulative traffic impacts.

One submitter raised a concern that impacts to the New England Highway was not assessed for the project. The New England Highway is the principal north-south arterial road through the region and is set up to handle interstate freight transport. The traffic volumes and temporary nature of the construction schedule is unlikely to significantly impact the operation of the New England Highway.

5.14.4 Cumulative agricultural impacts

Issue: There is potential for the project to result in cumulative agricultural impacts within the region.

The cumulative agricultural impacts in the region have been considered in the Soil, Land and Agricultural Assessment (Appendix D). The closest renewable energy projects which are approved and not yet constructed are the White Rock Wind Farm Stage 2, Sapphire Solar Farm and Glen Innes Wind Farm. The approximate disturbance footprints for these projects are as follows:

- White Rock Wind Farm and Solar Farm – 1,511 ha
- Sapphire Wind Farm and Solar Farm – 733 ha
- Glen Innes Wind Farm – 24 ha.

Collectively, the above projects and the project will have the potential to impact an estimated approximate 3,000 ha across the Inverell Shire and Glen Innes Severn LGAs. This represents 0.4% of land used for agriculture across the Inverell and Glen Innes Severn LGA's, which is a combined total of 798,166 ha.

This is considered a minor impact on important land (LSC classes 1 to 4) within the Inverell Shire and Glen Innes LGAs, as modelling all 3,000 ha of project disturbance footprints to occur on LSC class 3 land, this will represent 1.2% of the total LSC class 3 land mapped for the Inverell Shire and Glen Innes Severn LGAs, which is a combined total of 245,990 ha. This is considered a very conservative overestimate as most disturbance is expected to occur on lands LSC 4 or above.

The applicability of agrisolar to solar farm projects in the region is relevant to further mitigate these minor impacts to agriculture land use and occupancy of important agricultural land, given the suitable conditions for sheep grazing and the established sheep and lambing industries, support services and infrastructure.

Increased cumulative impacts including changes to land used for agriculture, localised productivity, secondary productivity and some agricultural support services are likely to be experienced where solar farm projects in the region do not implement agrisolar.

5.14.5 Cumulative energy security impacts

Issue: There is potential for the project to contribute to energy insecurity within the region during the transition from coal to renewables.

The project is consistent with the NSW Government's electricity infrastructure objectives set out in the *Electricity Infrastructure Investment Act 2020*, including:

- construction of specified amounts of renewable energy infrastructure
- construction of additional infrastructure necessary to minimise costs to NSW electricity customers and meet the NSW energy security target and reliability standard.

The project, and other renewable energy projects in the region, will contribute to energy security and reliability in NSW by diversifying the State's energy mix and helping to prepare for the retirement of large-scale coal-fired power generation.

5.15 The project

This section addresses submissions relating to the project location, layout and design.

5.15.1 Support for the project

Issues:

- I fully support this project going ahead as I believe it will be a huge benefit to my local community. It will provide employment opportunities and contribute to the local economy.
- This project is a positive step for renewable energy in NSW.
- It will be a benefit to the local community by boosting the local economy through utilising local businesses and providing employment opportunities during the construction phase.
- Local landowners will benefit from improvements to the Spring Mountain Road. The improvements which will have to be made to allow the heavy vehicle access required for construction will mean improved access for stock cartage to sale. This is a benefit which will continue long after the solar farm construction.

Several submissions in support of the project were received. The Applicant notes the content of these submissions and agrees that the project will result in a range of benefits to the local community through the implementation of upgraded local infrastructure, benefits that would accrue from the VPA and from local employment creating opportunities.

More broadly, the development of the project will contribute to the energy generation and storage targets for the New England REZ, with an indicative capacity of around 360 MW and storage of up to 150 MW for a 4-hour duration. Therefore the project will help the NSW Government meet its renewable energy and emissions reduction targets.

5.15.2 Suitability of the site

Issues: The site is zoned RU1 (primary production). The proposed change in land use from agricultural to energy production may:

- Impact the agricultural productivity of the site and region.
- Set a precedent for future projects being sited on agricultural land.
- Impact the landscape character of the area.

The project location was primarily selected by the Applicant due to the very good solar resource of the area and physical conditions for large-scale solar energy generation. The study area's flat to gently undulating topography and its predominantly cleared, agricultural land use make it highly suitable for the project. The site is suitable for the project, as it:

- is near an electricity transmission corridor (with available network capacity) onsite
- is within a renewable energy zone (REZ)
- is zoned RU1 which is a prescribed zone where electricity generating works are a permissible land-use and the environmental and planning constraints can be effectively managed
- can be conveniently accessed from the Gwydir Highway
- is adequate in size

- will be located on LSC 4 or higher (i.e. land generally not capable of sustaining high impact agricultural land uses)
- is suitably distant from potentially sensitive receptors and major townships
- avoids areas of high biodiversity value
- will not be highly visual from most viewpoints.

Alternate locations were considered during the due diligence phase, and none of these locations had all the attributes of this location and were not considered viable from technical, economic, social and/or environmental standpoints.

Located within the REZ, there are several other proposed and existing renewable energy projects in the broader region (outlined in Section 5.2).

The project will not result in material impacts to agriculture. The project will allow a dual land use of renewable energy and grazing. Potential impacts to agriculture are addressed in Section 5.2.

Consistent with contemporary consent conditions issued for large-scale solar farm developments in NSW, it is anticipated that the conditions of consent will include a requirement to prepare and implement a Decommissioning and Rehabilitation Plan

5.15.3 Inadequate solar resource

Issue: There will be inadequate solar resource to make the project viable.

The Applicant is an experienced developer of solar farms and considers that solar resource available onsite is adequate to generate the required power and thereby make the project viable.

Since submission of the EIS, the Applicant has changed the proposed solar panels type to panels with a greater capacity but smaller footprint. This has enabled a redesign of the site layout which has resulted in a reduction of the disturbance footprint and impacts on biodiversity.

5.15.4 Design of water crossings

Issue: The proposed water crossings are not practical and will restrict water flow, impact fish and cause erosion.

The proposed water crossings will be designed to minimise impacts to water flow, fish passage and erosion. As outlined in the EIS (Table 6.40), all watercourse crossings will be designed and constructed to:

- consider the appropriate level of serviceability and flood immunity required for the project
- consider local hydraulic conditions and minimise scour potential
- be able to accommodate the proposed quantities and types of heavy vehicles and OSOM vehicles
- minimise local flooding impacts
- be consistent with relevant guidance comprising *Guidelines for watercourse crossings on waterfront land* (DoPI 2012) and *Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings* (Fairfull, S. and Witheridge, G. 2003).

5.16 Procedural matters

5.16.1 Community benefit fund

Issue: There are no details of the proposed community benefit fund.

The Applicant seeks to ensure that financial and non-financial benefits are distributed to the broader community and other local and regional stakeholders.

The Applicant has written to Inverell Shire Council to enter into a VPA with Council to provide funding for community initiatives. The VPA offer will align with the recommended amount in the *Large-Scale Solar Guideline* as well as Inverell Shire Council's *Renewable Energy - Community Benefit Sharing Framework Policy*.

5.16.2 Neighbour agreements

Issue: There was no attempt made to enter into a neighbour agreement with neighbouring landowners.

The assessments show that during the construction phase some neighbouring landowners may be influenced by construction activities. These impacts will be temporary, and a suite of mitigation measures have been proposed to make sure there is minimal residual impact to these local landowners. One of the community benefits of the project is the upgrades to the Gwydir Highway/Spring Mountain Road intersection and the Spring Mountain Road/Sturmans Road access road. These upgrades will considerably improve the long-term safety and accessibility of road users in the local community.

The Applicant remains committed to the development of a community benefit sharing program to benefit local residents and the broader regional community, aimed at building and supporting local projects and initiatives. The Large-Scale Solar Guideline provides guidance on setting up such community benefits agreements and to this end, a VPA is being negotiated with Inverell Shire Council, which will provide funding for the local community.

As above, the overall impacts of the project to neighbouring landowners is considered negligible and the project provides benefits for neighbouring landowners (e.g. improvements to the access road have been committed to including upgrading of Spring Mountain Road and the intersection at Gwydir Highway/Spring Mountain Road).

Due to the minimal impacts of the project and regular engagement with neighbouring landowners, multiple neighbour agreements were not required to be executed. However, the project has entered into a neighbour agreement with the owner of Menari, at Lot 142 DP753305. This agreement allows the existing alignment of Spring Mountain Road (which travels through the property) to be used – thus eliminating the need to unnecessarily clear vegetation to realign the road to the gazetted location 150 metres to the west of the current road alignment. This agreement means that this neighbouring landowner becomes an associated landowner to the project (refer to Section 3.4 for a summary of the accepted impacts).

5.16.3 Community engagement

Issue: There has been inadequate engagement with the community regarding the project during the EIS phase.

The Applicant recognises the importance of community engagement to the success of the project. Consultation has been undertaken with neighbours throughout the EIS process. It also hosted a wider landowner briefing session prior to the submission of the EIS. Details of the community engagement undertaken during the EIS and the submission phases are outlined in Section 3.3.

The Applicant has undertaken further consultation during the preparation of the Submissions Report and is committed to improving its engagement program. The Applicant will continue to engage with the community prior to construction, during the construction and operation of the project.

5.16.4 Legislation, planning and policy

Issue: There are gaps in legislation and government policy relating to the planning of new solar farms.

Several submissions raised concern regarding perceived gaps in legislation and government policy relating to the planning of new solar farms, including in relation to the cumulative impacts of a proliferation of solar farms across specific regions, lack of consultation with local residents, and uncertainty about eventual decommissioning.

It is beyond the scope of the planning assessment process to consider whether planning legislation, policy and guidelines are suitable though, a brief response is provided in this section in relation to the underlying issues themselves for completeness.

NSW has a robust policy and legislative framework in place to manage the renewable energy transition. Large-scale solar farm developments are governed by the State significant development assessment process as detailed in the EP&A Act. the *Large-Scale Solar Energy Guidelines* details the level of information expected from solar farm developers. The guidelines guide the assessment of cumulative impacts and recommend that consultation is undertaken throughout the EIS development and subsequent processes.

The EP&A Act allows for a public process to be undertaken for State significant development projects. The Applicant has prepared an EIS for the project, which the DPHI placed on exhibition and received submissions.

When the project is approved by the IPC, it will be regulated under a development consent. The development consent will include conditions to ensure that the impacts of the project are avoided, minimised and offset. This will include strict conditions to manage amenity impacts, biodiversity impacts and decommissioning impacts.

5.17 Other matters

5.17.1 National and local economic impacts

Issues:

- There is potential for the project to result in impacts to the local and Australian economy.
- The profits from the project may not be realised on Australian shores and the project may impact Australian-owned farming enterprises.

The Applicant will support local business by utilising their established supply networks and providing sufficient opportunities and information for local businesses to secure new supply contracts. Wherever possible and practical, local businesses, goods and services will be prioritised.

Construction phase project procurement activities have the potential to deliver economic benefits to businesses within the local and regional area. Local procurement may also enable flow-on economic impacts, which will be realised in the regional area, specifically Inverell Shire and Glen Innes Severn Shire where the majority of the workforce is anticipated to be located.

The project will generate up to 400 construction jobs and 15 operational jobs, providing employment and upskilling opportunities to the region, and diversifying the existing regional employment industry sectors. While it is acknowledged that most employment opportunities from the project will be short term, combined projects in the New England REZ will offer many years of employment opportunities.

The Applicant has offered to enter into a VPA with Inverell Shire Council over the life of the project. Draft terms of the VPA are still being discussed with Inverell Shire Council. The Applicant understands that these contributions will be invested in activities that reflect the community needs and priorities.

5.17.2 Decentralised panels

Issue: It may be better to invest in domestic/commercial rooftops solar as this option may have fewer environmental and social impacts compared to large-scale solar farms.

Large scale solar farms are necessary in order to transition the energy market away from fossil fuel energy generation. Large scale solar farms can be developed and operated with minimal environmental impacts, and can bring a range of benefits to local and regional economies.

Rooftop solar can be a cost-effective method of reducing emissions from the electricity sector while using available surfaces (Best, Burke & Nishitateno 2019). The 2022 AEMO Integrated System Plan (ISP) supports rooftop solar as an important part of the renewable energy transition, stating that “NEM’s transformation will be influenced by the generation and feed-in capability of millions of individual consumer-owned solar PV systems” (p. 10). As such, rooftop solar should complement utility-scale energy generation, to allow for consistent energy provision in the future.

5.17.3 Ethical supply chain

Issue: There is the potential for overseas modern slavery practices to be associated with solar panels and other project-related infrastructure.

The Commonwealth *Modern Slavery Act 2018* requires entities based, or operating in, Australia, which have an annual consolidated revenue of more than \$100 million, to report annually on the risks of modern slavery in their operations and supply chains, and actions to address those risks. The Applicant is required to satisfy relevant requirements of the Commonwealth *Modern Slavery Act 2018* and the NSW *Modern Slavery Act 2018*. It is noted, however, that the modern slavery legislation is not included within the scope of the planning legislation.

It is also noted that the Clean Energy Council has formed a Modern Slavery Working Group, to which Recurrent Energy is a signatory. The objectives are to facilitate the process of reporting under the *Modern Slavery Act 2018* and raise the standard of practice across the clean energy sector in Australia. It does this by providing a platform to discuss and consider collaboration on efforts to:

- identify and address risks of modern slavery within supply chains
- report under the national Modern Slavery Reporting Requirement.

Furthermore, banks investing in the project will be required to observe the Equator Principles as part of the project legal due diligence process.

5.17.4 Not supportive of renewable energy

Issue: Renewable energy may not be safe from a health, political, humanitarian, technical, economical and/or practical perspective.

It is beyond the scope of the planning assessment process to consider these issues; however, brief responses are provided in this section for completeness.

CSIRO and AEMO’s ‘GenCost 2022–23’ report confirms that wind and solar power, supported by power storage capacity, are the most cost-effective options for development of new baseload power generation facilities (CSIRO, 2023), even when additional costs relating to transmission and storage are factored in. The report predicts further cost decreases over time due to technological maturity and reducing inflationary pressures.

The project is consistent with relevant Commonwealth, State, regional and local strategic plans and policies, and in particular the NSW Electricity Infrastructure Roadmap (DPIE 2020), which sets out the plan to deliver REZs in NSW. The development and operation of the project, in conjunction with other large-scale renewable energy projects, will contribute to filling the need for replacement power as ageing coal-fired generators close.

The decision regarding where to source project componentry is driven by economic considerations, and as with all infrastructure projects, may include imported componentry where this is the most cost-effective and quality-assured solution.

6 Updated project justification

The development and operation of the project, in conjunction with other large-scale renewable energy projects, will contribute to filling the need for replacement power as ageing coal-fired generators face closure in NSW. The project will contribute to the energy generation and storage targets for the New England REZ, with an indicative capacity of around 360 MW and storage of up to 150 MW for a 4-hour duration.

The project is consistent with relevant Commonwealth, State, regional and local strategic plans and policies, in particular the *NSW Electricity Infrastructure Roadmap*, which sets out the plan to deliver REZs in NSW.

The project is considered to be justified and in the public interest, as:

- it will contribute to energy security and reliability in NSW by diversifying the State's energy mix and helping to prepare for the retirement of large-scale coal-fired power generation
- it aligns with Commonwealth and NSW Government electricity policies and strategies and regional plans, and it will provide ongoing economic benefits for both the local economy within the Inverell Shire LGA and the Glen Innes Severn LGA and more broadly, the regional economy within the New England region
- the project will not result in significant environmental, social or economic impacts, and the EIS and this submissions report have concluded that any residual impacts can be appropriately managed and/or offset in accordance with relevant NSW Government policies
- the location of the project is suitable to develop a solar farm as it:
 - is adjacent to an electricity transmission corridor (with available network capacity) onsite
 - is within the New England REZ
 - is zoned RU1 which is a prescribed zone where electricity generating works are a permissible land-use and the environmental and planning constraints can be effectively managed
 - is conveniently accessed from the Gwydir Highway
 - is situated on land that is not prime agricultural land
 - is a suitable distance from potentially sensitive receptors
 - is a suitable distance from major towns and centres
 - avoids areas of high biodiversity value where possible
 - is sited to minimise the visual impact to surrounding properties
- the design of the project has been an iterative design and environmental assessment process to ensure impacts have been avoided and minimised as much as possible. This has included refining the design in consultation with neighbouring landowners, local and NSW Government agencies, registered Aboriginal parties and the local community.

Were this project not to proceed, the project's benefits, including contributions to the generation of renewable energy and increased energy security, will not be realised. Due to the need to establish renewable energy generation and storage projects in NSW, not proceeding with the project in its current location may encourage development in a less favourable location, resulting in undesired outcomes, such as greater requirements for grid connection infrastructure and greater environmental and social impacts.

The project will have both impacts and benefits on the surrounding natural and built environments. The impacts of the project have been investigated, are not predicted to be significant and can be adequately managed through appropriate design, mitigation and management during construction and operation. On balance, it is therefore considered that the project is in the public interest.

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Abbreviations

Abbreviation	Definition
AC	alternating current
ACHA	Aboriginal cultural heritage assessment
ACHMP	Aboriginal Cultural Heritage Management Plan
AEMO	Australian Energy Market Operator
AHIMS	Aboriginal Heritage Information Management System
DPHI	Department of Planning, Housing and Infrastructure
BAL	basic left turn
BAM	biodiversity assessment method
BCD	Biodiversity Conservation Division
BCF	Biodiversity Conservation Trust Fund
BDAR	biodiversity development assessment report
BESS	battery energy storage system
BOS	Biodiversity offset scheme
CEEC	critically endangered ecological community
CEMP	construction environmental management plan
CTMP	construction traffic management plan
DC	direct current
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DPHI	Department of Planning, Housing and Infrastructure
DPI	Department of Primary Industries
EEC	endangered ecological community
EIS	environmental impact statement
EMF	electro-magnetic field
EMM	EMM Consulting Pty Limited
EPA	Environment Protection Authority
FTE	full time equivalent
GDE	groundwater dependent ecosystem
GW	gigawatts
ha	hectare
ICNG	Interim Construction Noise Guideline
IPC	Independent Planning Commission

Abbreviation	Definition
KL	kilolitres
km	kilometres
kV	kilovolt
LEP	Local Environmental Plan
LGA	Local government area
LSC	land and soil capability
LV	light vehicle
m	metre
MNES	matters of national environmental significance
MW	megawatts
MW (AC)	megawatts (alternating current)
MW (DC)	megawatts (direct current)
NEM	National Electricity Market
NML	noise management level
NSW	New South Wales
OSOM	over size over mass
PAD	potential archaeological deposit
PCT	plant community type
PHA	preliminary hazard assessment
PV	photovoltaic
RAP	Registered Aboriginal party
REZ	Renewable Energy Zone
PSI	Preliminary Site Investigation
RFS	Rural Fire Service
SAII	serious and irreversible impacts
SEARs	Secretary's Environmental Assessment Requirements
SEPP	State Environmental Planning Policy
SSD	State significant development
Sundown Solar	Sundown Solar Pty Ltd
TEC	threatened ecological community
VPA	voluntary planning agreement
TfNSW	Transport for NSW
VI	vegetation integrity

