NSW GOVERNMENT

Gunnedah Solar Farm

State Significant Development

(SSD 8658)

November 2018

Cover photo

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Executive Summary

Gunnedah Solar Farm Pty Ltd (the Applicant) proposes to develop a new 150 megawatt (MW) solar farm and associated infrastructure near Gunnedah in north-eastern NSW.

Engagement

The Department exhibited the Environmental Impact Statement for the project from 27 April 2018 to 26 May 2018 and received advice from nine government agencies and 56 public submissions including two from special interest groups and 54 from members of the general public.

Gunnedah Shire Council supports the project and none of the other Government agencies objected to the project. Of the 56 submissions received from the general public and special interest groups, 49 objected to the project. The majority of these objections were from community members residing within 10 kilometres (km) of the project site.

The Department inspected the site and met with a number of community members that lodged submissions on 24 July 2018.

In response to concerns raised by the community and advice received from agencies on the project the Applicant revised the project layout, which has led to better outcomes for the community and the environment.

Assessment

The three key issues raised in submissions and considered in the Department's assessment are the potential flooding impacts, land use compatibility and the potential impacts on amenity (visual, traffic and noise).

Flooding

The project site is located in the Upper Namoi Valley Floodplain on flood prone land identified within the *Gunnedah Local Environmental Plan 2012*, *Draft Floodplain Management Plan for the Upper Namoi Valley Floodplain (2016)* and the *Carroll to Boggabri Flood Management Plan 2006*. Most of the site would be impacted by flood waters during a 1% Annual Exceedance Probability (AEP) flood event.

The majority of public submissions raised concerns about the project's perimeter security fencing and how it would impact flood behaviour. The key concern is that the proposed security fencing would cause vegetative debris to accumulate on the fence during a flood event and result in a redirection of floodwater.

Since the submission of the EIS, the Applicant has undertaken additional flood modelling and amended the fencing configuration to incorporate sections of drop-down fencing, which would allow water to flow into and through the site during a flood. With these changes the project would meet the performance criteria under the flood management plans. Further, the Department of Industry – Land & Water considers the project would have a negligible impact on the flow and velocity of floodwaters, including at the nearest residence (which is located 800 m to the east of the site boundary).

Land use compatibility

The Department notes that the project would occupy a 304 hectare (ha) portion of the 795 ha site that the landowner is not effectively able to cultivate and, as such, the effective agricultural output of the site would not be reduced by the project.

Further, the Department considers that the loss of 304 ha of agricultural cropping land represents a very small fraction (~0.1%) of the agricultural output of the region and would result in a negligible reduction in its overall productivity. Additionally, the inherent agricultural capability of the land would not be affected by the project and the land could be returned to agricultural use following decommissioning.

Amenity

The Department notes that solar development is relatively low-lying and the project site is largely flat. While the Applicant has designed the project to minimise visual impacts, portions of the project would be visible to surrounding residences, particularly those residences to the north of the site as they would have elevated views. However, the level of potential visual impacts is relatively minor at most surrounding residences due to intervening vegetation and/or distance.

The Department considers that subject to the implementation of visual impact mitigation measures, including vegetation screening, there would be no significant visual impacts on the surrounding residences and the rural character and visual quality of the area would be preserved.

The potential noise and traffic impacts would be short-term, relatively minor in nature and can be managed in accordance with Government policy. Nevertheless, the Department has recommended strict conditions requiring restricted construction hours, relevant road upgrades and a comprehensive Traffic Management Plan.

Summary

Overall, the Department considers the site to be appropriate for the project as it has good solar resources and is close to the existing electricity network, which has available capacity.

To address the residual impacts of the project, the Department has recommended a range of detailed conditions, developed in conjunction with agencies and Council, to ensure these impacts are effectively managed.

With these conditions, the Department considers that the project achieves a reasonable balance between maximising the efficiency of the solar resource development and minimising the potential impacts on surrounding land users and the environment.

Importantly, with a capacity of 150 MW the project would generate enough electricity to power up to 48,000 homes and is therefore consistent with the Commonwealth's *Renewable Energy Target* and NSW's *Climate Change Policy Framework* and *Renewable Energy Action Plan*. The project would also provide flow-on benefits to the local community, including up to 150 full time construction jobs, with a capital investment of approximately $200 million.

As such, following on from its assessment of the project, the Department considers that the project is approvable, subject to the recommended conditions of consent.

Contents

1. Introduction

Gunnedah Solar Farm Pty Ltd (the Applicant), a joint venture owned by Photon Energy NV (Photon Energy), Canadian Solar Energy Holdings Singapore 4 Pte Ltd (Canadian Solar) and Polpo Investments Ltd, proposes to develop a new 150 megawatt (MW) solar farm (the project) approximately 9 kilometres (km) north-east of Gunnedah, within Gunnedah local government area (see **Figure 1**).

Photon Energy, Canadian Solar and Polpo Investments are also proposing to develop a number of other solar farms in NSW, including Suntop Solar Farm, Maryvale Solar Farm, Gunning Solar Farm, Mumbil Solar Farm, Carrick Solar Farm, Brewongle Solar Farm and Suntop 2 Solar Farm.

Additionally, Photon Energy has several smaller scale solar energy developments in NSW which have been approved by either the local council or the Joint Regional Planning Panel (JRPP), the largest of which is Leeton Solar Farm (29 MW).

1.2 Site and Surrounds

The project is located on a 795 hectare (ha) site adjacent to Orange Grove Road near the Oxley Highway. The proposed development footprint site covers 304 ha and has been designed to avoid impacts on remnant native vegetation, the areas most effected by flooding, and productive agricultural land. The Applicant has entered an agreement with the landowner to lease the site for the duration of the project.

Located on the Upper Namoi Valley Floodplain, the site and surrounding area is generally a flat landform, with hills rising to over 600 m AHD to its north-east (i.e. the Kelvin Hills). The site comprises cleared agricultural land zoned RU1 – Primary Production and is currently used for cropping (including irrigated cotton and chick peas) and grazing.

The site is located 900 m north of the Namoi River within the Namoi River catchment area and floodplain, 40 km south-west of the Keepit Dam. There are no natural waterways on the site, however there is a network of constructed irrigation and drainage channels throughout the site.

While there are no listed scenic or visually sensitive landscapes in proximity to the project site, there are 24 non-associated residences located within 5 km of the project. Seven of these residences are located within 2 km of the site, the nearest of which is located 800 m east of the site boundary (see **Figure 2**).

1.3 Other Solar Farms

The project is located approximately 3 km west of the proposed Orange Grove Solar Farm (SSD 8882), which if approved, would generate 110 MW and cover 253 ha. The proposed Orange Grove Solar Farm project site is shown in **Figure 1**.

As there is uncertainty around the timing of the two projects, the Department has assessed the potential cumulative impacts of both projects on the basis that construction may occur concurrently and both projects may be operational at the same time.

The key issues for cumulative impacts with the Orange Grove Solar Farm relate to construction traffic, potential visual impacts and workforce accommodation, which are discussed further in **sections 6.3**, **6.4** and **6.5**, respectively.

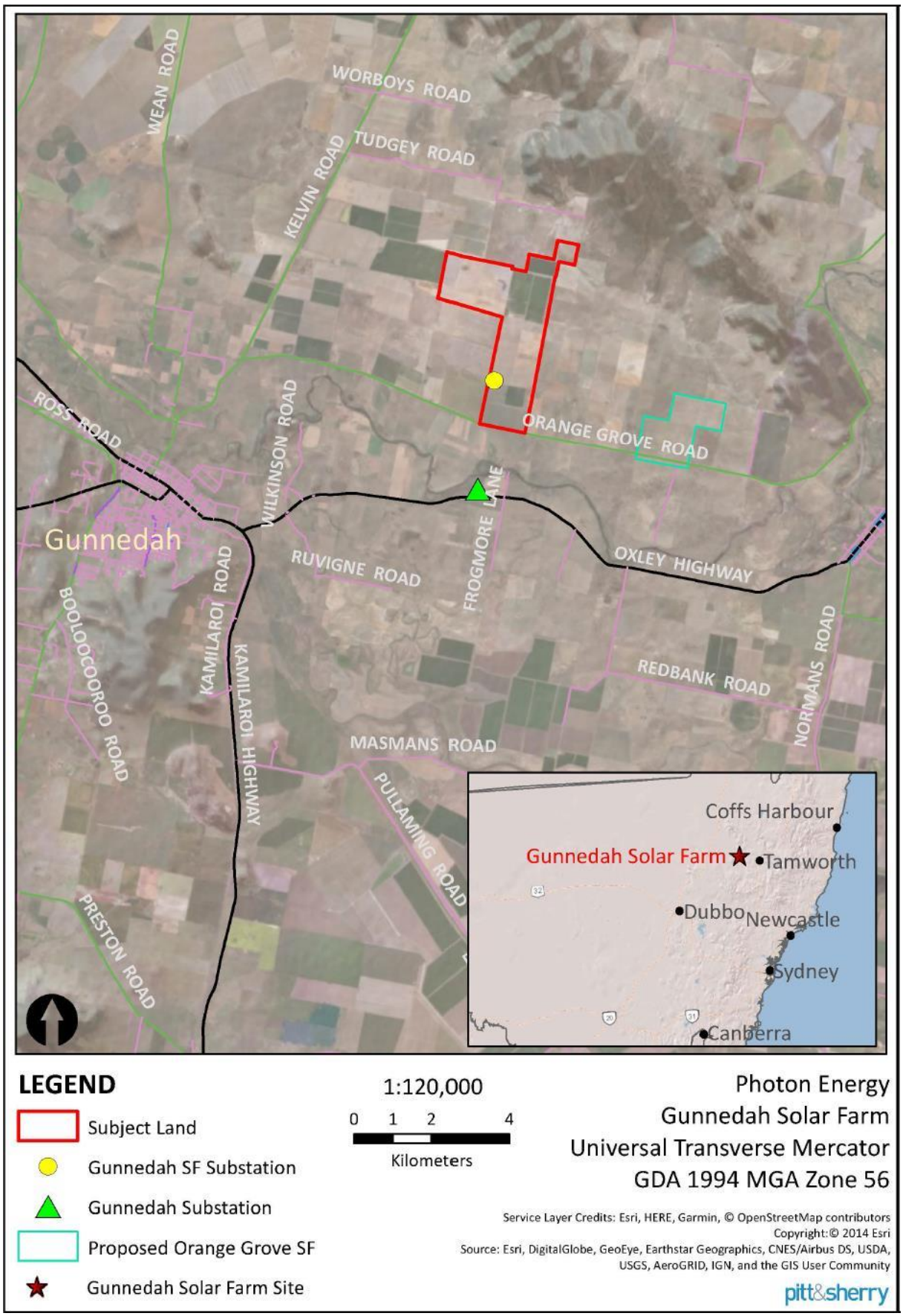


Figure 1 | Regional Context

2. Project

The project involves the construction, operation and decommissioning of a new solar farm with a generating capacity of approximately 150 MW.

The key components of the project are summarised in **Table 1**, depicted in **Figure 2**, described in detail in the environmental impact statement (EIS) (see **Appendix B**) and additional information provided during the Department's assessment of the project (see **Appendix C**).

Table 1 | Main Components of the Project

Aspect	Description
Project summary	The project includes: • approximately 460,000 solar panels (up to 3 m high) on a single-axis tracking system and 45 inverter stations (up to 1.2 m in height); • an on-site substation and connection to TransGrid's 132 kV transmission line which transects the site; • internal access tracks, staff amenities, maintenance and equipment buildings, offices, laydown areas, onsite car parking and security fencing (which incorporates drop-down fencing); • vegetation screening along the boundaries of the site; and • subdivision for the project site (304 ha), the substation (0.5 ha) and the remaining land associated with the property (577 ha).
Project area	795 ha (with a 304 ha development footprint)
Designated haulage route	Over-dimensional and heavy vehicles would access the site via the Kamilaroi Highway, Blue Vale Road, Old Blue Vale Road, Kelvin Road and Orange Grove Road.
Site entry and road upgrades	The site would be accessed utilising an existing access point on Orange Grove Road, approximately 6.3km east of the intersection with Kelvin Road. Key roadworks include: • upgrading Old Blue Vale Road to a minimum of 100 m from its intersection with both Kelvin Road and Blue Vale Road to a standard that allows two-way heavy vehicle movements; • removing loose gravel material at the Old Blue Vale Road and Kelvin Road intersection; and • upgrading the existing on-site access road, including sealing it for a minimum length of 30 m from its intersection with Orange Grove Road.
Operational life	• The expected operational life of the infrastructure is approximately 25 years. However, the project may involve infrastructure upgrades that could extend the operational life. • The project also includes decommissioning at the end of the project life, which would involve removing all above and below ground infrastructure.
Construction	• The construction period would last for up to 12 months. • Construction hours would be limited to Monday to Friday 7am to 6pm, and Saturday 8am to 1pm.
Hours of operation	• The project would operate during daylight hours. • Daily operations and maintenance would be undertaken Monday to Friday 7am to 6 pm.
Employment	Up to 150 full time equivalent construction jobs, and 10 full time equivalent operational jobs.
Capital investment value	$201 million

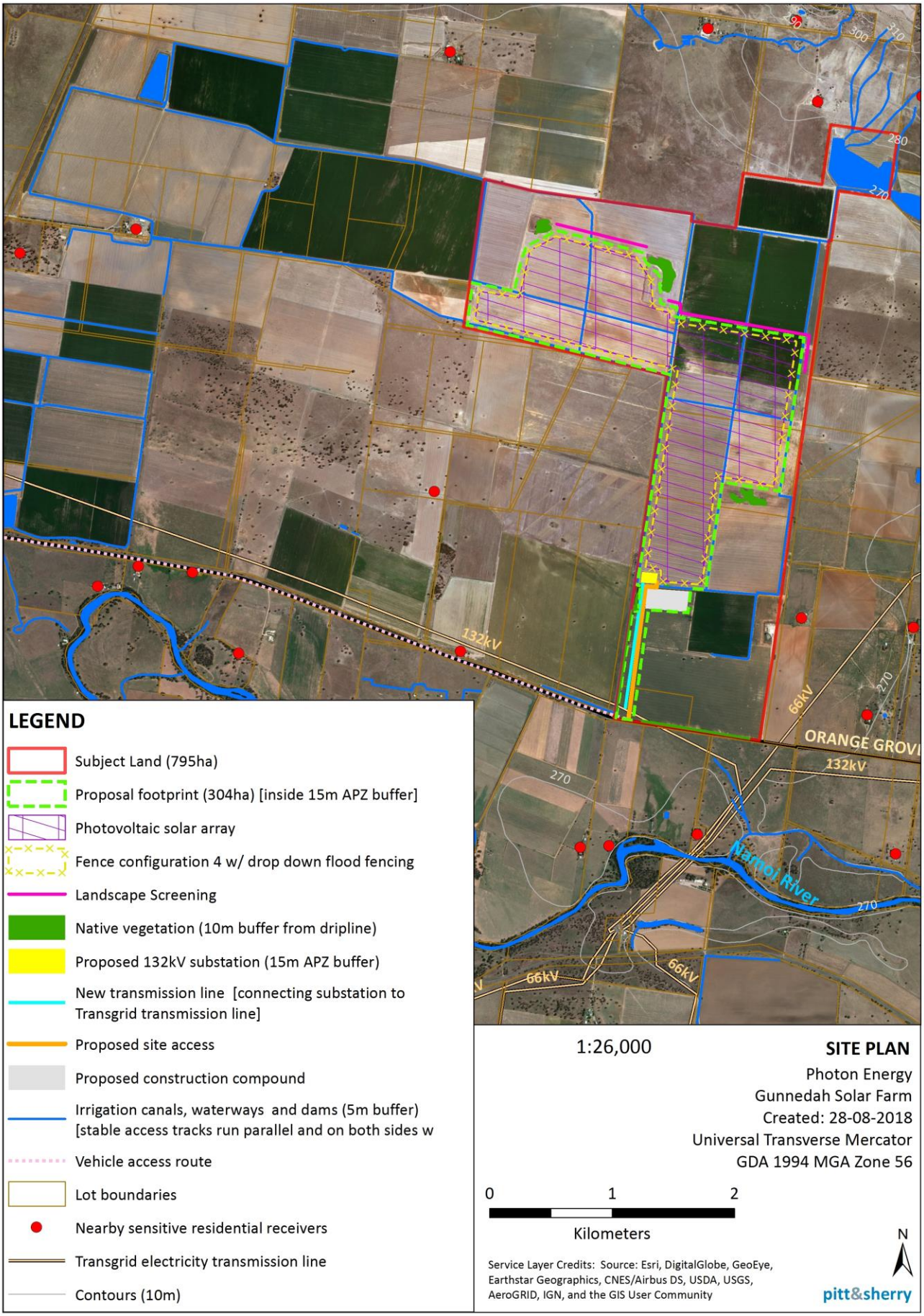


Figure 2 | Project Layout

3. Strategic Context

In 2017, NSW derived approximately 15.8% of its energy from renewable sources. The rest was derived from fossil fuels, including 79.3% from coal and 4.8% from gas. However, there are currently no plans for the development of new coal power stations in NSW, and the development of renewable energy sources, like wind and solar farms, is experiencing rapid growth.

This is highlighted in the 2017 *Independent Review into the Future Security of the National Electricity Market* (the Finkel Review), which outlines a strategic approach to ensuring an orderly transition from traditional coal and gas fired power generation to generation with lower emissions. It notes that Australia is heading towards zero emissions in the second half of the century.

The *United Nations Framework Convention on Climate Change* has adopted the Paris Agreement, which aims to limit global warming to well below 2°C, with an aspirational goal of 1.5°C. Australia's contribution towards this target is a commitment to reduce greenhouse gas emissions by 26% to 28% below 2005 levels by 2030.

One of the key initiatives to deliver on this commitment is the Commonwealth Government's *Renewable Energy Target*. Under this target, more than 20% of Australia's electricity would come from renewable energy by 2020. It is estimated that an additional 5,400 MW of new renewable energy capacity will need to be built by 2020 to achieve the *Renewable Energy Target*.

The *NSW Climate Change Policy Framework*, released in November 2016, sets an aspirational objective for NSW to achieve net zero emissions by 2050. The NSW Government also has a *Renewable Energy Action Plan*, which promotes the development of renewable energy in NSW.

In March 2018, the NSW Government identified 10 potential Energy Zones across three broad regional areas, including the New England, Central West and South West regions of NSW. The project would be located between the proposed Central West and New England Energy Zones.

With a capacity of 150 MW, the project would generate enough electricity to power up to 48,000 homes and is therefore consistent with both the Commonwealth's *Renewable Energy Target* and NSW's *Renewable Energy Action Plan*.

4. Statutory Context

4.1 State Significant Development

The project is classified as State Significant Development under Section 4.38 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). This is because it triggers the criteria in Clause 20 of Schedule 1 of *State Environmental Planning Policy (SEPP) (State and Regional Development) 2011*, as it is development for the purpose of electricity generating works with a capital investment value (CIV) of more than $30 million.

Under the Minister's delegation of 14 September 2011, as there were more than 25 public submissions received by way of objection, the Independent Planning Commission is the consent authority for the development application for the project.

4.2 Permissibility

The site is located wholly within land zoned RU1 - Primary Production under the *Gunnedah Local Environmental Plan 2012* (Gunnedah LEP). Solar farms are a permissible land use on land zoned RU1 under the Gunnedah LEP, as discussed further in **section 6.2**.

Additionally, under the *SEPP (Infrastructure) 2007* (Infrastructure SEPP) electricity generating works are permissible on any land in a prescribed rural, industrial or special use zone, including RU1.

4.3 Integrated and Other Approvals

Under Section 4.41 of the EP&A Act, a number of other approvals are integrated into the State Significant Development approval process, and consequently are not required to be separately obtained for the proposal.

Under Section 4.42 of the EP&A Act, a number of further approvals are required, but must be substantially consistent with any development consent for the proposal (e.g. approvals for any works under the *Roads Act 1993*).

The Department has consulted with the relevant government agencies responsible for the integrated and other approvals, considered their advice in its assessment of the project, and included suitable conditions in the recommended conditions of consent to address these matters (see **Appendix H**).

4.4 Mandatory Matters for Consideration

Section 4.15 of the EP&A Act outlines the matters that a consent authority must take into consideration when determining development applications. These matters are summarised as:

- the provisions of environmental planning instruments (including draft instruments), development control plans, planning agreements, and the EP&A Regulations;
- the environmental, social and economic impacts of the development;
- the suitability of the site;
- any submissions; and
- the public interest, including the objects in the EP&A Act and the encouragement of ecologically sustainable development (ESD).

The Department has considered all these matters in its assessment of the project, as well as the Applicant's consideration of environmental planning instruments in its EIS, as summarised in **section 6** of this report. The Department has also considered the relevant provisions of environmental planning instruments in **Appendix D**.

5. Engagement

5.1 Department's Engagement

The Department publicly exhibited the EIS from 27 April 2018 until 26 May 2018 (29 days) and advertised the exhibition in the Gunnedah Namoi Valley Independent and the Narrabri North West Courier. The Department also notified Gunnedah Shire Council, relevant government agencies and landowners adjoining the project boundary.

The Department inspected the site on 24 July 2018 and has consulted with the relevant Government agencies throughout the assessment process.

The Department also visited five properties around the site and met with most of the surrounding landowners to get an appreciation of the potential impacts associated with the proposed development and to further understand the concerns of individual landowners. The Department used this opportunity to inform the residents about the planning assessment process.

5.2 Submissions and Response to Submissions

During the exhibition period of the EIS, the Department received a total of 63 submissions, including:

- nine from government agencies;
- two from special interest groups; and
- 52 from the general public.

Full copies of the submissions are attached in **Appendix E.** The Applicant provided a response to the issues raised in submissions (see **Appendix G**), as well as additional information to address matters raised by the Department and other agencies during the assessment process (see **Appendix C**).

5.3 Key Issues – Government Agencies

Gunnedah Shire Council supports the development of the project, however initially raised concerns about traffic volumes, local road conditions, flooding, social and economic and koala habitat protection. Council also requested the implementation of several mitigation measures including a complaint handling procedure, and maintenance and monitoring of road conditions. All matters raised have been addressed by the Applicant in the Response to Submissions (RTS), are discussed in **sections 6.1**, **6.2**, **6.3** and **6.5** and have been incorporated into the recommended conditions of consent. Council has no residual concerns.

The **Department of Industry – Lands and Water (DoI L&W)** initially raised concerns about potential flooding impacts particularly in relation to the proposed perimeter fencing. Further flood modelling was undertaken by the Applicant for the RTS, which incorporated drop-down fencing and addressed DoI L&W's concerns. These matters are discussed in **section 6.1**. DoI L&W has confirmed it has no objection to the project, subject to the recommended conditions of consent.

The **Office of Environment and Heritage (OEH)** initially raised concerns about the adequacy of Aboriginal Cultural Heritage Consultation and the consistency of information on native vegetation and threatened species habitat. Following receipt of additional information and further discussions with the Applicant, OEH advised that it has no objection to the project subject to the recommended conditions of consent. These recommendations are discussed in **section 6.5**.

Roads and Maritime Services (RMS) recommended that the Applicant prepare a comprehensive Traffic Management Plan and undertake the relevant road upgrades prior to the commencement of construction. These recommendations are discussed in **section 6.3** and have been incorporated into the recommended conditions of consent.

The **Rural Fire Service (RFS)** and **Fire & Rescue NSW** recommended fire and emergency response plan conditions as well as specific operating requirements related to bushfire management, which have been incorporated into the recommended conditions of consent and, where appropriate, are discussed further in **section 6.4**.

The **Division of Resources and Geoscience (DRG)** noted that mining and exploration land uses were adequately addressed in the EIS, and that the Applicant provided sufficient evidence of consultation with the potentially affected titleholders.

The **Environment Protection Authority (EPA)** and **TransGrid** raised no concerns and made no recommendations.

5.4 Key Issues – Community

Of the 52 submissions received from the general public, 48 objected to, three provided comments on and one supported the project. Most of these submissions (i.e. 38) were from residents residing in the local area (i.e. within 10 km of the project site), as summarised in **Table 2**.

Table 2 | Summary of Community Submissions

Submitters	Total	Object	Support	Comment
< 5 km	26	25	1	0
5 – 10 km	17	14	0	3
10 – 50 km	4	3	0	0
> 50 km	5	5	0	0
TOTAL	**52**	**48**	**1**	**3**

The key issues raised in the public submissions related to flooding and land use compatibility, specifically regarding the use of prime agricultural land. Other issues raised in these submissions related to the amenity impacts of the project, including visual, noise and traffic impacts, and the potential impacts on property values.

A breakdown of the key issues raised by the general public is provided in **Figure 3** and summarised in **Appendix F**. **Section 6** of the assessment report provides a summary of the Department's consideration of these matters and recommended conditions.

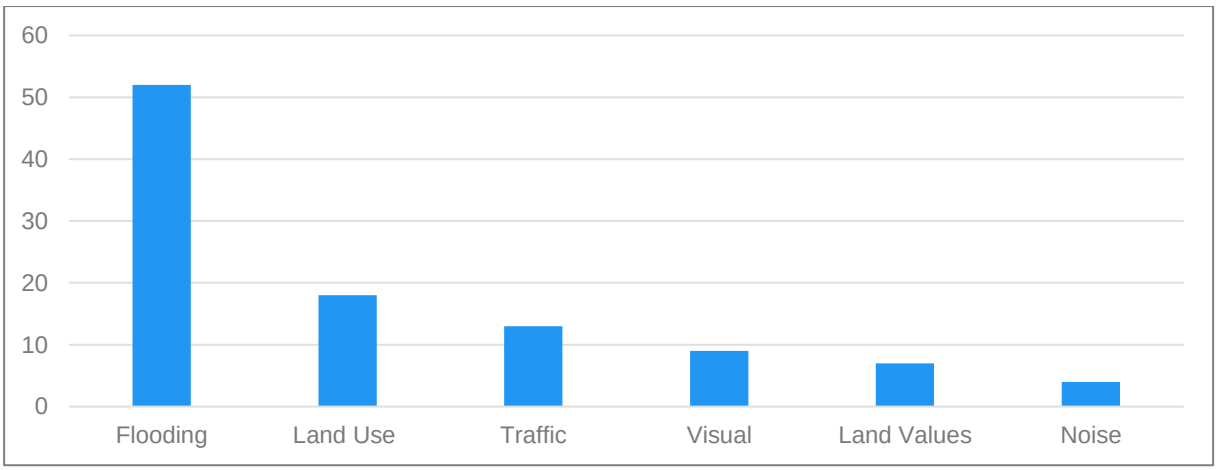


Figure 3 | Key Issues Raised in Public Submissions

5.6 Key Issues – Special Interest Groups

Two submissions were received from special interest groups, one objecting to and one providing comments on the project.

NTSCORP Limited, on behalf of the Applicant for the Gomeroi People native title determination application, objected to the project on the basis that adequate consultation with the local Aboriginal community has not been undertaken. The submission notes that only one Registered Aboriginal Party (RAP) was consulted as part of the Aboriginal Heritage Impact Assessment and no consultation was undertaken with the Gomeroi People.

With reference to the consultation requirements, NTSCORP Limited noted that consultation only with the Local Aboriginal Land Council (LALC) is not sufficient as not all knowledge is held by the LALC members and not all knowledge holders are associated with the LALC.

In response, the Applicant has committed to undertaking additional consultation and a site visit with NTSCORP Limited prior to commencing construction, and both OEH and NTSCORP Limited have confirmed they are satisfied with this approach as discussed in **section 6.5**.

Orange Grove Sun Farm Pty Ltd provided comments about the accuracy of the flood impact assessment, traffic impact assessment and misrepresentation of flood waters across the site for the proposed Orange Grove Solar Farm (3km east of the project site). The Department has considered all the issues raised by the community and special interest groups in its assessment of the project.

6. Assessment

The Department has undertaken a comprehensive assessment of the merits of the project. This report provides a detailed discussion of the three key issues, including the potential flooding impacts, compatibility of land use and the potential impacts on amenity (visual, traffic and noise).

The Department has also considered the full range of potential impacts associated with the project, including the potential cumulative impacts of the proposed Orange Grove Solar Farm, and has included a summary of the conclusions relating to these in **section 6.5**.

The key constraints for the project are depicted in **Figure 2** and a list of the key documents that informed the Department's assessment is provided in **Appendix A**.

6.1 Flooding

The project site is located in the Namoi River catchment approximately 900 m north of the Namoi River and has been identified as flood prone land within the Gunnedah LEP, and as being within the Upper Noise Valley Floodplain and the Boggabri Floodplain Management Plan area. There are no natural waterways within the site, but there is an extensive network of constructed irrigation channels to enable irrigation of cotton and other crops.

The project's development footprint has been designed to avoid the sites most flood affected land, however the majority of the development footprint would still be impacted by flood waters during a 1% Annual Exceedance Probability (AEP) event.

Concerns about the project's potential impact on flood behaviour were raised in a number of public submissions. In particular, a number of local landowners raised concerns that the project's proposed security fencing would cause debris to accumulate on the fence during a flood event and result in redirection of floodwater.

Regulatory Framework

Under the Gunnedah LEP, a consent authority must not grant consent to a development proposed on the flood planning area unless it is satisfied the development is not significantly adversely affecting flood behaviour and the surrounding environment.

The *Draft Floodplain Management Plan (FMP) for the Upper Namoi Valley Floodplain 2016* is the legal instrument that coordinates the development of future flood works on this floodplain. Further, the *Carroll to Boggabri Floodplain Management Plan* (FMP) assessment criteria applies for all new development within flood prone areas to ensure additional flooding problems are not created.

The Department has considered the provisions of the Gunnedah LEP and the relevant performance criteria of both FMPs in its assessment of the project, as summarised below.

Assessment

The Applicant commissioned a number of flood impact assessments throughout the assessment period, which evaluated a range of alternative drop-down fencing configurations, including:

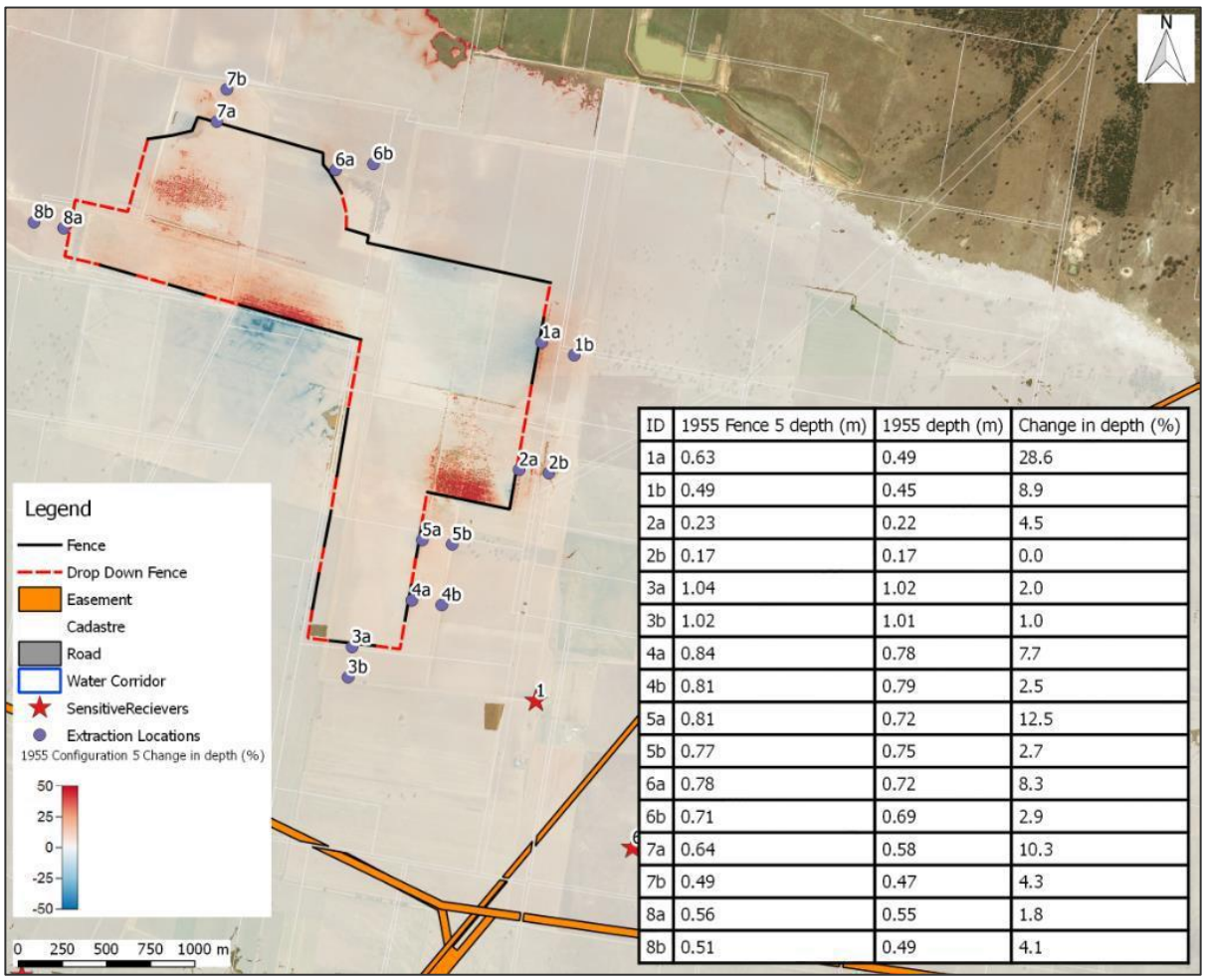
- Gunnedah Solar Farm - Flood Impact Assessment, pitt&sherry, 22 March 2018;
- Gunnedah Solar Farm - Updated Flood Impact Assessment, pitt&sherry, 29 June 2018; and
- Gunnedah Solar Farm - Water Levels and Fence boundary, pitt&sherry, 13 August 2018; and
- Gunnedah Solar Farm – Fence Configuration 5, pitt&sherry, 30 August 2018.

The Updated Flood Impact Assessment and subsequent studies combined ground surface data from a number of sources into a single flood model to estimate 1%, 5%, 10% AEPs and Probable Maximum Flood (PMF) flows, including:

- Light Detection and Ranging (LiDAR) survey data from 2000 which was collected for the Carroll to Boggabri Flood Study (SMEC, 2003),
- LiDAR survey data obtained by drone for Photon in 2017; and
- the construction drawing for the ring levee around the residence at the project site.

The assessments demonstrated that in a 1% AEP and PMF event, the project would comply with the Gunnedah LEP and the relevant FMPs' assessment criteria for permissible development on a floodplain, without sections of drop-down fencing incorporated into the security fencing.

Notwithstanding, in response to community concerns the Applicant evaluated a range of alternative perimeter fencing options in order to determine the optimum configuration for mitigating any residual flood impacts whilst meeting safety and security requirements. The modelled impact of the optimum fencing configuration (i.e. fencing configuration 5) in a 1% AEP flood event is shown in **Figure 4** and compared to the applicable assessment criteria of the FMPs in **Table 3**.



ID	1955 Fence 5 depth (m)	1955 depth (m)	Change in depth (%)
1a	0.63	0.49	28.6
1b	0.49	0.45	8.9
2a	0.23	0.22	4.5
2b	0.17	0.17	0.0
3a	1.04	1.02	2.0
3b	1.02	1.01	1.0
4a	0.84	0.78	7.7
4b	0.81	0.79	2.5
5a	0.81	0.72	12.5
5b	0.77	0.75	2.7
6a	0.78	0.72	8.3
6b	0.71	0.69	2.9
7a	0.64	0.58	10.3
7b	0.49	0.47	4.3
8a	0.56	0.55	1.8
8b	0.51	0.49	4.1

Figure 4 | Change in floodwater depth at perimeter incorporating fencing configuration 5

Table 3 | Impact of project incorporating fencing configuration 5 compared to flood assessment criteria for complying works

Assessment Criteria	Carroll to Boggabri FMP	Draft FMP for Upper Namoi Valley Floodplain	Assessment
Time for drainage of floodwaters from adjacent landholdings to be completed	Within 24hrs of natural / existing drainage time	Within 24hrs of natural / existing drainage time	Compliant
Maximum redistribution of peak flows onto adjacent property	5%	5%	<1% at most impacted residential receiver (VP1)
Maximum flood height impact on adjacent properties	100mm	200mm	Maximum of 14 mm at the eastern boundary of the site (1a in **Figure 4**)
Maximum flood height impact on high value infrastructure (eg. residence)	10mm	An increase that impacts high value infrastructure	Maximum of 2 mm at most impacted residential receiver (VP1)
Maximum % increase in flow velocity	50% for velocities up to 0.5m/s	50% on the landholding under application, adjacent landholdings and other landholdings that may be affected.	Maximum of -1% at the eastern boundary of the site Maximum of 4% at the north western boundary of the site

Fencing configuration 5 incorporates a combination of conventional security fencing as well as sections of drop-down fencing in key areas modelled to have the greatest potential impact on flood flows, as shown in **Figure 5**.

The drop-down fencing would be designed to allow floodwater to enter and pass through the site during a significant flood event to minimise any potential impacts, including the redirection and/or increase in the velocity of the water. Drop-down fencing can incorporate a number of technologies, an example of which incorporates a spring-loaded mechanism that is triggered by flood flows or debris build up.

Recommended Conditions

As such, the Department has recommended conditions of consent requiring the Applicant to design and construct the site perimeter fencing in accordance with fencing configuration 5, to meet the requirements of the *Draft FMP for the Upper Namoi Valley Floodplain 2016* and the *Carroll to Boggabri FMP 2006*.

Additionally, the Department has recommended conditions requiring the Applicant to prepare and implement a Water Management Plan in consultation with DoI L&W, that includes:

- detailed baseline data on hydrology across the downstream drainage system in the Carroll to Boggabri Floodplain;
- detailed plans, including design objectives and performance criteria for the site perimeter security fencing;
- a program to monitor and assess the impact of the development during flood events;
- reporting procedures for the results of the monitoring program; and
- a plan to respond to any exceedances of the performance criteria and mitigate and/or offset any adverse surface water impacts of the development.

Subject to the recommended conditions, both the Department and DoI – L&W consider the project would not result in significant impacts in the event of a flood.

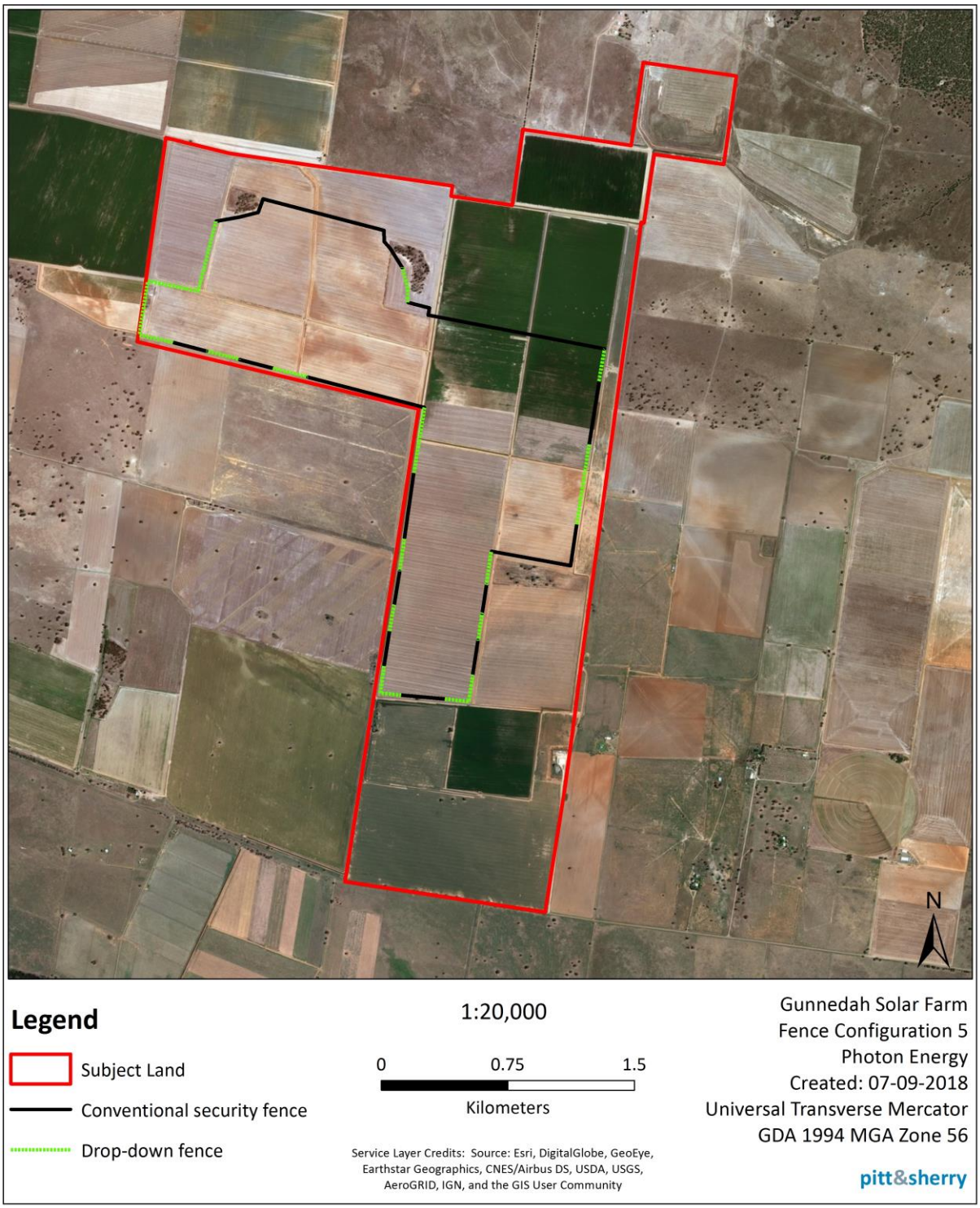


Figure 5 | Perimeter fencing configuration 5

6.2 Compatibility of Proposed Land Use

Provisions of the Gunnedah LEP

The site is located wholly within the RU1 Primary Production zone under the Gunnedah LEP. A solar farm is a permissible land use with consent under the LEP zoning table.

The project is also consistent with the objectives of the RU1 zone under the Gunnedah LEP, including in regard to:

- minimising conflict between land uses;
- minimising fragmentation and alienation of resource lands; and
- encouraging diversity in primary industry enterprises.

The project would not fragment or alienate any resource lands during operations and would be easily returned to agricultural land or other suitable uses following decommissioning. Further, managed grazing may also occur during the operation of the solar farm.

The introduction of solar energy would contribute to a more diverse local industry, thereby supporting the local economy and community, which is consistent with the *Gunnedah Community Strategic Plan 2013-2023.*

Finally, the project is consistent with the Department's *New England North West Regional Plan 2036* which identifies the development of renewable energy generation as a future growth opportunity for the region, and Council supports the development of the project, subject to the implementation of appropriate environmental mitigation measures.

Potential Impacts on Agricultural Land

The project is located within the New England North West Region, one of the State's most fertile and productive agricultural areas. Over 1.5 million ha of this region have been mapped as Biophysical Strategic Agricultural Land (BSAL).

The whole of the project site is mapped as BSAL, and while historically it has been used for grazing, portions of the site have been used for irrigated cropping for the past 20 years. The land is mapped as capability Class 2 under the *Land and Soil Capability Mapping in NSW* (OEH, 2017), which means that the land is not suited to continuous cultivation.

At present, the landowner is only able to effectively crop an estimated 180 ha of the 795 ha site, which leaves the remaining 615 ha uncultivated. The development footprint would occupy 304 ha of the remaining 615 ha of the site, allowing the landowner to continue using the most productive land for agricultural purposes. As such, the agricultural output of the site would not be materially affected by the project.

Combined with the proposed Orange Grove Solar Farm, both projects would have a development footprint of approximately 550 ha.

Notwithstanding, the loss of 550 ha of agricultural cropping land represents a very small fraction (~ 0.1%) of the agricultural output of the Gunnedah region and would result in a negligible reduction in the overall productivity of the region.

The Department notes the irrigation and drainage channels on site would continue to act as diversions to capture and divert stormwater. This coupled with the establishment of a 5 m buffer around the channels across the site would protect the channels and allow space for implementation of erosion and sediment controls when required.

Furthermore, nothing would prevent the future use of these channels following decommissioning of the project, and the project would not impact the use of irrigation and drainage channels for irrigators or landowners located upstream or downstream of the site.

Similarly, the inherent agricultural capability of the land would not be affected by the project due to the limited disturbance associated with the development of a solar farm, and managed grazing can be used to maintain the height of ground cover during operations and the land would be returned to agricultural use following decommissioning.

The potential loss of a small area of cropping and grazing land in the region must be balanced against:

- the broader strategic goals of the Commonwealth and NSW governments for the development of renewable energy into the future;
- the environmental benefits of solar energy, particularly in relation to reducing greenhouse gas emissions; and
- the economic benefits of solar energy in an area with good solar resources and capacity in the existing electricity infrastructure.

Based on these considerations, the Department considers that the proposed solar farm represents an effective and compatible use of the land within the Gunnedah region. In addition, the Department has recommended suitable conditions to ensure the agricultural capability of the land is reinstated following the decommissioning of the project.

6.3 Amenity

Visual

Concerns about visual impacts were raised in a number of public submissions, particularly regarding potential cumulative impacts with the proposed Orange Grove Solar Farm.

The EIS includes a comprehensive visual impact assessment that is based on 27 viewpoints and includes photomontages showing the visual impacts of the project at 6 locations, including 5 residences (see **Figure 6**).

Visual Context

The nearest residence, VP1, is located approximately 800 m south-east of the project at a similar elevation to the project site.

Eight residences are located along Tudgey Road between 1.8 km and 3.3 km to the north of the project on the lower slopes of the Kelvin Hills and would have slightly elevated views south towards the project (i.e. between 20 m and 50 m).

There are also a number of rural residences located to the west, south and south-east of the site, along Kelvin Road and Orange Grove Road between 1.7 km and 5 km of the project. These residences are at a similar elevation to the project site and are generally oriented south towards the Namoi River.

Four of the residences (i.e. VP1, VP6, VP7 and VP10) located to the south-east of the site would also have views of the Orange Grove Solar Farm.

Avoidance and Mitigation

The Applicant has designed the project to be setback from the northern, eastern and southern property boundaries, including a 1 km setback from Orange Grove Road, to mitigate visual impacts on surrounding residences and public viewpoints.

Additionally, the Applicant has proposed a vegetation buffer along the entire northern boundary and sections of the eastern boundary of the development footprint, located outside of the perimeter fence augmenting existing native vegetation, to further reduce visual impacts on residences located to the north and north-east of the site along Tudgey Road (see **Figure 6**).

Assessment

The maximum solar panel height would be up to 3 m, and the inverter stations would have a maximum height of 4.1 m (including 1.2 m elevated foundations due to potential flooding). All project related infrastructure would be a similar size to agricultural sheds commonly utilised in the local area. Additionally, the photovoltaic panels are designed to absorb rather than reflect sunlight and the project would not cause noticeable glint or glare compared to other building surfaces.

Notwithstanding, there would residual visual impacts to a number of surrounding residences, including VP1 and VP7, located to the project's south-east, and VP8, VP9, VP13, VP16, VP17, VP23, located to the project's north along Tudgey Road.

Figure 7 provides an example of the predicted view looking north-west towards the project from residence VP1, which is the closest residence located to the project's south-east.

While the Applicant had also proposed vegetation screening to mitigate the views of the project from residence VP1, the landowner of this residence advised he would prefer not to have vegetation screening as he was concerned about its impacts on flood behaviour.

Residence VP7 would have similar views to that of VP1, however, with reduced potential impact due to being located 1.5 km to the project's south-east.

Figure 8 provides an example of the predicted views looking south towards the project from residence VP9, the closest residence to the north, approximately 1.8 km north of the project on Tudgey Road. While the proposed vegetation screening goes some way towards mitigating the visual impact of the project, due to this residence's elevated location, it would still have views of the project infrastructure.

The predicted views on the other residence located along Tudgey Road (i.e. VP8, VP13, VP16, VP17 and VP23) would be similar to that of VP9, however, with reduced visual impacts due to increased distance from project's north.

Consideration was also given to potential cumulative visual impacts for the four residences located to the south-east of the project between the project and the proposed Orange Grove Solar Farm. However, due to the distance to both projects and the relatively low-lying nature of the developments, the Department considers the cumulative impacts would not be significant.

The project is also located approximately 130 km from the Siding Spring Observatory and therefore falls inside the Dark Sky Region covered by the NSW Government's *Dark Sky Planning Guideline*. A consent authority must consider this guideline for a State Significant Development (SSD) that are likely to impact the night sky and are within 200 km of the Siding Spring Observatory.

There would be some night security lighting, however there would be negligible light spill beyond the horizontal plane and any lighting would be similar to that associated with a rural residence. Consequently, the Department considers that the project would not affect either the observing conditions at the Observatory or the surrounding residences.

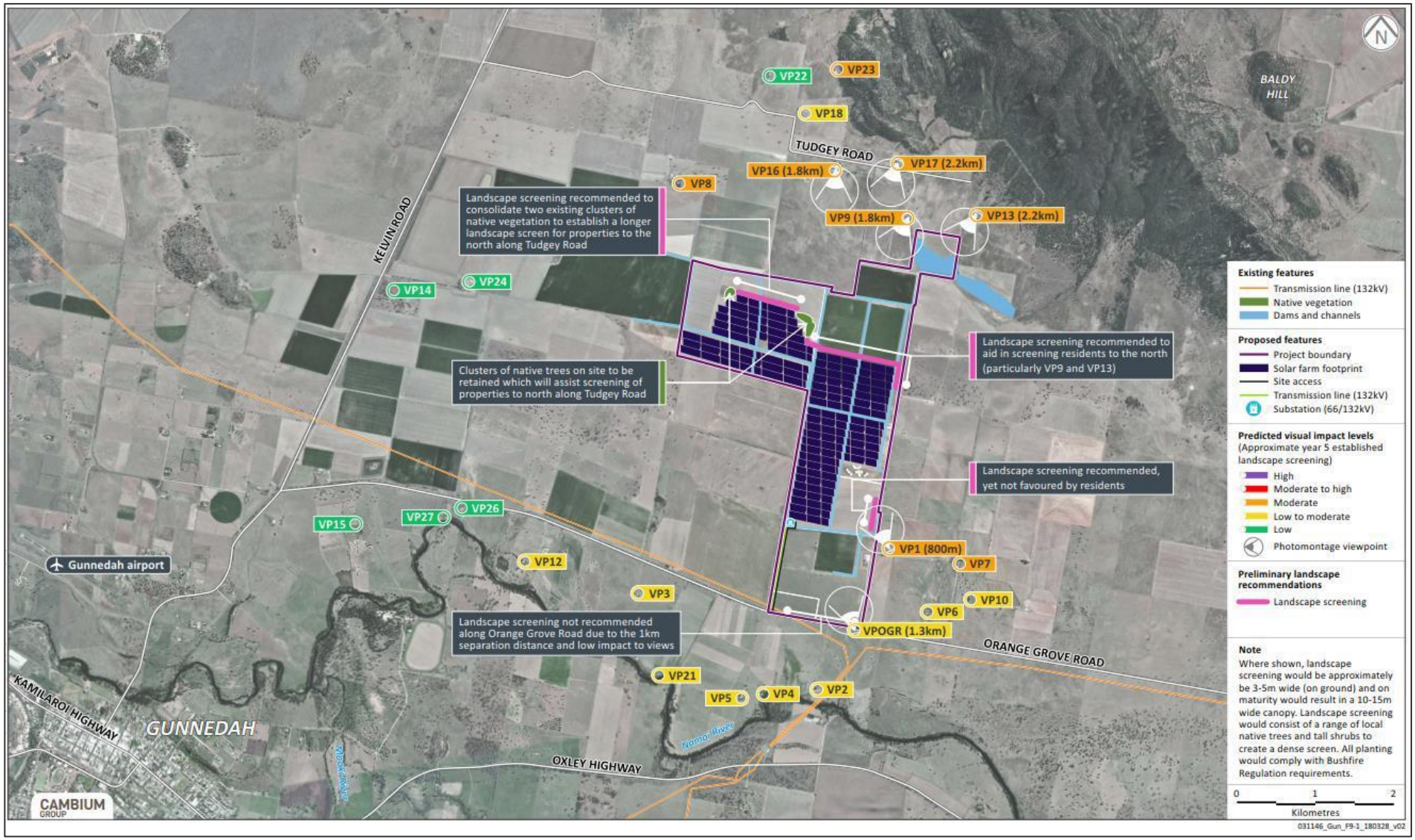


Figure 6 | Landscape Plan and Visual Impact Assessment

Figure 7 | Residence VP1 photomontage looking north-west towards the project

Figure 8 | Residence VP9 photomontage looking south towards the project

Recommended Conditions

To address the residual visual impacts, the Department has recommended a range of stringent conditions requiring the Applicant to establish and maintain a mature vegetation buffer along part of the site's northern and eastern boundaries. This buffer must:

- be established prior to the commencement of operations;
- consist of species that facilitate the best possible outcome in terms of visual screening;
- be effective at screening views of the solar panels and ancillary infrastructure from the relevant surrounding residences within 3 years of the commencement of construction; and
- be properly maintained with appropriate weed management.

Furthermore, the Applicant must prepare a detailed Landscaping Plan for the site, in consultation with Council and surrounding landowners, which must include a description of measures that would be implemented to ensure the effectiveness of the vegetation buffer. This plan must also include a program to monitor and report on the effectiveness of these measures.

The Department has also required that external lighting is minimised and complies with the relevant Australian Standards, and prohibits any signage or advertising on the development, unless it is required for safety purposes.

Subject to the implementation of these measures, the Department considers that there would be no significant visual impacts on surrounding residences, and the rural character and visual quality of the surrounding areas would be maintained.

Traffic

Several submissions from local residents raised concerns about the traffic impacts of the project on the local roads during the construction period.

Transport Routes and Site Access

It is likely that the infrastructure components required for the project would be manufactured overseas and delivered to either the Port of Newcastle or Port Botany. They would be transported to site from the relevant port via the Kamilaroi Highway, Blue Vale Road, Old Blue Vale Road, Kelvin Road and Orange Grove Road. This route would utilise the existing designated heavy vehicle route that avoids the centre of Gunnedah (see **Figure 9**). If infrastructure components are manufactured in Australia, they would be delivered via a similar route, depending on the manufacturing site location.

Light vehicles would access the site via Chandos Street, O'Keefe Avenue, Kelvin Road and Orange Grove Road. This would allow direct access between the town centre of Gunnedah and the project site.

The Orange Grove Solar Farm, if approved, is also proposing to use these transport routes for heavy and light vehicles.

The site would be accessed via an existing site access point located on Orange Grove Road in the south-west of the site (see **Figure 9**).

Traffic Volumes

There would be minimal traffic to and from the project site during the operation of the development (no more than 5 heavy vehicle movements per day). Consequently, the only material traffic impacts would occur during construction, decommissioning and major upgrades.

Traffic volumes would vary during the 12 month construction period but the daily vehicle movements during construction would not exceed 125 vehicle movements per day, comprising 75 light vehicles and 50 heavy vehicles movements. Additionally, up to 2 over-dimensional vehicles would be required to deliver the substation components. As construction activities would be restricted to daytime hours, construction related vehicles would only be using the local road network during the day.

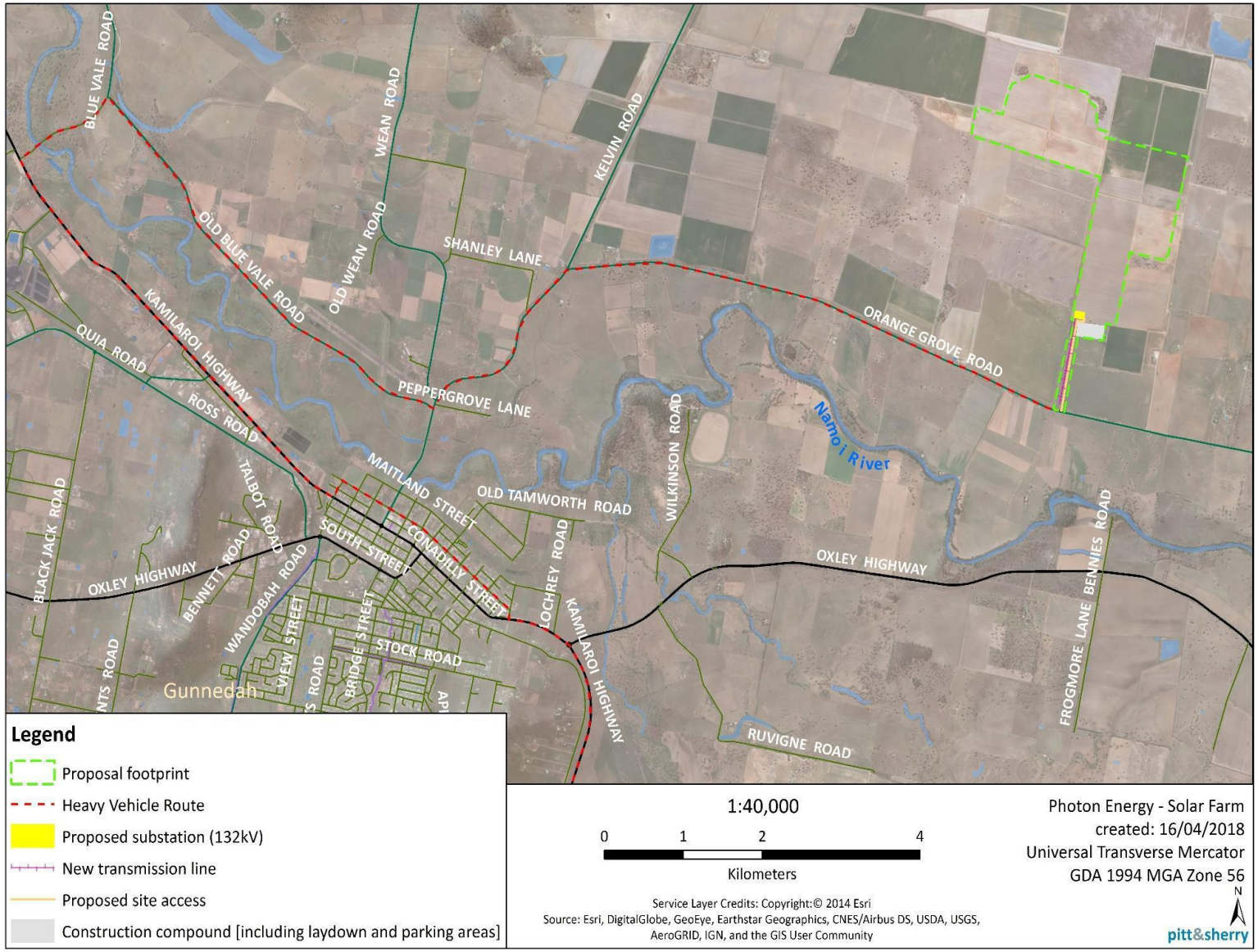


Figure 9 | Over-dimensional and Heavy Vehicle Access Route

If the Orange Grove Solar Farm is approved and constructed concurrently, the cumulative worst-case traffic volumes for the two projects would peak at 106 heavy vehicle movements and 180 light vehicle movements per day during construction.

Projected traffic during decommissioning and major upgrades would be similar to construction traffic levels, but over shorter durations.

Any potential traffic impacts on local road users would be minimised and managed through stringent measures developed as part of the Traffic Management Plan, including scheduling construction activities and deliveries to minimise road transport movements and avoid conflict with school buses. Council has agreed to this approach, and the Department has included this requirement in the recommended conditions.

Road Upgrades and Maintenance

Both RMS and Council support the proposed site access, provided the required road upgrades are undertaken to support the increased traffic volume. These include:

- upgrading the existing unsealed site access road with a minimum 30 m seal from Orange Grove Road, in order to meet RMS Typical Rural Property Access Standards;
- increasing the extent of the two-lane seal width (7 m) for 100m at the eastern and western ends of Old Blue Vale Road; and
- removing loose gravel material at the Old Blue Vale Road and Kelvin Road intersection.

Additionally, the Applicant has committed to preparing road dilapidation surveys, repairing any damage resulting from the construction traffic and developing a flood response plan as part of the Traffic Management Plan in consultation with RMS and Council.

Recommended Conditions

The Department has recommended conditions of consent requiring the Applicant to:

- undertake the relevant road upgrades prior to the commencement of construction;
- share the cost of the relevant road upgrades with the applicant of the Orange Grove Solar Farm, if both projects proceed;
- ensure the number of vehicles does not exceed:
    - 50 heavy vehicle movements a day during construction, upgrading or decommissioning;
    - 2 over-dimensional vehicle movements during construction, upgrading or decommissioning; and
    - 5 heavy vehicle movements a day during operations;
- ensure the length of vehicles accessing the site (excluding over-dimensional vehicles) does not exceed 19m; and
- prepare and implement a Traffic Management Plan in consultation with RMS and Council that includes provisions for dilapidation surveys to be undertaken and the preparation of a flood response plan detailing procedures and options for safe access to and from the site in the event of flooding.

Subject to the recommended conditions, the Department, RMS and Council consider that the project would not result in significant impacts on road network capacity, efficiency or safety.

Noise

Some of the submissions from local residents raised concerns about the noise impacts of the project, both from construction activities and ongoing operations.

The EIS includes a noise impact assessment of both operational and construction noise, including an assessment of the noise impacts associated with construction traffic.

The noise impact assessment concluded that the noise associated with the proposed construction, upgrading and decommissioning activities would be well below both the 'highly noise affected' criterion of 75 dB(A) and the 'noise affected' criterion of 45 dB(A) in the EPA's *Interim Construction Noise Guideline* (ICNG).

Notwithstanding, the Applicant has committed to minimising and managing construction noise impacts by implementing the noise mitigation work practices set out in the ICNG, including scheduling activities to minimise noise, using quieter equipment, informing the immediately surrounding landowners and establishing a complaint handling procedure.

The noise impact assessment concluded that the noise levels from the general operation of the project would comfortably comply with the relevant noise criteria of 35 dB(A) established under the *Noise Policy for Industry* at all residences under all scenarios and meteorological conditions.

The Department and the EPA consider that any noise impacts would be limited to the construction period and would be short-term and minor, and the Department has recommended conditions requiring the Applicant to:

- minimise the noise generated by any construction, upgrading or decommissioning activities on site in accordance with best practice requirements outlined in the ICNG, including consultation with nearby landowners; and
- restrict construction hours to Monday to Friday 7 am - 6 pm, and Saturday 8 am - 1 pm, with no works on Sundays and NSW public holidays.

6.5 Other Issues

The Department's consideration of other issues is summarised in **Table 4**.

Table 4 | Other Issues

Issue	Findings	Recommended Condition
Biodiversity	• The project site comprises agricultural land that has been heavily modified by past disturbances associated with land clearing, cropping, paddock development and irrigation. • The patches of remnant native vegetation remaining on the site would remain undisturbed for the duration of the proposal. Further, no native vegetation on the site would be directly or indirectly impacted by the project and all areas of disturbance would be confined to cropping land. • The Department considers that the project has been designed to avoid impacts to Endangered Ecological Communities (EECs) and minimise impacts on native vegetation. • Gunnedah Shire Council's *Koala Management Strategy* (Gunnedah 2015) lists Blakely's Red Gum Eucalyptus blakelyi as a secondary food tree for koalas. The tree species is present on the project land, however there are no historic or current observations of koalas within the project site and the isolation and poor condition of these trees make it unlikely to be suitable Koala habitat. • Further, the project site contains no Schedule 2 Koala feed trees and therefore the site does not contain potential koala habitat under *State Environmental Planning Policy No 44 – Koala Habitat Protection*. • The Department and OEH consider that the project is unlikely to result in any significant impacts on the biodiversity values of the locality.	• No specific conditions required.

Issue	Findings	Recommended Condition
Heritage	• The site does not contain any known Aboriginal or historic heritage items. • Given the highly disturbed nature of the site, the likelihood of identifying unexpected items during construction is low. If Aboriginal artefacts or skeletal material are identified, all work would cease, and the Chance Finds Protocol would be implemented. • However, the NTSCORP Ltd (on behalf of the Applicant for the Gomeroi People) and OEH raised concerns that adequate consultation had not been undertaken with the local Aboriginal community. • In response, the Applicant has committed to undertaking additional consultation and a site visit with the Gomeroi People prior to commencing construction, and OEH has advised that it is satisfied with this approach. The Department has formalised this commitment in the recommended conditions. • There are no known items of historic heritage value in the vicinity of the project site. • The Department and OEH consider that the project is unlikely to result in any significant impacts on heritage values.	• Undertake consultation with Aboriginal stakeholders prior to commencing construction. • Cease works and notify the NSW Police and OEH if human remains are identified over the life of the project. • Prepare and implement a Chance Finds Protocol.
Hazards	• The project would comply with the National Health and Medical Research Council standards for electric and magnetic fields. • In regard to other risks such as bushfire, part of the site is on land mapped as bushfire prone land. • Following a request by the RFS, the Applicant has committed to managing the entire site as an Asset Protection Zone and preparing a bushfire management plan to manage fire risk. • The Department considers that the bushfire risks can be suitably controlled through the implementation of standard fire management procedures.	• Ensure that the development complies with the relevant asset protection requirements in the RFS's *Planning for Bush Fire Protection 2006*. • Prepare and implement a Fire Management and Emergency Response Plan in consultation with RFS and Fire & Rescue NSW.
Water Resources	• The project would require around 10 megalitres (ML) of water during construction (mainly for dust suppression) and 1.5 ML of water annually during operation. • The Applicant is proposing to source this water from collected stormwater and existing onsite bores. • A static water supply (50,000 litres) would be established near the substation and maintained for fire protection. • DoI L&W raised no concerns about water supply or licensing under the *Water Management Act 2000*.	• Prohibit water pollution in accordance with Section 120 of the *Protection of the Environment Operations Act 1997*. • Undertake activities in accordance with OEH's *Managing Urban Stormwater: Soils and Construction* (Landcom, 2004) manual and *Guidelines for Controlled Activities on Waterfront Land* (DPI Water, 2012).
Workforce accommodation	• Up to 150 personnel would be required during the construction of the project. • Orange Grove Solar Farm would require 80 personnel during construction. As such, if both projects were approved and were constructed concurrently, up to 230 personnel would be required. • Both projects are proposing to source the workforce from the local and wider region including the surrounding local government areas. • The Applicant undertook an assessment of accommodation availability in Gunnedah, as well as Tamworth and Narrabri, which are both located within 100 km of the site. • The assessment indicated there is likely to be sufficient accommodation available to house workers during	• No specific conditions required.

Issue	Findings	Recommended Condition
	the construction period, even if both projects are constructed at the same time. Council has advised it has no concerns about this issue.	

Subdivision	• The Applicant proposes to subdivide all lots on which the development footprint is located (i.e. excise the development footprint from existing lots) to facilitate lease agreements with the land owners.
	• The proposed subdivision would result in 3 new lots: the TransGrid substation, the solar development envelope and a newly formed lot comprising the remaining land in accordance with the request from Council.
	• One of the reconfigured lots would be prohibited under a strict reading of the Gunnedah LEP as they would not meet the minimum lot size for RU1 land (200 ha).
	• Notwithstanding, under Section 4.38(3) of the EP&A Act, development consent for the project as a whole can be granted despite the subdivision component of the application being prohibited by the LEP.
	• The Department considers the subdivision should be approved as:
	  • it would permit existing agricultural land uses to continue on land that is not required for the development;
	  • it would not result in the addition of any dwelling entitlements on the subdivided lots; and
	  • it is consistent with key objectives of the RU1 zone as it would encourage diversity in primary industry enterprises and minimise conflict between land uses.
	• Further, Council supports the proposed subdivision.
		• Subdivide the proposed lots providing information is provided in accordance with requirements of Section 157 of the *Environmental Planning and Assessment Regulation 2000*.

7. Recommended Conditions

The Department has prepared recommended conditions of consent for the project (see **Appendix H**). These conditions are required to:

- prevent, minimise, and/or offset adverse impacts of the project;
- ensure standards and performance measures for acceptable environmental performance;
- ensure regular monitoring and reporting; and
- provide for the ongoing environmental management of the project.

The conditions are consistent with the Department's standard conditions for solar farms and use a risk-based approach that focuses on performance-based outcomes. This reflects current government policy and the fact that solar farms require relatively limited ongoing environmental management once commissioned.

In line with this approach, the Department has consolidated the number of management plans to the following:

- Traffic Management Plan;
- Landscaping Plan;
- Chance Finds Protocol;
- Water Management Plan; and
- Fire Management and Emergency Response Plan.

The recommended conditions also require the Applicant to provide detailed final layout plans to the Department prior to construction. The Department believes this is an adequate mechanism for providing greater flexibility for the siting of project infrastructure without resulting in any material changes to the impacts of the project.

Other key recommended conditions include:

- *roads* – upgrading the eastern and western ends of Old Blue Vale Road, and removing loose gravel material at the Old Blue Vale Road and Kelvin Road intersection; and
- *decommissioning and rehabilitation* – remove project infrastructure and restore land capability to pre-existing condition.

8. Evaluation

The Department has assessed the development application, EIS, submissions, Response to Submissions and additional information provided by the Applicant and relevant government agencies. The Department has also considered the objectives and relevant considerations under Section 4.15 of the EP&A Act.

The Department considers the site to be appropriate for a solar farm as it has good solar resources and available capacity on the existing electricity network.

The project has been designed to largely avoid key constraints, particularly in relation to flood prone land and biodiversity. The project also includes vegetation screening along the northern boundary to reduce potential visual impacts. Any residual impacts would be minor and can be managed through the recommended conditions of consent.

The project would not result in any significant reduction in the overall agricultural productivity of the region, and can be easily returned to agricultural uses after the project is decommissioned.

To address the residual impacts of the project, the Department has recommended a range of detailed conditions, developed in conjunction with agencies and the Council, to ensure these impacts are effectively minimised or offset. The Applicant has reviewed the conditions and does not object to them.

Importantly, the project would assist in transitioning the electricity sector from coal and gas-fired power stations to low emissions sources. It would generate up to approximately 300,000 (MWh) of clean electricity annually, which is enough to power up to 48,000 homes and save up to 290,000 tonnes of greenhouse gas emissions per year. It is therefore consistent with the goals of the Commonwealth's *Renewable Energy Target* and NSW's *Climate Change Policy Framework* and *Renewable Energy Action Plan*. The project would also stimulate economic investment in renewable energy and provide flow-on benefits to the local community, including up to 150 full time construction jobs, with a capital investment of approximately $200 million.

The Department considers the project achieves a reasonable balance between maximising the efficiency of the solar resource development and minimising the potential impacts on surrounding land users and the environment.

On balance, the Department considers that the project is approvable, subject to the recommended conditions of consent (see **Appendix H**).

This assessment report is hereby presented to the Independent Planning Commission for determination.

07/11/18

Diana Mitchell
A/Team Leader
Resource and Energy Assessments

7/11/18

Mike Young
Director
Resource and Energy Assessments

Appendices

Appendix A – List of Documents

Gunnedah Solar Farm Environmental Impact Statement, pitt&sherry, 2018.

Gunnedah Solar Farm Response to Submissions Report, pitt&sherry, 2018.

Gunnedah Solar Farm – Water Levels at Fence Boundary Memo, pitt&sherry, 13 August 2018.

Gunnedah Solar Farm – Fence Configuration 5 Memo, pitt&sherry, 30 August 2018.

Gunnedah Solar Farm – Fence Configuration 5 Figure, pitt&sherry, 7 September 2018.

Gunnedah Solar Farm – Constraints Map, pitt&sherry, 17 September 2018.

NSW Government, Draft Floodplain Management Plan for the Upper Namoi Valley Floodplain, 2016.

Carroll to Boggabri Flood Study and Compendium of Data, SMEC Australia Pty Ltd, 2013.

Appendix B – Environmental Impact Statement

See the Department's website at:
http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=8658

Appendix C – Additional Information

See the Department's website at:
http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=8658

Appendix D – Statutory Considerations

In line with the requirements of Section 4.15 of the EP&A Act, the Department's assessment of the project has given detailed consideration to a number of statutory requirements. These include:

- the objects found in Section 1.3 of the EP&A Act; and
- the matters listed under Section 4.15(1) of the EP&A Act, including applicable environmental planning instruments and regulations.

The Department has considered all of these matters in its assessment of the project and has provided a summary of this assessment below.

Aspect	Summary
Objects of the EP&A Act	The objects of most relevance to the Minister's decision on whether or not to approve the project are found in Section 1.3(a), (b), (c), (e) and (f) of the EP&A Act. The Department considers the project encourages the proper development of natural resources (Object 1.3(a)) and the promotion of orderly and economic use of land (Object 5(c)), particularly as the project is: • a permissible land use on the subject land; • located in a suitable location for efficient solar energy development; • able to be managed such that the impacts of the project could be adequately minimised and managed to an acceptable standard; and • consistent with the goals of the NSW *Renewable Energy Action Plan* and would assist in meeting Australia's renewable energy targets whilst reducing greenhouse gas emissions. The Department has considered the encouragement of ESD (Object 1.3(b)) in its assessment of the project. This assessment integrates all significant socio-economic and environmental considerations and seeks to avoid any potential serious or irreversible environmental damage, based on an assessment of risk-weighted consequences. The Applicant has also considered the project against the principles of ESD, particularly the principle of *intergenerational equity*, concluding that the proposal would benefit future generations by reducing the reliance on energy sources derived from non-renewable resources, which produce greenhouse gas emissions. Following its consideration, the Department considers that the project can be carried out in a manner that is consistent with the principles of ESD. Consideration of environmental protection (Object 1.3(e)) is provided in **section 6** of this report. The Applicant has applied both the *precautionary principle* and the *conservation of biological diversity and ecological integrity* having undertaken careful evaluation and assessment to avoid serious or irreversible damage to the environment wherever practicable. Following its consideration, the Department considers that the project is able to be undertaken in a manner that would improve or at least maintain the biodiversity values of the locality over the medium to long term and would have negligible impacts on threatened species and ecological communities of the locality. Consideration of the sustainable management of built and cultural heritage (Object 1.3(f)) is provided in **section 6.5** of this report. Following its consideration, the Department considers the project would have negligible impact on the built or cultural heritage of the locality. The Department considers any residual impacts on heritage can be managed and/or mitigated by imposing appropriate conditions.

Aspect	Summary
State Significant Development	Under Section 4.38 of the EP&A Act the project is considered a State Significant Development. The Minister for Planning is the consent authority for the development. Under the Minister's delegation of 14 September 2011, the Independent Planning Commission must determine the development application as there were more than 25 objections received during the public exhibition period.
Environmental Planning Instruments	The *Gunnedah Local Environment Plan (LEP) 2012* applies and is discussed in **sections 4.2** and **6.2** of this report. The project is permissible under the Infrastructure SEPP. The Department has considered the provisions of *SEPP (Rural Lands) 2008* and considers that the project is consistent with its objectives as the project would not compromise the long-term use of the land for agricultural purposes and would provide an additional source of income for the landowner of the associated property, whose land would be directly impacted by the project. Gunnedah Shire Council is listed under *SEPP No. 44 – Koala Habitat Protection*. The assessment found that there is no potential koala habitat identified on the site, and the Department considers there would be no impacts on koala habitat. The Department has considered the provisions of *SEPP No. 55 – Remediation of Land*. A preliminary assessment of the land found no contaminated land within the project site, and the Department considers the site is suitable for the development.

Appendix E – Submissions

See the Department's website at:
http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=8658

Appendix F – Consideration of Community Views

The Department exhibited the Environmental Impact Statement for the project from 27 April 2018 until 26 May 2018 (29 days) and received 56 submissions from the community, including two from special interest groups and 54 from members of the general public. Of the 56 submissions received from the general public and special interest groups, 49 objected to the project, one supported the project and five provided comments.

The key issues raised by the community (including in submissions) and considered in the Department's Assessment Report include potential flooding impacts, the use of prime agricultural land and the potential impacts on amenity (visual and traffic). Other issues are addressed in detail in the Department's Assessment Report.

Issue	Consideration
Flooding • Concern that security fencing would cause a hinderance and redirection of water. • Potential impact to neighbouring landholders. • Accuracy of the Flood Impact Assessment.	*Assessment* • The project site is located in the Upper Namoi Valley Floodplain on flood prone land. The majority of the site would be impacted by flood waters during a 1% Annual Exceedance Probability (AEP) event. • The Applicant amended the fencing configuration to incorporate sections of drop-down fencing in the areas potentially affected by flood. The drop-down fencing would drop during a significant flood event to allow the floodwater to flow through the site. • With the implementation of drop-down fencing, the project would meet the performance criteria under the aforementioned flood management plans. • The DoI – L&W considers the project would have a negligible impact on the flow and velocity of floodwaters, including at the nearest residence. • Subject to the recommended conditions, both the Department and DoI – L&W consider the project would not result in significant impacts in the event of a flood. *Conditions* • Design and construct the site perimeter fencing with sections of drop-down fencing to meet the requirements of the *Draft FMP for the Upper Namoi Valley Floodplain 2016* and the *Carroll to Boggabri FMP 2006*. • Prepare and implement a Water Management Plan in consultation with DoI – L&W.
Use of prime agricultural land • Perceived incompatibility of the project with the surrounding area.	*Assessment* • The project site is located within land zoned RU1 – Prime Production under the Gunnedah LEP. • The RU1 zone includes various land uses that are both permitted with and without consent. As a solar farm is a permitted land use with consent under a strict reading of the LEP zoning table. • Further, the project is permissible under the Infrastructure SEPP, and is consistent with the objectives of the *Gunnedah Community Strategic Plan 2013 – 2023* and *New England North West Regional Plan 2036*. • The project would occupy a 304 ha portion of the 795 ha site that the landowner is not effectively able to cultivate, and as such, the effective agricultural output of the site would not be reduced by the project during its operation. • The Department considers that the loss of 304 ha of agricultural cropping land represents a very small fraction (~0.1%) of the agricultural output of the region and would result in a negligible reduction in its overall productivity. • Further, the inherent capability of the land would not be affected by the project. • Managed grazing may be used to maintain the height of ground cover during operations and the land would be returned to agricultural use following decommissioning. *Conditions* • Reinstate the agricultural capability of the land following decommissioning of the project.

Issue	Consideration

Visual Impacts
• Visual impacts of project on surrounding residents.
	Assessment
	• Portions of the project would be visible to surrounding residences, particularly those residences located to the north of the project along Tudgey Road as they would have slightly elevated views south towards the project.
	• The Applicant has designed the development footprint to be setback from the site boundaries in order to mitigate the impacts of the project on the surrounding residences and public viewpoints.
	• The Department considers that subject to the implementation of visual impact mitigation measures, including vegetation screening, there would be no significant visual impacts on the surrounding residences.
	Conditions
	• Establish and maintain a mature vegetation buffer along the northern, southern and western boundaries. This buffer must:
	  • be established prior to the commencement of operations;
	  • consist of species that facilitate the best possible outcome in terms of visual screening; and
	  • be effective at screening views of the solar panels and ancillary infrastructure from surrounding residences within 3 years of the commencement of construction.

Traffic during construction • Increased traffic volumes on local roads during the construction period.	*Assessment* • There would be minimal traffic to and from the project site during the operation of the development. Consequently, the only material traffic impacts would occur during construction, decommissioning and major upgrades. • If the Orange Grove Solar Farm is approved and constructed concurrently, the cumulative worst-case traffic volumes for the two projects would peak at 106 heavy vehicle movements and 180 light vehicle movements per day during construction. • The Department considers that even if both projects were to be constructed concurrently, the traffic impacts would be largely short-term, relatively minor and can be managed in accordance with Government policy. *Conditions* • Undertake the relevant road upgrades prior to the commencement of construction. • Share the cost of the relevant road upgrades with the applicant of the Orange Grove Solar Farm, if both projects proceed. • Ensure the number and length of heavy vehicles does not exceed those predicted in the EIS. • Prepare and implement a Traffic Management Plan in consultation with RMS and Council.

Appendix G – Response to Submissions

See the Department's website at:
http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=8658

Appendix H – Recommended Conditions of Consent

See the Department's website at:
http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=8658