



EXTRAORDINARY COUNCIL MEETING

AGENDA

29 SEPTEMBER 2025

Notice is hereby given, in accordance with the provisions of the Local Government Act 1993 that an **EXTRAORDINARY MEETING of ORANGE CITY COUNCIL** will be held in the **COUNCIL CHAMBER, CIVIC CENTRE, BYNG STREET, ORANGE** on **Monday, 29 September 2025** commencing at **12:00 PM**.

Barry Omundson
CHIEF EXECUTIVE OFFICER

For apologies, please contact Executive Support on 6393 8391.

AGENDA

EVACUATION PROCEDURE

In the event of an emergency, the building may be evacuated. You will be required to vacate the building by the rear entrance and gather at the breezeway between the Library and Art Gallery buildings. This is Council's designated emergency muster point.

Under no circumstances is anyone permitted to re-enter the building until the all clear has been given and the area deemed safe by authorised personnel.

In the event of an evacuation, a member of Council staff will assist any member of the public with a disability to vacate the building.

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1 INTRODUCTION

1.1 Apologies and Leave of Absence

1.2 Livestreaming and Recording

This Council Meeting is being livestreamed and recorded. By speaking at the Council Meeting you agree to being livestreamed and recorded. Please ensure that if and when you speak at this Council Meeting that you ensure you are respectful to others and use appropriate language at all times. Orange City Council accepts no liability for any defamatory or offensive remarks or gestures made during the course of this Council Meeting. A recording will be made for administrative purposes and will be available to Councillors.

1.3 Acknowledgement of Country

I would like to acknowledge the Traditional Custodians of the land on which we meet today, the people of the Wiradjuri Nation. I pay my respects to Elders past and present, and extend those respects to Aboriginal Peoples of Orange and surrounds, and Aboriginal people here with us today.

1.4 Declaration of pecuniary interests, significant non-pecuniary interests and less than significant non-pecuniary interests

The provisions of Chapter 14 of the Local Government Act, 1993 (the Act) regulate the way in which Councillors and designated staff of Council conduct themselves to ensure that there is no conflict between their private interests and their public role.

The Act prescribes that where a member of Council (or a Committee of Council) has a direct or indirect financial (pecuniary) interest in a matter to be considered at a meeting of the Council (or Committee), that interest must be disclosed as soon as practicable after the start of the meeting and the reasons given for declaring such interest.

As members are aware, the provisions of the Local Government Act restrict any member who has declared a pecuniary interest in any matter from participating in the discussion or voting on that matter, and requires that member to vacate the Chamber.

Council's Code of Conduct provides that if members have a non-pecuniary conflict of interest, the nature of the conflict must be disclosed. The Code of Conduct also provides for a number of ways in which a member may manage non pecuniary conflicts of interest.

RECOMMENDATION

It is recommended that Councillors now disclose any conflicts of interest in matters under consideration by the Council at this meeting.

COUNCIL MEETING ADJOURNS FOR THE CONDUCT OF THE OPEN FORUM COUNCIL MEETING RESUMES

2 NOTICES OF MOTION/NOTICES OF RESCISSION**2.1 Notice of Rescission - Development Application DA 771/2024(1) for proposed Electricity Generating Works (solar farm) and Battery Energy Storage System (BESS) at Lot 5 DP6173 - 140 Cadia Road Springside**

RECORD NUMBER: 2025/2067

We, **CR KEVIN DUFFY, CR GRAEME JUDGE and CR TAMMY GREENHALGH** wish to move the following Notice of Rescission at the Extraordinary Council Meeting of 29 September 2025:

MOTION

That Council rescind the following resolution of Council from its meeting on 16 September 2025:

RESOLVED - 25/482**Cr F Kinghorne/Cr T Mileto***That Council resolves:*

- 1 That the information contained in the report for development application DA 771/2024(1) for proposed Electricity Generating Works (solar farm) and Battery Energy Storage System (BESS) at Lot 5 DP6173 - 140 Cadia Road, Springside, be acknowledged.*
- 2 That Council makes a submission to the Western Regional Planning Panel acknowledging that the application meets the criteria while also outlining Council's concerns.*

*For: Cr T Mileto (Mayor), Cr F Kinghorne, Cr D Mallard, Cr S Peterson, Cr G Power, Cr M Ruddy, Cr J Stedman, Cr J Whitton**Against: Cr T Greenhalgh (Deputy Mayor), Cr K Duffy, Cr G Judge**Absent: Cr M McDonell*

Signed Cr Kevin Duffy Cr Graeme Judge Cr Tammy Greenhalgh

ATTACHMENTS

- 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road Springside, D25/111932 [↓](#)

**Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road
Springside****5.3 Development Application DA 771/2024(1) - 140 Cadia Road, Springside**

RECORD NUMBER: 2025/1845
AUTHOR: Dhawala Ananda, Town Planner

EXECUTIVE SUMMARY

Application lodged	14 January 2025
Applicant/s	EDPR Australia Pty Ltd
Owner/s	Mr J A C and Mrs J K Crombie
Land description	Lot 5 DP6173 - 140 Cadia Road, Orange
Proposed land use	Electricity Generating Works (solar farm) and Battery Energy Storage System (BESS)
Value of proposed development	\$16,026,010.94

The development application seeks consent for the establishment of Electricity Generating Works (solar farm) and a Battery Energy Storage System (BESS) at 140 Cadia Road, Orange. The proposal involves two 5.0 MW PEG system solar farms on a 25.75-hectare site, with a combined fenced footprint of 13.01 hectares (representing 50.5% of the site area).

Each facility will consist of approximately 16,000 fixed, alternating-tilt solar panels, inverter stations, BESS units, and voltage conversion kiosks. The development will include landscape screening and 2.3-metre-high security fencing. Access to the site will be maintained via the existing driveway off Cadia Road, and additional power poles will be installed to connect the development to the existing electricity network.

Construction is anticipated to take approximately four months, with up to 50 personnel onsite during this phase. Once operational, the facility will be unmanned and subject to quarterly maintenance. The expected operational lifespan of the development is 35 years, with a total capital investment of \$16.03 million (inclusive of GST).

Under Section 2.19(1) and Schedule 6 of the State Environmental Planning Policy (Planning Systems) 2021, the proposal qualifies as regionally significant development due to the proposal involving private infrastructure works exceeding \$5 million in value. Accordingly, the Western Regional Planning Panel (WRPP) is the consent authority for this development application.

The purpose of this report is to inform Council that staff have completed the assessment of the Development Application. Council may now consider making a written submission to the WRPP regarding the proposed development. Should Council wish to make a submission, specific planning matters must be nominated to enable preparation of a submission letter for tabling at the WRPP meeting. It is important to note that, in accordance with the Sydney & Regional Planning Panels Operational Procedures, any Council submission cannot be specifically referenced in the assessment report or recommendations prepared by Council staff.

To assist Council in preparing a submission, the Planning Assessment Report, recommended Notice of Determination, Statement of Environmental Effects and Development Plans are attached. A copy of other supporting documentation can be provided upon request.

The proposed development is classified as Nominated Integrated Development and therefore "advertised development" under the Community Participation Plan. The application was publicly advertised for the prescribed 28-day period in accordance with Council's Community Participation Plan, during which 42 submissions were received. The issues raised in the submissions have been addressed in the attached planning assessment report for consideration by the WRPP. The matter is scheduled for determination by the WRPP on **30 September 2025**.

**Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road
Springside**

5.3 Development Application DA 771/2024(1) - 140 Cadia Road, Springside

DIRECTOR'S COMMENT

The Development Application proposes the construction of two 5.0 MW solar farms and a Battery Energy Storage System (BESS) at 140 Cadia Road, Orange, on a 25.75-hectare site. The project has an anticipated operational life of 35 years and a total capital investment of \$16.03 million (including GST).

As the proposal involves private infrastructure works exceeding \$5 million, it is classified as Regionally Significant Development under the *State Environmental Planning Policy (Planning Systems) 2021* meaning that the Western Regional Planning Panel (WRPP) is the consent authority for this application.

It is noted that the development is also classified as Integrated Development as it requires a Controlled Activity Approval due to its location over a mapped watercourse identified as a first-order stream under the Strahler system. General Terms of Approval have been issued and have been attached to the Notice of Determination.

Council's Planning Assessment has identified several key considerations, including but not limited to:

- Stormwater management
- Agricultural land use
- Visual impacts, including landscape and scenic amenity.

These matters have been addressed in the attached Planning Assessment Report.

The proposal was publicly exhibited as advertised development. At the close of the exhibition period 42 submissions were received - 41 objections and one (1) submission in support. All submissions were redacted and forwarded to the Applicant, along with a formal request for a detailed response to the issues raised. These matters have been addressed in the attached Planning Assessment Report.

The assessment concludes that, subject to appropriate conditions to mitigate impacts, the proposal is acceptable. Council may now consider whether or not to make a formal written submission to the WRPP regarding the proposed development.

LINK TO DELIVERY/OPERATIONAL PLAN

The recommendation in this report relates to the Delivery/Operational Plan Strategy "7.3 Plan for growth and development that balances liveability with valuing the local environment".

FINANCIAL IMPLICATIONS

Nil

POLICY AND GOVERNANCE IMPLICATIONS

Nil

Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road Springside

5.3 Development Application DA 771/2024(1) - 140 Cadia Road, Springside

RECOMMENDATION

That Council resolves:

- 1 That the information contained in the report for development application DA 771/2024(1) for proposed *Electricity Generating Works (solar farm) and Battery Energy Storage System (BESS)* at Lot 5 DP6173 - 140 Cadia Road, Orange, be acknowledged.
- 2 That Council determine whether or not it makes a submission on the application to the Western Regional Planning Panel.

FURTHER CONSIDERATIONS

The recommendation of this report has been assessed against Council's key risk categories and the following comments are provided:

Service/Project Delivery	Nil
Financial	Nil
Reputation/Political Environment	Nil
Environment	The assessment report includes an analysis of the likely impacts of the proposed development. Mitigation conditions to address impacts have been recommended in the Notice of Determination.
Compliance	Nil
People & WHS	Nil
Information Technology/Cyber Security	Nil

Supporting Information

The Development Application seeks consent for electricity generating works in the form of a Solar Farm and a Battery Energy Storage System (BESS) at 140 Cadia Road, Orange. The proposal involves the construction of two 5.0 MW PEG system solar farms on a 25.75-hectare site, with a combined fenced footprint of 13.01 hectares, representing approximately 50.5% of the total site area. Each facility will include around 16,000 fixed, alternating-tilt solar panels, inverter stations, BESS units, and voltage conversion kiosks. The development will also incorporate landscape screening and 2.3m high security fencing. Access to the site will be maintained via the existing driveway off Cadia Road, and additional power poles will be installed to connect the development to the existing electricity network.

Construction is expected to take approximately four months, with up to 50 personnel onsite during this phase. Once operational, the facility will be unmanned and maintained on a quarterly basis. The development has an anticipated operational life of 35 years and represents a capital investment of \$16.03 million (including GST).

In accordance with Section 2.19(1) and Schedule 6 of the State Environmental Planning Policy (Planning Systems) 2021, the proposal qualifies as regionally significant development due to the capital investment value exceeding \$5million. As such, the Western Regional Planning Panel (WRPP) is the consent authority for this application.

Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road Springside

5.3 Development Application DA 771/2024(1) - 140 Cadia Road, Springside

The proposed development is classified as "advertised development" under the Community Participation Plan. The application was publicly advertised for the prescribed 28-day period, during which 42 submissions were received. Of these, only one (1) submission was in support of the proposal. The issues raised in the submissions have been addressed in the attached Planning Assessment Report, which will be considered by the WRPP.

A detailed assessment of the relevant planning matters has been undertaken by Council staff. Key considerations include stormwater management, the impact on agricultural land use, and visual impacts, particularly in relation to landscape and scenic amenity. The proponent has submitted supporting technical reports addressing these issues. Following review, Council staff conclude that, subject to the adoption of recommended conditions to mitigate impacts, the proposed development can operate in an acceptable manner.

The purpose of this report is to inform Council that the staff assessment of the Development Application has been completed. Council may now choose to make a written submission to the WRPP regarding the proposal.

Should Council wish to do so, specific planning matters must be nominated so that arrangements can be made for a submission letter to be prepared and tabled for the WRPP's consideration. It is important to note that, in accordance with the Sydney and Regional Planning Panels Operational Procedures, any Council submission cannot be specifically referenced in the assessment report or recommendations prepared by Council staff.

To assist Council in considering whether to make a submission, the Planning Assessment Report, recommended Notice of Determination, Development Plans and Statement of Environmental Effects are attached. A copy of other supporting documents submitted in support of the Development Application can also be made available upon request.

Council is advised that the matter is scheduled for consideration by the WRPP on 30 September 2025. Should Council wish to make a submission, it is recommended that this be prepared and submitted in advance of this date.

ATTACHMENTS

- 1 Planning Report, D25/80505 [📄](#)
- 2 Draft Notice of Determination, D25/105891 [📄](#)
- 3 Statement of Environmental Effects (redacted), D25/105539 [📄](#)
- 4 Plans, D25/105497 [📄](#)
- 5 Submissions x 42 (redacted), D25/100745 [📄](#)

Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road Springside
Attachment 1 Planning Report

D25/80505
REPORT TO CCL 16 SEPTEMBER 2025
 WESTERN REGION PLANNING PANEL

FROM SENIOR PLANNER (DHAWALA ANANDA)

DATE 16 SEPTEMBER 2025

ON DEVELOPMENT APPLICATION
 140 CADIA ROAD, ORANGE
 ELECTRICITY GENERATING WORKS (SOLAR FARM) AND BATTERY
 ENERGY STORAGE SYSTEM (BESS)

PAN-499518 - PR2156

Application Lodged 14 January 2025

Development Application No DA 771/2024(1)

Documents Detail

1. Site Plans; Titled - Orange South 8B & 9B 2 X 5MW Solar Farms; Sheet numbers - G-0100, G-0310, G-0400, G-2100, G-2200, C-4300, C-4310, C-5310, C-5300, C-6300, C-7300, E-3400, E-4300, E-5300; revised plans date - 17/04/2025; Prepared by ITP Renewables
2. Statement of Environmental Effects prepared by Zenith Town Planning, dated 26/05/2025
3. Bushfire Risk and Operations plan prepared by BEMC, Reference - 242105; Dated 12/12/2024
4. Bushfire Emergency Management and Evacuation Plan - prepared by BEMC, Dated 12/12/2024
5. Fire and Hazard Study - prepared by EDP Renewables; dated 22/05/2025
6. Glint and Glare Study - prepared by ITP Renewables; dated 09/12/2024
7. Waste and Decommissioning Assessment - prepared by EDP Renewables; dated 22/10/2024
8. Traffic and Parking Impact Statement - reference 240856.01FA; prepared by M^LAREN TRAFFIC ENGINEERING; Dated 10/12/2024
9. Water Channels Assessment Report - prepared by EDP Renewables; dated 14/03/2025
10. Visual Impact Assessment Report - prepared by Zenith Town Planning, dated 23/05/2025
11. Noise Study and Addendum - Prepared by Muller Acoustic Consulting; Dated 24/03/2025
12. Prelim Groundcover Management Plan - prepared by EDP Renewables; dated August 2025
13. Biosecurity Management Plan - prepared by EDP Renewables; dated August 2025
14. Land Use Conflict Risk Assessment Rev A - prepared by Zenith Town Planning, dated 28/08/2025

Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road Springside

Attachment 1 Planning Report

Applicant	EDPR Australia Pty Ltd Level 4/54 Marcus Clarke Street CANBERRA ACT 2601
Owner/s	Mr J A and Mrs J K Crombie 140 Cadia Road ORANGE NSW 2800
Land Description	Lot 5 DP 6173 - 140 Cadia Road, Orange
Proposed Land Use	Electricity Generating Works (solar farm) and Battery Energy Storage System (BESS)
Value of Proposed Development	\$16,026,011.00
Provisions of LEP 2011 (amended)	C3 Environmental Management
Details of Advertisement of Project	Advertised in the Central Western Daily on Friday, 24 January 2025 and neighbouring properties notified. Exhibition closed on Monday, 24 February 2025 - 42 submissions received.
Recommendation	Approval

EXECUTIVE SUMMARY

Application lodged	14 January 2025
Applicant/s	EDPR Australia Pty Ltd
Owner/s	Mr JA and Mrs JK Crombie
Land description	Lot 5 DP 6173 - 140 Cadia Road, Orange
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The development application seeks consent for the establishment of Electricity Generating Works (solar farm) and a Battery Energy Storage System (BESS) at 140 Cadia Road, Orange. The proposal involves two 5.0 MW PEG system solar farms on a 25.75-hectare site, with a combined fenced footprint of 13.01 hectares (representing 50.5% of the site area).

Each facility will consist of approximately 16,000 fixed, alternating-tilt solar panels, inverter stations, BESS units, and voltage conversion kiosks. The development will include landscape screening and 2.3-metre-high security fencing. Access to the site will be maintained via the existing driveway off Cadia Road, and additional power poles will be installed to connect the development to the existing electricity network.

Construction is anticipated to take approximately four months, with up to 50 personnel onsite during this phase. Once operational, the facility will be unmanned and subject to quarterly maintenance. The expected operational lifespan of the development is 35 years, with a total capital investment of \$16.03 million (inclusive of GST).

Under Section 2.19(1) and Schedule 6 of the State Environmental Planning Policy (Planning Systems) 2021, the proposal qualifies as regionally significant development due to the proposal involving private infrastructure works (electricity generating works) exceeding \$5 million in value. Accordingly, the Western Regional Planning Panel (WRPP) is the consent authority for this development application.

Please refer to the locality plan below for the site context and layout.

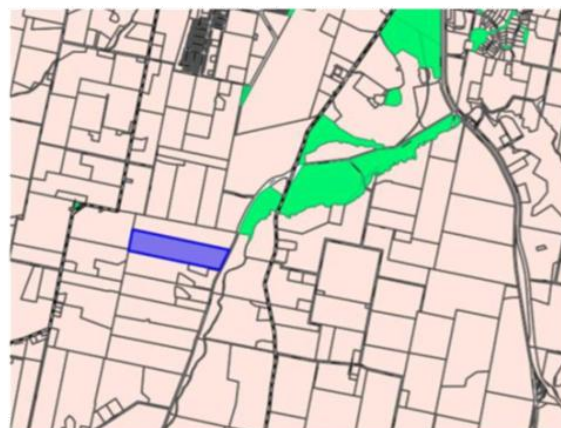


Figure 1 - locality plan

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The development is depicted diagrammatically below.



Figure 2 - locality plan

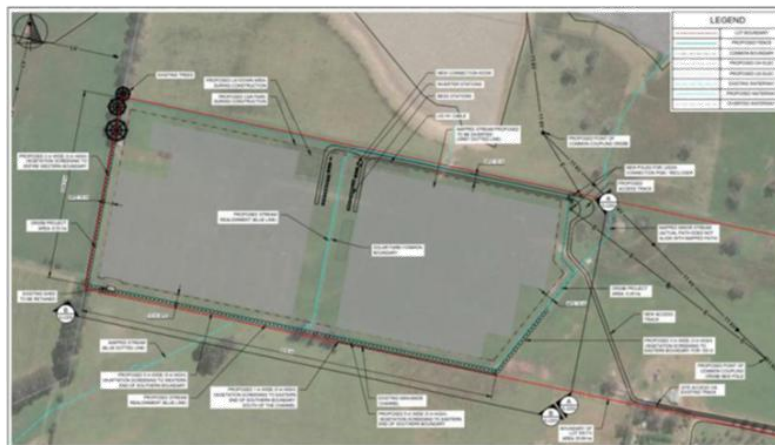


Figure 3 - excerpt of site plan/general arrangement plan

Engagement

The development is categorised as Integrated Development given the approval requirements for a controlled activity approval as the development is located over a mapped watercourse that is a 1st order stream under the Strahler system which requires a 28 Day exhibition period. The development was exhibited for the requisite period. At the conclusion of the exhibition period a total of 42 submissions were received, out of which all are objections to the proposed development except one (1) that was in favour of the development.

The submissions were redacted and provided to the applicant accompanied by a request to provide a detailed response to the matters raised. Out of this request and also following an onsite meeting with the applicant, WRPP members and Council staff on 8 April 2025, the applicant elected to increase the amount of landscaping offered.

The amendment to the proposal was determined not significant and as such a re-exhibition was not required. The submissions received have been considered by Council staff and are addressed later in this planning report.

Assessment

A detailed assessment of all relevant matters is provided below. The central matters identified out of the below assessment relate to the suitability of the site for the proposed development - primarily relating to the development's effect on scenic value, the visual impacts (specifically from nearby residential receivers). Other matters such as the adequacy of the proposed landscaping, the impact of the development on agricultural land, construction noise and traffic impacts are also addressed in detail.

Summary

The proposed development is permissible with the consent of the Western Region Planning Panel pursuant to Division 4, Clause 2.36 of State Environmental Planning Policy (Transport and Infrastructure 2021) and Orange LEP 2011. Under Section 2.19(1) and Schedule 6 of the State Environmental Planning Policy (Planning Systems) 2021, the proposal qualifies as regionally significant development due to the proposal involving private infrastructure works (electricity generating works) exceeding \$5 million in value. The proposed development is not inconsistent with the relevant aims, objectives and provisions of Orange Development Control Plan 2004.

Furthermore, the project site is not identified in the Orange Local Housing Strategy as an Urban Release Area intended for the expansion of the Orange township. As such, the proposed development will not interfere with nor hinder the planned future growth of Orange.

It is noted that the site is located outside of the Central West Renewable Energy Zone. The proposal is not considered to be inconsistent with the planning priorities, goals and actions of the Central West and Orana Regional Plan 2041 and Orange Local Strategic Planning Statement 2020.

Potential impacts have been identified in relation to stormwater management, agricultural land use, and visual impacts, including landscape and scenic amenity. These likely impacts have been assessed in the report. It is considered that appropriate mitigation measures have been proposed, and relevant conditions have been included to manage and minimise any adverse effects.

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FINANCIAL IMPLICATIONS

Nil

POLICY/GOVERNANCE IMPLICATIONS

Nil

RECOMMENDATION

That the Western Region Planning Panel consents to development application DA 771/2024(1) for *Electricity Generating Works (solar farm) and Battery Energy Storage System (BESS)* at Lot 5 DP 6173 - 140 Cadia Road, Orange pursuant to the conditions of consent in the attached Notice of Approval.

THE APPLICATION

The proposal seeks consent from the Western Region Planning Panel for a solar farm and energy storage system (BESS) at the subject site as a regionally significant project. The project is referred to as Orange South 8B and 9B Solar farm plus BESS NSW. The proponent is EDPR Australia Pty Ltd.

Specifically, the proposal involves:

- Construction of two (2) PEG system solar farms with an AC output of 5.0 MW per farm. The 8B system will be occupying 6.53ha at the western end and the 9B system is to occupy 6.48ha at the centre of the property, thereby a total of 13.01ha of 25.75ha is to be utilised for the solar farms.
- There are to be approximately 16,000 solar modules per system supported by inverter stations and BESS enclosed within a security fence and partial landscape screening. Access is to be via an existing driveway off Cadia Road into the project site.
- The operational life of the solar farms is anticipated to be 35 years, depending on various factors. The solar panels and related infrastructure will be decommissioned and removed upon termination of operations.

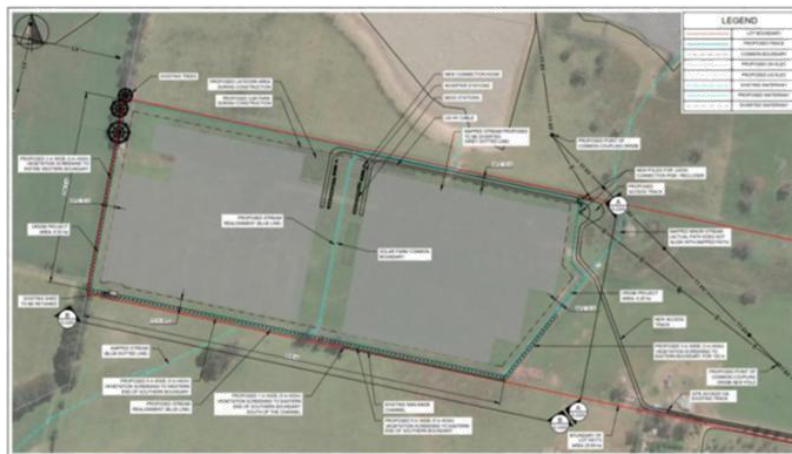


Figure 4 - proposed site plan/general arrangement plan

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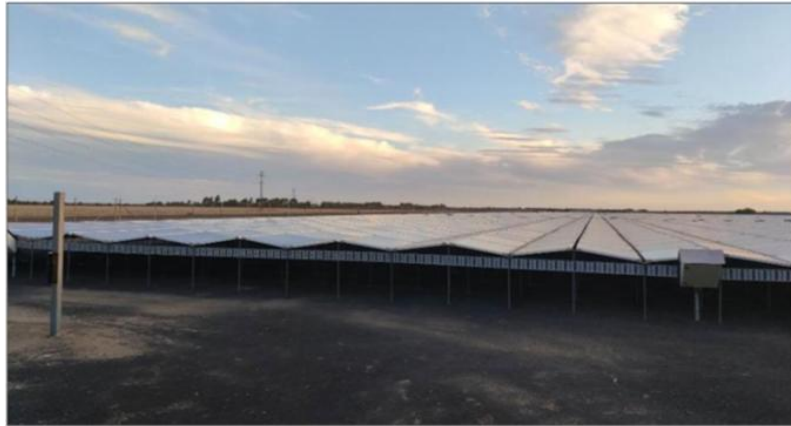


Figure 5 - example of PEG system installation

The development is described in the summary below -

Development Summary -

ASPECT	DESCRIPTION
PROJECT SUMMARY	The development involves the following: - Two PEG system solar farms with an AC output of 5.0 MW per site 8B system to occupy 6.53ha and 9B system to occupy 6.48ha, total site area is 25.75ha - Approximately 16,000 solar modules per system supported by inverter stations and BESS enclosed within a 1.8m security fence (topped with three rows of barbed wire to give a total height of 2.3m) and landscape screening - Access to the site will remain from an existing driveway off Cadia Road - Panels will have approximate height of 1.2m above ground level; they are fixed and has alternating-tilt positions (East to West) - A 2.5MW inverter station within each facility that is 3m high and mounted on a 12.2m long skid located in the centre of the array - Two 2.9m high kiosks to convert high and medium voltage to low voltage electricity

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	- Two 2.9m high battery energy storage systems located on skid located in the centre of the array - Additional power poles at the north-eastern corner and lines to connect to existing power lines
ELECTRICITY AUTHORITY	EDPR Australia Pty Ltd
SITE AREA	25.75ha
DEVELOPMENT FOOTPRINT (FENCED AREA)	13.01ha (50.5% of the total site area)
SITE ACCESS	Access to the site will remain from an existing driveway off Cadia Road
OPERATIONAL LIFE	Anticipated to operate for 35 years
CONSTRUCTION PHASE	Approximately 4 months for both sites, construction timings: 7am to 4pm, Monday to Friday
EMPLOYMENT	Construction phase: 50 personnel working onsite Operational phase: Unmanned, maintenance carried out quarterly by 2-3 crew members
CAPITAL INVESTMENT VALUE	\$16,026,011.00 (Incl. GST)

SITE PHOTOS



Figure 6 - site locality

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Figure 7 - looking south from the site



Figure 8 - looking south-east from the site

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Figure 9 - looking west from the site

BACKGROUND

The development application was lodged on 14 January 2025, a chronology of the development application since lodgement is outlined in table below.

Date	Event
14 January 2025	DA lodged
16 January 2025	DA referred to external agencies (Department of Planning and Environment-Water, Essential Energy, Department of Primary Industry - Agriculture)
24 January 2025	Exhibition of the application for 28 days as the application is determined as Integrated Development.
4 March 2025	Redacted version of the submissions provided to applicant
5 March 2025	Request for Information from Council to applicant
10 March 2025	Request for additional time to provide RFI from Applicant to Council & Department of Planning and Environment-Water
11 March 2025	Request for Information from Council to applicant (Preliminary Contamination Report)
14 March 2025	Panel briefing
31 March 2025	Request for Information from Department of Planning and Environment-Water to applicant

Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road Springside

Attachment 1 Planning Report

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08 April 2025	Site Inspection with Council, WRPP and Applicant
23 April 2025	Applicant requests additional time to respond for the RFI
1 May 2025	Upon providing additional information requested, General Terms of Approval received from Department of Planning and Environment-Water
23 July 2025	Additional comments have been received from the Department of Primary Industries and Regional Development (DPI&RD). While the Department is generally supportive of the proposed development, concerns regarding groundcover management and biosecurity management remain unresolved and unsatisfactory at this stage.
14 August 2025	The applicant has been requested to provide a Groundcover Management Plan and a Biosecurity Management Plan to enable completion of the planning assessment.
27 August 2025	Groundcover Management Plan and a Biosecurity Management Plan received by Council
04 September 2025	Council planning assessment complete

SITE HISTORY

The site has been issued a Notice of Approval for Development Application DA 297/2022(1), which proposes a Dual Occupancy (one additional rural dwelling) and shed. Approval was granted on 27 January 2023, with the consent set to lapse on 27 January 2028.

The proposed solar farms (8B system and 9B system) are located further west of the approved dwelling, carport, and shed (refer to Figure 10). In this context, the surrender of the consent for DA 297/2022(1) is not required. However, a review of the site and approved plans indicates that the proposed access track for the solar farm may interfere with the approved shed and carport.

To avoid conflict between the approved rural dwelling development and the proposed solar farm infrastructure, a condition has been required to ensure that:

- The access track is realigned or designed in a manner that avoids encroachment on the approved shed and carport footprint.
- The access arrangement is modified to ensure both developments can coexist without operational or structural conflicts.

This condition would provide certainty that both the approved residential development and the proposed solar farm can proceed without compromising one another.

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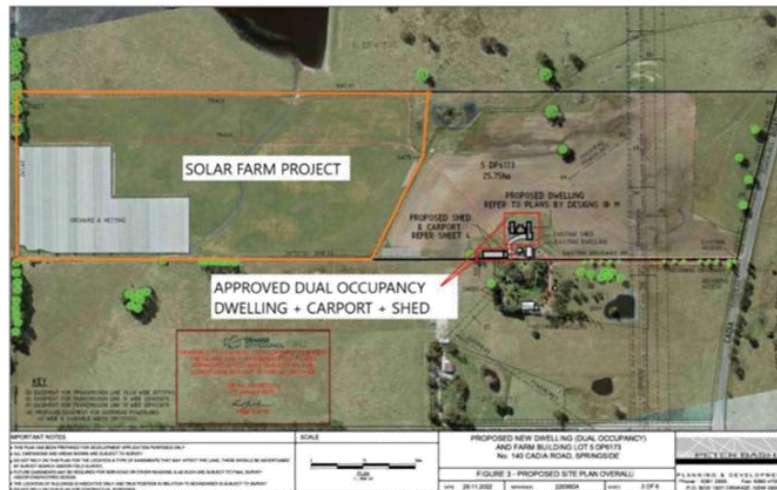


Figure 10 - approved plan [DA 297/2022(1)]

STRATEGIC CONTEXT

The proposed development - comprising two PEG system solar farms and an associated Battery Energy Storage System (BESS) - aligns with a number of strategic planning priorities at the local, regional, and state levels, particularly in relation to renewable energy generation, climate resilience, and sustainable land use.

The subject site is located in the south-western fringe of the Orange Local Government Area, an area traditionally used for agricultural purposes, with a long-standing rural zoning designation. While the land has not been identified for urban expansion in the Orange Local Housing Strategy, it presents an appropriate location for non-urban development that supports broader sustainability outcomes without compromising the city's planned growth.

The proposal supports the intent of the NSW Electricity Strategy and the State Environmental Planning Policy (Transport and Infrastructure) 2021, both of which encourage the development of renewable energy infrastructure to meet the State's net-zero emissions targets and growing energy demands.

Strategically, the proposal:

- Contributes to the diversification of land uses in rural zones, consistent with evolving rural land use policy.
- Aligns with the Central West and Orana Regional Plan 2041, which supports renewable energy investment in appropriate rural locations.
- Provides infrastructure that strengthens energy reliability, particularly with the integration of a BESS, enabling energy storage and improved grid stability.
- Does not conflict with urban expansion priorities or environmental conservation strategies identified in the Orange Local Strategic Planning Statement (LSPS).

Although visual and amenity impacts have been identified, they are site-specific and can be managed through appropriate mitigation measures. On balance, the strategic benefits of

**Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road
Springside**

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supporting renewable energy generation on non-urban land, coupled with the absence of conflict with core land release or environmental strategies, indicate that the proposal is strategically compatible with the long-term planning vision for the locality and region.

MATTERS FOR CONSIDERATION**Section 1.7 - Application of Part 7 of the *Biodiversity Conservation Act 2016* and Part 7A of the *Fisheries Management Act 1994***

Section 1.7 of the EP&A Act identifies that Part 7 of the Biodiversity Conservation Act 2016 (BC Act) and Part 7A of the Fisheries Management Act 1994 have effect in connection with terrestrial and aquatic environments.

There are four triggers known to insert a development into the Biodiversity Offset Scheme (ie the need for a BDAR to be submitted with a DA):

- Trigger 1: development occurs in land mapped on the Biodiversity Values Map (OEI) (clause 7.1 of BC Regulation 2017);
- Trigger 2: development involves clearing/disturbance of native vegetation above a certain area threshold (clauses 7.1 and 7.2 of BC Regulation 2017); or
- Trigger 3: development is otherwise likely to significantly affect threatened species (clauses 7.2 and 7.3 of BC Act 2016).

The fourth trigger (development proposed to occur in an Area of Outstanding Biodiversity Value (clause 7.2 of BC Act 2016) is generally not applicable to the Orange LGA; as no such areas are known to occur in the LGA. No further comments will be made against the fourth trigger.

In consideration of this section, the subject land is not identified on the Biodiversity Values Map. The site is largely clear of native vegetation, and the proposal does not involve any vegetation clearing or tree removal. Accordingly, the provisions of Part 7 of the *Biodiversity Conservation Act 2016* and Part 7A of the *Fisheries Management Act 1994* are not triggered by the development.

Section 4.14 - Consultation and development consent - certain bushfire prone land

Section 4.14 of the *Environmental Planning and Assessment Act 1979* requires Council to consider development on bushfire prone land and the following clauses be satisfied -

- (1) Development consent cannot be granted for the carrying out of development for any purpose (other than a subdivision of land that could lawfully be used for residential or rural residential purposes or development for a special fire protection purpose) on Bushfire prone land (being land for the time being recorded as bushfire prone land on a relevant map certified under Section 10.3(2)) unless the consent authority -
 - (a) is satisfied that the development conforms to the specifications and requirements of the version (as prescribed by the regulations) of the document entitled *Planning for Bushfire Protection* prepared by the NSW Rural Fire Service in co-operation with the Department (or, if another document is prescribed by the regulations for the purposes of this paragraph, that document) that are relevant to the development (*the relevant specifications and requirements*), or
 - (b) has been provided with a certificate by a person who is recognised by the NSW Rural Fire Service as a qualified consultant in Bushfire risk assessment stating that the development conforms to the relevant specifications and requirements.

This section of the *Environmental Planning and Assessment Act 1979* applies to the proposal, as the site is identified as Bushfire prone land (Vegetation Category 3). The solar farm does not constitute development that requires a Bushfire Safety Authority under Section 100B of the *Rural Fires Act 1997*, as confirmed by the *Planning for Bushfire Protection 2019* (PBP 2019). Accordingly, referral to the NSW Rural Fire Service (RFS) is not required.

The consent authority is however required under Section 4.14(1)(a) to be satisfied that the development is consistent with Section 8.3.5 ("Wind and Solar Farms") of *Planning for Bushfire Protection 2019*. (PBP)

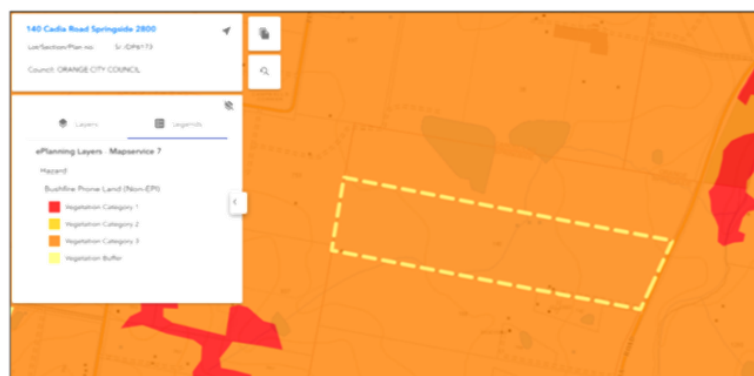


Figure 11 - subject site within bushfire prone land

PLANNING FOR BUSHFIRE PROTECTION - 2019

Section 8.3.5 Wind and solar farms

Wind and solar farms require special consideration and should be provided with adequate clearances to combustible vegetation as well as firefighting access and water.

The following should be provided for wind and solar farms:

- a minimum 10m APZ for the structures and associated buildings/infrastructure; and
- the APZ must be maintained to the standard of an IPA for the life of the development.
- Infrastructure for the purposes of requiring APZ excludes:
 - road access to the site; and
 - power or other services to the site and associated fencing.

The proposed solar farm complies with these requirements by incorporating a 10m APZ around solar arrays and associated infrastructure, a new access track, and utility services located within the fenced compound.

Further to the above, Section 8.3.5 of *Planning for Bushfire Protection 2019* (PBP 2019) requires that essential equipment be designed and housed to minimise the impact of bushfires on infrastructure during bushfire emergencies. Equipment must also be designed and maintained to ensure it does not pose a bushfire risk to surrounding vegetation.

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PBP 2019 also requires a Bushfire Emergency Management and Operations Plan to identify all relevant risks and mitigation measures associated with the construction and operation of wind or solar farms. The plan should address:

- measures to prevent or mitigate ignition sources
- restrictions on works during total fire bans
- availability of fire-suppression equipment, access and water
- storage and maintenance of fuels and other flammable materials
- notification procedures with the NSW RFS Fire Control Centre for works with ignition potential during Bushfire danger periods, and
- overall bushfire emergency management planning.

In response to these requirements, the application is supported by *Draft Bush fire risk and operations plan (prepared by BEMC)* and a *Bushfire Emergency Management and Evacuation Plan (prepared by BEMC)*, which addresses the matters outlined in Section 8.3.5 of *Planning for Bushfire Protection 2019*. The Plan identifies risks, details fire-prevention and suppression measures and establishes procedures for safe operations during bushfire danger periods and total fire bans. To secure ongoing implementation, a condition of consent will require the development to operate in accordance with the Plan for the life of the development, thereby ensuring bushfire risks are appropriately managed.

Section 4.15

Section 4.15 of the *Environmental Planning and Assessment Act 1979* requires Council to consider various matters, of which those pertaining to the application are listed below.

PROVISIONS OF ANY ENVIRONMENTAL PLANNING INSTRUMENT s4.15(1)(a)(i)**Orange Local Environmental Plan 2011****Part 1 - Preliminary****Clause 1.2 - Aims of Plan**

The broad aims of the LEP are set out under Subclause 2. Those relevant to the application are as follows:

- (a) to encourage development which complements and enhances the unique character of Orange as a major regional centre boasting a diverse economy and offering an attractive regional lifestyle,
- (b) to provide for a range of development opportunities that contribute to the social, economic and environmental resources of Orange in a way that allows present and future generations to meet their needs by implementing the principles for ecologically sustainable development,
- (c) to conserve and enhance the water resources on which Orange depends, particularly water supply catchments,
- (d) to manage rural land as an environmental resource that provides economic and social benefits for Orange,
- (e) to provide a range of housing choices in planned urban and rural locations to meet population growth,
- (f) to recognise and manage valued environmental heritage, landscape and scenic features of Orange.

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The application is broadly consistent with the above aims as it promotes economic diversification and renewable energy generation in line with the principles of ecologically sustainable development. This is, however, subject to the appropriate management of agricultural land values, biosecurity, groundcover, and visual impacts, all of which are addressed in detail within this report.

Clause 1.6 - Consent Authority

This clause establishes that, subject to the Act, Council is the consent authority for applications made under the LEP.

Notwithstanding the above clause, and as outlined under the heading *State Environmental Planning Policy (Planning Systems) 2021*, the development is classified as 'electricity generating works' pursuant to Schedule 6, Clause 5 – *Private infrastructure and community facilities over \$5 million*. As such, the proposed development is declared regionally significant, and the Western Regional Planning Panel (WRPP) is the consent authority in accordance with Section 4.5(b) of the Environmental Planning and Assessment Act 1979. Therefore, any reference to Council as the consent authority shall be interpreted as a reference to the WRPP.

Clause 1.7 - Mapping

The subject site is identified on the LEP maps in the following manner:

Land Zoning Map:	Land zoned C3 - Environmental Management
Lot Size Map:	Minimum Lot Size 100ha
Heritage Map:	Not a heritage item or conservation area
Height of Buildings Map:	No building height limit
Floor Space Ratio Map:	No floor space limit
Terrestrial Biodiversity Map:	No biodiversity sensitivity on the site
Groundwater Vulnerability Map:	Groundwater vulnerable
Drinking Water Catchment Map:	Within the drinking water catchment
Watercourse Map:	Affecting a defined watercourse, Strahler Stream Order 1 traverses through the site (joining to the Gosling Creek)*
Urban Release Area Map:	Not within an urban release area
Obstacle Limitation Surface Map:	No restriction on building siting or construction
Additional Permitted Uses Map:	No additional permitted use applies
Flood Planning Map:	Not within a flood planning area
Bushfire prone land:	Within vegetation Category 3

*a Strahler Stream Order 1 flows through the subject site, connecting to Gosling Creek; the development footprint is well-separated from the defined water course (i.e., Gosling Creek).

Those matters that are of relevance are addressed in detail in the body of this report.

Clause 1.9A - Suspension of Covenants, Agreements and Instruments

This clause provides that covenants, agreements and other instruments which seek to restrict the carrying out of development do not apply with the following exceptions:

- (a) to a covenant imposed by the Council or that the Council requires to be imposed, or

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- (b) to any relevant instrument under Section 13.4 of the Crown Land Management Act 2016, or
- (c) to any conservation agreement under the National Parks and Wildlife Act 1974, or
- (d) to any Trust agreement under the Nature Conservation Trust Act 2001, or
- (e) to any property vegetation plan under the Native Vegetation Act 2003, or
- (f) to any biobanking agreement under Part 7A of the Threatened Species Conservation Act 1995, or
- (g) to any planning agreement under Subdivision 2 of Division 7.1 of the Environmental Planning and Assessment Act 1979.

Council staff are not aware of the title of the subject property being affected by any of the above.

Part 2 - Permitted or Prohibited Development
Clause 2.1 - Land Use Zones and Clause 2.3 - Zone Objectives and Land Use Table

The subject site is located within the C3 Environmental Management zone. The proposed development is defined as an *electricity generating works* under OLEP 2011.

Electricity generating works means a building or place used for the purpose of -

- (a) making or generating electricity, or
- (b) electricity storage.

The proposed development is permissible pursuant to Clause 2.42 of State Environmental Planning Policy (Transport and Infrastructure) 2021. The proposed development is permitted with consent for this zone. This application is seeking consent.

As alluded to above the proposal constitutes regional development pursuant to Schedule 6, Clause 5 – *Private infrastructure and community facilities over \$5 million*. As such, the Western Regional Planning Panel (WRPP) is the consent authority.

Clause 2.3 of LEP 2011 references the Land Use Table and Objectives for each zone in LEP 2011. These objectives for land zoned C3 Environmental Management are as follows:

Objective (C3 Environmental Management Zone)	Assessment	Consistency
<i>To protect, manage and restore areas with special ecological, scientific, cultural or aesthetic values.</i>	Site largely cleared; no significant ecological or cultural features impacted. Visual impacts can be mitigated through landscaping.	Partially consistent
<i>To provide for a limited range of development that does not have an adverse effect on those values.</i>	Solar farm is low-impact and non-polluting; mitigation measures (groundcover, biosecurity, stormwater, visual) reduce potential adverse effects.	Consistent (with conditions)
<i>To manage development within water supply catchment lands to conserve and enhance the city and district's water resources.</i>	Site is within a designated drinking water catchment; stormwater and erosion controls are required to protect water resources.	Consistent (with conditions)

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<i>To maintain the rural function and primary production values of the area.</i>	Land is Class 3 agricultural and BSAL; co-location of panels may reduce traditional agricultural use; management plans required to maintain productivity.	Partially consistent
<i>To ensure development along the Southern Link Road has alternative access.</i>	Access arrangements to remain as existing from Cadia Road, no changes proposed.	consistent

Part 3 - Exempt and Complying Development

The application is not exempt or complying development.

Part 4 - Principal Development Standards

This part is not relevant to the development application.

Part 5 - Miscellaneous Provisions

This part is not relevant to the development application.

Part 6 - Urban Release Area

Not relevant to the application. The subject site is not located in an Urban Release Area.

Part 7 - Additional Local Provisions
7.1 - Earthworks

This clause establishes a range of matters that must be considered prior to granting development consent for any application involving earthworks, such as:

- (a) *the likely disruption of, or any detrimental effect on, existing drainage patterns and soil stability in the locality of the development*
- (b) *the effect of the development on the likely future use or redevelopment of the land*
- (c) *the quality of the fill or the soil to be excavated, or both*
- (d) *the effect of the development on the existing and likely amenity of adjoining properties*
- (e) *the source of any fill material and the destination of any excavated material*
- (f) *the likelihood of disturbing relics*
- (g) *the proximity to and potential for adverse impacts on any waterway, drinking water catchment or environmentally sensitive area*
- (h) *any measures proposed to minimise or mitigate the impacts referred to in Paragraph (g).*

Clause 7.1 of the Orange LEP 2011 requires that any proposed earthworks be assessed with regard to their impact on the surrounding environment, including soil stability, water quality, erosion and sediment control, as well as potential effects on adjoining properties and infrastructure.

For the proposed solar farm, earthworks will be limited to the construction of access tracks, panel foundations, and ancillary infrastructure. The site features generally gentle topography, which supports minimal disturbance.

The application is accompanied by a Ground Cover Management Plan that outlines the proponent's approach to managing potential erosion. The Ground Cover Management Plan is referred to as Soil and Water Management Plan in the draft notice of determination. To mitigate soil erosion within PEG-mounted solar arrays, the applicant proposes the installation of a gravel layer beneath the panels. This layer will serve as a riprap barrier, protecting against scour caused by water and wind erosion. The typical design includes 10mm-diameter gravel applied in 50mm-thick layers, with final specifications to be confirmed during the detailed design phase.

It is proposed that expected sheet flow and runoff from the gravelled areas will be captured by grassy swales, which will convey water to a detention basin or Large Poned Detention (LPOD) system. These features are designed to manage water quality and address biosecurity considerations for the project.

Detailed design and refinement of the Ground Management Plan (GMP), including specific groundcover concept plans, will be required during the construction phase. In the draft notice of determination, the requirements of ground cover management plan are covered under the *Soil and Water Management Plan (SWMP)* condition which is written as below - *To be prepared by a suitably qualified person and submitted to the Certifier for approval prior to the issuing of a Construction Certificate. The management plan is to be in accordance with the Landcom, Managing Urban Stormwater; Soils and Construction Handbook and shall detail both the during construction and post construction controls necessary to maintain the stability of soils on the site and maintain predevelopment water quality.*

With the implementation of appropriate erosion and sediment controls, and adherence to groundcover and soil management plans, the earthworks are unlikely to result in significant adverse environmental impacts. The proposal is therefore considered generally consistent with the objectives of Clause 7.1.

7.3 - Stormwater Management

This clause applies to all industrial, commercial and residential zones and requires that Council be satisfied that the proposal:

- (a) is designed to maximise the use of water permeable surfaces on the land having regard to the soil characteristics affecting onsite infiltration of water*
- (b) includes, where practical, onsite stormwater retention for use as an alternative supply to mains water, groundwater or river water; and*
- (c) avoids any significant impacts of stormwater runoff on adjoining downstream properties, native bushland and receiving waters, or if that impact cannot be reasonably avoided, minimises and mitigates the impact.*

Clause 7.3 of the Orange LEP 2011 requires that development is designed to minimise the impact of stormwater runoff on adjoining properties, watercourses, and the broader environment.

For the proposed solar farm, stormwater is proposed to be managed through a combination of passive and engineered measures to maintain natural hydrology and protect water quality. The design proposes to incorporate grassy swales to capture and convey sheet flow from the solar arrays to a detention basin or Large Poned Detention (LPOD) system, which aims at slow runoff, reduce peak flows, and allow for sediment settlement prior to discharge.

Council considers that these measures are consistent with recognised industry standards for stormwater management, including maintaining vegetative groundcover to promote infiltration and reduce erosion risk.

Detailed design of swales, detention capacity, and associated controls are required to be submitted to Council prior to the issue of a construction certificate.

7.6 - Groundwater Vulnerability

This clause seeks to protect hydrological functions of groundwater systems and protect resources from both depletion and contamination. Orange has a high water table and large areas of the LGA, including the subject site, are identified with "Groundwater Vulnerability" on the Groundwater Vulnerability Map. This requires that Council consider:

- (a) *whether or not the development (including any onsite storage or disposal of solid or liquid waste and chemicals) is likely to cause any groundwater contamination or have any adverse effect on groundwater dependent ecosystems, and*
- (b) *the cumulative impact (including the impact on nearby groundwater extraction for potable water supply or stock water supply) of the development and any other existing development on groundwater.*

Furthermore, consent may not be granted unless Council is satisfied that:

- (a) *the development is designed, sited and will be managed to avoid any significant adverse environmental impact, or*
- (b) *if that impact cannot be reasonably avoided - the development is designed, sited and will be managed to minimise that impact,*
- (c) *if that impact cannot be minimised - the development will be managed to mitigate that impact.*

The proposal is not anticipated to involve the discharge of toxic or noxious substances and is therefore unlikely to contaminate the groundwater or related ecosystems. The proposal does not involve extraction of groundwater and will therefore not contribute to groundwater depletion. The design and siting of the proposal avoid impacts on groundwater and is therefore considered acceptable.

7.7 - Drinking Water Catchments

- (1) *The objective of this clause is to protect drinking water catchments by minimising the adverse impacts of development on the quality and quantity of water entering drinking water storages.*
- (2) *This clause applies to land identified as "Drinking water" on the Drinking Water Catchment Map.*
- (3) *Before determining a development application for development on land to which this clause applies, the consent authority must consider whether or not the development is likely to have any adverse impact on the quality and quantity of water entering the drinking water storage, having regard to:*
 - (a) *the distance between the development and any waterway that feeds into the drinking water storage, and*
 - (b) *the onsite use, storage and disposal of any chemicals on the land, and*

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- (c) the treatment, storage and disposal of waste water and solid waste generated or used by the development.*
- (4) Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that:*
 - (a) the development is designed, sited and will be managed to avoid any significant adverse impact on water quality and flows, or*
 - (b) if that impact cannot be reasonably avoided - the development is designed, sited and will be managed to minimise that impact, or*
 - (c) if that impact cannot be minimised - the development will be managed to mitigate that impact.*

Clause 7.7 of the Orange LEP 2011 aims to protect drinking water catchments by minimising the adverse impacts of development on the quality and quantity of water entering drinking water storages.

The proposed solar farm at 140 Cadia Road is located within a drinking water catchment; therefore, appropriate measures are required to ensure compliance with this objective.

The development is proposing to maintain existing topography as far as practicable, with earthworks limited to access tracks, panel foundations, and ancillary infrastructure. As provided by the applicant the Ground Cover Management Plan (GMP) prepared, which includes erosion and sediment control measures, vegetative groundcover establishment, and the use of gravel layers beneath PEG-mounted arrays to reduce scour. Stormwater runoff will be managed through grassy swales directing flows to a detention basin or Large Pooled Detention (LPOD) system, ensuring water quality is maintained and sediment is captured prior to discharge.

The requirement for a Soil and Water Management Plan (SWMP), as conditioned, will ensure that appropriate measures are implemented to prevent adverse impacts on the quality or quantity of water entering the drinking water catchment, consistent with the objectives of Clause 7.7.

Clause 7.11 - Essential Services

Clause 7.11 applies and states:

Development consent must not be granted to development unless the consent authority is satisfied that any of the following services that are essential for the proposed development are available or that adequate arrangements have been made to make them available when required:

- (a) the supply of water,*
- (b) the supply of electricity,*
- (c) the disposal and management of sewage,*
- (d) storm water drainage or onsite conservation,*
- (e) suitable road access.*

In consideration of this clause, the development is required to adequately be serviced to ensure health, safety, and functionality.

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The proposed solar farm does not require reticulated water or sewerage services. During the construction phase, portable toilets are to be provided for wastewater disposal, and water supply will be managed via portable tanks or carts.

Electrical services are available to the site to support operational requirements. Stormwater management will be addressed through the measures outlined in the previous clause, with detailed design to be provided at the Construction Certificate stage.

Site access will be achieved directly from Cadia Road via an existing driveway; however, the existing site access requires improvements and related engineering conditions have been inserted in the draft notice of determination.

STATE ENVIRONMENTAL PLANNING POLICIES**STATE ENVIRONMENTAL PLANNING POLICY (PLANNING SYSTEMS) 2021**

State Environmental Planning Policy (Planning Systems) 2021 is applicable to the development, the SEPP categorises development of a certain type and or value as state or regional development.

Relevantly, pursuant to Clause 5 within Schedule 6; the development is categorised a private infrastructure and community facility over \$5 million (electricity generating works are explicitly listed), and as such is regionally significant.

Pursuant to Section 4.5(b) of the EP&A Act, the consent authority for regional development is the Western Region Planning Panel.

STATE ENVIRONMENTAL PLANNING POLICY (RESILIENCE AND HAZARDS) 2021**Chapter 3 - Hazardous and offensive development****3.7 - Consideration of Departmental guidelines**

In determining whether a development is -

- (a) a hazardous storage establishment, hazardous industry or other potentially hazardous industry, or*
- (b) an offensive storage establishment, offensive industry or other potentially offensive industry,*

Consideration must be given to current circulars or guidelines published by the Department of Planning relating to hazardous or offensive development.

In accordance with this clause, the applicant has undertaken an analysis and screening process to determine whether the proposal constitutes a potentially hazardous development under the Department of Planning's guidelines for hazardous and offensive development. SEPP (Resilience and Hazards) sets out the screening and risk assessment framework, noting that risk potential is typically influenced by five key factors:

- the properties of the substances handled or stored
- the conditions of storage or use
- the quantity involved
- the location in relation to the site boundary and
- surrounding land uses.

The SEPP screening process does not prescribe thresholds for Australian Dangerous Goods (ADG) Code Class 9 materials (Miscellaneous Hazardous Substances), which include the

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lithium-ion batteries proposed for the site. As such, a Preliminary Hazard Analysis (PHA) is not automatically triggered on the basis of screening thresholds.

The proposal addresses potential fire risks associated with the Battery Energy Storage System (BESS) through the adoption of mitigation and management measures outlined in the below table.

Table 4 – Recommended mitigation measures for potential hazardous materials risks

No.	Safeguard and mitigation measures
HM1	The Orange South 8B & 9B Solar and BESS site would manage the fire risks associated with the BESS by: • Installing reliable, automated monitoring and control systems, with an alarm and shutdown response capability. • Taking reasonable and safe measures to prevent the risks of external heat effects in the event of a bushfire. • Designing appropriate separation and isolation between battery cubicles, and between the BESS and other infrastructure, in accordance with the manufacturers' recommendations, and including gravel set-off areas around the facility. • Compliance with all applicable Australian codes and standards. • Preparation of a BESS-specific fire response plan, in conjunction with the NSW Rural Fire Service. • Installing an adequate automatic fire suppression system integrated into the detection and control system. • Disposal (and where possible, recycling) of any potentially hazardous material in accordance with the best international practices available at that time.
HM2	Fuels and pesticides/herbicides in use at the site will be stored at the laydown area in appropriately banded areas designed in accordance with AS1940-2004.

Accordingly, the proposal is not considered to constitute a potentially hazardous development under the provisions of the State Environmental Planning Policy (Resilience and Hazards) 2021, subject to the implementation of the identified risk mitigation and management measures.

Chapter 4 - Remediation of Land
4.6 - Contamination and Remediation to be Considered in Determining Development Application

- (1) *A consent authority must not consent to the carrying out of any development on land unless:*
 - (a) *it has considered whether the land is contaminated, and*
 - (b) *if the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purpose for which the development is proposed to be carried out, and*
 - (c) *if the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land will be remediated before the land is used for that purpose.*
- (2) *Before determining an application for consent to carry out development that would involve a change of use on any of the land specified in Subsection (4), the consent authority must consider a report specifying the findings of a preliminary investigation of the land concerned carried out in accordance with the contaminated land planning guidelines.*

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- (3) *The applicant for development consent must carry out the investigation required by Subsection (2) and must provide a report on it to the consent authority. The consent authority may require the applicant to carry out, and provide a report on, a detailed investigation (as referred to in the contaminated land planning guidelines) if it considers that the findings of the preliminary investigation warrant such an investigation.*
- (4) *The land concerned is:*
- (a) *land that is within an investigation area,*
 - (b) *land on which development for a purpose referred to in Table 1 to the contaminated land planning guidelines is being, or is known to have been, carried out,*
 - (c) *to the extent to which it is proposed to carry out development on it for residential, educational, recreational or child care purposes, or for the purposes of a hospital - land:*
 - (i) *in relation to which there is no knowledge (or incomplete knowledge) as to whether development for a purpose referred to in Table 1 to the contaminated land planning guidelines has been carried out, and*
 - (ii) *on which it would have been lawful to carry out such development during any period in respect of which there is no knowledge (or incomplete knowledge).*

The subject site is identified on Council's mapping as "potentially contaminated land" (see Figure 12) due to its historical use as an apple orchard located in the south-western corner of the site.

The Preliminary Contamination Investigation provided with the application indicates that impacts from the former orchard use are likely to be low to negligible. Council is satisfied that the imposition of an unexpected finds condition is sufficient to manage any contamination issues that may arise during construction. Given that a solar farm is not considered a sensitive land use, and no staff will be permanently located on site, exposure risk is minimal.

On this basis, and consistent with the advice received, the unexpected finds condition has been included in the draft notice of determination. Subject to this condition, the proposal is considered acceptable with respect to Chapter 4 of the SEPP (Resilience and Hazards).



Figure 12 - subject site identified as contaminated land

STATE ENVIRONMENTAL PLANNING POLICY (TRANSPORT AND INFRASTRUCTURE) 2021**Chapter 2 Infrastructure****Division 4 Electricity generating works or solar energy systems****2.36 Development permitted with consent**

- (9) **Solar energy systems** Development for the purpose of a solar energy system may be carried out by any person with consent on any land.

Clause 2.36 of the State Environmental Planning Policy (Transport and Infrastructure) 2021 permits development for the purpose of a solar energy system with consent on any land. The proposed development at 140 Cadia Road involves the construction and operation of a solar farm, which falls within the definition of a solar energy system. As such, the proposal is consistent with this provision, being a permissible form of development subject to development consent.

2.42 Determination of development applications for solar or wind electricity generating works on certain land

- (1) This section applies to development in a regional city for the purposes of electricity generating works using a solar or wind energy source that is -
- (a) State significant development, or
 - (b) Regionally significant development.
- (2) Development consent must not be granted unless the consent authority is satisfied that the development -
- (a) is located to avoid significant conflict with existing or approved residential or commercial uses of land surrounding the development, and
 - (b) is unlikely to have a significant adverse impact on the regional city's -
 - (i) capacity for growth, or
 - (ii) scenic quality and landscape character.
- (3) In determining whether to grant development consent, the consent authority must consider measures proposed to be included in the development to avoid or mitigate conflicts referred to in Subsection (2)(a) or adverse impacts referred to in Subsection (2)(b).
- (4) In this section -

Regional Cities Map means the State Environmental Planning Policy (Infrastructure) 2007 Regional Cities Map.

Regional City means an area of land identified as "subject land" on the Regional Cities Map.

Clause 2.42 of the State Environmental Planning Policy (Transport and Infrastructure) 2021 applies to development in a regional city for the purposes of electricity generating works using a solar or wind energy source that is State significant or regionally significant development. The proposed solar farm at 140 Cadia Road is regionally significant development and is therefore subject to this clause.

Clause 2.42(2) requires that, when determining development applications for solar electricity generating works in a regional city, consideration must be given to the potential impacts of the development on surrounding land uses and the ability of the regional city to

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accommodate future growth. The application is supported by a Land Use Conflict Risk Assessment (LUCRA), which concludes that the proposed solar farm is generally benign in nature and can co-exist with surrounding land uses with minimal risk of conflict.

The LUCRA identifies potential risks during construction, operation, and decommissioning phases, including air quality and noise emissions, traffic interactions on Cadia Road, biosecurity risks, and temporary loss of agricultural land. These risks are considered manageable through the implementation of recommended mitigation measures, such as dust suppression, traffic management, weed and pest control, and biosecurity protocols. Importantly, the report notes that the land can continue to support compatible agricultural activities, such as livestock grazing on the land surrounding the array during the operational phase and can be fully restored to agricultural use following decommissioning.

The proposal does not compromise the regional city's capacity for growth. While the development will have some impact on scenic quality and visual amenity, the applicant proposes to mitigate these impacts through the establishment of vegetation screening along the eastern, southern, and part of the western boundaries. The proposed screening includes a 5m wide planting strip along the southern boundary, designed to grow to a height of approximately 5m. An additional 1m wide (5m high) vegetative screen is proposed along the south-eastern boundary to reduce visual impacts on the adjoining residential property. The eastern and western boundaries will include 3m wide plantings with an expected height of 3m. Figures 13 and 14 illustrates the proposed vegetation screening elevation. In relation to vegetation, the application was referred to Council's Manager City Presentation and the following comments were received -

Whilst I have no objection to the location and size of the vegetation shown in the plan, I agree that a detailed landscape plan should be submitted prior to the issue of the Construction Certificate, particularly given the current absence of proposed vegetation species on the plan.

Existing trees in the northwest and southwest corner of the development should be retained.

As discussed, I would prefer to see similar vegetation planting along the northern boundary to reduce the visual impact on the surrounding area; however, I appreciate the adverse effect this would have on the performance of the solar panels. Perhaps consideration could be given to including low-level native shrubs or grasses along the northern boundary.

As per comments above, conditions are inserted in the draft Notice of Determination.

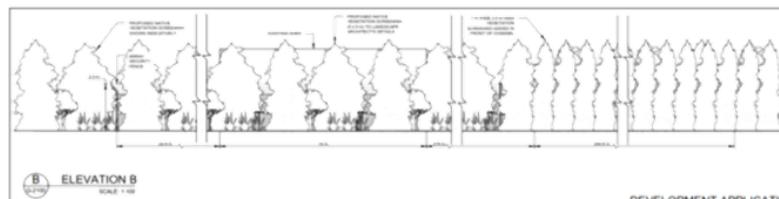


Figure 13 - proposed vegetation screening along southern boundary

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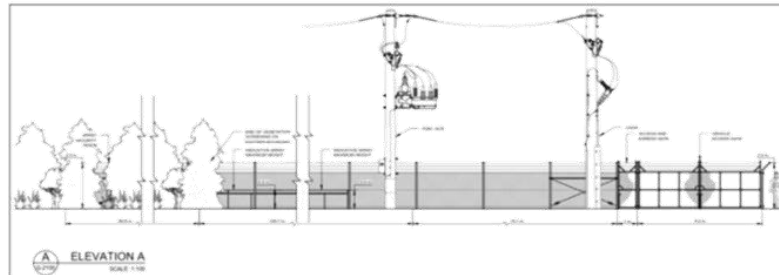


Figure 14 - proposed part vegetation screening along eastern boundary

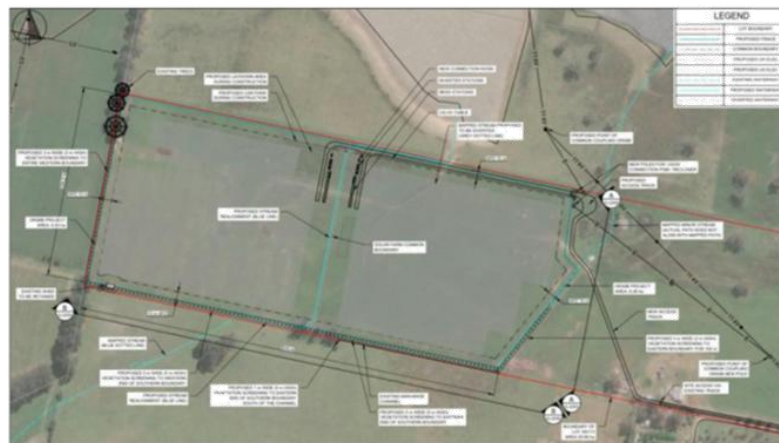


Figure 15 - proposed site plan

In addition to scenic quality and visual amenity impacts, potential risks to water quality have been identified in relation to the proposed development. The Land Use Conflict Risk Assessment (LUCRA) outlines management strategies to address these risks through the implementation of a Biosecurity Management Plan and a Groundcover Management Plan.

The Biosecurity Management Plan identifies activities that could contribute to the introduction or spread of weeds and facilitate pest animal incursions, including:

- Movement of vehicles to, from, and within the site
- Ground disturbance associated with access track construction
- Vegetation clearing
- Delivery of materials
- Ongoing site management

To minimise these risks, the proposal incorporates measures such as awareness and training programs, access control procedures, vehicle hygiene protocols, record-keeping, and targeted weed management. Based on the details provided in the Biosecurity Management Plan, Council staff are satisfied that these measures will effectively mitigate biosecurity risks and maintain the agricultural viability of the land.

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The Groundcover Management Plan identifies the following potential impacts on groundcover and soil:

- Erosion
- Loss of vegetation (grass cover)
- Soil compaction
- Weed invasion
- Land capability

To minimise these risks, the proposal incorporates measures such as installing a gravel layer beneath the solar arrays, constructing grassy swales for runoff management, and minimising ground disturbance during construction. The plan also highlights additional mitigation strategies and references an example of a similar EDPR PEG system installation.



Figure 16 - proposed groundcover plan



Figure 17 - example of gravel installation beneath PEG system solar panels

The proposed solution includes a gravel layer under the arrays to protect against erosion, complemented by strategically designed grassy swales to manage runoff and direct flows to detention basins, thereby safeguarding water quality. Additional measures include establishing pasture in non-gravelled areas, implementing rigorous weed control, and maintaining minimal soil disturbance.

The Groundcover Management Plan (GMP) aligns with the objectives of the *Environmental Planning and Assessment Act 1979 (NSW)*, the *Water Management Act 2000 (NSW)*, and relevant NSW guidelines, including the Large-Scale Solar Energy Guideline (2022) and DPI's "AgFacts" on maintaining groundcover. These guidelines include measures such as gravel layers under arrays, grassy swales for runoff control, pasture establishment in non-gravelled areas, and targeted weed management. These strategies ensure effective erosion control, soil stability, and water quality protection throughout the project lifecycle.

Based on the LUCRA findings and recommended management strategies, the development is considered consistent with Clause 2.42, as it avoids or minimises land use conflict and maintains the long-term productive potential of the land.

2.48 Determination of development applications - other development

- (2) *Before determining a development application (or an application for modification of a consent) for development to which this section applies, the consent authority must -*
- (a) *give written notice to the electricity supply authority for the area in which the development is to be carried out, inviting comments about potential safety risks, and*
 - (b) *take into consideration any response to the notice that is received within 21 days after the notice is given.*

In accordance with Clause 2.48(2), the application was referred to Essential Energy for comment. Essential Energy provided general advice, noting the following:

- *If the proposed development changes, there may be potential safety risks and it is recommended that Essential Energy is consulted for further comment;*
- *Any existing encumbrances in favour of Essential Energy (or its predecessors) noted on the title of the above property should be complied with;*
- *Any activities in proximity to electrical infrastructure must be undertaken in accordance with the latest industry guideline currently known as ISSC 20 Guideline for the Management of Activities within Electricity Easements and Close to Infrastructure;*
- *Prior to carrying out any works, a "Dial Before You Dig" enquiry should be undertaken in accordance with the requirements of Part 5E (Protection of Underground Electricity Power Lines) of the Electricity Supply Act 1995 (NSW); and*
- *It is the responsibility of the person/s completing any works around powerlines to understand their safety responsibilities. SafeWork NSW (www.safework.nsw.gov.au) has publications that provide guidance when working close to electricity infrastructure. These include the Code of Practice - Work near Overhead Power Lines and Code of Practice - Work near Underground Assets.*

The above comments are included as general advice in the draft notice of determination.

**PROVISIONS OF ANY DRAFT ENVIRONMENTAL PLANNING INSTRUMENT THAT HAS BEEN
PLACED ON EXHIBITION 4.15(1)(a)(ii)**

There are no draft Environmental Planning Instruments currently on exhibition that relate to the subject land or proposed development.

INTEGRATED DEVELOPMENT

The development is classified as Integrated Development under the provisions of Clause 4.46(1) of the Environmental Planning and Assessment Act 1979 and is referred to as Nominated Integrated Development under the Environmental Planning and Assessment Regulation 2021. The reason being: a Controlled Activity Approval under the provisions of Sections 89, 90 and 91 of the Water Management Act 2000 will be required from the NSW Department of Planning and Environment - Water.

The NSW Department of Planning and Environment - Water have issued General Terms of Approval which are attached to the consent.

PROVISIONS OF ANY DEVELOPMENT CONTROL PLAN s4.15(1)(a)(iii)**Orange Development Control Plan 2004**

Orange Development Control Plan 2004 ("the DCP") applies to the subject land. An assessment of the proposed development against the relevant Planning Outcomes will be undertaken below.

Chapter 0 - Transitional Provisions**Section 0.2 - General Translation of Zones**

Section 0.2 provides that any reference to a zone under Orange Local Environmental Plan 2000 is to be a reference to the corresponding zones in the zone conversion table.

The table identifies that the C3/E3 Environmental Management corresponds with the 7 Environmental zone.

Section 0.4 - Former LEP Matters**0.4-11 Transport routes****Objectives:**

- 1 To ensure the continued safe and efficient operation of arterial and other important road corridors.
- 2 To alleviate traffic flows on high volume routes whenever feasible.
- 3 To promote a high level of urban design on land exposed to significant volumes of traffic, cyclists and pedestrians.

PO 0.4-11 INTERIM PLANNING OUTCOMES - TRANSPORT ROUTES

- 1 The development provides a high standard of visual appeal to motorists, cyclists and pedestrians as well as adjoining property owners.
- 2 The visual appearance of the development, including any signage, lighting or other ancillary element, must not generate a distraction to motorists.
- 3 Any signage must not be animated whether by movement or flashing lights.
- 4 Where land has more than one street frontage the street with the lower volume of traffic is to provide the principal access to the development, subject to safety considerations.
- 5 Where access is provided onto an arterial road, distributor road or major collector road, the access point must have appropriate safe sight distances for the prevailing speed limit and clear and unimpeded entrance/exit signage must be displayed.
- 6 Where on-site customer parking is provided that is not immediately visible from a public road clear and unimpeded directional signage must be displayed.
- 7 Where the proposal is residential, or another noise sensitive form, appropriate noise mitigation measures to limit the development from traffic noise must be demonstrated.

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The objectives of this section seek to ensure the continued safe and efficient operation of arterial and other important road corridors to alleviate traffic flows on high-volume routes wherever feasible, and to promote a high standard of urban design on land exposed to significant volumes of traffic, cyclists and pedestrians.

In relation to these objectives, the proposal is considered satisfactory for the following reasons:

- The development will not adversely impact the safe and efficient operation of Cadia Road. The site has only one road frontage, and access is provided directly from Cadia Road, which is suitable given the scale and nature of the proposal.
- Screening vegetation is proposed to be planted along the southern, eastern and western boundaries (to a height of 5m and 3m wide on the southern boundary) to provide a high level of visual amenity for motorists, cyclists, pedestrians and adjoining property owners. The site will not be readily visible from Cadia Road.
- Additional smaller vegetation (less than 1m in height) will be conditioned along the northern boundary to enhance visual aspects from this frontage.
- No signage or lighting is proposed, thereby avoiding unnecessary distraction to motorists.

Further to the above, the proponent has submitted a Glare and Glint Study in support of the development. The study identified that 34 observation points and seven road routes may experience green glare, while four observation points and three road routes may experience yellow glare. Green glare has a low potential to cause after-images, whereas yellow glare has a higher potential to impact drivers.

The study found that glare impacts are generally of short duration. The most affected locations (Observation Points 1 and 2) were predicted to receive up to 15 minutes of glare in a single day. To mitigate this, it was recommended that the vegetation screen be extended along the south-eastern boundary. Yellow glare along road routes was also limited to small sections and did not exceed 15 minutes, however, additional mitigation may be required at the intersection of Forest Road and Gosling Creek Road through extended screening on the eastern boundary.

The Large-Scale Solar Energy Guideline provides the following key principles while assessing for the glint and glare for a project.

Glint and glare principles

- Solar panels should be sited to reduce the likely impacts of glint and glare.
- Solar panels and other infrastructure should be constructed of materials and/or treated to minimise glint and glare.
- If a large scale-solar energy development is likely to exceed the relevant criteria for glare and standards for glint, mitigation strategies must be adopted to reduce the impacts.

The proposed development is located with a setback of approximately 500m from Cadia Road and is further assisted by the natural slope of the land. These site characteristics help reduce the likelihood of glint and glare impacts on road users and adjoining properties.

The Glint and Glare Assessment submitted with the application found that impacts are within the moderate range specified in the Guideline. As stated in the guideline, mitigation measures including vegetative screening along the southern, eastern, and western boundaries (up to 5m high and 3m wide), as well as low-level planting to the north, are incorporated to ensure residual impacts are minimised. These measures are consistent with the Guideline's requirement to adopt mitigation strategies where impacts may arise.

Overall, the Glare and Glint Assessment concluded that with the proposed vegetation planting around the site, visual impacts from glare will be sufficiently mitigated in most cases. Where yellow glare is experienced, it will be of short duration and in locations with relatively low traffic volumes.

On this basis, the proposal is considered satisfactory with the objectives and planning outcomes for development along transport routes under Section 0.4 of the DCP.

Chapter 2 - Natural Resource Management

Section 2.1 - Water Quality

This section highlights that developments which alter natural drainage patterns such as by concentrating or redirecting flows, increasing flow rates, or disturbing land near creeks, impact waterways through erosion, sedimentation, and nutrient release, all of which may reduce downstream water quality. It also notes that activities involving groundwater extraction or onsite wastewater disposal have the potential to affect groundwater resources.

Specific planning outcomes for stormwater quality are as follows:

P0 2.1-1 PLANNING OUTCOMES - STORMWATER QUALITY

- 1 Development is carried out in a manner that does not contribute to downstream erosion or sedimentation of waterways.
- 2 Development complies with the *Water and Soil Erosion Control* requirements of the *Development and Subdivision Code*.
- 3 On-site detention is carried out in accordance with the *Development and Subdivision Code* for all developments comprising buildings with a site coverage greater than 50m² or where site coverage exceeds the "percentage impervious" level listed in the Code applicable to that development.
- 4 Where on-site detention is not appropriate, contributions are made towards retarding basins and/or GPTs and associated drainage under the Contribution Plan that applies to the land.
- 5 Development in the vicinity of natural watercourses is positioned away from the waterway and includes measures to minimise the impact of the development on the waterway such as the establishment of creekside buffer zones and planting of native trees in a manner that enhances streambank stability.

Stormwater considerations are addressed under the heading "Clause 7.3 - Stormwater Management" under LEP considerations in this report. Additionally, it is noted that the General Terms of Approval (GTA) issued by the Department of Planning and Environment - Water provides conditions in relation to requiring detailed soil and water management plan, detailed drainage plans and detailed bulk earthworks plans prior to commencing any proposed works.

The proposed development is considered satisfactory with regards to stormwater quality.

Specific planning outcomes for groundwater quality are as follows:

PO 2.1-2 PLANNING OUTCOMES - GROUNDWATER QUALITY

- 1 Development applications for development (excluding dwelling houses) that proposes to extract groundwater or involve on-site wastewater disposal identify potential risks to, and management of, groundwater resources.
- 2 Development is carried out in a manner that does not adversely affect groundwater resources.
- 3 Development considered by Council to have the potential to significantly affect groundwater quality incorporates a monitoring program and provides test results from a NATA-accredited laboratory to Council for review and for inclusion in the City SoE Reports.
- 4 Development that requires or proposes the use of groundwater demonstrates that the groundwater extraction will meet the requirements of DLWC, where necessary.

Groundwater quality considerations have been addressed under "Clause 7.6 - Groundwater Vulnerability" in this report. The submitted documentation indicates that dangerous goods stored onsite will be contained within appropriately designed and managed facilities to prevent spills. Additionally, no extraction of groundwater is proposed. As the development does not involve the discharge of toxic or noxious substances, it is considered unlikely to contaminate groundwater or associated ecosystems. Similarly, the absence of groundwater extraction means the proposal will not contribute to groundwater depletion.

Based on the information provided within the submitted material and the recommended conditions of consent, it is considered that the planning outcomes relating to water quality would be met.

Section 2.2 - Soil resource management

This section identifies that soil characteristics influence land use and development capability, and the suitability for building footings, onsite waste disposal, road engineering and drainage.

Specific planning outcomes for soil resource management are as follows:

PO 2.2-1 PLANNING OUTCOMES – SOIL RESOURCE MANAGEMENT

- 1 Development complies with the *Water and Soil Erosion Control* requirements of the *Development and Subdivision Code*.
- 2 Sites affected by soil degradation are restored in accordance with management strategies to be submitted with development proposals.
- 3 Agricultural practices apply conservation farming techniques particularly within the water supply catchments and in areas susceptible to significant erosion hazard.
- 4 A geotechnical investigation is carried out by a NATA-accredited laboratory that identifies and classifies all new residential lots for dwelling houses in accordance with AS 2870-1996 *Residential Slabs and Footings Construction*.
- 5 A geotechnical investigation is undertaken that determines the suitability of land for on-site disposal of sewage effluent in accordance with *Environmental and Health Protection Guidelines: On-site Sewage management for Single Households* where appropriate.
- 6 Non-agricultural activities in rural areas are carried out on less -productive soils.

The proposed solar farm has been assessed against the relevant planning outcomes for soil resource management:

- The development incorporates erosion and sediment control measures consistent with the *Water and Soil Erosion Control* requirements of the *Development and Subdivision Code*.
- These measures are detailed in the Groundcover Management Plan (GMP), which includes gravel layers beneath arrays, grassy swales for runoff management, and pasture establishment in non-gravelled areas. The site is not identified as significantly

degraded, however, the GMP includes strategies to maintain and restore groundcover during and after construction, ensuring soil stability and minimising erosion.

While the proposal is a non-agricultural use, the design supports co-use opportunities such as livestock grazing during operation, consistent with conservation principles and maintaining agricultural viability.

The fourth and fifth planning outcomes relate primarily to residential development and onsite sewage disposal and are not applicable to the proposed solar farm. Wastewater during construction will be managed via portable facilities, and no onsite sewage disposal is proposed.

The development is located on rural land within the Towac and Spring Hill soil landscapes, which dominate the southern half of the City of Orange and are considered highly productive agricultural land, identified as Biophysical Strategic Agricultural Land (BSAL). The site is also classified as Class 3 - High Capability Land, which has moderate limitations and is capable of sustaining cropping with careful management to avoid environmental degradation.

In relation to development on highly productive agricultural land, the proposal will result in a minor, temporary loss of agricultural land. However, it is noted that the subject land has not been used for cropping for several years, other than for grazing activities. The proposal allows for future grazing within the fenced solar array area after construction, and the remaining land outside the solar farm footprint may continue to be used for livestock grazing or cultivation.

The proposal will not impact the day-to-day operations of neighbouring primary production uses. The loss of 13.01ha represents approximately 0.07% of the total agricultural land within the Orange LGA, which is considered negligible in the regional context.

The proposal satisfies the relevant planning outcomes for soil resource management through the implementation of comprehensive erosion control measures, maintenance of groundcover, and provision for agricultural co-use. While the site is identified as BSAL and Class 3 land, the scale of impact is minor, temporary, and reversible, ensuring that the long-term agricultural potential of the land is maintained.

Section 2.3 - Vegetation and Section 2.4 - Flora, Fauna and Biodiversity

The natural environment of the Orange LGA has been heavily modified as a consequence of land clearing for various uses, including agriculture, plantation forests, mining and urban development; and that clearing of native vegetation has significantly affected native habitats.

Specific planning outcomes for vegetation and flora, fauna and biodiversity include:

PO 2.3-1 PLANNING OUTCOMES – VEGETATION MANAGEMENT

- 1 Compliance with the *Native Vegetation Conservation Act 1997*.
- 2 Development is designed and constructed in a way that minimises the impact on existing vegetation.
- 3 Particular attention is given to the effect of rural or urban residential release development on existing vegetation and scenic areas.
- 4 Development applications indicate on plans the location of all significant trees affected by or in the vicinity of development.
- 5 Applications demonstrate to Council's satisfaction that all practical measures have been made to retain trees that contribute to and embellish the Orange landscape.

PO 2.4-1 PLANNING OUTCOMES - FLORA & FAUNA MANAGEMENT

- 1 Where there is a likely impact of development on native habitats, that impact is addressed in the development application.
- 2 A *Species Impact Statement* is prepared for development that is likely to significantly affect habitats of threatened species. The statement is submitted with a development application and indicates how threatened species will be managed with the development.
- 3 Development affecting all or part of significant water bodies or remnant woodland areas with the potential to comprise habitats of threatened species incorporates the protection and conservation of these areas where deemed reasonable by Council.
- 4 Threatened species, populations and ecological communities are managed in conjunction with development in accordance with the *Threatened Species Conservation Act*.

Vegetation, flora, fauna and biodiversity have previously been addressed under "Section 1.7 - Application of Part 7 of the Biodiversity Conservation Act 2016 and Part 7A of the Fisheries Management Act 1994". The subject site is not identified as containing terrestrial biodiversity.

The development is considered satisfactory with regards to flora, fauna and biodiversity.

Chapter 3 - General Considerations**Section 3.1 - Cumulative Impacts**

This section identifies that the consent authority will consider not only the direct impacts of a particular development but also whether the development, when carried out in conjunction with other development in the locality, has a more significant environmental impact.

Specific planning outcomes regarding cumulative impact include:

PO 3.1-1 PLANNING OUTCOMES - CUMULATIVE IMPACT

- 1 Applications for development demonstrate how the development relates to the character and use of land in the vicinity.
- 2 The introduction of new development into a locality maintains environmental impacts within existing or community-accepted levels.
- 3 Water conservation measures are implemented.

Cumulative impacts of the proposed solar farm are addressed under the heading "the likely impacts of the development s4.15(1)(b)".

Section 3.2 - Scenic, Landscape and Urban Areas

This section of the DCP identifies that in scenic rural areas, the visual and environmental contribution of trees plays a vital role in defining the unique landscape character. Development within these areas should aim to preserve and enhance this character by maintaining existing shelter belts composed of introduced species such as hawthorn and pine, protecting native remnant vegetation, and integrating ornamental plantings. These

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elements, often found among orchards, grazing lands, and vineyards, collectively contribute to the area's distinctive rural aesthetics and should be thoughtfully incorporated into future planning and design.

PO 3.2-1 PLANNING OUTCOMES - SCENIC, LANDSCAPE AND URBAN AREAS

- | | |
|---|--|
| 1 | Development incorporates landscaping that enhances the landscaped setting of the locality. |
| 2 | External finishes, materials and colour schemes of development complement its setting. |

In relation to Planning Outcome 1, the proposed development has indicated that a landscaping strip will be installed along the southern, western and eastern boundaries of the solar farm. It is discussed in detail under Clause 2.42 of Chapter 2 of the State Environmental Planning Policy (Transport and Infrastructure) 2021.

Included in the attached Notice of Determination, a condition of consent is mentioned that requires the submission of an amended landscape plan that provides further detail and refinement of what has been submitted. The development is considered satisfactory within Section 3.2 of the Orange DCP. The consent authority in determining this matter will need to be satisfied that the proposed landscape elements suitably assist in mitigating the visual and amenity impacts that have been identified in the submissions.

Chapter 4 - Special Environmental Considerations**Section 4.4 - Contaminated Land**

In relation to this section, the subject land is identified as contaminated under Council's mapping system. An assessment of contamination risks has been undertaken in this report in accordance with Clause 4.6 of Chapter 4 of the State Environmental Planning Policy (Resilience and Hazards) 2021. Based on that assessment, the proposed development is considered satisfactory, with relevant conditions being recommended and included in the Notice of Determination.

Chapter 5 - General Consideration for Zones and Development**Section 5.3 - Advertised and neighbour notified development**

This section directs one to Council's Community Participation Plan for guidance on advertised and neighbour notified development. It is noted that Electricity Generating Works are not listed as a type of development that is either advertised or notified development.

Notwithstanding this, *Clause 8A, Schedule 1 Community Participation requirements of the Environmental Planning and Assessment Act 1979 and the Environmental Planning and Assessment Regulation 2021* identify that nominated integrated development must be advertised for a period of 28 days. Accordingly, the development application was advertised and on exhibition from Friday, 24 January to Monday, 24 February 2025.

Following the exhibition period, a total of 42 submissions were received. They were redacted and furnished to the applicant with a request to prepare a response addressing the matters raised. As a result of this process and in response to the submissions the applicant amended the application by adding additional vegetation screening along the southern boundary. The height of the vegetation to be installed was also considered and increased to reduce visual impacts to the surrounding.

Council staff accepted the amended plans, and the amendments were considered minor and as such a re-advertisement and re-exhibition was considered not necessary.

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Submissions received during the advertising period are addressed later in this report under Section 4.15(1)(d) *Any Submissions Made in Accordance with the Act*.

Chapter 10 - Special Uses and Road Zones
Section 10.4 - Development along Cadia Road

Section 10.4 identifies Cadia Road as a busy road, primarily due to increased traffic generated by mining operations at Cadia. As a result, careful consideration must be given to the number, location, and design of new intersections along Cadia Road.

The section also notes that noise-sensitive developments should be located as far as practicable from Cadia Road to minimise potential impacts.

PO 10.4-1 PLANNING OUTCOMES – DEVELOPMENT ALONG CADIA ROAD

- 1 Residential development on land fronting Cadia Road is set back sufficient distance or incorporate appropriate noise attenuation in the house design so as not to expose residents to potential noise conflicts associated with mine-related traffic using Cadia Road.

This planning outcome is relevant to residential development and is considered not applicable to the current proposal. The proposed development is not regarded as a highly noise-sensitive use, and a more detailed assessment of potential impacts is provided later in this report under the heading *"The likely impacts of the development - s4.15(1)(b)."*

Chapter 15 - Car Parking
Section 15.4 - Parking requirements

Section 15.4 identifies the requirements for off-street car parking spaces.

Section 15.4 does not nominate a minimum car parking rate for a solar farm or any other similar land use. Similarly, a secondary resource often used by Council staff, *the Roads and Maritime Service Guide to Traffic Generating Development*, which is now updated and replaced by the newer *Guide to Transport Impact Assessment 2024* does not address a minimum car parking rate for a solar farm or any other similar land use either. In such circumstances a professionally prepared car parking report is to be provided.

A traffic and parking impact statement report was submitted in support of the development which provides commentary on parking generation for the development. The report indicates the following table for staff parking requirements:

Land Use	Scale	Rate	Spaces Required
CONSTRUCTION PHASE			
Solar Farm	Up to 30 staff	0.8 spaces per 1 staff ⁽¹⁾	24
OPERATIONAL PHASE			
Solar Farm	3 staff	1 space per 1 staff	3

Notes: (1) Assuming 20% carpooling between construction workers.

The proposed development plans showcase provision made for temporary parking of 40 light vehicles during the construction phase of the development. The temporary car parking area is appropriately sited within the site so as to allow ingress and egress in a forward gear. The parking area shown on plans exceed the recommended spaces and is considered satisfactory.

The application was referred to Council's Assistant Development Engineer and the following comments were made, and relevant conditions were inserted:

- Proposed access from Cadia Road to be constructed to suit the turn path of a B-Double heavy vehicle prior to the commencement of construction.
- The proposed site access to be generally in conformance with Figure 7.4 of Austroads Guide to Road Design Part 4, with a bitumen seal extending at least 30m from the Cadia Rd pavement edge.
- Obtain Road Opening Permit for works within road reserve.

A separate laydown area for equipment brought to the site via B-Doubles is also provided within the site and is separate to the temporary car parking for light vehicles.

The development is considered satisfactory with regards to onsite car parking.

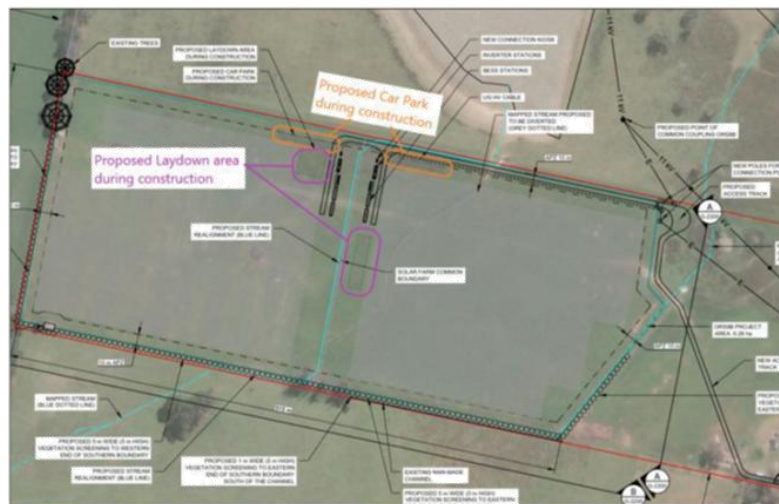


Figure 18 - car parking layout

PROVISIONS PRESCRIBED BY THE REGULATIONS s4.15(1)(a)(iv)

Demolition of a Building (clause 61)

The proposal does not involve the demolition of a building.

Fire Safety Considerations (clause 62)

The proposal does not involve a change of building use for an existing building.

Buildings to be Upgraded (clause 64)

The proposal does not involve the rebuilding, alteration, enlargement or extension of an existing building.

BASIX Commitments (clause 75)

BASIX is not applicable to the proposed development.

THE LIKELY IMPACTS OF THE DEVELOPMENT s4.15(1)(b)**Context and Setting**

The site is located within a rural-zoned property of approximately 25.75ha. The land is gently undulating to moderately sloping, with cleared paddocks and patches of remnant vegetation along property boundaries. The development footprint will occupy two discrete areas: the 8B system (6.53ha) at the western end of the site, and the 9B system (6.48ha), resulting in a total development footprint of approximately 13.01ha. The site has an existing single storey dwelling with ancillary structures such as cattle yards and sheds.

The surrounding area is primarily rural, with agricultural uses including cropping and grazing, and is sparsely populated. There are five residential dwellings located in proximity to the proposed development. The properties to the south of the subject site are elevated in relation to the subject land and will have the opportunity to view the subject development.

The introduction of solar arrays and associated infrastructure, including the Battery Energy Storage System (BESS), will modify the existing visual appearance of the site and character of the broader locality.

Visual impacts and Landscape Character

The likely impacts upon existing views, vistas, and the impact upon the general landscape character of the locality are central to the assessment of this application; and critical in determining the appropriateness and suitability of the proposed development in the locality.

Quantifying such impacts is challenging. Unlike other matters typical of a planning assessment such as overshadowing or height of a building which are numerical based; determining the level of impact likely as a result of this development requires one to undertake a qualitative exercise.

The Department of Planning, Housing and Infrastructure has prepared a practice note titled "Large-Scale Solar Energy Guideline" and its supporting "technical Supplement for Landscape and Visual Impact Assessment" along with Transport for New South Wales "Guideline for Landscape Character and Visual Impact Assessment" aim to achieve balanced outcomes that support the development of solar energy industry while avoiding and managing major impacts on the landscape and private views.

The guidelines differentiate between landscape impact assessment (which is the assessment of impact on the aggregate of an area's built, natural and cultural character or sense of place) and visual impact assessment (which is the assessment of impact on views).

Landscape character assessment helps determine the overall impact of a project on an area's character and sense of place (what people think and feel about a place and how society values it, whether or not they are physically present at it).

Visual impact assessment helps define the day-to-day visual effects of a project on people's views (what people see at a place, when they are there).

The two assessments should be clear and discrete as it is likely the design responses and mitigation measures to address landscape character impact will be different to those for visual impact.

The measure of impact is carried out based on a combination of sensitivity, magnitude, private receivers and private agreements.

Sensitivity refers to a measure of the capacity of a landscape or view to absorb the impacts from the proposed change. For example, a pristine natural environment is likely to be more sensitive than an industrial area. A view from a residence is also likely to be more sensitive than from a local road where views are more intermittent and less frequent.

Magnitude refers to the physical scale of the solar energy development and is influenced by several factors. The apparent size of the development decreases as the distance from the viewer increases, while it appears larger when there is a greater relative height difference between the viewer and the solar array. Additionally, the apparent size increases with the actual physical scale and dimensions of the solar installation, although this effect becomes less noticeable as the distance from the viewer grows.

Private receivers - The visual impact assessment must assess the potential impacts on private receivers, including private recreation areas and sporting fields, dwellings, and tourist and visitor accommodation. In assessing the visual impacts on dwellings, the assessment must focus only on views from the dwelling and not from the property boundary or other parts of the property. The assessment should also consider the potential worst-case views that have the greatest potential to impact residential amenity. Residential amenity encompasses the overall quality, experience and nature of views and outlooks available to occupants of a dwelling and its immediate surrounds, including pool areas and adjacent gardens.

Private agreements - The applicant has not provided any details of private agreements that may exist between the applicant and neighbouring or affected private landowners.

Once the above metrics are established for a specific location or vantage point, they are incorporated into an evaluation matrix to determine the level of impact, which ranges from Negligible to High, as shown below.

		Magnitude			
		High	Moderate	Low	Negligible
Sensitivity	High	High	High-Moderate	Moderate	Negligible
	Moderate	High-Moderate	Moderate	Moderate-low	Negligible
	Low	Moderate	Moderate-low	Low	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

Figure 7 Landscape character and visual impact rating matrix.

The material submitted in support of the application includes a visual impact assessment, prepared in accordance with the methodology outlined in the above-referenced document, and is summarised as follows:

The landscape to the south of Orange has been extensively modified by human activity, predominantly associated with the agricultural industry. It is characterised by a mix of farming operations, rural land uses, and arterial roads, including those providing connections to the Cadia mining operations. The overall magnitude of the proposal and its impact on the broader landscape character is considered moderate when viewed from private properties and public roads in the locality.

The sensitivity of private property to landscape change is considered low to moderate, reflecting the existing modified rural landscape, which is predominantly agricultural in character, combined with the separation distance from most residences and the

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influence of topography. Sensitivity decreases with distance, such that visibility of the solar farm from dwellings and other structures located beyond 2km is expected to be negligible. Accordingly, the overall impact on landscape character in relation to private property is assessed as ranging from moderate to negligible.

The sensitivity of public places such as Cadia Road to landscape change would be high in close proximity to a new development. However, distance separation and the local topography reduce that sensitivity, and in this case, it is assessed to be moderate. The works would be most visible to motorists travelling southbound along Cadia Road on approach to the site, where the solar arrays and associated infrastructure would appear within the view corridor. Beyond this approach, views of the solar farm are expected to be limited due to intervening landform and roadside vegetation. Accordingly, the overall impact on landscape character in relation to the public domain is assessed to range from moderate to low.



Figure 19 - 2km visual catchment

As illustrated in Figure 19, a 2km radius visual catchment has been identified around the development site. In general, the greater the distance from the site, the less discernible the solar farm becomes. The ability to distinguish the type of land use and the composition of materials diminishes with distance. The site itself is cleared and contains no existing structures or vegetation that would provide screening within the development footprint. However, the undulating topography and surrounding vegetation interrupt direct views towards the property from most directions.

Within the defined catchment, five dwellings (OP1, OP2, OP3, OP12 and OP48) are assessed as experiencing a high visual impact – refer figure 20, owing to their close or mid-range proximity to the project site, combined with elevated outlooks that afford direct or partially filtered views of the solar arrays. A further eight observation points are rated as experiencing a moderate impact, while eight observation points are rated

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as experiencing a low impact. For all other locations, the combination of distance, landform, existing vegetation and built structures is expected to obscure or significantly reduce visibility of the development.

In relation to the public domain, the visual impact along Cadia Road is assessed as high for motorists approaching the site from the north and when travelling past the northern boundary. However, this impact is tempered by the topographic difference of approximately 17m, requiring views to be directed upward and across a distance of more than 400m to observe the array (refer to Figure 20).



Figure 20 – Five residences with high visual impact

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Figure 21 - views from Cadia Road

The Visual Impact Assessment report concludes and recommends that vegetation be planted as a landscape screening along the southern, western and eastern boundaries of the proposed development (refer to Figure 22).



Figure 4 Recommended landscape screen

Figure 22 - proposed landscape screen

In response to the submitted visual impact assessment, it is acknowledged that the properties identified in the study represent those most likely to experience direct visual effects from the proposal. Council staff are satisfied that the assessment adequately addresses the relevant landscape character considerations and appropriately identifies the potential visual impacts arising from the development. As outlined in the report, and illustrated in Figure 20, five dwellings are considered to be subject to varying degrees of visual impact. The extent of impact differs due to local variations in landform, topography, and the presence of existing vegetation and landscape features that provide screening. Of the five dwellings, the property identified as OP2 is assessed as being the most directly and significantly affected. The images below illustrate the representative views from OP2.

In assessing visual impact, consideration has been given to the accepted four-step planning principle [Planning Principle for views - general principles *Tenacity Consulting v Warringah Council* [2004] NSWLEC 140 at 25-29], namely:

1. identifying the views to be affected
2. determining from which part of the property those views are obtained
3. assessing the extent of the impact, and
4. assessing the reasonableness of the proposal causing the impact.

Based on this principle, the assessment has focused on views obtained from the primary living spaces of the affected dwellings. Having regard to this framework, the proposal is considered acceptable as it will not unreasonably diminish the existing views enjoyed by the identified property owners.

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With respect to Section 5.7 of the *Large-Scale Solar Energy Guideline - Development Rights*, it is noted that a development application [DA 1/2013(1)] was previously approved for a single-storey dwelling on adjoining land at 168 Cadia Road. This consent lapsed on 23 September 2018. Notwithstanding the lapse, the land continues to benefit from a dwelling entitlement by virtue of Clause 4.2A(3)(b) of the *Orange Local Environmental Plan 2011*.

Accordingly, while the proposed solar farm is expected to result in visual impacts on adjoining land that retains but has not yet exercised development rights, it is considered that any future dwelling on this land could be designed, sited, and oriented to avoid or minimise significant visual intrusion from the project. In addition, the proposed landscape screening measures will further mitigate potential high visual impacts and help ensure an acceptable visual relationship between the solar farm and any future residential development.

Summary - on balance, while the proposal will result in some high visual impacts for a limited number of nearby dwellings and for motorists along Cadia Road, these impacts are considered manageable and acceptable in planning terms. The overall landscape character has already been modified by rural and agricultural uses, and measures such as appropriate siting, design, orientation of future dwelling on adjoining land, together with proposed landscape screening that will be enhanced by a recommended condition, will serve to mitigate impacts. Accordingly, the visual impacts of the development are not considered to warrant refusal of the application.

Agricultural Viability

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In relation to development on highly productive agricultural land, the proposal will result in a minor, temporary loss of agricultural land. However, it is noted that the subject land has not been used for cropping for several years. The predominant use of the property has been for grazing activities. The submitted documentation indicates that the proposal allows for future grazing within the fenced solar array area after construction, and the remaining land outside the solar farm footprint may continue to be used for livestock grazing or cultivation.

The proposal will not impact the day-to-day operations of neighbouring primary production uses. The loss of 13.01ha represents approximately 0.07% of the total agricultural land within the Orange LGA, which is considered negligible in the regional context. The proposed footprint occupies approximately 50.5% of the subject land, leaving a considerable portion available for the continuation of agricultural activities.

The proposal is therefore considered satisfactory in terms of maintaining the land's ongoing contribution to the agricultural industry within the Orange LGA. To reinforce this outcome, a condition of consent will require the continuation of sheep grazing within the fenced area of the solar farm to ensure the land remains productively utilised throughout the life of the development.

Traffic Impacts

The development is not expected to generate any adverse traffic impacts, either during construction or during the operational phase of the development.

Construction Phase

During the construction phase, up to 80 truck deliveries (including B-doubles) are expected over the course of the project, averaging approximately eight truck movements per day. These movements will generally occur outside of peak traffic periods, between 10am and 2pm. A peak construction workforce of around 30 staff may generate up to 15 vehicle trips per peak hour.

The application was referred to Council's Assistant Development Engineer (ADE), who raised no concerns subject to the imposition of appropriate conditions of consent. As part of construction management, advanced warning signage advising of trucks turning are to be installed along Cadia Road during the construction period. In addition, a light vehicle car park and a temporary laydown area are to be provided within the site (as per plans), designed to allow all vehicles to enter and exit in a forward gear, ensuring safe and efficient access.

Operational Phase

The traffic associated with the ongoing operation of the development will be minimal, limited to approximately two to three staff undertaking maintenance and cleaning on a quarterly basis. While occasional visits by technicians may be required for repairs or fault rectification, such activity is expected to be infrequent and well within the capacity of the local road network. These operational traffic levels will not give rise to any adverse impacts on the locality.

On this basis the development is considered satisfactory with respect to traffic impacts.

Environmental Impacts

The development is not anticipated to result in any adverse environmental impacts in relation to endangered ecological communities, threatened species, or habitat, as outlined

in the preceding assessment. The site has been selected and designed to avoid areas of ecological sensitivity, and vegetation disturbance will be minimised.

In addition, the applicants submit that proposal will deliver positive environmental outcomes through the generation of renewable energy, contributing to reduced greenhouse gas emissions and supporting the transition to a more sustainable energy supply.

Noise Impacts

PEG system

The development incorporates the PEG system, a simplified high-density ground-mount solution that achieves greater land yield compared with tracker and fixed-tilt systems. Its low-profile tilt design requires minimal spacing between modules, creating a contiguous array of solar panels. The system is lightweight, mobile, and relatively simple to install using only hand tools, avoiding the need for heavy machinery, DC trenching, foundations, or concrete works.

The solar panels are supported by slender steel rods (typically 16 mm in diameter), referred to as posts or piles, which are driven into the ground. This process, known as *nailing*, is undertaken using handheld equipment such as jackhammers, impact drivers, or hammer drills. According to the Noise Assessment prepared by Muller Acoustic Consulting (March 2025), the estimated total sound power level for this nailing activity is 105 dBA (approximately 97 dBA at 1m).

During construction

Noise modelling was undertaken for typical construction activities at identified receivers, measured at 1.5m above ground level and assessed against standard construction hours. The modelling incorporated a 10 dB attenuation factor to account for standard mitigation measures.

Predicted noise levels were modelled for a range of construction scenarios, including trenching, nailing, and assembly, across 45 identified receivers. The results indicate that no receiver is expected to exceed the relevant threshold criteria, with all predicted noise levels remaining within compliance limits. Accordingly, construction noise impacts are considered to be acceptable.

Operational period

The noise assessment adopted a night-time Project Noise Trigger Level (PNTL) of 35 dBA LAeq(15min). Modelling of the operational phase, including inverters and the Battery Energy Storage System (BESS), demonstrates that noise emissions will comply with the applicable criteria at all identified residential receivers. As such, the operational noise impacts are assessed as negligible.

Conclusion

The PEG system installation method - through nailing of narrower posts - generates substantially lower noise levels compared with hydraulic piling rigs typically required for tracker systems. The detailed noise assessment confirms that predicted noise levels during the construction of the Orange South 8B and 9B Solar Farms and the associated Battery Energy Storage System, including PEG system installation, remain within the relevant construction noise management levels. As a result, noise impacts on the surrounding community are expected to be minimal and temporary, limited to the four-month construction period.

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Decommissioning and Site Rehabilitation

As detailed in the Waste and Decommissioning Assessment submitted with the application, the solar farm will be decommissioned at the end of its approximate 35-year lifespan, with the site restored to its original condition or repurposed for agricultural uses.

A significant portion of the solar farm materials are recyclable. Waste generated during decommissioning will be categorised and either recycled or disposed of in accordance with the POEO Act. Established specialised industries will undertake this work, and it is expected that these industries will continue to grow and improve efficiency as more solar farms are decommissioned over time.

To address concerns regarding potential site abandonment, the developer/owner is legally responsible for decommissioning and must comply with long-term contracts with stakeholders to ensure proper site remediation. Condition of consent has been recommended.

Cumulative Impacts

Cumulative impacts of a development can arise under four typical scenarios:

- Time-crowded effects where individual impacts occur so close in time that the initial impact has not dissipated before the next occurs.
- Space-crowded effects where impacts overlap due to their proximity in space.
- Nibbling effects where small, often minor impacts collectively erode the environmental condition of a locality.
- Synergistic effects where heterogeneous impacts interact such that the combined effect is greater than the sum of the individual effects.

The proposed development has the potential to generate one or more of these scenarios, such as multiple noise-generating construction activities occurring simultaneously, or two or more large vehicles making deliveries concurrently, potentially affecting traffic along Forest Road and Cadia Road.

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Notwithstanding this, the implementation of suitable mitigation measures - including a Construction Environmental Management Plan, a Traffic Management Plan, and noise control measures - will ensure that any cumulative impacts remain within acceptable levels.

Furthermore, it is noted that there are no other similar developments in close proximity to the site that would collectively result in unacceptable cumulative impacts.

THE SUITABILITY OF THE SITE s4.15(1)(c)

The site is considered suitable for the proposed development. Despite identified constraints relating to soil management and water catchment, visual amenity and landscape character, and agricultural land use, these matters can be effectively managed through appropriate mitigation measures and conditions of consent.

The development is a permissible use under the provisions of the State Environmental Planning Policy and the Orange Local Environmental Plan 2011.

It is also noted that Council staff are not aware of any physical, technological, or natural hazards affecting the land that would otherwise constrain the development from occurring in a satisfactory manner. The site's topography, accessibility, and surrounding land uses are compatible with the proposed solar farm, and environmental assessments indicate that the development can be carried out without generating unacceptable impacts. Accordingly, the site is well-suited to accommodate the proposed use.

ANY SUBMISSIONS MADE IN ACCORDANCE WITH THE ACT s4.15(1)(d)

The proposed development is classified as "advertised development" under the provisions of the Community Participation Plan. The application was publicly exhibited for the prescribed period of 28 days, during which a total of 42 submissions were received. Of these, one submission expressed support for the development, while the remaining submissions raised concerns regarding the proposal.

The categories of issues raised in the submissions are summarised below -

Issue raised	Planning response
Consultation and Process Submissions expressed dissatisfaction with the absence of early and meaningful community engagement. Concerns were raised that the project has not met expectations under the Large-Scale Solar Energy Guideline in relation to consultation with neighbours and stakeholders.	The large-scale solar energy guideline that is referred to in the submissions does not apply to the proposal. Notwithstanding, whilst Council in its CPP encourages developers to carry out early engagement with neighbours in developing a project it is not a formal requirement. While earlier engagement may have been limited, the DA exhibition process provides an opportunity for public input into the planning process.
Visual and Landscape Impacts Objections focused on the visual prominence of the proposal, with submitters stating that screening measures would be inadequate to protect valued views. Concerns included the	A detailed Visual Impact Assessment was submitted in support of the application. An evaluation of visual and landscape matters has been provided in the body of this report.

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transformation of a rural landscape into an industrial-scale facility, with flow-on effects for nearby cellar doors, tourism and rural character.	Landscape screening along the southern boundary has been increased, the height of vegetation proposed is at 5m (earlier 3m) and additional 1m wide vegetation is proposed along the south-eastern boundary. It is acknowledged that landscape mitigation measures will take time to get established resulting in some impacts initially until vegetation matures. Visual change is acknowledged but considered acceptable within the rural setting subject to implementation of mitigation measures.
Glint and Glare Concerns were raised regarding potential glare effects on nearby dwellings, road users, cyclists and aircraft. While CASA advised no hazard to aircraft operations, residents consider the impacts on local traffic and amenity to be unacceptable.	A glare and glint assessment has been provided in the body of this report. The assessment concluded that with the proposed vegetation planting around the site, visual impacts from glare will be sufficiently mitigated in most cases. Where yellow glare is experienced (see assessment in the body of this report), it will be of short duration and in locations with relatively low traffic volumes. Additionally, the Civil Aviation Safety Authority (CASA) confirmed no aviation safety risk.
Traffic and Road Safety Submissions identified road safety risks associated with construction and operational traffic, particularly heavy vehicles. Concerns included B-double access, potential congestion, and increased conflict with existing users such as school buses, cyclists, and mine-related traffic.	A detailed assessment of traffic impacts has been provided in the body of this report. It is understood that construction will involve up to 80 truck deliveries (avg. 8/day between 10am–2pm) and a peak workforce of 30 generating around 15 vehicle trips per peak hour. Traffic management measures include onsite parking/laydown areas and advance warning signage for large vehicles. Council's ADE raised no concerns subject to the implementation of recommended conditions. Operational traffic will be minimal (2-3 staff visits quarterly, occasional technicians), within the road network

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	capacity. No adverse traffic impacts are expected.
Agricultural Land Use and Food Security A number of submissions objected to the use of high-quality basalt soils for non-agricultural purposes. Issues raised included the permanent loss of productive farmland, risks of soil compaction and erosion, and inconsistency with Orange's established agricultural and viticultural economy.	A detailed assessment of the impact that the development will have on agricultural lands has been provided in the body of this report. The impacts identified are considered manageable through the implementation of recommended mitigation measures, such as dust suppression, traffic management, weed and pest control, and biosecurity protocols. Also, the LUCRA report notes that the land can continue to support compatible agricultural activities, such as livestock grazing on the land surrounding the array during the operational phase and can be fully restored to agricultural use following decommissioning.
Environmental and Ecological Impacts Concerns included potential contamination of water catchments (notably Gosling Creek and Spring Creek Dam), impacts on biodiversity and pollinator populations, and alteration of drainage and microclimate conditions.	A detailed assessment of Environmental and Ecological Impacts has been provided in the body of this report. To address these concerns, a Ground Cover Management Plan is submitted which proposes a gravel layer beneath panels to prevent erosion, with runoff directed to grassy swales and a detention basin/LPOD system. These measures manage water quality. Also, a biosecurity management plan is provided which proposes the mitigation measures to address biosecurity considerations. A Water Assessment, based on publicly available data, confirms the site is within the Orange water supply catchment and promotes sustainable soil management. The solar panels are similar to residential installations, containing no heavy metals or hazardous chemicals. The Land Use Conflict Risk Assessment recommends ongoing monitoring of water quality during operations to manage potential impacts.
Bushfire and Safety Risks	

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Several submissions raised concerns about bushfire risks from solar panels, inverters and battery storage systems, including the release of toxic smoke during fire events and the ignition potential of high-voltage infrastructure.	Safety is a key consideration throughout the project. The developer is required to comply with all Australian workplace health and safety laws. A Fire and Hazard Assessment, together with a Bushfire Risk and Operations Plan, has been prepared, as the site is identified by Orange City Council as bushfire prone. The design includes a minimum 10m Asset Protection Zone (APZ) around the solar arrays and BESS, managed as an Internal Protection Area (IPA) per NSW Rural Fire Service standards to provide a buffer against radiant heat for emergency services. The project also incorporates system fault monitoring, automated fire detection and suppression, and robust safety procedures embedded in Workplace Health and Safety (WHS) policies.
Noise Impact Submissions highlighted potential noise impacts from the construction and operation of the solar farm and BESS on surrounding residents and livestock	A Noise Assessment, referencing the NSW Industrial Noise Policy and relevant Australian Standards, evaluated potential noise during construction and operation. The assessment concluded that noise levels at all receivers will comply with applicable management levels with standard mitigation measures. The use of the PEG System for panel installation is expected to minimise construction noise.
Impacts to Property Value A few submissions expressed concerns about the potential for the development to negatively impact property values in the surrounding area.	While some submissions raised concerns regarding potential impacts on property values, there is no empirical evidence to suggest that solar farm developments of this type result in measurable decreases in nearby property values. Numerous studies and precedent developments indicate that well-designed and managed solar farms do not adversely affect residential or rural land values. The proposal incorporates appropriate visual screening, setbacks, and landscaping measures to minimise any potential perception impacts, ensuring the development is compatible with the

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	surrounding area. Impacts on property values is not a relevant consideration required under the Environmental Planning and Assessment Act
Decommissioning and Site Rehabilitation Submissions questioned the decommissioning, recycling/disposal of panels, and the potential for the site to be abandoned.	As detailed in the Waste and Decommissioning Assessment submitted with the application, the solar farm will be decommissioned at the end of its approximate 35-year lifespan, with the site restored to its original condition or repurposed for agricultural uses. A significant portion of the solar farm materials is recyclable. Waste generated during decommissioning will be categorised and either recycled or disposed of in accordance with the POEO Act. Established specialised industries will undertake this work, and it is expected that these industries will continue to grow and improve efficiency as more solar farms are decommissioned. To address concerns regarding potential site abandonment, the developer/owner is legally responsible for decommissioning and must comply with long-term contracts with stakeholders to ensure proper site remediation.
Policy, Strategic, and Locational Issues Concerns were raised that the site lies outside the designated Renewable Energy Zone and is inconsistent with Orange LEP objectives to protect agricultural and tourism values. Many submitters argued the project is opportunistically located close to transmission infrastructure rather than in a more suitable, less densely populated area.	Although the site is not located within a formal Renewable Energy Zone, its selection considered zoning restrictions, proximity to the existing electricity network, and overall land suitability. The proposed location is in a non-urban zone where a solar farm is a permissible development.
Economic and Social Concerns Submissions questioned the claimed community benefits of the project, with scepticism about reductions in energy costs. Some expressed concerns about foreign ownership of the proponent and the potential for social division within the local	The proposed development is expected to provide positive economic benefits, including local employment opportunities during construction and ongoing maintenance, as well as increased demand for local goods and services. Socially, the

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community.	project has been designed to minimise disruption to the community, with traffic, noise, and visual impacts carefully managed. No adverse effects on the broader community are anticipated, and the development is considered compatible with existing land uses.
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While a range of issues have been identified, the assessment demonstrates that potential impacts can be effectively managed through appropriate conditions of consent. Overall, the project is consistent with relevant planning policies and guidelines and is considered acceptable in the context of the surrounding land uses.

PUBLIC INTEREST s4.15(1)(e)

The proposed development is considered to be of moderate to high public interest, given the number of submissions received and the nature and extent of potential visual impacts. Notwithstanding this, based on the detailed assessment undertaken, it is concluded that the development remains within acceptable limits and satisfies the public interest test.

The proposal is consistent with relevant policy statements, planning studies, and guidelines, and no applicable matters have been identified that have not been addressed in this assessment.

SUMMARY

The proposed development is permissible with the consent of the Western Region Planning Panel pursuant to Clause 2.42 of State Environmental Planning Policy (Transport and Infrastructure) 2021. The proposed development complies with the relevant aims, objectives and provisions of Orange LEP 2011 and DCP 2004.

The proposal constitutes Regional development pursuant to Schedule 6, Clause 5 – *Private infrastructure and community facilities over \$5 million*. As such, the Western Regional Planning Panel (WRPP) is the consent authority.

The proposed development complies with the relevant aims, objectives and provisions of Orange LEP 2011 (as amended) and DCP 2004. A Section 4.15 assessment of the development indicates that the development is acceptable in this instance. Attached is a draft Notice of Determination outlining a range of conditions considered appropriate to ensure that the development proceeds in an acceptable manner.

COMMENTS

The requirements of the Environmental Health and Building Surveyor and the Engineering Development Section are included in the attached Notice of Approval.

ATTACHMENTS

1. Draft Notice of Approval
2. Plans
3. General Terms of Approval – Department of Planning and Environment – water

Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road Springside**Attachment 2 Draft Notice of Determination****NOTICE OF DETERMINATION OF A DEVELOPMENT APPLICATION**

Application number	DA 771/2024(1) PAN-499518
Applicant	Jou Jong Level 4, 54 Marcus Clarke Street, Canberra ACT 2601
Description of development	Development of a two 5MW solar farm (PEG System) and battery energy storage system (BESS).
Property	140 CADIA ROAD SPRINGSIDE 2800 5/-/DP6173
Determination	Approved Consent Authority - Sydney / Regional Planning Panel
Date of determination	30/09/25
Date from which the consent operates	30/09/25
Date on which the consent lapses	30/09/30
Approval bodies that have given general terms of approval	Department of Planning and Environment - Water

Under section 4.18(1) of the EP&A Act, notice is given that the above development

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application has been determined by the granting of consent using the power in section 4.16(1)(a) of the EP&A Act, subject to the conditions specified in this notice.

Reasons for approval

1. To ensure compliance with relevant statutory requirements.
2. To ensure the utility services are available to the site and adequate for the development.
3. To provide adequate public health and safety measures.
4. To prevent the proposed development having a detrimental effect on adjoining land uses.
5. To comply with the Environmental Planning and Assessment Act 1979.
6. The proposal will reasonably satisfy local and state planning controls.
7. The proposal development will be consistent with the zone objectives and principal development standards.
8. The proposal development will complement the existing or desired future character of the area.

Right of appeal / review of determination

If you are dissatisfied with this determination:

Request a review

You may request a review of the consent authority's decision under section 8.3(1) of the EP&A Act. The application must be made to the consent authority within 6 months from the date that you received the original determination notice provided that an appeal under section 8.7 of the EP&A Act has not been disposed of by the Court.

Rights to appeal

You have a right under section 8.7 of the EP&A Act to appeal to the Court within 6 months after the date on which the determination appealed against is notified or registered on the NSW planning portal.

The Dictionary at the end of this consent defines words and expressions for the purposes of this determination.

PAUL JOHNSTON
MANAGER DEVELOPMENT ASSESSMENTS
Person on behalf of the consent authority

For further information, please contact Dhawala Ananda / Senior Planner

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Terms and Reasons for Conditions

Under section 88(1)(c) of the EP&A Regulation, the consent authority must provide the terms of all conditions and reasons for imposing the conditions other than the conditions prescribed under section 4.17(11) of the EP&A Act. The terms of the conditions and reasons are set out below.

General Conditions

1	Erection of signs - This section applies to a development consent for development involving building work, subdivision work or demolition work. - It is a condition of the development consent that a sign must be erected in a prominent position on a site on which building work, subdivision work or demolition work is being carried out— - showing the name, address and telephone number of the principal certifier for the work, and - showing the name of the principal contractor, if any, for the building work and a telephone number on which the principal contractor may be contacted outside working hours, and - stating that unauthorised entry to the work site is prohibited. - The sign must be— - maintained while the building work, subdivision work or demolition work is being carried out, and - removed when the work has been completed. - This section does not apply in relation to— - building work, subdivision work or demolition work carried out inside an existing building, if the work does not affect the external walls of the building, or - Crown building work certified to comply with the Building Code of Australia under the Act, Part 6.
	Condition reason: Prescribed condition under section 70 of the Environmental Planning and Assessment Regulation 2021.
2	Approved plans and supporting documentation Development must be carried out in accordance with the following approved plans and documents, except where the conditions of this consent expressly require otherwise. Approved Plans: Site Plans; Titled – Orange South 8B & 9B 2 X 5MW Solar Farms; Sheet numbers – G-0100, G-0310, G-0400, G-2100, G-2200, C-4300, C-4310, C-5310, C-5300, C-6300, C-7300, E-3400, E-

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	4300, E-5300; revised plans date – 17/04/2025; Prepared by ITP Renewables. Approved documents: Statement of Environmental Effects prepared by Zenith Town Planning, dated 26/05/2025; In the event of any inconsistency between the approved plans and documents, the approved Plans / Documents prevail. In the event of any inconsistency with the approved plans and a condition of this consent, the condition prevails. Condition reason: To ensure all parties are aware of the approved plans and supporting documentation that applies to the development.
3	Development and subdivision works requirements All of the following conditions are to be at the full cost of the developer and to the requirements and standards of the Orange City Council Development and Subdivision Code, unless specifically stated otherwise. All engineering work required by the following conditions is to be completed prior to the issue of an Occupation or Subdivision Certificate, unless stated otherwise. Condition reason: To comply with Council's Development and Subdivision Code.
4	National Construction Code All building work must be carried out in accordance with the provisions of the National Construction Code. Condition reason: To ensure compliance with relevant statutory requirements.
5	Duration of Operation and Solar Panel Design Compliance The solar farms (maximum capacity of 5.0 MW at each PEG system) is to operate for a maximum period of 35 years from the date of occupation. The applicant is required to provide written confirmation to Council within 7 days of the solar farm operation commencing, advising of the date on which the solar farm operation has commenced. In accordance with the details set-out, the design of the solar panel array is to comply with the following: The maximum height of any solar panel installed (at maximum tilt) at the subject site is 1.0m. Condition reason: To ensure the solar farm operates within the approved timeframe and design limits.

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Building Work
Before issue of a construction certificate

6	Bush fire attack level design and construction Before the issue of a construction certificate, detailed plans must be submitted to the certifier or Council (where certifier is not applicable) that demonstrate compliance with the section 8.3.5 under the 'Planning for Bush Fire Protection 2019' issued by the NSW Rural Fire Service and compliance with mitigation measures as outlined in section 8.5 of the 'Draft Bush Fire Risk and Operations Plan' accompanied with development application. Condition reason: To ensure the building is suitably constructed for potential bush fire attack.
7	Construction Site Management Plan Before the issue of a Construction Certificate, a construction site management plan must be prepared, and provided to the certifier or Council (where a certifier is not required) . The plan must include the following matters: a. The location and materials for protective fencing and hoardings on the perimeter of the site; b. Location of dedicated washdown areas (located away from drainage lines, stormwater drains and water bodies); c. Provisions for public safety; d. Pedestrian and vehicular site access points and construction activity zones; e. Details of construction traffic management including: i. Proposed truck movements to and from the site; ii. Estimated frequency of truck movements; and iii. Measures to ensure pedestrian safety near the site; f. Details of bulk earthworks to be carried out; g. The location of site storage areas and sheds; h. The equipment used to carry out works; i. The location of a garbage container with a tight-fitting lid; j. Dust, noise and vibration control measures; k. Details of chemical storage and management; l. The location of temporary toilets; m. The working hours; n. Stakeholder/community engagement; o. The protective measures for the preservation of trees on-site and in adjoining public areas including measures in accordance with: i. AS 4970 – Protection of trees on development sites; ii. An applicable Development Control Plan; iii. An arborist's report approved as part of this consent A copy of the construction site management plan must be kept on-site at all times while work is being carried out.

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	Condition reason: To require details of measures that will protect the public, and the surrounding environment, during site works and construction.
8	Waste Management Plan requirements The applicant must submit a waste management plan that describes the nature of wastes to be removed, the wastes to be recycled and the destination of wastes. Any waste stockpile on site during construction is to be located to minimise impact on amenity of neighbouring properties and the public domain. All wastes from the construction phases of this project are to be deposited at a licensed or approved waste disposal site. Condition reason: To ensure waste management practices are undertaken, resource recovery is promoted and local amenity protected during construction site works.
9	Road opening permit required A Road Opening Permit in Accordance with Section 138 of the Roads Act 1993 must be approved by Council prior to a Construction Certificate being issued or any intrusive works being carried out within the public road reserve. Condition reason: To ensure compliance with relevant statutory requirements.
10	Soil and Water Management Plan A Soil and Water Management Plan (SWMP) is to be prepared by a suitably qualified person and submitted to the Certifier for approval prior to the issuing of a Construction Certificate. The management plan is to be in accordance with the Landcom, Managing Urban Stormwater; Soils and Construction Handbook and shall detail both the during construction and post construction controls necessary to maintain the stability of soils on the site and maintain predevelopment water quality. Condition reason: To ensure no substance other than rainwater enters the stormwater system and waterways.
11	Landscaping - amended plan showing landscaping An amended detailed plan showing landscaping must be submitted with an application for a construction certificate. The amended plan must include the following: • Details of all proposed vegetation species • Vegetation planting along the full length of the western boundary and the first 100 metres of the eastern boundary (measured from the southern end), with plantings designed to achieve a minimum 3-metre width and 3-metre height at maturity • Vegetation planting along the full southern boundary, with plantings designed to achieve a minimum 3-metre width and 5-metre height at maturity. In addition, vegetation planting to a minimum width of 1 metre and 5 metres in height at maturity must be provided for a length of 210 metres from the eastern end of the southern boundary • Vegetation planting comprising low-level native shrubs or grasses along the northern

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	boundary to reduce visual impact on the surrounding area - Retention of existing trees located in the north-west and south-west corners of the development site. - Fencing along site boundaries, to prevent cattle and sheep from grazing on and damaging the landscaping. and must submitted to, and approved by Council's Manager Development Assessments prior to the issue of a construction certificate. Condition reason: To ensure a quality rural setting for the development which complements the surrounding environment.										
12	Decommissioning Plan A decommissioning Plan for the solar farms shall be submitted to Council's Manager Development Assessments for approval prior to the issue of a construction certificate. The decommissioning plan shall, as a minimum, detail the process for removing infrastructure from the site including timeframes, waste minimisation and recycling strategies to minimise waste going to landfill (including opportunities to reuse and/or recycle solar panels and other best practice waste minimisation actions available), the expected means of disposal of the waste; and proposed remediation and rehabilitation of the site as part of returning the site to owners of the land and completing the obligations under the lease of land. The decommissioning must comply with the following table: <table border="1"> <thead> <tr> <th>Feature</th><th>Objective</th></tr> </thead> <tbody> <tr> <td>Development site (as a whole)</td><td>Safe, stable and non-polluting</td></tr> <tr> <td>Solar farm infrastructure and all ancillary infrastructure</td><td>To be decommissioned and removed</td></tr> <tr> <td>Land use</td><td>Restore land capability to pre-existing agricultural use, unless the Council agrees otherwise</td></tr> <tr> <td>Community</td><td>Ensure public safety</td></tr> </tbody> </table> This plan shall form part of the terms of the lease of the land. Evidence shall be provided to Council to demonstrate that the decommissioning plan is a binding condition on the lease of the land for the purposes of the solar farm. Condition reason: To ensure the site is safely restored and managed at the end of the solar farm's operational life.	Feature	Objective	Development site (as a whole)	Safe, stable and non-polluting	Solar farm infrastructure and all ancillary infrastructure	To be decommissioned and removed	Land use	Restore land capability to pre-existing agricultural use, unless the Council agrees otherwise	Community	Ensure public safety
Feature	Objective										
Development site (as a whole)	Safe, stable and non-polluting										
Solar farm infrastructure and all ancillary infrastructure	To be decommissioned and removed										
Land use	Restore land capability to pre-existing agricultural use, unless the Council agrees otherwise										
Community	Ensure public safety										
13	Farm Management Plan Prior to the issue of a Construction Certificate, a detailed Farm Management Plan must be prepared and submitted to the satisfaction of Council's Manager Development Assessments. The Plan is to address, at a minimum: The management of cattle and/or sheep grazing around the solar arrays, and										

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- The irrigation strategy for the proposed landscaping.

Condition reason: To manage the land use of both the solar farm and agricultural practices.

Before building work commences

14	Cadia Road vehicle access construction requirements
	Prior to the commencement of any onsite construction work, the following site access improvements are to be constructed at the proposed intersection with Cadia Road to the satisfaction of Orange City Council as the roads authority under a Road Opening Permit process: • Provide an access driveway generally in conformance with Figure 7.4 of Austroads Guide to Road Design Part 4, with a bitumen seal extending at least 30m from the Cadia Road edge of pavement, and either a 2m wide by 100mm deep heavy-duty concrete dish drain or 375mm culvert and headwalls for the full width of the bitumen sealed splay. • The intersection works are to be designed and constructed for the posted speed limit at this location and be able to accommodate up to a 26m B-Double. • Truck warning signs (W5-22 Size B) with distance plates (W8-5 Size B) under are to be installed 300m in advance of the site access in both directions on Cadia Road, and are to be removed after completion of construction. Provide details of proposed signage and locations for Orange City Council concurrence as part of the road works design review. • Details of any ancillary works are to be provided including (but not limited to) line marking, drainage transitions, batter slopes, vegetation removal, services relocation, and road reserve widening acquisition. • Safe Intersection Sight Distance (SISD) requirements as outlined in Austroads Guide to Road Design Part 4A and relevant TfNSW Supplements to Austroads is to be provided and maintained in both directions at the site access intersection. Condition reason: To comply with Orange City Council Development and Subdivision Code
15	Construction certificate required
	A construction certificate must be obtained from Council or an accredited certifier at least two (2) days prior to any building or ancillary work commencing. Where the construction certificate is obtained from an accredited certifier, the determination and all appropriate documents must be notified to Council within seven (7) days of the date of determination.
	Condition reason: To ensure compliance with Section 6.7 of the Environmental Planning and Assessment Act 1979, and Part 3 of the Environmental Planning and Assessment (Development Certification and Fire Safety) Regulation 2021.

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16	Appoint PC Appoint Principal Certifier. The person having the benefit of the development consent and a construction certificate shall: (a) Appoint a Principal Certifier and notify Council of the appointment (if Council is not appointed) and, (b) Notify Council of their intension to commence the erection of the building (at least two (2) day's notice is required) The Principal Certifier shall determine when inspections and compliance certificates are required. Condition reason: To ensure compliance with relevant statutory requirements.
17	No commencement until details received The construction works the subject of this development consent MUST NOT be commenced until: (a) Detailed plans/specifications of the building have been endorsed with a construction certificate by: (i) the Council, or (ii) a registered certifier, and (b) The person having the benefit of the development consent: (i) has appointed a Principal Certifier, and (ii) has notified the Council of the appointment, and (c) The person having the benefit of the development consent has given at least two (2) day's notice to the Council of the person's intention to commence the erection of the building; and (d) Builder's name and licence number has been supplied to Council or the Principal Certifier; or (e) Owner Builder's permit issued by Department of Fair Trading to be supplied to Council or the Principal Certifier; and (f) Home Building Compensation Fund (HBCF) has been paid and a copy of the

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	Certificate supplied to Council or the Principal Certifier; and (g) A sign has been erected onsite in a prominent position containing the information prescribed by Clause 98A(2) and (3) of the EP&A Regulations, being the name, address and telephone number of the Principal Certifier for the work, name of the principal contractor for the work and telephone number on which that person may be contacted outside working hours, and stating that unauthorised entry to the site is prohibited. This sign must be maintained onsite while work is being carried out and removed when the work has been completed. Condition reason: To ensure compliance with relevant statutory requirements.
18	Onsite toilet A temporary onsite toilet is to be provided and must remain throughout the project or until an alternative facility meeting Council's requirements is available onsite. Condition reason: To provide adequate public health and safety measures.
19	Department of Planning and Environment-Water - TC-G001 Before commencing any proposed controlled activity on waterfront land, an application must be submitted to Department of Planning and Environment-Water, and obtained, for a controlled activity approval under the Water Management Act 2000. Condition reason: To ensure compliance with relevant statutory requirements.
20	Department of Planning and Environment-Water - TC-G004 A. This General Terms of Approval (GTA) only applies to the proposed controlled activity described in the plans and associated documents found in Schedule 1, relating to Development Application DA 771/2024(1) provided by Council to Department of Planning and Environment-Water. B. Any amendments or modifications to the proposed controlled activity may render the GTA invalid. If the proposed controlled activity is amended or modified, Department of Planning and Environment-Water, must be notified in writing to determine if any variations to the GTA will be required. SCHEDULE 1 The plans and associated documentation listed in this schedule are referred to in general terms of approval (GTA) issued by Department of Planning and Environment-Water for integrated development associated with IDAS-2025-10039 as provided by Council: - Statement of Environmental Effects, Solar Farm, prepared by Zenith Town Planning dated 19 December 2024 - Site plans 2 x 5 MW Solar Farms, Sheet No.G-0000 to E-5300 prepared by ITP Renewables dated 17 April 2025

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	Draft Bush Fire Risk and Operations Plan, prepared by BEMC dated 12 December 2024
	Condition reason: To ensure compliance with relevant statutory requirements.
21	Department of Planning and Environment-Water - TC-G005 A. The application for a controlled activity approval must include the following plan(s): - Site plans - shall define the waterfront land boundary from the top of the watercourse bank - Detailed civil construction plans - Construction streamworks plans - shall be consistent with the Managing Urban Stormwater: Soils and - Construction - Volume 1 (https://www.environment.nsw.gov.au/publications/managing-urban-stormwater-soilsand-construction-volume-1) - Construction watercourse crossing design plans - shall include a Site Management Plan that details the construction sequence, duration of works and details how elevated flows events will be managed - Soil and water management plan - Construction detailed drainage plans - Construction detailed bulk earthworks plans B. The plan(s) must be prepared in accordance with Department of Planning and Environment-Water 's guidelines located on the website - https://www.dpie.nsw.gov.au/water/licensing-and-trade/approvals/controlled-activity-approvals/what/guidelines
	Condition reason: To ensure compliance with relevant statutory requirements.
22	Soil Erosion and Sediment Control Soil erosion control measures shall be implemented on the site as per the Soil and Water Management Plan (SWMP) approved by the Council.
	Condition reason: To prevent soil erosion and protect water quality during site works.
23	Access Track Compatibility Prior to the commencement of works for the solar farm, the access track and any associated infrastructure must be designed and constructed so as not to encroach on the approved shed and carport footprint of the rural dwelling. The final access arrangement must be modified, to the satisfaction of Council to ensure both the approved dwelling development and the solar farm infrastructure can operate independently and without conflict.
	Condition reason: To avoid conflict between the approved rural dwelling development and the proposed solar farm infrastructure and to ensure that both developments can coexist without operational or structural interference.

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During building work

24	Tree protection during work
	While site works are being carried out, all required tree protection measures for the existing trees located in the north-west and south-west corners of the development site must be implemented and maintained in good condition for the duration of the works.
	This includes maintaining adequate soil grades and ensuring all machinery, builders refuse, spoil and materials remain outside tree protection zones.
	Condition reason: To protect trees during the carrying out of site work.
25	Adjustments to utility services
	Any adjustments to existing utility services that are made necessary by this development proceeding are to be at the full cost of the developer.
	Condition reason: To comply with Council's Development and Subdivision Code.
26	Driveway and parking areas
	All vehicle access driveways and parking areas are to be designed for all weather access and expected loading conditions (provided however that the minimum pavement depth for gravel roadways is 200mm).
	Condition reason: To comply with Council's Development and Subdivision Code.
27	Hours of work - construction
	All construction work on the site is to be carried out between the hours of 7am and 6pm Monday to Friday inclusive, 7am to 5pm Saturdays, and with no works proposed on Sundays and Public Holidays. Written approval must be obtained from the Chief Executive Officer of Orange City Council to vary these hours.
	Condition reason: To ensure compliance with relevant statutory requirements.
28	Protection of the Environment Operations Act - material delivery
	All materials onsite or being delivered to the site are to be contained within the site. The requirements of the <i>Protection of the Environment Operations Act 1997</i> are to be complied with when placing/stockpiling loose material, or when disposing of waste products, or during any other activities likely to pollute drains or watercourses.
	Condition reason: To protect waterways from pollution by stockpiled or placed construction materials.
29	Unexpected finds - contamination

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	In the event of an unexpected find during works such as (but not limited to) the presence of undocumented waste, odorous or stained soil, asbestos, structures such as underground storage tanks, slabs, or any contaminated or suspect material, all work onsite must cease immediately. The beneficiary of the consent must discuss with Council the appropriate process that should be followed therein. Works onsite must not resume unless the express permission of Council's Director Development Services is obtained in writing. Condition reason: To ensure any unexpected finds of contamination are notified to Council and managed appropriately.
30	Landscaping Establishment and Maintenance The required landscaping must be the first works undertaken on the site following the issue of the construction certificate to allow plants to establish as early as possible. During this period, construction personnel must monitor, maintain, and water the landscaping on a weekly basis. Any plants that die must be replaced on a like-for-like basis. Condition reason: To ensure the successful establishment of landscaping and maintain the visual amenity of the site.
31	Biosecurity and Weed Management The development must be carried out in accordance with the approved Biosecurity Management Plan, prepared by edp Renewables, dated August 2025, including implementation of awareness and training programs, access control procedures, vehicle hygiene protocols, record-keeping, and targeted weed management. Condition reason: To minimise biosecurity risks and ensure effective weed management during the operation of the development.
32	Noise Management and Community Consultation 1. The approved Construction Site Management Plan must be implemented and complied with for the full duration of the construction period. 2. All plant must be operated conservatively, with no over-revving of motors/engines, and shut down when not in use. Only plant with quiet operation performance may be used. 3. Multiple noisy plant or equipment operating simultaneously is to be avoided, and impact noise minimised. 4. Vehicles must be fitted with broadband reversing alarms instead of high-frequency alarms. Signage must be displayed at the site entrance to advise drivers to minimise noise when entering and exiting the site. 5. All drivers and contractors must receive training to ensure awareness of noise-sensitive receivers and their obligation to minimise noise-generating activities during construction. 6. The use of project related community consultation forums to notify residential receivers of project progress, upcoming potentially noise generating works, including the duration and nature are to be conducted.

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Condition reason: To minimise construction noise impacts and ensure timely communication with the community.

Before issue of an occupation certificate

33	Completion of works on public land and services Certification from Orange City Council is required to be submitted to the Principal Certifying Authority prior to the issue of an Occupation Certificate stating that all works relating to connection of the development to Council assets, works on public land, works on public roads, and stormwater have been carried out in accordance with the Orange City Council Development and Subdivision Code and the foregoing conditions. Condition reason: To comply with Council's Development and Subdivision Code.
34	Completion of works relating to road opening permit A Road Opening Permit Certificate of Compliance is to be issued for the works by Council prior to any Occupation Certificate being issued for the development. Condition reason: To ensure compliance with relevant statutory requirements.
35	Erosion and sediment control - soil to be stabilised Prior to the issuing of an occupation certificate, soil on the site shall be stabilised to prevent erosion and the pollution of waters by uncontrolled sediment. Condition reason: To prevent site erosion and sediment loss, and protect waterways from sediment pollution.
36	Landscaping - to be installed and maintained in accordance with approved plans Landscaping must be installed in accordance with the approved plans and must be permanently maintained to the satisfaction of Councils Manager Development Assessments. Condition reason: To ensure a quality urban design for the development which complements the surrounding environment.
37	Litter management plan Prior to the issue of an occupation certificate, the applicant shall submit a Litter Management Plan for the approval of Council's Manager Building and Environment. The Litter Management Plan shall detail the commitments required to be undertaken by the operator of the premises during routine operations to reasonably manage the pick-up of rubbish from the site, the surrounding street network and open spaces. Condition reason: To ensure litter generated from the operation of food premises is

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	appropriately managed.
38	On-Site Firefighting Water Supply Prior to the issue of an occupation certificate, a rainwater tank with a minimum capacity of 10kL, equipped for firefighting purposes, must be installed within the fenced area of the solar farm and filled to capacity with water. The tank must be permanently maintained at not less than 90% capacity. A static water supply notice must be attached to the front gate of the development site. Condition reason: To ensure adequate on-site water supply is available for firefighting purposes.
39	No use or occupation without occupation certificate No person is to use or occupy the building or alteration that is the subject of this approval with the prior issuing of an occupation certificate. Condition reason: To ensure compliance with the Building Code of Australia.

Occupation and ongoing use

40	Essential Energy Comments • If the proposed development changes, there may be potential safety risks and it is recommended that Essential Energy is consulted for further comment; • Any existing encumbrances in favour of Essential Energy (or its predecessors) noted on the title of the above property should be complied with; • Any activities in proximity to electrical infrastructure must be undertaken in accordance with the latest industry guideline currently known as ISSC 20 Guideline for the Management of Activities within Electricity Easements and Close to Infrastructure; • Prior to carrying out any works, a "Dial Before You Dig" enquiry should be undertaken in accordance with the requirements of Part 5E (Protection of Underground Electricity Power Lines) of the Electricity Supply Act 1995 (NSW); and • It is the responsibility of the person/s completing any works around powerlines to understand their safety responsibilities. SafeWork NSW (www.safework.nsw.gov.au) has publications that provide guidance when working close to electricity infrastructure. These include the Code of Practice – Work near Overhead Power Lines and Code of Practice – Work near Underground Assets. Condition reason: To ensure compliance with relevant statutory requirements.
41	Outdoor Lighting Any outdoor lighting must be designed, installed, and operated in accordance with AS/NZS

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	4282:2023 – Control of the Obtrusive Effects of Outdoor Lighting. Condition reason: To minimise light spill and protect the amenity of nearby sensitive receivers.
42	Maximum Electricity Generation Capacity The development comprises two PEG system solar farms, each with a maximum capacity of 5 MW (AC). Each PEG system must not exceed 5 MW (AC) at any time. Condition reason: To ensure the development operates within the approved generation capacity.
43	Duration of Operation This consent allows the electricity generating works (solar farm) to operate for a maximum period of 35 years from the date of occupation. Condition reason: To ensure compliance with relevant statutory requirements.
44	Landscape Monitoring and Maintenance Landscaping shall be permanently maintained in accordance with the approved plans. Additionally, a 24-month landscape monitoring period must commence, upon the issue of an occupation certificate. During this period, the following minimum requirements apply: • Fortnightly watering of all landscaping; • Bi-annual mulching of all landscaping; • Quarterly inspections of all landscaping to identify sick or dead plants. Any damaged or deteriorating plants identified during inspections must be replaced like-for-like within 7 days of the inspection. Council officers, or officers appointed by Council, may inspect the landscaping at any time. Condition reason: To ensure the successful establishment and ongoing maintenance of landscaping and the protection of visual amenity.
45	Site Decommissioning and Rehabilitation Within 3 months of the cessation of operations, the site must be rehabilitated to the satisfaction of Council, in accordance with the approved Decommissioning Plan. Documentary evidence from a suitably qualified person must be provided to Council to confirm that the development has been successfully decommissioned to the required standards. Condition reason: To ensure the site is safely rehabilitated and restored.
46	Bushfire Emergency Management and Operations The development must at all times be operated in accordance with the endorsed Bushfire

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Risk and Operations Plan and the Bushfire Emergency Management and Evacuation Plan, both prepared by BEMC.

The development must be regularly maintained to ensure compliance with the requirements of Section 8.3.5 of *Planning for Bush Fire Protection 2019*.

Condition reason: To ensure ongoing bushfire preparedness, emergency response, and safe operation of the development in accordance with current bushfire protection requirements.

General advisory notes

This consent contains the conditions imposed by the consent authority which are to be complied with when carrying out the approved development. However, this consent is not an exhaustive list of all obligations which may relate to the carrying out of the development under the EP&A Act, EP&A Regulation and other legislation. Some of these additional obligations are set out in the [Conditions of development consent: advisory notes](#). The consent should be read together with the *Conditions of development consent: advisory notes* to ensure the development is carried out lawfully.

The approved development must be carried out in accordance with the conditions of this consent. It is an offence under the EP&A Act to carry out development that is not in accordance with this consent.

Building work or subdivision work must not be carried out until a construction certificate or subdivision works certificate, respectively, has been issued and a principal certifier has been appointed.

A document referred to in this consent is taken to be a reference to the version of that document which applies at the date the consent is issued, unless otherwise stated in the conditions of this consent.

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Dictionary

The following terms have the following meanings for the purpose of this determination (except where the context clearly indicates otherwise):

Approved plans and documents means the plans and documents endorsed by the consent authority, a copy of which is included in this notice of determination.

AS means Australian Standard published by Standards Australia International Limited and means the current standard which applies at the time the consent is issued.

Building work means any physical activity involved in the erection of a building.

Certifier means a council or a person that is registered to carry out certification work under the *Building and Development Certifiers Act 2018*.

Construction certificate means a certificate to the effect that building work completed in accordance with specified plans and specifications or standards will comply with the requirements of the EP&A Regulation and *Environmental Planning and Assessment (Development Certification and Fire Safety) Regulation 2021*.

Council means ORANGE CITY COUNCIL.

Court means the Land and Environment Court of NSW.

EPA means the NSW Environment Protection Authority.

EP&A Act means the *Environmental Planning and Assessment Act 1979*.

EP&A Regulation means the *Environmental Planning and Assessment Regulation 2021*.

Independent Planning Commission means Independent Planning Commission of New South Wales constituted by section 2.7 of the EP&A Act.

Occupation certificate means a certificate that authorises the occupation and use of a new building or a change of building use for an existing building in accordance with this consent.

Principal certifier means the certifier appointed as the principal certifier for building work or subdivision work under section 6.6(1) or 6.12(1) of the EP&A Act respectively.

Site work means any work that is physically carried out on the land to which the development the subject of this development consent is to be carried out, including but not limited to building work, subdivision work, demolition work, clearing of vegetation or remediation work.

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Stormwater drainage system means all works and facilities relating to:

- the collection of stormwater,
- the reuse of stormwater,
- the detention of stormwater,
- the controlled release of stormwater, and
- connections to easements and public stormwater systems.

Strata certificate means a certificate in the approved form issued under Part 4 of the *Strata Schemes Development Act 2015* that authorises the registration of a strata plan, strata plan of subdivision or notice of conversion.

Sydney district or regional planning panel means Western Regional Planning Panel.

STATEMENT OF ENVIRONMENTAL EFFECTS

Orange South 8B & 9B Solar Farm + BESS



 Chris Grose/Beyond Zero Emissions

26 May 2025 Rev A

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Attachment 3 Statement of Environmental Effects (redacted)

Project 1322 Orange South 8B & 9B Solar Farm + BESS

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Project 1322 Orange South 8B & 9B Solar Farm + BESS

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Project 1322 Orange South 88 & 98 Solar Farm + BESS

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Project details

Project number	1322
Project title	Orange South 88 & 98 Solar Farm + BESS
Document title	Statement of Environmental Effects
Property	Lot 5 DP 6173 No. 140 Cadia Road, Springside, NSW
Client	
Author	
Company	Zenith Town Planning Pty Ltd PO Box 591 Moruya NSW 2537 11 624 467 349
ABN	11 624 467 349
Qualifications	Bachelor of Arts (Honours), UNSW Master of Urban & Regional Planning, USyd
	  
Version	Draft: 13 December 2024 Final: 19 December 2024 Draft Rev A: 22 May 2025 Final Rev A: 26 May 2025

Report title: This report should be cited as *Orange South 88 & 98 Solar Farm + BESS Statement of Environmental Effects*, prepared by Zenith Town Planning Pty Ltd.

Acknowledgements: This report has been prepared by Zenith Town Planning Pty Ltd using information supplied by and sourced from local, NSW and Australian government agencies.

Ownership: This report is the intellectual property of and Zenith Town Planning Pty Ltd.

Disclaimer: The contents of this report are only to be used for the express purpose of supporting the respective project described above. All care is taken to ensure the accuracy and veracity of this information, however, no responsibility is accepted for the interpretation of that information by end users.

Authorship: The author of this report, , is a director of Zenith Town Planning Pty Ltd and has been practicing in the field of urban and regional planning since 1994. He specialises in assessing development proposals for the development of regional scale renewable energy, waste management and extractive industry projects. This report has been prepared in full by the author without the assistance of AI.

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Project 1322 Orange South 8B & 9B Solar Farm + BESS

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TOWN PLANNING**EXECUTIVE SUMMARY**

This Statement of Environmental Effects supports an application to Orange City Council to develop a solar farm and battery energy storage system (BESS) at Lot 5 DP 6173 No. 140 Cadia Road, Springside, referred to as the Orange South 8B & 9B Solar Farm + BESS NSW. The land is located approximately 5.5 kilometres south-west of Orange town centre. The proponent is . The application is for regionally significant development that needs consent and is to be determined by the Western Regional Planning Panel.

is proposing to construct two PEG System solar farms with an AC output of 5.0 MW per site. The 8B system will occupy 6.53 hectares at the western end and the 9B system is to occupy 6.48 hectares at the centre of the property that has a total site area of 25.75 hectares. There are to be approximately 16,000 solar modules per system supported by inverter stations and BESS enclosed within a security fence and partially within landscape screening. Access is to be via an existing driveway off Cadia Road into the project site.

During the construction phase, there is expected to be approximately 50 personnel working on-site, with around 30 personnel present on-site at any one time. The typical working hours will be from 7.00am to 4.00pm, Monday through Friday. The construction phase for both sites is expected to take approximately 4 months in total. Once operational the site will be unmanned and maintenance would be carried out quarterly, or as required, by a crew of 2 to 3 people.

The operational life of the solar farms is anticipated to be approximately 35 years, depending on various factors. The solar panels and related infrastructure will be decommissioned and removed upon cessation of operations. This is likely to occur within two years of the end of the project. The site can then be returned to the pre-development land use or as agreed upon.

The site selection process has involved liaison with Orange City Council officers; identification of environmental and topographical constraints; existence of necessary infrastructure including accessways, power lines and sub-stations; proximity to the settlement of Orange to enable supply of power direct to the township; sufficient cleared land area; willingness of the land owner to develop the property and enter lease arrangements to facilitate the solar farm; and the availability of solar resources.

It is integrated development as a controlled activity approval may be required to be issued under section 4.46 of the *Environmental Planning and Assessment Act 1979* for works on or over a mapped watercourse which is classified as a 1st order stream.

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The land is zoned C3 Environmental Management under *Orange LEP 2011*. The development is defined as *electricity generating works* which means a building or place used for the purpose of making or generating electricity - a use permitted with consent zone under provisions of *Orange LEP 2011* and *SEPP (Transport and Infrastructure) 2021*

The township of Orange is mapped as a 'regional city' in *SEPP (Transport and Infrastructure) 2021*. Impacts on scenic quality and landscape character have been assessed in accordance with that state policy. These impacts will be mitigated or minimized by the proposed vegetation screening of the solar array.

The project site is not identified in *Orange Local Housing Strategy* as an urban release area for the expansion of Orange township. The proposed development will not interfere with or prevent the planned growth of Orange.

Although not located within the Central West Renewable Energy Zone, the proposal is not inconsistent with the planning priorities, goals and actions of the *Central West and Orana Regional Plan 2041* and the *Orange Local Strategic Planning Statement 2020*.

Key issues are potential impacts on biodiversity, management of water issues, access to the site and traffic impacts, the effects of noise emissions, impacts on agricultural uses, and impacts on landscape and scenic amenity. The likely impacts of the development have been considered and measures recommended to avoid, minimise or mitigate these impacts.

The use is suited to a rural location due to the need for a large land area and the ability to connect to the local electrical transmission network. The addition of a solar farm to the semi-rural area of Orange would not detract unreasonably from local amenity or the natural environment.

Electricity generated by the system will be directed to the settlement of Orange via existing electrical infrastructure to contribute to the supply of electricity for use by households and businesses. The solar farm will generate community economic benefits through local employment opportunities during the planning and construction phases as well as maintenance and inspection jobs once operational. The land may continue to be used for agriculture and returned to its current condition once the facility is decommissioned. The cumulative impacts of the proposed development are minor as the proposal is a small town-scale facility. Other solar farms have been developed in neighbouring areas but there have been no other solar farm proposals in the vicinity of the project site. There is sufficient capacity in the electricity grid system to accommodate the Orange South 8B & 9B Solar Farm + BESS as evidenced by contractual arrangements made by EDPR Australia with Essential Energy to connect to infrastructure.

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Project 1322 Orange South 8B & 9B Solar Farm + BESS

1. INTRODUCTION

1.1 Overview

The purpose of this Statement of Environmental Effects is to support an application to Orange City Council to develop a solar farm and battery energy storage system (BESS) at Lot 5 DP 6173 No. 140 Cadia Road, Springside, referred to as the Orange South 8B & 9B Solar Farm + BESS. The application is for regionally significant development that needs consent and is to be determined by the Western Regional Planning Panel.

The purpose of this report is to assist Council's assessment of the proposal against the matters for consideration listed in section 4.15 of the *Environmental Planning and Assessment Act 1979*.

It is integrated development as a controlled activity approval may be required to be issued under section 4.46 of the *Environmental Planning and Assessment Act 1979* for works on or over a mapped watercourse.

Table 1 below is a checklist of this application against relevant sections of legislation that may generate the need for a separate approval.

Table 1: Integrated development checklist

Act	Provision	Approval	The proposal	Integrated (Y/N)
Coal Mine Subsidence Compensation Act 2017	s 22	approval to alter or erect improvements, or to subdivide land, within a mine subsidence district	The land is not designated a mine subsidence district	No
Fisheries Management Act 1994	s 144	aquaculture permit	It is not proposed to carry out aquaculture	No
	s 201	permit to carry out dredging or reclamation work	It is not proposed to carry out dredging or reclamation work	No
	s 205	permit to cut, remove, damage or destroy marine vegetation on public water land or an aquaculture lease, or on the foreshore of any such land or lease	It is not proposed to remove, damage or destroy marine vegetation	No

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Act	Provision	Approval	The proposal	Integrated (Y/N)
	s 219	permit to— (a) set a net, netting or other material, or (b) construct or alter a dam, floodgate, causeway or weir, or (c) otherwise create an obstruction, across or within a bay, inlet, river or creek, or across or around a flat	It is not proposed to carry out any works across or within a bay, inlet, river or creek, or across or around a flat	No
Heritage Act 1977	s 58	approval in respect of the doing or carrying out of an act, matter or thing referred to in s 57(1)	The application does not relate to an interim heritage order or an item listed on the State Heritage Register	No
Mining Act 1992	ss 63, 64	grant of mining lease	The development does not involve an application for a mining lease	No
National Parks and Wildlife Act 1974	s 90	grant of Aboriginal heritage impact permit	Due diligence indicates that there is no item or place of Indigenous significance and an application is not being made for a permit	No
Petroleum (Onshore) Act 1991	s 16	grant of production lease	The development does not involve an application for a petroleum production lease	No
Protection of the Environment Operations Act 1997	ss 43(a), 47 and 55	Environment protection licence to authorise carrying out of scheduled development work at any premises.	The application does not involve scheduled development	No
	ss 43(b), 48 and 55	Environment protection licence to authorise carrying out of scheduled activities at any premises (excluding any activity described as a "waste activity" but including any activity described as a "waste facility").	The application does not involve scheduled activities	No
	ss 43(d), 55 and 122	Environment protection licences to control carrying out of non-scheduled activities for the purposes of regulating water pollution resulting from the activity.	The application does not involve non-scheduled activities that would generate water pollution	No

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Project 1322 Orange South 8B & 9B Solar Farm + BESS

Act	Provision	Approval	The proposal	Integrated (Y/N)
Roads Act 1993	s 138	consent to— (a) erect a structure or carry out a work in, on or over a public road, or (b) dig up or disturb the surface of a public road, or (c) remove or interfere with a structure, work or tree on a public road, or (d) pump water into a public road from any land adjoining the road, or (e) connect a road (whether public or private) to a classified road	There are no works proposed or required to be undertaken on a classified road	No
Rural Fires Act 1997	s 100B	Authorisation under section 100B in respect of bush fire safety of subdivision of land that could lawfully be used for residential or rural residential purposes or development of land for special fire protection purposes	The application does not involve subdivision for a residential use or a special fire protection purpose	No
Water Management Act 2000	ss 89, 90, 91	water use approval, water management work approval or activity approval under Part 3 of Chapter 3	Part of the proposed development is located over a mapped watercourse that is a 1 st order stream under the Strahler system. An application for a controlled activity approval is necessary. The application does not involve a water use approval or water management work approval	Yes

1.2 Scope of the report

This Statement has been prepared having regard to information that has been sourced from the Council's website, the NSW legislation website, SIX Maps, the website of the Department of Planning & Environment, the Planning Portal and SEED (Sharing and Enabling Environmental Data). All information referenced in this Statement has been sourced from publicly available documents or websites and from expert reports produced to support the application that are listed in Table 2. A Property Report sourced from the Planning Portal is appended as Attachment A.

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This statement is accompanied by the documents listed in Table 2 which support the development application and have been submitted under separate cover.

Note that the findings and recommendations of expert reports that accompany the application are summarised in this Statement. Further information about these matters should be sought from the original documents.

Table 2: Development application documents

Plan/Doc No.	Plan/Doc Title	Prepared by	Issue	Date
22113	Orange South 8B & 9B Solar Farm + BESS Drawing Pack	ITP Renewables	various	various
MAC180781-27RP1V1	Noise Assessment	Muller Acoustic Consulting Pty Ltd	-	10/12/2024
240856.01FA	Traffic and parking Impact Statement	McLaren Traffic Engineering	2	10/12/2024
-	Water Assessment	EDPR Australia Pty Ltd	2	06/12/2024
-	Glare and Glint Study	ITP Renewables	1	09/12/2024
-	Waste and Decommissioning Assessment	EDPR Australia Pty Ltd	1	22/10/2024
-	Fire and Hazard Assessment	EDPR Australia Pty Ltd	2	22/05/2025
-	Preliminary Site Contamination Report	EDPR Australia Pty Ltd	1	22/05/2025
-	Biodiversity Inspection Report	Red-Gum Environmental Consulting Pty Ltd	-	16/10/2024
1322	Visual Impact Assessment	Zenith Town Planning Pty Ltd	-	26/11/24
242105	Draft Bushfire Risk and Operations Plan	Bushfire Emergency Management Consultancy	4	12/12/24
212104	Draft Bushfire Emergency Management & Evacuation Plan	Bushfire Emergency Management Consultancy	4	12/12/24

1.3 The proponent

The proponent of the project is Based in with an office in has a growing portfolio of renewable developments across regional Australia, specialising in both large and town-scale solar farms and BESS projects designed to match current and future electricity demand.

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which is headquartered in and has a pan-regional presence with approximately 1.3 GWp of committed solar capacity. is part of , a global leader in the renewable energy sector with more than 15 GW installed capacity in 29 markets across Europe, North America, South America and Asia Pacific. is recognised as the world's most sustainable energy utility company with an ambition to be Net-Zero by 2040, under the new Science Based Targets initiative (SBTi) Net-Zero Standard.

1.4 Justification

Solar energy is energy created by the heat and light of the sun. Solar power is produced when this energy is converted into electricity or used to heat air, water, or other substances. Australia has the highest average solar radiation per square metre of any continent in the world. The Commonwealth and NSW Governments have recognized the need to supplement energy derived from fossil fuels with energy generated from renewable sources. Alternative energy supply may be sourced from solar photovoltaic, geo-thermal, solar thermal, wave and tidal action, and wind.

The development of solar photovoltaic power is well underway in NSW and across Australia. This growth in the local solar PV sector continues to provide a significant boost for Australia's regional economy with renewable infrastructure development estimated to create upwards of 2,300 direct jobs plus indirect employment.

According to the Australian Renewable Energy Agency (ARENA), the deployment of household solar PV that generates about 5 kW is expected to continue and at the same time an increase in rooftop solar PV installations on commercial premises generating around (10-100 kW) is expected.

Large scale solar PV is also rapidly expanding in Australia with several solar farms being constructed that will have the capacity to generate over 50MW. The proposed solar farm aims to fill the gap in the mid-sized plants. It will generate 5MW of AC power and contribute to renewable energy supply to supplement electricity generation from coal, oil and gas.

The proposed development is in accordance with relevant objects of the *Environmental Planning and Assessment Act 1979* in that it will assist to generate power to be distributed to residents of NSW thereby promoting the social and economic welfare of the community in a manner that manages and conserves natural resources. The proposed solar farm will further the goals of sustainability, and the orderly and economic use of land.

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2. SITE DESCRIPTION AND CONTEXT

2.1 Description

The site of the proposed Orange South 8B & 9B Solar Farm + BESS is described as Lot 5 DP 6173 No. 140 Cadia Road, Springside, NSW that is 25.75 hectares in area. The project site is shown edged red in the aerial image below.



Figure 1: Aerial image. Source: Google Earth

The site has been used for livestock grazing and horticulture. Structures include a dwelling and sheds located near the south-eastern corner of the site, and a small dam near the northern boundary. The terrain is generally flat with a gentle slope to the east.

The site is cleared of native vegetation other than a few eucalypts in the vicinity of the dwelling and scattered trees near the eastern boundary and near the dam. Horticultural uses comprise an apple orchard that is contained within a timber trellis structure at the south-western corner which will be removed prior to construction.

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Current access to the site is by way of an entrance off Cadia Road at the south-eastern corner of the site. Cadia Road runs parallel to the eastern boundary and is a local road managed by Orange City Council.

An 11KV power line runs north-west to south-east across the eastern end of the site. Gosling Creek runs parallel to Cadia Road on the opposite side to the project site and connects with the Gosling Creek Reservoir to the north.



Plate 1: Looking west across the site from the south-eastern corner

2.2 Context

Orange local government area is located in the central west region of NSW. Its traditional custodians are the Wiradjuri people. The explorer and surveyor Major Thomas Mitchell named the settlement of Orange. It was proclaimed in 1846 and became a municipality in January 1860. The town expanded rapidly during the gold rush years to then become a major producer of crops and maturing into the regional centre of today.

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The project site is located approximately 5.5 kilometres south-west of the township of Orange. The edge of urban residential development is 3.8 kilometres to the north-east and Orange Hospital is located 2.3 kilometres north-east of the site. Surrounding land uses comprise agricultural activities, rural industries and some rural living dwellings. Figure 2 shows the locality of the proposed development and proximity to Orange town centre.

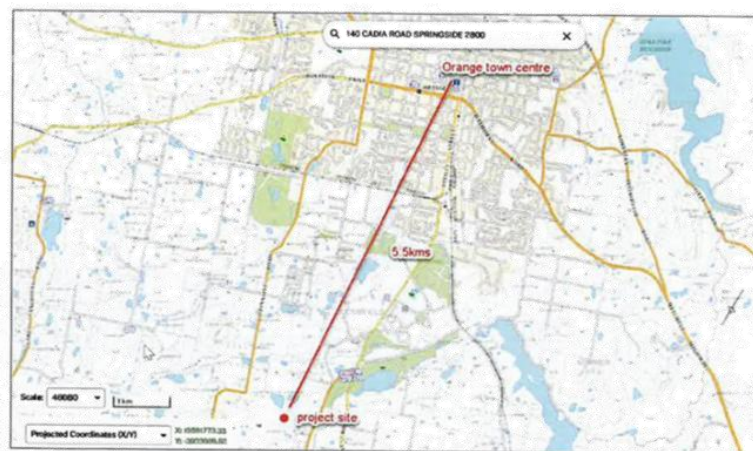


Figure 2: Locality map. Source: SEED

2.3 Climate

Global solar exposure is described by the Australian Bureau of Meteorology as being the total amount of solar energy falling on a horizontal surface. The daily global solar exposure is the total solar energy for a day. Typical values for daily global solar exposure range from 1 to 35 MJ/m² (megajoules per square metre). The values are usually highest in clear sun conditions during the summer, and lowest during winter or very cloudy days. Global solar exposure coincides with seasons – the longer the daylight hours the greater the solar radiation due to the tilt of the earth during summer months.

Solar exposure estimates are important for a wide range of applications, including for agriculture, power generation and solar heating system design and use. This climatic information sourced from the Australian Bureau of Meteorology indicates that the global solar exposure, or solar radiation, is sufficient to support power generation in the proposed location which benefits from the presence of electricity power lines in the vicinity of the project site.

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The mean monthly global solar exposure measured at Orange Agricultural Institute (station number 63254), the closest measuring station to the solar farm site, is given in Table 3 below. The annual mean daily global exposure for 2023 was 17.9MJ/m². This data demonstrates that Orange receives adequate solar energy to harness and convert to clean electricity and the area is suitable for solar electricity generation.

Table 3: Mean monthly global solar exposure at Orange Agricultural Institute, 2023

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Monthly mean	24.6	24.3	17.3	13.4	10.5	9.1	10.4	13.4	19.7	23.3	21.9	26.8

The map below (Figure 3) indicates that Orange receives an average daily solar exposure of 15 to 18 MJ/m² based on readings taken over the 30-year period from 1990 to 2019. This map has been sourced from the Australian Bureau of Meteorology. It confirms that the solar exposure received at Orange is sufficient to generate electrical energy at a commercial scale using photovoltaic panels.

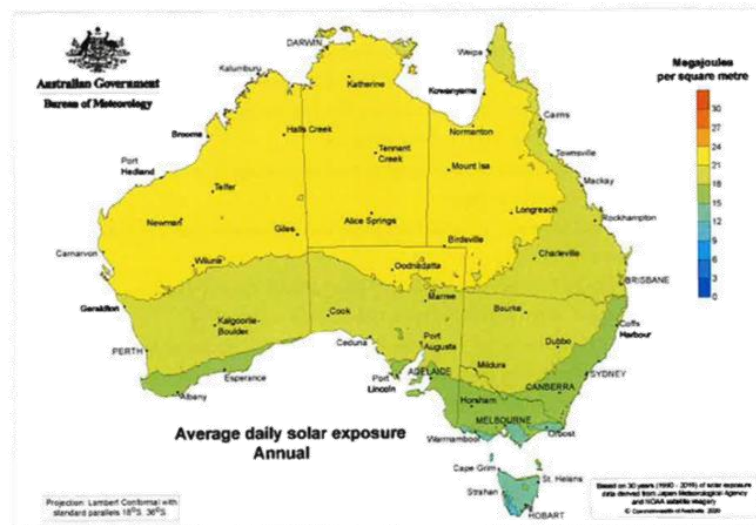


Figure 3: Average daily solar exposure. Source: Australian Bureau of Meteorology

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3. DETAILS OF THE PROPOSED DEVELOPMENT

3.1 Overview

EDPR Australia Pty Ltd is proposing to construct two PEG System solar farms with an AC output of 5.0 MW per site. The 8B system will occupy 6.53 hectares at the western end of the property and the 9B system is to occupy 6.48 hectares in the centre of the property.

The project comprises installation of groups of aligned PV modules on a vertical mounting structure at a height of approximately 1.2 metres above ground level, known as the PEG system. PEG Systems are ground-mounted PV systems that comprise high-density, lightweight solar arrays. The solar panels are installed in fixed, alternating-tilt positions and are oriented in an east-west (EW) direction to maximise energy production throughout the day

The layout of the solar farm is shown on General Arrangement Plan prepared by EDPR Australia. Components of the facility are:

- Approximately 16,000 solar panels per system installed to about 1.2 metres in height on mounting posts that are driven into the ground to a depth of between 0.8 and 2.0 metres,
- A 2.5MW inverter station within each facility that is 3 metres high and each mounted on a 12.2 metre long skid located in the centre of the array,
- Two 2.9 metre high kiosks to convert high and medium voltage to low voltage electricity suitable for connection to the local system,
- Two 2.9 metres high battery energy storage systems each mounted on a 12.1 metre skid located in the centre of the array,
- Access off Cadia Road using an existing driveway and a 4 metre wide access road to temporary car parking and materials laydown areas in the centre of each array,
- Additional power poles at the north-eastern corner and lines to connect to existing power lines,
- A 1.8 metre high security fence topped with three rows of barbed wire to give a total height of 2.3 metres surrounding each array,
- Diversion of the mapped watercourse that traverses the project site to avoid any encroachment of structures or components of the system over the watercourse, and
- Vegetation screening on the western and southern sides of the array and for a distance of 100 metres along the southern section of the eastern side of the array to be located on the outer side of the security fence.

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The operational life of the solar farms is anticipated to be approximately 35 years, depending on various factors. The solar panels and related infrastructure will be decommissioned and removed upon cessation of operations. This is likely to occur within two years of the end of the project. The site can then be returned to the pre-development land use or as agreed.

3.2 Construction and maintenance

During construction, there is expected to be up to 50 personnel with only approximately 30 on site at any one time working from 7.00am to 4.00 pm Monday to Friday. The construction stage is expected to take approximately 4 months for both arrays.

Once operational the site will be unmanned. Maintenance is expected to be carried out quarterly, or as required, by a crew of 2 or 3 people. Maintenance workers would not be required to remain on site. Cleaning of the PV panels would be carried out on an annual basis to maximise the performance of the system. This is done using water brought into the site and a sponge mop.

Construction may be limited to the off-peak tourist season if necessary. It is important to ensure that the timing of construction of the solar farm does not coincide with the period of construction of other infrastructure or local events that attract visitors to avoid additional pressure on visitor accommodation.

3.3 Access and car parking

It is proposed to use an existing driveway off Cadia Road at the south-eastern corner of Lot 5 to gain access to the development area. It will be necessary to construct a new 4 metre wide internal access track from the existing track to the north-eastern corner of the development area. The internal track then heads west parallel to the northern boundary to the location of each inverter station and BESS centre at the northern edge of each array. It is expected that a gravel all-weather road would suffice given that limited vehicles will access the site during and after the construction period.

Temporary materials laydown and car parking areas are to be located adjacent the inverter stations and BESS. It is expected that temporary car parking for up to 24 small vehicles would be needed to cater for the 30 construction workers at the rate of 0.8 spaces per worker.

Car parking spaces will be temporary and not require bitumen sealing. Permanent parking spaces for the maintenance crew are not considered necessary as maintenance activities would be carried out by way of a utility vehicle carrying a water cube and mowing/slashing equipment. The crew will be mobile and moving around and between rows of panels to clean panels and maintain grasses.

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Plate 2: Looking north along Cadia Road from the site entrance



Plate 3: Looking south along Cadia Road from the site entrance

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3.4 Services

Reticulated water and sewer services are not required to be provided to the solar farm as there are no permanent offices or amenities proposed on site. Portaloo's for wastewater disposal (see <https://www.kennards.com.au/site-equipment/showers-toilets.html>) and water supply by way of a portable tank or cart (<https://www.kennards.com.au/site-equipment/water-tank.html>) are proposed to be installed during the construction phase.

3.5 Landscaping

In line with the recommendations of the *Visual Impact Assessment*, it is proposed to screen the facility on the western and southern sides of the array and for a distance of 100 metres along the southern section of the eastern side of the array. Screening is to consist of a 3 metre wide vegetation strip planted on the outer side of a security fence using a variety of shrubs endemic to the Orange locality that grow to a maximum height of 3 metres along the western and eastern sides of the array. Screening is to consist of a 5 metre wide vegetation strip planted on the outer side of a security fence using shrubs that grow to a maximum height of 5 metres along the southern side of the array plus an additional row of screening, 1 metre wide by 5 metres high along the eastern half of the southern boundary adjacent to the stock fence line. The vacant section long the eastern half of the southern boundary, situated between the fence line and the southern channel (described in Section 5.3.2, page 38), is to be planted with a 1 metre wide by 5 metre high screen to avoid interference with the channel. No trees are to be removed during construction or for operation of the solar farm. Land that is disturbed during construction of the solar farm and not to be used for access or other maintenance purposes will be sown with grasses following completion of construction to minimise site disturbance and reduce the likelihood of airborne dust. Regular inspections of the site will be carried out to ensure that grassland is managed to reduce the risk of bushfire to surrounding land and to control weeds. Mowing or slashing between rows of panels and in the area immediately surrounding the arrays would be carried out as required. Livestock grazing may be carried out around the array and will benefit from condensation of moisture on the panels that will assist the growth of pasture grasses.

3.6 Security and setbacks

The solar array is to be enclosed within a 1.8 metre high chain mesh fence topped with three rows of barbed wire giving a total height of 2.3 metres. The fence is to be setback a minimum of 3 metres from the option boundary, i.e. the boundary of the lease area. Asset protection zones and access for fire-fighting vehicles are provided by a 10 metres wide setback between the security fence and the array. Security lighting is not proposed to be installed.

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4. STATUTORY FRAMEWORK

4.1 Legislation

4.1.1 Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment (EPA) Act 1979* is the principal piece of legislation governing the use and development of land in NSW. The objects of the Act are:

- (a) *to promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources,*
- (b) *to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment,*
- (c) *to promote the orderly and economic use and development of land,*
- (d) *to promote the delivery and maintenance of affordable housing,*
- (e) *to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats,*
- (f) *to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage),*
- (g) *to promote good design and amenity of the built environment,*
- (h) *to promote the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants,*
- (i) *to promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State,*
- (j) *to provide increased opportunity for community participation in environmental planning and assessment.*

The objects of the EPA Act are intended to guide land planning and management. Section 4.15 of the Act lists matters for consideration when assessing and determining an application for development.

4.1.2 Biodiversity Conservation Act 2016

The *Biodiversity Conservation Act 2016* introduced the *Biodiversity Offsets Scheme* which is used to determine whether the *Biodiversity Assessment Method* is necessary to assess the impacts of a development proposal on threatened species, endangered ecological communities and habitats. Determining whether a *Biodiversity Development Assessment Report* is required under the *Biodiversity Conservation Act 2016* and subsequently whether the *Biodiversity Offsets Scheme* would apply to the proposed works is subject to three steps.

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- The first step is to identify whether the site is mapped on the *Biodiversity Values Map*.
- The second step is to estimate whether the extent of native vegetation to be cleared for the proposed development is above the clearing threshold for the minimum lot size.
- The third step is to carry out a test of significance to predict whether impacts on biodiversity are likely to be significant.

Under the *Biodiversity Offsets Scheme*, offset obligations may apply where the biodiversity assessment finds that the removal of vegetation to facilitate the development will have significant impacts on flora. These offsets are in the form of credit obligations whereby payment is made to a biodiversity conservation fund which enable vegetation removal and provides funds to assist to preserve the same vegetation community elsewhere. Credit obligations also apply to fauna species where particular species are likely to be living in or frequenting the property. These matters are addressed in section 5.1 *Biodiversity* of this Statement.

4.1.3 Water Management Act 2000

The *Water Management Act 2000* includes provisions to control or permit works near a watercourse or stream. Works within specified distances of the top of the bank of a watercourse may necessitate issue of a *controlled activity approval* by the Natural Resources Assessment Regulator. Impacts on surface and groundwaters are addressed in 5.3 *Water resources* of this Statement.

4.1.4 Local Land Services Act 2013

The *Local Land Services Act 2013* regulates the clearing of native vegetation on rural land and where an activity is permitted without Council consent. There are two broad categories of land under the LLS Act - Category 1 (Exempt) land and Category 2 (Regulated, Vulnerable or Sensitive) land which are shown on the Native Vegetation Regulatory Map.

Clearing may be authorised on Category 1 (Exempt) Land but only where the activity is permitted without consent and when no other permit is required under other legislation. The onus is on the applicant to ensure they are not committing an offence under other legislation. If located on Category 2 (Regulated, Sensitive or Vulnerable) Land, the clearing may be authorised as an Allowable Activity or under the Land Management (native vegetation) Code within the LLS Act. If the clearing on Category 2 Land is not an Allowable Activity or is not authorised under the Land Management (native vegetation) Code, the clearing will need to be offset under the Biodiversity Offset Scheme. This means a Biodiversity Development Assessment Report is needed and the clearing will need to be approved by the Native Vegetation Panel.

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The LLS Act does not apply to the proposed solar farm as development consent is required to be obtained to enable the works to proceed.

4.1.5 National Parks and Wildlife Act 1994

The objectives of the *National Parks and Wildlife Act 1974* are to conserve and protect habitat, ecosystems, biodiversity, landforms, landscapes and objects, places or features of cultural value in NSW. Under the NPW Act, it is an offence to knowingly harm or desecrate an Aboriginal object. Harm includes destroy, deface or damage an Aboriginal object or Aboriginal Place, and in relation to an object, move the object from the land on which it has been situated. Aboriginal objects include sites, relics or cultural material such as scar trees, middens and ancestral remains.

The NPW Act can also protect areas of land that have no Aboriginal objects, that is, they may have no physical evidence of Aboriginal occupation or use. These areas can be declared 'Aboriginal places' if they have spiritual, natural resource usage, historical, social, educational or other type of significance.

Anyone who exercises due diligence in determining that their actions will not harm Aboriginal objects has a defense against prosecution for the strict liability offence if they later harm an object. The *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW* provides a process whereby a reasonable determination can be made as to whether or not Aboriginal objects will be harmed by an activity, whether further investigation is warranted and whether the activity requires an application for an Aboriginal Heritage Impact Permit.

4.1.6 Heritage Act 1977

The aims of the *Heritage Act 1977* are to identify, protect and conserve items of State heritage significance. Provisions of the Heritage Act facilitate the establishment of a State Heritage Register for the listing of items of State significance and the preparation of conservation management plans for these items. The Heritage Act also sets out the procedures for the approval of works relating to items listed on the State Heritage Register. Impacts on listed heritage items are addressed in section 5.9 *Heritage* of this Statement.

4.1.7 Noxious Weeds Act 1993

The aims of the *Noxious Weeds Act 1993* are to prevent the establishment, reduce the risk of spread and minimise the extent of noxious weeds within NSW. The extent of noxious weeds and procedures to

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eradicate weed infestation from the project site are addressed in section 3. *Details of the proposed development* in this Statement.

4.1.8 Roads Act 1993

Under section 138 of the Roads Act 1993, consent is required to carry out works in, on or over a public road, remove or interfere with a structure, work or tree on a public road or connect a road to a classified road. The consent of Transport for NSW is required in the case of works relating to a classified road. Traffic impacts are addressed in section 5.6 *Traffic* of this Statement.

4.1.9 Commonwealth Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* aims to protect nationally and internationally important flora, fauna, ecological communities and heritage places. The approval of the Commonwealth Minister for the Environment is required for actions that may have a significant impact on matters of national environmental significance. The *EPBC Act* also requires Commonwealth approval for certain actions on Commonwealth land.

An assessment of the potential impact of the proposed works on any matters of national environmental significance under the *EPBC Act* and the need for referral to the Commonwealth is provided in section 5.1 *Biodiversity* of this Statement.

4.2 State Environmental Planning Policies

4.2.1 State Environmental Planning Policy (Resilience and Hazards) 2021

Chapter 4 Hazardous and offensive development of SEPP (Resilience and Hazards) 2021 and the *Hazardous Industry Planning Advisory Paper No. 6 – Guidelines for Hazard Analysis* require that a preliminary hazard assessment (PHA) be prepared for potentially hazardous or offensive development. EDPR Australia Pty Ltd has carried out a hazard analysis and risk screening, submitted separately and entitled *Fire and Hazard Assessment*. The findings of this report are summarised in section 5.2.2 *Fire* of this Statement.

Chapter 4 Remediation of land of SEPP (Resilience and Hazards) 2021 requires the consent authority to consider whether land is contaminated and to determine whether the proposed use is suitable with or without contamination. Council can require an applicant for development to conduct a preliminary investigation and a subsequent more detailed investigation if warranted. Where contamination exists and

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remediation is necessary, Council must be satisfied that the remediation will take place before the land is used for the proposed purpose. It is noted that should the preliminary investigation identify contamination on the site then the *NSW Contaminated Land Planning Guidelines* apply to subsequent investigations. Land contamination is addressed in section 5.2.3 of this Statement.

4.2.2 State Environmental Planning Policy (Transport and Infrastructure) 2021

Chapter 2 Infrastructure of SEPP (Transport and Infrastructure) 2021 aims to facilitate the delivery of infrastructure across NSW. The policy contains provisions relating to approval processes and assessment requirements for infrastructure proposals according to the type or sector of infrastructure. It outlines land use zones where types of infrastructure are permissible with or without consent and identifies certain works as exempt and complying development.

Part 2.3 Division 4 of the policy relates to electricity generating works and solar energy systems. Section 2.36(9) enables the development of a solar energy system with consent by any person on any land. Part 3 Division 4 of the policy relates to electricity generating works and solar energy systems. The proposed development is permitted with consent by *SEPP (Transport and Infrastructure) 2021*.

Section 2.42 applies to the development of a solar energy system that is state or regionally significant in a mapped regional city. Under this section the consent authority must be satisfied that the development is located to avoid significant conflict with existing or approved residential or commercial uses of land surrounding the development. The consent authority must also be satisfied that the development is unlikely to have a significant adverse impact on the regional city's capacity for growth, or scenic quality and landscape character. Orange is mapped as a regional city under this policy. Impacts on scenic quality and landscape character have been assessed in accordance with that state policy. These impacts will be mitigated or minimized by the proposed vegetation screening of the solar array.

The project site is not identified in *Orange Local Housing Strategy* as an urban release area for the expansion of Orange township. The proposed development will not interfere with or prevent the planned growth of Orange.

Part 2.3 Division 5 of the policy relates to energy transmission or distribution. Section 2.48 requires the consent authority to consult with the electricity supply authority where development occurs near electricity infrastructure. If an electricity line runs within an easement on or near the project site, or the development is adjacent a substation, the consent authority is to consult the energy authority prior to determination of the application.

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Part 2.3 Division 17 relates to roads and traffic. Section 2.118 requires that a consent authority must not grant consent to development with a frontage to a classified road where there is an alternative access, where the safety, efficiency and ongoing operation of the classified road is expected to be adversely affected and where the development is sensitive to use of the classified road. Section 2.122 triggers a referral to Transport for NSW where electricity generating works are expected to generate 200 or more vehicles per hour with access to a road, or 50 or more vehicles per hour where access is to a classified road or a road that connects to a classified road.

4.2.3 State Environmental Planning Policy (Primary Production) 2021

Relevant objectives of *Chapter 2 Primary production and rural development of SEPP (Primary Production) 2021* are:

- (a) to facilitate the orderly economic use and development of lands for primary production
- (b) to reduce land use conflict and sterilisation of rural land by balancing primary production, residential development and the protection of native vegetation, biodiversity and water resources
- (c) to identify State significant agricultural land for the purpose of ensuring the ongoing viability of agriculture on that land, having regard to social, economic and environmental considerations
- (d) to simplify the regulatory process for smaller-scale low risk artificial waterbodies, and routine maintenance of artificial water supply or drainage, in irrigation areas and districts, and for routine and emergency work in irrigation areas and districts
- (e) to encourage sustainable agriculture, including sustainable aquaculture

The policy applies to *State significant agricultural land*, farm dams and other artificial waterbodies, livestock industries and aquaculture. There is no *State significant agricultural land* listed in the schedule to the policy.

The Department of Primary Industries (Agriculture) has released draft mapping of *State Significant Agricultural Land* in NSW to assist decision-making regarding development on rural land. This matter is addressed in section 5.7 *The community and economy*.

4.2.4 State Environmental Planning Policy (Planning Systems) 2021

Development that is state and regionally significant is identified in *SEPP (Planning Systems) 2021*. Electricity generating works including solar farms which have an estimated development cost of more than \$30 million, or an estimated development cost of more than \$10 million and are located in an environmentally sensitive area of State significance, are declared state significant development. Private

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infrastructure, including electricity generating stations, that have an estimated development cost of over \$5 million are declared regionally significant and are to be determined by a Regional Planning Panel.

4.3 Local Environmental Plans

The property is zoned C3 Environmental Management under *Orange LEP 2011* as shown in Figure 4.



Figure 4: Land zoning. Source: Orange LEP 2011 – Land Zoning Map Sheet LZN_009

The objectives of zone C3 are:

- To protect, manage and restore areas with special ecological, scientific, cultural or aesthetic values.
- To provide for a limited range of development that does not have an adverse effect on those values.
- To manage development within water supply catchment lands to conserve and enhance the city and district's water resources.
- To maintain the rural function and primary production values of the area.
- To ensure development along the Southern Link Road has alternative access.

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The development is defined as **electricity generating works** which means a building or place used for the purpose of making or generating electricity. This use is permitted with consent in zone C3.

The proposed development is satisfactory to the objectives of zone C3 in that renewable energy through the harnessing of sunlight is a form of primary industry. The development will thereby maintain the rural function and primary production values of the land. The development will not cause fragmentation or alienation of resource land as livestock grazing may continue around the perimeter of the solar array when the facility is constructed and operating.

The solar farm will diversify rural activities and provide an alternative means of income thereby supporting other on-farm activities. It will not lead to land use conflict with other land uses or any special values as it is a benign development during the operational phase that will not produce noise, odour, dust or other emissions that would impact on the amenity of surrounding land.

Employment opportunities will be created for the local community both during construction and operation. There are no statutory intentions to expand the urban settlement of Orange towards the project site and the solar farm will not obstruct any unplanned growth of the township of Orange. The project site is not mapped as an Urban Release Area in *Orange LEP 2011* (see Urban Release Area Map Sheet URA_009).

The solar farm would not adversely affect valuable environmental assets and would not have a significant impact on biodiversity or the ecological integrity of water resources, native vegetation or habitat linkages between patches of native vegetation.



Figure 5: Urban release areas. Source: Orange LEP 2011 – Urban Release Area Map Sheet URA_009

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It is considered that the proposed development is not inconsistent with the aims of *Orange LEP 2011* or the objectives of zone C3 Environmental Management.

The following clauses of *Orange LEP 2011* apply to the proposed development.

Clause 7.5 Riparian land and watercourses

The objectives of clause 7.5 are to protect and maintain the following water quality within watercourses, the stability of the bed and banks of watercourses, aquatic riparian habitats, and ecological processes within watercourses and riparian areas. The project site is within 40 metres of a mapped sensitive waterway. The consent authority is to consider whether the development:

- (a) *is likely to have any adverse impact on the following—*
 - (i) *the water quality and flows within a watercourse,*
 - (ii) *aquatic and riparian species, habitats and ecosystems of the watercourse,*
 - (iii) *the stability of the bed and banks of the watercourse,*
 - (iv) *the free passage of fish and other aquatic organisms within or along the watercourse,*
 - (v) *any future rehabilitation of the watercourse and its riparian areas, and*
- (b) *is likely to increase water extraction from the watercourse.*

The impacts of the facility on surface waters are considered in the *Water Assessment* prepared by EDPR Australia and summarised in section 5.3.

Clause 7.6 Groundwater vulnerability

The objectives of this clause are to maintain the hydrological functions of key groundwater systems and to protect vulnerable groundwater resources from depletion and contamination as a result of inappropriate development.

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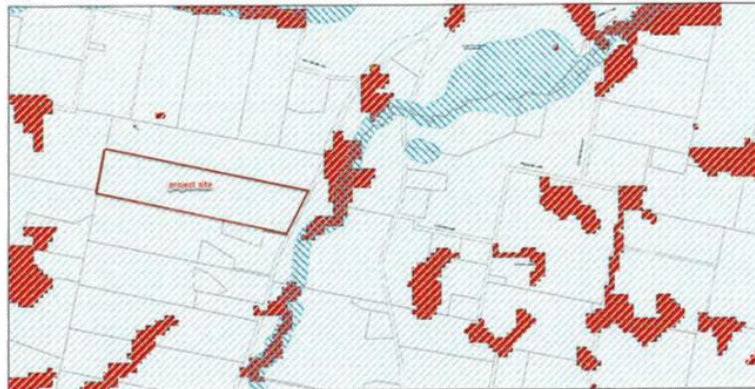


Figure 6: Groundwater vulnerability. Source Orange LEP 2011 - Groundwater Vulnerability Map Sheet CL2_009

The consent authority is to consider whether or not the development (including any on-site storage or disposal of solid or liquid waste and chemicals) is likely to cause any groundwater contamination or have any adverse effect on groundwater dependent ecosystems, and the cumulative impact (including the impact on nearby groundwater extraction for potable water supply or stock water supply) of the development and any other existing development on groundwater.

This matter is considered in the *Water Assessment* prepared by EDPR Australia and summarised in section 5.3. No groundwater is proposed to be extracted and there is not expected to be any interference with the groundwater table as a result of the proposed facility.

Clause 7.7 Drinking water catchments

The objective of this clause is to protect drinking water catchments by minimising the adverse impacts of development on the quality and quantity of water entering drinking water storages. The consent authority must consider:

- (a) the distance between the development and any waterway that feeds into the drinking water storage, and
- (b) the on-site use, storage and disposal of any chemicals on the land, and

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- (c) the treatment, storage and disposal of waste water and solid waste generated or used by the development.

Impacts on water quality are considered in the *Fire and Hazard Assessment* and the *Water Assessment* prepared by EDP Australia and summarised in sections 4.2.1 and 5.3 respectively. The edge of the project site is over 70 metres from the mapped Gosling Creek at the closest points and is separated by Cadia Road (see Figure 6). There are not expected to be any adverse effects on the water quality, stability or biodiversity of Gosling Creek or Gosling Creek Reservoir subject to implementation of the recommended mitigation measures.



Figure 7: Drinking water catchment. Source: Orange LEP 2011 – Drinking Water Catchment Map Sheet CL1_009

Clause 7.11 Essential services

This clause requires a consent authority to be satisfied that any of the following services that are essential for the development are available or that adequate arrangements have been made to make them available when required:

- (a) the supply of water,
- (b) the supply of electricity,
- (c) the disposal and management of sewage,

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- (d) stormwater drainage or on-site conservation,
- (e) suitable road access.

The supply of reticulated water and sewerage services is not required for the proposed development. However, portaloos for wastewater disposal (see <https://www.kennards.com.au/site-equipment/showers-toilets.html>) and water supply by way of a portable tank or cart (see <https://www.kennards.com.au/site-equipment/water-tank.html>) are proposed to be installed during the construction phase.

Electrical services are available to the site. Stormwater management is proposed to be addressed by controls recommended in this Statement with full details to be provided with the application for a construction certificate. Direct access is proposed off Cadia Road using an existing driveway that achieves safe intersection sight distances.

There are no draft environmental planning instruments that are on exhibition or have been exhibited but not yet published that apply to the site, or that relate to the proposed development of electricity generating works.

4.4 Development Control Plans

4.4.1 Orange Development Control Plan 2004

Orange DCP 2004 applies to all land in Orange LGA and was updated and revised in 2021.

Planning outcomes of Orange DCP 2004 that are applicable to the proposed development are given in Table 4 below with the reference to the relevant section of this Statement.

Table 4: Planning outcomes of Orange DCP 2004

Planning Outcome	Section of Statement of Environmental Effects
2 Natural resource management – water quality	
Development is carried out in a manner that does not contribute to downstream erosion or sedimentation of waterways	Section 5.3 Water resources
2 Natural resource management – groundwater quality	
Development is carried out in a manner that does not adversely affect groundwater resources	Section 5.3 Water resources

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Planning Outcome	Section of Statement of Environmental Effects
2 Natural resource management – soil resource management	
Non-agricultural activities in rural areas are carried out on less productive soils	Section 5.7 The community and economy
2 Natural resource management – vegetation management	
Development is designed and constructed in a way that minimise the impact on existing vegetation	Section 5.1 Biodiversity
DAs indicate on plans the location of all significant trees affected by or in the vicinity of development	Section 5.1 Biodiversity
2 Natural resource management – flora and fauna management	
Where there is a likely impact of development on native habitats, that impact is addressed in the DA	Section 5.1 Biodiversity
3 General Considerations – cumulative impact	
DAs demonstrate how the development relates to the character and use of land in the vicinity	Section 5.10 Landscape character and visual amenity
The introduction of new development into a locality maintains environmental impacts within existing or community-accepted levels	Section 5.7 The community and economy
Water conservation measure are implemented	Section 5.3 Water resources
3 General Considerations – scenic, landscape and urban areas	
Development incorporates landscaping that enhances the landscaped setting of the locality	Section 5.10 Landscape character and visual amenity
External finishes, materials and colour schemes of development complement its setting	DA Drawings by EDPR Australia Pty Ltd. Details of finishes and colour schemes to be submitted with application for construction certificate in accordance with planning outcomes for 4 Special Environmental Considerations – scenic areas
4 Special Environmental Considerations – land shaping	
Applications include details on the existing and proposed landform, watercourses and vegetation	Section 5.10 Landscape character and visual amenity
Applications are accompanied by a soil-erosion control plan for implementation prior to and upon commencement of the work	Condition of consent to provide to Council with application for construction certificate
4 Special Environmental Considerations – land contamination	
Land subject to development is clear from contamination	Section 5.2 Natural hazards
4 Special Environmental Considerations – scenic areas	
Trees that contribute to the landscape character are retained and embellished in scenic areas	Section 5.1 Biodiversity, Section 5.10 Landscape character and visual amenity

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Planning Outcome	Section of Statement of Environmental Effects
The external materials of buildings reflect the natural colours of the setting, i.e. with shades of natural green and browns	DA Drawings by EDPR Australia Pty Ltd
Details of proposed colour schemes, finishes of external materials, existing trees and proposed landscaping are submitted for Council endorsement prior to the issue of a construction certificate	Condition of consent to provide to Council with application for construction certificate

4.5 Land use strategies**4.5.1 Central West and Orana Regional Plan 2041**

The *Central West and Orana Regional Plan 2041* sets a 20-year strategic land use planning framework for the region. Objective 2 is to *Support the State's transition to Net Zero by 2050 and deliver the Central-West Orana Renewable Energy Zone*.

Orange is located south of the renewable energy zone. Despite not being included in the REZ, the Orange South 8B & 9B Solar Farm + BESS can contribute to achieving the transition goal of the NSW Government.

4.5.2 Orange Local Strategic Planning Statement 2020

Orange City Council Local Strategic Planning Statement 2020 sets a vision and framework to guide detailed land use planning by connecting regional planning priorities with local environmental and community plans. The LSPS puts forward 'diversification' as an economic goal to increase employment options, and goods and services available in the local area to reduce escape expenditure. Energy security is an environmental goal and renewable energy sources are encouraged and deployed sensitively to respect heritage and streetscape values.

4.5.3 Orange Sustainable Settlement Strategy

The purpose of the *Orange Sustainable Settlement Strategy* and its update in 2010 was to inform the land zonings of *Orange LEP 2011*, to analyse the residential and rural residential land markets and to identify land that is suitable for urban expansion. The project site is located within an area of land to the south-west of Orange that is not labelled and identified for urban growth in the strategy. The nearest land unit is LU-10 which is over one kilometre north of the project site and is earmarked for future urban residential or large lot residential

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4.5.4 Orange Local Housing Strategy

The *Orange Local Housing Strategy* was adopted by Orange City Council in 2022. An aim of the strategy is to identify where housing growth is to occur in Orange LGA. The strategy supersedes the *Orange Sustainable Settlement Strategy*. The project site is not identified in the housing strategy as an urban release area for the expansion of Orange township. The southern section of land unit LU-10 that was identified in the *Orange Sustainable Settlement Strategy* for future urban or large lot residential development is not considered suitable for residential development in the *Orange Local Housing Strategy* as the northern section of this land unit has not yet been fully developed.

4.6 Guidelines

4.6.1 Large Scale Solar Energy Guideline

The *Large Scale Solar Energy Guideline* applies to state significant developments. Although the guidelines do not legally apply to the proposed development, the NSW Government encourages applicants, councils and planning panels to consider the objectives and principles when preparing, assessing and determining applications for regionally significant development. The objectives, principles and assessment issues outlined in the guideline have been considered during preparation of this *Statement of Environmental Effects* and are referenced in the matters assessed in chapter 5. *Environmental Effects* and chapter 6. *Conclusion*.

4.6.2 Planning for Bushfire Protection 2019

The *Planning for Bushfire Protection 2019* guideline applies to land that is mapped as bushfire prone and is used to determine the extent of asset protection zones, access arrangements, water supplies and other matters that affect the ability to protect life and property in the event of a bushfire. Section 8.3.5 *Wind and solar farms* of the guideline sets out the requirements for the development of renewable energy facilities. This matter is addressed in section 5.2.2 *Fire* of this Statement.

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Where the proposed site contains native vegetation, habitat of threatened species or ecological communities, and requires clearing, an assessment must be undertaken in accordance with the *Biodiversity Conservation Act 2016*, the *Biodiversity Assessment Method* and documented in a biodiversity development assessment report (BDAR).

The Planning Secretary has the power to waive the requirement for a BDAR if an applicant can demonstrate that the proposed development is not likely to have a significant impact on biodiversity values.

Applicants are expected to demonstrate that they have applied principles of avoidance, minimisation and mitigation of impacts in project design.

A biodiversity assessment has been carried out by Red-Gum Environmental Consulting Pty Ltd to determine the potential impact on any threatened species and endangered ecological communities that are present on the project site and in the vicinity of the site. The findings of the assessment are summarized below. Reference should be made to the *Biodiversity Inspection Report* that is submitted with the development application for further information or clarification of any matter concerning the assessment and recommendations.

Methodology for the biodiversity assessment involved desktop research and a site inspection. The assessment covered details of recorded sightings of threatened species including koalas and identification of vegetation communities in the vicinity of the project site. The *Biodiversity Inspection Report* provides a test of significance in accordance with requirements of the *Biodiversity Conservation Act 2016*, an assessment of potential koala habitat as required by *SEPP (Biodiversity and Conservation) 2021*, and also satisfies requirements of the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999*.

5.1.2 Findings

Red-Gum contends that the majority of the site is dominated by exotic pasture grass which has little to no value to threatened fauna and threatened flora which are not present in these previously pasture improved areas. As long as no damage is done to the medium value native trees, there is no precedent for the *Biodiversity Conservation Act 2016* provisions to come into effect, nor will further assessment likely be required.

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No koala individuals have been sighted within 5 kilometres of the activity area and it is highly unlikely that a koala will be present in the activity area or be impacted by the proposed work, as there are no suitable food and habitat Eucalypt trees in or around the works zone.

If disturbance is kept to the minimum required level, then the proposed activities are unlikely to have an adverse effect on the foraging ability or the life cycle of threatened species that may be opportunistically using the site or surrounding areas and it is highly unlikely to displace any rare or threatened species. The assessment extends to any access tracks entering the property and within the site. Cadia Road, Orange NSW, is a sealed road and any access tracks to the development will cause minimal native vegetation loss as the ground cover is dominated by exotic grasses. The ecologist is of the opinion that the activities as proposed will not have a significant effect on any threatened species and ecological communities and/or their conservation if responsible construction methods are adhered to.



Figure 8: Plant community types in the immediate area. Source: Red Gum Environmental Consulting Pty Ltd

5.1.3 Mitigation measures

By way of a clearing process that minimizes the risk to threatened species that may be opportunistically using the site, it is recommended that:

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- I. Construction limits and exclusion zones be clearly identified prior to work,
- II. A visual inspection is conducted by environmental staff before construction commences to identify any areas of the site that might be supporting native fauna,
- II. Vehicle movements around the site will be restricted to the construction footprint and away from any flagging exclusion fencing to be installed,
- III. Soil disturbance by vehicle and pedestrian access is to be kept to a minimum outside the construction footprint, and
- V. Any weeds removed (particularly those bearing seeds) are to be disposed of appropriately at the nearest waste management facility.

5.2 Hazards**Hazards (Large Scale Solar Energy Guideline – for consideration only)**

The location of solar energy infrastructure should avoid any land subject to identified natural hazards (such as bushfires, flooding or land instability) and should not contribute to an increase in risk of a natural hazard.

Any natural hazards or risks associated with the construction, operation and decommissioning of the solar energy project must be assessed. These include those associated with hazardous materials (for instance, from PV panels and battery storage), and the threat of fire spreading to a solar development or being caused by associated infrastructure such as cables, panels or transmission lines.

If the project is located in a bushfire prone area, applicants must prepare a strategic bushfire study in accordance with the NSW Rural Fire Service's [Planning for Bush Fire Protection](#).

5.2.1 Flooding

The site is not mapped as a Flood Planning Area on the Flood Planning Map of *Orange LEP 2011*. The project site does contain any significant drainage lines, noting that there is a 1st order stream that crosses the site.

The site is elevated above the Gosling Creek Reservoir and Gosling Creek as shown in Figure 9 below.

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Figure 9: Contour map. Source: SIX Maps

Refer to section 5.3 *Water resources* and the *Water Assessment* prepared by EDPR Australia Pty Ltd for details of flooding and stormwater management and recommended mitigation measures to address these matters.

5.2.2 Fire

Due to the inclusion of grasslands, the site is mapped as being affected by bushfire on the bushfire prone land map that is available on the NSW Spatial Viewer. The project site is mapped as vegetation category 3. Section 8.3.5 *Wind and solar farms of Planning for Bushfire Protection 2019* has therefore been considered.

Defendable space is available within a setback between the array and the security fence that is 10 metres in width which is to be managed as an inner protection zone for the operating life of the solar farm. Infrastructure comprising electricity generating works is not a habitable building and is not listed as a *special fire protection purpose* under section 100B of the *Rural Fires Act 1997*.

In terms of fire safety including the threat of bushfire, the report recommends that the facility with battery storage can be made safer through the integration of safety in design principles from bushfire standards including APZ clearances, internal protection areas, comprehensive system fault monitoring,



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automated fire detection and suppression systems and safety procedures built into WHS policies and procedures to ensure these farm assets and the surrounding area are protected from the risk of fire.

The layout of the solar array is proposed to include an Asset Protection Zone (APZ) surrounding the entire site with a 10 metre wide setback from a non-combustible chain-link fence. The APZ will not be located on land exceeding a slope of 18 degrees. This APZ is also intended to act as a defendable space and a buffer against radiant heat effects for emergency services. An APZ shall also be established around the battery stations (which includes the cubicles, switching station and associated structures of the BESS) and other infrastructure such as the inverter stations and DC-DC converters located at the northern edge of each array.

Road access to the site and fencing are excluded from the APZ. Internal access roads are to have a minimum carriageway width of 5.5 metres between obstructions such as fencing, bollards and trees, and vertical clearances of 4 metres. Internal curves of the APZ and inner protection area (IPA) are designed with minimum 6 metre radius turning circles to assist in vehicle access. The APZ around the array provides access for fire-fighting vehicles. Fire-fighting vehicles are able to traverse and manoeuvre through the grasslands with open vision and adequate ability to pass each other.

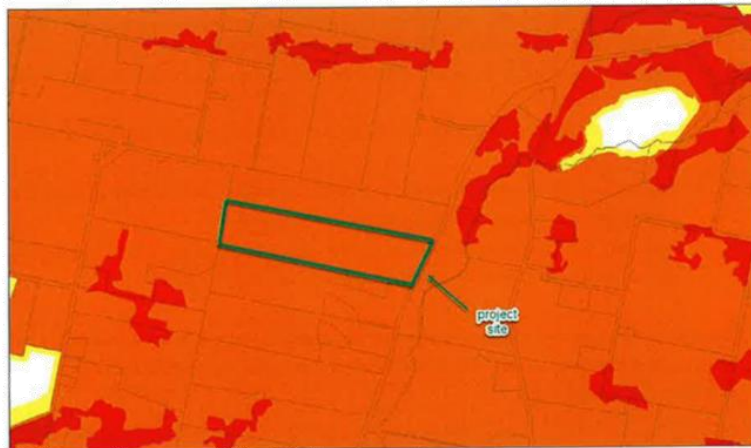


Figure 10: Extract from bushfire prone land map. Source: Orange city Council

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If the project includes battery energy storage that has a capacity of more than 30 MW, the applicant must undertake a preliminary hazard analysis in accordance with [Hazardous Industry Planning Advisory Paper No 6 – Risk Criteria for Land Use Safety Planning \(PDF 367 KB\)](#), [Hazardous Industry Planning Advisory Paper No 6 – Hazard Analysis \(PDF 525 KB\)](#) and [Multi-level Risk Assessment \(PDF 624 KB\)](#).

EDPR Australia Pty Ltd has carried out a hazard analysis and risk screening, submitted separately and entitled *Fire and Hazard Assessment*.

The results of risk screening are that a PHA is not required for dangerous goods to be stored on the site. However, the following management measures have been recommended to be implemented:

- Installing reliable, automated monitoring and control systems, with an alarm and shutdown response capability,
- Taking reasonable and safe measures to prevent the risks of external heat effects in the event of a bushfire,
- Designing appropriate separation and isolation between battery cubicles, and between the BESS and other infrastructure, in accordance with the manufacturer's recommendations, and including gravel set-off areas around the facility,
- Compliance with all applicable Australian codes and standards,
- Preparation of a BESS-specific fire response plan, in conjunction with the NSW Rural Fire Service,
- Installing an adequate automatic fire suppression system integrated into the detection and control system,
- Disposal (and where possible, recycling) of any potentially hazardous material in accordance with the best international practices available at that time, and
- Fuels and pesticides/herbicides in use at the site will be stored at the laydown area in appropriately bunded areas designed in accordance with AS1940-2004.

The solar farm includes an early warning system of issues such as earth faults and automatically initiates safety systems to prevent uncontrolled outbreaks of hazards such as electricity disturbances on the grid or localised issues such as fire.

A draft *Bushfire Risk and Operations Plan* and a draft *Bushfire Emergency Management and Evacuations Plan* have been prepared to establish procedures to respond to a fire event and other measures such as maintenance of ground fuels, access arrangements, on site fire-fighting equipment and isolation of electrical infrastructure. These two plans will need to be finalized after preparation of detailed designs for the project are prepared to apply for a construction certificate.

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5.2.3 Contamination

A search of the Environment Protection Authority's *List of Notified Contamination Sites and Protection of the Environment Operations Act Public Register* has been undertaken which revealed that there is no contaminated site listed in or around the project site. There are no known prior land-uses on the project site that are likely to have resulted in contamination of the land.

A *Preliminary Site Contamination Report* was prepared by EDP Renewables. The objective of the report is to ascertain whether the site, particularly the onsite soil, presents a risk to humans and/or the environment due to contamination from any past/present usage of the site or neighbouring properties.

Soil sampling was undertaken in order to assess the nature, location and potential distribution of any contamination (and associated risk) on the site. The samples were tested at the Wollongbar Environmental Laboratory, a site operated by the NSW Department of Primary Industries and Regional Development. The site holds accreditation with the National Association of Testing Authorities (NATA).

The sole potential source of contamination was identified as the remains of an orchard located within the proposed Orange South 8B development area. The results of the chemical analyses indicate that the site does not present a risk to human health or the environment in a 'residential with garden/accessable soil' setting and is considered suitable for the proposed development.

5.2.4 Mitigation measures

- There are no mitigation measures recommended in relation to flooding or land contamination.
- Finalise the draft *Bushfire Risk and Operations Plan* and a draft *Bushfire Emergency Management and Evacuations Plan* after preparation of detailed designs for the construction certificate.

5.3 Water resources**Water management** (Large Scale Solar Energy Guideline – for consideration only)

Surface water-related impacts, such as flooding, discharge/run-off and erosion, must be assessed. Appropriate mitigation measures, such as sediment controls, must be proposed where warranted.

Applicants should consult with landholders regarding potential surface-water related impacts of the project on neighbouring properties and any mitigation measures.

Any assessment of surface water-related impacts must be informed by a soil survey that considers the potential for erosion.

If there is any water take associated with the project, the applicant should identify the source of water (both potable and non-potable) and may need to acquire water access licences if the project is approved.

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A *Water Assessment* of potential impacts on groundwater and surface water flows and flooding has been carried out by EDPR Australia Pty Ltd. The findings of the assessment are summarized below. Reference should be made to the *Water Assessment* that is submitted with the development application for further information or clarification of any matter concerning the assessment and recommendations.

5.3.2 Findings

Orange is located in the south-eastern part of the Macquarie-Castlereagh water sharing plan region. Other towns in the broad vicinity include Bathurst and Wellington. There are two main creeks within the urban area of Orange- Blackmans Swamp Creek and Ploughmans Creek, both of which drain to the Macquarie River. The catchments of the Castlereagh and Macquarie rivers support a diverse range of ecosystems, ranging from forest, woodlands and wetlands to grasslands in both temperate and semi-arid environments.

The site of the proposed Orange South 8B & 9B Solar Farm + BESS is located to the south-west of Orange township and is located within a large sub-catchment that includes Blackmans Swamp and Ploughmans creeks. The site is relatively flat with a gradual slope to the north-west and levels ranging from approximately 956 metres AHD at the western side of the site to 946 metres AHD on the eastern side. The centre of the project site has an elevation of 950 metres AHD. The surrounding area has some small hills to the north and south reaching heights of 1,030 metres AHD.

A *Floodplain Risk Management Study* by Lyall and Associated in 2020 provides a 1% AEP event inundation map for Orange township which informed the designation of a flood planning area in *Orange LEP 2011*. These maps indicate that the site is unlikely to flood although there is the potential for some localized minor drainage lines running through the site.

Orange lies within the NSW Murray-Darling Basin Fractured Rock Groundwater Sources and there are groundwater dependent ecosystems of moderate to high potential near Orange. The site is mapped as groundwater vulnerability in *Orange LEP 2011*. There will be no extraction of groundwater or interference with the groundwater table and the works are not expected to contribute to any regional groundwater issues.

The primary river in the area is the Macquarie which rises in the Great Dividing Range near Bathurst and flows north-west through foothills and slopes past Wellington and towards Dubbo. The Macquarie-Castlereagh Surface Water Resource Plan identifies that the highest risks to irrigation water from salinity

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were found in tributaries of the Macquarie River between Orange and Dubbo. Water quality is listed as fair in the Orange area.

The project site contains a mapped watercourse as shown in Figure 11. The watercourse is identified as a first order stream based on the *Strahler system* approach. Interpretation of relevant Department of Planning and Environment-Water guidelines and regulations indicates that this first order stream falls under the definition of a "minor stream".

The stream is an intermittent watercourse, which in some sections does not exhibit the typical features of a defined channel. According to the EPI – Riparian Lands dataset (utilised by *SIX Maps*), the stream partially traverses the southern and eastern boundaries of the proposed development area. The layout of the PEG System solar panels, which are arranged and installed in "blocks", have been designed to maximise land use while minimally impacting the stream.

Notably, the proposed development consists of photovoltaic panels mounted on galvanised steel rods that, while different in function, are structurally similar to common stock fence posts and star pickets. Additionally, the mounting rods are typically driven directly into the ground, eliminating or reducing the requirement for footings and extensive concreting. A typical cross section of a PEG installation is captured in Figure 12 below. The design of a PEG system allows its primary mounting fixtures and solar modules to be elevated off the ground, enabling the preservation of the existing natural terrain of the land. In this particular case it is anticipated the stream banks and features can be largely preserved.

With reference to the *Controlled activities – Guidelines for riparian corridors on waterfront land fact sheet*, the recommended Vegetated Riparian Zone (VRZ) width for first order streams is 10 metres each side of the watercourse (Figure 13). Based on the proposed design, stream mapping and the riparian guidelines, encroachment of the solar farms arrays and security fencing on the Riparian Corridor (RC) of the stream is estimated to be:

Orange South 8B (western site):

- a. Solar arrays (south-west corner of site) – 1,100m².
- b. Security fencing – 20 metres + channel width

Orange South 9B (eastern site):

- c. Solar arrays (south-east corner of site) – 200m².
- d. Security fencing – 20 metres + channel width

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It is understood that General Terms of Approval are required to grant consent for the application and a controlled activity approval would need to be obtained to carry out the works.

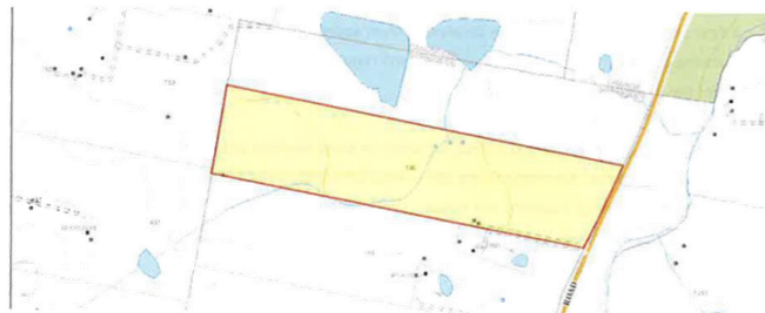


Figure 11: Mapped first order stream. Source: SIX Maps

In response to a request for further information from The Department of Planning and Environment - Water, a *Water Channels Assessment Report* was prepared and submitted by EDPR Australia Pty Ltd in March 2025. Based on further site investigations the report verifies that the mapped first-order stream appears to have been significantly altered and diverted by a man-made channel that runs along the southern boundary of Lot 5 DP 6173 adjacent the boundary fenceline then through the centre of Lot 5 towards the northern boundary. Photographic evidence illustrates the following characteristics of the channel:

- **Artificial Construction:** The channel exhibits features indicative of artificial construction, including a relatively straight alignment and formed banks.
- **Limited Natural Features:** The channel lacks significant natural stream bed and bank characteristics observed in undisturbed first-order streams.
- **Intermittent Flow:** Consistent with the description in the previously submitted Water Assessment, this channel rarely contains flowing water and primarily conveys surface runoff during and immediately following significant rainfall events.
- **Absence of Aquatic Habitat:** Due to the intermittent nature of the flow and the modified structure of the channel, there is no evidence of sustained aquatic habitat or the presence of significant riparian vegetation directly within the channel. The dominant vegetation is consistent with the surrounding ground cover.

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This report demonstrated that the proposed design of the Orange South 8B & 9B Solar Farm, utilising an elevated PEG system, will result in minimal impact to the identified waterfront land due to the artificial and intermittent nature of the channel, the elevated structures, and the implementation of comprehensive environmental management measures.

EDPR Australia Pty Ltd requested that DPE-Water consider this information and grant a controlled activity approval for the proposed solar farm development, allowing the energy project to proceed as per the proposed layout as:

- The flowpath is an artificially constructed channel with limited natural stream characteristics and intermittent flow.
- The elevated design of the solar arrays and the slim profile of the substructure steel rods will not impede surface water conveyance within the channel, in the rare event the channel was to accumulate with water.
- Sediment and erosion control measures will prevent any degradation of water quality or channel stability.
- The channel does not support significant aquatic habitat due to its intermittent nature.

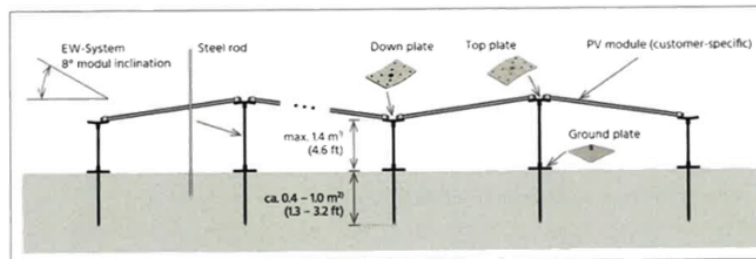


Figure 12: PEG System simplified design (cross-section). Source: ITP Renewables

The Department of Planning and Environment – Water did not accept the findings of the Water Channels Assessment Report and subsequently requested further information on 28 March 2025 that demonstrates how the layout of the solar array has been designed to minimise the construction footprint or mitigates impacts on the mapped watercourse and channels that convey flows to the dams. It was requested to amend the solar installation layout to ensure that no structures are located within the mapped watercourse or any channel that conveys flows to the dams and to provide amended site plans showing the revised solar farm layout, including any proposed encroachments or watercourse crossings.

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Table 1. Recommended riparian corridor widths

Watercourse type	VRZ width (each side of watercourse)	Total RC width
1 st order	10 metres	20 m + channel width
2 nd order	20 metres	40 m + channel width
3 rd order	30 metres	60 m + channel width
4 th order and greater (includes estuaries, wetlands and any parts of rivers influenced by tidal waters)	40 metres	80 m + channel width

Note: where a watercourse does not exhibit the features of a defined channel with bed and banks, the department may determine that the watercourse is not waterfront land for the purposes of the WM Act.

Figure 11: Riparian corridor widths. Source: Controlled activities – Guidelines for riparian corridors on waterfront land

In response to this request for further information and noting that the watercourse has already been realigned to run parallel to and along part of the southern boundary of the project site, ITP Renewables has revised the general arrangement plan (Dwg No. 22113-G-2100) to indicate that it is now proposed to divert the mapped watercourse from its current alignment to continue to run parallel to the southern boundary to the common boundary between the 8B and 9B arrays, then to run to the north as far as the northern boundary of the project site, then to run east and parallel to the northern boundary to enable water to drain to the existing dam on Lot 100 DP 1234308.

The proposed site activity is not expected to materially contribute to any regional groundwater issues, particularly those associated with nearby farming districts. Potential adverse surface water-related impacts to the site relate to site accessibility and managing downstream sedimentation.

The development has the potential to alter existing water quality conditions within the site. The impervious area of solar facilities is typically only marginally increased owing to associated hardstand and building areas. However, the panels may impact the nature of vegetation/grass coverage on the site, which has the potential to increase surface runoff and peak discharge. Increased flow concentration off the panels also has the potential to erode soil at the base of solar panels.

As the site has been historically used for farming there is very little natural ground cover vegetation. Modelling by the NSW Government indicates a soil profile of clay loam with nil cracks in the top horizons.

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There is the potential that site runoff may contain sediments and increase turbidity or other water quality parameters in downstream water ways.

5.3.4 Mitigation measures

The potential for site accessibility and the potential for inundation issues during flood events should be reviewed and procedure developed to halt construction during heavy rainfall to reduce potential impacts to the development and to increases in downstream sedimentation. The following mitigation measures given in Table 5 are recommended to manage downstream sedimentation.

Table 5: Proposed mitigation measures to manage downstream sedimentation

Stage	Measure	Activities/approach
Design	Site drainage and water quality controls	Design Basis - Undertake hydrological assessment of the site's catchment in accordance with relevant methods outlined in Australian Rainfall and Runoff - Determine sediment management targets and drainage control standards in accordance with Managing Urban Stormwater: Soils and Construction Vol 1 (Blue Book) (DECC, 2008). - Develop a site erosion and sediment control plan in accordance with the Blue Book. - Develop site drainage design incorporating detention basins and sedimentation management structures where relevant. - Permanent site drainage should coincide with temporary arrangements where possible
Construction and/or demolition	Site drainage and water quality controls	General site works: - Catch drains to be located downslope of any proposed road works. - Install location appropriate sediment fences or other applicable control measures depending on whether the feature is upstream or downstream of a disturbed part of the site or will need to be trafficable. - All stormwater collection points need to have appropriate sedimentation and erosion controls. - Undertake ongoing inspections of stormwater facilities and water control measures to assess their effectiveness. - Vibration grids or wash bays at all construction exits. - Level spreaders at locations where concentrated flow is discharged offsite to ensure sheet flow like conditions are maintained. - Flat land erosion control options include erosion control blankets, gravelling, mulching, soil binder, turfing and revegetation
Construction and/or Demolition	Stormwater point source control	In the event of concrete works: - Do not undertake works if chance of heavy rain. - Store rinsate water, if applicable, separately to other water on site and dispose of offsite as appropriate. - Block on site drains in the area of the works and remove any contaminated runoff.

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Stage	Measure	Activities/approach
		In the event that dewatering practices are required: - Elevate pump hose intakes for withdrawing water from excavations to minimise sediment pumping and direct hose to a containment area for settling prior to discharge of water. - Limit direct discharge off site (consistent with the design requirements for sediment pond discharge). - Stormwater collected on site should be reused where possible. Controls should be inspected and maintained on a regular basis. All water released from sediment basins should be clear or disposed of off site by vehicle. - Material and waste storage areas should be designed and operated to minimise interaction with surface waters. - Vehicle washdown areas should be located away from water courses

5.4 Air quality
5.4.1 Assessment of impacts
Air quality (Large Scale Solar Energy Guideline – for consideration only)

Dust suppression measures that will be used during construction and operation, such as water carts during land preparation, temporary wind fences and re-vegetation of disturbed areas, should be considered.

The Department of Planning, Industry and Environment maintain air quality monitoring stations across rural NSW. The instruments used at most rural network sites are low cost indicative particulate monitors that respond to all aerosols including smoke and fog.

Total suspended particles are solid particles and liquid droplets 100 micrometres or less in diameter. They come from natural and human-made sources, such as pollen, bushfires and motor vehicle emissions. Dust emissions are also a source of air pollution and can cause poor air quality. The pollutants measured by the Department are nitrogen dioxide, sulphur dioxide and ammonia.

Particles are also measured as PM₁₀ and PM_{2.5}. PM₁₀ are particles less than 10 micrometres in diameter. Sources include crushing or grinding operations and dust stirred up by vehicles on roads. PM_{2.5} are fine particles less than 2.5 micrometres in diameter. Sources include all types of combustion, including motor vehicles, power plants, residential wood burning, forest fires, agricultural burning, and some industrial processes.

Table 6 gives 24-hour average readings of PM₁₀ particles, PM_{2.5} particles and the rating for the nearest monitoring station to the project site which is located at Orange.

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Table 6: Average hourly air quality readings

Monitoring station	Orange	
Period	18 November 2024, 24-hour average	
Particles	Reading	Rating
PM ₁₀	7.6 ug/m ³	Good
PM _{2.5}	1.8 ug/m ³	Good

Activities that disturb the earth's surface and that are carried out with the use of machinery have the potential to generate dust emissions. This may be exacerbated by wind exposure to an exposed ground surface. The previous use of the land for farming may have involved regular tilling, sowing and harvesting that may create dust and impact on air quality. Similarly, grazing would generate dust as animals trample the ground surface. The land has been modified for agriculture with the consequent loss of most native vegetation leading to exposed soil surfaces.

The construction of the solar farm will not involve extensive earthworks. Pile driving for footings for the array framework and excavation for roads and ancillary structures will be carried out. Along with the delivery of materials using heavy vehicles, these construction works may generate dust, however, once operational the change of use of the land from agricultural to solar photovoltaic electricity generation is expected to reduce particulate emissions and lead to an improvement in local air quality. Vehicle movements would be restricted to internal access roads and the majority of the site would be revegetated with native or pasture grasses.

The presence of agricultural activities in the vicinity of the site may cause dust to settle on the panels. However, the proposed regular maintenance regime of cleaning panels every two to three months would ensure that the array operates at maximum efficiency.

5.4.2 Mitigation measures

To minimize dust generation during the construction and operational phases the following mitigation measures are proposed:

During construction:

- Limit vehicle movements to areas necessary to deliver panels, ancillary structures and equipment,
- Suppress dust emissions using watering and cease works during dry and windy conditions,

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- Ensure ground disturbance is limited to areas necessary to place footings or to be used for access,
- Ensure minimal handling of excavated materials, and
- Ensure stockpiles of excavated material is bunded and protected from wind and vehicle movements.

During operation:

- Grade and add road base to internal accessways,
- Revegetate the site with suitable groundcover immediately after construction works are completed, and
- Ensure all plant and equipment is maintained in a clean condition and operates in accordance with specifications.

5.5 Noise**5.5.1 Assessment of impacts**

Noise and vibration (Large Scale Solar Energy Guideline – for consideration only)
Construction noise impacts should be assessed in accordance with the [Interim Construction Noise Guideline](#) and operational noise impacts in accordance with the NSW [Noise Policy for Industry](#).

A *Noise Assessment* of the impacts of noise emissions has been carried out by Muller Acoustic Consulting. The findings of the assessment are summarized below. Reference should be made to the *Noise Assessment* that is submitted with the development application for further information or clarification of any matter concerning the assessment and recommendations. The purpose of the *Noise Assessment* is to quantify potential environmental noise emissions associated with the construction and operation of the project. Where impacts are identified, recommendations are made to mitigate and manage noise.

5.5.2 Findings

The results of the Noise Assessment demonstrate that noise levels are expected to comply with noise management levels at the identified receivers shown in Figure 14 during standard construction hours and taking into account the standard mitigation measures. Similarly, operational noise management levels are satisfied at all receiver locations. Road noise emissions associated with the project are anticipated to satisfy the relevant Road Noise Policy criteria at all receivers along the proposed transportation route. Sleep disturbance is not anticipated, as there are no operational noise sources that

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generate significant maximum noise events and noise emissions from the project are predicted to satisfy the EPA maximum noise level criteria. A qualitative assessment of potential vibration impacts has been completed. Due to the nature of the works proposed and distances to potential vibration sensitive receivers, vibration impacts from the project would be negligible.

Based on these results, the project satisfies the relevant requirements of the *Interim Construction Noise Guideline*, *Noise Policy for Industry* and the *Road Noise Policy*. Approval of the project is supported subject to the implementation of recommended mitigation measures.

5.5.3 Mitigation measures

The following mitigation measures are recommended to address noise emissions during the construction phase. Reference should be made to *Table 12 Standard Mitigation Measures* in the *Noise Assessment* dated 29 October 2024 for further details.

- Implement community consultation or notification measures,
- Site inductions,
- Minimise disturbance arising from delivery of goods to construction sites,
- Shield stationary noise sources, and
- Shield sensitive receivers from noise activities.



Figure 14: Location of noise sensitive receivers. Source: Muller Acoustic Consulting

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TOWN PLANNING**5.6 Traffic and access****5.6.1 Assessment of impacts****Traffic and transport** (Large Scale Solar Energy Guideline – for consideration only)

Applicants should consider whether the local and classified road network can accommodate the traffic generated by the construction of the solar energy project, having regard to any advice from relevant road authorities.

Applicants should provide a clear list of road upgrades required and an assessment of the relevant impacts of these upgrades, having regard to advice from relevant road authorities. Applicants must identify whether the road upgrades require landowner's consent.

A *Traffic and Parking Impact Assessment* has been prepared by McLaren Traffic Engineering. The findings of the assessment are summarized below. Reference should be made to the *Traffic and Parking Impact Assessment Report* that is submitted with the development application for further information or clarification of any matter concerning the assessment and recommendations.

The traffic assessment includes a description of the existing road network and considers expected traffic generation during site construction and operation. Site access arrangements and intersection capacity are also considered.

It is noted in the traffic assessment that access is proposed from Cadia Road which is an unclassified local road with a signposted 100km/hr speed limit. Cadia Road joins Forest Road to the north which is a classified regional road. All construction vehicles required to access the site will utilise the existing road network. The largest construction vehicle required to access the site is a 26 metre B-Double and is to access the site via a right turn from Cadia Road and egress the site via a left turn onto Cadia Road.

Construction and operation of the solar farm does not require the use of over-size and over-mass (OSOM) vehicles. The project site is neither of sufficient size or capacity or fronted by/provided access via a classified road. Referral to Transport for NSW as part of the development application process is not required.

In terms of public transport, the site is located within a 1.9 kilometre walking distance of a bus stop (ID: 280060) with services provided by Orange Buslines which connect to the town centre and hospital. Orange Train Station is located approximately 5.6 kilometres to the north-east of the project site which services the North West NSW TrainLink and the Western NSW TrainLink timetable.

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5.6.2 Findings

Parking

A maximum of 30 construction workers on site at any one day are likely to generate movements in the order of 24 vehicles entering and exiting the site. This is based on the number of vehicles being 80% of the workforce.

The provision of one parking space per employee is considered appropriate therefore 24 spaces are to be provided during construction and three during the operational phase. On site parking should be in an informal/temporary arrangement for the type of development proposed. If more parking spaces are needed on-site then a shuttle bus service can be implemented to transport construction workers to and from a location in Orange.

Traffic impacts

During the construction period an estimated 80 trucks (including up to 26 metre B-Doubles) will access the site and are expected to generate up to eight truck movements per day (4 inbound and 4 outbound). The trucks will access the site throughout the day generally between 10.00am and 2.00pm and would therefore not contribute to morning or afternoon peak hour traffic.

Traffic generation is given in Table 7 below. The proposed development is classified as low impact with reference to the *Austrroads Guide to Traffic Management Part 12: Integrated Transport Assessments for Developments*.

Table 7: Expected traffic generation

Phase	Description of vehicles	Expected vehicle trips
Establishment	10-15 trucks and trailers to deliver gravel with 4 to 5 workers with 2 persons per vehicle	10 vehicle trips per day for 2 to 3 days
	Light vehicles	4 to 6 vehicle trips per day
Construction	80 B-double articulated trucks of 26m length to deliver equipment	8 vehicle trips per day
	40 light vehicle trips for 40 construction workers (worst case with no shuttle bus operation)	80 vehicle trips per day
Commissioning	Light & heavy rigid vehicles for 10 workers with 2 persons per vehicle	10 vehicle trips per day
Operational	1 light vehicle for maintenance contractor	2 vehicle trip every 2 to 3 months

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A sight distance of 160 metres either side of the site entry is required. The minimum sight distance is achieved on approach to the site entry from both the north and the south, resulting in compliance with AS2890.1:2004 and AS2890.2:2018.

5.6.3 Mitigation measures

No mitigation measures are recommended to manage traffic and car parking impacts.

5.7 The community and economy**Social and economic impacts (Large Scale Solar Energy Guideline – for consideration only)**

A social impact assessment is required for all state significant projects and must be undertaken in accordance with the department's [Social Impact Assessment Guideline for State Significant Projects \(PDF 2.181 KB\)](#). The assessment will include both positive and negative impacts of the proposed development on potentially affected people and groups, including how the impacts are distributed. This includes workforce accommodation, job creation opportunities and flow-on economic impacts to local communities.

5.7.1 Population and accommodation

The population of Orange urban centre in 2021, as defined by the Australian Bureau of Statistics which includes the town of Orange and rural land surrounding the settlement, was 40,127 persons. The total population of Orange local government area in 2021 was 43,512 persons. Orange township represents over 90% of the LGA population. The median age of people in Orange urban centre in 2021 was 36 years compared to 37 for the LGA.

Unemployment at the time of the 2021 Census of Population and Housing was 3.6% of the labour force comprising persons aged 15 years and over in Orange urban centre. The labour force participation rate in 2021 was 61.7%. The top three occupations were professionals, technicians and trade workers, and community and personal service workers. The top three industries of employment were hospitals, gold ore mining, and other social assistance services.

There were a total of 16,461 private dwellings in Orange in 2021. 91.4% of these were occupied private dwellings. There were 1,414 unoccupied private dwellings or 8.6% of all private dwellings. There were a further 62 unoccupied private dwellings across the LGA. The majority of dwellings in Orange (85.4%) were separate houses and the remainder were medium density dwellings comprising semi-detached, row or terrace houses, townhouses, flats and apartments.

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There are 120 establishments offering accommodation for visitors to Orange and the surrounding district listed on the NSW Government's VisitNSW website <https://www.visitnsw.com/destinations/country-nsw/orange-area/accommodation>. These include holiday parks, motor inns, bed and breakfasts, serviced apartments and hotels. In addition to these establishments there are 1,414 unoccupied private dwellings some of which may be available as short term rentals, and unregulated accommodation places such as AirBnB and Stayz. Accommodation is also on offer in the nearby town of Bathurst and numerous villages within a short distance of Orange.

Table 8: Key demographic characteristics

Sector	Characteristic	Orange urban centre	Orange LGA	NSW
Population	Total persons	40,127	43,512	8,072,163
	Median age	36	47	39
Employment	Labour force participation rate	61.7%	62.1%	58.7%
	Unemployment rate	3.6%	3.5%	4.9%
Housing	Occupied private dwellings	91.4%	91.7%	90.6%
	Unoccupied private dwellings	8.6%	8.4%	9.4%
	Total private dwellings	16,461	17,659	3,199,992
	Average occupancy rate	2.4	2.5	2.6
	Median monthly mortgage repayments	\$1,668	\$1,700	\$2,167
	Median weekly rent	\$330	\$330	\$420
	Proportion separate houses	85.4%	86.3%	65.6%

5.7.2 Agriculture and land capability

Agricultural land use principles (Large Scale Solar Energy Guideline – for consideration only)

1. Applicants should consider the agricultural capability of the land during the site selection process.
2. Applicants should avoid siting solar energy projects on important agricultural land as far as possible.
3. Agricultural assessment should be proportionate to the quality of the land and the likely impacts of a project.
4. Mitigation strategies should be adopted to ensure that any significant impacts on agricultural land are minimised.

Orange is located in the Central West Region as defined by the Australian Bureau of Agricultural and Resource Economics and Sciences. The agricultural sector supports an estimated 7,351 jobs or 12.5% of regional employment in the region.

(https://public.tableau.com/app/profile/australian.bureau.of.agricultural.and.resource.economics.and.sci/viz/AMR_v9_A3L/Dashboard1).

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Data released in 2022 indicates that the estimated annual economic output of the agricultural sector was \$2,427 million in the region with wheat and cattle and calves contributing the bulk of this value. Agricultural land in the region occupies three quarters of the region. The most common land use by area is grazing native vegetation followed by modified pastures and cropping. There are a total of 3,675 farms operating in the Central West region.

The Department of Primary Industries issued a factsheet in September 2012 titled *Central West Region Pilot Area Agricultural Profile*. The project identified important agricultural lands in a study area which included Orange, Forbes, Cabonne and Blayney LGAs to guide land use planning and support sustainable industry development.

A key characteristic of the study area is the diversified production system that combines cropping with sheep meat, wool or cattle production. The variety of landscapes and climates in the study area mean that a diverse range and quantity of produce can be grown. The range of agricultural industries in the study area is significant and includes various crops, fruit, beef, wool, prime lambs, milk, pigs, grapes, vegetables, eggs, nuts and meat poultry.

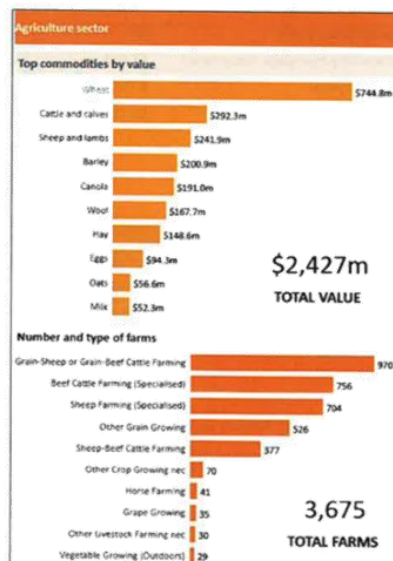


Figure 15: Central West region agricultural data. Source: ABARES 2023

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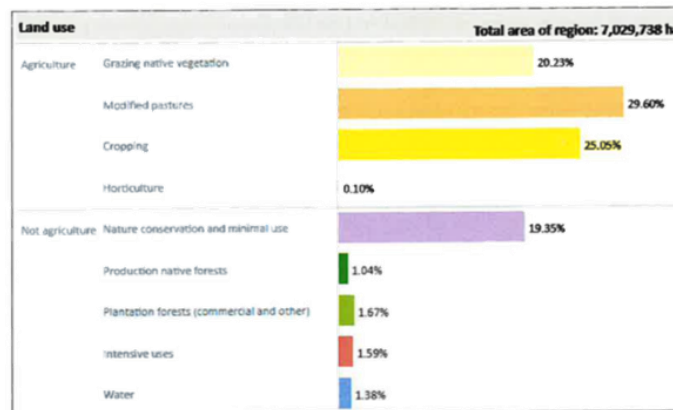


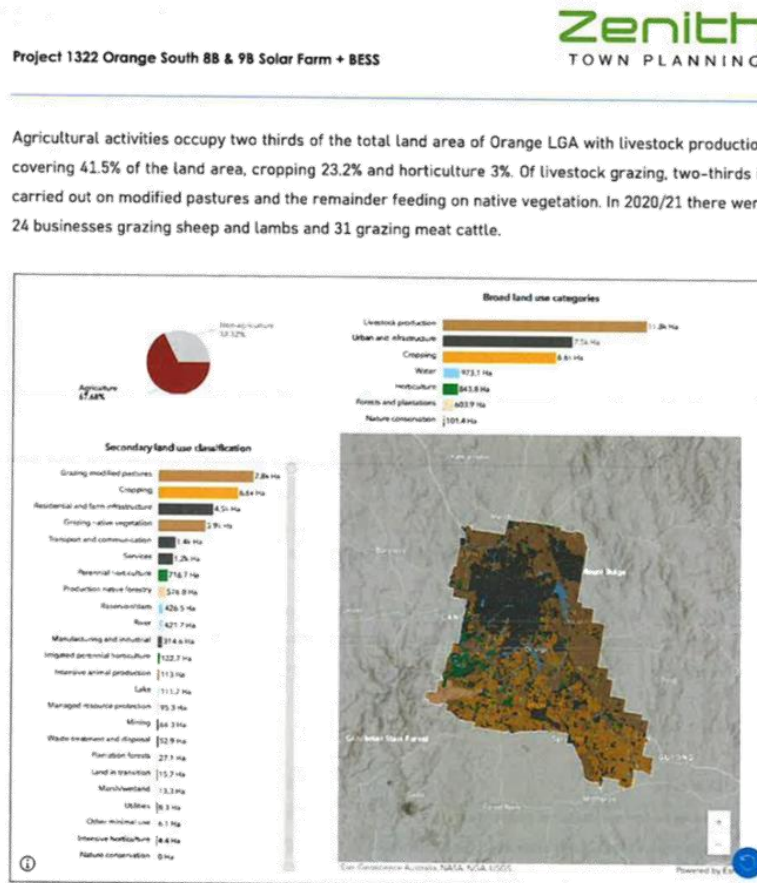
Figure 16: Central West region land use data. Source: ABARES 2023

Data regarding agricultural production in Orange LGA has been sourced from *AgTrack – Agricultural and Land Use Dashboard* that is maintained by the Department of Primary Industries and Regional Development. The most recent data is for the 2020/2021 financial year.

Table 9: Agricultural data for Orange LGA 2020/2021

Land area	284 square kilometres
Area used for agricultural production	192 square kilometres
Proportion of total land area used for agriculture	68%
Total gross value of agricultural commodities	\$15.19 million
Total employment directly related to agriculture	300 fte
Agricultural commodities produced	22
Total agricultural businesses	49
Agricultural commodities diversity	32% of 59 commodities produced in NSW

Orange LGA is located within the Central West/Orana planning region as defined by the NSW Government (noting that the boundaries of the region differ to those defined by the Commonwealth Government). The total gross value of agricultural commodities produced in 2020/2021 was \$3.56 billion.



The total gross value of agricultural commodities produced in Orange LGA in 2020/21 was 15.19 million. Of this livestock products including meat accounted for 58.1% of this produce, the second biggest producer in value terms was the fruit and nuts sector which accounted for 26.1% of the gross value of commodities. The agricultural sector employed 300 people in 2020/21 and a further 109 jobs were in related industries within the agriculture, forestry and fishing sector.

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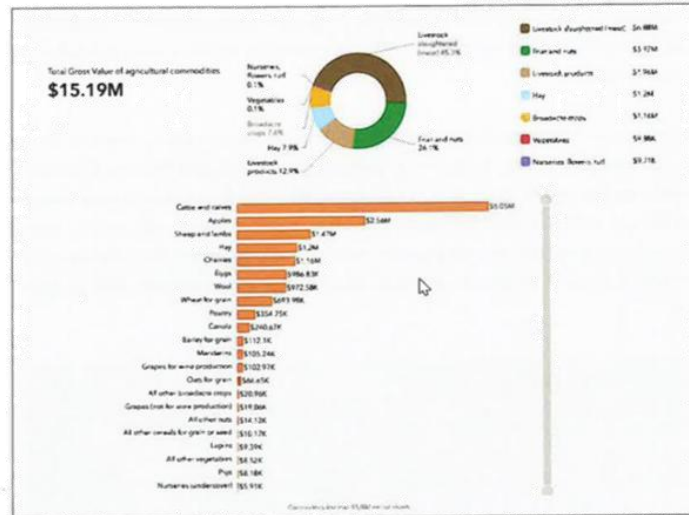


Figure 18: The gross value of agricultural commodities 2020/21 Orange LGA. Source: AgTrack

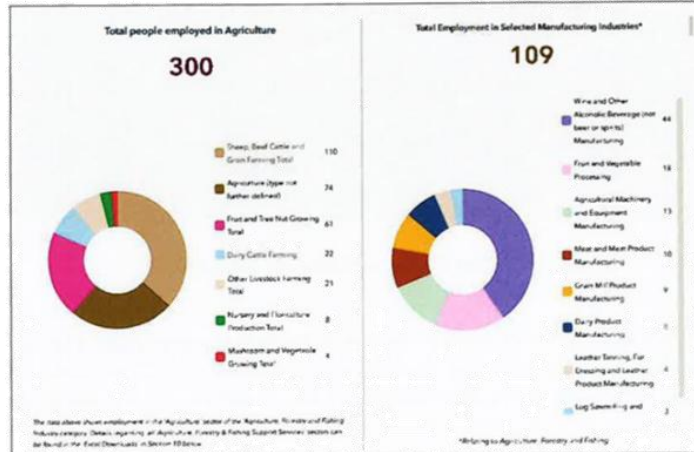


Figure 19: Agricultural employment in Orange LGA 2020/21. Source: AgTrack

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DPI Agriculture uses the land and soil capability mapping scheme as the preferred methodology for the classification of agricultural land. Eight classes of rural land are mapped plus flood irrigation, and mining and quarrying land.

Figure 20 below shows land capability mapping for the project site and surrounding land. The project site has a land capability of class 3. This is high capability land that has moderate limitations and is capable of sustaining high-impact land uses, such as cropping with cultivation, and using more intensive, readily available and widely accepted management practices. However, careful management of limitations is required for cropping and intensive grazing to avoid land and environmental degradation. (*The land and soil capability assessment scheme – A general rural land evaluation scheme for NSW, 2nd Approximation, OEH*).

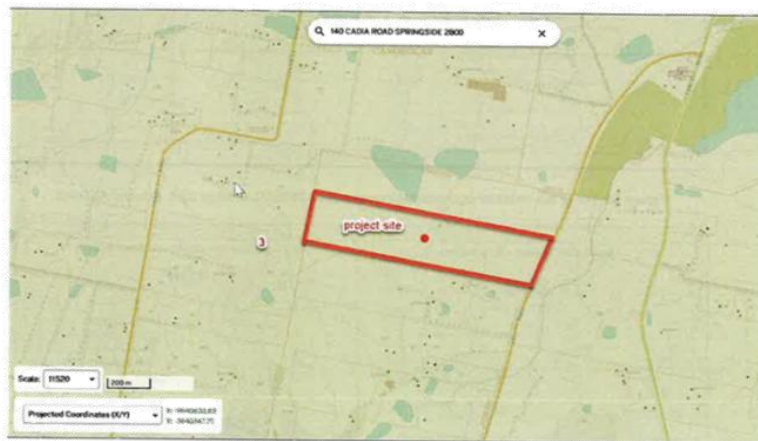


Figure 20: Land capability mapping. Source: SEED

The Department of Primary Industries (Agriculture) has recently released draft mapping of *State Significant Agricultural Land* in NSW under *SEPP (Primary Production and Rural Development) 2019*. The project site is mapped as being *State Significant Agricultural Land* under *State Environmental Planning Policy (Primary Production) 2021* as shown in Figure 21 below.



Figure 21: Draft State Significant Agricultural Land Map. Source: DPI 2022

Strategic regional land use mapping in Figure 22 indicates that the project site is also mapped as Biophysical Strategic Agricultural Land (BSAL). This is land with high quality soil and water resources capable of sustaining high levels of productivity.



Figure 22: Strategic Regional Land Use Policy. Source: SEED

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Important Agricultural Lands are being mapped across NSW by the Department of Primary Industries. The purpose of this mapping is to identify land which has the inherent capability of being productive with minimal input and to assist in making planning decisions about agricultural land.

5.7.3 Potential socio-economic impacts

Employment

It is anticipated that there will be 50 personnel directly involved in construction with a maximum of 30 workers on site at any one time. Construction is expected to take approximately four months. Varying levels of expertise will be required ranging from labourers to qualified electricians and project managers. In addition, personnel would be involved in transport and delivery of materials to the site. Some of this employment may be able to be sourced locally. The construction period and availability of workers is subject to the availability of skilled and unskilled labour which is currently in short supply in regional areas due to high levels of development including infrastructure renewal.

Expenditure

This initial expenditure generates flow on effects throughout the local economy through income and employment. EDPR Australia Pty Ltd will commission local professionals to carry out the land survey of the project site. If necessary, sites officers employed by Orange Local Aboriginal Land Council will be engaged to carry out a cultural survey prior to commencement of works to identify any Indigenous items or places present on the project site.

The facility will bring direct economic benefits to the local economy through wages and salaries and indirect benefits through the need for accommodation and sustenance in the area for non-local employees. Restaurants, cafes, bakeries, supermarkets, pubs, newsagents would all benefit from the additional business this will bring.

Accommodation

It is considered that there is adequate accommodation available to cater to the 50 construction workers given the number of visitor accommodation establishments in the area. In addition, there are 1,414 unoccupied private dwellings in Orange urban centre some of which may be available for short term rentals and as unregulated visitor accommodation. There are likely to be negligible effects on the availability of affordable rental over the short construction period as it is not expected that landlords would evict long-term tenants in preference of short term workers. Workers coming to the area would

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be likely to take up tourist accommodation similar to mine workers across country NSW, however, construction may be limited to the off-peak tourist season if necessary.

Agrivoltaics**Heat island** (Large Scale Solar Energy Guideline – for consideration only)

Where a solar energy project is located adjacent to a horticultural or cropping activity, the solar array should be setback from the property boundary by at least 30m to mitigate any heat island effect.

The amount of land given over to renewable energy production will be 13.01 hectares which is 50% of the whole property and 0.07% of the total area of land used for agriculture in Orange LGA. There will be a minor temporary loss of agricultural land, however, the landowners may continue to farm the project site, for example, by grazing livestock around the array and on the remaining vacant parts of the rural parcel. These activities which are defined as extensive agriculture in *Orange LEP 2011*, do not require development consent in zone C3 Environmental Management and may proceed at any time. The additional lease income may be put to improvements elsewhere on the property. The facility will contribute to the local economy through direct and indirect employment over the short term and through the benefits that renewable energy supply will bring to the region.

EDPR Australia encourages livestock grazing around the solar array to continue agricultural production and with the added benefits of reduced land maintenance and fire risk. The solar array will likely improve pasture yields. The panels protect the ground in summer, reducing moisture loss from the soil and increasing moisture due to condensation on the panels. Experience elsewhere is that the panels also protect lambing ewes from eagles and ravens and the security fence will help protect the lambs from foxes. The NSW Farmers *Renewable Energy Landholder Guide* (2000) also notes that 'some producers have found the area (beneath and around a solar array) to be an ideal lambing paddock, due to the added shelter and protection provided by chain link perimeter fencing'. Land adjoining the project site is not being used to cultivate crops or for horticulture within 30 metres of the boundary at the present time.

The potential for dual use of rural land, known as agrivoltaics, is gaining media attention as evidenced by an article in the *Sydney Morning Herald* in August 2024. The owner of a property in Glenrowan, Victoria says that *there is no noticeable difference in productivity between the paddocks with solar panels and those without ... (the sheep) have shade in summer and shelter from the rain and the grass is greener from the moisture running off the panels*. This practice has been commonplace in Europe and North America for about a decade. The chief executive of Farmers for Climate Action is quoted as saying *renewable energy helps make farms more financially secure because it pays the farmer drought-proof income without compromising agricultural productivity* (*Sydney Morning Herald* by Caitlin Fitzsimmons, 18 August 2024).

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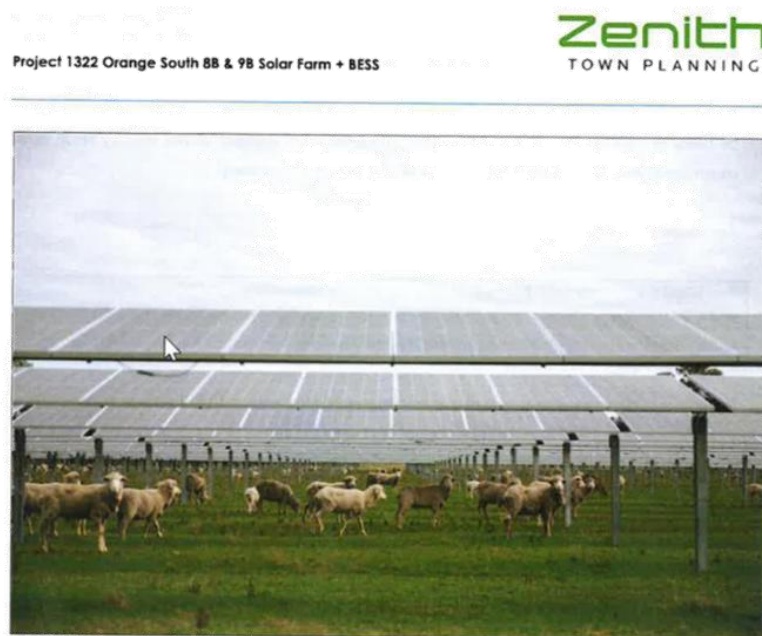


Plate 4: Sheep grazing beneath solar panels. Source: Chris Grose/Beyond Zero Emissions

In summary:

- The solar farm will generate community economic benefits through local employment opportunities during the planning and construction phases as well as limited maintenance and inspection jobs once operational,
- Indirect economic benefits are through the flow-on expenditures to linked industries,
- The development of a solar farm will create a new market for local contractors and expand diversity of income for the landowners,
- There will be only a minor temporary loss of agricultural land although the land has not been used for agricultural purposes for several years. Sheep grazing may continue to some extent and the remaining land that is part of the parcel and not proposed to be used for renewable energy may be used for livestock grazing or cultivation in the future.. The loss of 13.01 hectares of agricultural land represents 0.07% of the total land area used for agriculture in Orange LGA,
- The array of panels can be removed once the facility is decommissioned and the land returned to its current condition,
- Community benefits of the solar farm will be through an understanding of sustainable development and by gaining commitment to greater reliance on renewable energy, and

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- The power generated by the solar farm would be directed to the township of Orange for consumption by households and businesses.

5.7.6 Mitigation measures

It is recommended that labour to construct the solar farm and for ongoing maintenance be sourced from within Orange LGA wherever possible. Where labour needs to be brought into the area, it is considered that there would be sufficient accommodation options for employees in the LGA for the estimated maximum of 50 workers engaged during the construction phase. It is also recommended that advertising be placed in local media and to approach local businesses to determine whether there is the capacity and expertise available in Orange and surrounding districts to participate in the construction and ongoing maintenance activities.

5.8 Heritage**5.8.1 Indigenous heritage****Aboriginal cultural heritage** (Large Scale Solar Energy Guideline – for consideration only)

The loss of Aboriginal cultural heritage should be avoided. If losses cannot be avoided, impacts must be minimised. An assessment of the likely impacts on Aboriginal cultural heritage must be undertaken and should include consultation with the Aboriginal community undertaken in accordance with the [Aboriginal cultural heritage consultation requirements for proponents](#) and test excavations, if required.

5.8.1.1 Determining whether to use the generic due diligence process

The property lies within the area managed by Orange Local Aboriginal Lands Council. To determine whether due diligence should be carried out a number of questions are posed:

1. *Is the activity a Part 3A project declared under s.75B of the EP&A Act?*

The proposed development is of regional scale and is not considered major development, noting that Part 3A of the EP&A Act no longer exists.

2. *Is the activity exempt from NPW Act or NPW Regulation?*

The proposed development is not exempt from NPW Act or NPW Regulation.

3. *Will the activity involve harm that is trivial or negligible?*

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The proposed development will not cause harm that is trivial or negligible and involves ground disturbance.

4. Do either or both of these apply:

- Is the activity in an Aboriginal Place?
- Have previous investigations that meet the requirements of this code identified Aboriginal objects?

The site of the proposed development is not a declared Aboriginal Place under the NPW Act and there are no known previous investigations into the presence of Aboriginal objects on the site.

5. Is the activity a low impact one for which there is a defence in the NPW Regulation?

The proposed development is not a low impact activity that is listed in the NPW Regulation.

6. Do you want to use an industry specific code of practice, adopted by the NPW Regulation or other due diligence process?

There is no industry code that applies to the development of small-scale solar farms or other form of renewable energy that has been adopted under the NPW Regulation. No other due diligence process has been carried out.

It is therefore necessary to follow the generic due diligence process outlined in the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW*. This code was implemented by the NSW Government in 2010 to ensure that an adequate due diligence process that addresses Aboriginal cultural heritage issues has been carried out.

This process follows the steps shown in Figure 23 below.

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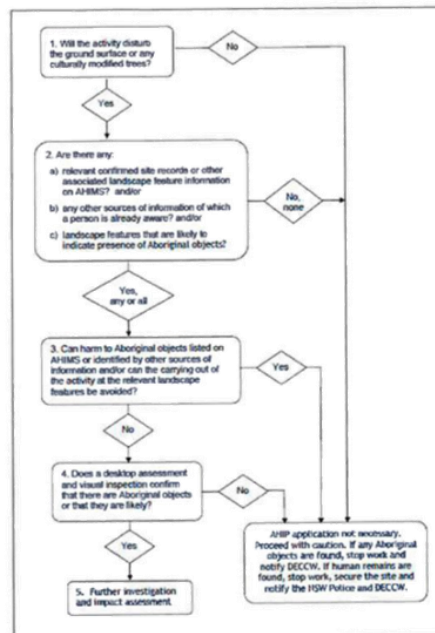


Figure 23: The generic due diligence process.

Source: Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW, 2010

5.8.1.2 Implementing the due diligence process

The generic due diligence process outlined in the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW* was implemented to ensure that an adequate due diligence process that addresses Aboriginal cultural heritage issues has been carried out. This process follows the following five steps:

1. Will the activity disturb the ground surface?

Yes. Earthworks will involve trenching which is required for the cabling of each PV array/module to inverters and a substation. Other earthworks would be pile-driving to support module frames, and to enable the placement of concrete slabs and gravel accessways. However, most of the infrastructure would be pre-fabricated off-site, delivered and assembled on-site.

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2a. Search the AHIMS database

In accordance with the code, an on-line search was carried out of the *Aboriginal Heritage Information Management Service (AHIMS)* that is maintained by Heritage NSW. The search is part of the due diligence process and remains valid for 12 months.

A search of Lot 5 DP 6173 with a buffer of 50 metres to encompass the development footprint and access tracks was performed on 19 November 2024. The search results are:

- There are no Aboriginal sites recorded in or near the selected location, and
- There are no Aboriginal places that have been declared in or near the selected location.

It is noted that surveys for Aboriginal objects have not been carried out in all parts of NSW and Aboriginal objects may exist on a parcel of land even though they have not been recorded in *AHIMS*. Further, not all known Aboriginal sites are registered on the *AHIMS* database and not all sites consist of physical evidence or remains, e.g. dreaming and ceremonial sites.

2b. Activities in areas where landscape features indicate the presence of Aboriginal objects

The development area does not possess landscape features that indicate the presence of Aboriginal objects. The vast majority of the site has been cleared for many years and used to graze livestock and horticulture. The development area is not located within 200 metres of a waterbody, within a sand dune or on a ridge top, ridgeline or headland, is not located within 200 metres of a cliff face or within 20 metres of a cave, rock shelter or cave mouth. There is a very low probability of Aboriginal objects occurring on the project site.

3. Can you avoid harm to the object or disturbance of the landscape features

This step only applies if the proposed development is on land that is not disturbed land or contains known Aboriginal objects.

The development area has been disturbed and farmed, does not possess significant landscape features and no known Aboriginal objects are listed in *AHIMS*.

4. Desktop assessment and visual inspection

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This step only applies if the proposed development is on land that is not disturbed land or contains known Aboriginal objects.

A site inspection was made on 7 December 2022 and there was no obvious evidence of any artefacts or items of cultural significance on the surface of the land.

5. Further investigations and impact assessment

A basic search of AHIMS records has been carried out and the generic due diligence process has been implemented. It is considered that extensive search of AHIMS records or further investigations and an Aboriginal Heritage Impact Permit are not required as there are no Aboriginal sites or places that have been recorded or observed on the project site and the landscape features of the site do not indicate the presence of any Aboriginal cultural objects.

Orange LALC has been advised of the plans to develop the solar farm by email. As not all culturally significant items or places are made public and listed on AHIMS, a request was forwarded to the LALC enquiring as to whether the organization has any knowledge of Indigenous items or places of significance on the property and whether a site survey is required to be carried out prior to commencement of works.

A representative of Orange LALC replied to an email relating to the Orange South 7A Solar Farm & BESS at 25 Lone Pine Avenue that is also proposed by EDPR Australia stating that *this parcel is privately owned land and there would be no way of knowing if there are any items of cultural significance. If the owner is planning any development, he would need to contact us here at the OLALC to undertake a cultural heritage study to have this determined.*

A response has not been received from Orange LALC regarding the subject application for Orange South 8B & 9B, however, it is assumed that a site survey should be carried out before any work commences to determine whether an Aboriginal Cultural Heritage Assessment is necessary and subsequently whether an Aboriginal Heritage Impact Permit is required to be obtained.

5.8.2 Non-indigenous heritage

Non-Aboriginal heritage (Large Scale Solar Energy Guideline – for consideration only)
An assessment is required of the likely impacts on archaeological objects and places.

The site of the proposed Orange South 8B & 9B Solar Farm + BESS is not listed as an item of heritage significance in Schedule 5 Environmental heritage of Orange Local Environmental Plan 2011. The nearest

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items that are listed in Schedule 5 are item 114 Gosling Creek Reservoir and item 62 Adavale House at Spring Creek. Both of these items are of local heritage significance. The closest point of item 114 is 575 metres from the project site and item 62 is 1.1 kilometres from the eastern boundary of the project site. These two items are not considered to be located in the vicinity of the project site meaning that a heritage management document is not required.

5.8.3 Mitigation measures

There are no recommendations in relation to Indigenous or non-Indigenous heritage.

5.9 Glint and glare**5.9.1 Assessment of impacts****Glint and glare principles** (Large Scale Solar Energy Guideline – for consideration only)

1. Solar panels should be sited to reduce the likely impacts of glint and glare.
2. Solar panels and other infrastructure should be constructed of materials and/or treated to minimise glint and glare.
3. If a large scale-solar energy development is likely to exceed the relevant criteria for glare and standards for glint, mitigation strategies must be adopted to reduce impacts.

A *Glint and Glare Assessment* has been carried out using the Solar Glare Hazard Analysis Tool by ITP Renewables. The findings of the assessment are summarized below. Reference should be made to the *Glint and Glare Assessment* that is submitted with the development application for further information or clarification of any matter concerning the assessment and recommendations.

The *Glint and Glare Assessment* is based on identifying the potential sensitive receptors in close proximity to the project site having regard to the elevation of the site relative to surrounding land and structures or vegetation that would act as visual barriers. The analysis is desktop and is considered to represent the worst-case scenario as modelling is unable to capture all vegetation and structures that may obstruct glint and glare to a particular receptor. If necessary, where potential glare and glint impacts are assessed mitigation measures are recommended to reduce potential impacts to an acceptable level.

5.9.2 Findings

The results of the GlareGauge analysis indicated that 34 observation points and 7 road routes may receive green glare, while 4 observation points and 3 road routes may receive yellow glare. Yellow glare has the potential to cause after image to observers, while green glare has low potential to

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cause after image. Observation points 1 and 2, which are located to the south of the project-associated dwelling, are the most impacted by glare both receiving up to 15 minutes of glare in a single day. The glare experienced by these locations is only for a short duration per day. ITP recommends extending the screen from the southern boundary to partially screen the south-eastern boundary of the development area to mitigate glare potential at these observation points.

Yellow glare experienced along the road routes did not exceed 15 minutes in a single day and is generally limited to small sections of the roads. However, the intersection of Forest Road and Gosling Road shows glare will impact drivers navigating this intersection. This may require mitigation through the extension of the vegetation screening around the eastern side of the site. This impact is considered minor and does not mandate the extension of the vegetation screen for the length of the eastern boundary of the array.

As a result of the glare study, ITP believe that the proposed vegetation screening will be sufficient to mitigate visual impacts of glare in most cases. Where yellow glare is experienced, the durations are short and low traffic is expected in these areas.

5.9.3 Mitigation measures

Extend the southern vegetation screen along the south-eastern boundary of the site to mitigate glare to dwellings adjoining the project site to the south. Consider extending the vegetation screen for the length of the eastern boundary of the array.

5.10 Landscape character and visual amenity

5.10.1 Assessment of impacts

Visual amenity principles (Large Scale Solar Energy Guideline – for consideration only)

1. The baseline character of the landscape must be determined through engagement with the community.
2. Applicants must consider landscape character and visual impacts early in the site selection and design process to minimise impacts and conflicts where possible.
3. Solar energy projects should be sited and designed to avoid areas with topographical constraints that would increase the visibility of a development.
4. Where solar energy projects are likely to result in moderate or high visual impacts, mitigation strategies must be adopted to reduce or manage impacts.

Impacts on landscape character and visual amenity of the proposed solar farm have been assessed by Zenith Town Planning Pty Ltd. Reference should be made to the *Visual Impact Assessment* that is

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submitted with the development application for further information or clarification of any matter concerning the assessment and recommendations.

The methodology included site inspections of the location of the proposed works and the surrounding area in December 2022 to identify potential viewpoints, land uses and characteristics of the surrounding area, and includes an assessment against planning principles for visual impact established by the Land and Environment Court.

The assessment estimates the likely impacts on landscape character and viewpoints within a 2 kilometre radius based on the sensitivity to physical change and the magnitude, or relative size and scale, of the works to apply an impact rating. The observation points and public roads shown within the visual assessment catchment are the same as those used for the glint and glare analysis by ITP Renewables.



Figure 24: Visual catchment map. Source: ITP Renewables

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Plate 5: Dwelling to the south of the site



Plate 6: Dwelling north-west of the site

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The township of Orange is mapped as a 'regional city' in *SEPP (Transport and Infrastructure) 2021*. Impacts on scenic quality and landscape character have been assessed in accordance with that state policy.

The overall impact of the proposed Orange South 8B & 9B Solar Farm + BESS on landscape character is assessed to be low-moderate for both private property and the public domain. However, distance, the undulating topography and clustered vegetation lessen the effects on landscape character.

Five dwellings to the south and north-west have a visual impact rating of high due to being in close proximity to the project site or within mid-range proximity and at a higher elevation than the centre of the arrays and with a potential direct or filtered line of sight to the arrays. A further eight observation points have a visual impact rating of moderate and eight observation points have a visual impact rating of low. Distance, topography, existing vegetation and structures would obscure visibility of the site from the remaining observation points.

The visual impact on Cadia Road is high on approach to the project site from the north and whilst passing the northern boundary but will be tempered by the difference in elevation of around 17 metres meaning that it would be necessary to look up and across a distance of more than 400 metres to see the eastern array.

The rural landscape is a primary production environment and appropriate uses including solar farms are permissible in the zone. The development is of a type that is suited to a rural location due to the land area required, proximity to an urban centre and access to energy infrastructure. The presence of the solar farm in the landscape can be reversed without permanent impact. The land will return to its current appearance after the solar farm is decommissioned in approximately 35 years' time. The process of decommissioning will see the removal of all panels, supporting frames and ancillary items such as the inverter stations and fencing.

5.10.3 Mitigation measures

- a. It is recommended that vegetation be planted as a landscape screen along the southern and western boundaries and for a distance of 100 metres along southern section of the eastern edge of the facility on the outer side of the security fence as shown below to mitigate visual impacts on neighbouring private properties and users of Cadia Road,

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Figure 25: Recommended landscape screen

- b. The landscape screen along the western boundary and part of the eastern boundary comprises shrubs or trees that grow to a maximum height of 3 metres so as to not interfere with sunlight access to the array and be planted to a width of 3 metres with stepped plantings to ensure dense screening.
- c. The landscape screen along the southern boundary comprises shrubs or trees that grow to a maximum height of 5 metres and be planted to a width of 5 metres with stepped plantings to ensure dense screening plus an additional row of screening, 1 metre wide by 5 metres high along the eastern half of the southern boundary adjacent to the stock fence line. The screen is to be planted on the outer side of the security fence and between the security fence and realigned watercourse. The screen is proposed to be 5 metres high and 1 metre in width along the eastern half of the southern boundary, between the channel and the fence line, to avoid planting across the channel, and
- d. All plants used in the landscape screen should be endemic to the Orange locality to ensure that the vegetation contributes to the rural landscape character of Orange South and enhances local biodiversity values. Plants should be selected from the table in section 6.5 of *Chapter 6 Rural Development of Orange Development Control Plan 2004* (as amended in 2021) titled *Suitable plants for buffers in the Orange area*.

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The following plants that may be suitable for landscape screening are recommended in Chapter 6 Rural development of *Orange DCP 2004* for use as buffers in rural areas of Orange LGA.

Table 10: Suitable plants for buffers in the Orange area. Source: Orange DCP 2004

Botanical name	Common name	Mature height (m)
ACACIA		
<i>Baileyana</i>	Cootamundra Wattle	6.0
<i>Boormanni</i>	Snowy River Wattle	4.0
<i>Cardiophylla</i>	Wyalong Wattle	3.0
<i>Fimbriata</i>	Fringed Wattle	6.0
<i>Specatbilis</i>	Mudgee Wattle	5.0
BANKSIA		
<i>Ericifolia</i>	Heath Banksia	2.0
CALLISTEMON		
<i>Pallidus</i>	Lemon Bottlebrush	4.0
<i>Pinifolius</i>	Green Bottlebrush, Red Bottlebrush	2.0
<i>Seeberi</i>	Alpine Bottlebrush	1.0
<i>Subulatus</i>		1.5
GREVILLEA		
<i>Rosmarinifolia</i>		2.0
HAKEA		
<i>Sericea</i>	Bushy Needlewood	2.5
LEPTOSPERNUM		
<i>Flavescens</i>	Common Tea Tree	4.0
<i>Squarossum</i>	Peach Tea Tree	2.5
MELALEUCA		
<i>Armillaris</i>	Honey-Myrtle	6.0
<i>Decussate</i>	Cross-Leaved Honey-Myrtle	5.0
<i>Ericifolia</i>	Swamp Melaleuca	3.0
<i>Halmaturorum</i>	Salt Paper Bark	3.0
<i>Incana</i>	Grey Honey-Myrtle	2.0

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Project 1322 Orange South 8B & 9B Solar Farm + BESS

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TOWN PLANNING**5.11 Waste management****Waste management principles** (Large Scale Solar Energy Guideline – for consideration only)

1. Construction waste from large-scale solar energy projects must be minimised and the use of reusable and recyclable materials should be prioritised where possible.
2. Impacts on local waste management facilities must be minimised as far as practicable during construction, operation and decommissioning.
3. Recycling of photovoltaic panels and associated equipment should be prioritised and maximised as far as possible to avoid landfill.

5.11.1 Assessment of impacts

A *Waste and Decommissioning Assessment* of the waste generated during construction and operation of the proposed solar farm has been carried out by EDPR Australia to determine the appropriate means of waste disposal and recycling. The findings of the assessment are summarized below. Reference should be made to the *Waste and Decommissioning Assessment* that is submitted with the development application for further information or clarification of any matter concerning the assessment and recommendations.

The largest amount of waste will be generated during the construction phase and be classified as general solid waste (non-putrescible). Wastes would include wooden pallets, cardboard, plastics, green waste and domestic waste. Construction of a solar farm would not generate any putrescible waste products. Minimal waste would be generated when the farm is operational other than small amounts of replacement parts and packaging required for maintenance and repair works.

Local waste management facilities and capacities are identified in the assessment. Technology for recycling of PV panels is advancing rapidly worldwide and while recycling options currently exist, they are likely to be more advanced and readily available at the time of decommissioning. Options for recycling of PV panels should be reviewed as the project progresses.

Estimates of waste materials and proposed management arrangements for each phase of the development project are provided in Table 11 below.

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Table 11: Estimated waste materials and waste management arrangements

Waste	Source	Estimated quantity (tbc by contractor)	Bin/container	Disposal and management
Commissioning				
Cardboard	Solar panel cardboard packaging	30m ³	Cardboard only recycling skip bin (3)	Laydown area to set up skip bins for transfer to waste contractor's off-site facilities and/or an alternative public waste management facility
Wooden pallets	- Solar panel shipment - Solar tracker mounting shipment	97 m ³	Landfill skip bin (15)	Transfer to waste contractor's facilities or to an alternative public waste management facility
Plastics	- Plastic pipe offcuts/scrap - Solar panel plastic wrapping - Drums used to temporarily store diesel fuel and water - Electric cable reels	Minimal		Transfer to waste contractor's facilities or to an alternative public waste management facility
Scrap metal	Electric cable waste	Minimal		Transfer to waste contractor's facilities or engage a scrap metal merchant
Concrete	Excess concrete waste from inverter and battery foundations and piling works	Minimal		Specialised concrete recycling for repurposing into recycled products
Chemicals	- Used lubricating oils and filters - Unused or spent chemicals	Minimal	-	Fluids recycled where possible, or transfer to waste contractor's facilities
Operation				

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Waste	Source	Estimated quantity (tbc by contractor)	Bin/container	Disposal and management
	Waste as a result of maintenance or replacement of equipment	Minimal	-	Taken offsite to appropriate recycling/disposal
Decommissioning				
PV panels	- Glass for panels - Silicon for wafers - Supporting poles and mounts	16,000 panels (per site), 402 tonnes glass 60 tonnes silicon for wafers	-	Laydown area to set up skip bins for transfer to waste contractor's off-site facilities or to appropriate recycling facility
Scrap metal	Electrical cable waste	860 tonnes scrap metal (per site)	Landfill skip bins	Transfer to waste contractor's facilities
Equipment	Inverters and batteries	240 m ³ (per site)	Landfill skip bins	Transfer to waste contractor's facilities
Concrete	Foundations of the inverter, transformer and battery	19 m ³ (per site)	Concrete recycling bin	Specialised concrete recycling for repurposing into recycled products
Other	Fencing and storage containers	40-ft container (2) (per site)	-	Removed from site and reused where possible

Waste management should be predicated on the international hierarchy of waste management to avoid/reduce, reuse, recycle, recover, treat and dispose of waste products to avoid or reduce waste materials where possible, and to re-use, recycle and recover the majority of waste materials generated during each of the construction, operational and decommissioning phases.

5.11.2 Mitigation measures

It is recommended that a waste management plan be developed to provide detailed procedures to manage the waste stream.

The plan should contain:

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- Strategies to reduce waste during all project phases,
- Recycling, re-use and recovery strategies and opportunities,
- Classification of all waste streams with a tracking register and details,
- On site recycling management,
- Allocation of responsibilities for recycling, re-use and disposal, and
- Reporting and notification procedures if a waste incident occurs and there is a threat to the environment.

5.12 Decommissioning

Decommissioning and rehabilitation principles (Large Scale Solar Energy Guideline – for consideration only)
1. The land on which a large-scale solar energy project and supporting infrastructure is developed must be returned to pre-existing use if the project is decommissioned.
2. If operations cease, infrastructure (including underground infrastructure) should be removed unless there is significant justification for retaining it.
3. Land must be rehabilitated and restored to pre-existing use, including the pre-existing LSC class, if previously used for agricultural purposes.
4. The owner or operator of a solar energy project should be responsible for decommissioning and rehabilitation, and this should be reflected in an agreement with the host landholder.

5.12.1 Assessment of impacts

The expected operating life of the Orange South 8B & 9B Solar Farm + BESS (excluding the construction and decommissioning phases) is expected to be approximately 35 years depending upon market conditions. The proponent is seeking a flexible approach to any limits imposed on the period of operation of the solar farm that enables the operator to respond to market conditions and any technological changes that occur over the next few decades.

Upon decommissioning all infrastructure, including cabling and panels and mounting frames including footings and inverters would be disassembled and removed from the site. Panels may contain small amounts of silver, tin and lead, much of which are recoverable and also disposed of (if applicable) in a safe manner at decommissioning stage. The panels used are identical to those found in residential rooftop solar panels across Australia. Solar panels are made almost entirely with abundant, earth-friendly materials like glass, aluminium, copper, and silicon. Solar farms do not produce air or water pollution or greenhouse gases in operation.

Decommissioning will involve:

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Project 1322 Orange South 8B & 9B Solar Farm + BESS

- Notification of stakeholders (e.g. Essential Energy, Orange City Council) of proposed de-energisation,
- De-energisation of the solar farm and disconnection of assets,
- Removal of PV modules and associated infrastructure,
- Removal of electrical wiring, and
- Remediation of land.

Relevant equipment will be brought on to the site to facilitate decommissioning, including amenities for site crew for the duration of the works. This equipment may include mobile cranes, excavators, skid steers, loaders, rollers/compactors, pile drivers, telehandlers, skip bins, water carts, temporary shipping containers for storage, site office and site ablution blocks.

Full details of the process are provided in the *Waste and Decommissioning Assessment* prepared by EDPR Australia. Reference should be made to that report for an explanation of each step in the decommissioning process.

5.12.2 Mitigation measures

There are no mitigation measures in relation to decommissioning.

5.13 Health

Health (Large Scale Solar Energy Guideline – for consideration only)

Applicants should consider the power frequency and electric and magnetic field exposure guidelines referenced by the Australian Radiation Protection and Nuclear Safety Agency.

5.13.1 Assessment of impacts

The information presented in this section has been sourced from the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA). It includes a description of the type of electromagnetic radiation that may be produced by the generation and distribution of electricity.

The generation, distribution and use of electricity can produce extremely low frequency (ELF) electromagnetic fields (EMF) from electrically charged particles. The electric field is produced by the voltage whereas the magnetic field is produced by the current. The strength of the electric field is measured in units of volts per metre whilst the strength of the magnetic field is expressed in units of tesla (T), microtesla (µT), gauss (G) or milligauss (mG).

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ELF EMF is produced by both natural and artificial sources. Naturally occurring ELF EMF is associated with atmospheric processes such as ionospheric currents, thunderstorms and lightning. Artificial sources are the dominant sources of ELF EMF and are usually associated with the generation, distribution and use of electricity at the frequency of 50 or 60 Hz. The widespread use of electricity means that people are exposed to ELF electric and magnetic fields in the home, in the environment and in the workplace.

According to the Australian Radiation Protection and Nuclear Safety Agency, which maintains continual oversight of emerging research into the potential health effects of the EMF exposure, there is no established evidence of health effects from exposure to electric and magnetic fields from powerlines, substations, transformers or other electrical sources, regardless of proximity.

5.13.2 Mitigation measures

There are no mitigation measures in relation to health impacts.

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Project 1322 Orange South 8B & 9B Solar Farm + BESS

6. CONCLUSION**6.1 Findings****6.1.1 Suitability of the site**

The site is considered suitable for the proposed development of the Orange South 8B & 9B Solar Farm + BESS. A connection and capacity are available to the Essential Energy zone substation to transfer power generated by the solar panels to the township and on to the grid.

The development area is relatively free of constraints and is accessible to large delivery vehicles during the construction phase and for utility vehicles for ongoing maintenance.

6.1.2 Triple bottom line assessment*Environmental*

The likely impacts of the development have been considered in this Statement and supporting documents. Considerations include impacts on biodiversity, natural hazards, visual and scenic amenity, glare and glint, traffic, noise, air quality, water resources, indigenous and non-indigenous heritage, the community and the local economy. Any impacts on these interests have been found to be acceptable and mitigation measures have been recommended where necessary.

There will be minimal dust and noise emissions during construction and no dust or air emissions resulting from the development during the operational phase of the facility. Dust generated by any nearby industries would be managed through regular clearing of solar panels and is not considered a threat to the effective operation of the facility.

Noise impacts once operational have been assessed to be within noise management levels and therefore are not expected to interfere with inhabitants of dwellings near the site.

An intermittent 1st order stream runs along the southern boundary of the site and then runs north-south to the north-eastern corner of the 8B array. Some fencing and part of each array is to be located over and within 10 metres of the watercourse. The projects is integrated development as a controlled activity approval may be required to be issued under section 4.46 of the *Environmental Planning and Assessment Act 1979* for works on or over a mapped watercourse.

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Project 1322 Orange South 8B & 9B Solar Farm + BESS

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It is considered that the solar farm can co-exist with surrounding rural and semi-rural activities. It is recommended that the arrays be screened using vegetation types that are endemic to the Orange district which will ensure that visual impacts are mitigated as much as possible and scenic amenity is maintained.

According to the Australian Radiation Protection and Nuclear Safety Agency, which maintains continual oversight of emerging research into the potential health effects of the EMF exposure, there is no established evidence of health effects from exposure to electric and magnetic fields from powerlines, substations, transformers or other electrical sources, regardless of the proximity, causes any health effects. The location of the solar farm and the distance separation between nearby dwellings and the site mean that any potential impacts on health are mitigated.

Economic

The solar farm will generate community economic benefits through local employment opportunities during the planning and construction phases as well as maintenance and inspection jobs once operational. The development of a solar farm will create a new market for local contractors and expand diversity of income for the landowners.

The site represents 0.07% of agricultural land in Orange LGA. The land is of high capability that has moderate limitations and is capable of sustaining high-impact land uses, such as livestock grazing. The site is mapped as state significant agricultural land, however, there will be no permanent loss of agricultural land as the array can be removed once the facility is decommissioned. Livestock grazing around the array is permitted without consent and the landowner is encouraged to re-commence agricultural use of the land once the facility is operational. The remaining land that is part of the parcel and not proposed to be used for renewable energy may be used for livestock grazing or cultivation in the future. Adjoining land within 30 metres of the site boundaries is not presently under cultivation.

6.1.3 Potential cumulative impacts**Cumulative impacts (Large Scale Solar Energy Guideline – for consideration only)**

Any cumulative impacts from other developments (proposed, approved and operative), especially biodiversity, socio-economic and construction traffic, must be assessed in accordance with the department's [Cumulative Impact Assessment Guidelines for State Significant Projects \(PDF 1.393 KB\)](#) (July 2021, or its latest version).

The cumulative impacts of the proposed development are minor. There have been no other utility scale solar farm proposals in the vicinity of the project site. There are no other electricity generating works in

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Project 1322 Orange South 88 & 98 Solar Farm + BESS

the immediate area and the use is suited to a semi-rural location due to the need for a large area of land. The addition of a solar farm to the area would not detract unreasonably from local amenity or the natural environment.

6.1.4 Consistency with planning framework**Strategic context** (Large Scale Solar Energy Guideline – for consideration only)

Applicants should consider whether the project is consistent with local or state planning strategies, and government policies such as climate change and energy policies, including the capability of the project to contribute to energy security and reliability.

The proposed development is consistent with the strategic planning framework that applies to the local government area, the site itself and to the development of electricity generating works. The solar farm is permissible with consent under provisions of *Orange LEP 2011* and *SEPP (Transport and Infrastructure) 2021* and is satisfactory to relevant provisions of other applicable SEPPs.

Regional cities (Large Scale Solar Energy Guideline – for consideration only)

Where an applicant proposes a large-scale solar development within a mapped area in proximity to a regional city, the provisions within the Transport and Infrastructure SEPP should be clearly and comprehensively addressed. Residential and commercial developments that have been approved (but not yet commenced) should be included when identifying the surrounding urban environment. The applicant should consult with the relevant council and identify any land identified for future growth in strategic planning documents including local strategic planning statements and housing strategies.

The township of Orange is mapped as a 'regional city' in *SEPP (Transport and Infrastructure) 2021*. Impacts on scenic quality and landscape character have been assessed in accordance with that state policy. These impacts can be mitigated by the proposed vegetation screening of the solar arrays.

The *Orange Local Housing Strategy* was adopted by Orange City Council in 2022. An aim of the strategy is to identify where housing growth is to occur in Orange LGA. The strategy supersedes the *Orange Sustainable Settlement Strategy*. The project site is not identified in the housing strategy as an urban release area for the expansion of Orange township. The proposed development will not interfere with or prevent the planned growth of Orange.

Although not located within the Central West Renewable Energy Zone, the proposal is not inconsistent with the planning priorities, goals and actions of the *Central West and Orana Regional Plan 2041* and the *Orange Local Strategic Planning Statement 2020*.

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Project 1322 Orange South 88 & 98 Solar Farm + BESS

Zenith
TOWN PLANNING**6.1.5 Contribution to government targets****Public interest** (Large Scale Solar Energy Guideline – for consideration only)

Applicants should consider an analysis of the public interest, including the public interest in renewable energy, the objects of the EP&A Act and the principles of ecologically sustainable development.

Electricity generated by the system will be directed to the settlement of Orange via existing electrical infrastructure to contribute to the supply of electricity for use by households and businesses. Any surplus electricity will be stored by the BESS and/or sent to the grid and any deficit will be drawn from the BESS and/or the grid. As well as the potential to utilize local contractors to construct the facility, the township will benefit through the ability to use clean energy that is generated adjacent the settlement.

Currently, Australia's energy grid operates on about 60% coal and 40% renewables. Australia subsidises fossil fuels by \$65 billion a year, or 2.5 per cent of GDP. The International Monetary Fund has found that in 2022 Australia granted \$9.7 billion in explicit fossil fuel subsidies, such as household electricity bill relief or tax breaks for coal and gas producers. In addition, there was another \$55.6 billion in implicit subsidies, with taxpayers footing the bill for premature deaths and poor health caused by air pollution, as well as environmental damage and global warming.

The NSW Government is committed to achieving a 50% emissions reduction by 2030 and net zero emissions by 2050. The Commonwealth Government's target is to reduce emissions in 2030 to 43% below 2005 levels, for 82% of Australia's energy to be generated by renewable technologies in 2030 and net zero in 2050.

The development of the solar farm will assist the transition of our economy from reliance on fossil fuels to renewable sources. It will assist Commonwealth and NSW Governments to achieve targets and objectives relating to emissions to address climate change. Capacity exists to cater for the electricity generated by the proposed solar farm as evidenced by contractual arrangements that are in place with Essential Energy to connect with and contribute to the grid system.

The proposed development satisfies the objects of the EP&A Act in that renewable energy will promote the social and economic welfare of the community and a better environment through conservation of fossil fuel resources and use of solar resources to generate energy. The development will facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment and will promote the orderly and economic use and development of land that satisfies the applicable strategic planning framework.

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Given the local, regional and national benefits of renewable energy generation and based on implementation of the recommended mitigation measures to avoid, minimize or mitigate impacts to the existing natural and built environment, the development is considered to be in the public interest.

6.2 Summary of mitigation measures

Table 12 provides a summary of mitigation measures. It is recommended that an environmental management plan be prepared to cover the construction and operational phases. Where necessary Table 12 includes a recommendation as to whether the mitigation measure should be included in the management plan. In addition to the mitigation measures detailed below, it is recommended that a waste management plan be prepared for inclusion in an environmental management plan.

Table 12: Summary of mitigation measures

Consideration	Mitigation measures	Environmental Management Plan
Biodiversity	By way of a clearing process that minimizes the risk to threatened species that may be opportunistically using the site, it is recommended that: - Construction limits and exclusion zones be clearly identified prior to work, - A visual inspection is conducted by environmental staff before construction commences to identify any areas of the site that might be supporting native fauna, - Vehicle movements around the site will be restricted to the construction footprint and away from any flagging exclusion fencing to be installed, - Soil disturbance by vehicle and pedestrian access is to be kept to a minimum outside the construction footprint, and - Any weeds removed (particularly those bearing seeds) are to be disposed of appropriately at the nearest waste management facility.	Yes, with reference to ongoing site access during both construction and operational phases, and to the storage of materials within the site
Hazards	- Install a reliable, automated monitoring and control systems, with an alarm and shutdown response capability - Take reasonable and safe measures to prevent the risks of external heat effects in the event of a bushfire - Design appropriate separation and isolation between battery cubicles, and between the BESS and other infrastructure, in accordance with the manufacturers' recommendations, and including gravel set-off areas around the facility - Comply with all applicable Australian codes and standards - Prepare a BESS-specific fire response plan, in conjunction with the NSW Rural Fire Service - Install an adequate automatic fire suppression system integrated into the detection and control system	Yes, for construction and operational phases

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Consideration	Mitigation measures	Environmental Management Plan
	- Dispose (and where possible, recycle) of any potentially hazardous material in accordance with the best international practices available at that time - Fuels and pesticides/herbicides in use at the site will be stored at the laydown area in appropriately bunded areas designed in accordance with AS1940-2004 In terms of fire safety including the threat of bushfire, the report recommends that the facility with battery storage can be made safer through the integration of safety in design principles from bushfire standards including APZ clearances, internal protection areas, comprehensive system fault monitoring, automated fire detection and suppression systems and safety procedures built into WHS policies and procedures to ensure these farm assets and the surrounding area are protected from the risk of fire. Finalise the draft <i>Bushfire Risk and Operations Plan</i> and a draft <i>Bushfire Emergency Management and Evacuations Plan</i> after preparation of detailed designs for the construction certificate	
Water resources	Design – site drainage and water quality controls: - Undertake hydrological assessment of the sites catchment in accordance with relevant methods outlined in Australian Rainfall and Runoff. - Determine sediment management targets and drainage control standards in accordance with Managing Urban Stormwater: Soils and Construction Vol 1 (Blue Book) (DECC, 2008). - Develop a site erosion and sediment control plan in accordance with the Blue Book. - Develop site drainage design incorporating detention basins and sedimentation management structures where relevant. - Permanent site drainage should coincide with temporary arrangements where possible Construction and/or demolition – site drainage and water quality controls: - Catch drains to be located downslope of any proposed road works. - Install location appropriate sediment fences or other applicable control measures depending on whether the feature is upstream or downstream of a disturbed part of the site or will need to be trafficable. - All stormwater collection points need to have appropriate sedimentation and erosion controls. - Undertake ongoing inspections of stormwater facilities and water control measures to assess their effectiveness. - Vibration grids or wash bays at all construction exits. - Level spreaders at locations where concentrated flow is discharged offsite to ensure sheet flow like conditions are maintained.	Yes, for construction and operational phases. Include an erosion & sediment control plan or soil and water management plan

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Consideration	Mitigation measures	Environmental Management Plan
	- Flat land erosion control options include erosion control blankets, gravelling, mulching, soil binder, turfing and revegetation Construction and/or demolition - stormwater point source control: In the event of concrete works: - Do not undertake works if chance of heavy rain. - Store rinsate5 water, if applicable, separately to other water on site and dispose of offsite as appropriate. - Block on site drains in the area of the works and remove any contaminated runoff. In the event that dewatering practices are required: - Pump hose intakes for withdrawing water from excavations will be elevated to minimise sediment pumping and directed to a containment area for settling prior to discharge. - Limit direct discharge off site (consistent with the design requirements for sediment pond discharge). - Stormwater collected on site should be reused where possible. Controls should be inspected and maintained on a regular basis. All water released from sediment basins should be clear or disposed off site by vehicle. - Material and waste storage areas should be designed and operated to minimise interaction with surface waters. - Vehicle washdown areas should be located away from water courses	
Air quality	During construction: - Limit vehicle movements to areas necessary to deliver panels, ancillary structures and equipment - Suppress dust emissions using watering and cease works during dry and windy conditions - Ensure ground disturbance is limited to areas necessary to place footings or to be used for access - Ensure minimal handling of excavated materials - Ensure stockpiles of excavated material is banded and protected from wind and vehicle movements During operation: - Grade and add road base to internal accessways - Revegetate the site with suitable groundcover immediately construction works are completed - Ensure all plant and equipment is maintained in a clean condition and operates in accordance with specifications.	Yes, for construction and operational phases
Noise	- Implement community consultation or notification measures. - Site inductions.	Yes, for construction phase

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Consideration	Mitigation measures	Environmental Management Plan
	- Minimise disturbance arising from delivery of goods to construction sites, - Shield stationary noise sources, and - Shield sensitive receivers from noise activities.	
Traffic	No mitigation measures are recommended	n/a
The community & local economy	- labour to construct and maintain the solar farm be sourced from within the Orange local government area wherever possible - advertising be placed in local media and local businesses contacted to determine whether there is the capacity and expertise available to participate in the construction and ongoing maintenance activities - Ensure that the timing of construction of the solar farm does not coincide with the construction of major infrastructure projects to avoid a shortage of visitor accommodation	n/a
Heritage	There are no recommendations in relation to Indigenous or non-Indigenous heritage.	n/a
Glare and glint	Extend the southern vegetation screen along the south-eastern boundary of the site to mitigate glare to dwellings adjoining the project site to the south. Consider extending the vegetation screen for the length of the eastern boundary of the array.	Yes, for construction phase
Visual impacts	- It is recommended that vegetation be planted as a landscape screen along the southern and western boundaries and for a distance of 100 metres along southern section of the eastern edge of the facility on the outer side of the security fence as shown below to mitigate visual impacts on neighbouring private properties and users of Cadia Road, - The landscape screen along the western boundary and part of the eastern boundary comprises shrubs or trees that grow to a maximum height of 3 metres so as to not interfere with sunlight access to the array and be planted to a width of 3 metres with stepped plantings to ensure dense screening, - The landscape screen along the southern boundary comprises shrubs or trees that grow to a maximum height of 5 metres and be planted to a width of 5 metres with stepped plantings to ensure dense screening. An additional row of screening, 1 metre wide by 5 metres high, is to be planted along the eastern half of the southern boundary adjacent to the stock fence line. The screen is to be planted on the outer side of the security fence and between the security fence and realigned watercourse. The screen is proposed to be 5 metres high and 1 metre in width along the eastern half of	Yes, for construction phase

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Consideration	Mitigation measures	Environmental Management Plan
	the southern boundary, between the channel and the fence line, to avoid planting across the channel, and All plants used in the landscape screen should be endemic to the Orange locality to ensure that the vegetation contributes to the rural landscape character of Orange South and enhances local biodiversity values. Plants should be selected from the table in section 6.5 of <i>Chapter 6 Rural Development of Orange Development Control Plan 2004</i> (as amended in 2021) titled <i>Suitable plants for buffers in the Orange area</i>.	
Waste management	It is recommended that a waste management plan be developed to provide detailed procedures to manage the waste stream. The plan should contain: - Strategies to reduce waste during all project phases, - Recycling, re-use and recovery strategies and opportunities, - Classification of all waste streams with a tracking register and details, - On site recycling management, - Allocation of responsibilities for recycling, re-use and disposal, and - Reporting and notification procedures if a waste incident occurs and there is a threat to the environment.	Yes, for construction and operational phases
Decommissioning	There are no mitigation measures in relation to decommissioning.	n/a
Health	There are no mitigation measures in relation to health impacts.	n/a

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Property Report

140 CADIA ROAD SPRINGSIDE 2800

Attachment A



Property Details

Address: 140 CADIA ROAD SPRINGSIDE 2800
Lot/Section /Plan No: 5/-/DP6173
Council: ORANGE CITY COUNCIL

Summary of planning controls

Planning controls held within the Planning Database are summarised below. The property may be affected by additional planning controls not outlined in this report. Please contact your council for more information.

Local Environmental Plans	Orange Local Environmental Plan 2011 (pub. 24-2-2012)
Land Zoning	C3 - Environmental Management: (pub. 5-11-2021)
Height Of Building	NA
Floor Space Ratio	NA
Minimum Lot Size	100 ha
Heritage	NA
Land Reservation Acquisition	NA
Foreshore Building Line	NA
Drinking Water Catchment	Drinking Water Catchment
Groundwater Vulnerability	Groundwater Vulnerability

Detailed planning information

State Environmental Planning Policies which apply to this property

State Environmental Planning Policies can specify planning controls for certain areas and/or types of development. They can also identify the development assessment system that applies and the type of environmental assessment that is required.

This report provides general information only and does not replace a Section 10.7 Certificate (formerly Section 149)

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- State Environmental Planning Policy (Biodiversity and Conservation) 2021: Allowable Clearing Area (pub. 2-12-2021)
- State Environmental Planning Policy (Biodiversity and Conservation) 2021: Land Application (pub. 2-12-2021)
- State Environmental Planning Policy (Biodiversity and Conservation) 2021: Subject Land (pub. 2-12-2021)
- State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004: Land Application (pub. 25-6-2004)
- State Environmental Planning Policy (Exempt and Complying Development Codes) 2008: Land Application (pub. 12-12-2008)
- State Environmental Planning Policy (Housing) 2021: Land Application (pub. 26-11-2021)
- State Environmental Planning Policy (Industry and Employment) 2021: Land Application (pub. 2-12-2021)
- State Environmental Planning Policy (Planning Systems) 2021: Land Application (pub. 2-12-2021)
- State Environmental Planning Policy (Primary Production) 2021: Land Application (pub. 2-12-2021)
- State Environmental Planning Policy (Resilience and Hazards) 2021: Land Application (pub. 2-12-2021)
- State Environmental Planning Policy (Resources and Energy) 2021: Land Application (pub. 2-12-2021)
- State Environmental Planning Policy (Transport and Infrastructure) 2021: Land Application (pub. 2-12-2021)
- State Environmental Planning Policy (Transport and Infrastructure) 2021: Subject Land (pub. 2-12-2021)
- State Environmental Planning Policy No 65—Design Quality of Residential Apartment Development: Land Application (pub. 26-7-2002)

Other matters affecting the property

Information held in the Planning Database about other matters affecting the property appears below. The property may also be affected by additional planning controls not outlined in this report. Please speak to your council for more information

Land near Electrical Infrastructure	This property may be located near electrical infrastructure and could be subject to requirements listed under ISEPP Clause 45. Please contact Essential Energy for more information.
Local Aboriginal Land Council	ORANGE
Regional Plan Boundary	Central West and Orana

This report provides general information only and does not replace a Section 10.7 Certificate (formerly Section 149)

6/10/2022 1:56 PM | 132316c2-e8b9-4469-ab05-7aafdf5e3ae1

2 / 2



AHIMS Web Services (AWS)
Search Result

Attachment B

Your Ref/PO Number : 1322
Client Service ID : 951691

Zenith Town Planning
P O Box 591
Moruya New South Wales 2537
Attention: Allen Grimwood
Email: zenithplan@bigpond.com

Date: 19 November 2024

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : 5, DP:DP6173, Section : - with a Buffer of 50 meters, conducted by Allen Grimwood on 19 November 2024.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road Springside

Attachment 3 Statement of Environmental Effects (redacted)

If your search shows Aboriginal sites or places what should you do?

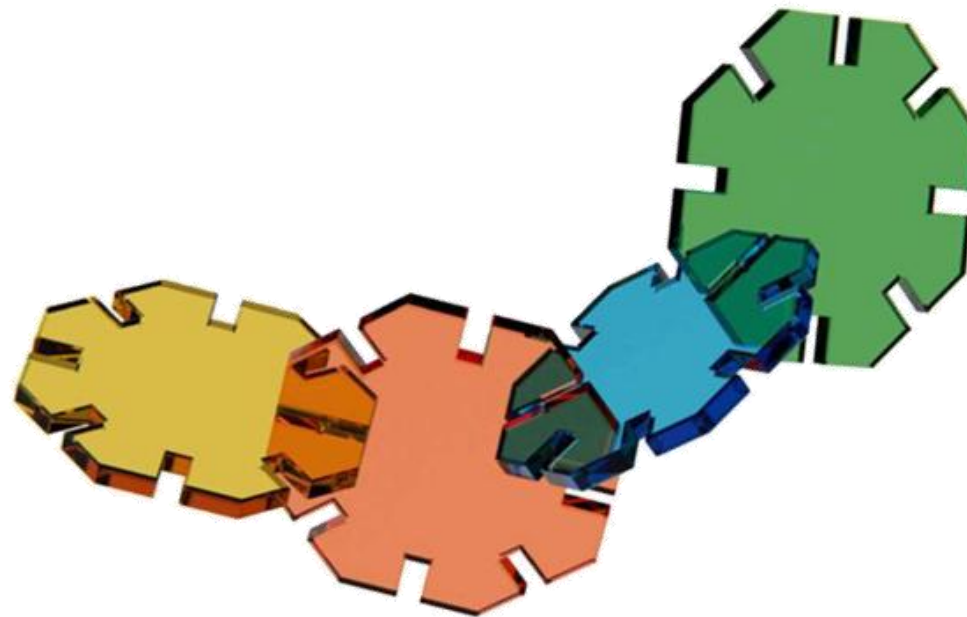
- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (<https://www.legislation.nsw.gov.au/gazette>) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request.

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Heritage NSW and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings.
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

ORANGE SOUTH 8B & 9B 2 X 5 MW SOLAR FARMS

DEVELOPMENT APPLICATION



Sheet List Table	
Sheet Number	Sheet Title
G - GENERAL: G-0000 - GENERAL: G-01XX - TITLE	
G-0100	TITLE
G - GENERAL: G-0000 - GENERAL: G-03XX - KEYNOTES & SYMBOLS	
G-0310	PROJECT INFORMATION
G - GENERAL: G-0000 - GENERAL: G-04XX - LOCATION PLAN	
G-0400	LOCATION PLAN
G - GENERAL: G-2000 - GENERAL ARRANGEMENT: G-21XX - GENERAL ARRANGEMENT PLANS	
G-2100	GENERAL ARRANGEMENT PLAN
G - GENERAL: G-2000 - GENERAL ARRANGEMENT: G-22XX - ELEVATIONS & SECTIONS	
G-2200	SITE ELEVATIONS
C - CIVIL: C-4000 - EQUIPMENT FOOTINGS: C-43XX - DETAILS	
C-4300	INVERTER FOOTING DETAILS
C-4310	BESS FOOTINGS DETAILS
C - CIVIL: C-5000 - FENCING: C-53XX - DETAILS	
C-5310	GATE DETAILS
C-5300	FENCING DETAILS
C - CIVIL: C-6000 - ROADS & ACCESS: C-63XX - DETAILS	
C-6300	ACCESS PATH DETAILS
C - CIVIL: C-7000 - LANDSCAPE & ENVIRONMENTAL: C-73XX - DETAILS	
C-7300	LANDSCAPE DETAILS
E - ELECTRICAL: E-3000 - ARRAY: E-34XX - DETAILS	
E-3400	PEG ARRAY DETAILS
E - ELECTRICAL: E-4000 - PV EQUIPMENT: E-43XX - DETAILS	
E-4300	INVERTER STATION DETAILS
E - ELECTRICAL: E-5000 - BESS EQUIPMENT: E-53XX - DETAILS	
E-5300	BESS STATION DETAILS



info@itprenewables.com
itprenewables.com
+61 2 6257 3511

Level 1, 19-23 Moore St
Turner, ACT 2612
AUSTRALIA

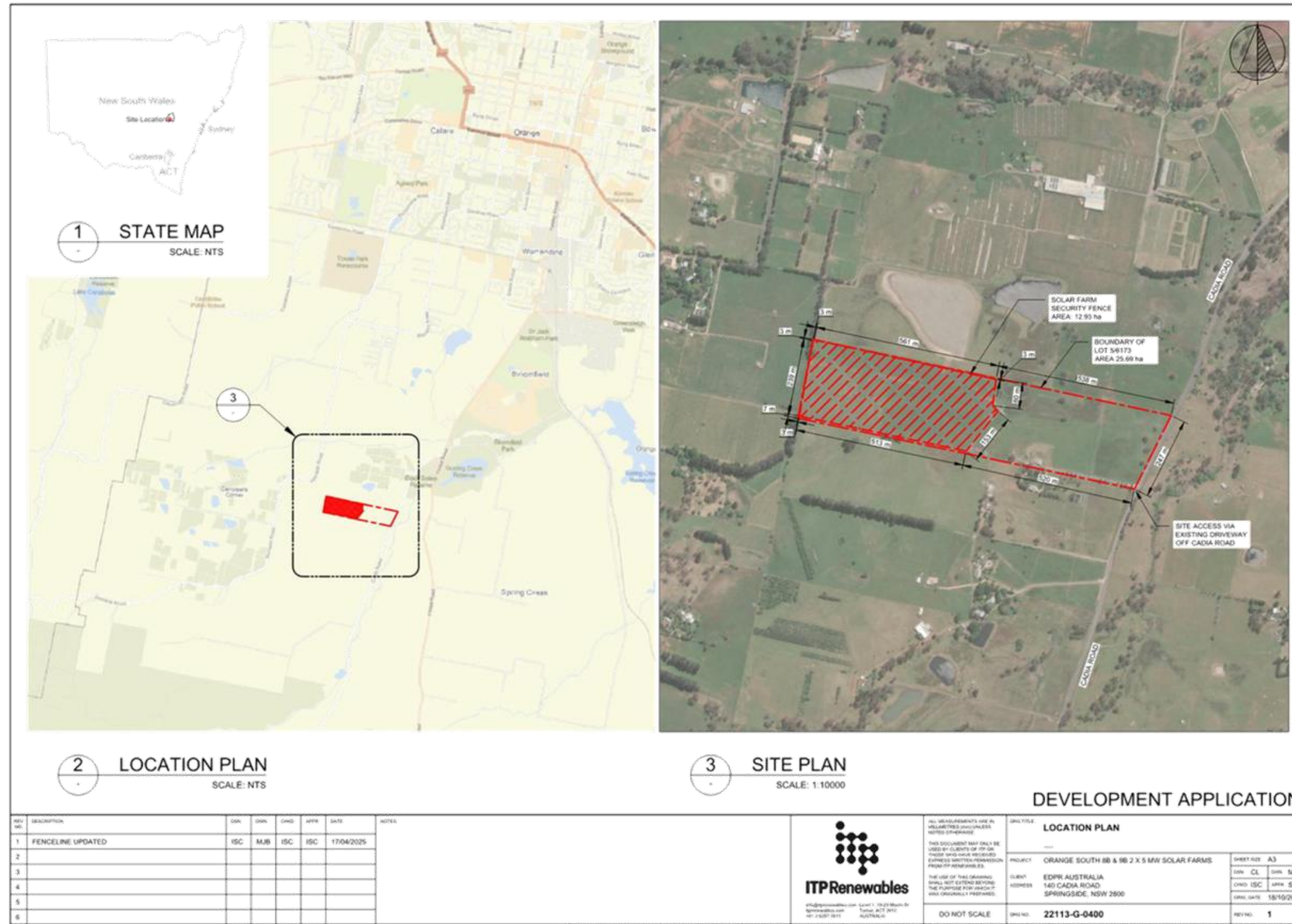
CLIENT:
EDPR AUSTRALIA
ADDRESS:
140 CADIA ROAD
SPRINGSIDE
NSW 2800

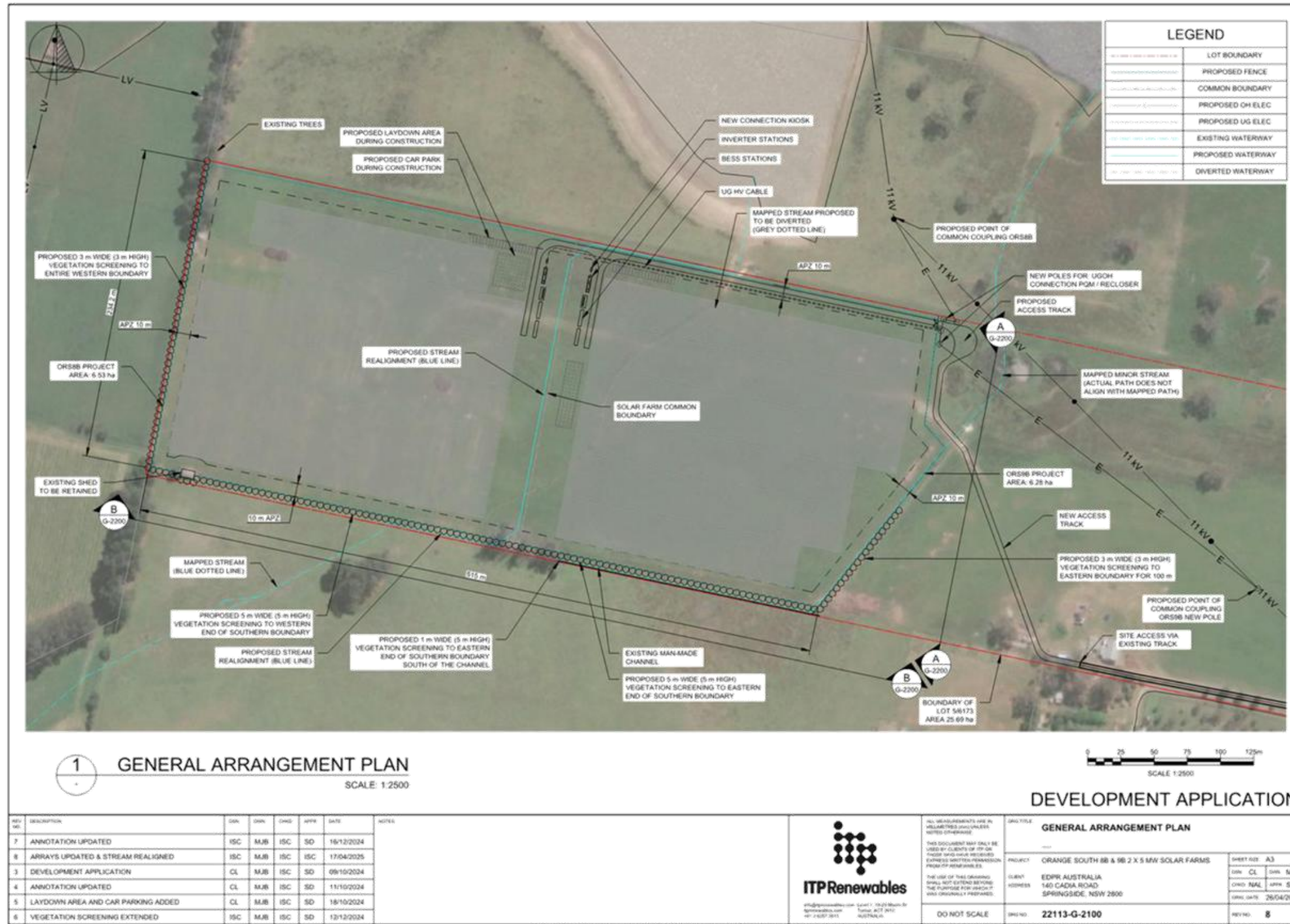
SITE INFORMATION	
LOT / DP	5/6173
ADDRESS	140 CADIA ROAD, SPRINGSIDE, NSW 2800
LGA	ORANGE CITY COUNCIL
LAT / LONG	-33.333586 ; 149.068051
LOT AREA	25.69 ha
DEVELOPMENT FENCED AREA	12.82 ha
CONNECTION VOLTAGE	11 kV
CONNECTION FEEDER	ESSENTIAL ENERGY ORS387
CONNECTION SUBSTATION	ESSENTIAL ENERGY ORANGE SOUTH 66/11 ZS

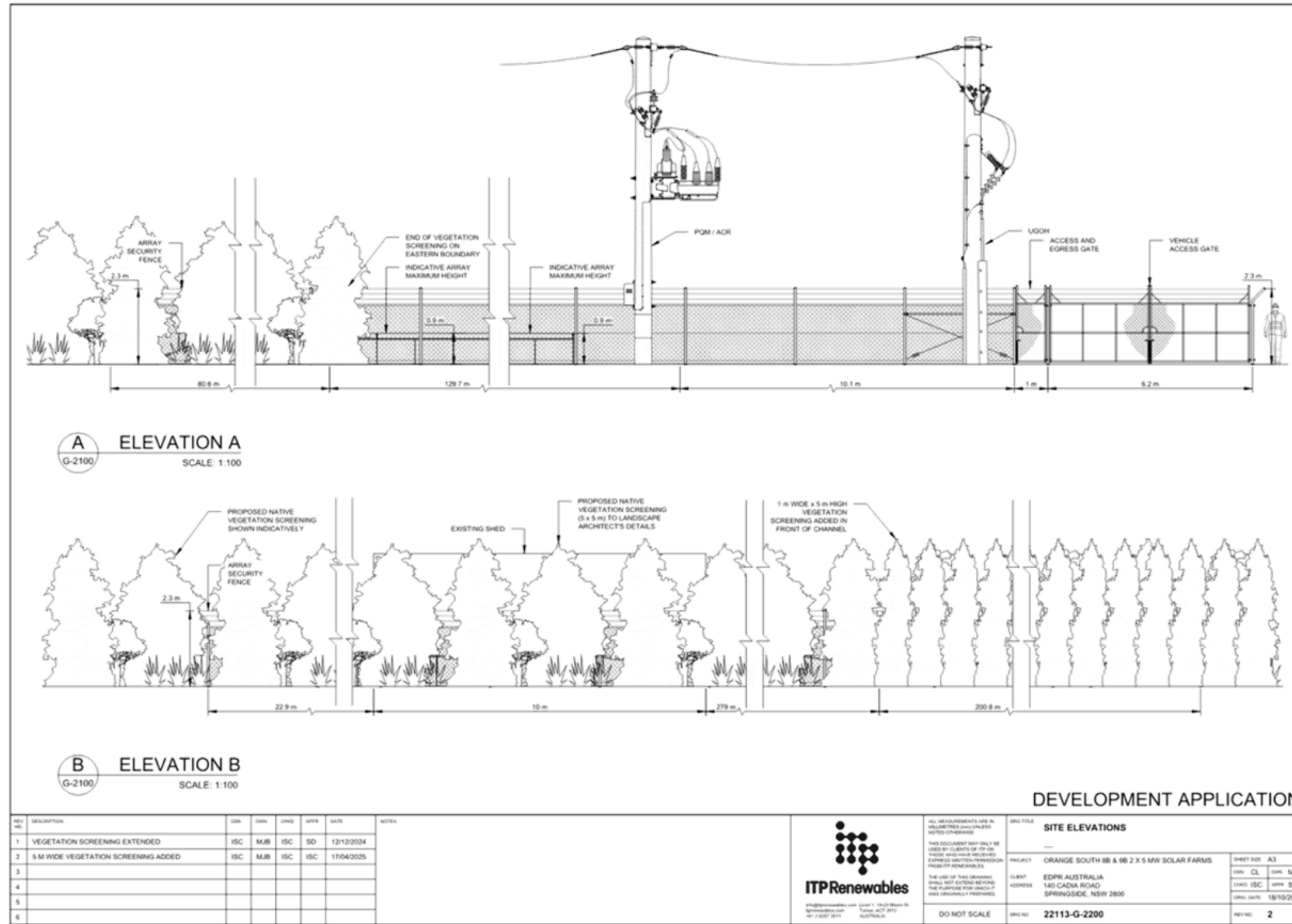
PV PROJECT INFORMATION (DA)	
AC CAPACITY	4.99 MW PER SITE
INVERTERS	2 x 3.4 MW AC PER SITE
FRAMING MODEL	PEG
PEG SPACING (N-S)	MIN. 1.2 m
PEG SPACING (E-W)	MIN. 0.3 m
SECURITY FENCE SETBACK	MIN. 3.0 m FROM OPTION BOUNDARY
ARRAY TRACK	MIN. 10.0 m FROM SECURITY FENCE
ACCESS TRACK WIDTH	4.0 m

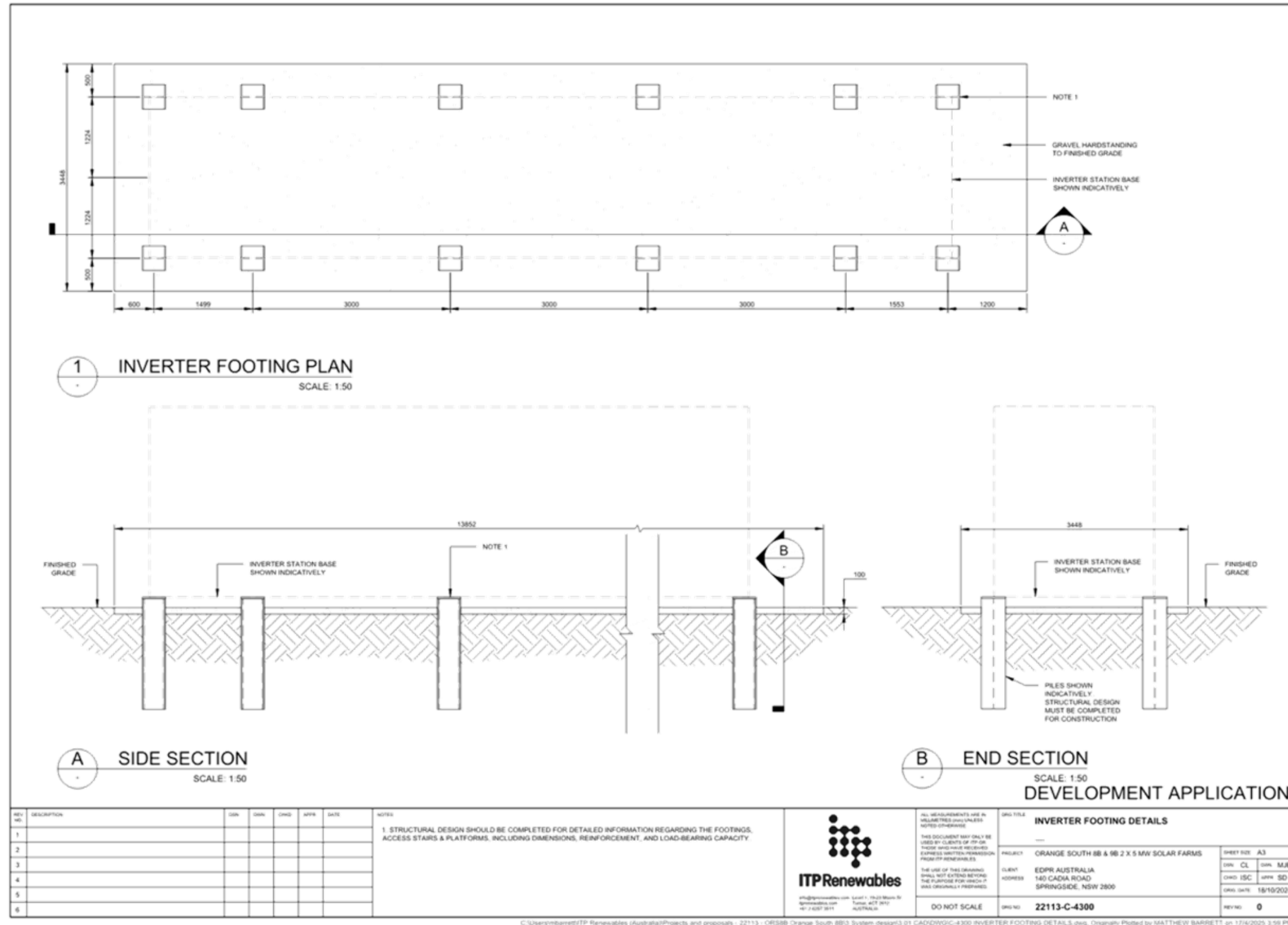
1 PROJECT INFORMATION

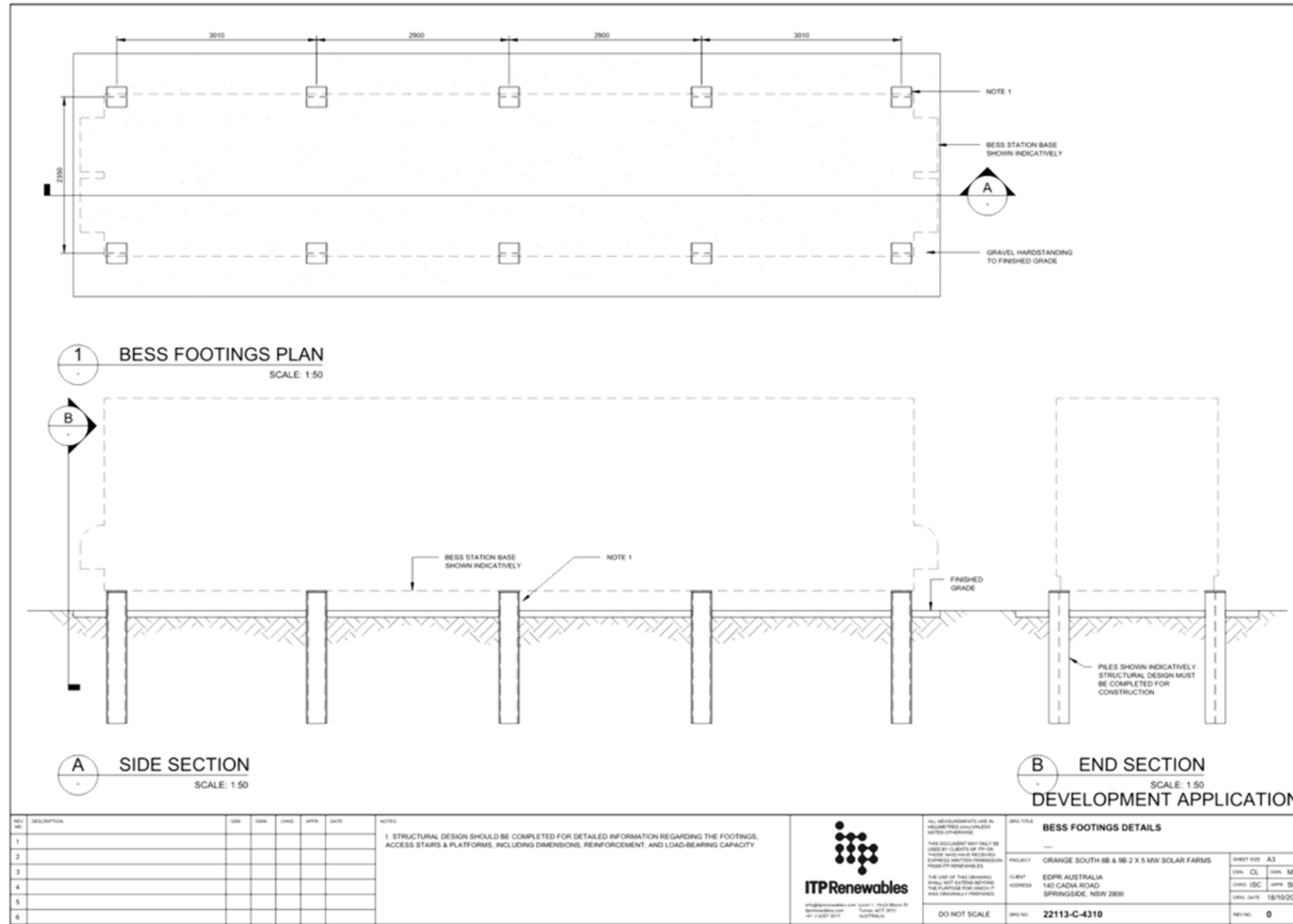
[illegible]

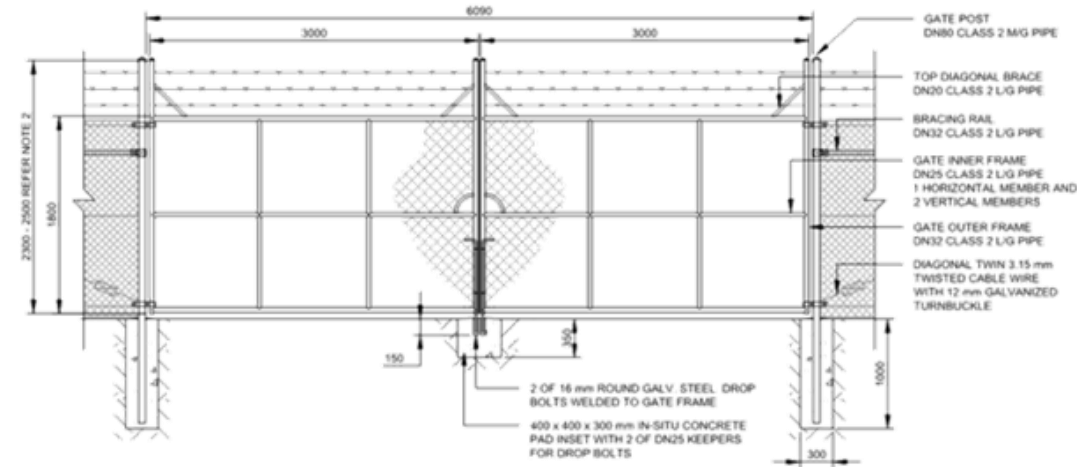




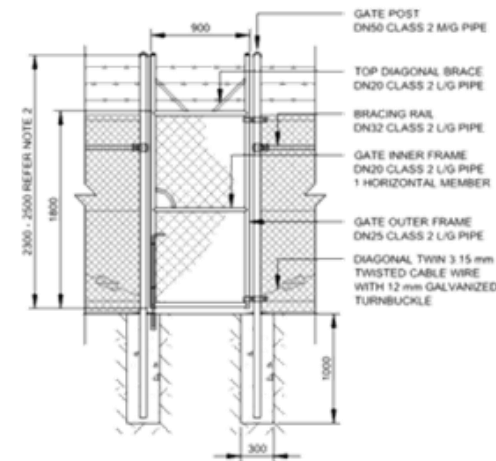








5 DOUBLE LEAF 6 METRE GATE SECTION
SCALE: 1:50



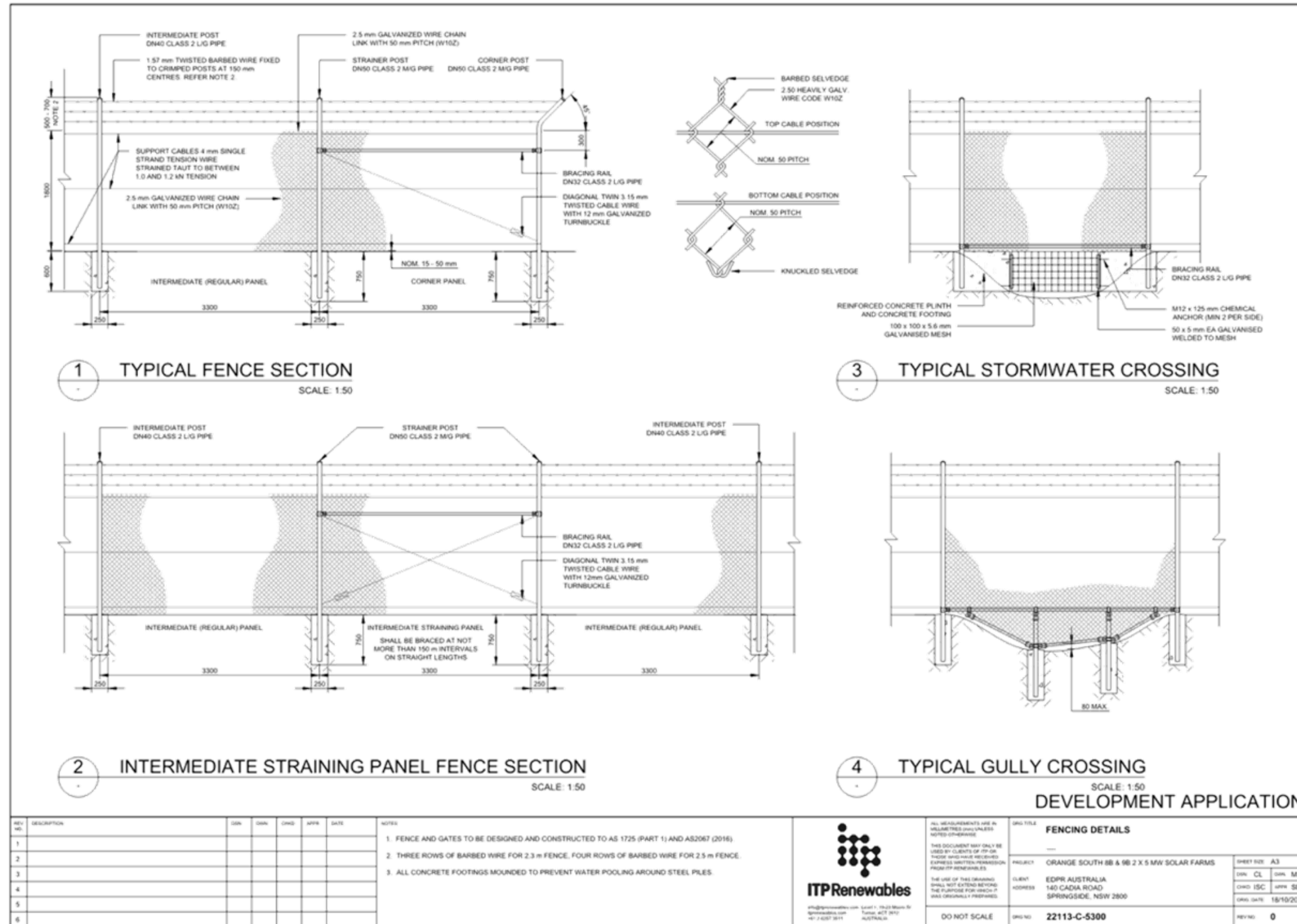
7 SINGLE LEAF GATE SECTION
SCALE: 1:50

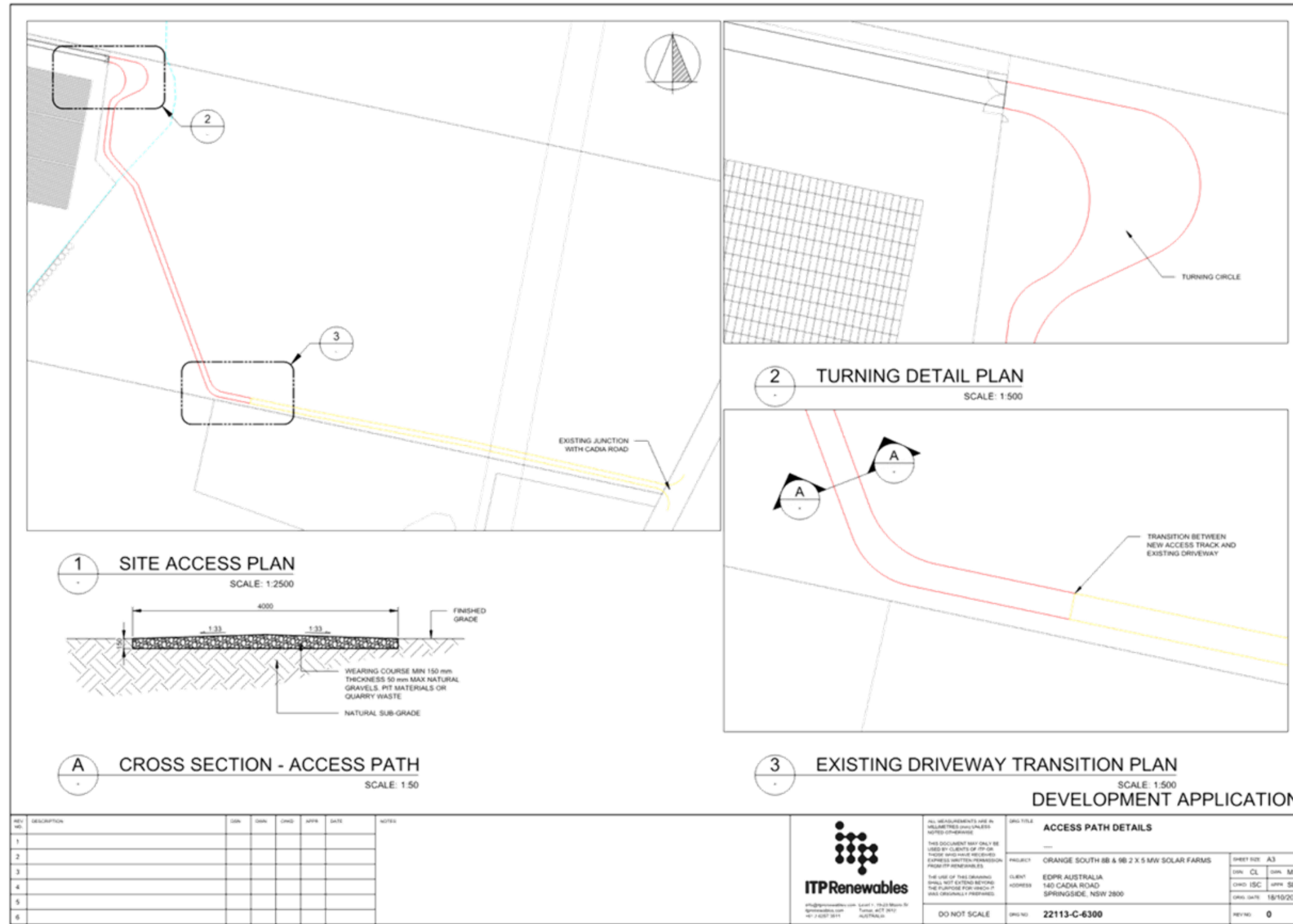
REV NO	DESCRIPTION	ISSN	DRAWN	CHECKED	APPROVED	DATE	NOTES
1							1. FENCE AND GATES TO BE DESIGNED AND CONSTRUCTED TO AS 1725 (PART 1) AND AS2067 (2016).
2							2. THREE ROWS OF BARBED WIRE FOR 2.3 m FENCE. FOUR ROWS OF BARBED WIRE FOR 2.5 m FENCE.
3							3. ALL CONCRETE FOOTINGS MOUNDED TO PREVENT WATER POOLING AROUND STEEL PILES.
4							
5							
6							

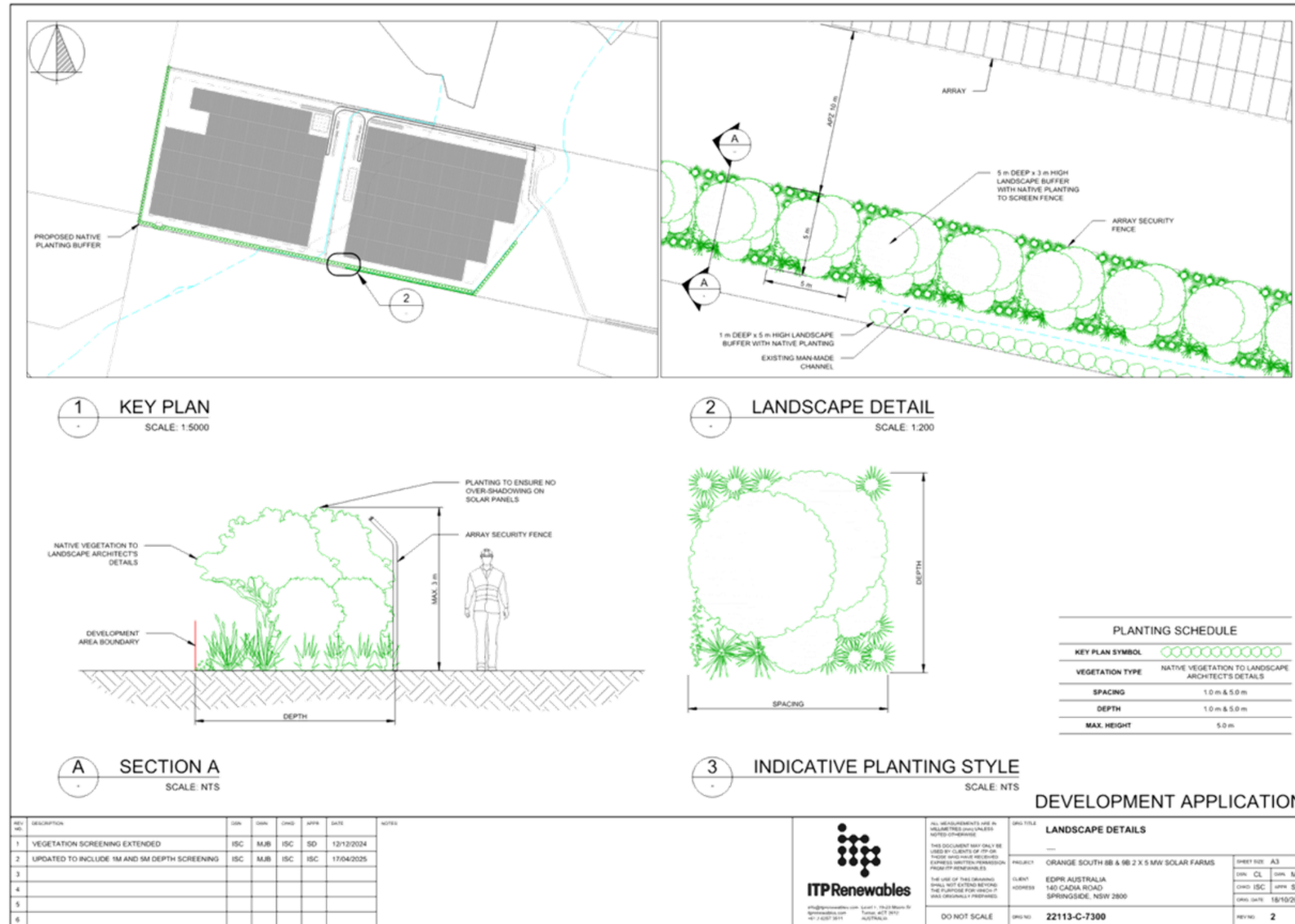


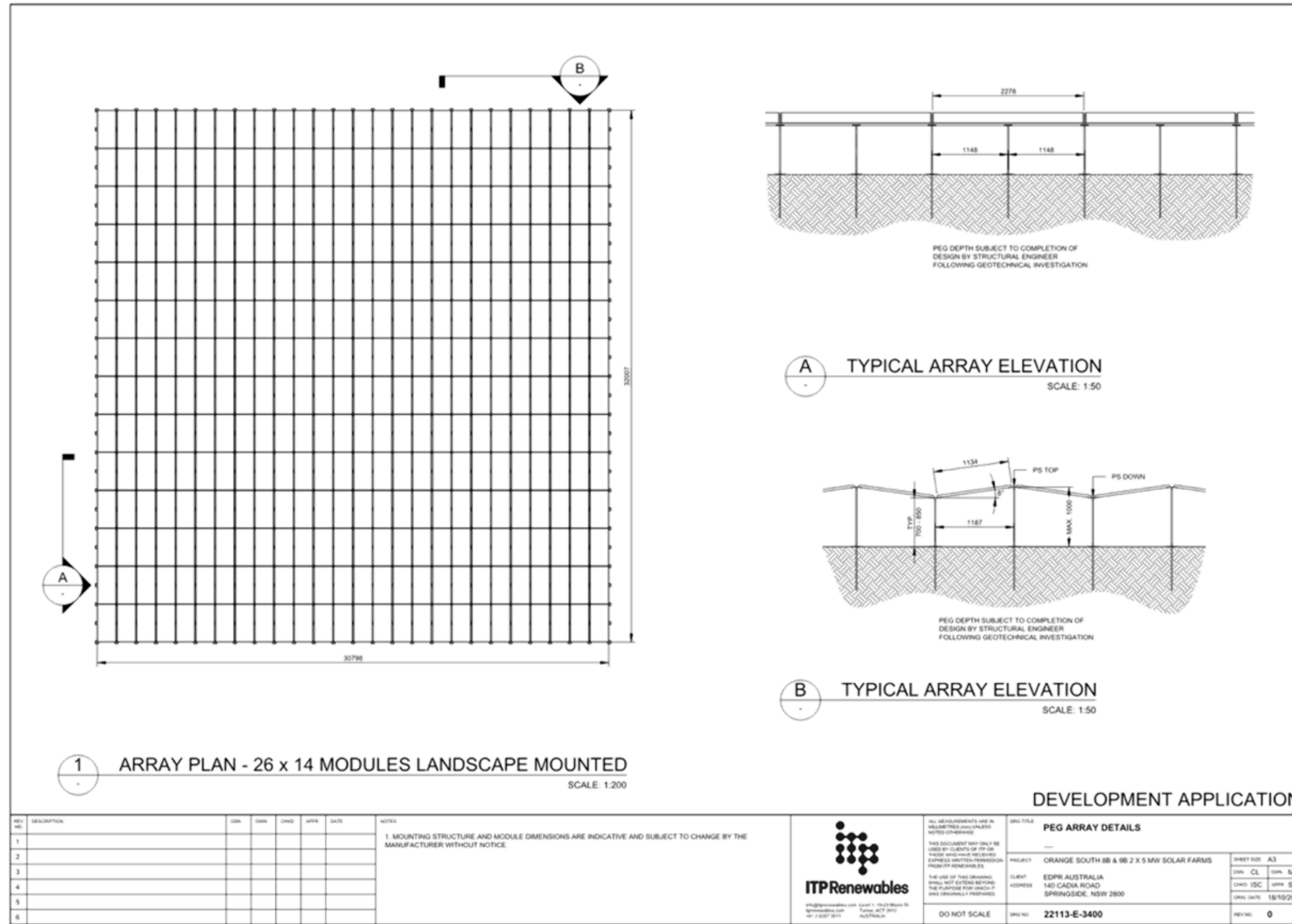
ITP Renewables
info@iprenewables.com.au | Locked 1 - 79223 Moore St
 Sydney NSW 2012 Australia
 Tel: +61 2 6357 3511

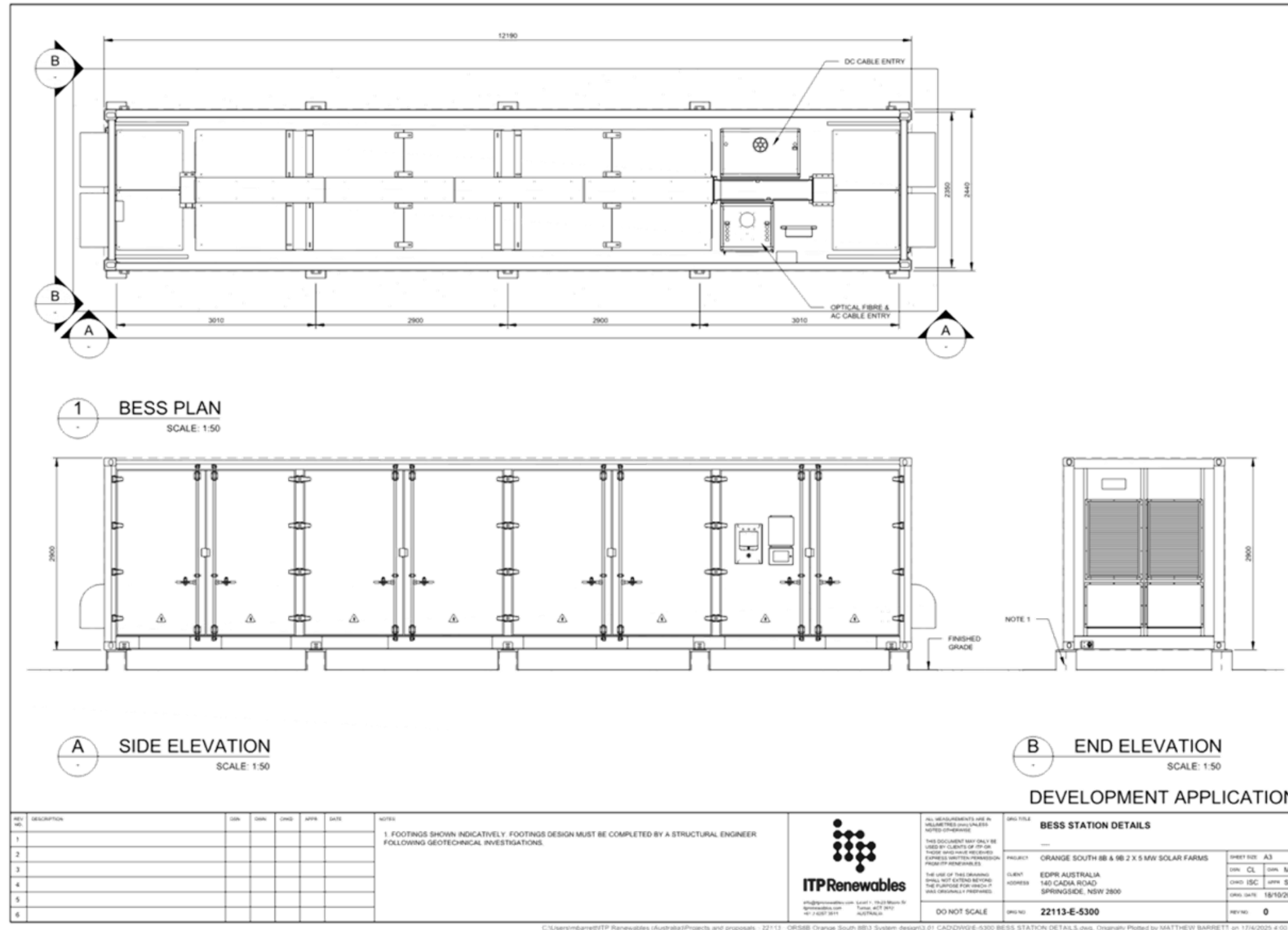
GATE DETAILS	
ORANGE SOUTH BB & 9B 2 X 5 MW SOLAR FARMS	
CLIENT ADDRESS	DPDR AUSTRALIA 140 CADRIA ROAD SPRINGSIDE, NSW 2800
SHEET SIZE	A3
ISSN CL	DRAW M
CHECKED ISC	DATE 18/10/20
GATE NO	22113-C-5310
REV NO	0











C:\Users\mbarrett\ITP Renewables (Australia)\Projects and proposals - 22113 - OR58B Orange South 8B/3 System design\3.01 CAD\DWG\22113-0300 BESS STATION DETAILS.dwg, Originally Plotted by MATTHEW BARRETT on 12/14/2025 4:00 PM

Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road Springside

Attachment 5 Submissions x 42 (redacted)

Submission 1

From:
Sent: Wednesday, 12 February 2025 1:42 PM
To: Orange City Council
Subject: Development Application DA 771/2024(1) - PAN-499518

DA771/2024(1)
PAN -499518

12th February 2025

Chief Executive Officer
Orange City Council
135 Byng Street
Orange NSW 2800

Dear Mr Waddel

Development Application DA771/2024(1)

Electrical Generation Works (Solar Farm) and Battery Energy Storage System
140 Cadia Road, Springside

I object to the proposed development as there are better locations for this development in areas that are less densely populated and closer to roads with less thoroughfare.

As this development is very close to several residential properties with primary access on the busy Cadia Road I feel that it is not in the town's best interest for this development not to proceed.

kindest regards,

Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road Springside

Attachment 5 Submissions x 42 (redacted)

Submission 2

From:
Sent: Thursday, 13 February 2025 2:18 PM
To:
Cc: Orange City Council
Subject: F22 27407-40 DA assessment process - Orange City Council- Solar Installation - CASA REPLY [SEC=OFFICIAL]

Good afternoon

CASA assesses solar farm / panel impact to aircraft operations by applying industry best practice which is currently the United States Federal Aviation Agency guidance.

This guidance advises that glare is not a safety hazard to aircraft operations but can have a significant negative impact on air traffic control towers.

There is no obligation for this development to be referred to CASA as there is no tower, however CASA can advise that this particular project will not present a hazard to aircraft operations, and therefore we have no objection to the proposal proceeding as planned.

Regards

Airspace Protection Team
Air Navigation, Airspace & Aerodromes Branch
CASA Air Navigation, Transformation and Risk Division

p: 131 757



Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road Springside

Attachment 5 Submissions x 42 (redacted)

Submission 3

DA771/2024(1)

PAN-499518

14 February 2025

Chief Executive Officer

Orange City Council

135 Byng Street

Orange NSW 2800

Dear Mr Waddel

Development Application DA771/2024(1). Electrical Generation Works (Solar Farm) and battery Energy Storage System 140 Cadia Road, Springside.

I object to the proposed development for the following reasons.

- Visible from incoming air traffic/flight path bad look for tourists
- Prime Agricultural land being used for non-Agricultural purpose
- Impacts on local residents with glare and unsightliness.
- Lack of community consultation
- Better locations elsewhere
- Detrimental to land values
- Allowing a development of this type would reflect badly on our community and decision makers

Yours Sincerely

Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road Springside

Attachment 5 Submissions x 42 (redacted)

Submission 4

16th February 2025

Chief Executive Officer
Orange City Council
PO Box 35
ORANGE NSW 2800
council@orange.nsw.gov.au

RE: Submission DA 771/2024 (1)
Electrical Generation Works (Solar Farm) and Battery Energy Storage System
140 Cadia Road, Springside

To whom it may concern,

I am writing to show my objection with regards the above proposed Electrical Generation Works (Solar Farm) and Battery Energy Storage System development application. I do not reside within the vicinity of the proposed development; however, I do have the following concerns if the development was to proceed

I have objection to the Electrical Generation Works (Solar Farm) and Battery Energy Storage System as I feel the development will:

- Devalue the existing properties in the Springside area.
- Have a noticeably visual impact on many of the surrounding residences, Gosling Creek and Forest Road areas. The proposed 3.0m vegetation screen will have little impact on the undulating landscape, and in fact, is inadequate.
- Produce glint and glare from the panels that may be a hazard to traffic on the very busy Cadia Road and Forest Roads.
- Change the visual amenity of Orange. The proposed site is very close to Orange, which is outside of the Renewable Energy Zone. There would be better suited locations for the development that are less densely populated and provide larger buffer zones.
- Have a hydrological change in Orange city's water supply catchment.

Once again, I object the proposed Electrical Generation Works (Solar Farm) and Battery Energy Storage System development application

Kind Regards,

**Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road
Springside**

Attachment 5 Submissions x 42 (redacted)

DA771/2024(1)
PAN -499518

Submission 5

16th February 2025

Chief Executive Officer
Orange City Council
135 Byng Street
Orange NSW 2800

Dear Mr. Waddel,

Re: Objection to Development Application DA771/2024(1).
Electrical Generation Works (Solar Farm) & Battery Energy Storage System – 140 Cadia Road, Springside

I strongly object to the proposed solar farm for the following reasons:

1. Environmental Impact & Inappropriate Land Use.

The disruption of soil and vegetation risks erosion and water contamination, impacting Gosling Creek and the town's water supply. Additionally, the site is prime agricultural land, and converting it into an industrial energy facility sets a dangerous precedent for further encroachment into rural areas. More suitable, less populated locations should be considered.

2. Visual Intrusion & Property Value Decline.

The large-scale infrastructure will disrupt the area's rural character and diminish its scenic appeal for residents and visitors. This visual pollution, combined with the industrial nature of the project, is likely to lower nearby property values. As potential buyers of a nearby property, we are reconsidering our purchase due to this development, and others will likely be deterred as well. Furthermore, our understanding is that Orange and its surrounds are outside the Renewable Energy Zone.

3. Noise, Light Pollution & Traffic Safety Risks.

The battery storage system and solar farm operation and maintenance could generate noise, that would detract from the quiet country lifestyle currently enjoyed by near neighbours. Security lighting if fitted and reflective glare from the panels pose additional risks, especially on an already high-traffic road used by both residents and Cadia Mine workers. Any additional visual obstructions could increase the risk of traffic accidents involving vehicles and wildlife.

4. Increased Traffic & Infrastructure Strain.

The construction and maintenance of this facility will increase traffic on Cadia Road, which is already congested due to residential, mine-related and tourist traffic. Given the area's existing accident-prone nature, adding further hazards is unacceptable.

5. Lack of Community Consultation.

This project has been pushed forward with no engagement with local residents. A development of this scale demands transparency and proper consultation to address community concerns.

For these reasons, I strongly urge the Orange City Council to find this project unprovable and the Western Regional Planning Panel to reject this application.

Yours sincerely,

Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road Springside

Attachment 5 Submissions x 42 (redacted)

Submission 6

From:
Sent: Monday, 17 February 2025 3:29 PM
To: Orange City Council
Subject: Solar farm on Caida Rd

DA771/2024(1)
PAN -499518
13th February 2025
Chief Executive Officer
Orange City Council
135 Byng Street
Orange NSW 2800
Dear Sir

Development Application DA771/2024(1)
140 Cadia Road, Springside

I **object** to the proposed development for the following reasons

1. The reflection while driving to and from work in early mornings and late afternoons.

Thousands of vehicles travel this road every day at all hours.

Cadia Road is one of the busiest most dangerous roads in the area and this will add one more hazard to the drive.

2. The eye saw so close to two town. Orange is known for it beautiful city and this diminishes the of the surrounding area that thousands of people travel past and enjoy every day. This effects both Locals and visitors.

3. This proposed development is located in the Orange drinking water catchment, we only need to think back to the last dry spell we had in Orange and the water restrictions we had to endure during that period to know that we cannot allow any development that may have an adverse impact on our Cities drinking water supply to occur.

THIS PROCECT SHOULD NOT BE APPROVED

Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road Springside

Attachment 5 Submissions x 42 (redacted)

Submission 7

DA771/2024(1)
PAN -499518

17th February 2025

Chief Executive Officer
Orange City Council
135 Byng Street
Orange NSW 2800

Dear Mr Waddel

Development Application DA771/2024(1)
Electrical Generation Works (Solar Farm) and Battery Energy Storage System
140 Cadia Road, Springside

I am writing to lodge my OBJECTION to the proposal on the following grounds.

1. The proposed development joins my northern boundary fence.
2. Lack of Consultation. There has been no consultation what so ever in relation to this proposal.
3. Potential impact on property value.
4. Road Safety.

Background

My family and I moved to Orange over 20 years ago. We lived in the City of Orange for a short time before deciding to purchase our house on a 1.494ha block of land at . The purchase of this house and small block of land allowed us to enjoy a country lifestyle while still residing close to Orange and the services it has to offer.

We were later able to purchase which is a block of 19.12ha that wraps around Cadia Road. Then my daughter and son in law had the opportunity to purchase e which they did. Every mother's dream to have my daughter, husband and grand children living next door to us and also enjoy the country lifestyle.

We were then given the opportunity to purchase which is a block of 20.5ha and that wraps around my . Both and Cadia Road have a building entitlement which we hope will one day be used by one of our family members. This enabled us to have a beautiful, picturesque block close to Orange that our extending family can enjoy.

Objection 1

As stated earlier, the infrastructure of the proposed development is located directly adjacent to the Northern Boundary of . The proposed development would be very visible from the whole of this block but in particular the building envelope.

Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road Springside

Attachment 5 Submissions x 42 (redacted)

We also own and this block also has a building entitlement. Due to the higher elevation of this block the proposed development is also visible from a large portion of it. The building envelope sits in the Southwestern corner and overlooks the proposed development.

Even with the Visual Mitigation suggested for the project, ie plantings of "shrubs or trees that grow to a maximum of 3 meters" the visual impact from a lot of our property is unacceptable.

Below is a photo of and 1 with the approximate location of the building envelopes marked on it.



Photo Showing approximate location of building envelopes on our property

**Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road
Springside**

Attachment 5 Submissions x 42 (redacted)



Photo showing view from the building envelope on lot 942, RL 950



Photo looking North from the building envelope on lot , RL990

Objection 2

Consultation: There has been absolutely no consultation with us in relation to this project even though we are the immediate neighbors to the South of the project. It is not as if the applicant is unaware of the benefits of early, effective consultation with the local community and neighboring properties. Statement of environmental effects they make reference to the Large-Scale Solar Energy Guideline August 2022, this guide line has a whole section on community consultation and the benefits of early community involvement.

Objection 3

I am concerned that if for whatever reason we were to decide to sell either or that being so close to the proposed project would limit the number of potential buyers and potentially decrease the value of our property.

Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road Springside

Attachment 5 Submissions x 42 (redacted)

Objection 4

I am a regular user of Cadia Road and despite what is indicated in the Statement Of Environmental Effects, Cadia Road is a very busy road. It hosts a lot of Cadia Valley Operations traffic as well as State Forest logging trucks, local resident traffic, tourism and special interest group traffic as well as a large number of push bike riders. The Glint and Glare study indicates there are intersections and parts of both Cadia Road and Forest Road that will be effected by Yellow Glare, this creates an unacceptable safety risk for road users.

Conclusion

I am very disappointed that we were not consulted in relation to this project. It is clear that a site visit took place in 2022 and there has been ample time since then and before the lodging of the development application for consultation to have taken place. We have not been approached at any stage by the proponent to seek our input into the design and development of this project. In this day and age that is not just disappointing, it is totally unacceptable.

For the reasons listed in my submission this project **should not be approved**.

Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road Springside

Attachment 5 Submissions x 42 (redacted)

Submission 8

DA771/2024(1)
PAN -499518

16th February 2025

Chief Executive Officer
Orange City Council
135 Byng Street
Orange NSW 2800

Dear Mr Waddel

Development Application DA771/2024(1)
Electrical Generation Works (Solar Farm) and Battery Energy Storage System
140 Cadia Road, Springside

Executive Summary

I write to formalize my **OBJECTION** to the proposal on the following grounds.

1. The proposed development is within 15 meters (or less) of my boundary fence; it is approximately 200m from infrastructure on my land and it is approximately 350m from my house (receiver OP3).
2. Lack of Consultation. There has been no consultation at all in relation to this proposal.
3. Orange is known for its Vistas and its appealing landscapes. The location of the proposed Solar Farm is not appropriate. It is very close to the city of Orange and it is close to Gosling Creek Reserve, Cadia Road and Forest Road all of which are used by many visitors to our city. It is also located close to, if not under the flight path to Orange Airport.
4. Orange is outside of the NSW Renewables Energy Zone. The Bureau of Meteorology suggests that Orange is located within the bottom 25% of solar radiation in Australia.
5. The Project area is not suitable all year round for the grazing of sheep as suggested in the Statement of Environmental Effects.

Background

My family and I moved to Orange over 20 years ago. We lived in the City of Orange for a short time before deciding to purchase our property on the outskirts of Orange at . This purchase allowed us to enjoy the beautiful country lifestyle Orange has to offer while remaining near the City of Orange and the exceptional services it has to offer.

Orange is a growing city, so our decision to purchase in an area Zoned C3 (Environmental Management under Orange LEP 2011) was intentional. It meant we were not going to be subjected to any more land subdivisions.

We have also been fortunate enough to be able to purchase both and . Both of these blocks of land have building entitlements, and these additional purchases have given us not only an exceptional location to live within proximity to Orange, but they have also given us enough land to conduct a small-scale farming operation. To add to the enjoyment of living where we do, my son-in-law, my daughter and their three children have purchased at which is located within and alongside

Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road Springside

Attachment 5 Submissions x 42 (redacted)

Our small farming operation, which comprises approximately 40 hectares is currently hosting 56 head of cattle and 60 head of sheep which demonstrates the quality of the land in this area. As with all farming operations livestock numbers do fluctuate in line with climate conditions.

Objection 1**Visual Impact**

As stated earlier, the infrastructure of the proposed development is located directly adjacent to the Boundary of our property, and it sits within very close proximity to infrastructure on land owned by us at . approximately 200m, and it is close to our primary place of residence, approximately 350m, referenced as receiver in the visual impact assessment, our property received an impact rating of high.

Even with the Visual Mitigation suggested for the project, which is totally inadequate, ie plantings of “shrubs or trees that grow to a maximum of 3 meters” the visual impact from a lot of our property is unacceptable. The facility would impact on the enjoyment we get from the use of our land.

The majority of our land is higher than the proposed development so it would be very visible from the majority of our land.

See the photos taken below from the locations indicated in the first photo on our land





Photo 1 looking North West, RL950, 175 meters to the proposed project



Photo 2 looking North, RL950. 200 meters to the proposed project



Photo 3 looking North/North East, RL960, 250 meters to the proposed project



Photo 4 looking Northeast RL970, 250 meters to the proposed project area



Photo 5 looking North, RL990, 460 meters to the proposed project (building envelope 170 Cadia road)

Objection 2

Consultation

Consultation has been nonexistent in relation to this project, which is totally unacceptable given the close proximity of the proposed project to land owned by us and our place of residence.

The Statement of Environmental Effects Orange 8B & 9B Solar Farm + BESS at section 4.6 **Guidelines** at 4.6.1 Large Scale Solar Energy Guideline states, and I quote "The objectives, principles and assessment issues outlined in the guideline have been considered during preparation of this Statement of Environmental Effects and are referenced in the matters assessed in Chapter 5".

I now quote from the Large-Scale Solar Energy Guideline August 2022 referenced above

1.1 Objectives

The objectives of this guideline are to:

- support the development of sustainable solar energy industry in NSW
- encourage the industry to select suitable sites and locations to avoid or reduce the likelihood of land use conflicts, environmental impacts and impacts on the community.
- provide clear and consistent guidance on how to measure and assess the key Environmental and social impacts of large-scale solar energy projects.
- Provide clear and consistent expectations to improve the quality of development applications and reduce delays in assessments.
- **Promote meaningful, respectful, effective and best practice community and stakeholder Engagement throughout the development assessment process.**

Although the proponent is aware of and in fact refers to the Large-Scale Solar Energy Guideline, they have completely ignored it and failed on the community and stakeholder engagement front.

Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road Springside

Attachment 5 Submissions x 42 (redacted)

Further If you visit the EDP Renewable Australia website on the very first page of that website you will find what I have screen shot below.



EDP Renewables in Australia

In November 2023, EDP Renewables (EDPR) acquired ITP Development in Australia and the company became part of EDP Renewables APAC, a leading clean energy hub for the region.

The Australia team develops town-scale solar farms in Australia, undertakes solar farm landholder engagement, system design, planning approvals, financing, electrical connection approvals and commissioning.

EDP Renewables Australia maintains relationships with multiple stakeholders – communities, governments and contractors to ensure successful projects delivery.

EDPR has failed on relationships with communities as there has been absolutely no engagement or consultation with the project's immediate neighbors or the wider community.

Objection 3

Vistas

The Orange area is known for its vistas and appealing landscapes. These aspects are not just seen from the ground, they are also seen from the air. The air traffic into and out of Orange continues to grow, I have personally taken many flights in and out of Orange and I have witnessed first-hand the pleasure and excitement of travelers taking in the views from above, both on arrival into and departure out of Orange Airport.

The proposed development sits almost directly under the flight path of Orange Airport.

Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road Springside

Attachment 5 Submissions x 42 (redacted)

See fly.safe.dji.com map below:



The proposed development also has potential to visually impact on the recreational use of public land in the area, including walking and bike trails connecting Shiralee Road with Gosling Creek Reserve via BalleyKeane Lane. Cadia Road forms part of Orange's promoted "Out of Town Trails" in Ride Orange Guide for regional cycling-known as the Panuara Loop. The Guide with respect to the Panuara Loop advises as follows:

Please be advised that the Panuara Loop experiences high traffic volumes, particularly along Cadia and Forest Roads between 5am-8am and 3pm-8pm daily.

<https://www.orange.nsw.gov.au/wp-content/uploads/2019/12/orange-Ride-Guide.pdf>

These high volumes of traffic are partly caused by the major employer that sits towards the end of Cadia road. However, they are added to by the many tourists taking in the wonderful rural and agricultural views not only on push bikes but also on motor bikes and motor cars, we regularly witness groups of vintage cars and motorcycles enjoying this area.

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Objection 4**Renewables Zone.**

Orange sits outside of the renewables zone and for good reason. The Bureau of Meteorology suggests that Orange is located within the bottom 25% of Solar Radiation in Australia, therefore, highlighting that it is not the best place for solar infrastructure to be developed.

Power can be generated and transmitted through the huge power line network that exists in NSW, from one location to another. Doesn't it therefore make sense to locate solar farms in the locations where they will be most efficient and productive.

Objection 5**Agrivoltaics**

Throughout the Statement of Environmental Facts, we are led to believe that livestock ie sheep can continue to graze and co-exist with the solar panels. While I have no doubt that this may be the case in some locations, the name Springside was given to this area for good reason. The area is low lying and very wet. Sheep do not like wet, swampy ground and I can state that from first-hand experience that wet ground leads to problems with foot abscess, particularly in sheep.

I accept that sheep will be able to graze the project area during the drier months, but it would be delusional to expect to run sheep in the project area all year round.

Objection 6**Hydrological change**

The facility would significantly change the hydrological conditions of the land and downstream to Gosling Creek Reserve with over 50% of the land area changing from pasture to hard surfaces with a commensurate increase in run-off rates which in turn can cause erosion of streams and sedimentation. As a consequence, there are potential effects on water quality at nearby Gosling Creek Dam, which falls within the city of Orange's drinking water catchment. The application proposes that mitigation of drainage impacts be considered at construction stage. The approving authority must be certain what mitigation measures will be required upfront as part of the Development Application and how effective these can be within the site.

Objection 7**Vegetation screening**

Vegetation screening of part of the site, which is frankly in-adequate, will take time to establish and in the interim period adjoining residents will be exposed to the introduction of industrial scale structures that have a major impact on the visual aspects of the landscape, for a number of years. The screens will require intensive management including weed control and irrigation to facilitate effective establishment. It is hard for me to imagine how this is going to be facilitated given the wet and swampy nature of most of the land in the project area.

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Attachment 5 Submissions x 42 (redacted)

In the event that despite objections to the development that the application was to be approved then the development must, at the very least, be conditional upon the effective establishment of screening prior to commencement of establishment of structures associated with the development.

Objection 8**Site selection**

I do not recall seeing an advertisement asking landowners for expressions of interest to host this project.

There must be a more suitable location on a larger block of land that is more obscured from view and offers an acceptable buffer zone while still benefiting from proximity to the power network for connectivity.

The development should be reconsidered within an area comprising large scale rural lands obscured from public areas, not near small rural lifestyle lots and significant public recreational areas and roads.

Conclusion

I am not anti-renewable energy, and I am certainly not anti-development. I am, however opposed to development that could be in a much better and more productive location, and I am anti applicants that fail to engage with the close neighbours and the general community about their proposed development. I note that a similar sized solar project The Burrundulla project near Mudgee was knocked back by both the planning panel and the land and environment court because it was too close to homes and the mitigation factors failed to hide the solar panels. Furthermore, the senior commissioner in the case latched on to the fact that the community consultation undertaken by the developer who had relied on planning controls and experts understanding of what the community appreciated in the landscape as a proxy for talking to people in the community about their concerns. It is clear that this is the same for this proposed development here at 140 Cadia Road Springside rather than engage directly with the local community and the neighbours who are the ones most affected by the project, the applicant and their consultants have relied upon a generic assessment.

For the reasons outlined in my submission this project **should not be approved**.

Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road Springside

Attachment 5 Submissions x 42 (redacted)

Submission 9 (email cover page)

From:
Sent: Wednesday, 19 February 2025 3:40 PM
To: Orange City Council
Cc:
Subject: Submission- solar site DA 771/2024(1)
Attachments: Submission template solar site DA.docx

Dear Mr Waddel –
Please find attached a submission re DA 771/2024(1)
140 Cadia rd. Springside nsw 2800

Whilst now resides in Orange having recently retired from farm at springside –our family has long association with the district and its environs,
This leads us to create a submission that identifies some positives but in the main this development, if approved, flies in the face of historical development from orchards (small) to hobby blocks and closer settlement
As such we have outlined these points in the attached submission for consideration by the consent authority
Kind regards

Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road Springside

Attachment 5 Submissions x 42 (redacted)

Submission 9

DA771/2024(1)
PAN -499518

19th February 2025

Chief Executive Officer
Orange City Council
135 Byng Street
Orange NSW 2800

Dear Mr Waddel

Development Application DA771/2024(1)
Electrical Generation Works (Solar Farm) and Battery Energy Storage System
140 Cadia Road, Springside nsw 2800

Exec summary:

This submission outlines positives and negatives and concludes -this development is not in the best interests of the social fabric of the community in which it is proposed -so we do not support this development.

Pros-

land ownership title should allow individuals reasonable opportunities to value add or develop said land utilizing appropriate protocols so to do -thus allowing public comment in formal submissions

Cons-Objections->

The said land has for generations been classed as prime agr land -fit for agr/horticultural practices – solar panels do NOT fit this description and removes said land from its designated classification'

Prior to public notification of said DA -No public or local consultation

Visual amenity to surrounding land holders will be compromised-including historical visual amenity

Potential impact on adjoining land holders land value -adjacent to an industrial operation.

The loss of life style units of land that this industrial development will impact upon—small lifestyle units of land being in high demand as Orange and district grows

This DA development is close to and within the water catchment of Orange city which questions the impact on the hydrological changes the said Development may create—toxicity of water into surrounding land and catchment.

Orange being outside the state REZ area suggests an opportunist application close to a major transmission line—to (CVO) -smacks in the face of community for a commercial opportunity.

Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road Springside

Attachment 5 Submissions x 42 (redacted)

Submission 10

20th February 2025

Chief Executive Officer
Orange City Council
135 Byng Street
Orange NSW 2800

Dear Mr Waddel,

Development Application DA771/2024(1)
Electrical Generation Works (Solar Farm) and Battery Energy Storage System
140 Cadia Road, Springside

We wish to submit an objection to the above proposed development for the following reasons:-

1. The close proximity to the city of Orange – I believe this will affect and restrict future development and the growth of our city - surely there are less populated areas that would be more suited to a solar farm.
2. The lack of community consultation from EDPR Australia Pty Ltd – the community as a whole has not been made aware of the development and the long-term implications of a solar farm on the outskirts of residential areas. We live within 2 kms of this proposed Solar farm and have had no consultation with regards to the effect it will have on health or impact on the value of property in the area.
3. Orange is not in a Renewable Energy Zone. These zones have been mapped out for a reason as they are considered suitable for renewable energy - Orange is not included.
4. Will the development effect the long term water catchment of Orange or contaminate the city's water over time if this happens will EDPR Australia Pty Ltd compensate residents?
5. How productive will a solar farm be in this area knowing the local climate and our long grey/cloudy winters.

As a concerned resident and rate payer living less then 2kms from this proposed development it would be appreciated if we could be included in any further correspondence in relation to this matter.

Yours sincerely,

Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road Springside

Attachment 5 Submissions x 42 (redacted)

Submission 11

From:
Sent: Thursday, 20 February 2025 9:03 AM
To: Orange City Council
Subject: DA 771/2024(1) - PAN 499518

I hereby submit my objection to the above mentioned DA application.

I object on the following grounds.

The locale of this proposed Solar Installation has been traditionally used for fruit agriculture , and small hobby farms , and is so close to Orange city to be regarded as residential.
The approved usage is evident on surrounding farms.

The farms in the locale are small in size and are not appropriate for Large Scale solar installations.

Construction of a 13 hectare solar installation on the 25 hectare farm would be tantamount to the construction of a large factory on a small parcel semi rural land and would be detrimental both financially and environmentally to the neighbours and surrounding locale. These impacts are paramount when considering the appropriateness of such a solar installation.

Signed

Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road Springside

Attachment 5 Submissions x 42 (redacted)

[Submission 12 \(email cover page\)](#)

From:
Sent: Thursday, 20 February 2025 9:20 AM
To: Orange City Council
Subject: 140 Cadia Road, Springside - Solar Farm Objection
Attachments: 140 Cadia Road, Springside - Solar Farm Objection.pdf

Dear Mr Waddel,

Please see attached my Objection Submission for the above noted development.

Please note that this object in no way, forms a position of , and is not to be construed in such a manner. I am objecting as a concerned local, and any of the views contained within my objection in no way forms an option from my employer, Acumentis.

I look forward to hearing from you soon.

Many thanks

Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road Springside

Attachment 5 Submissions x 42 (redacted)

Submission 12

DA771/2024(1)
PAN -499518

20th February 2025

Chief Executive Officer
Orange City Council
135 Byng Street
Orange NSW 2800

Dear Mr Waddel

Development Application DA771/2024(1)
Electrical Generation Works (Solar Farm) and Battery Energy Storage System
140 Cadia Road, Springside NSW 2800

I **object** to the proposed development for the following reasons.

- I live within proximity to the solar farm and note that Cadia Road is already an extremely busy arterial road, as a result of many hundreds of vehicle movements per day (24/7), as a result of Cadia Mine traffic movements. Impacts with regard to traffic congestion/safety will be amplified by the project, with safety concerns noted.
- Visual impacts via glare and visual impediment on the surrounding landscape will be amplified as a result of the project.
- Visual impact on recreational users of Gosling Creek and Forest Road are noted.
- The proposed visual mitigation is inadequate.
- There has been a distinct **lack community consultation** in relation to the development. A 32,000 panel development with battery storage, and associated infrastructure within 6km form the Orange CBD, should have been better addressed within the local community. To date, so far as the local population is concerned, has been zero consultation. This shows a lack of pre-planning on behalf of both the development proponent and Orange City Council.
- Orange City Council does not form part of the Central West Renewable Energy Zone, so why is a development of this scale being proposed in the first instance.
- We have environmental concerns, noting that the development lies within the Orange city's water supply catchment, being noted as Environmentally sensitive land, which includes a Bushfire overlay.

**Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road
Springside**

Attachment 5 Submissions x 42 (redacted)

- The underlying zoning of C3 - Environmental Management, is designed to protect the local landscape, with the following zoning objectives.
- • To protect, manage and restore areas with special ecological, scientific, cultural or aesthetic values.
- • To provide for a limited range of development that does not have an adverse effect on those values.
- • To manage development within water supply catchment lands to conserve and enhance the city and district's water resources.
- • To maintain the rural function and primary production values of the area.
- • To ensure development along the Southern Link Road has alternative access.

The proposal seems to be at odds with regard to the zoning objectives.

- It is difficult enough getting approval for a dwelling, farm shed, or any basic infrastructure within this zoning, so how a proposal of this scale fits into the planning objectives within the locality is beyond me.

Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road Springside

Attachment 5 Submissions x 42 (redacted)

Submission 13

DA771/2024(1)
PAN -499518

15th February 2025

Chief Executive Officer
Orange City Council
135 Byng Street
Orange NSW 2800

Dear Mr Waddel

Development Application DA771/2024(1)
Electrical Generation Works (Solar Farm) and Battery Energy Storage System
140 Cadia Road, Springside

I **object** to the proposed development for the following reasons

1) Lack of Community Consultation

- we are directly affected by this proposed project as it is in the line of site from our house. We had no notification of the proposal. We were alerted to it by a neighbour.

2) Visual Impact

- there will be significant visual impact for many surrounding properties. The proposed visual screen of 3 metres in height and width is inadequate. The proposed plan shows the panels very close to the boundary fence. This may have determined the height of the screen to avoid shading the panels. Moving the edge of the panels would allow for a much more adequate screen.

3) Glare

- there is potential for significant glare from the panels. We renovated our house 5 years ago and we were not permitted to use zincalume on the roof because of the potential for glare and reflection. It would seem the glare from the panels is deemed acceptable despite being on the helicopter flight path to the hospital and for fixed wing planes to Orange airport.

Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road Springside

Attachment 5 Submissions x 42 (redacted)

Submission 14

DA771/2024(1)
PAN -499518
17th February 2025

Chief Executive Office
Orange City Council
135 Byng Street
Orange NSW 2800
Dear Mr Waddel

Development Application DA771/2024(1)
Electrical Generation Works (Solar Farm) and Battery Energy Storage System
140 Cadia Road, Springside
I object to the proposed development for the following reasons:

LACK OF COMMUNITY CONSULTATION

The council did not communicate with near neighbours other than direct neighbours

GLARE

The development is not adequately screened. A renovation we completed four years ago, we were required to change our roof type from zinvalume because it was considered glare and reflection would be too high.

VISUAL IMPACT

I feel the screening height of 3m high visual screening is inadequate when viewing the development from our house on Forest Road side of Cadia Road.

Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road Springside

Attachment 5 Submissions x 42 (redacted)

Submission 15

21st February 2025

DA771/2024(1)
PAN -499518

To Whom It May Concern,

Development Application DA771/2024(1)
Electrical Generation Works (Solar Farm) and Battery Energy Storage System
140 Cadia Road, Springside

I write to OBJECT to the above proposal on the following grounds.

1. The visual impact on our house is unacceptably high.
2. Lack of Consultation. There has been no consultation with us in relation to this proposal.
3. Traffic impacts of the project.
4. The Glint and Glare impacts on our property and surroundings.
5. Potential impact on property value.

Background

My family and I were lucky enough to purchase _____ which is located at _____ at _____ in _____. This allowed us to move from our existing house which was in Orange to the outskirts of Orange to enjoy the country lifestyle, while still benefiting from being close to the city of Orange and the wonderful services that it provides. We are 7.7kms from the Orange Post office by car, 5.6kms to our son's high school, 8.5kms from our other children's primary school. The location of our property is amazing being so close to Orange but providing us with the country / rural lifestyle we wanted so dearly for our family. Another attraction for us purchasing _____ was that it is located very close to where my _____ and _____ and in fact is surrounded by _____ which my _____ have been fortunate enough to purchase since we moved into our house.

We have really enjoyed the country lifestyle since moving out of Orange and in particular the privacy and the views from almost every angle of our property not just from outside but also from inside our home. When I stand at my kitchen window which is located on the northern side of my house, which I do multiple times every day and lookout the window I can see for a very long way and I have a very good rural outlook, the proposed development which identifies our property as OP2 in the Visual Impact Assessment and R01 in the Noise Impact Assessment would be located approximately 200 metres from that particular position in my house and it will absolutely ruin those views.

We purchased _____ with the intention of extending and modernising the cottage while keeping the heritage appearance of the cottage on the outside. Since making the purchase we have spent a lot of time in the garden clearing overgrown gardens and removing small sheds that obscured the views from inside and around our home, this has enhanced the rural landscape and beautiful views our property has. The proposed development if approved is going to occupy the majority of the northwestern views of our property and completely destroy the beautiful rural landscape and scenery we currently enjoy, turning what is currently picturesque rural landscape into an industrial eye saw to our property and other adjoining properties and the larger Orange community.

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Springside**

Attachment 5 Submissions x 42 (redacted)

Objection 1**Visual Impact**

As stated earlier our property is identified as in the visual impact assessment in table 4, we are rated high for magnitude, high for sensitivity and high for impact. Our property is located approximately 200 metres from the nearest proposed solar panel, and the views from not only outside our house but also from inside our house, which has been built with large windows in most walls so the rural scenic view can be enjoyed will be absolutely destroyed if this project goes ahead. Our kitchen, main living area and our lounge room all face North which is where the proposed development is in relation to our house, so every time we look out the windows in these rooms, we will see this proposed development. The main entrance to our house is west facing, from this location the view is of the proposed development also, having us see the proposed development site every time we enter or leave our home. Our private open space to the north is going to be completely consumed by this proposed development – removing the current rural outlook.

The mitigation suggested in the Visual Impact Assessment of three metre high plantings is not sufficient to do anything more than potentially soften the effect of the security fence that is required to be placed around the solar panels. The southern boundary of the proposed development is lower than our house and lower than the middle point of the development, therefore the proposed plantings are not going to provide an adequate screening for our property.

I note the Large – Scale Solar Energy Guideline August 2022, which is referred to and ignored in the Statement of Environmental Effects, (prepared by Zenith Town Planning) on page 7, paragraph four says “Although large-scale solar energy projects are the focus of this guideline, applicants, councils and planning panels are encouraged to consider the objectives and principles when preparing, assessing and determining solar energy development applications (DAs) for regionally significant development. The assessment process and level of detail required in a statement of environmental effects should be proportionate to the scale of the development and the likely impacts”. Then on page 24 the second last paragraph of the same Guideline states “Visual impacts must be assigned a rating from very low to high having regard to these considerations. Applicants must seek to avoid high impacts (unless the impacts can be justified) and ensure effective mitigation is provided for moderate impacts such as vegetation screening”. Our property and a number of other properties are assigned a visual impact rating of high which according to the Guideline the applicants must seek to avoid (unless the impacts can be justified), I fail to see how the impacts can be justified, so they must be avoided.

Orange is known for its very pleasing views that consists of not only rural landscape but also vineyards, large dams, established trees and for a fair portion of the year nice green pastures are present, visitors from outside the area flock to Orange to enjoy these views. As I travel into Orange, I often see many of these visitors and Orange locals enjoying the recreational areas around Gosling Creek and Jack Brabham Park. There are numerous events held each year which start at Gosling Creek and travel out either Cadia Road or Forest Road this proposed project will be highly visible from both of those roadways and will detract from the views and outlook currently in and around the development site.

As outlined above the visual impact of this project to our home, other neighbouring properties and to Orange locals and visitors means it should not be approved.

Below are photos of the project area taken from three locations inside my property and from our deck to highlight the visual impact that the project is going to have on our home.



Picture 1: View from the entrance of our house - proposed site marked in red



Picture 2: View from kitchen window – proposed site marked in red



Picture 3: View from Lounge Room Window - proposed site marked in red



Picture 4: View from our deck - proposed site marked in red

**Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road
Springside**

Attachment 5 Submissions x 42 (redacted)

Objection 2

Consultation.

There has been absolutely no consultation in relation to this project even though we are I believe one of the closest neighbors to the project and our residence, identified as in the Visual Impact Assessment received Magnitude, Sensitivity and Impact ratings of high we have not been consulted by anyone involved in this project.

It is not as if the applicant is not aware of the benefits of early effective consultation with the local community. In the Statement of Environmental Effects, they make reference to the Large-Scale Solar Energy Guideline August 2022, this guideline has a whole section, (section 3) on community and stakeholder engagement. The guidelines include requirements for the applicant to:

- *provide clear and concise information to the community and stakeholders about projects and their impacts*
- *implement activities that encourage and facilitate public participation*
- *report on what was heard and what changes were made in response to feedback and why.*

Engagement with the community as early as possible to identify potential opportunities and constraints, these could relate to project design for example:

- *the positioning and siting of the project*
- *characterisation of the scenic quality and sensitivity of the landscape and viewpoints*
- *visual impacts including mitigation measures.*

The applicant has not given stakeholders any opportunity to meaningfully participate in the engagement process, there has been no engagement process. I urge those reviewing this application to strongly consider the lack of consultation and complete disregard of the guideline when making your decision regarding this project.

Objection 3

Traffic impacts of the project.

The traffic and parking impact statement lists Cadia Road as an unclassified LOCAL road. Has the applicant considered that this local road is used by:

- the residence of Cadia Road and surrounding district
- is a local school bus route
- is used by workers of Newmont's Cadia Valley Operations, one of the biggest employers in the area, 365 days of the year.
- is used by State Forest logging trucks.
- forms part of Orange's promoted "Out of Town trails" in the Ride Orange Guide for regional cycling – known as the Panuara Loop

Cadia Road is a busy road with several different types of vehicles and road users on it each and every day. From approx. 5am – 8am and 3.30pm to 8pm Cadia Mine workers travel the road, which sees a large volume of traffic on Cadia Road. The mine also has freight deliveries, oversize loads and cranes that travel the road daily. During the school year there are 2 school buses that travel Cadia Road currently stopping at 166 Cadia Road and 140 Cadia Road to pick up and drop off children. The logging trucks travel the road doing several trips per day. Along with all the above-mentioned traffic there are also social users of the

Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road Springside

Attachment 5 Submissions x 42 (redacted)

road including cyclists, motor bike riders, recreational users and tourists. The additional traffic added to Cadia road by the proposed project increases interactions that are unnecessary and increases the risk of motor vehicle accidents.

In the traffic and parking impact statement drawing title: 02 – B-Double Turn in From Cadia Road it is showing a B-Double entering the driveway of the project area, the B – Double is shown to leave the road pavement to have adequate turning circle, as there is no turning lane, I fail to see how this is going to be possible. Has this been properly considered and reviewed with the current road users considered?

Objection 4**Glint and Glare**

Our property is identified as OP02 in the Glint and Glare study, the study states that our property will receive “up to 15 minutes of yellow glare between 3.15pm and 4.30 pm, from 2 May to 9 August”, the study describes Yellow glare as follows “Yellow glare, which has potential to cause temporary afterimage” Using the Large-Scale Solar Farm Guideline, section 5.6 Glint and Glare, Table 2 this gives my primary place of residence High glare impact. The same table states “Significant amount of glare that should be avoided.”

The Statement of Environmental Effects suggested that glare effects for road traffic would only be minimal due to low traffic use on Cadia Road. Obviously, this is incorrect, as detailed above in objection 3 Cadia Road experiences a high volume of traffic every day, cyclists, school buses, workers travelling to and from Cadia, heavy and oversize vehicles travelling to Cadia and the Pine Plantation as well as tourists and recreational users. From the results published in the Glint and Glare Study section 3.4, Results table 4, the affected times are from approx. 3.15pm – 5.30pm and 7.45am – 9am depending on location in relation to the project site, both of these times are times of high traffic movements on Cadia Road. No amount of Glint and Glare or in fact any other distractions for road users are acceptable as they have the potential to cause a serious traffic incident.

This project is in the wrong location and cannot be approved.

**Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road
Springside**

Attachment 5 Submissions x 42 (redacted)



Image taken from 140 Cadia Road



Image taken from Forest Road

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Attachment 5 Submissions x 42 (redacted)

Objection 5**Impact on Property Value**

I am concerned about the Potential impact the proposed project will have on our properties value. The Visual Impact Assessment on page 10 in the second last paragraph states "visual impacts on the dwelling on lot 5 DP6173 which is project associated are not assessed. Should the property be sold at some point in the future then any impacts on this dwelling would be factored into the decision to purchase".

Is this indicating that the sale price for Lot 5 DP6173 may be impacted by the proposed project? If so, the same would apply if we decided to sell sometime in the future. On this alone I feel this project could negatively affect a number of property owners around the proposed project site. The proposed project site is simply in the wrong place and should be reconsidered within an area comprising large scale rural lands obscured from public areas, not near rural lifestyle blocks and local recreational areas and public road.

Conclusion

I am very disappointed that we were not consulted in relation to this project given the close proximity of our land and our home. It is clear that a site visit took place in 2022 and there has been ample time since that time and before the lodging of the development application for consultation to have occurred. We have not been approached at any stage by the proponent to seek our input into any of the design or mitigation measures in relation to this proposed development. In this day and age that is not just disappointing, it is totally unacceptable.

For the reasons listed in my submission this project **should not be approved**.

Regards

Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road Springside

Attachment 5 Submissions x 42 (redacted)

Submission 16

From:
Sent: Saturday, 22 February 2025 9:16 PM
To: Orange City Council
Subject: Objection to solar farm at 140 Cadia Road, Orange

My wife and I are land owners at (Orange), less than 0.5 km from the Cadia Rd and we wish to lodge an objection to the abovementioned development.

This development is on the doorstep of Orange in a rural area comprising many small farms and lifestyle blocks. When we purchased this farm we had no idea that it was to be centred in a renewable energy zone and thereby may have not been prepared to pay so much. The rural vistas of nearby residents and passersby will be irrevocably changed and land values decreased but I'm sure someone else will be able to put an accurate figure on this.

This area of Orange boasts very fertile soils and high stock carrying rates and to lose further agricultural land to something as aesthetically unappealing and economically inefficient, as a solar farm, is both foolish and environmentally embarrassing. Even though I reside in my son, , who lives in Orange manages and develops the property and so we have a strong family connection to the area.

It appears that the proposed development is within the catchment of Gosling Creek, which flows into Gosling Ck Dam then to Spring Ck Dam then to Suma Park Dam which supplies Orange with drinking water.

Photovoltaic modules which comprise the electricity generating panels of a solar farm contain an array of toxic chemicals including cadmium, lead and also zinc, tellurium, indium, gallium, selenium, aluminium, molybdenum and copper. A paper published by the University of Stuttgart demonstrated how these chemicals can be leached into the environment and contaminate ground water and enter drinking water. The leaching is dependent on the quality of the panels, their care of manufacture, age and environmental factors but it poses a very significant health risk.

In March 2024 a hailstorm destroyed a massive solar farm in Texas USA. The impact reduced the panels to small glass pellets and the toxin release was massive. Such an incident could occur on the Cadia Rd. resulting in a chemical spill into Gosling Ck. and subsequently contaminating Suma Park Dam. As well as a serious human health problem it could lead to heavy metal levels in the fish stocks of the associated streams.

There is no way that large arrays of solar panels containing a plethora of toxic chemicals should be permitted in a drinking water catchment especially one such as Orange's which has a small capacity water storage facility allowing for greater concentration of the toxins. The recent and ongoing problem in the Blue Mountains

Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road Springside

Attachment 5 Submissions x 42 (redacted)

with contamination of the Medlow Bath Dam (also a small dam) with firefighting retardant provides a salutary lesson.

The fact that this proposed facility is to be built in the water catchment area of Orange is enough to halt its development.

The Land Newspaper recently reported a fire at the Cohuna Solar Farm at Raywood near Bendigo. This was a significant fire as ten CFA units attended and the town's residents were warned of the black toxic smoke that was drifting towards the town. This facility had another fire in 2023. The Land also reported another fire at a solar farm at Walla Walla, just north of Albury, in early January. It appears that fires in solar farms are not uncommon.

As with all renewable systems, solar farms have a finite life, and must be renewed. Estimates of their usefulness vary from 25 to 30 years, which is not very long and at the end of their life there are substantial decommissioning costs. Based on the Draft Solar Decommissioning Calculator (Draft Energy Policy Framework- NSW Dept. of Planning) the cost of decommissioning a solar electricity generating facility is \$A 145,000 per MW. For a 5MW farm at today's prices this would amount to \$725,000. For 13.01 ha (the area of the proposed farm) this would be valued at \$416,320 at a current price of \$32,000/ha (I know as I'm speaking from personal experience). This cost is much greater than the value of the land hosting the solar factory.

Conditions of approval for solar factories that have been approved state that the Applicant (Developer/ Lessee) is responsible for demolition of infrastructure and rehabilitation of the land. However there is a catch. The Applicant Company has no assets and is beneficially owned by share holding by another company. During the operational life of the project the income earned by the Applicant company is paid as dividends to the holding company which is the beneficial owner of the shares in the Applicant company. At the end of life of the project the Applicant company has no assets and is put into administration by the Holding company. The host landowner therefore has to pick up the costs for the demolition of the infrastructure and rehabilitation of the land.

The implication here is that no private landowner could ever bear the costs of decommissioning and remediation. It is likely that the land would be abandoned by the landowner and therefore local government (Orange City Council) under the Protection of the Environment Operations Act 1997 (POEO Act) and therefore ratepayers would be required to fund the clean up costs.

The proposal is under the flight path of Orange Regional Airport and glare could also contribute to helicopter access to nearby Orange Hospital.

Ignoring the fact that solar farms are a very inefficient means of generating electricity, which should be sufficient evidence to halt the project, the other overriding arguments against it are

1. It is sited in the water catchment area of Orange with all its attendant health implications
2. Potential damage to the facility from hail and wind leading to leaching of toxic chemicals.
3. The ever present threat of fire from the plant itself or bushfires'
4. The release of toxic fumes from fire that would impact the nearby Orange Hospital and the Gosling Ck Aged Care facility.

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- 5. Potential burden to ratepayers if forced to pay remediation costs.(25 years is not far away)
- 6. Visual and environmental pollution from the facility.By the time the trees grow the facility will have had its use by date.
- 7. The loss of highly fertile and productive land
- 8. EDPR Aust Pty. Ltd. is a foreign company and has no interest in the welfare of Australians.

I earnestly hope that you do not approve this project.

Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road Springside

Attachment 5 Submissions x 42 (redacted)

Submission 17

From:
Sent: Sunday, 23 February 2025 4:33 PM
To: Orange City Council
Subject: Development Application DA771/2024 (1)
Importance: High

Dear Mr Wadell,

I am writing to **formally object** to the proposed construction of a solar farm at 140 Cadia Road, Orange NSW under **DA771/2024(1)**. As a property owner on , I have significant concerns regarding the impact this development may have on the local environment, community, and quality of life.

1. **Visual Impact:** The proposed solar farm is likely to disrupt the natural landscape and scenic views that are characteristic of our area. The installation of large-scale solar panels and associated infrastructure could diminish the rural aesthetic and potentially affect property values in the surrounding community.
2. **Property Value Impact:** There is a valid concern that the proximity to a large solar installation could reduce property values in the area. Many property owners, including myself, have invested in this region for its natural beauty, tranquility and agricultural viability, which could be compromised by this development.
3. **Agricultural concerns:** The use of prime agricultural land for industrial purposes may not align with regional planning objectives focused on preserving agricultural productivity. Orange is outside of the Renewable Energy Zone and other areas on less fertile ground would be more appropriate.
4. **Alternative Locations and Solutions:** While I support the transition to renewable energy, I believe alternative locations with less impact on residential and agricultural areas should be considered. Utilizing degraded or less sensitive land could achieve sustainability goals without compromising our community's lifestyle and property values.

I respectfully request that these concerns be thoroughly considered in the evaluation process for this proposal. I would appreciate the opportunity for further consultation and to be informed of any developments related to this project.

Best Regards,

Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road Springside

Attachment 5 Submissions x 42 (redacted)

Submission 18

Ref: DA771/2024(1) – PAN-499518

23 February 2025

Mr David Waddell
Chief Executive Officer
Orange City Council
135 Byng Street
Orange NSW 2800

Dear Mr Waddell

Re: Objection to DA771/2024(1) – Electricity Generating Works (solar farm) and Battery Energy Storage System (BESS) proposed at 140 Cadia Road Orange.

We reside at _____, approximately _____ from the proposed development (only one property between us and the site). Despite living in such close proximity, we were not officially notified regarding this development proposal. This lack of notification and consultation is unacceptable and makes us think the proponent is trying to sneak the development in to deny us the opportunity to raise concerns regarding the potential detrimental impacts on our family, our property and the wider neighbourhood.

We **object** to the proposal on the following grounds:

- The proposed development would devalue our property and all land in the area. No-one wants to live near or see an industrial site near their home.
- The proposed development is on prime agricultural land. There is no logical reason to utilise productive soil for an unattractive solar 'farm' with its proposed 2.3 metre fence (inclusive of three rows of barbed wire similar to a prison fence) which would change the fabric of the area.
- Orange, as you well know, is a renowned food and wine region, known for its clean air and sustainable production, and the proposed development on the border of the city would detract from this and negatively impact tourism.
- The proposed development is on a flight path to Orange Airport which is important for two reasons: 1) The development site adjoins a vineyard. The visual impact to visitors viewing this as they are flying to Orange is the opposite of what we try to promote as a food and wine region. It promotes ugly development in an otherwise agricultural area. 2) Potential glare from the panels could also impact safe approach to landing of planes at the airport.
- Cadia Road is a very busy road with significant traffic during the morning and afternoon – especially in line with shift times at Cadia. Any potential glare from the proposed panels presents an unacceptable risk to users of both Cadia Road and further east to Forest Road – even with the proposed plantings. Further to this, adding a solar farm on Cadia road would add to this traffic flow especially during construction but also through production and maintenance.
- The proposed development is in a hydrologically sensitive area. The site is located in a Conservation Management Zone which would have water runoff and groundwater feeding

**Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road
Springside**

Attachment 5 Submissions x 42 (redacted)

immediately into the Environmental Conservation Zone and Heritage zoned Gosling Creek Reservoir to the Northeast. Solar panels degrade over time due to UV and other factors and there is potential for unacceptable leaching of heavy metals and PFAS into the soil. This poses an unacceptable risk to the water quality of this area and Orange's water catchment.

- Orange is outside the Renewable Energy Zone – these developments should remain within designated areas.
- Being so close to existing residents, this proposal would also present real health risks, both physical and mental. Glare, noise, reduction in property values and visual amenity would lead to mental anguish and health concerns of residents. Solar farms are also known to produce EMF radiation which given the proximity to surrounding residents could impact on residents' physical health with long-term exposure.
- The proposed site is in the middle of a number of small agricultural holdings on the edge of an expanding Orange which has been heading down Pinnacle Road. This site will be right on the edge of Orange impacting on a greater number of residents.
- Households have already heavily invested in solar infrastructure doing government's job for them. In return we are now receiving little or no feed-in tariffs from energy providers for this outlay. There is also the potential for penalties to households during times of excess load feeding into the electricity network. Instead of allowing this development, we would like Council to initiate discussions and represent its constituents to reduce this financial impact and promote improved battery storage and battery installations for households. This would be a smarter way of utilising infrastructure that has already been installed and invested in, supporting your rate payers, and would give a better outcome for all.

We implore Council to oppose any progression of this proposed development. There are many alternatives for the site away from our beautiful town which would not have such a detrimental impact. Please continue to care for your constituents and keep this development away from the edge of Orange.

Yours sincerely

**Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road
Springside**

Attachment 5 Submissions x 42 (redacted)

Submission 19

SUBMISSION Re: DA771/2024(1) – PAN-499518 – 140 CADIA ROAD, SPRINGSIDE (Lot 5 DP 6173)

23 February 2025
To: The Chief Executive Officer
Orange City Council
135 Byng Street
Orange NSW 2800

Dear Mr Waddel

Re Development Application DA771/2024(1)

Electrical generation Works (solar Farm) and Battery Energy Storage System
140 Cadia Road, Springside

I am writing to submit the following objections to the proposed development:

- In the DA there is a lack of documentation around any consultation with the local community and broader potentially impacted stakeholders in relation the development – the DA application presents no evidence of any consultations with Orange 360, ORVA, The Orange Aboriginal Land Council and others to evaluate the range of perspectives on any potential impacts on tourism and culture.
- The [Environmental impact statement](#) presented in the proposal, the impacts on 'scenic quality and landscape character' have been evaluated as 'low-moderate' (page 61) based on immediate visual/scenic impacts (which it is argued can be mitigated by screening), but there has been no *landscape character impact assessment*, which has been defined in more *holistic* terms in various NSW Government Guidelines as:
"An area or sense of place definable by the quality of its built, natural and cultural elements" (Department of Planning, Housing and Infrastructure's [Large-Scale Solar Energy Guideline](#), Glossary, page 5); or
The assessment of impact on the aggregate of an area's built, natural and cultural character or sense of place" ([Guideline for landscape character and visual impact assessment Environmental impact assessment practice note EIA-N04](#), 1.4)
- 'Landscape character' and 'visual amenity' impacts on recreational users of Gosling Creek and other designated recreational areas could well be underestimated, given there has been no surveying of such users' perspectives.
- Given that South Orange includes a range of scenic drives, recreational and viticultural opportunities, which have attracted many to relocate to Orange and settle on lifestyle blocks in this region, the potential for the devaluation of properties in the Springside area and along Pinnacle Road is significant.
- There are growing concerns in the community that large-scale renewable energy projects are being proposed or determined in South Orange, which is outside the Central-West-Orana REZ. These projects do not align with the [Orange Local Environmental Plan 2011 \(2012 EPI 55\)](#), which includes zoning objectives such as the promotion of "the unique agricultural character of Orange" and the facilitation of "a variety of tourist and visitor accommodation land uses that are compatible with agriculture" and viticulture.

Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road Springside

Attachment 5 Submissions x 42 (redacted)

- Orange is a regional city with a growing reputation in sustainable and value-adding employment sectors such as health, tourism, hospitality and viticulture and tertiary education. There has also been significant residential growth in South Orange, so it seems a high-risk strategy to prioritise short-term construction projects here, when there are so many less-densely populated areas in NSW which renewable energy projects, so essential to NSW and Australia, can be sited. The aim should be to make regional centres more attractive to relocate to, not the opposite.

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Attachment 5 Submissions x 42 (redacted)

Submission 20

DA 771/2024(1)
PAN – 499518

23 February 2025

Chief Executive Officer
Orange City Council
135 Byng Street
Orange NSW 2800

Dear Mr Waddell,

Development Application DA771/2024(1) 1
Electrical Generation Works (Solar Farm) and Battery Energy Storage System
140 Cadia Road, Springside

strongly objects to the proposed location of a new solar farm at 140 Cadia Road and described in the DA submitted to Orange City Council by EDPR Australia Pty Ltd. We are not against renewable energy or solar power however we believe the location proposed is too close to the edge of an expanding city and will make use of some of the best agricultural land in the country. There are more suitable locations for such a solar farm. We believe that the developer has not considered the impact of this location on the community but is instead quite opportunistically submitting DAs for solar farms on any land available, as close to the city as possible.

operates a vineyard and cellar door at Our property adjoins the proposed solar farm property at our northeast corner. We have views of the proposed solar farm area from many viewpoints on our land, but more importantly we have an extensive view of it from our cellar door. We run a cellar door on the property. The view that customers see on arrival will also be spoiled. The cellar door is situated to the southwest of the proposed solar farm and at a higher elevation that overlooks the proposed site.

The establishment of the proposed solar farm will have an immediate negative impact on the real estate value of our property. This will occur because many potential buyers will not want to purchase land neighbouring a solar farm, whether it be for investment, lifestyle or agricultural use. Potential buyers do not want to look at it. In particular, a potential buyer looking at purchasing our vineyard and cellar door will see it as an unattractive feature for future cellar door customers to look at.

Proximity to edge of town - Further subdivision to the south of Orange will not be encouraged if potential residents have to build a house next to a solar farm. The proposed site is only 1.85km from the (Hawkes Lane) edge of the current development on Shiralee Road.

Land usage – The proposed solar farm is to be located on high quality agricultural land. Its soil is volcanic basalt and is some of the best farming land available anywhere in the country. This land is too good to cover with solar panels and too good for sheep.

**Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road
Springside**

Attachment 5 Submissions x 42 (redacted)

We are concerned that glare from the solar panels will be distracting and possibly dangerous to road users, especially on Cadia Road.

We are concerned that the proponents of the solar farm have not considered the potentially dangerous distraction from glare for pilots of planes landing and taking off at Orange airport. One of the flight paths to the west of the airport goes right above our property, which adjoins the proposed site. There is no mention of the flight path in the glare report provided by the proponents.

Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road Springside

Attachment 5 Submissions x 42 (redacted)

Submission 21

From:
Sent: Sunday, 23 February 2025 8:51 PM
To: Orange City Council
Cc:
Subject: Objection- DA 771/2024(1) - 140 Cadia Road, Orange.
Attachments: Solar Farm Objection OCC Feb 2025.docx

Att'n Chief Executive Officer
Orange City Council,
135 Byng Street,
Orange, NSW, 2800.

Dear Mr Waddel,

RE: DA 771/2024(1) – 140 Cadia Road, Orange.
Electrical Generation Works (Solar Farm) and Battery Energy Storage System.

I wish to object to the proposed solar farm at 140 Cadia Road, Orange, NSW, 2800 (DA 771/2024(1) – 140 Cadia Road, Orange).

I am rather concerned and most disappointed that there was no formal community consultation and was only recently informed of the Development application. I find that such a proposal being submitted without community consultation to be quite an affront. Although I have been told that the developer was advised to do so.

- My wife and I frequently are at the eastern end of our property undertaking farming tasks and we have always considered it to be such a privilege to look across our beautiful valley that encompasses our city of Orange. We are aware that that eventually Orange will expand further to the South (some of this has already started with the developments along Shiralee Road). How will this monstrosity affect the future desires for homes in that area?
- We feel that the proposed industrial solar farm, would in many parts infringe upon the pleasure we have upon our property as we have no desire to look over an Industrial site (Such a large Photo Voltaic (PV) array would in my opinion, be industrial).
- We feel that if in the future we had to sell our property, such an industrial eyesore would significantly affect the future value of our property which in many parts we understand to be a highly prized location. Should the future potential sale price of our property be hindered by the proposed eyesore?

**Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road
Springside**

Attachment 5 Submissions x 42 (redacted)

- Although we understand the Civil Aviation Safety Authority (CASA) have no initial objections to the proposed Solar array, we are extremely concerned that in the future, the flight path is likely to be altered, due to the impact to aircraft of reflected sunlight glare from the panels. This would likely result in more aircraft flying directly over our property, impacting the noise pollution and once again the value of our property.
- Brandy Creek and any other smaller waterways (including the creek that starts near Berrilee Lane) carry large volumes of water during the rainy seasons. We are approximately 800-900m away from the creek near Berrilee Lane and during the spring we can hear the torrent of water that flows from there which directly feeds into Gosling Creek. The area and locations further West and South of the proposed industrial solar array are significant contributors to the Orange water supply.
- From my understanding the creek (its name I am unable to clarify) that runs through the proposed industrial solar farm is regarded as ".... *an intermittent watercourse, which in some sections does not exhibit the typical features of a defined channel*". Having lived on Pinnacle Road for over 50 years I can attest that this creek that starts at the northern boundary of Brangayne Vineyard and has a significant catchment area from properties further west. Although this water course does not run continually, it is however a significant contributor to the Gosling creek reservoir.
If the creek is regarded to be "*an intermittent watercourse*" one would question why dams supplied by the creek are always full?
- In a time of "Climate Change" we feel that any affect upon the harvesting of valuable rainwater for Orange is of vital importance.
- The solar arrays will channel water coming off them to run off under the line the panels which unless significant permanent drainage is installed could cause erosion. Currently, when rain falls it is evenly distributed over an even grassed/vegetative area.
- The proposed area for the industrial solar array is moderately topographically level. Quite a significant amount of water lies across the land during the wetter seasons. This water, from what I have observed in my lifetime, eventually gradually flows into Gosling Creek and no doubt is also absorbed into underground aquifers. I believe this proposed industrial solar array will adversely affect the distribution of water runoff.
- The area around Gosling creek apart from being one of the major water storage locations for Orange is also part of a significant recreational area. This Industrial eyesore will infringe upon the visual pleasures desired and experienced by the local and visiting community, regardless of how tall a tree barrier or industrial fence may be.
- The desired location for the industrial solar farm is not in an industrial area and as such other industries are omitted from being able to build in this area. Can and would this proposal be an opening to other industrial developments which might in some ways pollute our valuable water catchment area?

**Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road
Springside**

Attachment 5 Submissions x 42 (redacted)

- We are concerned also that such an industrial solar array could affect some of our local and some already endangered species. This area is now home to at least two Wedge Tailed Eagles that I have sighted soaring over the southern parts of Orange in the last twelve months.

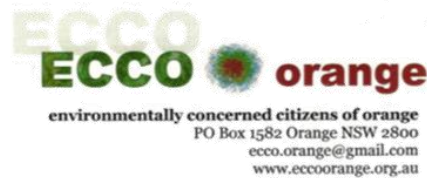
Orange is my home and I am proud to live here, I understand that progress will occur, but I do question the appropriateness of this proposed industrial Solar Farm being located so close to Orange and future homes and future housing developments.

We would formerly request that our objection to such a large industrial solar array be lodged.

Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road Springside

Attachment 5 Submissions x 42 (redacted)

Submission 22



Mr David Waddell
Chief Executive Officer
Orange City Council
February 20, 2025

Re: DA 771/2024 (1) -140 Cadia Rd. Orange 2800

Dear Mr Waddell

Thank you for the opportunity to comment on the proposed development at the above address. ECCO is writing in support of the project.

In 2024 for the first time, our planet reached a climate change milestone that should concern us all - 1.5 degrees above preindustrial levels. This is yet another wakeup call for our need to transition away from fossil fuels and move rapidly towards renewable energy as quickly as possible. To do so requires the installation of more renewable energy projects such as this one.

However, ECCO's ongoing support for projects such as these is contingent on the application of appropriate conditions to minimise environmental damage to air, water and biodiversity. We are reassured in this regard that the EIS conducted for this development does not indicate any significant environmental issues of concern.

The site in question is land that has been used for agricultural purposes and does not present any issues relating to biodiversity or endangered or threatened flora and fauna. The installation of solar panels will not impede the continued use of the site for grazing sheep, so it can continue to be used for that purpose. The stated inclusion of vegetation screening is important. It is also important that the species selected should contribute to habitat that will increase the biodiversity value of the site.

Our only concern about this proposed project is that its boundary is only 70 metres from Gosling Creek, which forms part of Orange's water catchment. It is imperative that all measures be taken to prevent any contamination of the creek, from site runoff or otherwise, during the construction phase of the solar farm and its subsequent operation. Otherwise, we are reassured that the proposed solar farm should proceed without significant environmental threat.

ECCO is also supportive of the proposal as it will help provide locally-generated cheaper energy to the grid and thereby directly benefit Orange's residents. Developments such as this are an important part of the transformation of our energy system and can act as

ECCO orange ~~~~~

a catalyst for local residents and businesses to move away from fossil-fuelled electricity generation, and in that way make a significant contribution to reducing Orange's carbon footprint.

Yours sincerely

ECCO orange 

Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road Springside

Attachment 5 Submissions x 42 (redacted)

Submission 23

Dear Sir/Madam,

I would like to raise my objection to the proposed DA 771/2024(1) for 140 Cadia Road, Orange 2800.

As a local rate payer, father to the next generation of Orange citizens and a farmer in the district I strongly oppose the development of a solar farm within the water catchment of Orange. I find it completely ludicrous that this would even be contemplated. There are numerous studies available which show the leaching of elements from photovoltaic modules from solar panels as the result of damaged and abandoned panels. One hailstorm could destroy the proposed solar farm and have grave environmental impacts to the water catchment of Orange which is vital to the sustainability of this great region. A simple internet search will uncover the chemicals enclosed in solar panels are not limited to such toxic chemicals as cadmium, lead and also zinc, tellurium, indium, gallium, selenium, aluminium, molybdenum and copper.

Orange is a unique geographic hub featuring diverse geography, including rolling hills, fertile farmland, and rugged bushland. To erect solar panels at the expense of its natural beauty is an embarrassment and needs to be stopped. Having spent a lot of time in the Wellington (Dubbo Council) region over the last 10 years the natural vista has been destroyed by environmental vandals polluting what was beautiful productive farming country with solar panels.

Orange has become a major health and transport hub. The glare report appears to fail to have any investigation into the Flight path for both Orange Regional Airport or the Base Hospital and the impact it could have to the services offered from these depots.

In addition Cadia Road is a major arterial road servicing both mining, residential, cyclists and agriculture. To add up to 30 work vehicles plus inbound products during construction would stretch an already over subscribed road.

Finally, EDPR Aust Pty Ltd is a foreign owned company, headquartered in Singapore with little to no interest in Australia's prosperity. To risk our natural beauty to a company with no interest in our welfare is crazy.

Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road Springside

Attachment 5 Submissions x 42 (redacted)

Submission 24

From:
Sent: Monday, 24 February 2025 10:31 AM
To: Orange City Council
Subject: DA771/2024(1) PAN -499518

Dear Officer

Development Application DA771/2024(1)
Electrical Generation Works (Solar Farm) and Battery Energy Storage System
140 Cadia Road, Springside

I object to the proposed development for the following reasons:

1, Visual Impact. The proposed project is too close to neighbours boundary which only about 3 meters, the solar panels may disrupt natural scenery and affect visual aesthetics. So we might consider to plant tall trees along the boundary, by doing this not only block the view but also the sun light for the solar panels, therefore the solar panels should away from the boundary at least 30 meters.

2, Water resource impact: Cleaning solar panels may consume significant amounts of water, the subject land has no dam water which might need to use the town water to do so. And it's very close to the neighbour's dam, it will be a challenging to regulate the illegal use of a neighbour's water in future.

3, This farmland is too small to build such a big capacity solar farm, I highly recommend to reduce the solar farm capacity to half of the proposal.

Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road Springside

Attachment 5 Submissions x 42 (redacted)

Submission 25

DA771/2024(1)
PAN -499518

20TH February 2025

Chief Executive officer
Orange City Council
135 Byng Street
Orange NSW 2800

Dear Mr Waddel

Development Application DA771/2024(1)
Electrical Generation Works (Solar Farm) and Battery Storage System
140 Cadia Road Springside

With myself been an electrician of 50 years in Orange and district, I totally agree with the concept of solar and the future of renewables, but I object to the proposed development for the following reasons.

Having installed solar panels to our place eight years ago, I have records of our solar production, usage in the house and what we have exported back to the grid. With my wife having retired six years ago, we have tried to use as much as possible from the solar panels by using appliances such as washing machine, dishwasher, hot water and air conditioning between the hours of 9am to 4pm. Even with this consumption from our 7kw solar system we still send 50% of our production back to the grid. This would be the same or if not more going back to the grid from the whole of the 2800 postcode.

As of July 2024 in the 2800 postcode there was 57,000 kilowatts of solar panels on 8,000 roofs producing approx. 235 M/WH of electricity each day. This proposed solar farm is 10 M/WH of solar production which is only 4.25% of the existing production in the 2800 postcode.

With an average of 4.8 hours of sunlight per day of usable sunlight in the Orange area and with the Dubbo area having nearly 9 hours of usable sunlight, solar farms need to be located in areas of maximum solar gain for the panels.

What we need instead of solar farms, are companies willing to work to install battery storage systems in various locations around the city and the state to store all the excess solar from the existing solar panels on the roofs of all the houses for the day and night time usage.

We need to get smarter in our usage of our existing excess solar production and plan more for the future of our excess solar production. People are more accepting of roof top solar panels which are up high on the roofs than large solar farms on the edge of town in amongst rural houses.

This proposed solar farm would have a negative visual impact on the rural landscape on the edge of Orange that would impact locals and visitors to our city.

Information in the above submission was obtained from NSW Country Solar web site and from my personal Fronius app for my solar system.

Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road Springside

Attachment 5 Submissions x 42 (redacted)

Submission 26**DEVELOPMENT PROPOSAL - DA 771/2024(1) – 140 CADIA ROAD,
ORANGE**
DA771/2024(1) – PAN- 499518

Arguments against widespread solar panels and wind turbines in Australia often center around concerns about their visual impact on the landscape, potential disruption to wildlife, inconsistency in power generation due to weather dependence, the cost of installation and maintenance, and concerns about land use, particularly in areas with high agricultural value. Also of concern is the issue in regard to recycling and disposal of solar panels, when damaged and/or at the end of their lifespan.

DA 761/(2024(1) 25 Lone Pine Avenue, 15,600 panels is to be considered by Orange Council. This is to be followed by DA771/2024(1) – 140 Cadia Road, Orange South 8B and 9B 2x5MW Solar Farms, development application for the area near Spring Creek Dam and Gosling Creek; a further 16,000 solar panels per site

This objection is regarding Solar Farms DA771/2024(1) – 140 Cadia Road. I wish to voice my objection to the development applications of ALL 3 Solar Farms and would ask Orange Council to consider the following before coming to a decision.

In 1970 singer/songwriter Joni Mitchell wrote "Big Yellow Taxi". The song is known for its environmental concern –

*"They paved paradise to put up a parking lot –
Don't it always seem to go,
That you don't know what you got 'til it's gone?
They paved paradise and put up a parking lot "*

When asked about writing the song Mitchell said I wrote "Big Yellow Taxi" on my first trip to Hawaii. I took a taxi to the hotel and when I woke up the next morning, I threw back the curtains and saw these beautiful green mountains in the distance. Then, I looked down and there was a parking lot as far as the eye could see, and it broke my heart this blight on paradise.

It seems to me that DA771/(2024) 140 Cadia Road, Orange South 8B and 9B 2x5MW Solar Farms, development application for the area near Spring Creek Dam and Gosling Creek; a further 16,000 solar panels per site is about to do the same thing, to turn scenic farmland, productive agricultural pastures into vast expanses of dark metallic panels, which are visually unappealing to residents and visitors to our city of Orange.

The conversion of fertile agricultural land into solar farms has serious consequences for soil health, food security and biodiversity. I wish to put forward the following arguments AGAINST granting permission to build these Solar Farms DA

**Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road
Springside**

Attachment 5 Submissions x 42 (redacted)

771/2024(1) – 140 Cadia Road; for Orange City councillors to seriously consider and debate before making a final decision.

1 Visual and Social Impact on Rural Communities

There are many concerns regarding the changing landscape. Rural communities often take pride in their farming communities, open fields and traditional agricultural heritage. Solar farms which consist of rows of reflective panels, fencing (1.8m high security fence topped with three rows of barbed wire to give a total height of 2.3m) and transformer stations, can significantly alter our Orange landscape. This transformation of green fields into expanses of dark, metallic panels can be visually unappealing to residents and visitors. DA771/2024(1) – 140 Cadia Road, Orange South 8B and 9B 2x5MW Solar Farms – a total of 32,000 solar panels, this development application is for the area near Spring Creek Dam and Gosling Creek.

Regional areas such as ours are bearing the brunt in the destruction of valuable agricultural land for the sake of Solar and Wind Farms, which in the case of Solar Panels have only a life span of between 25 and 30years. Many in our community feel that these projects are to be imposed on them without proper consultation.

There could also be a rise in community tensions between farmers who sell their land for solar development and neighbours who want to preserve the agricultural landscape. A reason for this is that solar farms will reduce the attractiveness of their properties, leading to lower real estate values. Potential homebuyers will possibly be discouraged by the sight of these solar facilities in what once was green pastures as shown by *Image Plates 1 – 10 of Zenith Town Planning proposal*. Council may dispute this as studies on property value impact are mixed, but it has been shown in some cases that properties adjacent to solar farms have seen depreciation in the value of their property.

There is also concern over the amount of glare and reflection of these solar panels; and also the amount of light pollution. While modern solar panels are designed to minimize glare, solar farms still create reflective surfaces that can cause discomfort for nearby residents, drivers and even pilots in low-flying aircraft. Solar farms require security fencing and often have motion-activated lighting or small substations that emit artificial light at night. This can disturb the dark sky environment that rural regional areas such as ours enjoy, which could possibly affect wildlife and residents in surrounding properties.

Tourism and rural/regional appeal should also come under this heading of Visual and Social impact as our region relies on agritourism, local produced food and wine; and outdoor activities to attract visitors (Orange360.com.au/Our-region/Orange). A shift from picturesque farmland, green pastures to land dominated by solar panels and batteries may make the area less appealing to tourists and reduce local economic opportunities which come with tourism.

2 Soil Degradation and Land Irreversibility

The installation of solar farms often involves heavy machinery, which can compact the soil, reducing its ability to absorb water and nutrients. Compacted soil leads to increased surface runoff and erosion, making the land less fertile and harder to restore when the time comes to decommission. There is also the question of Topsoil removal and grading. Solar farms require the land to be level to ensure stability for the installation of the solar panels. This can and will remove the nutrient-rich topsoil layer. Once topsoil is lost it will take years to regenerate naturally, making it difficult to return the land to its once productive stage. Healthy soil is home to beneficial bacteria, fungi and earthworms that contribute to soil fertility. Disrupting the soil structure through grading and panel installation can reduce microbial activity, negatively impacting long-term land health.

It is a fact that some solar panels contain hazardous materials like cadmium and lead. Improper disposal or damage to panels can lead to leaching into the soil and potentially contaminating groundwater sources. Even with the best intentions, accidents do happen, and accidental spills of chemicals used for cleaning solar panels should be also taken into consideration.

Regarding the maintenance of these solar panels the question of water usage arises. Solar panels require periodic cleaning to maintain efficiency. Even though Orange would not be considered an arid region where dust and dirt accumulates, my car which is housed under a carport frequently needs a visit to the carwash due to the amount of pollen and dust particles that accumulate on the car's windows. To maintain efficiency these 47,600 solar panels will need to be cleaned. This can put a strain on local water supplies, particularly in areas already facing water scarcity, which the City of Orange has done in the past. Orange has experienced years of drought and has issued water restrictions to safeguard the city's water supply. Residents of Orange are and have been encouraged to use water efficiently in daily activities, including gardening, cleaning and other household uses. Question: Will these Solar Farms – combined total of 47,600 solar panels put a strain on the community water security?

Still under the heading of Soil Degradation and Land Irreversibility is the question of Drainage and Flood Risks and Land restoration. The installation of solar farms can change natural drainage patterns, leading to water pooling in some areas and excessive dryness in others. Solar Farms may increase local flood risks by reducing the land's ability to absorb rainfall effectively.

As DA771/2024(1) – 140 Cadia Road, Orange South 8B and 9B 2x5MW Solar Farms, development application for the area near Spring Creek Dam and Gosling Creek. If the land has lost its ability to absorb rainfall effectively and "runoff" from these solar farms occurs, can we not assume that the "runoff" could contain potential hazardous metals, chemicals, herbicides into the city's water supply?

When the time comes to decommission after 25 – 30 years i.e. when solar panels reach the end of their lifespan, restoring the land to agricultural use can be costly and challenging. Subsurface infrastructure such as concrete footings and underground cables may remain in place, thus further complicating land

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rehabilitation. Currently the cost of recycling solar panels in Australia is approximately \$28 per panel (www.3denergy.com.au) Without proper decommissioning plans, former solar farms could become abandoned brownfields as it would become too costly to return the land to its previous use as agricultural land. Question: Will the land be returned to what was once agricultural land – removing all structures as well as removal of all subsurface infrastructures? If this is not the case, then it will become an abandoned brownfield, a scar on the once green landscape.

3. Food Security Concerns

Reaching Net Zero emissions in Australia by 2050 requires a massive expansion of renewable energy. Solar farms require more land (2 – 5 hectares per MW) meaning large scale solar expansion could impact on agricultural land. Solar Farms represent a massive footprint and eventually could impact our ability to produce food. High-quality farmland is a limited resource and using it for solar farms reduces the amount of land available for food production. Agricultural land that is converted into solar farms may never return to full agricultural productivity, especially if the soil quality is degraded. This eventual loss of fertile land may limit future generations' ability to grow food, creating long-term food security risks. DA771/2024(1) development proposal states that the subject land has an area of approximately 25.75 hectares. This cannot be seen in isolation as the "patchwork" of solar farms slowly and progressively invade Australia's rich agricultural land, as the opening sentence states fact – that reaching Net Zero emissions in Australia requires a MASSIVE expansion of Solar and Wind Farms.

If too much agricultural land is repurposed for energy production, it can lead to lower crop yields and higher food prices. You may say ... "could never happen", but are we not forever being told that renewables are the cheapest form of energy and that our electricity bill would be reduced by \$275. If only that was true, if only there was a direct correlation between the number of solar farms and lower electricity bills. While solar panel prices have decreased, the initial cost of land acquisition, installation and infrastructure remains high. These costs will forever be passed on to the consumer dashing any lowering of our electricity bills.

Many farms and gardens in Orange rely on bees, butterflies and other pollinators to support crop growth. If solar farms replace flowering crops or natural vegetation, pollinators populations can decline, negatively impacting nearby farms.

In conclusion I present the following arguments for Orange Council to consider:

1. **Land Use and Environmental Impact** – Solar farms require vast amounts of land, potentially leading in this case to the loss of agricultural land. For Australia to reach its Net Zero targets our rural and regional areas will bear the brunt of this Renewable Transition with the construction of many Solar and Wind Farms "blanketing" our regions.
2. **Intermittency and Reliability** – We all understand that solar energy depends on sunlight meaning it is unreliable at night or during cloudy weather; but it must be pointed out that energy storage solutions e.g.

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batteries can only store energy for hours, not days or weeks, limiting their ability to provide backup during extended cloudy periods. A case in point is Broken Hill – A storm on October 17th 2024 brought down seven supporting transmission towers leaving 20,000 people in Broken Hill and its surrounds without power for days. Businesses lost thousands of dollars.

3. **Soil Degradation and Land Reversibility**
4. **Loss of Agricultural Economy and Rural Livelihoods**
5. **Impact on Local Water Resources**
6. **Visual and Social Impact on Rural Communities**

In conclusion the conversion of rich prime fertile agricultural land into solar farms such as DA771/2024(1) – 140 Cadia Road, Orange I believe will have serious consequences for tourism and the ability to generate economic opportunities by visitors wanting to come to the Orange Region, gone will be the scenic views of rolling farmland and picture perfect reserves, also in question is the security and health of our water supply from said Solar Farm and lastly the question of endangering the soil health, food security and biodiversity if this Development Proposal DA771/2024(1) – 140 Cadia Road gets permission from Orange Council to proceed.

**Our “slice” of paradise is being paved
with Solar Panels**

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Attachment 5 Submissions x 42 (redacted)

Submission 27

From:
Sent: Monday, 24 February 2025 1:08 PM
To: Orange City Council
Subject: Submission regarding DA771/2024(1)

DA 771/2024(1) - PAN-499518

Chief Executive Officer
Orange City Council
135 Byng Street
Orange NSW 2800

Dear Mr Waddell,

Development Application DA771/2024(1)
Electrical Generation Works (Solar Farm) and Battery Energy Storage System
140 Cadia Road, Springside

I write today to object to the proposed development mentioned above for numerous reason. Firstly to comment on the lack of community consultation which a development of this size and purpose requires. Extensive community consultation certainly should have been a part of the initial process.

Most importantly though - I write as one of the closest inhabitants of the tenanted buildings to this proposed development. And even more importantly - when viewed on any of the maps attached to the development, in fact, when standing at my front door - I am far closer to this proposed development than any of the locations that any of the assessments have been undertaken from. For example in the Noise Assessment document and the Glint and Glare Assessment Documents- my tenanted home has been completely overlooked and the sites that they have taken the sound and 'view impact' locations from are from much further than my house! This is not acceptable at all in the assessments required for this DA - the impact on my house in regards to sound, glint, glare, view impact amongst other things have not been taken into account at all!

I urge you to take notice of this objection in this regard. My home and my daily life are to be impacted with NO assessment in any assessments attached to the DA, of how close this proposed development is to my home. This development is 130m from my front door, from my kitchen window. It will completely take up my view from one direction of my home, not to mention the paddocks my livestock are in which are mere metres from this proposed facility. The impact of the view into my home has not been assessed. The noise impact on my home has not been undertaken. Let alone the proximity of wastes and hazards, fire hazards etc. If the noise assessment has been taken from further locations - it will be far noisier at a location closer to the site like my house and this has not been assessed.

None of these assessments have included a house 130m from it. If it is proven that the noise, glint and glare, view impact etc are not to impact me (I do not foresee how they won't) then the view of a 2m high chain link fence with barb wire will indeed impact my view - from a beautiful rural part of Orange that we know and love.

I am able to forward a map showing distance from the development to my house, and can also forward photographic proof of how my house and the windows on my eastern side look completely into the western boundary of this development, and how close this location is to my home physically and to the eye.

I am not opposed to solar energy nor the planning of solar farms, but do feel that the correct assessments should be undertaken for any proposals that include tenanted buildings within the proximity of this facility for example to our house.

Yours sincerely,

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Attachment 5 Submissions x 42 (redacted)

Submission 28

From:
Sent: Monday, 24 February 2025 1:26 PM
To: Orange City Council
Subject: Objection to Proposed Development Application for Solar Farm and Battery Energy Storage System DA771/2024 (1) PAN -499518

Chief Executive Officer
Orange City Council
135 Byng St, Orange NSW 2800

Objection to Proposed Development Application for Solar Farm and Battery Energy Storage System DA771/2024 (1) PAN -499518

Dear Mr Waddell,

I am writing to formally object to the proposed development application for the solar farm and Battery Energy Storage System (BESS) located at 140 Cadia Road, Springside, which is situated approximately 130 metres from my residence

My primary concern is that the development application does not seem to have properly assessed or considered the impact of the proximity of my property to the proposed site. At a distance of just 130 metres, my home will be directly affected by potential noise, light reflection and glare, visual impacts, and possible safety hazards associated with both the solar farm and the BESS.

1. **Noise and Visual Impacts:** Solar farms, especially when paired with BESS, can generate significant operational noise, both from the inverters and the battery storage systems. Given the proximity to my home, I am concerned that this noise could negatively affect the quality of life at my residence. Furthermore, the large scale of such developments, including the installation of large solar panels and associated infrastructure, could lead to visual disturbances that would detract from the natural surroundings and harm the aesthetic value of the closest property.
2. **Safety Concerns:** Battery Energy Storage Systems carry inherent risks, particularly concerning fires, and hazardous materials. With my home located so close to the proposed development, I am deeply concerned about the safety risks posed by the operation of the BESS.
3. **Lack of Consideration for Residential Impact:** It appears that the development application does not adequately address the social and residential impacts of the proposed development. The potential disruption to daily life, including traffic disruptions during construction, noise, glare and view impact, and impacts on property

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Attachment 5 Submissions x 42 (redacted)

values, have not been sufficiently considered from the closest points of tenanted buildings. These are critical factors.

Given the proximity of my home to the proposed solar farm and BESS site, I urge the planning authorities to revisit the application and ensure that all potential impacts on my property, and other nearby residential properties, are fully assessed and mitigated. A comprehensive review of the development's potential effects on health, safety, noise, view impact, and the environment is essential before any approval is granted.

I respectfully request that my objection be taken into account during the review of this application. I also request to be notified of any updates or further steps in the approval process.

Thank you for your attention to this matter.

Sincerely,

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24/02/2025, 11:43

DA 771/2024(1)

DA 771/2024(1)

Submission 29

1 email in thread.

Email 1 of 1

Date: February 24, 2025 11:21 AM +11:00**From:****To:**

Chief Executive Officer
Orange City Council
Dear Mr Waddel.

Electrical Generation Works and Battery.
140 Cadia Road
We want to submit an objection to the proposed plan

The Lack of community consultation from EDPR.

Orange is not in a Renewable Energy Zone.

If they see fit they will continue with solar farms inside town limits
and effect the growth of the city.

As I have solar panels the efficiency of them in winter are negligible

about:blank

1/1

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Attachment 5 Submissions x 42 (redacted)

Submission 30 (1 of 2 submissions)

From:
Sent: Monday, 24 February 2025 2:45 PM
To: Orange City Council
Subject: Objection to proposed industrial solar factory at 140 Cadia Road Orange
Attachments: Leaching_via_Weak_Spots_in_Photovoltaic_Modules.pdf; Final SA-15-23 Incident response to industrial solar farm fires-1.pdf

Objection to proposed industrial solar factory at 140 Cadia Road Orange
Submission to Orange Council - council@orange.nsw.gov.au
Name:
Phone:
Post:
Email:
Reportable political donations and/or gifts: NIL
DA number: DA 771/2024 (1) – PAN - 499518
Site address: 140 Cadia Road, Springside, ORANGE NSW

Background:

ITP (IT Power) was a Canberra based consultancy. In November 2023 ITP was "acquired" by EDPR APAC (Asia Pacific) based in Singapore. This acquisition by EDPR APAC lead to the establishment of EDPR Australia and via EDPR APAC is part of the EDP group majority owned and controlled by EDP (Energy de Portugal) – www.edp.com
IT Power (now EDPR Australia) was the developer who was determined to destroy the entrance to Mudgee NSW. The Mid-Western Regional Council refused the IT Power DA. IT Power appealed this decision to the Land and Environment Court in NSW – IT Power (Australia) Pty Ltd v Mid-Western Regional Council – NSW (2023) NSWLEC 1800, 28 December 2023. This appeal by IT Power (now EDPR Australia) was dismissed.
EDPR Australia is the developer of the proposed 10MW, 16,000 solar panels and a Grid Scale Lithium Battery (an industrial scale solar energy factory (not a farm)) and with a 2.3M high security surrounding the site/s at 140 Acadia Road, Springside, Orange.
The site is adjacent to a tributary to Gosling Creek Reservoir.
The site is in a rural lifestyle area with largely small area properties and close to the Regional City of Orange.

Grounds of Objection

There are numerous reasons that this proposal should not be approved.

1. Risk of contamination and pollution

a. Solar panels leach their heavy metals and carcinogens. Expect the developer to deny this occurs as they will most likely rely on a 24 solar panel leaching study that show solar panels do not leach.
The Institute for Photovoltaics and Research Centre, University of Stuttgart, Germany

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Attachment 5 Submissions x 42 (redacted)

study that was conducted over 1.5 years found leaching of solar panels occurs.

Extract from their research findings:

Our long-term experiments clearly demonstrate that it is possible to leach out all, or at least a large amount, of the (toxic) elements from the photovoltaic modules. It is therefore not sufficient to carry out experiments just over 24 h and to conclude on the stability and environmental impact of photovoltaic modules.

Gosling Creek needs to be protected from any contamination.

A copy of the Institute of Photovoltaics and Research Centre, Stuttgart is attached.

b. Grid scale battery, solar panel, inverters and transformer fires, apart from the fire risk to neighbours and fire fighters poses a very large risk as they emit toxic compounds as well as contaminating the sites, neighbours and soil and water.

The recent major fire of a grid scale lithium battery occurred at Moss Landing California (there have been 4 battery fires in 4 years at Moss Landing). There have also been large grid scale lithium battery fires in Victoria and only last week, there was an inverter at Raywood near Bendigo.

Large grid scale lithium battery fires pose a particularly high risk. These batteries contain Lithium ion Phosphate (Lithium Hexafluoro Phosphate (LiPF₆)) and other Li-salts containing fluorine.

When a Lithium Hexafluoro Phosphate battery burns heavy metals get distributed along with Lithium Hexafluoro Phosphate released into the atmosphere. On exposure to air Lithium Hexafluoro Phosphate (has a high elemental content of Fluorine (F)) disassociates and becomes Hydro fluoric acid (HF).

Hydro fluoric acid is a contact poison and causes irritation to eyes, mouth, throat, lungs and nose (mucous membranes) and can be deadly. It differs from other acids because the fluoride ion readily penetrates the skin, causing destruction of deep tissue layers, including bone. Systemic effects can occur from all routes of exposure and include pulmonary edema, nausea, vomiting, gastric pain, and cardiac arrhythmia.

Additionally, if LiPF₆ is inhaled it will disassociate in the human body and become Hydro fluoric acid causing significant health impacts.

There is no antidote for hydrofluoric acid (HF) toxicity.

2. FIRE risk

Electrical and battery fires do happen on industrial scale solar energy factories (SF). Rural Fires Services are not equipped to attend a SF fire as breathing apparatus is essential.

Any fire fighting on a SF site runs the risk of entrapment of the fire crew as they are not designed to move fire vehicles over and around the fire ground.

The toxic nature of a lithium battery fire and the risk to human health will require residents in the smoke fall-out area to be evacuated or be provided with breathing apparatus.

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A copy of the Queensland incident response to industrial solar factories is attached.

3. Visual amenity and rural landscape

The installation of 16,000 panels cannot be satisfactorily mitigated. Installation of an industrial factory will result in the loss of the rural landscape and destruction of visual amenity for surrounding neighbours, tourists and the City of Orange.

4. Decommissioning

Will this developer own this large scale industrial solar factory (SF) when it comes time to decommission and remediate the site?

The current cost to decommission alone according to NSW Planning will be of the order of \$1.5 million. Remediation will be on top of this.

Not specifically this developer, but the industry practice is to develop these SFs and then sell them off as part of their "asset recycling". Who will be the owner of the SF and will they be around to decommission and clean up?

It is likely the last owner will be a shelf company that goes into liquidation and will have no funds to decommission, leaving the landowner to foot the bill and when the land owner walks away the clean up will rest with the Orange Council under the POEO Act (NSW).

5. Waste and Recycling

Should this proposal be approved, then a condition of approval should require that all construction waste including broken and faulty solar panels be recycled and not placed in landfill, and damaged panels during operation, for instance hail damaged panels, be recycled and not placed in landfill, and all materials brought onto the site are to be removed when decommissioning occurs including all underground cables and concrete and these materials are required to be recycled and not placed in landfill.

6. Performance Bonds

Council should require the developer to lodge a financial bond with the Council for the future cost of decommissioning and any site contamination cleanup.

END.

Submission 30 - Attachment 1


energies


Article

Leaching via Weak Spots in Photovoltaic Modules

Jessica Nover ¹, Renate Zapf-Gottwick ^{1,*}, Carolin Feifel ², Michael Koch ² and Juergen Heinz Werner ¹

¹ Institute for Photovoltaics and Research Center SCoPE, University of Stuttgart, 70569 Stuttgart, Germany; jessica.nover@ipv.uni-stuttgart.de (J.N.); juergen.werner@ipv.uni-stuttgart.de (J.H.W.)

² Institute for Sanitary Engineering, Water Quality, and Solid Waste Management, University of Stuttgart, 70569 Stuttgart, Germany; carolin.feifel@isw.uni-stuttgart.de (C.F.); Michael.Koch@isw.uni-stuttgart.de (M.K.)

* Correspondence: renafe.zapf-gottwick@ipv.uni-stuttgart.de

Abstract: This study identifies unstable and soluble layers in commercial photovoltaic modules during 1.5 year long-term leaching. Our experiments cover modules from all major photovoltaic technologies containing solar cells from crystalline silicon (c-Si), amorphous silicon (a-Si), cadmium telluride (CdTe), and copper indium gallium diselenide (CIGS). These technologies cover more than 99.9% of the world market. We cut out module pieces of $5 \times 5 \text{ cm}^2$ in size from these modules and leached them in water-based solutions with pH 4, pH 7, and pH 11, in order to simulate different environmental conditions. Unstable layers open penetration paths for water-based solutions; finally, the leaching results in delamination. In CdTe containing module pieces, the CdTe itself and the back contact are unstable and highly soluble. In CIGS containing module pieces, all of the module layers are more or less soluble. In the case of c-Si module pieces, the cells' aluminum back contact is unstable. Module pieces from a-Si technology also show a soluble back contact. Long-term leaching leads to delamination in all kinds of module pieces; delamination depends strongly on the pH value of the solutions. For low pH-values, the time dependent leaching is well described by an exponential saturation behavior and a leaching time constant. The time constant depends on the pH, as well as on accelerating conditions such as increased temperature and/or agitation. Our long-term experiments clearly demonstrate that it is possible to leach out all, or at least a large amount, of the (toxic) elements from the photovoltaic modules. It is therefore not sufficient to carry out experiments just over 24 h and to conclude on the stability and environmental impact of photovoltaic modules.

Keywords: leaching; long term; photovoltaic modules; delamination; solubility



Citation: Nover, J.; Zapf-Gottwick, R.; Feifel, C.; Koch, M.; Werner, J.H. Leaching via Weak Spots in Photovoltaic Modules. *Energies* **2021**, *14*, 692. <https://doi.org/10.3390/en14030692>

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the RoHS is not obeyed. However, also the technology of modules with crystalline Si cells has a problem with RoHS, although it could easily be overcome by using cell connectors without lead (usually, the solder contains about 40% lead) in the solder. The tiny amount of Pb in the metallization pastes could be kept below the RoHS limits. In 2019, the amount of lead-free metallization pastes in the case of silicon (Si) solar cells was only 30% [4]. At the same time, the world market share of lead-containing solder for cell connectors was over 90% [4].

Most probably, photovoltaic modules, which contain toxic substances, are safe for the users and the environment, at least as long as the modules are not damaged. Nevertheless, what happens if modules are damaged? What happens at the end of their use? Are they “donated” or “exported” like old cars, other old electronic equipment, and waste to countries outside the EU? In the worst case, finally, wherever it may be, the modules are crushed and/or discarded in landfills. What could happen with the toxic elements? In fact, it is no longer a question if these substances are released into the environment: several studies proved they do and that the release depends on the pH-value of the leaching solvents, as well as on the redox conditions [5–10]. A literature review can be found in [11].

Despite of all these studies [5–11], several questions are open: How are the toxic substances released? What are the weak spots in the modules? Does leaching only occur in the case of delaminated modules, i.e., in modules, that have lost the front glass? In this case, in particular for thin film modules, it would be understandable that the toxic substances are leached from, for example, the CdTe layers, which are no longer protected by the front glass. Does it work the other way around: Are the thin layers leached from the edges of the module (pieces) leading, finally, to delamination? Clearly, after delamination, the leaching would then be accelerated even more, because the leaching solution is now able to attack the thin layers not only from the edges, but also from the surface. Are there any potentially accelerating parameters, like agitation or temperature, regarding the leaching?

The present contribution gives answers to most of these questions via a long-term study. In contrast to previous work, our leaching tests are not only conducted over 24 h as requested by standard leaching tests [12–15], but for more than 1.5 year; some of our results are even taken after almost two years. Furthermore, we analyze not only eluted amounts of toxic substances like cadmium (Cd) and lead (Pb), but also other elements present in the module layers such as zinc (Zn), tellurium (Te), indium (In), gallium (Ga), selenium (Se), aluminum (Al), molybdenum (Mo), and copper (Cu), to identify soluble and, therefore, weak layers in PV modules. Parts of the experimental details were published earlier in German [16]; some results about the leaching of Cd, Te, and Pb up to day 360 were published earlier by us [10]. We find, that, finally, the modules delaminate because of the leaching from the edges of the module pieces. In all kinds of modules, at least one of the layers of the different cell types represents a weak path for the leaching. In the case of CdTe module pieces, the CdTe layer itself and the Mo contact are soluble. In the case of CIGS module pieces, the Zn front contact, the Mo back contact, and the Cd-containing buffer layer are susceptible to strong leaching. For crystalline silicon module pieces, the Al back contact is a weak spot; for amorphous silicon (a-Si) module pieces, also the back contact (Ni) and the intermediate layer containing Zn are identified as weak spots.

Section 2 of the present contribution describes the sample preparation and the leaching conditions and shows how we determine the total amount of elements within each type of our investigated solar modules. Section 3 presents our leaching results. We measured for more than 1.5 years, not only at room temperature, but also at increased temperature, as well as under accelerated leaching conditions. The leaching time constant depends on the module type, as well as on the leaching conditions. Section 4 identifies the weak spots for each particular module type. Section 5, finally, concludes that the amount of leached out elements after 1.5 years in some cases exceeds the value after one day by more than two orders of magnitude. Thus, leaching experiments, which are just carried out over one day, are valuable. However, statements about the stability and environmental noxiousness of photovoltaic layers are highly questionable when based on such short-term measurements.

2. Materials and Methods

2.1. Sample Preparation and Experimental Conditions

For cutting the module pieces with well-defined sizes and edges, we applied water jet cutting to get samples from the four major commercial PV technologies: crystalline silicon (c-Si), amorphous silicon (a-Si), cadmium telluride (CdTe), and copper indium gallium diselenide (CIGS). The module pieces are cut in a way that all module pieces contained at least one solder ribbon, but no parts of the frame, module boxes, or cables. The sample size of the module pieces for the leaching experiments was $5 \times 5 \text{ cm}^2$.

The leaching experiments were carried out under three different conditions, in order to identify potential accelerating conditions:

- Room temperature $T_{RT} = 25^\circ\text{C}$, no agitation;
- Room temperature $T_{RT} = 25^\circ\text{C}$, with agitation (orbital shaking with rotational speed $n = 100 \text{ min}^{-1}$);
- Increased temperature $T_{IT} = 40^\circ\text{C}$, with agitation (orbital shaking with rotational speed $n = 100 \text{ min}^{-1}$).

For all experiments, we used high-density polyethylene (HDPE) bottles supplied with the leaching solution with a 1000 mL volume and two pieces from the very same module; see also [10]. The samples were not fixed in the bottles, and the bottles were lightproof. From earlier experiments (not presented here), we know that light accelerates leaching. However, light leads also to the production of alga, in particular for the long leaching times we are using. Alga production changes the experimental conditions and makes the leaching experiments less reproducible. Therefore, for the experiments presented here, we decided to use lightproof bottles. In order to increase the significance and validity of our experiments even more, each experiment was conducted in triplicate (this means three bottles, each one filled with two samples) for every condition. The leaching data, i.e., the concentration of a particular element in the solutions, are given as the mean value of the probes taken from the three bottles.

The leaching solutions with three different pHs covered the pH range of different environmental conditions that might occur in rain, groundwater, or waste disposal sites; their exact chemical composition and pH are shown in Table 1. All leaching solutions were based on deionized (DI) water. Over the whole 1.5 years of the experiments, the pH and the oxidation/reduction-potential E_H remained almost constant. Data for E_H , following DIN38404-6, stemmed from measurements with a platinum electrode against a silver/silver chloride reference (Ag/AgCl). The concentration of potassium chloride $c_{KCl} = 3 \text{ mol/L}$ was $T = 25^\circ\text{C}$; we converted the data to a potential against a standard hydrogen electrode [17].

Throughout the leaching experiments, starting after 0.5 days, we periodically took 15 mL samples from the leaching solutions in the bottles and analyzed them for the leached out elements. After taking the probe, we poured in again fresh solution of 15 mL to keep the 1000 mL volume. All data were corrected for the amount of elements that were taken out from the solution due to sampling.

Table 1. Composition of leaching solutions with pH-values of 3, 7, and 11 used in the experiments and the measured reduction potential E_H ; the same conditions as in [10]. (Copyright (2017) The Japan Society of Applied Physics, reproduced with permission).

pH	E_H (V)	Chemical Composition
3	0.62	15.4 g/L $\text{C}_6\text{H}_8\text{O}_7$, 2.8 g/L Na_2HPO_4 , DI water
7	0.56	3.7 g/L KH_2PO_4 , 5 g/L Na_2HPO_4 , DI water
11	0.33	0.04 g/L NaOH , DI water

2.2. Heavy Metal Analysis and Determination of Initial Metal Content in Module Pieces

We characterized the samples that were taken from the leaching solutions with inductively coupled plasma mass spectrometry (ICP-MS) and give the data for the leached elements according to ISO 17294-2 [18]. This method is only able to measure dissolved substances; it cannot detect precipitations in the solution. Therefore, the elements in the precipitates were not counted as leached.

Here, we always give the amount of leached out elements as a percentage with respect to the total amount of elements that were in the original module pieces. Therefore, we had to measure the total mass of those elements in the module pieces before the experiment. For that purpose, similar module pieces as those for the experiments were milled to a powder. Then, the powder was digested by adding acid and oxidizing agents and, finally, using microwave irradiation. After that, the digested samples underwent the ICP-MS analysis, similar to our earlier experiment [10]. For each PV technology, and for all the elements analyzed, Table 2 shows their mass M_{total} that was contained in the original reference module pieces.

Table 2. Elemental mass M_{total} in the $5 \times 5 \text{ cm}^2$ module pieces for crystalline silicon (c-Si), amorphous silicon (a-Si), cadmium telluride (CdTe), and copper indium gallium diselenide (CIGS). The data represent mean values and the standard deviation from three measurements.

Element	c-Si (mg)	a-Si (mg)	CdTe (mg)	CIGS (mg)
Zn		0.9 ± 0.4		16.1 ± 3.1
Cd			13.9 ± 0.9	0.2 ± 0.002
Te			15.6 ± 1.1	
In				14.1 ± 4.3
Ga				0.7 ± 0.1
Se				6.7 ± 1.3
Al	167 ± 40	196 ± 27	289 ± 63	280 ± 190
Mo			12.7 ± 1.7	5.0 ± 0.2
Cu	254 ± 15	130 ± 14	80 ± 11	146 ± 5.7
Ni		1.0 ± 0.1		
Pb	16.7 ± 0.8		2.4 ± 0.3	

2.3. Mass Balancing at the End of the Leaching Experiments

During the leaching experiments, the total mass:

$$M_{total} = M_{diss} + M_{MP} + M_{FR} \quad (1)$$

of a particular element is the sum of the following masses: the amount M_{diss} dissolved in the solution, the remaining mass M_{MP} within the module pieces, and the mass M_{FR} that precipitated in the bottles of the solution. Clearly, at the end of the leaching experiment, the total mass, determined by Equation (1) should equal the masses in Table 1. We measured the mass M_{FR} in the following way: First, the module pieces were removed from the bottles, and then, the solution was filtered using vacuum filtration with a cellulose nitrate membrane filter with a pore size of $0.45 \mu\text{m}$. The mass M_{MP} was measured in the same way as the total mass of the elements in one module piece, as described previously. To measure the mass of the filter residue M_{FR} , we digested the filter residue together with the filter by applying a microwave enhanced oxidative digestion. Again, ICP-MS measured these samples, and the measurement of the cellulose nitrate membrane filter itself (blank value) ran in parallel. Subtracting the blank values for the filter, we calculated the amount of each element in the filter residue.

3. Results

3.1. Delamination of Module Pieces

One focus during long-term leaching in water-based solutions lies in the occurrence of delamination. In order to simulate field conditions, in a first series of experiments, we did not use any accelerating leaching parameters for the module pieces for analyzing the delamination (Figure 1a). Delamination, in this study, is defined as a separation between all kinds of module layers, not only between the encapsulation layer, often ethylene vinyl acetate (EVA) foil, and the glass. The delamination was determined by visual examination.

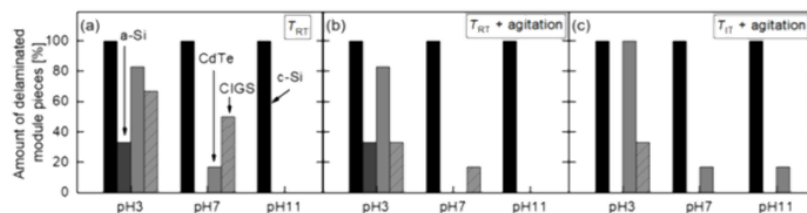


Figure 1. Amount of delaminated module pieces from crystalline silicon (c-Si), amorphous silicon (a-Si), cadmium telluride (CdTe), and copper indium gallium diselenide (CIGS) depending on the pH value of the water-based solution after 1.5 years for the three different experimental conditions: (a) $T_{RT} = 25^\circ\text{C}$, no agitation, (b) $T_{RT} = 25^\circ\text{C}$, with agitation, and (c) $T_{IT} = 40^\circ\text{C}$, with agitation.

After 1.5 years of leaching, we observed delamination in all kinds of PV module pieces: c-Si, a-Si, CdTe, and CIGS. The probability of delamination depends on the pH value of the solutions and the experimental conditions. In the case of c-Si module pieces, we always observed 100% delamination, independent of the pH-value, temperature, and agitation: in all aqueous solutions and for all module pieces, delamination occurred. However, in this case, delamination occurred via the EVA layer, and the type differed from the delamination type of thin film module pieces (via thin layers), as discussed later. Delamination of a-Si module pieces only happened in aqueous solutions with pH 3, and only 30% of the module pieces were affected. The agitation (Figure 1b) and also the temperature (Figure 1c) had no accelerating effect on the delamination. In fact, during the leaching experiments with $T_{IT} = 40^\circ\text{C}$ plus agitation, no delamination of a-Si module pieces was found. The highest amount of delamination in the case of CdTe module pieces occurred in acidic water-based solutions. For this type of module, the increased temperature weakly affected the delamination, as shown in Figure 1c. At room temperature, no delaminated CdTe module pieces were observed in the solutions with pH 11, whereas in neutral solutions, only 17% of the module pieces showed delamination. The pH dependence held also for the CIGS module pieces. In pH 3 solutions, the highest amount of delamination occurred with 67% of the module pieces. In pH 7 solutions, the amount of delaminated module pieces was still 50%. In alkaline solutions with pH 11, no delamination was observed with agitation or with increased temperature.

We classified all these delaminations into three different types: (i) Total separation: Here, the front side is clearly separated from the rear side. This delamination occurs in case of CdTe and a-Si module pieces. Figure 2a shows a scheme of this delamination type. (ii) Fractional separation: Here, only parts of the rear or front side are separated. The major part of the module compound is still intact. This type of delamination takes place for CIGS module pieces and for c-Si module pieces when leached in solutions with pH 11. The scheme is shown in Figure 2b. (iii) Blistering: Figure 2c shows this third type of delamination. Blistering occurs between either the front glass and the EVA foil, or between the EVA foil and the solar cell, but there is no complete separation. This type only occurs in c-Si module pieces.

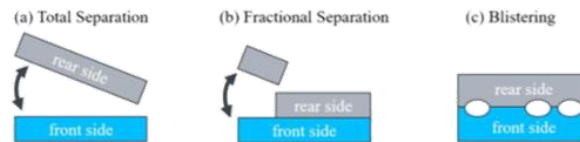


Figure 2. Different types of delamination during the leaching process: (a) Total separation (observed for CdTe and a-Si module pieces). The front side is completely separated from the rear side. (b) Fractional separation (observed for CIGS and c-Si module pieces). Only small parts of the rear side are separated; the major part of the module structure is still intact. (c) Blistering (only observed for c-Si module pieces). Bubble formation emerges locally on the front side of c-Si module pieces, either between glass and EVA or between EVA and solar cell depending on the pH. In this case, no separation occurs between the front and the rear side.

Total separation: Figure 3a–d shows photographs of the front and the rear side of a $5 \times 5 \text{ cm}^2$ CdTe module piece before and after 1.5 years of leaching. Before leaching the CdTe module piece, the integrated series connection of the cells is visible (see the horizontal lines) on the front side (Figure 3a) and also on the rear side (Figure 3b). On the rear side, one sees also the solder ribbon. Only the rear side glass of the module piece shows cracks caused by the water jet cutting. The breakage pattern of this glass indicates that heat-strengthened glass is used as the rear side glass. Figure 3c,d shows the front and the rear side of a CdTe module piece after the leaching process of 1.5 years in solutions with pH 3. Apart from a few parts, the module material disappeared completely. The solder ribbon is still attached to the rear side glass by an insulating tape. After this long-term leaching, the front and the rear side glasses are no longer connected to each other, but totally separated. For a-Si module pieces, the same type of delamination is observed.

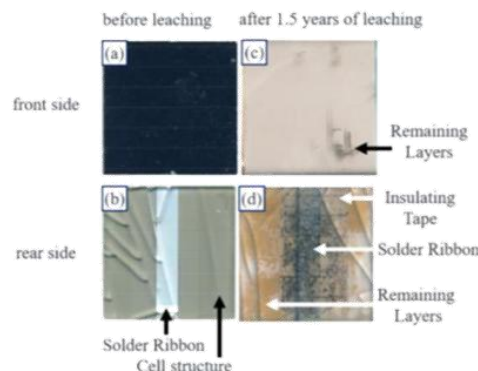


Figure 3. Photographs of (a) the front and (b) the rear side of a $5 \times 5 \text{ cm}^2$ CdTe module piece before leaching. On the rear side, the solder ribbon and the interconnection of cells are visible. (c) Front side of the module piece after leaching over 1.5 years in solutions with pH 3. Apart from a few visible remaining parts, the module material disappeared. (d) Rear side of the module piece after the leaching. The solder ribbon with the insulating tape is visible and also some parts of remaining layers. After 1.5 years of leaching, the front and the rear side glasses are no longer attached to each other; total separation occurs.

Fractional separation: Figure 4a–d shows photographs of the front and the rear side of a $5 \times 5 \text{ cm}^2$ CIGS module piece before and after 1.5 years of leaching: parts of the rear side are separated. Both glasses, the front and the rear side glass, show cracks due to the water jet cutting. Figure 4c shows a photograph of the front side after 1.5 years of leaching in solutions with pH 3. From the front side, a few transparent spots around the edges are visible. From a more detailed look at the back side of the module piece (Figure 4d), it becomes clear that at the transparent spots, parts of the rear side glass are missing, together with the back contact and the active module layers. Therefore, only the transparent front glass remains.

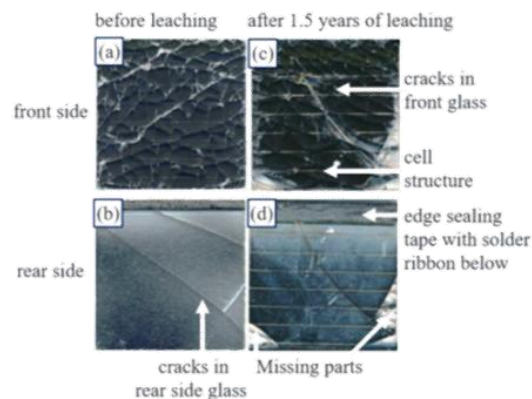


Figure 4. Photographs of (a) the front and (b) the rear side of a $5 \times 5 \text{ cm}^2$ CIGS module piece before leaching. On the rear side, the edge sealing tape with the solder ribbon below is visible. In the front glass, as well as in the rear side glass, cracks are recognizable; they stem from the water jet cutting. (c) Front side after leaching for 1.5 years in pH 3 solution. (d) Rear side after leaching. Parts of the rear glass are missing, together with the back contact and the active layers. Only the transparent front glass remains.

Blistering: Figure 5a shows a photograph of a c-Si module piece of $5 \times 5 \text{ cm}^2$ in size after 1.5 years of leaching in pH 3 solution. In this case, local bubble formation takes place between the solar cell and the EVA foil, especially around the solder ribbon, but no total separation is observed. In solutions with pH 11, delamination between the EVA foil and the front glass appears across extended areas (Figure 5b). A few parts of the glass are separated, and the exposed EVA foil with the solar cell below remains. Due to delamination, the textured structure of the front glass becomes visible. The breakage pattern of the glass matches the pattern known for tempered glass. The rear side of the c-Si module pieces (white backsheet) shows no changes caused by leaching. Only for this PV technology, the occurrence of delamination, i.e., blistering, does not depend on the pH value of the leaching solution. Module pieces leached in pH 7 solutions also show blistering. Blistering takes place at both locations: between the solar cell and the EVA foil, as well as between the EVA foil and the front glass.

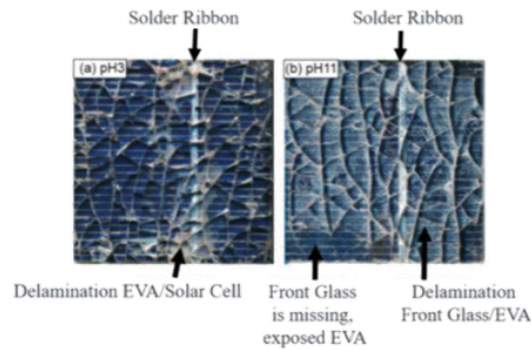


Figure 5. Photographs of c-Si module pieces with $5 \times 5 \text{ cm}^2$ after 1.5 years of leaching in solutions with (a) pH 3 and (b) pH 11. In solutions with pH 3, a local bubble formation occurs between the solar cell and the EVA foil, preferably around the solder ribbon. In solutions with pH 11, a delamination between the EVA foil and the front glass appears across extended areas. A few parts of the glass are separated, and the exposed EVA foil with the solar cell below remains.

3.2. Leaching Results

The previous figures, as well as our previous experiments on milled module pieces [8] give the proof for severe leaching for all module technologies. In the following, we present detailed results on the elements that were leached out from module pieces of $5 \times 5 \text{ cm}^2$ in size. In a first publication [10], we presented preliminary leaching data for Cd, Te, and Pb only and until Day 360, i.e., about one year. In contrast, here, we extend our study to 1.5 years and include many more other elements. This gives us the chance to identify possible weak spots and the leaching paths in the modules. In detail, we measure the amount of the following elements in our water-based solutions of Table 1 with different pH-values: Zn, Te, In, Ga, Se, Al, Mo, Cu, Cd, and Pb. The non-toxic element Si, which is contained in the modules' cells from crystalline, as well as from amorphous silicon, is not measured, simply because the module glass itself also contains high amounts of Si. Our measurement conducted by ICP-MS cannot distinguish between Si from the cells and from the glass of the modules.

3.2.1. CdTe Module Pieces

Figure 6a shows the common structure of a CdTe module including the front glass and front contact (usually tin oxide (SnO_2)), the buffer layer cadmium sulfide (CdS), the photoactive layer CdTe, the Mo back contact, the encapsulant EVA, and finally, the rear side glass. The typical thickness of each layer is also given [19–21]. CdTe modules are mostly fabricated in a superstrate configuration: the production process starts with the front glass, on which the transparent front contact SnO_2 is deposited. We used commercial CdTe-modules for the preparation of the module pieces and measured the amount of eluted elements with the above discussed ICP-MS method. Therefore, we are not able to distinguish between the Cd from the CdS buffer layer and the Cd from the photoactive CdTe film.

Figure 6b–d shows the time-dependent leaching of the elements Cd, Te, and Mo in water-based solutions with pH 3, pH 7, and pH 11; see also [10] for the leaching results of Cd and Te until Day 360. These results stemmed from experiments at $T_{RT} = 25^\circ\text{C}$ without agitation. In all solutions, the amount of leached elements increases with time, but with different leaching rates for different pHs of the solutions. At the early beginning of leaching, Mo from the back contact leaches out with the highest amount, followed by Cd.

Tellurium leaches the least. Thus, already from this observation, it becomes clear that the Mo layer is a weak spot in the case of the CdTe module. After approximately 300 days of leaching, the concentration of Te increases dramatically and approaches the eluted amount of Cd and Mo. Around this time of leaching, delaminations are observed. After 1.5 years, the concentrations of eluted Cd and Mo related to the total amount in the module piece in acidic solutions (pH 3) reach $c_{Cd} \approx 92\%$ and $c_{Mo} \approx 88\%$. The amount of eluted Te is $c_{Te} \approx 54\%$.

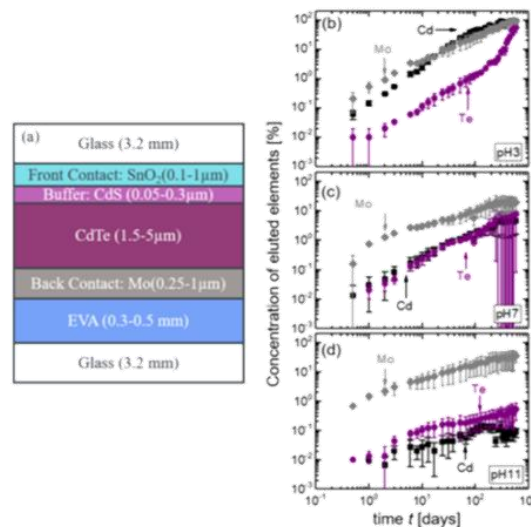


Figure 6. (a) Schematic structure of a typical CdTe module (not drawn to scale) and (b) time-dependent leaching results of the elements Cd, Te, and Mo from CdTe module pieces in acidic aqueous solutions with pH 3 and (c) in solutions with pH 7 and (d) pH 11.

Figure 6c shows the leaching in water-based solutions with pH 7. Here, the concentrations of eluted Cd, Mo, and Te, finally, after 1.5 years, reach $c_{Cd} \approx 4.5\%$, $c_{Mo} \approx 19\%$, and $c_{Te} \approx 7.8\%$, respectively. In this case, the leaching of Cd and Te shows the same time-dependent leaching behavior. The large standard deviations for Te appearing after approximately 300 days of leaching are due to the delamination of one module piece out of three experimental runs. Clearly, after delamination of this particular module piece, substantially higher amounts are leached out, because the leaching solution is able to directly attack the CdTe layers from the surface. Therefore, we observe substantially higher amounts of eluted Te and slightly higher amounts of Cd for this one out of the three experimental runs. The leaching of Mo is highest from the beginning to the end and comparable to the leaching amounts of Cd and Te.

Figure 6d presents the leaching data for pH 11. Here, at the end of the experiment, the amount of eluted Mo is still high with $c_{Mo} \approx 34\%$. The measured concentration of Te is below 1% after 1.5 years, and the amount of leached Cd is the lowest. In solutions with pH 11, the time-dependent leaching rates of Cd and Te are much lower compared to the leaching rates in solutions with pH 7 and pH 3. For all conditions, the leaching rate of Mo is always higher than the one of Cd and Te. This indicates again that, in the case of CdTe modules, the Mo back contact is a weak spot.

The leaching results in Figure 6b–d clearly demonstrate an enormous difference between the leaching concentrations after one day and after the 1.5 years. For example, the Cd-elution in pH 3 at the end of the experiment reaches almost 100%, whereas it is only about 1 % after one day. For pH 3 and pH 7, the eluted concentrations increase approximately linearly with time: a one order of magnitude increase (on the log-scale) of the time leads to a one order of magnitude higher concentration (on the log scale) of the concentration. For pH 11, the data approach a square root dependence with time: it needs a two orders of magnitude increase on the time scale for a one order of magnitude increase on the concentration scale.

Figure 7 shows the ratio $R_{Cd:Te}$ of dissolved Cd to dissolved Te from leaching CdTe module pieces in solutions with pH 3, pH 7, and pH 11. For leaching solutions with pH 3, the value of $R_{Cd:Te}$ is not constant over the leaching time. At the beginning of leaching, $R_{Cd:Te}$ is highest with 35:1, but with time, it approaches $R_{Cd:Te} \approx 1$. For neutral solutions with pH 7, $R_{Cd:Te} \approx 1$ and is almost constant over time. The same behavior applies for leaching in alkaline solutions, but with $R_{Cd:Te} \approx 0.1$. This means that more Te is dissolved in the solutions.

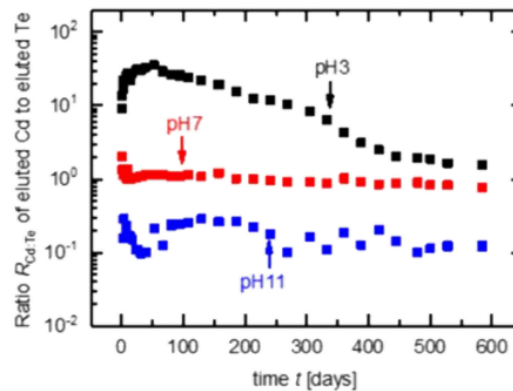


Figure 7. Ratio $R_{Cd:Te}$ of dissolved Cd to dissolved Te from leaching CdTe module pieces in solutions with pH 3, pH 7, and pH 11.

3.2.2. CIGS Module Pieces

Figure 8a shows a schematic cross-section through a CIGS module, composed of the front glass with EVA, the front contact (usually consisting of aluminum-doped zinc oxide, ZnO:Al), a buffer layer of CdS, the absorber layer Cu(In, Ga)Se₂, and a thin interfacial layer of MoSe₂ between the substrate glass and the CIGS. The MoSe₂ is formed by a reaction between the Mo and the Se atmosphere during the deposition of the Cu, In, and Ga [22]. CIGS modules are built in a substrate configuration. The fabrication starts with the deposition (sputtering or evaporation) of Mo on the rear glass. Then, the CIGS is deposited, mostly by co-sputtering or thermal evaporation of the constituent elements, Cu, In, and Ga in a Se atmosphere.

Figure 8b shows the leaching data for Zn, Cd, Mo, Cu, Ga, and In in pH 3 solutions. At the beginning of leaching, Zn from the front contact shows the highest amount with $c_{Zn} \approx 1\%$ already after one day; finally, we observe $c_{Zn} \approx 62\%$ after 1.5 years. Furthermore, already after one day, certain amounts of Mo from the back contact and In from the absorber layer are measurable in the solutions. Other elements, like Cd, Cu, and Ga, are detected later on. The leaching rates of each element differ in absolute values, but show a similar

time dependence. The leaching of the Mo from the CIGS module pieces differs from the data for Mo from CdTe module pieces (see Figure 6b). The Mo from CdTe module pieces seems to be more soluble, in particular for acidic solutions. The difference probably results from the formation of MoSe_2 at the back side of the CIGS films.

Figure 8c shows the leaching of Zn, Cd, Mo, Cu, Ga, and Se in pH 7 solutions. Indium is not detected in the solution with pH 7. The leaching of Zn for this pH is lower than that for pH 3, and so is the concentration after 1.5 years. In solutions with pH 11, we only find Mo, Ga, and Se with low concentrations in the solutions, as shown in Figure 8d. The leached Mo is lowest for pH 11 compared to the data from solutions with pH 3 and pH 7. In the case of CIGS module pieces, comparable to CdTe, the Mo back contact is a weak spot, but also the front contact Zn and the buffer layer Cd.

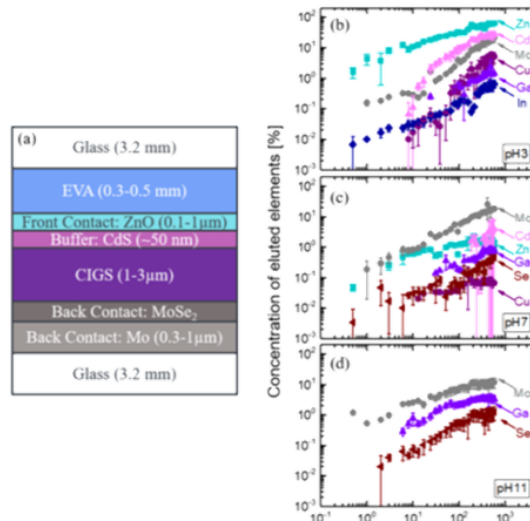


Figure 8. (a) Schematic structure of a typical CIGS module (not drawn to scale) and (b) time-dependent leaching results of the elements Zn, Cd, Mo, Cu, Ga, and In from CIGS module pieces in acidic aqueous solutions with pH 3 and (c) in solutions with pH 7 and (d) pH 11. In leaching solutions with pH 11, the concentrations of the elements Cd, Zn, Cu, and In are below the detection limit.

3.2.3. c-Si Module Pieces

Figure 9a shows a schematic cross-section through a classic c-Si module, consisting of a front glass with EVA, a silver front contact grid with contact fingers and busbars, and the silicon solar cell with a screen printed aluminum back contact and screen printed Ag contact pads (not drawn in the scheme). In contrast to thin film modules, instead of a rear glass, most c-Si modules have a backsheet and a second EVA sheet at the rear side. Figure 9b,c shows the leaching data for Al and Pb for pH 3 and pH 11 (see also [10] for the leaching results of Pb until Day 360). In the case of pH 7, the concentrations of Al and Pb are below the detection limit, which is 500 μg/L for Al and 20 μg/L for Pb. The eluted Pb stems either from the solder ribbon, which is not shown in the schematic cross-section, or from the screen printed metallization. For pH 3, the amount of leached Pb remains constant and below 0.1% until Day 241. After this time, the concentration increases dramatically up to $c_{\text{Pb}} \approx 3.7\%$ after 1.5 years. The concentration of Al reaches $c_{\text{Al}} \approx 27\%$ after 1.5 years in

the acidic solution. In contrast, for the alkaline solution with pH 11, the concentrations of Al and Pb are significantly lower, as shown in Figure 9c. In both cases, the leaching rates of Al are orders of magnitude higher than the ones for Pb. Thus, in the case of c-Si module pieces, the Al contact, which is screen printed and fired into the back side, makes up the weak spot and opens the path for leaching.

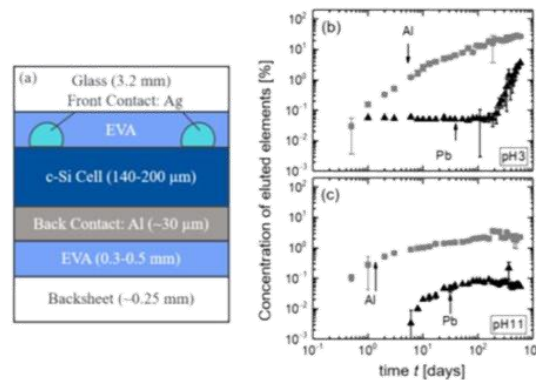


Figure 9. (a) Schematic structure of a typical c-Si module (not drawn to scale) and (b) time-dependent leaching results of Al and Pb from c-Si module pieces in acidic aqueous solutions with pH 3 and (c) in solutions with pH 11. In leaching solutions with pH 7, the concentrations of Al and Pb are below the detection limit.

3.2.4. a-Si Module Pieces

The common structure of an a-Si module is shown in Figure 10a. Amorphous silicon modules typically consist of a front glass with the front contact layer (SnO_2 is mostly used), the photoactive p-i-n layer from a-Si, followed by an intermediate layer consisting of ZnO and Ag, the back contact with a combination of Ni and Cu, and the encapsulant with the rear glass [23]. Similar to the production of CdTe modules, a-Si modules are built in a superstrate configuration, starting with the deposition of the front contact directly on the front glass. Figure 10b,c shows the concentrations of eluted Zn, Cu, and Ni in the solutions with pH 3 and pH 7. Unfortunately, we do not have any data about Ni before Day 388 of leaching. In leaching solutions with pH 11, the concentrations of Zn, Cu, and Ni are below the detection limits. For the other pH-values, we are able to present data: Zn, which stems from the intermediate layer, shows strong leaching with concentrations up to $c_{\text{Zn}} \approx 90\%$ after 1.5 years of leaching in the acidic pH 3 solution. The concentration of eluted Ni lies in the same range, whereas the concentration of Cu is $c_{\text{Cu}} \approx 7.5\%$. In aqueous solutions with pH 7, the elements Zn, Ni, and Cu leach only in minor amounts. The elements Zn, Cu, and Ni are leached out linearly with time, but with different rates depending on the element itself, as well as on the pH of the solution. In all cases, the leaching of the Zn is highest, and therefore, we identify the ZnO layer as a weak spot in a-Si module pieces.

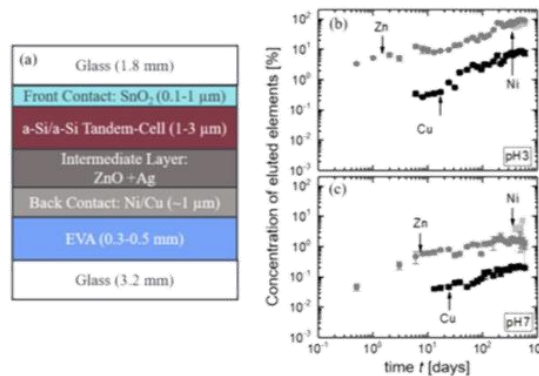


Figure 10. (a) Schematic structure of a typical a-Si module (not drawn to scale) and (b) time-dependent leaching results of Zn, Cu, and Ni from a-Si module pieces in acidic aqueous solutions with pH 3 and (c) in solutions with pH 7. In leaching solutions with pH 11, the concentrations of Zn, Cu, and Ni are not measurable according to the detection limit.

3.3. Accelerating Leaching Parameters for Cd from CdTe Module Pieces

All of the experiments considered so far were performed without any acceleration, for example, by elevated temperatures or stirring/agitation. Figure 11a,b compares the data for Cd, leached out from CdTe module pieces, for the three different pH-values and with/without agitation. Apart from the tests at $T_{RT} = 25^\circ\text{C}$, we also used additional agitation and solutions at an elevated temperature $T_{IT} = 40^\circ\text{C}$. All test series ran in parallel. Figure 11a shows the results after $t = 1$ day and Figure 11b after $t = 416$ days. The comparison of the two figures again underlines the dramatic difference in the leaching results after one day and after more than a year. Therefore, standard leaching experiments, which are only carried out over one day, are more or less meaningless, when one aims at judging the toxicity of CdTe modules. Furthermore, after just one day (see Figure 11a), additional agitation and/or elevated temperatures only slightly increase the amount of eluted Cd, even if for pH 3 solutions. In contrast, in particular for pH 7, increasing the temperature from $T_{RT} = 25^\circ\text{C}$ to $T_{IT} = 40^\circ\text{C}$ results in five times stronger leaching. Leaching in pH 11 solution triples the leaching of Cd for the same temperature increase. In contrast, in the case of agitation, we are not able to detect any Cd in the alkaline solutions after one day. In the case of pH 3, for all experimental conditions, after $t = 416$ days, the amount of eluted Cd in acidic solutions reaches almost 100%. In the case of the neutral pH 7 solutions, the final data all lie in the same range of $2\% < c_{Cd} < 4\%$. After 416 days, the eluted Cd reaches saturated values. Therefore, as shown in Figure 11b, there is almost no or only minor differences between the data with and without additional accelerating parameters.

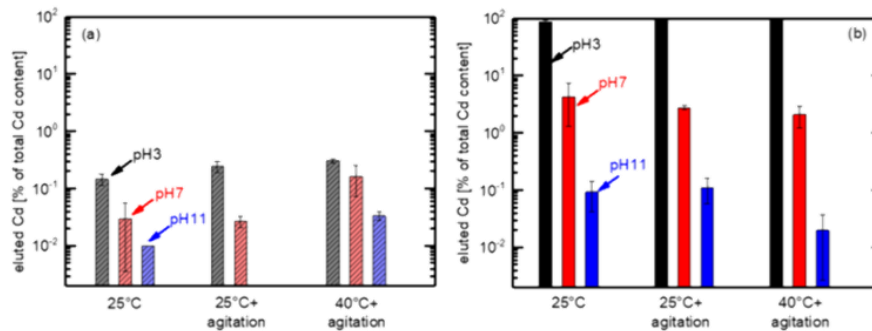


Figure 11. Dramatic difference between the leaching data after one day and more than a year of Cd out of CdTe module pieces. (a) Amount of eluted Cd from CdTe module pieces after $t = 1$ day in solutions of pH 3, 7, and 11 and different leaching conditions: with/without agitation and increased temperature $T_{IT} = 40^\circ\text{C}$ plus agitation. For all conditions, after one day, the Cd concentration ranges below 1%. (b) Amount of eluted Cd from CdTe module pieces after $t = 416$ days. For pH 3, almost 100% of the Cd is leached out. For pH 7, still several percent are leached out. This finding raises the question of the meaningfulness of judging the toxicity of CdTe containing modules with tests that are carried out for one day only.

3.4. Analysis of Time Dependence

To get a better understanding of how the different leaching conditions affect the time-dependent leaching, we fit the measured concentration $C(t)$ at the time t to an exponential model according to:

$$C(t) = C_{\max}(1 - e^{-\frac{t}{\tau}}), \quad (2)$$

where $C_{\max}$ is the maximum, final concentration dissolved in the solution and τ is the leaching time constant. The leaching time constant represents the time for the concentration to reach 63% of its final value as a measure of leaching velocity. For times $t \ll \tau$, the Taylor expansion of Equation (2) yields a linear behavior according to:

$$C(t) = C_{\max} \frac{t}{\tau}. \quad (3)$$

Indeed, in almost all of our experiments, if not disturbed by delamination effects, we see the linear time dependence predicted by Equation (3) and the saturation predicted by Equation (2). Equation (3) is the direct consequence of the number of atoms (Cd) that are leached per unit time, being directly proportional to the number of atoms that are still available for etching. Such an approach always leads to an exponential function such as Equation (2). However, not only delamination (which is expected to accelerate the leaching), but also other effects such as the formation of surface layers (see our work [24]), diffusion limitations, and/or the formation of precipitates could result in deviations from a behavior following Equations (2) and (3). For a diffusion limited leaching on a thin layer, one would observe a square root dependence, as discussed in [24]. This might be the case for some of the data here, in particular for pH 11.

Most of experimental data, in particular for pH 3 and pH 7, show an excellent agreement with the linear behavior, predicted by Equation (3) for time $t \ll \tau$, as well as for the saturation behavior, Equation (2). As an example, Figure 12a–c shows the time-dependent leaching of Cd from CdTe module pieces in solutions with pH 3 for the three different leaching conditions. The data are excellently fit with coefficients of determination $R^2 \geq 0.96$. Figure 12d–f shows the leaching data of Cd in solutions with pH 7. The dotted lines

represent the calculated fit according to Equation (2). The dashed lines show the calculated maximum Cd concentration C_{max} in the solutions; the time constants τ are also given. Modifications to the leaching conditions lead to accelerated leaching with a shorter time constant τ : For example, increasing the temperature to $T_{IT} = 40^\circ\text{C}$, as shown in Figure 12c, leads to a time constant that is only a third of the value at $T_{IT} = 25^\circ\text{C}$. In contrast to the time constant, the C_{max} -value is almost independent of the leaching conditions in pH 3 solution; it holds $C_{max} \approx 100\%$. Figure 12d shows the leaching data for pH 7 at $T_{IT} = 25^\circ\text{C}$ without agitation; we find $\tau = 210$ days. After this time $t = \tau$, a value of 63% of the maximum Cd concentration is reached, which is estimated to be $C_{max} = 4.8\%$. Modified experiments slightly decrease the maximum concentration, which we explain by the large standard deviations at the end of leaching, caused by the delamination of module pieces. Additional agitation decreases the time constant to $\tau = 80$ days (Figure 12e); increased temperature yields $\tau = 20$ days (Figure 12f), i.e., four-times faster leaching.

The excellent fits of our leaching data for pH 3 and pH 7 to Equations (2) and (3) show also that in this case, the leaching is not limited by any diffusion processes, which might take place inside or on the surface of the CdTe layers (this statement holds also for the experiments on all other cell technologies). This behavior is in contrast to our results on the leaching of milled module pieces, which were reported in a separate publication [24]. There, the model for the small spherical CdTe particles, with sizes below one millimeter, predicts a power law, with leaching data following a dependence on time t according to $t^{0.43}$. Indeed, in [24] we observed this behavior for the small particles also experimentally. Due to the different size and geometry of the samples, the leaching from the flat plates of module pieces as presented here, at least for pH 3 and pH 7, follows a different time dependence, which, for short times compared to the leaching time constant, is $t^{1.0}$, as, for example, shown in Figure 6b,c.

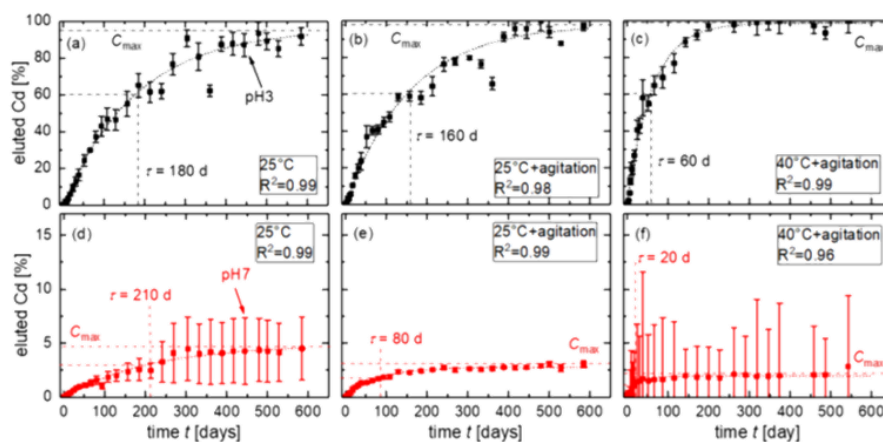


Figure 12. Leaching of Cd from CdTe module pieces in solutions with pH 3 at (a) $T_{IT} = 25^\circ\text{C}$, (b) at $T_{IT} = 25^\circ\text{C}$ with agitation, and (c) at $T_{IT} = 40^\circ\text{C}$ with agitation. Eluted Cd in solutions with pH 7 at (d) $T_{IT} = 25^\circ\text{C}$, (e) at $T_{IT} = 25^\circ\text{C}$ with agitation, and (f) at $T_{IT} = 40^\circ\text{C}$ with agitation. The dotted lines represent the calculated fit according to Equation (2) with high coefficients of determination R^2 . The dashed lines show the calculated maximum concentration C_{max} in the solutions.

Figure 13a shows the leaching time constant τ for pH 3 and pH 7: A higher temperature results in faster leaching. In our study, $T_{IT} = 40^\circ\text{C}$ is used, which is a common temperature PV modules reach when exposed to sunlight; on hot summer days, the temperatures are

even higher. In solutions with pH 7, the change in the leaching time constant due to varied conditions is even stronger. In contrast to a different τ , Figure 13b shows that the maximum concentration C_{max} of eluted Cd remains nearly constant and independent of modifications to the leaching conditions. However, the value C_{max} highly depends on the pH of the leaching solution: it holds $C_{max} \approx 100\%$ for pH 3 and $C_{max} \leq 4.8\%$ for pH 7. The lower C_{max} for pH 7 is explained by the formation of cadmium hydroxide in neutral solutions. This compound is not soluble and therefore not detected by our measurement method ICP-MS.

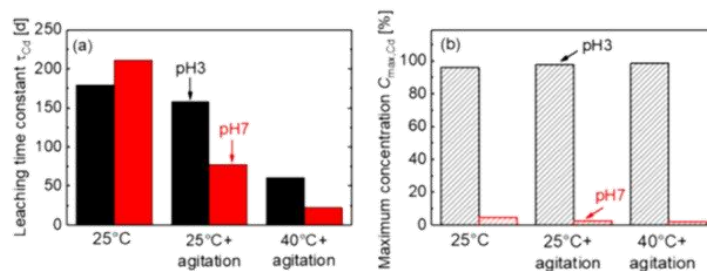


Figure 13. Calculated fit parameters for the leaching of Cd from CdTe module pieces under different conditions. (a) Leaching time constant τ_{Cd} for solutions with pH 3 and pH 7. (b) Maximum concentration C_{max} for the same conditions as in (a).

3.5. Mass Balance for CdTe Module Pieces

Figure 14 shows the distribution of the mass fractions for the elements Cd, Te, and Mo from CdTe module pieces leached for 700 days at $T_{RT} = 25^\circ\text{C}$ without agitation: the dissolved amount in the solution M_{diss} , the remaining mass in the module piece M_{MP} after the leaching process, and the mass of the filter residue M_{FR} with particles bigger than 0.45 mm. There are strong differences between the leaching behavior for pH 3 and pH 11:

pH 3: Almost all Cd, Te, and Mo from the module pieces is found in the mass M_{diss} of dissolved elements. In particular, for Cd, almost nothing remains in the module piece (mass M_{MP}) or is found in the mass M_{FR} of precipitates.

pH 11: Almost all Cd and Te still remain in the module pieces and are represented by the mass M_{MP} . Only in the case of Mo, a part of the Mo is measured in the solution as M_{diss} .

Mass loss for Te and Mo: The sum of the masses in the solution, filter, and module pieces measured after the leaching should reach 100% of the value before the leaching. However, for Te and Mo, the sum of the measured values after leaching is below 100%. The relatively small amount of missing mass is termed M_{Rest} in Figure 14. We explain the difference by the milling process for the determination of the remaining mass M_{MP} in the module piece. For a few samples, the milling process did not completely crush the encapsulation. The Mo back contact has a strong adhesion to the encapsulant. Therefore, it seems possible that not all Mo material was digested. There might also be a material loss during the filtration process, either when drying the filter afterwards, or due to particles remaining in the HDPE bottles despite carefully repeated rinsing.

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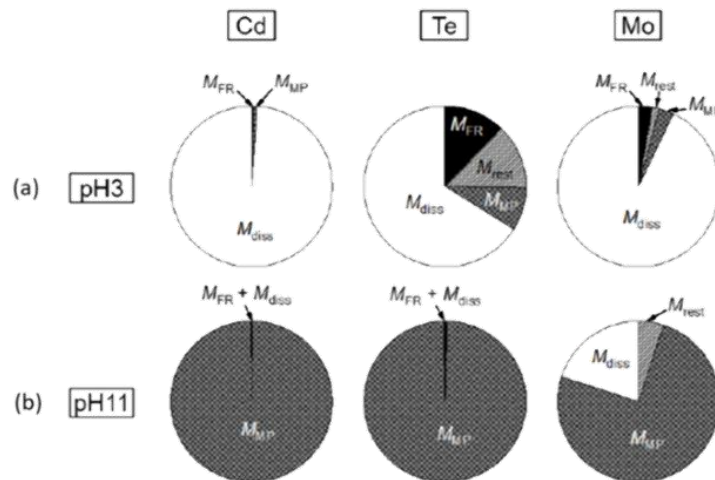


Figure 14. Mass balance of the CdTe module piece after 700 days in leaching solutions with (a) pH 3 and (b) pH 11 at $T_{RT} = 25^{\circ}\text{C}$ without agitation. In solutions with pH 3, the largest fraction of Cd, Te, and Mo is dissolved and found as M_{diss} ; only a small fraction M_{MP} remains in the module pieces. No Cd-particles (mass M_{FR}) are measured within the filter residue, whereas for Te and Mo, a small part is found in the residue. In solutions with pH 11, the major part of the elements Cd and Te remains in the module piece and is not leached out. Molybdenum is also measured in the solution.

4. Discussion

The combination of leaching experiments and the observation of delamination yields the following major insight: In the case of thin film modules (CdTe, CIGS, and a-Si), the delamination is the consequence of the high solubility of one or more thin layers of the modules' cells. They form a path for the attack of the water-based solutions. In contrast, in the case of modules containing cells from crystalline silicon, the cell's Al back contact is highly soluble, but not responsible for delamination. Instead, blistering occurs: delamination of c-Si modules is not visible on the back side, but on the front side, either between the front glass and EVA or between the EVA and the Si cell, depending on the pH of the leaching solution. Delamination between the front EVA and solar cell preferentially occurs around the solder ribbon on the front side of the cell and is therefore correlated with the leaching of Pb out of the solder ribbon. The backsheet on the rear side of the c-Si module piece shows no changes after the leaching. Unfortunately, the backsheet is not transparent; therefore, we do not have information about the condition of the solder ribbon on the back side and how the leaching of the Al back contact affects the leaching of the solder ribbon on the back. In solutions with pH 3, a local delamination takes place between the solar cell and the EVA foil, whereas in pH 11 solutions, the delamination occurs between front glass and EVA. In pH 7 solutions, we observe both kinds of delamination. The solution probably attacks the coupling agent. Therefore, in this case, we assume adhesion problems to be the main reason for blistering.

In the case of CdTe module pieces, the photoactive CdTe, as well as the Mo back contact are highly soluble in acidic, aqueous solutions with pH 3. The severe leaching correlates with the frequent total separation, i.e., delamination of the module pieces. For this type of module and under acidic conditions, frequently, the front side is clearly separated from the rear. As a consequence, this delamination enhances the leaching, especially of Te, which is

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observed in all leaching solutions, independent of pH. For short times, leaching for Cd, Te, and Mo increases linearly with time, but at different rates; the rates depend on the pH. The ratio $R_{Cd:Te}$ of eluted Cd to eluted Te Cd:Te also depends on the pH. This behavior is in accordance with the Pourbaix (potential-pH) diagram for CdTe in aqueous solutions showing the possible species of Cd and Te depending on the pH and the redox potential E_H [9]. In solutions with pH 3, the Te species have a lower solubility compared to the Cd species, which are present as Cd^{2+} ions. The solubility of predominant species of Cd and Te for pH 7 is the same, which explains the ratio $R_{Cd:Te} = 1$. In solutions with pH 11, probably, Te species form with a solubility that exceeds that of Cd. This assumption explains the estimated $R_{Cd:Te} \approx 0.1$. It is notable that only in solutions with pH 3, the ratio $R_{Cd:Te}$ is strongly time dependent, whereas it is almost constant for solutions with pH 7 and pH 11.

Increasing the temperature results in accelerated leaching of Cd from CdTe module pieces. The same behavior was earlier reported by Collins and Anctil [25] for the leaching of Cd from CIGS modules and Pb from c-Si modules, by increasing the leaching temperature to $T = 50^\circ C$. All of our leaching data for Cd are well described by Equation (2) and the C_{max} -value for Cd, which decreases with increasing pH. This finding is in accordance with the data reported by Ramos-Ruiz [5] on leaching of Cd and Te out of CdTe modules in solutions with different pH values under simulated landfill conditions. This pH-dependent leaching is understood on the basis of known leaching patterns, not only for Cd, but for all measured elements in this study.

In contrast to CdTe modules, with total delamination, for CIGS module pieces, fractional separation occurs in solutions with pH 3, as well as with pH 7: only parts of the rear side are separated. Our leaching experiments point out all CIGS module layers to be more or less soluble in aqueous solutions. The highest solubility is found for Zn from the front contact in pH 3 solutions, and at this location, we observe the fractional separation. With the Zn eluted, there is no longer a stable bond between the front glass/EVA and the rear side consisting of the photoactive layers (CdS, CIGS) and the back contact on top of the rear glass.

The leaching concentrations of Cd out of CIGS module pieces are lower than from CdTe module pieces. This lower leaching of Cd indicates that CdS in the CIGS cells is more stable against the solutions than CdTe. The Mo back contact of CIGS module pieces also seems to be more stable than the Mo back contact of CdTe module pieces. Between these two module types, the amounts of leached Mo differ especially in solutions with pH 3 and pH 11: in these solutions, Mo from CIGS shows lower leaching than Mo from CdTe module pieces. This difference probably arises from the formation of the $MoSe_2$ layer during the deposition of the CIGS layer in module fabrication. Theelen et al. [26] proposed that $MoSe_2$ prevents the formation of molybdenum oxide, MoO_x , which is the main reason for the degradation of Mo when it comes in contact with water or moisture. Modules from CdTe do not contain a protecting $MoSe_2$ layer. Therefore, during leaching, MoO_x is probably formed. The formation of MoO_x results in a large volume expansion [26]. This could explain the observed delaminations for CdTe module pieces.

Amorphous silicon module pieces show also highly time-dependent leaching, in particular the front layer of ZnO in combination with the Ni/Cu back contact. After 1.5 years of leaching, the elements Zn and Ni reach almost 100% in solutions with pH 3. The time-dependent leaching behavior of Zn from a-Si module pieces is similar to the leaching behavior of Zn from CIGS module pieces in both solutions of pH 3 and pH 7. The leaching rates are also comparable. Therefore, in the case of a-Si modules, ZnO is a weak spot. This finding is in line with the experiments of Pern et al. [27]: These authors studied the stability of various transparent conducting oxides (TCO), including ZnO. In their experiments, ZnO showed the highest degradation rates (of all studied TCOs) when it comes in contact with moisture.

5. Conclusions

Our leaching experiments on PV modules pieces from CdTe, CIGS, c-Si, and a-Si in water-based solutions with pH 3, pH 7, and pH 11 simulate different environmental conditions. Due to the wide span of pH-values, it seems also possible to predict from our experiments the behavior for other pH-values. During the leaching over 1.5 years, we observe different types of delamination. In the case of thin film modules (CdTe, CIGS, a-Si), the thin film layers themselves or the contact materials (e.g., Mo, ZnO) are the weak spots. Finally, their leaching leads to delamination. In contrast, in the case of modules with c-Si, the Al back contact shows the strongest leaching. However, this leaching is not responsible for the delamination. Instead, problems with the EVA causes blistering, which leads to the delamination of the module pieces with c-Si.

The time-dependent leaching is well described by an exponential saturation behavior with a leaching time constant, at least for low pH-values. The leaching time constant differs from element-to-element and changes under agitation and/or a temperature increase. For times small compared to this time constant, the amount of leached out elements increases linearly with time. It is therefore understandable that, roughly speaking, the concentrations of many leached out elements after 500 days are also more than two orders of magnitude higher than after one day. However, we observe also ratios of the concentrations after one 500 days and after one day that are higher or lower than two orders of magnitude: Higher values are obtained, when delamination occurs during leaching. Lower values are obtained when, for example, the ratio of eluted to precipitating elements changes during the experiment.

In the case of Cd leaching from CdTe module pieces, increased temperature leads to substantially accelerated leaching. In contrast, the maximal concentration of leached Cd only depends on the pH of the solution. A mass balance method shows that Cd, which is not measured in the solutions as dissolved, remains in the module pieces themselves and is not, as expected, leached out and then precipitated in the solutions.

In any case and under all experimental conditions, it is possible to either leach out all or a substantial amount of most elements from the module pieces. Clearly, in the case of our module pieces, leaching starts from the unprotected edges of the pieces of $5 \times 5 \text{ cm}^2$ in size, cut out from large area modules. During the manufacturing of commercial modules, they are provided with an edge sealing, which should prevent any leaching under normal operating conditions of the (undamaged) modules. However, if the edge sealing of the modules is not carefully done, or if it is damaged, or even worse, if the (front) module glass is broken, leaching is unavoidable. Rain water with pH values always below pH 7 will suffice to leach out the (toxic) elements. Even worse, if modules are cracked, crushed, or even milled and end up in landfills, the module constituents will also be leached out. Therefore, if toxic materials are not completely avoided in photovoltaic modules, it is of utmost importance to (i) replace damaged modules as fast as possible and to (ii) recollect and recycle them completely. In all other cases, in view of the huge amount of installed PV modules, most of them still containing Pb (mostly in the solder of the cell connectors) and/or Cd, they may impose a severe danger to the environment.

Compared to other, earlier studies, our experiments were carried out over more than a year. As one of the key results, we found huge differences between the amount of elements found in the solutions after one day and more than a year. In our opinion, tests for just one day are inappropriate to judge module technologies, in particular if conclusions and political decisions on the toxicity and environmental issues of photovoltaic module technologies are based on such short-term measurements.

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Incident response to Industrial Solar Farms Fires

Purpose

To advise all operational Rural Fire Service (RFS) and Fire and Rescue Service (FRS) staff and volunteers of the potential risks associated with responding to an incident at industrial solar farms and large scale Battery Energy Storage Systems (BESS) and the mandatory actions that must be taken to ensure health and safety.

Issues

There are currently about 43 operational Industrial Solar Farms located in [Queensland](#) with another 88 proposed or under construction. A number of these industrial solar farms are located in areas where RFS are the primary responder.

Significant incidents on large scale industrial solar farms include catastrophic inverter failures which can result in doors being blown off and fires external to the inverters.

When responding to incidents (i.e. fires, including bushfires and disaster recovery efforts etc) at solar farms, there are several factors contributing to electrical contact risks which must be kept in mind:

- There are various components at each stage of solar energy production which have potential to be live such as:
 - Inverters (converting direct current (DC) to alternating current (AC))
 - Switch boards
 - Electrical wiring and connection terminals
 - Battery energy storage systems (BESS)
- Solar electricity will still be produced at dangerous voltages in low light conditions
- Typically, DC voltages exceed 1000 Volts which presents a risk of arcing in fault conditions
- Electrical faults can result in electrical fires
- DC electrical faults may not be automatically isolated by protection systems and may continue to arc/burn until input power is switched off or burnt to open circuit
- Wiring is live/energised as soon as it is connected to the solar system
- DC arcing can be caused when disconnecting DC connectors whilst under load (to be undertaken by authorised person for the Solar Farm site).
- Insulation faults or contact with live circuits can cause a rapid release of energy resulting in electrical arcing
- Solar electricity production includes both DC and AC electrical currents.
- Multiple sources of electricity (eg high voltage electricity from the transmission or distribution network and the solar array that is absorbing light)

Electrical and other safety hazards associated with solar Photovoltaic (PV) systems include:

- PV array and PV modules being live (energised) as soon as they are exposed to light
- Power Conversion Equipment (PCE), e.g. inverters, having hazardous voltages once connected to the PV array
- wiring being live (energised) once connected
- the risk of electrical faults causing explosion, arcing and fires



- DC voltages and current sources of PV modules causing series arcing that may not be identified by automatic protection devices and so remain in place unless physical action to remove the fault occurs
- DC arcing caused by disconnection of DC connectors under load
- rapid energy release from energy storage (if used) if an insulation fault occurs or contact is made between live (energised) circuits, resulting in arc flash hazards
- toxic gases
- flammable gases
- hazardous chemicals.



(Photograph 1: Solar Farm example)



(Photograph 2: Fire damaged Inverter post fire event)

MANAGEMENT

Planning and Preparedness:

- Under the [Construction and Operation of Solar Farms Code of Practice 2019](#), Industrial Solar Farms will have an **Emergency Management Plan** to outline the procedures for access by emergency responders, evacuation of people on the site and site control measures during an incident. The emergency plan should also identify the hazards (e.g. electric shock, contact with hazardous substances, toxic gases) that may occur and how to safely manage those hazards during the emergency. It should also include information on safe remediation procedures or clean-up work after the emergency. RFS and FRS should engage with Solar Farms in their local area and obtain a copy of the Emergency Plan for station/brigade reference. RFS and FRS officers to ensure that they are aware of the contact details for the Solar Farm if unstaffed. The Code of Practice states that emergency contact details should be displayed at the site entrance.
- It is important to be aware of the level of acceptable loss that your local Solar Farm is willing to accept as this will impact the level of response required from QFES.

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Response:

- Self Contained Breathing Apparatus (SCBA) **must** be worn when working around burning solar panels and BESS due to the highly toxic gases. Under no circumstances should an officer go into the smoke or approach a fire without the correct respiratory protection.
- As RFS do not carry SCBA, RFS officers must not undertake a direct attack of solar panels that are burning, or operations that require crews to work in smoke from burning solar panels. RFS officers will be restricted to fighting exposure fires where the Solar Farm is not burning.
- Isolation of electricity production on solar farms must only be undertaken by an authorised person for the Solar Farm site.
- QFES Staff and volunteers are **not to enter** the solar farm property until an appropriately qualified electricity representative from the Solar Farm is onsite and deems the area safe to enter, and safe to investigate smoke or undertake fire response activities.
- Do not put water on Solar Panels. Emergency responders are to treat all wiring and solar module components as though they are electrically energised.
- Bush Fire Air Operations should operate upwind from the smoke plume of Solar Farm Fires due to the toxicity of the gases and visibility for the aircraft. The aircraft will also attempt to avoid hitting solar panel arrays with firebombing loads due to possible damage to structures and panels.
- When fighting wildfires in the vicinity of a Solar Farm, officers will need to, as per doctrine, wear negative pressure masks with MPC canisters.

Post-Response:

- Responding crews to ensure that all PPC are laundered correctly due to the contaminants.

References

[Electrical Safety Act 2002](#)
[Electrical Safety Regulations 2013](#)
[Old Work Health and Safety Act and Regulation 2011](#)
[How to manage work health and safety risks code of practice 2021](#)
[Construction and Operation of Solar Farms Code of Practice 2019](#)
[A Review on Safety Practices for Firefighters During Photovoltaic \(PV\) Fires Section 4.3.6](#)
[TacG-02-11-00-Hazardous-Materials-Large-Battery-Energy-Storage-Systems-Incidents.pdf \(sharepoint.com\)](#)
[TacG-02-07-00-Electricity-Supply-and-Distribution-Infrastructure.pdf \(sharepoint.com\)](#)
[Tactical Directive \(TacD\) 14.03.00 – Hazardous Material Incidents – Decontamination of QFES Staff and Volunteers and Members of the Community: \(sharepoint.com\)](#)

Assistant Commissioner, QFES People

Relevancy Matrix									
	Fire and Rescue		Emergency Management	Rural Fire Service		State Emergency Service		QFES Support	
	Full-time	Part-time	Full-time	Full-time	Volunteers	Full-time	Volunteers	Full-time	Part-time
Applicable:	✓	✓		✓	✓				
Not applicable:			X			X	X	X	X
Contact: Manager, Safety and Wellbeing 0477 985 925			Issue Date:	Removal Date:					
			21/11/2023						

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Submission 31

From:
Sent: Monday, 24 February 2025 2:55 PM
To: Orange City Council
Cc:
Subject: Development Application DA771/2024(1)-PAN-499518

24 February 2025

Chief Executive Officer
Orange city Council
135 Bing Street
Orange NSW 2800

Dear Mr Waddel

Development Application DA771/2024(1)
Electrical Generation Works (Solar farm) Energy Storage
System
140 Cadia Road, Springside

I **Object** to the proposed development for the following reasons:

This project has provided citizens of Orange with little or no consultation on Solar Farm or wind Turbine Projects in the district.

What is the long term plan for renewables in Orange?

Is this just the start of things to come?

If it is approved in that location, there is nothing stopping more developments in other areas on Oranges outskirts

- The development is in the catchment for Gosling Creek and ultimately Suma Park Dam, the Orange water supply.
- The industrial appearance of the solar farm and the reduction in the appeal to tourists of the region.
- Loss of wildlife during the construction phase.
- Loss of productive land and the unknown long-term damage to soils and pastures.
- Drop in land value in the immediate district to Springside.
- Refection from panels to locals of Springside and Cadia Road users.
- Damage to the environment and disruption to the local community during the construction phase and the

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ongoing maintenance of site.....if this happens.

Please feel free to contact me for clarification or any concerns

Regards

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23 February 2025

Submission 32

CEO Orange City Council

135 Byng St

Orange NSW 2800

Dear Mr Wadell

DA DA771?2024(1)

I object to the above notified development because I do not think a large solar farm is appropriate adjacent to a major wine industry and cycling tourist route

This area is also considered to be prime horticultural land and with increasing impact of climate change it is particularly important for future vineyard development

Your sincerely

Submission 33

24th February 2025

Chief Executive Officer
Orange City Council
135 Byng Street
ORANGE NSW 2800

Dear Mr Waddel

Development Application DA771/2024(1)
Electrical Generation Works (Solar Farm) and Battery Energy Storage System
140 Cadia Road Orange NSW

My name is _____ and I write on behalf of myself and my Husband _____
_____ we reside at _____ on a 60 acre property with picturesque
views to the North over Orange and the surrounding countryside. We have developed our
property over the last 20 years to take advantage of the views our property provides and the
Northern sun into our living areas.

I am writing to formally object to the proposed development of a solar farm in our residential
rural community. While I acknowledge the importance of renewable energy, I strongly
believe that this project is unsuitable for the proposed location due to the following reasons:

1. **Negative Impact on Real Estate Values**
The placement of an industrial-scale solar farm in close proximity to rural residential
properties will significantly reduce property values. Prospective buyers are often
deterred by such developments, leading to depreciation in home values and financial
loss for existing homeowners.
2. **Proximity to Urban Areas and Airports**
The proposed site is situated too close to urban areas and an airport, raising concerns
regarding potential glare hazards for aviation and disrupting planned urban growth.
Such projects should be located in less sensitive and more remote locations to
minimize these risks.
3. **Direct Boundaries with Rural Residential Homes**
The proposed solar farm directly borders rural residential properties, disrupting the
peace and lifestyle of residents who chose to live in this area for its natural
surroundings and rural character. The industrial nature of the project is wholly
incompatible with the existing residential setting.
4. **Loss of Prime Volcanic Soils Suitable for Intensive Agriculture**
The land designated for the solar farm consists of fertile volcanic soils capable of
sustaining high-value agricultural activities, including horticulture, cattle farming, and
fat lamb production. The displacement of productive farmland for industrial energy
production is a short-sighted decision that disregards the long-term economic and
food security benefits that agriculture provides.
5. **Visual Impact on Walking Trails and Recreation Areas**
The scenic beauty of our community, including walking trails and recreational
facilities around Gosling Creek, is a crucial asset that attracts tourism, supports local
businesses, and provides mental respite for residents and hospital visitors. The

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installation of large-scale solar panels will significantly degrade the visual amenity of these spaces, reducing their appeal and impacting tourism-driven economic activity.

6. **Disruption to Community and Local Well-being**

The proposed solar farm is in close proximity to a medical hospital, which serves as a critical healthcare facility for our community. The disruption caused by construction, increased traffic, and changes to the environment will have a negative effect on patients, staff, and visitors seeking peace and recovery in the area.

7. **Lack of Community Consultation**

There has been little to no meaningful consultation with the local community regarding this development. Such a significant project should involve thorough discussions with residents, ensuring their voices and concerns are considered before proceeding.

8. **Unsuitability of the Climate for Solar Power**

The region of Orange experiences severe and long winters, which are not conducive to consistent and reliable solar power production. The inefficiency of solar generation in this climate raises concerns about the project's viability and sustainability.

9. **Location in a Water Catchment Area**

The proposed site falls within a designated water catchment area. Historically, residents have faced restrictions on their own development proposals due to water catchment regulations. Allowing this large-scale industrial project to proceed despite such regulations would be inconsistent and unfair.

10. **Significant Visual and Property Value Impact on Nearby Homes**

The proposed development is less than two kilometers from my property, and the visual impact will be substantial. As my property overlooks the site, the solar farm will ruin previously unobstructed views, negatively impacting the enjoyment and value of my home.

11. **Safety Concerns Due to Glare on a Busy Road**

The proposal site runs adjacent to a very busy road with consistent traffic. The glare from the solar panels at certain times of the day will create hazardous driving conditions, posing a serious risk to commuter safety.

For these reasons, I urge the planning authority to reject the proposal and consider alternative locations that do not jeopardise residential well-being, agricultural productivity, or the natural beauty of our community. I appreciate your time and consideration of this objection and look forward to your response.

Sincerely,

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Submission 34

DA771/2024(1)

PAN -499518

24th February 2025

Chief Executive Officer

Orange City Council

135 Byng Street

Orange NSW 2800

Dear Mr Waddel

Development Application DA771/2024(1)

Electrical Generation Works (Solar Farm) and Battery Energy Storage System

140 Cadia Road, Springside

Subject: Formal Objection to Proposed 28-Hectare Solar Farm Near Orange

Dear Mr Waddel

I am writing to formally object to the proposed 28-hectare solar farm development near Orange, which has been lodged without appropriate consultation with the local community. This development is entirely inappropriate for the area due to its location amongst small agricultural holdings, its significant visual and environmental impacts, and broader concerns regarding land use failure to comply with planning guidelines, property values, and public safety.

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1. Prime Agricultural Land at Risk

The proposed site is located on prime agricultural land with a long history of valuable sheep and cattle grazing, horse breeding, orcharding and viticulture. Productive farmland should not be sacrificed for an industrial-scale solar development when more suitable, less arable land exists nearby.

Orange is outside the NSW Government Renewable Energy Zone (REZ), making this project even more inappropriate. This development threatens the long-term viability of agricultural operations in the area and sets a dangerous precedent for the displacement of farmland for profit-driven industrial projects.

2. This Solar Farm Has Been Shoehorned into the Back of a small rural holding.

Rather than utilizing a more appropriate location within the larger landholding, the solar farm has been shoehorned into the back of a small 40-hectare property utilizing more than 60% of the available land, positioned hard against the boundaries of three adjoining neighbours.

A 28-hectare project located on a 200- or 300-hectare property would have allowed proper setbacks and buffer zones, minimizing the impact on neighbouring properties. Instead, the landowner has positioned the solar farm as far from their own residence as possible while maximizing the negative impact on neighbours.

The choice of a site of appropriate size to facilitate mitigation rather than a site in an area where the property size is on average 50 Hectares or less thereby ensuring significant impacts on neighbours.

The fencing is industrial, not rural, and the proposed plant screening is inadequate and short-lived. One of the restored workers cottages on my property, , has a direct view of the solar site from its kitchen window, permanently altering its rural and heritage character.

To maintain the existing historical landscape, I have already planted a boundary of Cedrus deodara, which grows up to 50 metres tall, to replace the previous Radiata Pines which had existed on the boundary but had outlived their lifespan. My neighbour on the Orange city side is also planting fast-growing screening trees. These plantings will necessitate a redesign of the project and a reduction in its size a fact the developer would have known had they conducted proper consultation.

3. Failure to Adhere to NSW Planning Guidelines

The NSW Department of Planning and Environments Large-Scale Solar Energy Guideline 2022 outlines clear expectations for solar farm developments, emphasizing:

- Consideration of local environmental factors, including proximity to adjoining properties
- Minimization of visual and environmental impacts
- **Early and ongoing engagement with the local community**

Additionally, the Technical Supplement for Landscape Character and Visual Impact Assessment (August 2022) states:

Applicants **must engage** with the community, including the Indigenous community, as early as possible and throughout the assessment, to inform outcomes and any measures to mitigate impacts.

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Importantly, the assessment process should happen alongside the design and siting of a solar energy project so the community input can effectively inform the design.

EDPR, the company behind this proposal and its subsidiary ITP Renewables who submitted the Development Application, have been explicitly criticized in during the consideration of previous applications for failing to consult with affected landowners prior to lodgement, they have been told it is unacceptable behaviour. Despite this, no consultation occurred. This failure to engage is in direct contradiction to NSW Government guidelines and planning best practices.

4. Visual Impact on Residents and the City of Orange

This development will have a substantial negative visual impact on surrounding properties and the broader rural and scenic character of the Orange outskirts.

Additionally, it will impact recreational users of Gosling Creek and the Forest Road area, diminishing the enjoyment of these important public spaces for both residents and visitors.

The proposed visual mitigation measures are inadequate for a development of this scale and will fail to properly screen the industrial structures from view.

5. Traffic & Public Safety Risks Glint & Glare Concerns

The proposed site is near Cadia and Forest Roads, both of which are heavily trafficked, particularly by mining and agricultural vehicles. Any glint or glare from the solar panels that could distract drivers poses an unacceptable safety risk. This issue has not been adequately addressed in the proposal.

6. Environmental & Water Catchment Concerns

The proposed development falls within the hydrological catchment of the Orange water supply. Large-scale land modifications for solar infrastructure can alter surface water runoff and groundwater absorption, potentially impacting water quality and availability. The proposal fails to provide a clear assessment of these risks.

7. Proven Negative Impact on Property Values

Numerous studies demonstrate that industrial-scale solar farms can significantly devalue nearby properties. A 2020 study by Herron Todd White found that properties closely adjacent to large solar farms can experience value reductions of 10-30%, depending on location and visibility.

My rural property, , has been undergoing meticulously landscape and agricultural restoration over the last six years, with over \$1 million invested in restoring the historic value of its garden and associated rural land. The forced proximity of an industrial-scale solar farm will inevitably impact its market value and severely compromise the investment and heritage significance of the property.

8. Destruction of a Significant Garden & Lifeâ€™s Work

was home to one of the most important gardens in the Central West. Over the last six years, I have worked tirelessly to restore this garden, planted over 500 trees, restoring the landscape with the intention of passing this legacy on to my son. We regularly allow charity groups access to the garden to raise funds, the most recent being an event to support those suffering from Parkinson's.

Additionally, our property is part of a scientific trial, in association with the NSW Department of Primary Industries (DPI), measuring the success of DDT contamination removal from land previously used for orcharding.

9. A Development That Can Easily Be Located Elsewhere

Why should the value and amenity of my home and farm restored with years of dedication and financial investment be compromised by a for-profit development that could easily be placed elsewhere.

There is no compelling reason for this project to be located here when:

- Less densely populated rural land exists, where neighbours would not be impacted.
- The site is outside the Renewable Energy Zone, making it a non-priority location for solar energy development.
- Lower-value, less-arable land is available, preserving productive farmland for future generations.

This proposal is a case of opportunism, where a single landowner has chosen to profit at the expense of their neighbours and community. The failure to consult and the deliberate placement of the solar farm against property boundaries demonstrates a lack of responsible planning.

Conclusion

This application is deeply flawed and inconsistent with responsible land use planning. Given the:

- **Total absence of consultation, inadequate setbacks**
- **Significant visual, environmental, and safety concerns**
- **Failure to comply with NSW Planning Guidelines**
- **Documented negative impact on property values and agricultural land**
- **Easy availability of better, alternative locations**

I strongly urge the council to reject this development application.

Yours sincerely

Submission 35

**Submission to Orange City Council Regarding the Development
of Three 5 MW Solar Power Plants and Battery Energy Storage
Systems (BESS) / DA 771/2024(1)**

Date: 24 February 2025

1. Introduction

This submission strongly opposes the proposed development of three 5 MW solar power plants, each with an accompanying Battery Energy Storage System (BESS), at Cadia Road and Lone Pine Avenue, Orange, NSW. The projects, initiated by EDP Renewables Australia, claim to support renewable energy goals but, in reality, present significant environmental destruction, loss of biodiversity, fire risks, water contamination, and long-term sustainability issues that far outweigh any purported benefits.

The push for so-called 'clean and green' energy is a misleading narrative that ignores the substantial environmental and social costs associated with large-scale solar and battery storage developments. These projects require extensive land clearing, disrupting ecosystems and wildlife habitats. The toxic materials used in solar panels and lithium-ion batteries pose a severe risk of contamination, and their production, maintenance, and disposal create pollution at every stage. Additionally, solar farms contribute to local heat island effects, altering microclimates and exacerbating drought conditions.

Despite being presented as a step toward sustainability, these developments prioritize corporate profit over community wellbeing and environmental protection. The residents of Orange, NSW, deserve transparency regarding the full impacts of these projects, including fire hazards, economic disadvantages, and the irreversible harm to local flora and fauna. This submission highlights these critical concerns and presents compelling reasons why the Orange City Council must reject the proposed developments outright.

2. Project Overview

The proposed developments include:

- **Cadia Road Site:** Two 5 MW solar farms with BESS on a 13-hectare site, approximately 5.5 km southwest of Orange's town center.
- **Lone Pine Avenue Site:** A single 5 MW solar farm with BESS (5 MW / 10 MWh) on a 7-hectare site, about 4 km southeast of Orange's town center.

Each site is planned to contain approximately 16,000 solar panels installed on PEG systems, optimized for lightweight, high-density solar infrastructure.

2.1. Footprint and Environmental Disruption

- The combined footprint of these projects exceeds 20 hectares of land that will be permanently altered, stripped of native vegetation, and repurposed into industrial-scale solar infrastructure.
- This large-scale clearing will fragment ecosystems, reducing habitat connectivity for native species and placing additional stress on already vulnerable populations.
- The installation of PEG-mounted solar panels requires land grading and extensive groundwork, leading to soil compaction, erosion, and disruption of natural drainage patterns, which may increase flood risks in adjacent areas.
- The increase in impermeable surfaces will contribute to heightened water runoff, further affecting local waterways and leading to sedimentation that can negatively impact aquatic ecosystems.
- The presence of battery storage units will require additional infrastructure, including high-voltage transmission lines and substations, expanding the industrial footprint even further.
- This level of land transformation contradicts the principles of sustainability and conservation, proving that these so-called renewable projects are neither green nor environmentally responsible.

3. Environmental Considerations

3.1. Impact on Local Ecosystem

- The sites are in proximity to rural and natural landscapes, requiring an environmental impact assessment (EIA) to determine potential harm to local flora and fauna.
- Potential disruption to existing biodiversity corridors, particularly for bird species and small mammals, must be thoroughly investigated.
- Habitat loss and fragmentation concerns similar to those raised in the Beryl BESS project must be addressed to prevent adverse effects on species such as the Grey-crowned Babbler (*Pomatostomus temporalis*) and Eastern Pygmy Possum (*Cercartetus nanus*) (NSW Wildlife Atlas, 2023).
- The presence of high-voltage transmission infrastructure will pose an additional hazard to bird populations, particularly large raptors and migratory species vulnerable to electrocution and collision.

3.2. Soil and Water Contamination Risks

- The land alteration required for PEG system installation could lead to soil degradation, increased runoff, and sedimentation affecting local waterways.
- There is no mention in the current documentation regarding water requirements for cleaning and maintaining the solar panels. The council must ensure a sustainable water management plan is in place.
- Given the proximity to local waterways, there is a risk of soil and water contamination, particularly from lithium-ion BESS leakage, as seen in similar projects. Lithium, nickel, and cobalt leaching from batteries can cause long-term damage (Battery University, 2022).
- The use of firefighting foams containing per- and polyfluoroalkyl substances (PFAS) in case of BESS fires poses a significant risk to water quality. PFAS chemicals do not

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break down in the environment and have been linked to severe health and ecological consequences.

3.3. Fire Safety and Thermal Runaway Risks

- Lithium-ion batteries are prone to thermal runaway, a process that can cause overheating and fires, releasing toxic gases such as hydrogen fluoride (Moss et al., 2020).
- The NSW Work Health and Safety Act 2011 requires comprehensive fire risk mitigation strategies, which must be detailed in the development documentation (SafeWork NSW, 2011).
- The release of toxic gases can pose serious health risks to local residents, emergency responders, and wildlife, particularly in bushfire-prone areas (NSW Rural Fires Act 1997).
- PFAS-containing firefighting foams used to combat BESS fires pose long-term contamination risks to soil and groundwater.

3.4. Heat Island Effect and Microclimate Alteration

- The BESS facility will generate significant heat during operation, contributing to localized warming, impacting soil moisture, and potentially altering weather patterns over time (CSIRO, 2023).
- Without adequate mitigation strategies, increased temperatures may exacerbate drought conditions and negatively impact surrounding vegetation and wildlife.
- Large expanses of solar panels will reflect and absorb heat, further disrupting local temperature regulation and worsening the urban heat island effect.

3.5. Toxic Waste and Long-Term Pollution Risks

- The production and disposal of solar panels involve hazardous chemicals such as lead, cadmium, and PFAS, which pose a serious risk to human and environmental health.
- The decommissioning of solar panels and battery storage units lacks a clear strategy, leading to concerns over landfill accumulation and long-term leaching of toxic substances.
- Many solar panels have an average lifespan of 20-25 years, after which they become electronic waste, with recycling processes that remain inadequate and inefficient.

4. Community and Economic Impacts**4.1. Impact on Local Residents**

- The proximity of the projects to residential areas raises concerns about potential noise pollution, especially from BESS cooling systems and inverters.
- Glare from solar panels may affect nearby homes and roadways, requiring proper mitigation measures.
- The aesthetic degradation of the landscape will diminish property values, leading to financial losses for residents.
- Health concerns related to EMF (electromagnetic field) exposure from BESS and high-voltage infrastructure require further independent investigation.

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- Increased industrialization of the area will erode the rural character and negatively impact residents' quality of life.
- The potential for toxic smoke emissions during a fire incident poses significant health risks to nearby residents, requiring detailed evacuation planning.
- The construction phase will bring heavy traffic, noise, and dust pollution, significantly affecting local residents for extended periods.

4.2. Economic Viability and Energy Contribution

- The proposal must clarify how the energy output will benefit Orange residents beyond general contributions to the grid.
- Job creation for local workers should be prioritized over reliance on external contractors.
- The reliance on foreign-manufactured solar panels and battery components undermines local economic benefits and increases supply chain vulnerabilities.
- The economic cost of maintaining and eventually decommissioning these installations is often underestimated, leading to potential long-term financial burdens on the community.
- Solar and battery storage facilities require specialized maintenance, meaning local workers may not be employed beyond the construction phase.
- There is no guarantee that the energy produced will remain in the local area, as it will likely be exported to other regions, providing no direct benefit to Orange residents.
- Land repurposed for industrial-scale solar prevents alternative, more sustainable economic uses, such as agriculture or ecotourism, which provide long-term community benefits.

4.3. Fire and Safety Risks

- Lithium-ion BESS installations pose significant fire hazards due to thermal runaway risks, requiring substantial emergency preparedness measures.
- The ability of local emergency services to respond effectively to BESS fires must be evaluated, as traditional firefighting methods are insufficient against battery-related fires.
- The use of PFAS-containing firefighting foams introduces long-term environmental contamination concerns, making fire response strategies a critical issue.
- The release of toxic gases, including hydrogen fluoride, during battery fires poses extreme health risks to local residents and first responders.
- If fire suppression systems fail, large-scale evacuations may be required, disrupting entire communities.
- The lack of clarity around decommissioning and waste management strategies for expired lithium-ion batteries raises concerns about abandoned infrastructure and toxic waste sites in the future.

4.4. Agricultural Disruptions

- The conversion of agricultural land into solar and battery storage facilities permanently removes fertile soil from production, reducing local food security.
- Increased dust and soil degradation during construction can affect surrounding farmlands, leading to lower crop yields and economic losses for farmers.

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- The introduction of industrial-scale energy production in a rural setting increases the risk of chemical runoff contaminating agricultural water supplies.
- The cumulative impact of multiple renewable energy projects in the region will further stress agricultural viability, pushing farmers out of productive industries.

4.5. Tourism and Regional Branding Impacts

- Orange is recognized for its natural beauty, wine regions, and agritourism. The visual pollution created by these industrial solar farms will damage the area's appeal to visitors.
- The presence of large-scale solar farms disrupts the landscape, impacting local tourism businesses and reducing regional income from visitors.
- The destruction of native habitats and scenic rural landscapes contradicts Orange's branding as a pristine, environmentally conscious region.

4.6. Long-Term Economic Burden and Waste Management

- Decommissioning solar farms and BESS installations remains an unresolved issue, with no clear financial or logistical plans for waste management.
- The majority of solar panels used today are non-recyclable, meaning that at the end of their lifespan, they will contribute to Australia's growing electronic waste crisis.
- Abandoned solar farms have been observed in other regions where developers have failed to fulfill decommissioning obligations, leaving hazardous waste behind for local governments to manage.
- The economic liability of ensuring proper disposal of toxic battery materials will likely fall on local councils and taxpayers rather than project proponents.

4.7. Disproportionate Burden on Local Communities

- While corporate stakeholders profit from large-scale renewable projects, local communities bear the environmental and economic consequences.
- The social fabric of rural communities is at risk, as industrial-scale renewable energy projects often lead to depopulation and economic stagnation in affected areas.
- Communities already struggling with employment opportunities may find that promised renewable energy jobs are either temporary or outsourced, offering no sustainable benefits.
- The erosion of agricultural land for solar developments prioritizes corporate interests over the livelihoods of farmers and rural workers, further exacerbating economic disparity

5. Compliance with Local and State Regulations

The proposed solar farms and battery energy storage systems present multiple breaches of local and state regulations, highlighting severe non-compliance concerns. These include:

- **Environmental Planning and Assessment Act 1979 (NSW):** The projects fail to balance development needs with environmental conservation, neglecting critical assessments of biodiversity destruction and ecosystem fragmentation.

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- **Biodiversity Conservation Act 2016 (NSW):** The impact on threatened species and ecological communities is inadequately addressed, violating legal requirements to mitigate biodiversity loss.
- **Protection of the Environment Operations Act 1997 (NSW):** The lack of proper safeguards against soil, water, and air pollution, particularly regarding lithium-ion battery leaks and PFAS contamination, presents a direct breach of environmental protection laws.
- **Work Health and Safety Act 2011 (NSW):** Insufficient planning for fire safety and emergency response for lithium-ion battery fires violates workplace health and safety obligations, exposing workers and residents to unnecessary risks.
- **Rural Fires Act 1997 (NSW):** Given the high fire risk associated with BESS installations, the lack of comprehensive risk management strategies breaches regulatory obligations to prevent fire hazards.
- **Water Management Act 2000 (NSW):** The absence of detailed water usage and runoff management plans raises significant concerns about compliance with water protection policies.
- **Waste Avoidance and Resource Recovery Act 2001 (NSW):** The failure to provide a clear decommissioning and waste management strategy for solar panels and battery storage units violates legal requirements for responsible disposal and recycling of hazardous materials.

These extensive regulatory breaches underscore the unsuitability of the project and the necessity for its rejection. The Orange City Council must enforce strict compliance with environmental and safety regulations to protect the community and ecosystem from irreversible damage.

6. Recommendations

Given the overwhelming environmental, economic, and safety concerns associated with these proposed developments, it is imperative that the Orange City Council takes decisive action to reject these projects outright. The following recommendations must be implemented to ensure community safety, environmental protection, and long-term sustainability:

6.1. Immediate Rejection of the Project

- Based on the identified breaches of environmental, planning, and safety regulations, the Orange City Council must reject the development applications in their entirety.
- The approval of such projects would set a dangerous precedent, prioritizing corporate interests over community welfare and environmental preservation.

6.2. Comprehensive Environmental and Safety Review

- Conduct a full-scale, independent Environmental Impact Assessment (EIA) that includes cumulative effects from multiple renewable projects in the region.
- Commission third-party safety reviews specifically addressing fire hazards, toxic material leakage, and PFAS contamination risks associated with BESS facilities.
- Mandate ongoing air and water quality monitoring for any similar projects proposed in the future.

6.3. Protection of Agricultural and Residential Land

- Implement strict zoning restrictions to prevent large-scale industrial renewable projects from being approved in close proximity to agricultural land and residential communities.
- Recognize the importance of preserving local farmland and ecosystems rather than converting them into hazardous industrial solar waste zones.

6.4. Holding Developers Accountable

- Enforce stringent financial penalties and legal consequences for developers failing to comply with environmental and safety regulations.
- Require legally binding decommissioning plans that ensure the full removal and safe disposal of toxic materials after the project's lifespan.
- Implement a mandatory community impact levy, ensuring any approved projects directly fund local environmental restoration initiatives.

6.5. Promotion of Truly Sustainable Energy Solutions

- Encourage investment in alternative renewable technologies, such as microgrid-based solar solutions that do not require extensive land clearing or grid-scale storage facilities.
- Support energy projects that enhance rather than degrade local biodiversity, including distributed solar installations on already-developed sites like rooftops and car parks.
- Develop policies that prioritize community-owned renewable projects, ensuring that profits remain within the local economy instead of multinational corporations.

6.6. Increased Transparency and Public Consultation

- Require all renewable energy projects to undergo thorough public consultation, ensuring affected residents have a meaningful say in the decision-making process.
- Mandate that developers disclose all project risks, including fire hazards, contamination threats, and economic disadvantages, in accessible and non-technical language.
- Establish an independent regulatory body to oversee renewable energy developments and ensure accountability.

7. Conclusion

It is undeniable that the proposed solar farms and battery energy storage systems will result in irreversible environmental damage, economic burdens, and significant safety risks. While renewable energy projects are being promoted as a path to sustainability, this proposal exemplifies how corporate interests overshadow the long-term well-being of local communities, agriculture, and ecosystems. The destruction of remnant vegetation, contamination of soil and water sources, increased fire hazards, and the failure to ensure responsible decommissioning make it clear that these projects do not align with true environmental responsibility or community benefit.

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Attachment 5 Submissions x 42 (redacted)

The Orange City Council has a duty to prioritize the health, safety, and prosperity of its residents over the financial gains of energy corporations. Approving these developments would set a dangerous precedent of allowing industrial-scale renewable energy projects to encroach upon agricultural and residential land without adequate oversight. Furthermore, the extensive breaches of local and state regulations demonstrate that these projects are neither legally compliant nor ethically justifiable.

For these reasons, we urge the Council to **reject the proposed developments** in their entirety and instead advocate for responsible, truly sustainable energy solutions that do not jeopardize local ecosystems, agriculture, or community well-being. **Orange deserves better.**

References

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5. PV Magazine Australia. (2025, February 5). *EDP Renewables plans multiple solar and storage sites for inland city*. Retrieved from: <https://www.pv-magazine-australia.com/2025/02/05/edp-renewables-plans-multiple-solar-and-storage-sites-for-inland-city/>
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7. CSIRO. (2016). *Challenges for changing electricity delivery in South East Queensland*. Retrieved from: https://research.csiro.au/climate/wp-content/uploads/sites/54/2016/03/15_CAF-WP15-electricity-delivery-SEQ.pdf

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Submission 36

DA771/2024(1)

PAN-499518

24th February 2025

Chief Executive Officer

Orange City Council

135 Byng Street

Orange NSW 2800

Dear Mr Waddel

Development Application DA771/2024(1)

Electrical Generation Works (Solar Farm) and Battery Energy Storage System

140 Cadia Road, Springside.

Executive Summary

I write to OBJECT to the above proposal on the following grounds.

1. Lack of Consultation
2. Visual Impact
3. Traffic concerns
4. Proximity of the Development

Background.

I was born in Orange in 1979. I spent the first part of my life growing up in town, before moving out to a small property located in the Village of Borenore. It was my parents dream to live and raise their family in a rural setting, which in turn became my dream to live and raise my own family in the same way.

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My wife and I realised this dream when we where able to purchase
in . With the intention to extend and modernise
our home to capture the surrounding views from our living spaces.

Situated only 5.5kms from the centre of Orange meant that we could access the
benefits of living close to a major inland city and enjoy living in a rural setting with
visually pleasing views and country lifestyle. We also purchased to be
close to family as my partners parents own the adjoining land and house to our cottage,

Our cottage is identified as OP 2 on the Visual Impact Statement and R 01 on the Noise
Impact Statement and sits approximately 200 metres from the proposed development
on the southern side. From statements in the EIS our cottage is the most affected of all
the dwellings in the surrounding area to the development.

Objection 1.

Lack of Consultation:

In the entire time we have owned there has been zero consultation
from the proponent. After receiving the notice of the development application, I reached
out to the previous owners, who also advised that they had not had any consultation
regarding the proposed development.

In Referencing the Large-Scale Solar Energy Guideline August 2022

Section 3 Community and Stakeholder Engagement.

***Applicants must undertake meaningful engagement with stakeholders throughout
the environmental impact assessment process and during the construction,
operation and decommissioning phases of a project. They must consult the
community according to the Undertaking Engagement Guidelines for State
Significant Projects.***

Based on this, I feel they have failed to meet their obligations according to the
guidelines.

Also, as part of the Environmental Impact Statement (EIS) the proponent must
according to the guidelines:

***Applicants must also ensure that stakeholders are given the opportunity to
participate in the engagement process in a meaningful way. The environmental
impact statement should include details of consultation with surrounding
residents, community members, relevant authorities and councils. This includes***

Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road Springside

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the key matters raised and how feedback was considered and incorporated into the project.

The proponents EIS does not include any mention of the above, clearly neglecting the most basic of guidelines set out in the Large-Scale Energy Guideline August 2022.

This alone outlines the lack of due diligence and respect for the community and stakeholders and in is totally unacceptable.

Objection 2.

Visual Impact:

As stated previously our house is OP 2 in Figure 2 of the visual impact assessment.

It is approximately 200m from our boundary to the boundary of the development and approximately 250m from our Kitchen window to the development boundary.

We have north facing living and kitchen areas, with large windows which gives a very pleasing rural view from these areas of our house. It is from these areas we will look directly at the proposed development.



Picture 3: View from Lounge Room Window - proposed site marked in red



Picture 4: View from our deck - proposed site marked in red



Picture 1: View from the entrance of our house - proposed site marked in red



Picture 2: View from kitchen window - proposed site marked in red

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As stated in the proponents VIA in Table 4 our house is rated **High** for **Magnitude**, **Sensitivity** and **Impact** rating as well as 4 other dwellings. A further 8 have moderate visual impact as stated.

The proposed use of screening would be unacceptable as the proponents proposed screening will be ineffective given the size of the screen and land's topography. The land in which the screen would be planted lays (for most part) in a natural water course and this land during the wetter seasons is swamp like and would make near impossible growing conditions for the vegetation suggested in the EIS.

I query, how long will it take to establish an effective screen to mitigate the visual impact, are we as stakeholders expected to put up with the unsightly industrial look of the solar farm until this happens? What will happen once the project is decommissioned in the 35-year period as stated? The proposed screen will negatively impact our aspect and when fully grown, will erode our view from our private space.

In reference to the Technical Supplement for Landscape Character and Visual Impact Assessment:

Performance objectives

Applicants must address the relevant performance objective for each assessable viewpoint and the identified level of impact (Table 8).

Table 8. Visual performance objectives

High visual impact	This level of impact should be avoided unless the applicant has a negotiated agreement with the affected landholder or can justify that: • all reasonable efforts have been made to avoid the impact and alternative project designs are not feasible or would be unlikely to materially reduce the impact, • all reasonable mitigation options have been considered, • the proposed mitigation measures would effectively mitigate the impact and would not result in a significant obstruction of views, • the project site is strategically important because of its location, and • the project is in the public interest.
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The proponents have not addressed the recommendations set out in Technical Supplement for Landscape Character and Visual Impact Assessment.

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Glint and Glare:

Our house is identified as OP 02 in Figure 9 of the Glint and Glare Study.

According to this study OP02 received the most glare with a cumulative total of 93.62 Hr/Yr of yellow and green glare. This equates to approximately 15.38 mins per day.

As seen in Table 2 in Section 5 of the Assessment issues and requirements of the Large-Scale Solar Energy Guideline August 2022 our house exceeds the hours per year for both High glare impact and Moderate glare impact per year, also stating that Significant amount of glare should be avoided.

Table 2. Impact rating and performance objectives for glare impacts to residential dwellings

High glare impact	Moderate glare impact	Low glare impact
> 30 minutes per day > 30 hours per year	< 30 minutes and >10 minutes per day < 30 hours and >10 hours per year	< 10 minutes per day < 10 hours per year
Significant amount of glare that should be avoided.	Implement mitigation measures to reduce impacts as far as practicable.	No mitigation required

I ask why is this acceptable? Why has there not been any consultation from the proponent? How can a study define it as acceptable when guidelines state otherwise.

If the proponents would have conducted their due diligence in line with the guidelines set out by the New South Wales Government I feel this project would not have even made it to the Development application stage.

Objection 3.**Traffic:**

The traffic and parking impact statement provided by the proponent does not factor in any Local, Cadia Mine or School bus stops in its assessment.

Given that there are approximately 500 people that work at the mine over a 24hr period there is traffic along Cadia Road at all times of the day due to the nature of the shift work and contractors that travel this road. This does not include local residents that also travel this road on a daily basis.

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There also is a school bus that runs morning and afternoon and has stops at 166 Cadia Road and 140 Cadia to pick up and drop off children during school terms. It would be an accident waiting to happen given that the access point for this development is via 140 Cadia Rd driveway.

As shown in the traffic report the B Double trucks that will enter from the north will need to leave the roadway to allow for the turn into the access point. This will lead to road damage on the edge of the bitumen causing a hazard to fellow road users.

It appears that according to the diagram that the access point is too narrow and would encroach on the neighbour's driveway.

Objection 4.**Site Selection:**

I question how this site for this development was chosen. If there was a true and proper scope for acceptable sites along Cadia Rd using the guidelines set by the NSW Government I believe we would not be here writing objections. The site is too close to several Dwellings (5 high impacted and 8 Moderate impacted). It is situated along a natural watercourse; in a wet winter the chosen site is known for being swampy and inaccessible to any vehicles. The proposed use of sheep to control the growth of pasture will not be adequate during winter as sheep do not like wet ground conditions and are susceptible to foot rot, furthermore accessibility of any mechanical forms of transport or mowing equipment will also be limited. Overall the site does not add up to be an appropriate choice for this type of development.

Below picture of the watercourse the proposed screening is to be planted in:



Summary:

My family and I moved to _____ to live in a rural setting and raise our children, where we can enjoy the landscape that is from the private areas of both our house and yard. Every morning, I look out our kitchen window to see the livestock, native birds and animals across the paddocks. If this development was to be approved our views and rural aspect will be eroded.

The insufficient proposed screen will not be enough to hide the solar farm, nor the ground conditions sustain it. It will take years to get to a state where if at all it will block the panels from view, only in the meantime we will have to endure the effects of the glint and glare that will come from it.

If the proponents would have done their due diligence and engaged the local landholders at the scoping stage as per the guidelines, we may not have even purchased the land knowing that this development was to be pursued. We feel that we have been misled by the lack consultation and now possibly could have to endure its 35-year lifespan. Even when it's decommissioned the screening trees will still be there to block our views, left to grow without them being maintained, closing in the aspect we have now.

I am not against renewable energy; it has a place in our world going forward. Orange is not a place where these solar farms perform well, our area is in the bottom 25% of solar producing sun in the state, we are not even in the Government Renewable Energy Zone.

It is a case of the wrong development in the wrong place, and this is why I OBJECT to its proposal.

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Attachment 5 Submissions x 42 (redacted)

Submission 37

From:
Sent: Monday, 24 February 2025 5:00 PM
To: Orange City Council
Subject: Objection to proposed solar farm

24/02/2025

Chief executive officer
Orange City Council
135 Byng Street
Orange NSW 2800

Subject: Objection to proposed 28-Hectare Solar Farm

Dear Mr Waddel,

I am writing to object to the proposed solar farm, near Orange.

As the future owner of development. I have several concerns regarding this development.

The location of the proposed solar farm is adjacent to several small rural properties, directly impacting the character of this area. There are better suited sites for a development of this size.

The immediate proximity to property boundaries, will have a significant visual and noise impact. Especially for our current tenants, who are renting the cottage in the south-east corner of our property, the development is less than 150m away with direct field of view. The surrounding paddocks are also home to their 26 horses, which would be disturbed by the noise.

We have put immense effort over the past years to improve the state of this property and this garden. I am very concerned about the impact of this development on the value of our property and the surround area, as I will be living there for the next 50 years.

At last, there hasn't been adequate consultation to assess the impact of this development on the local community.

Yours sincerely,

Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road Springside

Attachment 5 Submissions x 42 (redacted)

Submission 38

From:
Sent: Monday, 24 February 2025 5:07 PM
To: Orange City Council
Subject: FW: Development Application DA771/2024(1)-PAN-499518

24 February 2025

Chief Executive Officer
Orange city Council
135 Bing Street
Orange NSW 2800

Dera Mr Waddel

Development Application DA771/2024(1)
Electrical Generation Works (Solar farm) Energy Storage System
140 Cadia Road, Springside

I **Object** to the proposed development for the following reasons:

This project has provided citizens of Orange with little or no consultation on Solar Farm or wind Turbine Projects in the district.
What is the long term plan for renewables in Orange?
Is this just the start of things to come?
If it is approved in that location, there is nothing stopping more developments in other areas on Oranges outskirts

- The development is in the catchment for Gosling Creek and ultimately Soma Park Dam the Orange water supply.
- The appearance of the solar farm and the reduction in the appeal to tourists to the region
- Loss of wildlife during the construction phase.
- Loss of productive land and the unknown long term damage to soils and pastures
- Drop in land value in the immediate district to Springside
- Refection from panels to locals of Springside and Cadia Road users.

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Springside**

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- Damage to the environment and local community during the construction phase and ongoing maintenance of site

Please feel free to contact me for clarification or any concerns

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Attachment 5 Submissions x 42 (redacted)

Submission 39 (2 of 2 submissions)

From:
Sent: Monday, 24 February 2025 7:09 PM
To: Orange City Council
Subject: Supplementary submission on DA re 140 Acadia Road

Objection to proposed industrial solar factory at 140 Cadia Road Orange 2
Supplementary submission
Submission to Orange Council - council@orange.nsw.gov.au
Name:
Phone:
Post:
Email:
Reportable political donations and/or gifts: NIL
DA number: DA 771/2024 (1) – PAN - 499518
Site address: 140 Cadia Road, Springside, ORANGE NSW

Additional Background:

is the developer of the proposed 10MW, 16,000 solar panels and a Grid Scale Lithium Battery (an industrial scale solar energy factory (not a farm)) and with a 2.3M high security surrounding the site/s at 140 cadia Road, Springside, Orange.

Grounds for Objection: Developer deception

EDPRA is presenting this development as two separate solar factories each producing 5MW of electricity. These 2 x 5MW are both proposed on the same property (note site is 140 Cadia Road) and therefore should be considered as a 10MW development.

It should be noted that a solar factory of 5MW or under to avoid stricter connection rules that apply to larger developments greater than 5MW.

This developer is deceiving authorities and Orange Council should not be complicit by approving this project.

Grid Scale Lithium Battery contamination

Information regarding the fallout and impact on people in the vicinity of the Moss Landing (California) grid scale lithium battery fire on 16 January 2025. Please see link:

Environmental tests reveal elevated levels of toxic metals since Moss Landing battery fire - Local News Matters

[Environmental tests reveal elevated levels of toxic metals since Moss Landing battery fire - Local News Matters](#)

END.

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Attachment 5 Submissions x 42 (redacted)

Submission 40

From:
Sent: Monday, 24 February 2025 11:43 PM
To: Orange City Council
Cc:
Subject: Reference Numbers: DA 771/2024(1) - PAN-499518 - INDUSTRIALISED SOLAR + BATTERY ENERGY STORAGE SYSTEM objection submission
Attachments: Grass Fire Shuts Down Beryl Solar Farm 26 April 2023.pdf; How Solar Farms Can Damage The Environment Firetrace International 11 Oct 2022.pdf; No Deal Country Firefighters Refuse To Fight Wind Turbines and Solar Panel Fires 27 June 2024.pdf; Telsa battery on fire at Bouldercombe energy storage site Genex confirms 27 Sept 2023.pdf; Forever chemicals being found literally everywhere January 2025.pdf; Ecological Nightmare Wind and Solar Rollout Delivers Permanent Environmental Destruction 9 Aug 2024.pdf; EV Explosion Lithium Battery Fires Provide New and Exciting Firefighting Opportunities 10 Aug 2024.pdf; As Victoria bushfire season looms one powerful reminder of Black Saturday hangs in the air 2 Jan 2024.pdf; Remembering Black Saturday 15th anniversary (1).pdf

Dear Orange NSW Council and Senators,

I object and do NOT consent to Reference Numbers: DA 771/2024(1) - PAN-499518 - INDUSTRIALISED SOLAR + BATTERY ENERGY STORAGE SYSTEM because of the extreme potential environmental harm solar farms and battery energy storage systems does to livestock, wildlife, drinking water, the unique and valuable ecosystem and biodiversity, as well as being extremely flammable bushfire toxic smoke and bushfire risk, especially as they are connected to dangerous and potentially flammable high voltage transmission lines.

Why are these high voltage transmission lines so dangerous? Because

Just over sixteen years ago, on the 7th of February 2009, 6 out of the 11 Black Saturday fires that took 173 lives and did untold damage to property, livestock and wildlife, were started by high voltage transmission lines. This was such a devastating, large scale catastrophe that a Royal Commission was called to investigate why these fires happened and how they could be prevented in the future - [VBRC_Summary_Pf.pdf](#), [Remembering Black Saturday - 15th anniversary | Emergency Victoria](#).

Cameron Stuart of Britannica.com on the 20th of January 2025 ([Black Saturday bushfires | Causes, Deaths, Map, & Location | Britannica](#)), described the horrific, catastrophic, devastating Black Saturday fires in detail:

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"On February 7 Victorians were told to brace for the "worst day" in the state's history: weather forecasters warned of a record [heat wave](#) with temperatures soaring to 115.5 °F (46.4 °C), combined with gale-force winds of up to 56 miles (90 km) per hour. That day more than 47 major fires erupted across the state, 14 of them claiming lives or causing significant damage. The most deadly [conflagration](#), known as the Kilmore East fire, which claimed 121 lives, was sparked by a faulty power pole near the township of Kilmore East, 37 miles (60 km) north of [Melbourne](#). The flames quickly jumped a major highway and roared into a forest, where they turned into a giant fireball, dwarfing the resources of local firefighters, who could only flee in its path. Aided by steep slopes and powerful winds, this fire raced through a series of townships, including Kinglake (where 38 people died), Strathewen (27 perished), and [St. Andrews](#) (12 were killed), catching residents by surprise and trapping many in their homes. Some sought to escape by car as the fires approached, but dozens died on the roads as they were overtaken by the fire, which leapt 330 feet (100 metres) above the tree line and was powerful enough to kill with [radiant](#) heat from nearly 1,000 feet

Late in the afternoon a sudden change in wind direction pushed the fire to the northeast, bringing new towns into its path. A parallel fire, known as the Murrindindi fire, also blew to the northeast, swallowing the unsuspecting tourist town of Marysville, where 34 people lost their lives. Fire experts said that these two fires alone released [energy](#) equivalent to that of 1,500 atomic bombs like [the one dropped on Hiroshima, Japan](#)."

Fire experts said that these two fires alone released [energy](#) equivalent to that of 1,500 atomic bombs like [the one dropped on Hiroshima, Japan](#)."

Not only are lithium battery factories extremely dangerous, but they are also deadly [Lithium battery factory fire kills 22 in South Korea](#).

In California, it was reported that it was PG&E's powerlines that had sparked the recent horrific and deeply devastating fires - , [How Did The California Wildfires Start? Officials Weigh Power Lines, Fireworks—And Arson \(forbes.com\)](#), [PG&E's Lengthy Record of Starting Wildfires, and What the Company Is Doing to Change It \(californialocal.com\)](#) and in fact, PG&E was found to be responsible for the worst fire in California history - the Camp Fire ([Customers of PG&E, other utilities pay billions for wildfire prevention- CalMatters](#))

"POWER LINES AND ELECTRIC INFRASTRUCTURE

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Springside**

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Multiple residents of Altadena sued Southern California Edison on Monday, alleging the Eaton Fire was started by the company's electrical equipment. The lawsuits cite [eyewitness reports of sparking power lines](#). The company has pushed back against the theory, saying in a [statement](#) Sunday its "analysis shows no interruptions or operational/electrical anomalies in the 12 hours prior to the fire's reported start time until more than one hour after the reported start time of the fire." One of the filed complaints [reportedly](#) alleged, "there is clear evidence from video footage, photographs, and witness accounts that the fire was caused by electrical equipment operated by Defendants Edison International and Southern California Edison." Power infrastructure has been a leading cause of fires in California in the past—with eight of the state's 20 most destructive fires having power-related causes—and the amount of fires started by equipment has grown recently, [The New York Times](#) reported."

Interestingly enough,, prior to the recent wildfires in California, PG&E had a mitigation plan, which as you can very plainly see did NOT stop the extremely horrific, deadly and destructive California Wildfires from happening, much less actually put them out, and so now, what will happen to all the taxpayers who lost their homes, livelihoods, pets, etc because of PG&E's powerlines sparking the tremendously fast moving fires throughout Southern California, doing untold damage, along with taking lives?
(TN13803_20240402T112956_PGE's_2025_Wildfire_Mitigation_Plan_Update.pdf).

And then there is the astronomical and, in my opinion, completely irresponsible and unjustifiable cost of these renewables:

Stated in the 2025 SUBMISSION TO CSIRO'S DRAFT 2024-25 GENCOST REPORT.pdf

"3.0 Capital Cost Factors GenCost defines future capital cost factors 6 for various generation and storage technologies. It observes recent years when freight and raw materials rapidly increased costs. Its use of a 2006 to 2009 price bubble to show prices returned to previous expectations is not entirely realistic since the industry was much smaller at that time and basic power costs affecting manufacturing have been recently escalating much more rapidly. GenCost's contention that "... inflationary pressures for most technologies and the cost of some...such as solar PV and batteries are falling again" is contestable. We believe this is only a small part of the story. In our view: • Renewables are now relatively mature technologies after 30 years of intensive development, thus making assumptions of substantial future cost decreases too optimistic. • Labour costs have been hit with high inflation recently; these costs are not going to go down. • The dominance of one country, China, in the entire supply chain for renewables makes higher future prices likely as competition is stifled and hence deserves more careful analysis. • Increasing demand in global markets may cause price rises. • Shipping costs are being hit by increasing fuel

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Springside**

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costs. • Operating costs of renewables are greater than anticipated, as the UK and Germany have found. • Subsidies for the cheapest form of electricity generation, which surely should not still be necessary) could be reduced, adding to manufacturing costs. Compounding the uncertainties in predicting future costs are: a. realisation that the extraordinary costs involved are not affordable nor sustainable, b. the negative impact on national economies from unreliable intermittent power, c. many countries, including the largest, doing nothing or very little, to meet Net Zero goals, d. the withdrawal of the US from the Paris Accord, e. the mounting market failure of EVs, f. recognition that the science of climate catastrophism is overstated and overhyped, and g. the severe environmental impacts of solar and wind generation installations being regarded as unacceptable. 6 GenCost Section 5 P3"

This report/submission was written by 19 independent engineers and professionals who are all well qualified to comment on the true costs of implementing the government's Net Zero 2050 policy for the National Electricity Market (NEM):

Professor Michael Asten, PhD, BSc (Hon), BLitt, FRAS Ben Beattie, BE(Elec), CPEng RPEQ Jeremy Barlow, BE, MBA, FAIMM William Bourke, BSc, BEng (Aero), MEng Sc. Michael Bowden IEng (Electronics-UK); CPL; CQP Rafe Champion, MSc (History and Philosophy of Science), B.Ag.Sc. (Hons) Arthur Day, PhD, BSc (Hon) Paul R C Goard, BSc, Physicist, M.A.I.P., M.I.of P., M.A.I.E., M.A.M.O.S. Peter J F Harris, BEng, Dipl. Prod Eng. Professor Emeritus Aynsley Kellow, BA(Hons) PhD Bryan Leyland, MSc (Power systems) DistFEngNZ, FIMechE, FIEE (rtd) John McBratney, B. Tech (Electronic Engineering), formerly MIE Aust, MIEEE John McLean, PhD Paul Miskelly, BE MEngSc Electrical Engineering Grant Piper, BE Aero UNSW, FRAeS, Chair NREN Peter Ridd, PhD, BSc James R (Jim) Simpson, (Ret., former business unit manager, OTC & Telstra) Bill Stinson, Dip.Tech(Building), B.AppSc.(Building), Dip Labour Relations & Law, Cert. Design Sc. (Facilities) James Taylor, PhD, MSc, BEng Elect (Hon), PEng, FCASI

Submission 40 - Attachment 1

Grass fire shuts down Beryl Solar Farm

April 26, 2023



Beryl Solar Farm

A grass fire has resulted in the shutdown of Beryl [Solar Farm](#), located 5km west of Gulgong in New South Wales.

Related article: [Toxic blaze breaks out at Victorian Big Battery](#)

Crews from NSW Rural Fire Service (NSW RFS) and Fire and Rescue NSW (FRNSW) worked to extinguish the grass fire burning under solar modules at Beryl Solar Farm on Monday.

Firies said they were struggling to reach the flames.

"The fire is burning under the solar panels, making access difficult for firefighters," a NSW RFS spokesman told [news.com.au](#).

"A large column of smoke could be visible from Gulgong."

The solar farm supplies power to the Sydney Metro Northwest rail link.

A spokesperson for the solar farm said all plant personnel were safe and accounted for.

Related article: [Ausgrid launches annual bushfire prevention program](#)

"The site has been secured, and there were no injuries. BSF thanks the first responders who assisted the site teams with this effort."



Submission 40 - Attachment 2



How it Works	Products	Applications	Resources
	Indirect Release Systems	Wind Energy Storage	Blog Case Studies Videos
	Direct Release Systems	Manufacturing & Machining	Reports Instruction Manuals
	High Pressure CO2 Systems	Collectors Container Handling	Certification Webinars
	Electrical Systems	Equipment	Submit A Support Ticket
	FK-5-1-12 Systems	Electrical Panels	
	FlexRope	Military Ground	
	Engineered System	Vehicles Military	
	FM-200	Aircraft	
	Clean Agent		
	FK-5-1-12		
	Clean Agent		

How Solar Farm Fires Can Damage the Environment

October 31, 2022 | By **Firetrace International**



A fire at a **solar farm** can result in pollution as well as posing a serious threat to human life and health – consequently it's vital you protect your solar project from fire risk.

A fire at a solar farm can have devastating consequences for the surrounding environment. This is in addition to the obvious risks fires pose to human health. The damage can include air pollution, water pollution, fatalities, bronchitis, **the** **and** **other** lung diseases in the local population.

How Big Can Solar Fires Get?

Despite studies showing that the prevalence of **solar farm fires may be underreported**, there have been known instances of fire events in the solar sector that have caused significant damage to the surrounding environment.



Have you ever wondered **what happens when a solar farm catches on fire**? Well, earlier this year there was a **solar farm fire in Australia** that resulted in the loss of an area of grassland totaling five hectares, which is roughly equivalent to **12 NFL football fields**. In this instance, it took the local fire department an hour and a half to get fire under control. With the remoteness of many solar farm locations, it can be challenging for firefighters to get to the scene of a fire in a short timeframe.

What Damage Can Solar Farm Fires Do to the Surrounding Environment?

Here are three ways in which a solar farm fire could cause serious damage to the surrounding environment and the local population:

1. Polluted Water Supply

Stormwater runoff has been highlighted as one of the most noticeable **impacts of forest fires**. After vegetation has been destroyed by fire, the ground's soil becomes hydrophobic – meaning it is unable to absorb water. This means debris and sediment is transported into larger bodies of water, resulting in the pollution of local supplies. Filtering such water sources is often costly and time-consuming.



2. Poor Air Quality

For example, if a forest burns, then large amounts of **smoke are released into the atmosphere**. This smoke includes microscopic particles – often less than 2.5 micrometers in diameter, or around one-seventieth the size of a human hair. These particles are so small that our bodies find it difficult to filter them out of our airways. Consequently, they get **lodged deep in our lungs**.



3. Serious Damage to Human Health

The World Health Organization (WHO) has highlighted how **forest fires can have a major impact on mortality and morbidity** depending on the size, speed, and proximity of the fire. The WHO says young children, pregnant women, and older adults are the most susceptible to "health impacts" from smoke and ash. In addition, the WHO explains that smoke and ash from wildfires can greatly affect "those with pre-existing respiratory diseases or heart disease." Meanwhile, as well as fatalities, wildfires can cause burns, decreased lung function, pulmonary inflammation, bronchitis, exacerbation of asthma, and exacerbation of cardiovascular diseases, such as heart failure.



How You Can Reduce Solar Farm Fire Risk

Given that fires at **solar farms** pose significant danger to environmental and human health, solar farm operators must do all they can to protect their **renewables** from fire risk. There are a few ways to stay safe from fire in addition to integrating fire suppression systems and **fire risk assessments**.

- Make certain independent third parties regularly test solar systems
- Integrate additional safety components at your **solar panel farm**
- Establish standardized quality assurance measures
- Replace defective or prematurely aged components

With the challenges of the **solar supply chain** and current **solar prices**, it's important to take action and prevent the worst-case scenario from occurring.

Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road Springside

Attachment 5 Submissions x 42 (redacted)

FIND OUT: CAN SOLAR FARM INVESTORS, OPERATORS, AND OWNERS AFFORD NOT TO PROTECT THEIR ASSETS? >

Topics

- Renewable Energy
- Solar

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STOP THESE THINGS

Submission 40 - Attachment 3

No Deal: Country Firefighters Refuse to Fight Wind Turbine and Solar Panel Fires



(<https://stopthesethings.com/wp-content/uploads/2024/06/volunteer-firefighters.png>)

Fed up country firefighters are refusing to fight fires started by wind turbines, solar panels and giant batteries. Placing their lives at mortal risk to save others and their property, would be heroic enough. However, most of them are volunteers who spend hundreds of hours being trained in firefighting methods and how to do so safely – at their own time and expense.

When Summer bites, spare a thought for rural communities riddled with wind turbines: the perfect incendiary device. Around the world, hundreds have blown up in balls of flame – in the process – each one raining molten metal and over 1,000 litres of flaming gear oil and hydraulic fluid (see [our post here \(https://stopthesethings.com/2015/04/22/victorian-country-fire-authoritys-claim-that-wind-turbines-not-combustible-scorched/\)](https://stopthesethings.com/2015/04/22/victorian-country-fire-authoritys-claim-that-wind-turbines-not-combustible-scorched/) and burning plastic earthwards.

Wind turbine fires are ten times more common than the wind industry and its parasites claim (see our post [here \(https://stopthesethings.com/2014/07/18/wind-turbine-fires-ten-times-more-common-than-thought-experts-warn/\)](https://stopthesethings.com/2014/07/18/wind-turbine-fires-ten-times-more-common-than-thought-experts-warn/) and check out this website: <http://turbinesonfire.org> (<http://turbinesonfire.org/>)).

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Large-scale solar creates its very own fire risk (<https://stopthesethings.com/2024/04/22/farmers-uninsurable-risk-solar-factory-neighbours-face-total-financial-ruin/>), with panels known to self-immolate without warning.

Likewise, giant lithium-ion batteries will burst into toxic fireballs at the drop of a hat: firefighters simply stand upwind and watch them burn themselves out, over a period of days (<https://stopthesethings.com/2021/08/09/wind-solar-storage-fires-up-giant-battery-burns-for-days-after-terrifying-explosion/>).

Connecting thousands of generators spread across the countryside with a veritable cobweb of high voltage transmission lines increases fire risk, exponentially. Every time the wind picks up strength during summer there is a high probability of lines clashing, arcing and setting the country ablaze.

Now, with more than their own lives at risk, Victoria's Country Fire Authority volunteers have said 'enough is enough'.

This group of courageous volunteers knows full well that the insanely deadly risk created by part-time power generators can be readily avoided by returning to a sensible energy policy – starting by keeping Australia's coal-fired power plants up and running and ultimately moving to nuclear plants located on the same sites.

As the articles below attest, Victoria's country firefighters are well within their rights to refuse to play ball, anymore.

CFA strike: Volunteers refuse to fight wind, solar and transmission line fires

The Weekly Times

Peter Hunt

18 June 2024

At least 24 CFA brigades are taking strike action, refusing to fight fires on land hosting high-voltage transmission lines, solar or wind farms, over what they call the Victorian Government's "reckless renewables expansion".

Most of the brigades are in communities that are being carved up by the 500kV Victoria-NSW Interconnector and subject to more wind and solar farm developments, as the Allan Government rushes to generate 95 per cent of the state's electricity from renewable sources by 2035.

The volunteer firefighters have written to Emergency Services Minister Jaclyn Symes and CFA chief officer Jason Heffernan stating they would "restrict turn-out commitments to incidents at electricity generation and transmission infrastructure sites to 'property perimeter defence'," only entering the site if lives were at risk.

The brigades' letter calls for "an immediate halt" of all current and proposed high voltage transmission lines and renewable energy infrastructure projects, and demands the government give "genuine consideration of concerns and acknowledgment of the negative impacts to our people and communities.

"Further action will be considered and taken as deemed necessary," the letter stated.

Gre Gre Village CFA captain and St Arnaud deputy group officer Peter Knights said: "Our brigades are not prepared to defend renewables infrastructure that destroys our communities, carves up our land, reduces our productive capacity and divides people."

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Most of the 24 brigades backing the strike sit along 120kms of the proposed VNI West transmission line corridor, from north of Stawell and out past Charlton.

Traynors Lagoon CFA captain Jason Barratt said Victorians lived in one of the most fire-prone places on earth, yet the government was rushing to roll out renewables that increased the risk of fire in regional communities.

"CFA volunteers are becoming less and less, but they're increasing the load on us," Mr Barratt said.

Brigades say they have no hope of fighting wind-turbine fires and warn the CFA has issued contradictory standard operating procedures for the fireground when working near transmission lines that put their lives at risk from smoke-induced flashovers.

CFA brigades are already struggling to deal with fires sparked by isolated powerlines and transformers that go unnoticed for hours, to become firestorms that engulf the state, as happened on Ash Wednesday 1983, Black Saturday 2009 and the St Patrick's Day fires of 2018.

The International Association for Fire Safety Science estimates wind turbines catch fire at a rate of 1 in 1710, with UK research engineers finding "the three elements of the fire triangle, fuel (oil and polymers in the turbine), oxygen (wind) and ignition (electric, mechanical and lighting) are present and confined to the small and closed compartment of the turbine.

"Moreover, once ignition occurs in a turbine, the chances of externally fighting the fire are very slim due to the height of the nacelle (turbine) and the often remote location of the wind farm."

Energy Safe Victoria estimates there are about 2300 turbines in Victoria, with planning records showing another 311 under construction and hundreds more seeking Victorian Government approval.

The volunteer strike leaves hundreds of wind turbines without firefighter protection this summer and raises questions over CFA command's ability to draw on Fire Rescue Victoria for support, given its urban pumpers are incapable of fighting fires off road and without access to hydrants.

Mr Knight said he "can't imagine that book makers in insurance companies will think it's a good thing", so would cost them (renewable project developers) more.

As for fighting fires around transmission lines, Mr Knights said the CFA had issued standard operating procedures that were contradictory and dangerous to volunteers.

The CFA's SOPs advise brigades "not to directly attack fires in transmission line easement areas and crew members should maintain a safe working distance of at least 25 metres from lines or outside of easement areas, whichever is greater".

Mr Barratt said there were "too many grey areas in the SOP to make us feel safe", such as whether brigades should be 25m outside the easement and the role of fire behaviour during windy conditions.

Mr Knights said 25m was unacceptable and that brigades needed to be at least 100m from transmission lines during a fire, given the risk of smoke acting as a conductor and causing a flashover.

The CFA SOP states smoke from fires near or under transmission lines can create electrical arcs or flashovers that are "potentially life threatening to someone standing nearby", but gives no details under what conditions this can occur.

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Meanwhile the Australian Energy Market Operator has established a subsidiary Transmission Company Victoria, which is in the midst of seeking Essential Services Commission approval for a transmission licence, which would give it the right to enter properties without landholder approval and compulsorily acquire easements.

The Weekly Times (<https://www.wind-watch.org/news/2024/06/18/cfa-strike-volunteers-refuse-to-fight-wind-solar-and-transmission-line-fires/>)



(<https://stopthesethings.com/wp-content/uploads/2024/02/truck-and-fire.jpg>)

Volunteer firefighters say they will not fight fires around new renewables projects, transmission lines
ABC Rural
Angus Verley
19 June 2024

Volunteer firefighters from a number of brigades in Victoria's central north will not attend blazes at properties hosting renewable energy plants or transmission lines.

Yesterday, captains from five brigades wrote to the CFA and the state government to declare that their members were not prepared to fight fires near or involving infrastructure such as the Victoria to New South Wales Interconnector (VNI West).

VNI West — a transmission line that would run hundreds of kilometres through farmland in western Victoria — has triggered angry protests from farmers who say they do not want it on their land.

The proposed transmission line is one of many being planned across Victoria to get the power from planned renewable energy projects into the national electricity grid.

'Pretty simple'

Jason Barratt, the captain of the Traynors Lagoon Fire Brigade and spokesperson for the newly formed Firefighters Against Renewables Over Victoria, told ABC Rural the group's message was "pretty simple".

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"Any renewable infrastructure or projects, we're just going to refuse to fight fires in and around them," he said.

"We'll basically sit at the fence and wait for it to come out to us — we won't go in and put our lives at risk."

Mr Barratt said landowners who agreed to host transmission lines on their properties should not expect the assistance of firefighters.

"Anyone who's got renewable infrastructure will have to find their own way to protect it because CFA volunteers consider it too unsafe to do that," he said.

"You have crops and sheep that will be unprotected and there could be insurance implications as well."

Mr Barratt said an additional 19 brigades had agreed to join the action.

Letter of demands

The group's letter of demands calls for an immediate halt to "all current and proposed projects" and requests "appropriate reconsideration of alternative solutions", which Mr Barratt said should include nuclear power generation.

The cosignatories said infrastructure such as VNI West would "greatly impact our ability to control wildfire both on ground and particularly from the air".

Mr Barratt said transmission lines and renewable energy plants would make it more difficult to fight fires.

"We're worried about our ability to fight fires around transmission lines and the CFA hasn't been very good at all at giving us clear instructions on how safe it is to fight fires around them," Mr Barratt said.

"At the end of the day, we are volunteers and the government is willingly putting this infrastructure in and adding risk to our community and our members and it's unnecessary."

This is the latest protest action by affected regional communities against planned transmission line projects being rolled out to connect planned renewable projects.

[ABC Rural \(https://www.abc.net.au/news/rural/2024-06-19/cfa-renewables-protest-volunteer-firefighters-transmission-lines/103995318\)](https://www.abc.net.au/news/rural/2024-06-19/cfa-renewables-protest-volunteer-firefighters-transmission-lines/103995318)



<https://www.farov.com.au/> (<https://www.farov.com.au/>)



(<https://stopthesethings.com/wp-content/uploads/2024/03/battery-fire.png>)

Firefighters Against Renewables Over Victoria (FAROV)
Press Release

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We are a collective of 5 Fire Brigades situated under the proposed VNI West 500kV Transmission Lines and in a proposed Renewable Energy zone as part of the Victorian State Government's mission to cover our food bowl and countryside in renewable infrastructure.

We have received commitments from a further 19 impacted Brigades and looking to add the support of many more either in joining our proposed action or taking their own variation of action.

We seek your support in publishing the attached call to CFA Brigades to sign on to proposed Industrial Action by the Volunteer Brigades, and to explain to our communities that our intentions are altruistic and with the safety of all residents in these areas and our volunteers in mind. We seek genuine long term solutions to energy production and transmission, not short term money grabbing by international investors and cash strapped Governments.

Letter of Demands from CFA Brigades to State Emergency Services Minister and CFA CO

Affected CFA Brigades have united in a call for industrial action to achieve demands with respect to the future of their role as firefighters in view of the Victorian State Government proposed reckless renewables expansion. We consider untenable the risks to lives and property, and irreparable damage imposed by proposed installations of High Voltage Transmission Lines and Renewable Energy Infrastructure.

Industrial action is proposed until

- Genuine consideration of concerns and acknowledgement of the negative impacts to our people and communities is given
- An immediate halt is effected of all current and proposed projects
- Appropriate reconsideration of alternative solutions, is conducted
- Action taken so that the safety and security of our members and communities can be assured.

It is proposed by the initiating Brigades, and Brigades signing on in support, that they commit to the following :-

1. Undertaking to restrict turn out commitment to incidents at electricity generation and transmission infrastructure sites to "Property Perimeter Defense" only. Brigades will not commit to enter land or premises upon which such infrastructure is situated, to complete fire management tasks unless there are personal safety issues identified by the incident controller. Brigades will not commit to defending or protecting electricity generation or transmission assets forthwith.
2. Undertaking that, by commencing Industrial Action, the members of the brigade will not implement or continue the Industrial Action where that action would endanger the Life or personal safety or welfare of our community.
3. Brigade specific concerns and proposed actions will be communicated to CFA, additional to that contained in this letter, including restrictions to turn out capacity, training and reporting of incidents.

Further action will be considered and taken as deemed necessary.

Our Volunteers, and colleagues at Fire Rescue Victoria, are being committed to a future use without consent, to provide free labour and fire protection services to a greedy, investor centric renewables industry which is focused only on profit with complete disregard of the destruction of our unique, beautiful and productive regional landscapes and communities.

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Wind Towers the height of the Rialto, Solar Installations covering massive expanses of productive farm land and Transmission Lines the height of MCG lights, all with the propensity to ignite fires and impede safe firefighting, placed in the extreme fire risk areas of regional Australia, are simply illogical and unnecessary, given the short life span and inadequacy of wind turbines and large solar as a long term power generation solution. Genuine alternatives to these installations and the huge transmission line projects such as WRL and VNI West are available.

These installations will greatly impede our ability to control wildfire both on ground and particularly from the air. The access to these areas, as controlled by Renewable Energy Entities, will be restricted and therefore unsafe.

The State Government of Victoria controls this process and we demand of them the following:-

- o Acknowledge that high voltage lines are potentially lethal in wildfire scenarios.
- o Acknowledge that high voltage lines in high fire risk areas jeopardise firefighter and community safety and that powering down 500kV Transmission Lines during wildfire events is not a realistic protection mechanism.
- o Acknowledge that Wind Turbines and industrial solar facilities provide probable ignition sources in high fire risk areas and impede fire fighting actions.
- o Ensure impacted residents and communities can object to proposed Renewable Energy (RE) projects on the basis of fire risk and community impact. Specifically, to reinstate rights to object to RE facility project proposals through VCAT, as removed by State Government in April.
- o Acknowledge that owners of renewable energy facilities will be responsible and liable for their own fire risk and management and that Volunteers are not compelled to turn out to emergency events at these locations.
- o A cessation of proposed imposition of Fire Services Levy increases announced in the Victorian State Budget 2024 and a review of that system with amendments to align tax collection to location of spend and contribution by volunteers, particularly in rural and remote Victoria.
- o Provide transparency and full public disclosure of budgeted consumer and government financial contribution, and detailed stakeholder interests, of each renewable infrastructure project.

The CFA is called to support it's members and employees as follows :-

- o Clear, accurate and concise safe working distances for attending and attacking wildfire for all fireground participants near High voltage transmission lines and renewable facilities.
- o Ensure SOP's must dispel any misinformation that it is in any way safe to operate near or under a 500kV line whilst managing a wildfire in the vicinity, and establish concise safe working procedures and distances for both CFA Brigades and Private Units attending.
- o Acknowledge that High Transmission Lines placed across broadacre cropping and grazing land in high fire danger areas makes an unacceptable risk to firefighters and communities in the vicinity.
- o Active support of Brigades to rebuke misleading information regarding Fire Safety and Procedure as it concerns RE Projects, published to the Public by Government and/or RE Corporate entities.
- o Clear guidance as to access rights of both Brigades and Private units on to Renewable Energy Company controlled property, and full guarantee of indemnity for actions taken both as Brigade Volunteers and private units when attending fire incidents at such properties.
- o Undertaking to prioritise provision of adequate trucks and equipment upgrades.

We do not take our decision to take industrial action lightly. Our members have decades of dedicated service to the CFA, both to our local districts and at major fire emergencies. We expect Victorian State Government and CFA management to not only listen to our concerns but to initiate actions to prevent

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the destruction of our communities and our Brigades, from proposed renewables transition.

We willingly accept the risks that nature and mishap throw up from time to time but we refuse to be used as an unpaid resource for corporate, government and private interests to profit from an already stretched volunteer system. We are there to be utilized by our community but not used as free labour.
FAROV (<https://www.farov.com.au/>)



([https://stopthesethings.com/wp-](https://stopthesethings.com/wp-content/uploads/2020/03/fire.png)

[content/uploads/2020/03/fire.png](https://stopthesethings.com/wp-content/uploads/2020/03/fire.png))

Rural Volunteer Fire Fighters in Victoria are taking a stand against the unconscionable rollout of wind, solar, battery and HV transmission lines. Their concerns are for their safety and the safety of the communities they serve. They are also concerned about the destruction of agricultural land, grazing land and areas of high biodiversity. Government and the 'renewables' industry have shown they have no

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concern for the safety of communities, the preservation of agricultural and grazing land, no interest in preserving Australia's unique flora and fauna and also a complete disregard for the inability of landowners to procure adequate public liability insurance at a reasonable cost.

It is time to push back against politicians who are elected to serve their constituents but appear to be beholden to the 'renewables' industry, an industry that does not have a plan in place for the decommissioning and disposal of tens of thousands of tonnes of PV solar panels, wind turbines and batteries at their 'end of life'. This is a failure to comply with their obligations pursuant to the Environment Protection and Biodiversity Conservation Act 1999:

3A Principles of ecologically sustainable development

The following principles are principles of ecologically sustainable development:

- (a) decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations;
- (b) if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation;
- (c) the principle of inter-generational equity—that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations;
- (d) the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making.

They are also ignoring their obligations pursuant to the 2015 Paris Agreement Article 2.1(b):

"Increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development, in a manner that does not threaten food production";

Volunteer Fire Fighters from other Victorian Brigades and other State Brigades consider supporting your colleagues in their pushback against the community destroying and unconscionable rollout of wind, PV solar, battery and HV transmission projects.

We will prevail.

Kind regards,



[/https://stopthesethings.com/wp-content/uploads/2014/12/wind-turbine-fire-lake_bonney_windfarm.jpg](https://stopthesethings.com/wp-content/uploads/2014/12/wind-turbine-fire-lake_bonney_windfarm.jpg)

Posted on ~~June 27, 2024~~ June 23, 2024

4 thoughts on “No Deal: Country Firefighters Refuse to Fight Wind Turbine and Solar Panel Fires”

1.

July 5, 2024 at 1:56 pm

I support this action 100%. Our farm is in a high risk area and a wind ‘farm’ on adjacent properties has been shoved through by the NSW planning and IPCN. The larger of the two properties is foreign owned, absentee landowner, NO support in the 2019 fires. The renewables company is French, NEOEN. My partner is a Senior deputy captain in the RFS. Our concerns were ignored and not addressed meaningfully by the upper echelons (paid, no skin in the game) of the RFS or AFAC.

↩ Reply

2.

June 28, 2024 at 4:46 pm

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Fire at lithium battery factory kills at least 22 people (mostly chinese migrant workers). Some days ago.

[!\[\]\(830769b31eeeaca920791081939ff8ba_img.jpg\) Reply](#)

1.

June 29, 2024 at 12:21 am
In South Korea.

[!\[\]\(6bb0e4f14c4133b37d2887cb37e67ddd_img.jpg\) Reply](#)

3.

June 28, 2024 at 4:18 pm

I support their stance 100%, they already put their lives on the line each time they go out to fight fires.

The renewable industry is taking sufficient money from the Government (our money) in subsidies why should our volunteer fire fighters risk their lives to save the industries useless waste of time and money equipment.

They take over peoples land including neighbours without consideration of the cost to ensure fires do not kill or destroy residents and their homes and businesses. Every installation should have sufficient on site firefighters and equipment at immediate hand, they should not rely on local communities to do this job.

If they cannot pay to do this then they should not be given permission to build their structures.

[!\[\]\(e50091943b385fe16d3277389202856f_img.jpg\) Reply](#)

Submission 40 - Attachment 4

Tesla battery on fire at Bouldercombe energy storage site, Genex confirms

ABC Capricornia Industrial Fires

Wed 27 Sep 2023 at 7:33am



Fire breaks out at Tesla battery facility in Central Queensland. (Supplied: Kent Murray)

Witnesses have reported loud bangs, "multicoloured" flames and a smell of burning plastic as a Tesla battery burns at one of Queensland's first large-scale battery storage sites after catching fire last night.

Police were called to the incident in Child's Avenue in Bouldercombe, about 23 kilometres from Rockhampton, at 7:45pm.

Officers said the fire caused hazardous smoke to spread across the immediate area and nearby residents were urged

Key points:

- A resident says he heard bangs and pops as the fire raged
- He kept his distance because he believed the

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to stay indoors and keep respiratory medication close by.

smoke would have been "very toxic"

Several firefighting crews responded and the fire was contained to a single battery this morning.

- The site's owner and operator says Tesla will be involved in the investigation of the incident

Queensland Fire and Emergency Services Fitzroy Zone Commander John Platt said the battery pack was still alight and he was unsure how long it would continue to burn.

"They are monitoring temperatures — a lot of that combustion can be internal to the unit so it's just about monitoring and making sure the visible fire doesn't spread," Mr Platt said.

He said officers were monitoring gas levels and air sampling in the Bouldercombe region and confirmed residents had nothing to be concerned about.

"There is no worry for members of the public in terms of that toxic gas issue."

Mr Platt said the timing of the fire was fortunate, as the region's bushfire conditions were relatively mild compared to last week, when parts of central Queensland had a high fire danger rating.

Huge, multicoloured flames

Gracemere resident Dave Bailey witnessed the fire and said he could see huge, multicoloured flames.

"We heard a few bangs and pops and things like that," Mr Bailey said.

"At one point the flames were pretty good – different colours and things like that."



Crews worked throughout the night to contain the blaze. (Supplied: David Bailey)

But he said he was not willing to get any closer because he was worried the smoke would be dangerous.

"The smoke we saw coming from there would have been very toxic smoke, but we didn't get close enough to smell it or anything like that," Mr Bailey said.

Genex Power, which owns and operates the Bouldercombe Battery Project, said no-one was at the site at the time of the incident.

"On advice from the Queensland fire brigade and protocols provided by Tesla, the fire is being allowed to

burn out under the supervision of the fire brigade," a spokesperson said.



Frank Lawrence lives about 300 metres from the site. (ABC Capricornia: Jasmine Hines)

Site disconnected from grid

Frank Lawrence lives next door to the site and said he slept through the fire but noticed a plastic burning smell this morning when he woke.

"It came up on Facebook — that was the first I knew of it," he said.

"It was like a plastic smell drifting around but other than that that's all we got."



Authorities have cordoned off the site. (ABC Capricornia: Jasmine Hines)

The battery is a lithium Tesla Megapack 2.0 unit and is one of 40 used at the site.

In a statement released on the ASX, Genex Power said the site had been disconnected from the grid and it was working with Tesla to investigate the cause.

Police say the fire does not appear to be suspicious.

Powerlink, which owns the substation next to the facility, says there is no damage to its assets or infrastructure.

The Queensland Fire and Emergency Service said a single crew remained at the scene.

ABC Capricornia — local news in your inbox

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Posted Wed 27 Sep 2023 at 7:33am, updated Thu 28 Sep 2023 at 10:12am

Attachment 1 Copy of CCL 16 September 2025 Report 5.3 DA 771/2024(1) - 140 Cadia Road Springside

Attachment 5 Submissions x 42 (redacted)

Submission 40 - Attachment 5

Forever chemicals being found 'literally everywhere'

Australia needs to prevent the introduction of more "forever chemicals" amid warnings it is becoming increasingly difficult to deal with the contaminants already in the environment.

A federal senate inquiry is examining the extent of contaminations from the PFAS family of chemicals, which do not naturally break down and have been linked to health problems like cancer.

Water Services Association of Australia executive director Adam Lovell recommended severe restrictions and labelling on PFAS in non-essential consumer products so consumers have a choice to limit their exposure.

The presence of the chemicals is becoming increasingly difficult to manage, he told a hearing on Wednesday.

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Adam Lovell said the presence of PFAS chemicals is becoming increasingly difficult to manage. (Steven Saphore/AAP PHOTOS)

"We're finding (PFAS) literally everywhere," he said.

Sydney Water executive general manager Paul Plowman agreed the chemicals were "absolutely ubiquitous".

"So we do need to manage it within the urban water cycle," he said.

The agency is designing a thermal treatment facility to treat wastewater at high temperatures to destroy the chemical, leaving behind a reusable biochar.

"It's extremely energy intensive and very, very expensive," he said.

Utility costs are passed on to customers, and it would be cheaper and easier to avoid the presence of the chemicals than to treat them, he added.

NSW Environment Protection Authority chief executive Tony Chappel said more than 1100 sites in the state had been triaged, with significant contamination detected at 51 since legacy firefighting chemicals were found at Williamtown air force base and Newcastle Airport.

Rivers, lakes, a park and a school are among the NSW sites likely to have had significant exposure.

But the state agency has only so much power over sites that include Defence bases and federally-owned airports.

"Without legal powers to regulate or compel the commonwealth government this has created significant issues," Mr Chappel said.

For many of the listed sites, the environmental watchdog says the discovery of PFAS in the environment does not mean there is a human health risk.

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While drinking water in Sydney and the Hunter region is regularly monitored, NSW Health is supporting an expanded screening test for water utilities managed by regional councils.

PFAS chemicals are known for their heat, water and stain resistance and have been commercially produced for decades for use in firefighting foam, aviation, carpets, fabric and cosmetics.

The [federal inquiry](#) is examining sources of contamination and the effectiveness of current regulations, along with the social, economic, health and environmental effects.

Stop PFAS Blue Mountains convenor Jon Dee criticised health authorities for not offering blood tests in communities where chemicals have been detected and said drinking water guidelines were inadequate.

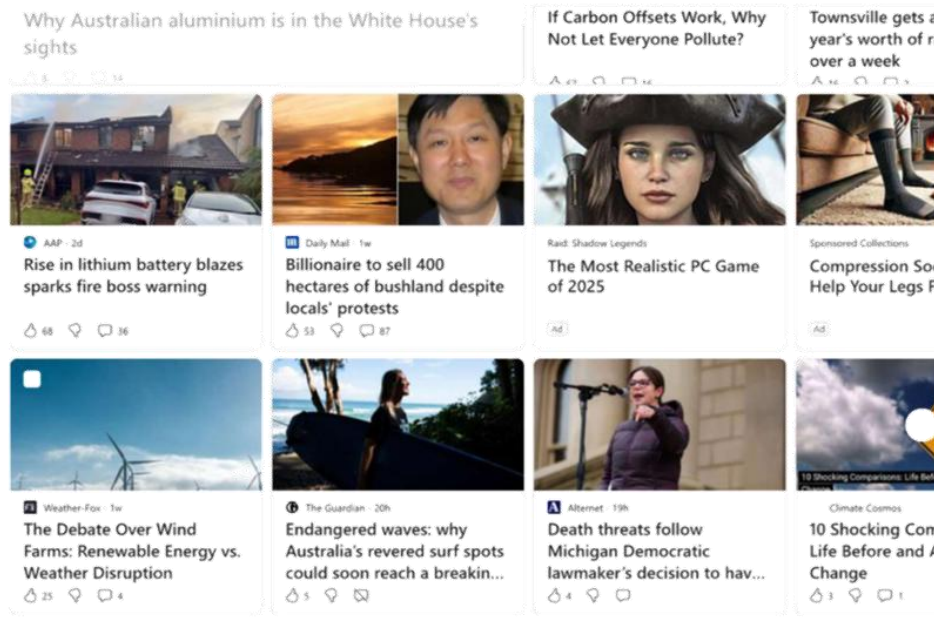
The United States' Environmental Protection Agency agency has set an enforceable target of four nanograms per litre, but it also has a health-based goal of zero.

University of Sydney professor Stuart Khan said it was a purely aspirational statement by an agency that had "effectively plucked a number out of the air" and Australia's less-strict guidelines were aligned with the rest of the world.



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Coles slammed over mass product cull

Story by Duncan Evans • 6d • 3 min read

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The supermarket giant will cut more than 2000 items from its massive 20,000 range as part of rationalisation program to simplify its supply chains and remove duplication on its shelves.

Mr Littleproud, speaking with NewsWire on Thursday, said the move would increase prices at the checkout.

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"This is a direct measure to try and reduce competition to push up prices and push up their margin," he said.

"It's as simple as that.

"You don't take competition away from the shelves, unless you are trying to do one simple thing: rescue competition and increase prices."

QUT retail marketing and consumer behaviour expert Professor Gary Mortimer cautioned, however, the cull could potentially lead to a small drop in prices for shoppers if the company secured an overall reduction in its cost base.

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STOP THESE THINGS

Submission 40 - Attachment 6

Ecological Nightmare: Wind & Solar Rollout Delivers Permanent Environmental Destruction



(<https://stopthesethings.com/wp-content/uploads/2022/02/solar-panel-blight-720x405-1.jpg>)

The wind and solar 'industries' are clear-felling ancient forests, bulldozing whole mountains, stripping the last remnants of fragile vegetation from deserts, killing endangered whales, eagles, bats and more, turning productive farmland into industrial wastelands and are being paid handsomely to do so by the governments you elect. Seems legit, right?

As Bonner Cohan outlines below, the environmental destruction being wreaked to make way for endless seas of solar panels and thousands of giant industrial wind turbines – neither of which will ever generate power on demand – makes absolutely no sense, at all.

Thousands of Joshua Trees set to fall victim to Green-Energy transition
DC Journal

28 June 2024



(<https://stopthesethings.com/wp-content/uploads/2024/07/joshua-trees-800x535-1.png>)

More than 3,500 majestic Joshua trees in California's Mojave Desert are being shredded onsite to make way for thousands of solar panels under a plan approved by California and Kern County officials.

The sprawling solar project will produce intermittent energy on 2,300 acres of land near the small towns of Boron and Desert Lake.

It is not clear whether any of the electricity produced at the solar site will serve some nearby communities. But the project's developer, California-based Avantus, says contracts have been signed to deliver some of the power to Silicon Valley Clean Energy and Central Coast Community Energy, both are nonprofits that provide green energy to homes in more affluent coastal communities, the Los Angeles Times reported.

Even though many of the trees are estimated to be between 100 and 200 years old, government approval of the solar project in 2021 predated a state decision to protect the Joshua tree under the California Endangered Species Act and last year's enactment by the legislature of the Joshua Tree Conservation Act, which bans unpermitted killing of the trees. As a result, the targeted trees are defenseless.



<https://stopthesethings.com/wp-content/uploads/2014/11/stripping-the-land-1024x767-e1415220313754.jpg>

The company provides no evidence for its claim that Joshua trees “are being threatened by climate change caused by greenhouse gas emissions.” [Note to Ed: How carbon dioxide gas – essential for all plants and all life on Earth – threatens any vegetation is beyond comprehension]

In addition to the loss of the Joshua trees, which share the same habitat as the threatened desert tortoise, residents will have to contend with massive amounts of dust that will be kicked up during the project’s construction.

“Let’s destroy the environment to save the environment. That seems to be the mentality,” Deric English, a Boron Junior-Senior High School teacher, told the Los Angeles Times. “It’s hard to comprehend.”



<https://stopthesethings.com/wp-content/uploads/2024/07/mojave-desert-tortoise.png>

Two recognized subspecies of Joshua trees are native to the Mojave Desert, where they can be found at elevations of 2,000 to 6,000 feet. The trees enjoy varying degrees of protection in the jurisdictions they inhabit, but those protections can be undermined if a favored project, such as a solar plantation, comes along.

A similar fate could befall the Mojave Desert tortoise. In April, in a 4-0 decision, the California Fish and Game Commission voted to list the Mojave Desert tortoise as endangered under the Golden State's Endangered Species Act. The creature has been listed as threatened under the federal Endangered Species Act since 1990. Even though the tortoise is California's state reptile, it is being pushed to the brink by various factors, including vehicle strikes, wildfires, raven predation, illegal marijuana growth, and massive solar farm development.

While desert tortoises and Joshua trees are at risk from giant solar arrays on the ground, up in the air, taxpayer-subsidized wind turbines pose a real threat to supposedly protected bald and golden eagles.

In February, the Interior Department's Fish and Wildlife Service updated its rule for an "incidental take" under the Bald and Golden Eagle Protection Act.

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"In addition to continuing to authorize specific permits, we created general permits for certain activities under prescribed conditions, including qualifying wind energy projects, power line infrastructure, activities that may disturb breeding bald eagles, and bald eagle nest take," the FWS states.

In other words, the Bald and Golden Eagle Protection Act is a nice law, but, under certain conditions, wind power developers can go around it by getting permits for the "incidental," but entirely predictable, killing of the eagles the law is supposed to protect.

To promote renewable energy, FWS officials allow wind turbines to reach hundreds of feet into the air and go up in areas where "protected" eagles are known to fly. And by issuing permits for the "incidental take" of a bird, they acknowledge that some of the eagles will be slaughtered in the turbines' spinning rotors.



(https://stopthesethings.com/wp-content/uploads/2020/01/dead_eagle_at_base_of_turbine-e1401765122884.jpg)

If wind and solar power are making it rough for endangered species on land and in the air, things are no better at sea. On April 14, Maryland Gov. Wes Moore signed an agreement with administration officials to secure more lease areas for offshore wind development in the Atlantic Ocean.

More offshore wind turbines would further complicate the migratory patterns of the endangered right whale. Female right whales migrate from the Northeastern Coast to waters off the Southeast, where they give birth before returning north with their calves. Their path — going and coming — takes them through an area where Richmond, Va.-based Dominion Energy plans to construct 176 turbines as part of its Coastal Virginia Offshore Wind project.

If neighboring Maryland becomes a player in offshore wind, the migrating whales' journey will become even more perilous.

Lured by generous taxpayer subsidies and encouraged by compliant government officials, wind and solar developers have concluded that endangered species pose little threat to their livelihoods.
DC Journal (<https://dcjournal.com/thousands-of-joshua-trees-set-to-fall-victim-to-green-energy-transition/>)



(<https://stopthesethings.com/wp-content/uploads/2024/07/dead-humpback-whale23.jpg>)

Posted on ~~August 9, 2024~~ July 28, 2024

One thought on “Ecological Nightmare: Wind & Solar Rollout Delivers Permanent Environmental Destruction”

1.

August 10, 2024 at 6:37 am

The dust doesn't stop when construction is complete. Once the “desert varnish” is destroyed, the dust is eternal.

When pioneers were crossing the California deserts they thought of the yet-unnamed trees as Joshua pointing the way to the Promised Land.

[↩ Reply](#)

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Submission 41

23 February 2025

Mr David Waddell
CEO - Orange City Council
PO Box 35
Orange NSW 2800

Dear Mr Waddell

*Re Objection to DA771/2024(1) – PAN-499518
Electricity Generating Works (solar farm) and Battery Energy Storage System (BESS)*

We have just been made aware of DA771/2024(1) which we vehemently object to and request council oppose. We own _____ and were not notified of this proposal even though our property is nearby.

We *object* to the proposal for the following reasons:

- A solar farm should not be placed so close to the city of Orange which is a popular tourist destination and an emerging wine region. Council invests heavily in the promotion of tourism in Orange including FOOD week and allowing this development to proceed negatively impacts on this investment.
- The solar farm would utilise prime agricultural land and is located in Orange's drinking water catchment. The impacts of degrading solar panels on the environment are still not fully understood but it is not a risk we should accept.
- Traffic on Cadia Road is already congested and dangerous with numerous vehicles (including large trucks) heading to Cadia mine.
- Solar farms devalue surrounding land. Any proposal like this should be away from town and wineries in an unpopulated area.
- There are potential EMF impacts which can harm human health.

We request that Council opposes this proposal and makes their opposition known to the Western Regional Planning Panel.

①

Submission 42

DA 771/2024(1) PAN-499518
Lot 5 DP6173 - 140 Cadia
Road, Orange.
23/2/25.

Dear Chief Executive Officer,

I wish to make a submission regarding the proposed Solar Farm on Lot 5 DP6173 - 140 Cadia Road, Orange.

My objections are:

- The solar panels will be covering areas of good agricultural land, one proposed area (the western area), until recently was a productive apple orchard.
- The area proposed for the solar farm is in a catchment area, which will be heavily impacted with the bringing in of fill etc., and truck traffic while setting the panels up and the 2 electricity conversion kiosks and the 2 BESS stations.
- It will devalue my property, which joins it.
- There will be an excessive amount of glare reflected from

②

those panels.

- It will take years before trees planted around the panels will reduce the glare from the panels.
- I will be heavily impacted by the traffic coming up and down the driveway adjoining my driveway and my northern boundary (the access route to the solar farm), when the solar farm is being set up.
- I am led to believe it will take from 3-4 months, Mon-Fri 7am-4pm to set up, and involve up to 10 trucks a day (some B doubles), accessing that driveway. I will be heavily impacted with noise and dust and disturbance of my livestock, right along my entire northern boundary, from Cadia Road to my back boundary fence.
- The driveway of 140 Cadia Road is very narrow alongside and ~~cottage~~ and ~~the ground~~ here is terraced along the boundary fence, due to the steepness of the slope and the soil previously giving way under the fence. It is made narrower by a row of Leylandii

(3)

Cypress trees recently planted by them and the roots will undermine this terracing along with the heavy truck traffic, which will further undermine this section of the hill and driveway, which is to be the access road to the solar farm.

- driveway ends beside their garage, behind their house. There is no farm road beyond that, only a track through the paddock in dry weather.
- If this solar farm is approved by Council, I would propose the access route road is made along the northern boundary of 140 Cadia Road. The 2 BESS (Battery Energy Storage System) stations and the 2 electricity conversion kiosks are to be located along the northern boundary.
- Who is going to be responsible for keeping the grass down under the panels, to reduce the fire hazard?
- Who is going to maintain the trees planted around the panels?
- * I have not been able to speak to the Council

④

Officer responsible for the application, as she is working remotely with no phone access. I would have liked to have spoken to her on the phone or in person, not via a link or by email, but found this was not possible.

The visual impact of the solar farm will be seen from as far away as Forest Road and will destroy the rural ambience of the Springside area. Therefore I am against the development of this solar farm.

Yours faithfully