Wollar Solar

Preliminary Environmental Assessment

WOLLAR SOLAR FARM

ngh environmental

Document Verification

Project Title: Wollar Solar farm

Project Number:	18-012
Project File Name:	Wollar PEA final v1 030418

Revision	Date	Prepared by (name)	Reviewed by (name)	Approved by (name)
Draft v1	16/02/18	Zoe Quaas Louiza Romane	Brooke Marshall	Brooke Marshall
Draft v2	23/02/18	Louiza Romane	Brooke Marshall	Brooke Marshall
Final v1	27/02/18	Louiza Romane	Brooke Marshall	Brooke Marshall
Final v2	05/04/18	Louiza Romane	Brooke Marshall	Brooke Marshall

NGH Environmental Pty Ltd (ACN: 124 444 622. ABN: 31 124 444 622) and NGH Environmental (Heritage) Pty Ltd (ACN: 603 938 549. ABN: 62 603 938 549) are part of the NGH Environmental Group of Companies.

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ACRONYMS AND ABBREVIATIONS

ABS	Australian Bureau of Statistics
AHIMS	Aboriginal heritage information management system
BC Act	*Biodiversity Conservation Act 2016*
BDAR	Biodiversity Development Assessment Report
CEC	Clean Energy Council
Cwth	Commonwealth
DoEE	Department of the Environment and Energy
DP&E	Department of Planning and Environment
EIS	Environmental Impact Statement
EMF	Electric and Magnetic Fields
EP&A Act	*Environmental Planning and Assessment Act 1979* (NSW)
EPA	(NSW) Environment Protection Authority
EPBC Act	*Environmental Protection and Biodiversity Conservation Act 1999* (Cwth)
Ha	hectares
Heritage Act	*Heritage Act 1977* (NSW)
ISEPP	*State Environmental Planning Policy (Infrastructure) 2007* (NSW)
km	kilometres
kV	kilovolts
LEP	Local Environment Plan
LGA	Local Government Area
M	Metres
MNES	Matters of National environmental significance under the EPBC Act (*c.f.*)
MW	Megawatt
MWH	Megawatt Hours
NSW	New South Wales
OEH	(NSW) Office of Environment and Heritage, formerly Department of Environment, Climate Change and Water
PCT	Plant Community Type
PEA	Preliminary Environmental Assessment
PV	Photovoltaic
RMS	Roads and Maritime Services
SEARs	Secretary's Environmental Assessment Requirements
SEPP	State Environmental Planning Policy (NSW)

1 INTRODUCTION

1.1 PURPOSE OF THIS DOCUMENT

This Preliminary Environmental Assessment (PEA) provides a description of the Wollar Solar Farm proposal, including the site and its surroundings, the statutory framework for approval and identification of key potential environmental issues that may be associated with the solar farm proposal. The report has been prepared to support a request to the Department of Planning and Environment (DP&E) for the Secretary's Environmental Assessment Requirements (SEARs) which would guide the preparation of an Environmental Impact Statement (EIS) for the proposal under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

1.2 THE PROPONENT

Wollar Solar Farm is developed by Wollar Solar Development Pty Ltd (ABN 88 621 969 266) (hereafter "Wollar Solar" or "the Company"), an Australian developer of utility-scale solar generation.

The company is a subsidiary of Solar Megawatt Holding Pty Ltd, which has a dedicated management team highly experienced in transmission network connection planning, renewable generation development and operation, and renewable project financing. This team has extensive experience in developing and operating utility-scale renewable generations in Australia and internationally.

2 SITE DESCRIPTION

2.1 SITE CONTEXT

The Wollar Solar Farm proposal is located on the western side of Barigan Road approximately 7 km south of Wollar Village. The proposal area is located within the Mid-Western Regional Local Government Area (LGA). The proposed solar farm would connect to an existing TransGrid substation approximately 900 m east of the proposal area via a loop in to a nearby transmission line.

The land immediately surrounding the proposal area includes grazed (cattle) and Crown Land. Coal mining is the main local industry for employment in the Mid-Western Region, followed by beef cattle farming and primary education (ABS, 2016). The nearest mine site (Wilpinjong) is approximately 11 km north west of the proposal area.

Wollar is the closest village to the proposal area with a population of 69 people in 2016. This is a decrease of 77% since 2006. Community facilities include a general store (with post office and fuel), Community Hall, Rural Fire Service and a Public Primary School. The land in the region is primarily used for grazing and cropping for feed. The village is approximately 5 km south east from the Wilpinjong coal mine site that was approved in 2006. Since then, the Wilpinjong owner Peabody Energy has received an approval (April 2017) for a further mine expansion to approximately 1.5 km from the village and about 9 km from the proposal area. There are currently a small number of privately-owned properties in Wollar village.

Mudgee is approximately 38 km south west from the proposal area and is the closest regional center for residents of Wollar to access services; the population in (ABS) 2016 was 10,923 people, which is a 9.7% increase since 2006 and makes up 44.4% of the Mid-Western Region LGA. The town services include banks, supermarkets, accommodation, post office, medical centres and a hospital. Mudgee is host to a variety of community and sporting events throughout the year, and is well known for its premium wineries, making it a hub for tourism.

One residence that is owned by the current land owner is located on the subject land. No other nearby residences are within 2 km of the proposal area. The intention is that the solar farm would purchase all lots and retain the residence. Consultation undertaken to date with nearby stakeholders is outlined in Section 5.

Interesting regional features include Munghorn Gap Nature Reserve and Goulbourn River National Park. The reserve is located approximately 9 km to the West and the national park is approximately 13 km to the north east of the proposal area. The Munghorn Gap Nature Reserve is the second oldest nature reserve in Australia and covers approximately 5934 ha. The reserve offers recreational uses and holds important Aboriginal heritage values. The Goulburn River National Park stretches along 90 km of river that offers walking, camping and swimming opportunities as well as holding significant cultural values including over 300 known Aboriginal heritage sites.

2.2 THE SITE

The Wollar Solar Farm proposal would be located on a property of approximately 800 ha. The relevant lots include Lots 22-25, 27, 30, 45, 49-51, 60-63, 69-80, 92, 105-107, 119 and 152-154 of DP 755430, and Lot 1 of DP 650653 Under the *Mid-Western Regional Local Environmental Plan 2012*, the proposed solar farm is located on land zoned as RU1 Primary Production.

The property has been under agricultural cultivation since the early 1900's and is predominantly cleared of overstorey vegetation. The proposal area is currently grazed by approximately 500 cattle, and a small number of horses and sheep. Stock feed is cropped onsite occasionally, although there are currently no crops.

No bores have been developed onsite. One main creek (Wollar Creek) traverses the eastern portion of the property. It carries water only after substantial rainfall and is the only source of regular water above ground. There are 15 dams on the property that are used for stock water.

The current access to the proposal area is via Maree Road. Access to Maree Road is via Barigan Road with both roads being unsealed. Wollar Road intersects Barigan Road approximately 7 km north of the intersection with Maree Road. An alternative access options from Barigan Road (near the existing TransGrid substation) will be considered subject to feasibility assessment.

It is expected that the haulage route for most vehicles, including heavy and over dimensional vehicles, during construction and operation of the solar farm would be from Mudgee then north to:

- Castlereagh Highway
- Wollar Road
- Barigan Road

This would be confirmed during more detailed investigations.

An existing TransGrid 330kV transmission line transects the proposal area in the north eastern corner and will be used to connect the solar farm.

The proposal locality and subject land are shown in Figure 2-1 and 2-2. The proposal area photographs are provided in Appendix A.

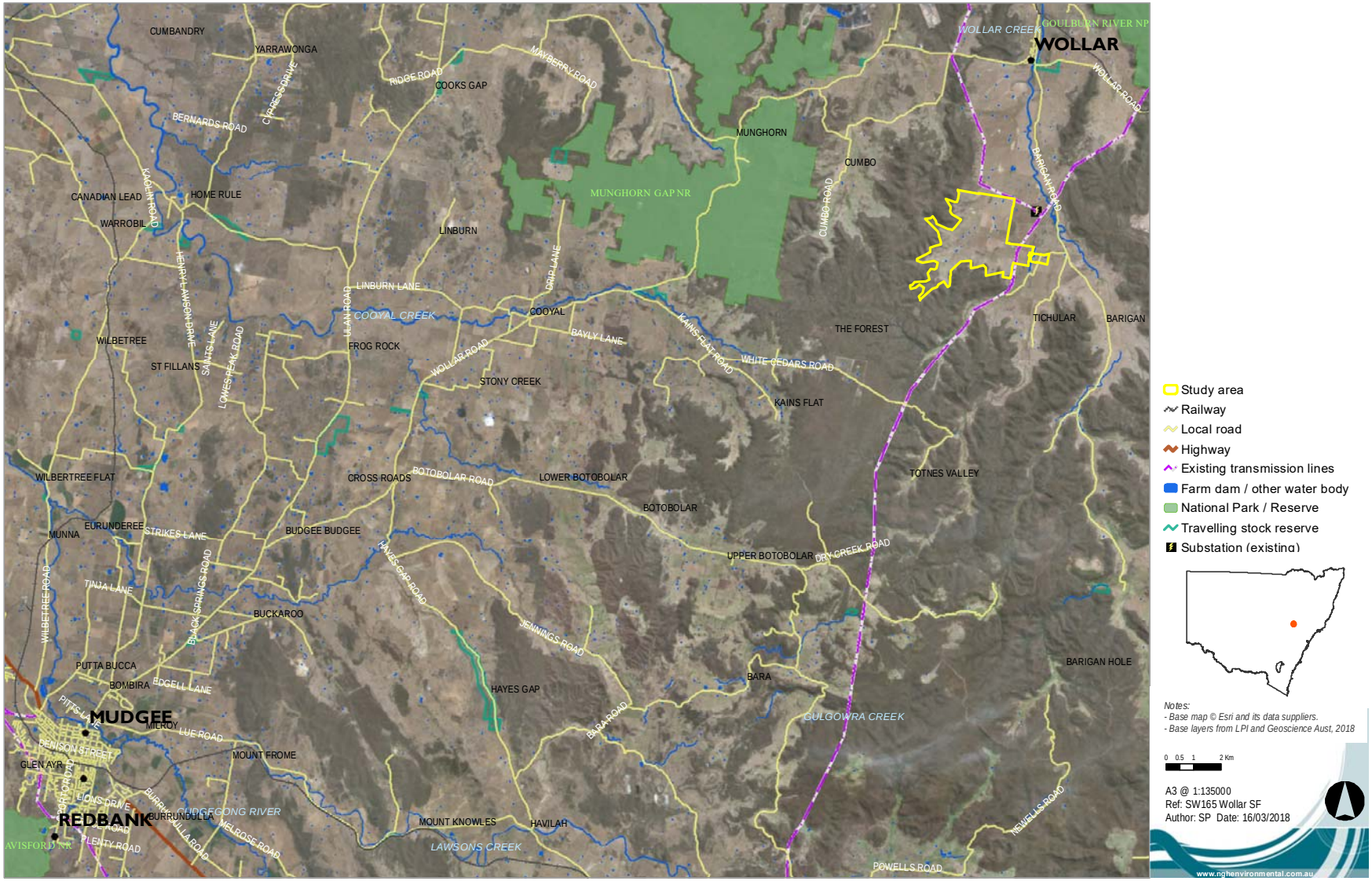

Figure 2-1 Proposal location (and proximity to nearest towns).

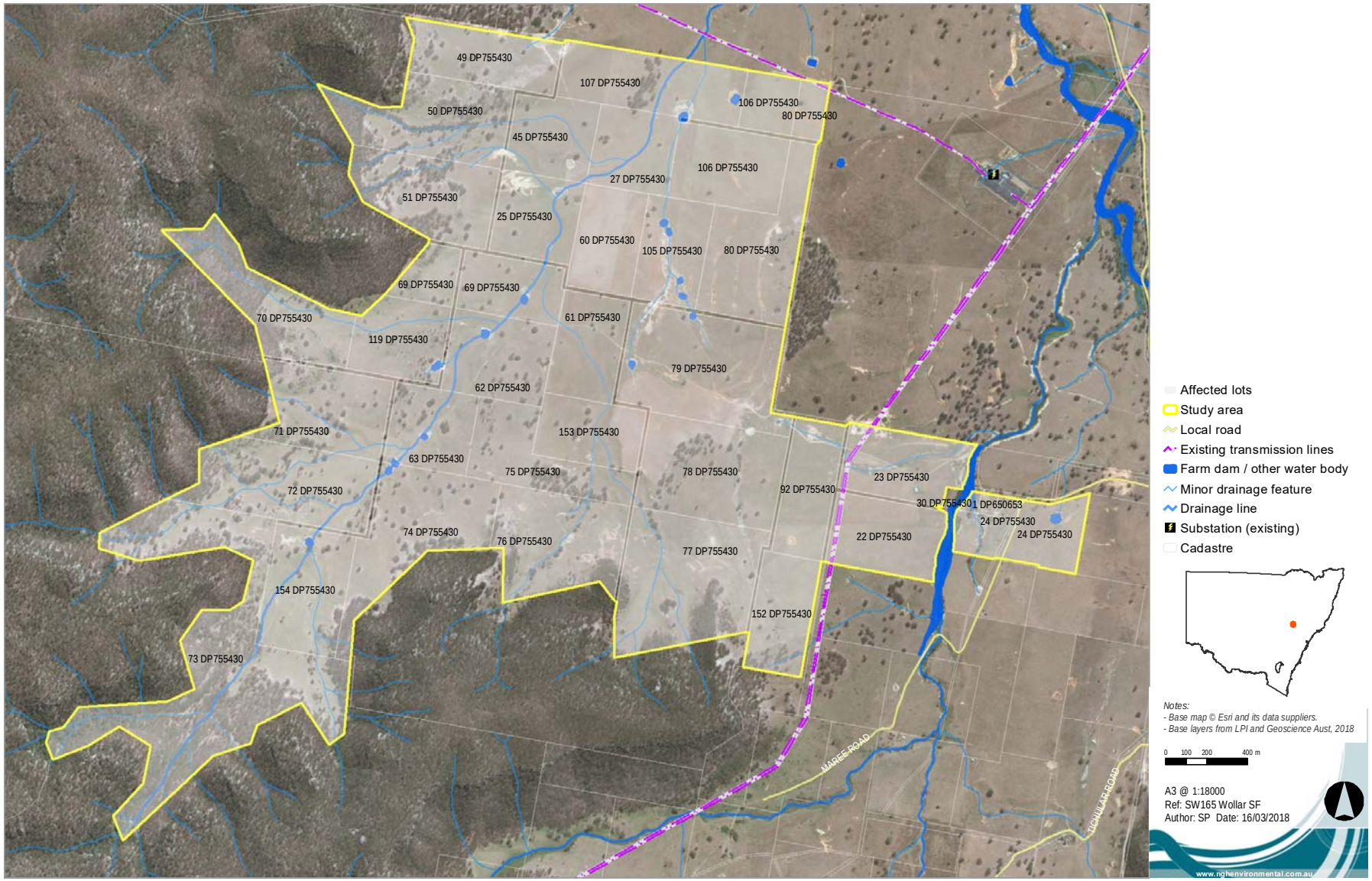

Figure 2-2 Subject land affected by the proposal

3 THE PROPOSAL

3.1 PROPOSAL DESCRIPTION

The proposed Wollar Solar Farm will generate up to 400 MW of renewable energy that would supply electricity to the national grid. The proposal area is approximately 800 ha and will consist of the following components occupying around half the area: a) around 1,000,000 solar panels mounted on either a fixed or single axis tracking system b) access to the site c) onsite access tracks d) operations and maintenance building with associated car parking e) an onsite electrical substation f) overhead and underground electrical cable reticulation g) energy storage facility h) security fencing and CCTV i) native vegetation planting to provide visual screening for specific receivers, if required.

The land, including the homestead on site, is proposed to be purchased by Wollar Solar Farm prior to construction.

It is anticipated that the proposed solar farm would include development of the following infrastructure:

- Construction laydown and parking areas.
- PV modules.
- Inverter stations.
- An energy storage facility consisting of lithium ion batteries of a capacity up to around 30MWH. These would be housed in a purpose built structure or within dedicated containers located in a secure compound close to the substation.
- Site office and maintenance building with associated car park.
- Internal access tracks to allow for site maintenance.
- Overhead lines and underground electrical conduits and cabling to connect the PV arrays onsite.
- Approximately 200 m of overhead high voltage transmission lines to connect to the grid onsite.
- Maree 330kV substation will be constructed within the site boundary (likely north-east corner), connecting to the grid via an existing 330 kV transmission line.
- Intersection treatment, upgrades and construction of access track either off Maree Road, or via an easement between the proposed substation and existing Transgrid substation (Appendix B). Final access will be determined by further traffic investigations.
- Native vegetation planting to provide visual screening for specific viewers, if any are required.

The solar farm's site boundaries are illustrated in Figure 2-2. An indicative layout would be informed by detailed site investigations during the assessment, planning and design stage. The layout would maximise use of low constraint areas. Areas currently mapped as moderate to high constraint will require further investigation regarding their developability. It is likely that solar array would be constructed over areas of overland flow, but this would be informed by further hydrological modelling.

The Wollar Solar Farm would be expected to operate for 30 years. The construction phase of the proposal would take less than 12 months. After the initial 30 year operating period, the solar farm would either be decommissioned, removing all above ground infrastructure and returning the site to its existing land capability, or repowered with new PV equipment subject to landowner and planning consents.

The Wollar Solar Farm would have an estimated capital investment value of approximately $450 million and is therefore deemed a State Significant Development. A report would be prepared during the EIS process as part of the proposal which would confirm the capital investment cost.

4 PROPOSAL JUSTIFICATION AND ALTERNATIVES

4.1 PROPOSAL JUSTIFICATION

The renewable energy sector in Australia contributes 14.3% of the country's overall electricity; more than 50 large scale renewable energy projects are currently under way or being developed creating up to 5,500 jobs and more than $9.3 billion of investment (CEC, 2018). Large scale solar farm projects such as the proposed Wollar Solar Farm support long-term and stable policies such as the Renewable Energy Target (RET) and have the potential to benefit average household electricity bills substantially and reduce power disruptions providing alternative generation sources for the energy sector.

The Wollar Solar Farm proposal would provide the following benefits, specific to Australia's commitments:

- Reduction in greenhouse gas emissions required to meet our international climate commitments;
- Assisting the transition towards cleaner electricity generation;
- Direct contribution to help in meeting the Renewable Energy Target (RET).

At a State level, the Wollar Solar Farm proposal is consistent with current goals and targets for renewable energy generation in NSW. These include Goal 22 of the NSW 2021: A plan to Make NSW Number One (NSW Government 2011):

> *Contribute to the national renewable energy target [i.e. 20% renewable energy supply] by promoting energy security through a more diverse energy mix, reducing coal dependence, increasing energy efficiency and moving to lower emission energy sources*

The proposal is also consistent with the three goals of the NSW Renewable Energy Action Plan (NSW Government 2013) which include:

1. Attract renewable energy investment and projects.
2. Build community support for renewable energy.
3. Attract and grow expertise in renewable energy.

The COP21, also known as the 2015 Paris Climate Conference, achieved a legally binding and universal agreement on climate, with the aim of keeping global warming below 2°C, chiefly by reducing greenhouse gas emissions. The Wollar Solar Farm would form part of the Australian effort to help meet this target.

During construction, the Wollar Solar Farm proposal will create local employment and economic stimulus in Wollar. During construction, approximately 300 jobs will be created along with an additional five jobs during operation. These benefits could be expected to extend to local service centres including Mudgee. These townships will provide accommodation, food, fuel and trade equipment and services. Most of these benefits would occur during the construction period. Limited but maintained economic benefits during the approximate 30 year lifetime of the project would continue to occur during monitoring and inspections, maintenance, repair and upgrade of infrastructure at the solar farm.

Generally, solar farm development enjoys community support. OEH commissioned community research regarding attitudes to renewable energy in 2014 found that 89% of people support the use of renewable energy in the form of solar farms in NSW. Furthermore, 78% of respondents supported having a solar farm within 1-2 km of where they lived. Among the reasons for this were benefits to the environment and local

economy. A significant amount (83%) of respondents believed that NSW should produce more of its energy from renewables over the following 5 years (OEH, 2015).

4.2 ALTERNATIVES CONSIDERED

The site was preferred as it has:

- Excellent solar exposure
- Excellent access to local and major roads
- Excellent access to the grid transmission network
- A low number of non-involved neighbouring dwellings
- Likely low level of environmental impact
- Been largely cleared and heavily disturbed by cultivation and grazing
- Low relief terrain

The Draft Large Scale Solar Energy Guideline for State Significant Development (SSD) provides recommendations regarding selection of suitable solar farm sites and areas of constraint that should be identified. These are addressed in Table 4-1 and 4-2 for the site.

Table 4-1 Site selection criteria: preferable site conditions

Preferable site condition	Site observation
Optimal solar resources	Good solar irradiance observed
Suitable Land	Low relief land far from existing development.
Local impacts minimised	Consultation underway.
Capacity to rehabilitate	Minimal site disturbance, if using pile driven array mounts.
Community support	Consultation underway
Proximity to electrical network	Close to existing substation. Connection point crosses site.
Connection capacity	Optimal location to connect to the existing transmission network with high grid system strength

Table 4-2 Site selection criteria: Areas of constraint

Areas of constraint	Site observation
Native vegetation	Much of the site is cleared of overstorey vegetation and has been subject to extensive past modification for agricultural use.
Potential residences	Few residential receivers.
Waterways	Few permanent waterways.
Aboriginal/Heritage significance	Requires investigation.
Important agricultural land	Not mapped as Biophysical Strategic Agricultural Land (BSAL)

Areas of constraint	Site observation
Residential zones	No residential zones.
Resource developments	No current mineral leases.

Photovoltaic solar technology was chosen because it is cost effective, low profile, durable and flexible regarding layout and siting. It is a proven and mature technology which is readily available for broad scale deployment at the site.

The mixture of fixed and tracking panels is to be determined after further analysis.

5 CONSULTATION

5.1 CONSULTATION PLANNING

A community consultation plan (CCP) has been developed for the Wollar Solar Farm proposal.

The aim of the plan is to:

1. Identify effective methods to inform the community about the Wollar Solar Farm
2. Facilitate engagement with the community, including allowing meaningful contributions from the community into the environmental assessment and project development.
3. Obtain social license to operate from the local community, allowing for good long-term relationships with community stakeholders

Effective engagement will require an understanding of community stakeholders and prioritisation of potential impacts. It also relies on the community understanding the project and specific issues of interest to them, in order to contribute effectively. The focus of the consultation plan will be on providing this understanding and engagement.

This plan has been developed to coincide with the early planning and assessment stages of the project. If the project is approved, consultation will also be required to continue into the construction and operational phases of the project. These phases will require a new or updated plan, to reflect any changes to consultation objectives but also the increasing knowledge gained about the community. At this stage, only pre approval project stages are addressed.

The Consultation Plan is appended to this report, Appendix C. Consultation activities with key stakeholders are planned to coincide with the early investigations and proposal development, preparation of the EIS and into the public exhibition period, to ensure that feedback is fully considered and incorporated into the project as far as possible.

5.2 CONSULTATION TO DATE

The following consultation has been undertaken. Key issues raised to date are identified.

Table 5-1 Consultation to date

Key Stakeholder	Consultation to date	Date of Meeting (s)	Key issues raised
1. Involved land owner	Face to face meetings	12 Sep 2017, 1 and 19 February 2018.	No specific issues, wishes to be kept informed.
2. Adjacent neighbours	Refer Stakeholder 4		
3. Residents of Wollar community	Refer Stakeholder 6		
4. Large local employer / land use (Wilpinjong mine)	The Wilpinjong mine site representative has been contacted (February 2018) and informed of the proposal. Note that the adjoining properties are all owned by the mine and sub leased to a Pastoral Management Company. The mine has advised they will brief this Pastoral Company.	1 February 2018. 19 February 2018.	Wilpinjong has provided an overview of the approved mining activities and the Wilpinjong Extension Project mining areas (as presented in the WEP EIS) and the Exploration Licence Application and its proximity to the solar project. Wilpinjong Mine is continuing to consider the potential impact of the project on its current and future operations.
5. Representative bodies (Mid-Western Regional Council and Mudgee Chamber of Commerce)	Mid-Western Regional Council were also contacted, and the early details of the proposal discussed with the General Manager and Director of Development (February 2018).	2 February 2018.	No specific issues, wishes to be kept informed.
6. Special interest groups (The Wollar Progress Association and Mudgee District Environmental Group)	The Presidents of both the Mudgee District Environmental Group as well as the Wollar Progress Association have both been contacted and personally briefed (February 2018).	20 February 2018.	No specific issues, wish to be kept informed.
7. Geological Survey of NSW	Overview of development provided.	16 March 2018.	No specific issues, wishes to be kept informed.

6 PLANNING CONTEXT

6.1 KEY NSW LEGISLATIVE INSTRUMENTS

6.1.1 *Environmental Planning and Assessment Act 1979*

Development in NSW is subject to the requirements of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and its associated regulations. Environmental planning instruments prepared pursuant to the Act set the framework for approvals under the Act. The Wollar Solar Farm proposal would be assessed under Part 4 of the EP&A Act.

6.1.2 *State Environmental Planning Policy (State and Regional Development) 2011*

Clause 20 of Schedule 1 of *State Environmental Planning Policy (State and Regional Development) 2011* states that the following is considered a State Significant Development:

Development for the purpose of electricity generating works or heat or their co-generation (using any energy source, including gas, coal, biofuel, distillate, waste, hydro, wave, solar or wind power) that:

> *(a) has a capital investment value of more than $30 million, or*
>
> *(b) has a capital investment value of more than $10 million and is located in an environmentally sensitive area of State significance.'*

The Wollar Solar Farm proposal would have a capital investment cost estimate of more than $30 million. Therefore, the proposal is classified as "State Significant Development" under Part 4 of the EP&A Act.

State Significant Developments are major projects which require approval from the NSW Minister for Planning and Environment. While the Minister for Planning and Environment is the consent authority for State Significant Development, the Minister may delegate the consent authority function to the Planning Assessment Commission (PAC), the Secretary or to any other public authority.

An EIS is required to be prepared in accordance with the requirements of the Secretary's Environmental Assessment Requirements (SEARs) of Department of Planning and Environment. In determining the SEARs, the Secretary must consult with relevant public authorities and would have regard to the need to assess key issues raised by those public authorities.

6.1.3 *State Environmental Planning Policy (Infrastructure) 2007*

Clause 34(7) of *State Environmental Planning Policy (Infrastructure) 2007* (ISEPP) provides that development for the purpose of a solar energy system may be carried out by any person with consent on any land (except land in a prescribed residential zone). A solar energy system includes a PV electricity generating system.

The proposal, being zoned as RU1 Primary Production is therefore permissible with consent.

6.1.4 *Roads Act 1993*

The *Roads Act 1993* (Roads Act) provides for the classification of roads and for the declaration of the Roads and Maritime Services (RMS) and other public authorities as road authorities for both classified and unclassified roads. It also regulates the carrying out of various activities in, on and over public roads.

Intersection treatments and road upgrades either off Maree Road, or via an easement between the proposed substation and existing TransGrid substation (Appendix B) will be required to obtain site access. Final access will be determined by further traffic investigations. Additional approval from the roads authority (RMS and/or Mid-Western Regional Council; Section 138 permit) is expected to be required to carry out road upgrades.

6.1.5 *Biodiversity Conservation Act 2016*

The *Biodiversity Conservation Act* relates to the conservation of biodiversity. The Act repeals the *Threatened Species Conservation Act 1995*, the *Nature Conservation Trust Act 2001* and the animal and plant provisions of the *National Parks and Wildlife Act 1974*.

The purpose of this Act is to maintain a healthy, productive and resilient environment for the greatest well-being of the community consistent with the principles of the ecological sustainable development.

The new act brings in changes to biodiversity survey and assessment and offset methodologies. It also requires specific consideration of irreversible impacts. The proposal would impact on native vegetation and biodiversity values. Given the newness of this act, extensive consultation with OEH would be undertaken during the survey and assessment of the project.

6.1.6 *Heritage Act 1977*

This Act aims to conserve heritage values. The Act defines 'environmental heritage' as those places, buildings, works, relics, moveable objects and precincts listed in the Local or State Heritage Significance. A property is a heritage item if it is listed in the heritage schedule of the local Council's Local Environmental Plan or listed on the State Heritage Register, a register of places and items of particular importance to the people of NSW. Under Section 89J of the EP&A Act, an approval under Part 4 or a permit under Section 139 of the *Heritage Act 1977* would not be required for a State Significant Development.

The potential to impact environmental heritage is discussed in Section 7.1.5 of this report. Consultation would be undertaken with Mid-Western Regional Council and the assessment would be undertaken in accordance with OEH guidelines for *Assessing Heritage Significance (Heritage Office* (former), 2001).

6.2 LOCAL INSTRUMENTS

6.2.1 *Mid-Western Regional Local Environmental Plan 2012*

The site is located within the Mid-Western Regional Local Government Area (LGA), which is subject to the provisions of the *Mid-Western Regional Local Environmental Plan 2012*. The proposed solar farm is located across the following land zones:

- The solar farm site:
  - **RU1 Primary Production**: Electricity generation is prohibited within this land zoning, however the ISEPP allows the development for the purpose of a solar energy system on any land with consent, which overrides the local provisions.
- The transmission line route:
  - **RU1 Primary Production:** Electricity generation is prohibited within RU1, however the ISEPP allows the development for the purpose of a solar energy system on any land with consent, which overrides the local provisions.

6.3 COMMONWEALTH LEGISLATION

6.3.1 *Environment Protection and Biodiversity Conservation Act 1999*

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is administered by the Commonwealth Department of the Environment and Energy (DoEE). Under the EPBC Act, if the Minister determines that an action is a 'controlled action' which would have or is likely to have a significant impact on a Matter of National Environmental Significance (MNES) or Commonwealth land, then the action may not be undertaken without prior approval of the Minster.

The EPBC Act identifies the following nine MNES:

- World Heritage properties.
- National heritage places.
- Ramsar wetlands of international significance.
- Threatened species and ecological communities.
- Migratory species.
- Commonwealth marine areas.
- The Great Barrier Reef Marine Park.
- Nuclear actions (including uranium mining).
- Water resources (in relation to coal seam gas development and large coal mining development).

Actions that adversely affect these matters may be deemed to be a 'controlled action' under the Act.

A search of the Commonwealth Protected Matters Search Tool (coordinate search, undertaken on 25/01/2018) indicates that there are no World Heritage or National Heritage areas or items within the proposal site. No areas of Commonwealth land were identified, and no Commonwealth heritage places were identified.

Search results returned five Wetlands of International Importance. Due to the distance approximately 150-200 km upstream of the proposal site, these have been confirmed as not being relevant to the proposal.

Three threatened ecological communities were returned from the search, including Central Hunter Valley eucalypt forest and woodland (Critically Endangered), Upland Basalt Eucalypt Forests of the Sydney Basin Bioregion and White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (Box Gum Woodland) (Critically Endangered). None of these occur at the proposal site.

Thirty-three threatened species and twelve migratory species were also returned from the Protected Matters Search. The site provides suitable habitat for several of these species. Further flora and fauna studies would confirm whether impacts to these entities would occur, during the preparation of the EIS. At this stage, the need for a Commonwealth referral is considered unlikely.

7 PRELIMINARY ENVIRONMENTAL ASSESSMENT

7.1 ASSESSMENT OF KEY ISSUES

A summary of the key environmental issues of relevance to the site and its development is provided in Section 7.1. They include:

- Biodiversity
- Visual amenity and landscape character
- Community and socio-economic impacts
- Aboriginal heritage
- Non-indigenous heritage
- Noise
- Land use and cumulative impacts
- Watercourses and hydrology
- Soils

7.1.1 *Biodiversity*

Potential ecological constraints within the locality of Wollar and the proposal site have been identified based on the following information sources:

- Existing threatened species listings under the BC Act and EPBC Act.
- Existing records of threatened species sightings in the proposal site, as recorded in the Bionet Database (OEH).
- Department of Environment Protected Matters Search Tool (nationally threatened species listed under the EPBC Act).
- Threatened species and communities identified as potentially occurring through the Biodiversity Assessment Methodology Calculator (OEH).
- Areas of outstanding biodiversity value declared under the BC Act 2016.
- A site walk over, undertaken in February 2018 by a senior ecologist.

Site Inspection

A site inspection of the proposal site was surveyed by a senior ecologist on the 6th and 7th February 2018. The site inspection included the identification of potential biodiversity constraints and vegetation mapping within the proposal site. PCTs were determined based on the presence of diagnostic species via rapid assessment and recording of dominant species within each stratum. No floristic plots were undertaken.

Following the site inspection, additional areas were provided for assessment outside of the initial survey area. These areas have been assessed via desktop and compared to adjacent areas which have been surveyed in addition to existing vegetation mapping and threatened species records within the region. Constraints and vegetation mapping was then extrapolated from areas that have been surveyed using the precautionary principle.

Threatened species and communities

A search of the EPBC Act Protected Matters Search Tool was undertaken within a 10 km buffer of the proposal site. The search identified three endangered Ecological Communities: Central Hunter Valley

eucalypt forest and woodland, Upland Basalt Eucalypt Forests of the Sydney Basin Bioregion and White Box – Yellow Box – Blakley's Red Gum Grassy Woodland and Derived Native Grassland. The search also identified 33 threatened species and 12 migratory species that are either known to occur or have potential to occur in the search area, including:

- 11 flora species
  - Leafless Tongue-orchid (*Cryptostylis hunteriana*)
  - Bluegrass (*Dichanthium setosum*)
  - *Euphrasia arguta*
  - *Homoranthus darwinioides*
  - Hoary Sunray (*Leucochrysum albicans var. tricolor*)
  - *Ozothamnus tesselatus*
  - Omeo Stork's-bill (*Pelargonium sp. Striatellum*)
  - *Philotheca ericifolia*
  - A leek-orchid (*Prasophyllum sp. Wybong*)
  - Small Purple-pea (*Swainsona recta*)
  - Austral Toadflax (*Thesium australe*)
- 8 bird species
  - Regent Honeyeater (*Anthochaera phrygia*)
  - Curlew Sandpiper (*Calidris ferruginea*)
  - Painted Honeyeater (*Grantiella picta*)
  - Swift Parrot (*Lathamus discolor*)
  - Malleefowl *(Leiopa ocellata*)
  - Eastern Curlew (*Numenius madagascariensis*)
  - Superb Parrot (*Polytelis swainsonii*)
  - Australian Painted Snipe (*Rostratula australis*)
- 3 fish
  - Flathead Galaxias (*Galaxias roratus*)
  - Murray Cod (*Maccullochella peelii*)
  - Macquarie Perch (*Macquaria australasica*)
- 1 amphibian
  - Booroolong Frog (*Litoria booroolongensis*)
- 6 mammals
  - Large-eared Pied Bat (*Chalinolobus dwyeri*)
  - Spot-tailed Quoll (*Dasyurus maculatus maculatus*)
  - Corben's Long-eared bat (*Nyctophilus corbeni*)
  - Greater Glider (*Petauroides volans*)
  - Brush-tailed Rock-wallaby (*Petrogale penicillata*)
  - Koala (*Phascolarctos cinereus*)
  - New Holland Mouse (*Pseudomys novaehollandiae*)
  - Grey-headed Flying-fox (*Pteropus poliocephalus*)
- 2 reptiles
  - Pink-tailed Worm-lizard (*Aprasia parapulchella*)
  - Striped Legless Lizard (*Delma impar*)

A search of the OEH Wildlife Atlas database for the coordinates North: - 32.35, West: 149.89, East: 149.89, South: -32.45, identified 10 threatened species that have been recorded within 10 km of the proposal site. These include:

- Little Eagle (*Hieraaetus morphnoides*)
- Square-tailed Kite (*Lophoictinia isura*)
- Black Falcon (*Falco subniger*)
- Little Lorikeet (*Glossopsitta pusilla*)
- Brown Treecreeper (eastern subspecies) (*Climacteris picumnus victoriae*)
- Speckled Warbler (*Chthonicola sagittata*)
- Regent Honeyeater (*Anthochaera phrygia*)
- Painted Honeyeater (*Grantiella picta*)
- Diamond Firetail (*Stagonopleura guttate)*
- Grey Headed Flying Fox (*Pteropus poliocephalus*)
- Koala (*Phascolarctos cinereus*)

None of the above species have been recorded within the proposal site. The closest recorded sighting is a Koala and Square-tailed Kite located about 4.5 km and 5 km north of the proposal site respectively, near the township of Wollar.

Species credit species

The proposal will be assessed under the Biodiversity Assessment Methodology (BAM; OEH 2017). A preliminary assessment using the Biodiversity Assessment Calculator was undertaken to determine candidate species credit species requiring consideration. Based on the preliminary BAM assessment and site information collected to date, species that are expected to require further surveys (unless all areas of potential habitat can be avoided or the species is assumed to occur) are identified (**bold**) in the table below.

Table 7-1 Candidate species that may require further surveys.

Type	Species	Scientific Name	Survey Time	Potential to occur and require surveys?
Flora	Ausfeld's Wattle	*Acacia ausfeldii*	Any	No, no suitable habitat in likely development area
Flora	Tylophora Linearis	*Tylophora linearis*	Sept-May	No, no suitable habitat in likely development area
Flora	Commersonia procumbens	*Commersonia procumbens*	Aug-May	Yes, requires survey
Flora	Capertee Stringybark	*Eucalyptus cannonii*	Any	No, no suitable habitat in likely development area
Flora	Scant Pomaderris	*Pomaderris queenslandica*	Any	No, no suitable habitat in likely development area
Flora	*Prostanthera discolor*	*Prostanthera discolor*	Any	No, no suitable habitat in likely development area
Flora	Mount Vincent Mint-bush	*Prostanthera stricta*	Any	No, no suitable habitat in likely development area
Flora	Large-leafed Monotaxis	*Monotaxis macrophylla*	Aug	No, no suitable habitat in likely development area
Amphibian	Giant Burrowing Frog	*Heleioporus australiacus*		No, no suitable habitat in likely development area
Bird	Bush Stone Curlew	*Burhinus grallarius*	Any	No, no suitable habitat in likely development area
Bird	**Gang-gang Cockatoo**	***Callocephalon fimbriatum***	**Oct- Jan**	**Yes, breeding habitat only**
Bird	**Glossy Black Cockatoo**	***Calyptorhynchus lathami***	**Oct-Jan**	**Yes, breeding habitat only**

Type	Species	Scientific Name	Survey Time	Potential to occur and require surveys?
Bird	White Bellied Sea Eagle	*Haliaeetus leucogaster*	July -Dec	No, not detected during surveys.
Bird	**Little Eagle**	***Hieraaetus morphnoides***	**Aug -Oct**	**Yes, breeding habitat only**
Bird	**Swift Parrot**	***Lathamus discolour***	**May-Aug**	**Yes**
Bird	**Square-tailed Kite**	***Lophoictinia isura***	**Sept – Jan**	**Yes, breeding habitat only**
Bird	Powerful Owl	*Ninox strenua*	May-Aug	No, no suitable habitat.
Bird	**Masked Owl**	***Tyto novaehollandiae***	**May – Aug**	**Yes**
Bird	**Regent Honeyeater**	***Anthochaera Phrygia***	**Sept – Dec**	**Yes**
Marsupial	Eastern Pygmy Possum	*Cercartetus nanus*	Oct – Mar	No, no suitable habitat.
Marsupial	Squirrel Glider	*Petaurus norfolcensis*	Any	No, no suitable habitat in likely development area
Marsupial	Brush-tailed Phascogale	*Phascogale tapoatafa*	Any	No, no suitable habitat in likely development area
Marsupial	**Koala**	***Phascolarctos***	**Any**	**Yes.**
Mammal	**Grey Headed Flying Fox**	***Pteropus poliocephalus***	**Oct – Dec**	**Yes, breeding habitat only**
Mammal	**Little Bentwing-bat**	***Miniopterus australis***		**Yes, breeding habitat only**
Mammal	**Eastern Bentwing-bat**	***Miniopterus schreibersii oceanensis***	**Nov – Feb**	**Yes, breeding habitat only**
Mammal	**Large- eared Pied bat**	***Chalinolobus dwyeri***	**Sept -Mar**	**Yes, breeding habitat only**
Reptile	**Pink-tailed Legless Lizard**	***Aprasia parapulchella***	**Sept -Nov**	**Yes**
Reptile	Pale-headed Snake	*Hoplocephalus bitorquatus*	Nov – Mar	No, no suitable habitat.

Vegetation and fauna habitat

Much of the proposal site has been extensively cleared of woody vegetation and has been highly modified by agricultural practices. However, small fragmented areas of moderate-good condition woodland occur within the proposal site. Cleared areas predominantly consist of a high abundance of annual weeds such as *Centaurea solstitialis*, however some areas do contain a high cover but low abundance of derived native grasses. The valley flats and lower slopes contain a combination of scattered trees and small remnant clumps of Box-Gum Grassy woodland dominated by *Angophora floribunda*, *Eucalyptus blakleyi* and *Eucalyptus albens* transitioning into shrubby dry sclerophyll forest and dry rainforest vegetation on higher slopes, gullies and sandstone ridgelines consisting of *Eucalyptus albens*, *Callitris endlicheri*, *Cassinia arcuata* and *Eucalyptus crebra*. Remnant paddock trees are scattered throughout the proposal site and small rocky outcrops occur. These remnant areas have been highly disturbed and lack a diverse native understory due to grazing and pasture improvement practices. Additionally, vegetation within the proposal site is recovering from a significant bushfire that occurred within the last 12 months, with signs of die back as well as epicormic regrowth observed.

No threatened fauna was observed during the initial site inspection, but numerous wombat dens were observed and recorded within the lower valley flats.

Table 7-2 Summary of vegetation and habitat across the project boundaries

Site (Easting and northing)	Image
Cleared area (775547, 6409465) Degraded paddock dominated that had been consistently grazed	
Native pasture (776188, 6409900) High cover but low diversity of native species	

Site (Easting and northing)	Image
PCT599 (776298, 6408793) Box gum grassy woodland with high recruitment and habitat tree containing trunk fissures	
PCT281 (774748, 6408618) Box gum grassy woodland	

Site (Easting and northing)	Image
PCT610 (775300, 6408491) Mod condition White Box shrubby woodland transitioning up to ridgeline	
Wombat den (775799, 6408750) Wombat den present within the lower areas of the site	
Rocky outcrop (776464, 6408671) Small areas of rocky outcrop	

Plant community types and threatened ecological communities

Based on existing vegetation mapping and the initial site inspection, vegetation within the proposal area were assigned to Plant Community Types (PCTs) in accordance with the Vegetation Information System Classification Database (OEH). PCTs were determined based on the presence of diagnostic species identified within the site survey. The results are preliminary in nature and will be refined following detailed

vegetation survey of the site, and with reference to Floristic Plots in accordance with the Biodiversity Assessment Methodology (OEH, 2017).

PCTs, based on the preliminary inspection, include;

- **PCT 281** – *Rough-Barked Apple – red gum – Yellow Box woodland on alluvial clay to loam soils on valley flats in the northern NSW South Western Slopes Bioregion and Brigalow Belt South Bioregion*
- ***PCT 599*** – *Blakely's Red Gum – Yellow Box grassy tall woodland on flats and hills in the Brigalow Belt South Bioregion and Nandewar Bioregion*
- ***PCT 1610*** – *White Box – Black Cypress Pine shrubby woodland of the Western Slopes*

PCTs, based on desktop assessment and the extrapolation of site data within a larger study area (however are unlikely to be impacted by the proposal) include;

- ***PCT 1540*** – *Grey Myrtle – Grey Gum gully dry rainforest on sandstone ranges of the Sydney Basin*
- ***PCT 1654*** – *Narrow-leaved Ironbark – Grey Gum shrubby open forest on sandstone ranges of the upper Hunter Valley*

Subject to further assessment, the vegetation communities may be consistent with the following threatened ecological communities (TEC):

- White Box – Yellow Box – Blakely's Red Gum Woodland (NSW BC Act, Endangered Ecological Community).
- White Box – Yellow Box– Blakely's Rd Gum Grassy Woodland and Derived native grassland (EPBC Act, Endangered).

The preliminary vegetation mapping is provided below.

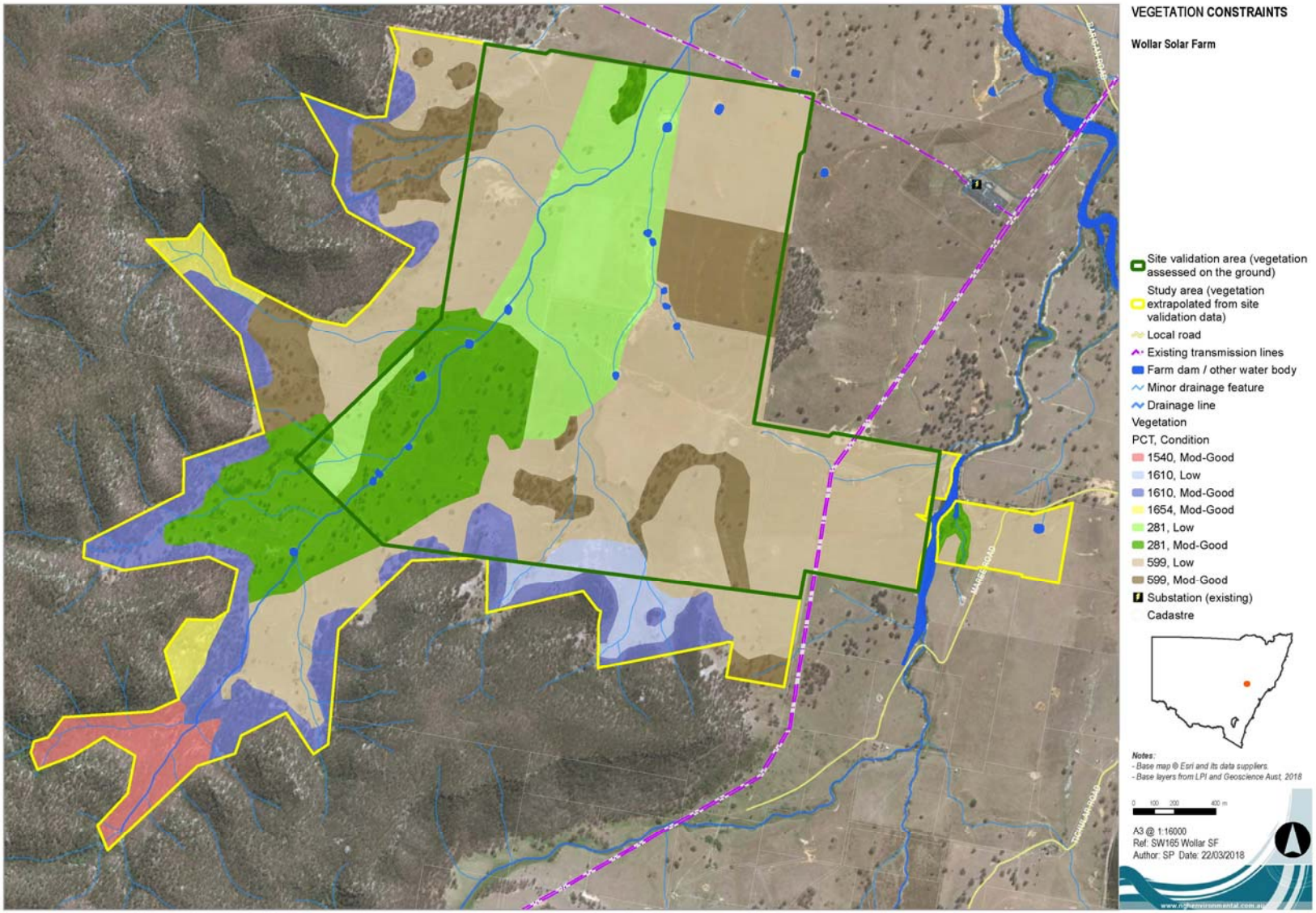

Figure 7-1 Preliminary mapping of Plant Community Types (PCTs) and their general condition (Low, Moderate-Good).

Constraints and need for further assessment

To inform the early project planning process and investigation strategies, biodiversity features within the proposal site have been mapped to areas of High, Moderate, or Low constraints. Refer to Section 8.

As part of the EIS, the detailed ecological surveys and further investigation and assessment will be undertaken in the format of the Biodiversity Development Assessment Report (BDAR) in consultation with OEH. If calculations determine that offset credits are required to offset impacts, then an offset strategy may be required to be developed.

7.1.2 *Visual amenity and landscape character*

The town of Wollar is approximately 7 km north of the proposal site and the proposal has the potential to attract interest from residents here and in the locality. Visual impacts to any neighbouring houses and road users adjacent to the site may result from the solar farm. The site is located within a rural area with large lot agricultural production and sparsely distributed residences usually located some distance from roads. There is one residence within 2 km of the proposed solar farm that is currently owned by the land owner. Additionally, aerial imagery shows the distribution of structures within 7 km of the site (Figure 7-2). There are very few structures that may have a discernible view of the solar farm infrastructure. Most of these have been confirmed as sheds or dilapidated, uninhabited dwellings. Topographical screening for receivers to the south west of the site in Kains Flat is also evident from aerial imagery.

An assessment of the level of visual impact would be undertaken as part of the EIS process. The EIS would also consider the potential for the solar farm to affect local landscape character. Consultation will be undertaken broadly to understand the local values of the area, including visual characteristics valued by the community. Additional consultation with specific affected residences would be undertaken to identify the nature and significance of impacts and the need for mitigation measures.

Glare and reflections from solar farm infrastructure would be investigated. It is noted that solar panels are designed to absorb as much sunlight as possible. They therefore reflect a very low percentage of the light and are generally not considered likely to result in glare or reflections that would affect traffic or nearby receivers. However, it is understood that this has been raised for other solar projects as an issue of interest to neighbours.

Constraints and need for further assessment

The location of nearby receivers have been mapped in Figure 7-2. No habitable dwellings are expected to have a view of solar farm infrastructure. Assessment on landscape character and public vantage points would be the focus of a Visual Impact Assessment (VIA) in the EIS.

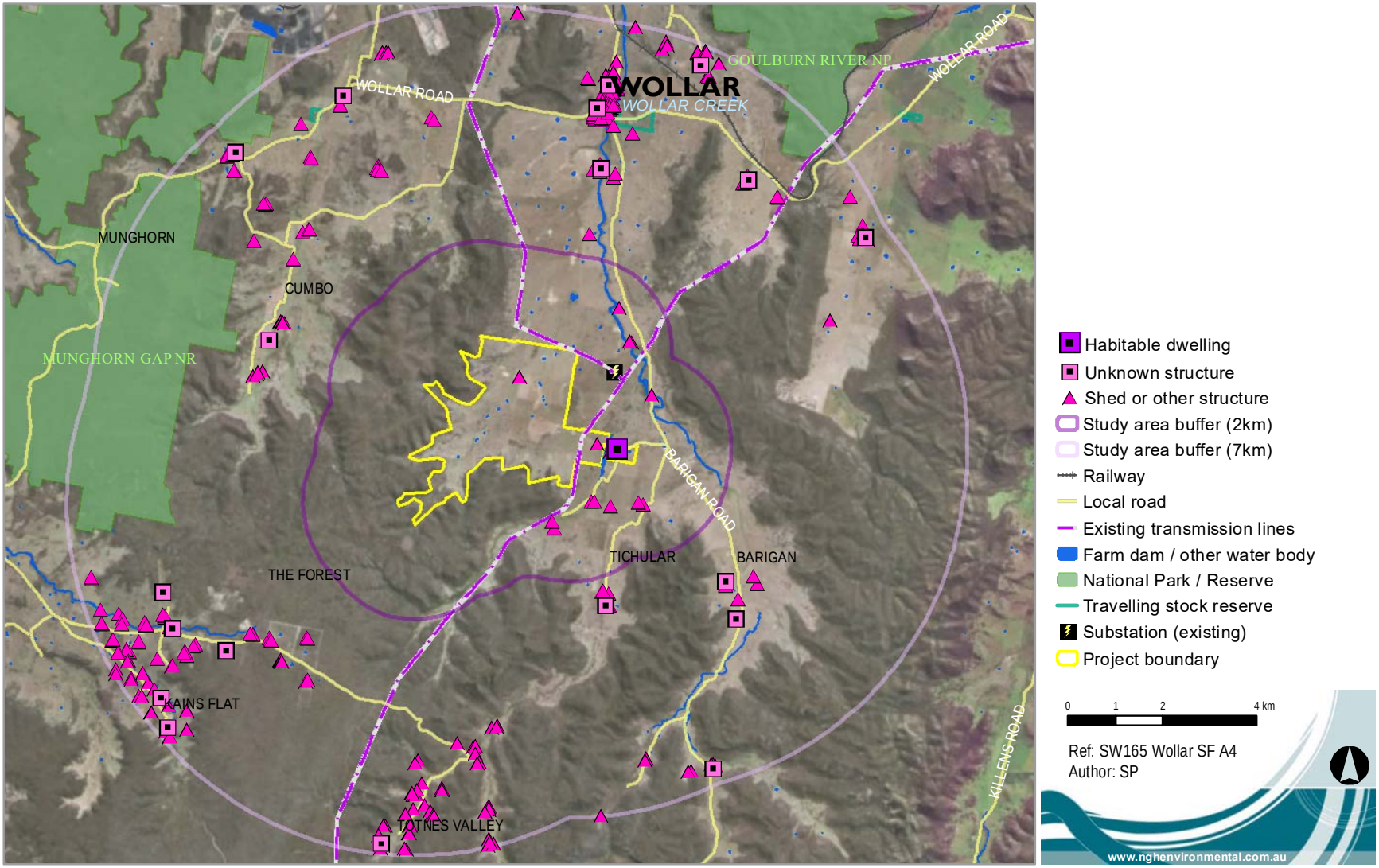

Figure 7-2 Location of receivers within 7 km site

The VIA would also include view shed analysis and community consultation, would be prepared as part of the EIS to investigate visual impacts and mitigation options. Mitigation measures would become part of the project description, as required, i.e. vegetation screens if required.

7.1.3 *Community impacts, social and economic impact*

The proposal site is located within the Mid-Western Regional Local Government Area (LGA), which covers 9,000 square kilometres. The 2016 census indicates that the Mid-Western Regional LGA had a population of 24,569, which is a 14% increase since 2006; the median age of 41 (ABS 2016). The Mid-Western LGA is in Central West NSW includes the regional centre of Mudgee and the localities of Wollar as discussed in Section 2, along with Gulgong, Rylestone, Kandos, and Bylong. The region brings approximately 500,000 visitors annually to experience various events and attractions.

The construction of the Wollar Solar Farm would generate economic benefits during construction and operation, including local employment opportunities and economic stimulus. The construction period may place strain on local services however, including accommodation, retail outlets and attractions. Additionally, the residents of Wollar may be impacted by the increase in traffic during the construction period, which may exacerbate existing mine traffic. The cumulative socio-economic impacts between the existing mine and the solar proposal, and the perceptions about these and broader impacts to the community require investigation and consideration.

Constraints and need for further assessment

The EIS would assess potential social and economic impacts of the proposal, including cumulative impacts of the mining operations and issues perceived by the community to be of concern. It would investigate ways to spread the benefits of the project into operation. This issue has been raised for other solar farm projects where energy generation is replacing agricultural land uses. A detailed investigation and consultation with affected landowners and broader stakeholders would be undertaken.

A Community Consultation Plan has been prepared to provide a framework to engage with the community about the proposal and ensure opportunities to provide input into the assessment and development process are understood.

7.1.4 *Aboriginal heritage*

A search of the Aboriginal Heritage Information Management System (AHIMS) was carried out on 25 January 2018, centred on the proposal site and with a buffer of approximately 10 km. One Aboriginal site was identified near the proposal site and no Aboriginal places were declared in or near this location. There have been no items recorded at the proposal site, however one item has been recorded approximately 1.2 km north of the proposal site.

Conclusions and need for further assessment

An Aboriginal Cultural Heritage Assessment Report and associated stakeholder consultation process would be completed as part of the EIS. This would include consultation with the Mudgee Local Aboriginal Land Council. If any Aboriginal Heritage sites are identified that may be potentially affected by the proposed site, mitigation measures would be determined in accordance with the *Guide to Investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW* (OEH 2011).

7.1.5 *Non-indigenous heritage*

Non-indigenous heritage database searches were conducted on 25 January 2018 and included:

- The NSW State Heritage Inventory (SHI) (for items listed on the State Heritage Register, Heritage and Conservation Registers of State Government agencies and local heritage items on the Mid-Western Regional Council Heritage Schedule).
- The Australian Heritage Database (for items listed on the National and Commonwealth Heritage Lists and World Heritage List).

Within the Mid-Western LGA, 484 items of heritage significance are listed by local government and state agencies and 14 items, the closest being 37 km from the site in Gulgong, were listed under the *NSW Heritage Act*. An additional search of the Wollar area found one item of significance listed by local government and state agencies being St Luke's Anglican Church located 4.6 km from the site, and no items were listed under the *NSW Heritage Act.* No items were identified on the National, Commonwealth or World Heritage Lists.

Constraints and need for further assessment

Consideration of potential dust and vibration impacts on items near to the haulage route should be investigated in more detail as part of the environmental assessment. The potential to impact non-listed heritage items would also be investigated by site inspection; old land holdings can contain buildings or structures of significance. Protections for such features would be commitments of the EIS, as required.

7.1.6 *Noise*

One residence is located within 2 km of the proposed solar farm and is owned by the proposed site land owner. Aerial imagery shows approximately 19 unknown structures between 2 – 7 km from the site.

Noise impacts would be most relevant during construction (generated by construction vehicles and machinery). During the operation of the solar farm, noise levels would be much less. Noise would be generated from the solar tracking system (if a tracking system is decided upon), the substation and switchgear and any maintenance works undertaken at the site.

Constraints and need for further assessment

A construction and operational noise and vibration assessment will be undertaken as part of the EIS to assess potential noise impacts for affected residents. The assessment will be undertaken in accordance with the *Interim Construction Noise Guideline* (DECC, 2009), *NSW Industrial Noise Policy* (EPA, 2017), *Assessing Vibration: A Technical Guideline* (DECC, 2006) and NSW 'Road Noise Policy' (DECCW, 2011). Given the low number of nearby receivers, mitigation strategies to manage noise impacts acceptably are considered highly feasible. Refer to the constraints assessment in Section 8.

7.1.7 *Land use*

The conversion of agricultural land use to electricity generation for the operational life of the solar farm has impacts that extend across several specialist areas. These include biodiversity, visual and socio-economic impacts, as discussed above. Soil and water (quality and quantity) impacts and management are also highly relevant to this issue.

The proposal site is located in an agricultural area and has a history of agricultural cultivation; clearing and some cropping are evident. The surrounding land includes grazing land and forested hills. Consultation with

the landowner noted that the proposed site has been a cattle farm with cropping for stock feed purposes for generations.

While suited to grazing, the proposal site is not mapped as Biophysical Strategic Agricultural Land (BSAL), which is land identified to have high quality soil and water resources capable of sustaining high levels of productivity. This may be due to the site having soils that cannot withstand repeated cultivation and ephemeral water resources. Information given from the landowner noted that the soils surrounding the homestead creek are highly erosive. Many of the drainage lines mapped for the site are ephemeral.

Mining is the other dominant land use in the locality. The land surrounding the site is classed as land with a coal resource exploration potential (open cut and or underground). The Wilpinjong coal mine is located approximately 8.4 km to the north west of the site and the Ulan coal mine approximately 22 km from the site. The Wilpinjong coal mine was constructed in 2006 and in May 2017 approval to extend the mine was granted. The mine could now be within 1.5 km of the town of Wollar.

A search of the Department of Planning and Environment MinView on 31 January 2018 found the site to have no current mineral titles. The mineral Exploration Licence Application ELA5574 is closest mineral related title to the site. The closest title is approximately 3 km from the site and was applied for by Wilpinjong Coal Pty Ltd.

Lot 121 DP 755430 to the south and Lot 224 DP 755425 to the east of the proposal site is mapped as Crown Land. Other Crown Land easements (paper roads) may be present through the centre of the site running east to west and north to south and along the outer eastern boundary, between designated lots.

Two separate transmission lines run through the north east and south-eastern sections of the site respectively.

Conclusions and need for further assessment

It is noted that, where pile driving is used to install PV array mounts on land of relatively low relief, the soil disturbance and therefore reversibility of the project, with regard to future land uses, is very high. Excavation and footings is generally limited to discrete footings for inverters, switch station and office buildings. Building-in strategies to retain land use options post-decommissioning, will be part of the assessment and mitigation process.

The impact on agricultural production in the locality and region would be assessed in detail in the EIS. Additionally, the EIS will address cumulative impacts associated the proposal and other activities occurring within the area including the construction and operation of Wilpinjong coal mine and the operation of the Ulan coal mine.

7.1.8 *Watercourses and hydrology*

Fifteen dams occur within the proposal site; four within the south western portion of the proposal site, nine within the central portion and two within the south eastern portion. Six watercourses occur within the proposal site, all are tributaries of Spring Flat Creek which occurs in the northern centre of the site. Wollar Creek is located on the eastern boundary of the proposal site. The Mid-Western LEP 2012 does not identify the site as flood prone.

A topographical desktop hydraulic constraints analysis has been completed to assist with constraints mapping (Ashley Bond, Footprint PTY LTD, March 2018). A classification of the watercourses on the site has been provided in Figure 7-3. All watercourses on the site are classified as ephemeral with no flowing water. Flows through watercourses within the site would generally be broad and shallow as they are typically

characterised by broad deep depressions without a defined low flow channel. The areas high in elevation immediately surrounding the site give rise to watercourses that are typically characterised by short steep gullies. The flows arriving at the site from these gullies would likely have reasonably high and erosive velocities.

The tributary off the eastern side of Wollar Creek has been classified as high constraint along with the Spring Flat Creek and two of its tributaries in the south west corner of the proposal area. One tributary of Spring Flat Creek has been classified as low constraint and the remaining four as moderate constraint. Further investigation is required to inform a site layout and confirm where permanent infrastructure may be constructed. Refer to Table 7-3 below for constraint categorisation.

Constraints and need for further assessment

The constraint of watercourses has been mapped in Figure 7-2 with reference to the classification in Table 7-3 below.

Table 7-3 Watercourse classification

Watercourse Classification	Development Constraint	Description
High	No permanent infrastructure to be located within 10m either side of the top of bank or 40m either side of the watercourse in the absence of any defined bank.	• Named Watercourse • Watercourse with visible bed and banks • Watercourse with visible signs of current erosion and/or previous erosion control works that should be contained within a riparian corridor to enable treatment and ongoing maintenance. • Development within the watercourse could result in adverse hydraulic impacts or increase erosion potential.
Moderate	Consideration could be given to locating permanent infrastructure over the watercourse subject to careful consideration during the design phase. Such considerations could include locating solar array piers outside areas of higher depth and velocity flows. Additional hydraulic modelling may be required in order to determine potential impacts.	• Watercourse with no defined bed and banks • Watercourses where flows would be characterised by shallow, low velocity flows. • Development within the watercourse could result in an adverse impact on hydraulic function or increase erosion potential unless properly considered during the design phase.
Low	Permanent infrastructure could be located over the watercourse without adversely impacting on hydraulic function or increasing erosion potential.	• Watercourse with no defined bed and banks • Watercourses where flows would be characterised by very shallow, low velocity flows. • Development within the watercourse is not likely to result in an adverse impact on hydraulic function or increase erosion potential.

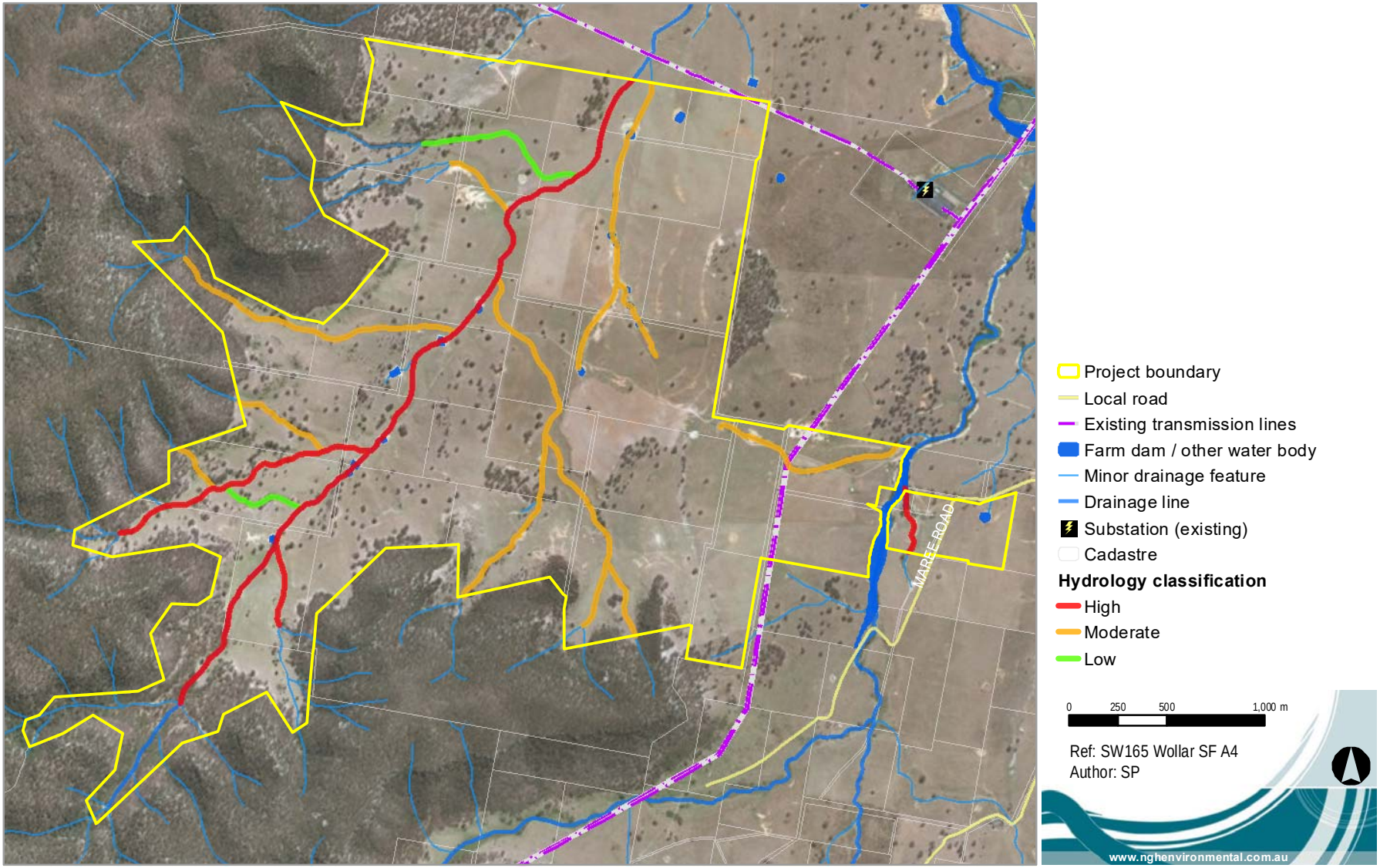

Figure 7-3 Categorisation of watercourses

Under section 89J of the EP&A Act, SSD developments do not require a controlled activity approval (other than an aquifer interference approval) under section 91 of the *Water Management Act 2000*. However, best practice measures are being used to inform site development in accordance with this act. The WM Act defines waterfront land as the bed of any river, lake or estuary and any land within 40 metres of the river banks, lake shore or estuary mean high water mark. In these areas, permanent infrastructure would be avoided or minimised, as informed by further hydrological studies. In overland flow areas, which do not meet the definition of waterfront land under the Water Management Act, permanent infrastructure may be considered.

Confirmation of the hydraulic function and ecological value of the waterways will be undertaken as part of the EIS. Those that qualify as 'water front land' will trigger best practice management with regard to impacts that cannot be avoided (crossings). Those that are more accurately defined as ephemeral waterways with moderate constraint may have PV arrays constructed over provided that potential impacts have been determined and mitigation strategies prepared as part of the EIS.

The EIS would assess the impacts to waterways and include appropriate mitigation measures, such as buffering these areas for avoidance, where possible, and adherence to best practice guidelines (Guidelines for Controlled Activities on Waterfront Land; DPI 2012) where avoidance is not possible[1].

The results of the hydraulic analysis are included in the Section 8 constraints mapping.

7.1.9 *Soils*

One soil landscape occurs within the proposal site: 'Barigan Creek'. Its limitations include:

- High erosion hazard under cropping or where there is low surface cover
- Salinity in localised areas in drainage depressions.
- Low to moderate fertility
- Subject to structural degradation
- Potential erosion during development, moderate shrink-swell potential of clayey subsoils and areas of high salinity.

The site is not mapped as BSAL (Biophysical Strategic Agricultural Land).

The preliminary hydraulic constraints analysis referred to in Section 7.1.8, concluded that soils on the site appear to have high erosion hazard as there is evidence over the site of either current erosion issues or previous erosion protection works. Furthermore, the broad deep depressions provide an indication of previous erosion on the site. The high and erosive velocities flowing from the surrounding gullies would further contribute to the erosive nature of the soils.

[1] Water front land is defined by the Water Management Act as land within 40m of the bank of incised channels. Works within water front land trigger Control Activity Approval, although SDD is exempt, best practice measures will be to reference the Controlled Activity Guidelines for any works in these areas (DPI 2012).

A search of the NSW OEH Contaminated Sites Register (NSW Government, 2017b) on 25 January 2018 identified one site within the Mid-Western Regional LGA, located approximately 38 km from the site. The proposed site does not appear on the List of NSW Contaminated Sites notified to the EPA (NSW Government, 2017a), as of the 25 January 2018. It is noted that the site has a history of agricultural land use and as such, agricultural sites may contain buried rubbish including contaminants such as herbicides that may be encountered during excavation.

Constraints and need for further assessment

The EIS would provide thorough consideration of soil and erosion impacts and proposed mitigation measures for construction, operation and decommissioning, as required. Buffers would be maintained where required to control erosion.

It is considered unlikely that substantive contamination is present at the site and therefore no detailed investigation is likely to be required within the EIS. Mitigation would be applied for unexpected finds. Management of ground cover during operation and restoration of the site's land capability would be recommended by EIS. These plans may benefit from base line soil mapping.

7.2 OTHER ENVIRONMENTAL ISSUES

Issue	Existing environment	Potential Impacts	Investigation strategies
Access and traffic	The Castlereagh Highway intersects Ulan Road approximately 37 km from the Ulan Wollar Road. Ulan Wollar Road transfers to Barigan Road approximately 7.2 km from the solar farm. Castlereagh Highway and Wollar Road would be the major transport routes for haulage and site vehicles during construction and operation of the project. Access to the site would be via Barigan Road which passes through the town of Wollar and bounds the site to the East. An access track would be constructed as part of the works to access the site.	Establishing access to the site may require construction of access tracks, upgrades and intersection treatments. Management of traffic, for safety as well as road pavement conditions will be required. Two access options are being considered for access track locations: 1. Access via Maree Road, which may require uprade of Wollar Creek crossing 2. Access via existing TransGrid substation access track and proposed easement During construction, there may be associated impacts to nearby receivers such as dust, vibration and noise generation.	Both access options would be further investigated during the preparation of the EIS. Construction traffic impacts would be considered in the EIS and take into consideration existing traffic volumes and any requirements from the roads authority. The mitigation measures would require a Traffic Management Plan including haulage routes be prepared.
Hazards and risks – Electric and Magnetic Fields (EMF)	Existing powerlines produce EMF within their vicinity. Additional infrastructure which form part of the proposal such as inverters, connecting powerlines and the substation would produce EMF within the site.	The EMF levels associated with solar infrastructure are well below the guideline for public exposure and would not be expected to have any adverse impact on human health. There can however, be perceived impact for any nearby residents.	The EMF levels of the proposed infrastructure would be assessed as part of the EIS. Standard design provisions are expected to ensure impacts comply with relevant guidelines together with communication of the issue as required.
Hazards and risks – Bushfire	The proposal site has been predominantly cleared for agricultural purposes. The proposal site is not mapped as bushfire prone but has some areas of steep vegetated landforms.	Emergency response protocols will however be required in the event of a bushfire. Battery storage has specific risks and mitigation strategies.	The potential to increase risk of bushfire would be assessed in the EIS. Emergency protocols would reflect advice from relevant agencies.

8 PRELIMINARY CONSTRAINTS ASSESSMENT

8.1 METHODOLOGY

Preliminary constraints advice has been informed by a desktop review and confirmed by site inspection (senior ecologist, February 2018). The inspection allowed for full traverses of the site and vehicle-based surveys in the locality. As such, they are considered sufficient to provide preliminary constraints advice to inform development of the concept design and investigation strategies.

Low, moderate and high environmental constraints are defined in Table 8-1, with reference to the 'developability' of the site. Where uncertainty exists, a higher constraint rating has been applied. Further investigation may reduce the constraint level. Environmental constraints were mapped for the site and are provided as Appendix B and discussed in Section 8.2.

Table 8-1. Environmental constraints

Constraint	Definition
Low	Minimal impacts anticipated. Most suitable for development. Standard management protocols would be sufficient to manage any impacts. Least cost for assessment and management of constraints.
Moderate	Impacts should be minimised, where possible. These areas may require specific management protocols and may add some cost and time to the assessment and approval process.
High	Avoid if possible. These areas will be difficult, expensive or may not be possible to obtain approval to develop. They may require costly additional surveys to understand and manage impacts. They may be costly to offset. They may impact the ability to obtain a timely approval.

8.2 RESULTS

8.2.1 *Low environmental constraints*

In low constraint areas, minimal impacts are anticipated. They contain no sensitive features (waterways, high risk soils, receivers, ecological values) and are most suitable for development.

The inspection has confirmed that these areas are unlikely to generate biodiversity credits or may have very low biodiversity credit requirements if they do. These include areas of:

- Ephemeral waterways will little if any hydraulic function
- Degraded derived grasslands (that do not meet the criteria for TEC determination)
- Non-TEC PCTs in low or poor condition, containing few habitat resources
- Non-native vegetation (Exotic vegetation)

Regarding cropped and exotic areas, it is noted that even in low constraint areas, these may need to be replaced by a more perennial ground cover prior to construction, to reduce erosion and dust issues once the panels are installed. These issues will require a mitigation strategy and may require specialist input.

8.2.2 *Moderate environmental constraints*

These include:

- Works in or that affect **waterways** may require additional justification and management. Permits may apply for works in waterways and construction practices will be subject to best practice methodologies and rehabilitation requirements. Works that may affect local hydrology are likely to require specialist input from a hydrologist. Validation of the nature of waterways will be undertaken to differentiate waterways from overland flow areas.
- **Crown Land** and Crown land easements occur within the proposal site. Consultation and approvals would be required if impacts on crown lands are required. These should be sought concurrent with the EIS, in consultation with DPI Lands, if required.
- **Native vegetation** with moderate biodiversity value. These areas do not necessarily need to be avoided but are likely to generate biodiversity credits that require offsetting. These include areas of;
    - Degraded TEC
    - Non-TEC PCTs in moderate condition
    - Areas of derived native pasture that contain a high cover but low diversity of native species.

8.2.3 *High environmental constraints*

These include:

- Named **waterways** with visible beds and banks. Watercourse with visible signs of current erosion and/or previous erosion control works that should be contained within a riparian corridor to enable treatment and ongoing maintenance.
- Development within the watercourse could result in adverse hydraulic impacts or increase erosion potential.
- Potential **residences** in close proximity of the site (requires ground validation). Nearby receivers may be affected by visual impact, traffic noise and vibration and dust. Verification of impacts and consultation will be undertaken to ensure all impacts are acceptably mitigated.
- **Aboriginal Heritage**: No survey has been undertaken of the site but an artefact is recorded north of the site. Any Aboriginal heritage sites/items/etc. identified would be a moderate to high constraint; impacts on sites will require approval. Mitigation strategies can range from avoidance, to salvage programs to more intensive survey including test pits.
- **Native vegetation** with high biodiversity value. If these areas cannot be avoided, they will require justification in the Biodiversity Development Assessment Report (BDAR) and will generate high biodiversity credit requirements that require offsetting. It is noted that higher value vegetation will generate greater offset requirements. These include areas of:
    - TEC with an intact overstorey and/or native dominated understorey
    - Non-TEC Plant Community Types (PCTs) in good condition (good ecosystem credit species habitat)

- Potential candidate species credits habitat.
- Areas (including paddock trees and small clumps) that contain hollow bearing trees
- Areas containing rocky outcrops

9 CONCLUSION

This report has outlined the Wollar Solar Farm proposal and established the planning context of the proposal, currently in the early planning stage. The proposal would be assessed under Part 4 of the EP&A Act and classed as State Significant Development under *State Environmental Planning Policy (State and Regional Development) 2011*.

The proposal has the potential to result in a number of local and broader benefits including:

- Assist in meeting Australia's future energy demand in a cost effective and sustainable way.
- Generation of clean, renewable energy, sufficient to supply energy to around 144,726 average NSW homes.
- Displacement of approximately 711,123 metric tonnes of carbon dioxide.
- Creation of local job opportunities.

Preliminary assessment and consultation with Mid-Western Regional Council, involved landowners, key local environmental groups and immediate neighbours has been undertaken. No objections have so far been noted but all stakeholders have been interested to hear more about the proposal. More intensive consultation will continue to understand key community issues and take into account feedback that can be reflected in the final project description and set of accompanying mitigation measures.

Based on this Preliminary Environmental Assessment, an indicative scope for the EIS has been developed, focusing on the key issues:

- Biodiversity
- Visual amenity and landscape character
- Community and socio-economic impacts
- Aboriginal heritage
- Non-indigenous heritageNoise
- Land use and cumulative impacts
- Watercourses and hydrology
- Soils

Secondary issues will also be investigated, commensurate with risk, through desktop investigation.

Once received, the EIS would be prepared in accordance with the project-specific SEARs. Mitigation measures will be developed for inclusion in the EIS and will address the management of key issues and other issues identified in the assessment process.

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APPENDIX A PHOTOGRAPHS OF THE SITE


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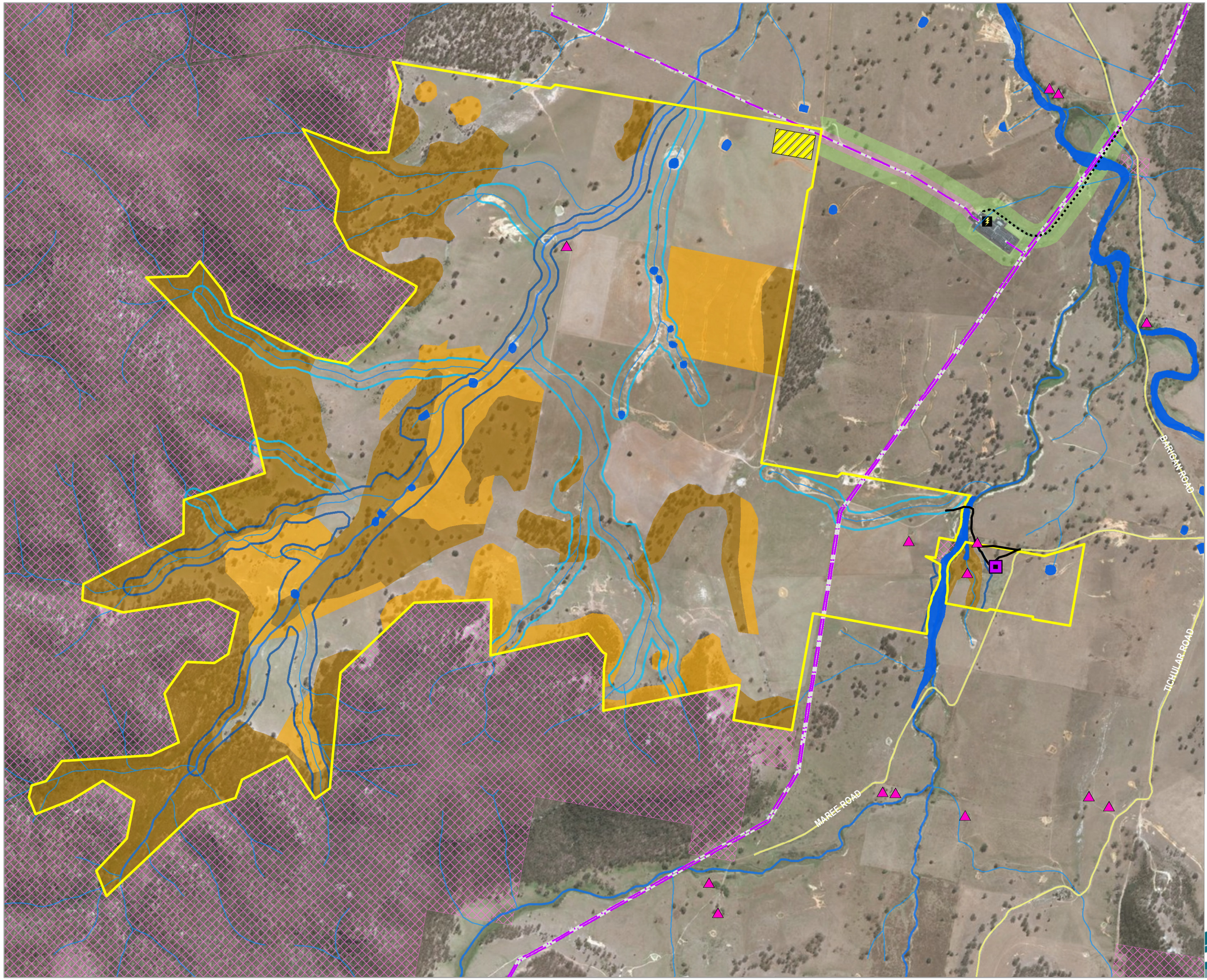
APPENDIX B PRELIMINARY CONSTRAINTS MAPPING



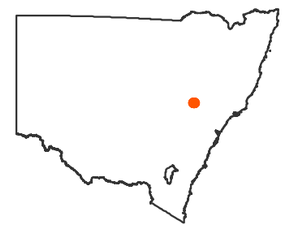
CONSTRAINTS

Wollar Solar Farm

- Study area (vegetation extrapolated from site validation data)
- Habitable dwelling
- Shed or other structure
- Existing transmission lines
- Proposed Maree 330 kV substation
- Existing access track
- Existing TransGrid access road
- Local road
- Minor drainage feature
- Drainage line
- Farm dam / other water body
- Existing TransGrid easement (60m)
- Study area for possible access road (120m)
- Existing TransGrid Wollar 500/330 kV substation

Constraints

- Waterway buffer (high)
- Waterway buffer (moderate)
- Vegetation (high)
- Vegetation (moderate)
- Crown land (moderate)



Notes:
- Base map © Esri and its data suppliers.
- Base layers from LPI and Geoscience Aust, 2018

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APPENDIX C COMMUNITY CONSULTATION PLAN

Community Consultation Plan

WOLLAR SOLAR FARM

FEBRUARY 2018

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Document Verification

Project Title: CCP – Wollar Solar FARM

Project Number: 18-012

Project File Name: Wollar CCP Final v1

Revision	Date	Prepared by (name)	Reviewed by (name)	Approved by (name)
Draft v1	07/02/18	Louiza Romane	Brooke Marshall	Louiza Romane
Final v1	26/02/18	Louiza Romane	Brooke Marshall	Louiza Romane

NGH Environmental Pty Ltd (ACN: 124 444 622. ABN: 31 124 444 622) and NGH Environmental (Heritage) Pty Ltd (ACN: 603 938 549. ABN: 62 603 938 549) are part of the NGH Environmental Group of Companies.

CONTENTS

1 INTRODUCTION

1.1 COMMUNITY CONSULTATION PRINCIPLES

Best practice community consultation involves the community in all decision making stages of a project. The community plays a role from project conception, through the assessment process and on to project development. Effective community consultation has three important functions:

1. It facilitates deeper understanding of issues and decisions required for the project;
2. It enhances the quality of decisions made for the project;
3. It allows people to contribute to decisions that affect their lives.

Important community engagement principles for a project include:

- Openness – combats assumptions and misinformation.
- Inclusiveness - consultation should be diverse and representative, not responding only to the most vocal stakeholders.
- Effective communication – requiring trust between parties and tools appropriate to the task.
- A communication strategy – clarity about what is being undertaken:
    - Inform - one-way communication to deliver information about the project.
    - Consult - two-way communication to seek input into the project.
    - Collaborate and involve – seek participation in elements of the project design and implementation.
- Early rather than late communication – to maximise engagement opportunities.
- Accountability – the process should be monitored and evaluated to ensure its aims are being achieved.

1.2 AIM OF THIS PLAN

This Community Consultation Plan (CCP) has been developed for the Wollar Solar Farm proposal.

The aim of the plan is to:

1. **Identify effective methods to inform the community about the Wollar Solar Farm**
2. **Facilitate engagement with the community, including allowing meaningful contributions from the community into the environmental assessment and project development.**
3. **Obtain social license to operate from the local community, allowing for good long-term relationships with community stakeholders**

The plan identifies:

- Community stakeholders for the project;
- Issues / risks related to the engagement of each stakeholder group;
- A consultation strategy for each stakeholder group;
- A set of consultation activities against the project development time line.

Effective engagement will require an understanding of community stakeholders and prioritisation of potential impacts. It also relies on the community understanding the project and specific issues of

interest to them, in order to contribute effectively. The focus of the consultation plan will be on providing this understanding and engagement.

1.3 STRUCTURE

The structure of this plan is:

1. Proposal overview
2. Identification of community stakeholders for the project
3. Issue management – what specific issues need consideration?
4. Project based activities – what activities will be undertaken to achieve the goals of this CCP?

1.4 IMPLEMENTATION AND REVISION OF THIS DOCUMENT

This plan has been developed to coincide with the early planning and assessment stages of the project.

If the project is approved, consultation will also be required to continue into the construction and operational phases of the project. These phases will require a new or updated plan, to reflect any changes to consultation objectives but also the increasing knowledge gained about the community. At this stage, only pre approval project stages are addressed.

1.5 RELEVANT GUIDELINES

This CCP has been prepared with reference to the following guidelines / references:

- *Establishing the social licence to operate large scale solar facilities in Australia: Insights from social research for industry,* Australian Renewable Energy Agency (ARENA).
- *Beyond Public Meetings: Connecting community engagement with decision making,* Twyford Consulting 2007.
- *Large-scale solar energy guideline draft for state significant development 2017,* NSW Government.

2 PROPOSAL OVERVIEW

2.1 WOLLAR SOLAR FARM

The proposed solar farm would be located on Lots 22-25,27, 30, 45, 49-51, 60-63, 69-80, 92, 105-107, 119 and 152-154 of DP 755430 and Lot 1 of DP 650653 on the western side of Barigan Road approximately 7 km south of Wollar Village. The proposal area would be located within the Mid-Western Regional Local Government Area (LGA). The proposed solar farm would connect to an existing substation approximately 900 m east of the site.

The proposed Wollar Solar Farm will generate up to 400 MW of renewable energy that would supply electricity to the national grid. The proposal area is approximately 800 ha and will consist of the following components occupying around half the area: a) around 1,000,000 solar panels mounted on either a fixed or single axis tracking system b) access to the site c) onsite access tracks d) operations and maintenance building with associated car parking e) an onsite electrical substation f) overhead and underground electrical cable reticulation g) energy storage facility h) security fencing and CCTV i) native vegetation planting to provide visual screening for specific receivers, if required.

The current access to the proposal area is via Maree Road. Access to Maree Road is via Barigan Road with both roads being unsealed. Wollar Road intersects Barigan Road approximately 7 km north of the intersection with Maree Road. An alternative access options from Barigan Road (near the existing TransGrid substation) will be considered subject to feasibility assessment.

A new substation will be constructed within the site boundary (likely in the north-east corner). An existing TransGrid 330kV transmission line transects the proposal area in the north eastern corner and will be used to connect the solar farm to the existing substation which is located about 900 m directly east of the proposal area.

2.2 CONSTRUCTION

The Wollar Solar Farm would be expected to operate for 30 years. The construction phase of the proposal would take approximately 18 months. After the initial 30-year operating period, the solar farm would either be decommissioned, removing all above ground infrastructure and returning the proposal area to its existing land capability, or repowered with new PV equipment subject to landowner and planning consents.

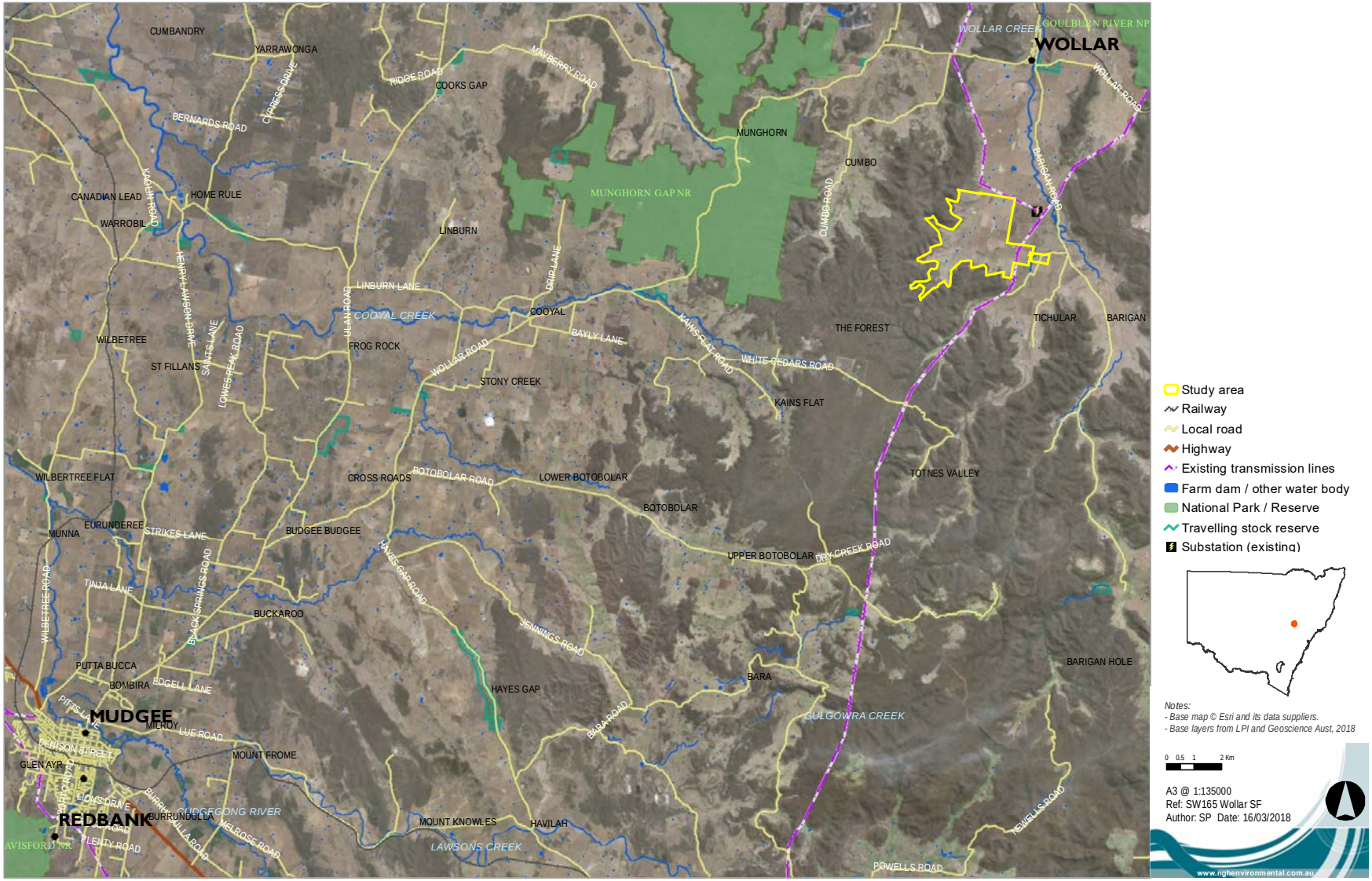

Figure 2-1 Site location

3 COMMUNITY PROFILE

Understanding the makeup and values of a community is essential to finding effective ways to reach the community. It is also important to understand ways which project may impact the community. This may not be limited to the construction and operational stages of a project but may also include the pre lodgement assessment phase, as the project is being shaped. This section provides a broad overview of the community demographics in the Mid-Western Local Government Area (LGA) and the local townships of Wollar, Mudgee and Cooyal.

3.1 MID-WESTERN LOCAL GOVERNMENT AREA

The proposal area is located within the Mid-Western Regional Local Government Area (LGA), which covers 9,000 square kilometres. The 2016 census record indicates that the Mid-Western Regional LGA had a population of 24,569, which is a 9% increase since 2011; the median age is 41 (ABS 2017). Aboriginal and Torres Straight Islanders make up 3.9% of the population and 85.5% of people are Australian born.

There was 9,930 people employed in the Mid-Western region LGA labour force in 2016, with a median age of 43 for those working full-time. Coal mining employed the highest percentage of workers (12.0%). Other major industries were retail, agriculture and tourism (Mid-Western Regional Council).

The ABS Socio-Economic Indices For Areas (SEIFA) is a summary of social and economic data that provides a measure of relative disadvantage in relation to social conditions of people and households within a particular region. The SEIFA score ranges from 121 (most disadvantaged) to 1193 (least disadvantaged). The SEIFA score for the Mid-Western LGA in 2011 was 951 (ABS 2011). These indices of wellbeing indicate that the Mid-Western LGA have a relatively high standard of living without many social or economic disadvantages (ABS 2011).

The Mid-Western LGA includes the localities of Gulgong, Rylestone, Kandos, Wollar and Bylong. Each year, the region brings around 500,000 visitors to experience local food, wine, sporting and cultural events. Some of the main community and economic features for the Mid-Western LGA are:

- Education facilities, including 13 primary schools, four high schools, Mudgee TAFE and a number of private and community based childcare organisations.
- Health facilities, including a major hospital in Mudgee with a maternity ward, visiting specialists in medical centres, meals on wheels, healthy communities' activities program.
- Tourism attractions, including wine tasting, heritage museums, farmers markets, hot air ballooning, farm tours, miniature railway and kayak tours.
- Environmental attractions, including Putta Bucca Wetlands, Ferntree Gully, Windamere Dam and Dunns Swamp.
- Transport services, such as the Mudgee airport which provides flights to Sydney and Newcastle, trains and coaches.
- Recreational and sporting facilities, including the Glen Willow regional sporting centre, parks and sporting fields, showgrounds, swimming pools.
- Community facilities, including showgrounds, parks, saleyards, halls and libraries.
- Clubs, including pony clubs, car clubs, arts groups and fitness clubs.

Tourism events occur all year round and include, gardening fairs, arts, culture and heritage festivals, the Flavours of Mudgee festival, NRL matches, the Gulgong Folk Festival, Mudgee Bike Muster and public holiday celebrations.

3.2 WOLLAR

The closest village to the Wollar Solar Farm proposal area is Wollar. The proposal area is south of the village of Wollar, which is 316 km north west of Sydney and 38 km north east of Mudgee. The village has a general store (with post office and fuel), Community Hall, Rural Fire Service and a Public School (primary).

Wollar appears to have an aging workforce and has had a significant reduction in its population size over the last decade. It had a population of 69 people from twelve families in 2016. This is a population decrease of 77% since 2006. The total employment estimate in Wollar as at the 2016 Census was 82% with the leading employment being the mining and agriculture industries, followed by retail and education (ABS 2017). Workers in Wollar are predominantly in the 35 to 44 (19.2%) and 45 to 64 (53.8%) year age groups with 15.3% of workers age between 20 to 24 and 11.5% between 25 to 34.

The village is approximately 5 km south east from the Wilpinjong coal mine site that was approved in 2006. Since then, the Wilpinjong owner Peabody Energy has received an approval (April 2017) for a further mine expansion to approximately 1.5 km from the village and about 9 km from the proposal area. There are currently a small number of privately-owned properties in Wollar village.

3.3 MUDGEE

Mudgee is approximately 38 km from the solar farm proposal area and is the closest large regional center. In 2015, there were approximately 1,182 businesses in Mudgee. The town services include banks, supermarkets, accommodation, post office, medical centres, hospital and airport. Mudgee is host to a variety of community and sporting events throughout the year, and is well known for its premium wineries, making it a regional hub for tourism.

The population in (ABS) 2016 was 10,923 people, which is 44.4% of the Mid-Western Region LGA. The median age was 38, and the median personal income was $623. The employment rate was 92% with the most common occupation being technicians and trade workers (16.5%), labourers (14%), professionals (14%), managers (13.1%) and sales workers (12.6%). Major employment industries in Mudgee include school education, cafes, restaurants and takeaway food services, coal mining, supermarket and grocery stores and accommodation.

3.4 COOYAL

Cooyal is approximately 22km from the solar farm proposal area and services include accommodation at the Old Cooyal Hotel and a fire station.

In 2016, Cooyal had a population of 114 people and an employment rate of 75.4%. Workers in Ulan are predominantly 35 – 44 (19.7%), 65 – 74 (18.6%), and 45- 54 (17.4%). Workers aged over 75 made up 13.9% of the workforce. Mining, construction, agriculture, forestry and fishing were the most common industries.

4 STAKEHOLDER GROUPS AND CONSULTATION STRATEGIES

It is important to identify key stakeholder groups and relevant characteristics of the groups in order to tailor engagement strategies to suit them. Different levels of engagement will be appropriate to different groups, depending on the potential interest or impacts on the groups:

- Where impacts are minor, the International Association for Public Participation (IAP2) consultation spectrum suggests approaches such as 'Inform' and 'Consult'.
- Greater impacts on communities require approaches such as 'Involve', 'Collaborate' and 'Empower'.

Proposed strategies are set out below for each stakeholder group. Levels of engagement may change, depending on issues identified during the consultation process.

Table 4-1 Stakeholder group consultation strategies

Stakeholder group	Defining characteristics	Consultation strategies
1. Adjacent neighbours	Neighbours on subject land adjacent to the project for example: those with a view of infrastructure, or have potential for noise or vibration from the haulage route or construction activities. 1 residence is located within 2km of the site that is currently owned by the site land owner. It is likely that this residence along with the site will be purchased by the proponent.	**Inform, consult, involve, collaborate** Face to face consultation and direct feedback is required. Mitigation strategies may require changes to the project or the development of specific plans of management i.e. screening visual impact. All consultation should be documented.
2. Near neighbours and residents of Wollar community	Impacts for this group would be less than adjacent neighbours, but being a major development close to a small settlement, direct impacts may be of great interest to residents. This is a large development with potential to define the locality in some ways. This is particularly relevant given the exposure of this group to other large developments such as the Wilpinjong coal mine and proposed Bylong coal mine. Very few habitable dwellings are located within 7km of the site, however a level of direct impact may be experienced.	**Inform and consult** Understanding the values and potential impacts to this group is highly important. It will assist the assessment process and development of appropriate mitigation strategies and in gaining social license to operate from the local community. The opportunity for face to face consultation and direct feedback should be provided upon request. All consultation should be documented.

Stakeholder group	Defining characteristics	Consultation strategies
3. Small Local Businesses	As above, being a major development close to a small settlement, direct impacts may be of great interest to businesses. There will be opportunities as well as potential impacts to consider. Businesses may also assist to spread information about the project and can be influential in a developing public opinion.	**Inform and consult** Understanding the values and potential impacts to this group is highly important. It will assist the assessment process and development of appropriate mitigation strategies and in gaining social license to operate from the local community. The opportunity for face to face consultation and direct feedback should be provided upon request. Potential opportunity to distribute project information and understand community sentiment. All consultation should be documented.
4. Large local employer / land use	Cumulative impacts may be relevant to other large scale projects in the area. Wilpinjong coal mine is located approximately 15km from the site and may experience direct impact during construction activities. The mine is operated by Peabody Energy.	**Inform and consult** Specific information may be required from this group to understand impacts of the project (i.e. haulage routes, accommodation for construction staff). An avenue to receive information and provide specific feedback or ask questions should be provided.
5. Representative bodies	Representatives of groups such as: Mid-Western Regional Council Mudgee Chamber of Commerce Mudgee Local Aboriginal Land Council	**Inform** Specific information may be required for this group. An avenue to receive information and provide specific feedback or ask questions should be provided.
6. Media	Outlets to ensure a clear and consistent message is delivered to the broader community: Local radio, television, newspapers.	**Inform** May be used to reach the broader community. A contact should be provided to these outlets, so further information can be provided if required.
7. Special interest groups	There may be benefit in contacting special interest groups, to ensure that any special areas of interest will be addressed in the assessment of the project. Local information can be important. A number were identified specific to this proposal. These include: • The Wollar Progress Association • Mudgee District Environmental Group	**Inform** These should be specifically contacted. Specific information or assessment may be required to understand and mitigate impacts for these groups. An avenue to provide feedback or ask questions should be provided.

Stakeholder group	Defining characteristics	Consultation strategies
8. Broader community	It is important to ensure a clear and consistent message is delivered to the broader community. There may be opportunities and impacts to the broader community that are important to understand during the assessment of the project. Accommodation and services for project construction staff and other economic matters may be of interest.	**Inform** Newsletters, advertisements, website information used to relay information about the project. A contact should be provided to this group, for further information / provision of feedback.

5 ISSUE MANAGEMENT

A set of project-specific issues and risks to maximising community engagement in the project have been identified below. These issues pose potential risks to the effective identification and mitigation of impacts important to the community and ultimately, to achieving social license to operate from the community. Strategies have been developed below, specific to the identified issues. These have been incorporated into the Project-based Activities, in Section 6.

Table 5-1 Risks and strategies

Issue	Risks	Strategies
The project may define / overwhelm the locality / village of Wollar	This may polarise the community. They may not feel that the project reflects their values. The scale of the project may overwhelm the existing local character.	Early dissemination of information about the project and its specific justification and benefits, particularly with reference to developing new income streams on agricultural land and the ability to restore the land capability after decommissioning. This may include material about the role of solar energy in the country's energy mix, the technology and its impacts. Particularly, visualisations (representative montages) can assist to understand the actual versus perceived impacts. Seek direct input into how the project may reflect the communities 'personality' and values. How the benefits of the project may be spread to the local community. Clear communication of key environmental impacts and mitigation strategies of the project. Offer direct contact with project manager.
Cumulative impacts with local mines	Impacts to and from Wilpinjong coal mine during construction	Early dissemination of information about the project Seek direct input into how the project may operations of the mine Offer direct contact with project manager.
Misinformation / left out of engagement	Feel left out, disengaged, misinformed Rural residences can be difficult to contact and word of mouth travels very fast in small communities.	Direct communication early to local community – adjacent landowners first, near neighbours second, then the wider community. Multiple means to identify all relevant residences undertaken – mapping, Council, engagement with other members of the community.

Issue	Risks	Strategies
Lack of support for project	Lack of interest, leading to low levels of public support. Unaddressed concerns may generate opponents of this project. Large proportion of jobs in local area are reliant on coal mining may influence support of development of renewable infrastructure.	Early dissemination of information about the project and its justification and benefits. Clear communication of key environmental impacts and mitigation strategies. Make participation easy – to ensure all concerns are addressed. Be creative – seek support for renewable project that demonstrates how benefits are felt at the local level. Look for opportunities – ways the project could benefit local businesses, for example.
The approvals process can be long and complex.	Perception that the process is too difficult to become involved in. Suspicion that input will not be valued. Overly technical information provided, use of jargon.	Clearly illustrate approvals process. Clearly define opportunities for community input including what is required and when it is required. Communicate back, identifying where input has been used. Reinforce this at each relevant stage for community input – pre lodgement, during public exhibition etc. Milestone events should be identified early and celebrated.
Distrust in environmental assessment process.	Distrust of impact identification and mitigation strategies.	Establish credentials of assessment team and Wollar Solar Development Pty Ltd. Present these in the EIS and in newsletters etc. Make participation easy – create opportunities to discuss issues with the team.
Representative	Risk of biased consultation, serving only the 'squeaky wheel'. Sections of the community may be "overpowered" and may be marginalised.	Ensure community is engaged in a forum that minimises risk of debate being side tracked. Follow up with smaller groups where required. Use established social (and media) channels in dissemination of materials, i.e. sport clubs.
Unified message	Differing messages may create confusion and mistrust.	Limit points of contact. Have message clearly set out for use, rather than reinventing it for each consultation activity.
Unequal distribution of benefits	Residents close to the development are likely to feel more strongly.	Identification of stakeholder groups should reflect differences in impacts.

6 PROJECT BASED ACTIVITIES

The following table outlines the different project stages and associated community consultation objectives and activities, in chronological order. The stages include:

- Decision to proceed with early investigations, proposal development
- Receipt of EIS format and content requirements from DPE
- Detailed assessment and proposal development
- EIS on public exhibition, submissions reporting

Further stages apply post approval.

During this progression, mile stone events should be celebrated, and used as an opportunity to keep the community on board. Milestones can include:

1. Announce project – notify near residents first, follow up with consistent information
2. Early studies update – meet the community face to face
3. EIS submitted – explain avenues for input
4. Approval – celebrate in a way that involves the community

Further milestones apply post approval.

Table 6-1 Proposed engagement activities

Stakeholder group	Issue	Consultation objective	Community engagement targets	Format
Decision to proceed with early investigations, proposal development, and receipt of SEARs				
Adjacent landowners	Misinformation / left out of engagement Lack of support for project	Inform, consult, involve, collaborate	Early dissemination of information about solar development generally. Early dissemination of information about the project and its justification and benefits. Seek direct input to include in assessment approach and development of proposal.	Face to face meetings with Project Manager. Encourage ongoing direct contact with Project Manager.
Near neighbours and Wollar local community	Misinformation / left out of engagement May define locality Lack of support Unequal distribution of benefits	Inform and consult	Early dissemination of information about solar development generally. Early dissemination of information about the project and its justification and benefits. General feeling toward solar development	Newsletter introduction to the project, contact number provided and supplementary information on website Provide opportunity for follow up call by Project Manager if requested.
Local small business owners	Misinformation / left out of engagement Lack of support for project	Inform and consult	Build relationship with these owners and staff as they may assist to 'get the word out'. Discuss specific impacts and opportunities.	Face to face meeting / direct contact with Project Manager. Encourage ongoing direct contact with Project Manager.
Large local employer / land use	Impacts to and from Wilpinjong coal mine during construction	Inform and consult	Ensure that the information is available to Peabody Energy. Discuss specific impacts and opportunities.	Face to face meeting / direct contact with Project Manager. Encourage ongoing direct contact with Project Manager.

Stakeholder group	Issue	Consultation objective	Community engagement targets	Format
Near neighbours and Wollar local community	Distrust in environmental assessment process The approvals process can be complex.	Inform	Preliminary project announcement, including stage of assessment, likely timelines, ways in which the community can be involved. Ensure the timelines and the stages for community input are clearly documented - use graphics and indicate where we are now at for the assessment. Make information on the project team and assessment team available	Newsletter to include graphic showing stage of the process and opportunities for input Website, links to other projects / accreditations
Broader community	Distrust in environmental assessment process The approvals process can be complex.	Inform		Media release, link to website (including newsletter)
Detailed assessment and proposal development				
Adjacent landowners	Lack of support	Inform, consult, involve, collaborate	Discuss and understand specific impacts on these receivers. Feed information into the final assessment to ensure all their issues have been identified and addressed by the project.	Face to face meeting / Phone call
Near neighbours and Wollar local community	May define locality Lack of support	Inform, consult, involve, collaborate	Identify ways the community can participate in the project and seek input on these: Vegetation screen planting, adopt a tree (one for project, one for landowner?) Signage / logo for solar farm (will be prominent part of the village? Other renewable or energy saving programs that the proponent could support?	Competitions, Adopt a tree, other programs

Stakeholder group	Issue	Consultation objective	Community engagement targets	Format
Near neighbours and Wollar local community	Distrust in environmental assessment process. Unequal distribution of benefits Risk of biased consultation, serving only the 'squeaky wheel'.	Inform and consult	Update community on detailed project, its impacts Seek input – any additional concerns, input into visual assessment if required. Meet specialists Feed information into the final assessment to ensure all community issues have been identified and addressed by the project, differentiating between stakeholder groups	Open house information day (provide links to relevant information, provision of feedback forms - also now on website)
Broader community	Representative	Inform and consult	Outline ways they can continue to have input into project Seek broad feedback on how the community feels about solar farms generally and this project specifically.	Media release, link to website (including feedback form)
EIS on public exhibition, submissions reporting				
Adjacent landowners	Relationship with landowners and community	Inform, consult, involve, collaborate	Update on project status.	Phone call update
Near neighbours and Wollar local community	Relationship with community	Inform and consult	Update on project status. Outline ways they can continue to have input into project	Newsletter update
Broader community	The approvals process can be long and complex.	Inform	Update on project status. Outline ways they can continue to have input into project	Media release
Approval determination				
Adjacent landowners	Relationship with landowners and community	Inform, consult, involve, collaborate	Update on project status.	Phone call update

Stakeholder group	Issue	Consultation objective	Community engagement targets	Format
Near neighbours and Wollar local community	Relationship with community	Inform	Update on project status. Thank the community for their involvement	Media release Website
Broader community	Relationship with community	Inform		

7 MONITORING AND EVALUATION

To ensure this plan is effective during the implementation of activities, and adapts as required to new information, the following review actions will be undertaken alongside implementation activities:

- Appoint and maintain a consultation manager for the project to implement activities and review this plan regularly.
- Keep an accurate record of all feedback from consultation activities and all correspondence with the community.
- Monitor regularly and respond promptly to email and phone queries.
- Monitor if the activities reaching a diverse and representative section of the community; do new activities need to be implemented?
- Has relevant information been passed back to:
    - Those developing the detailed project description
    - Assessment staff.

8 REFERENCES AND RESOURCES

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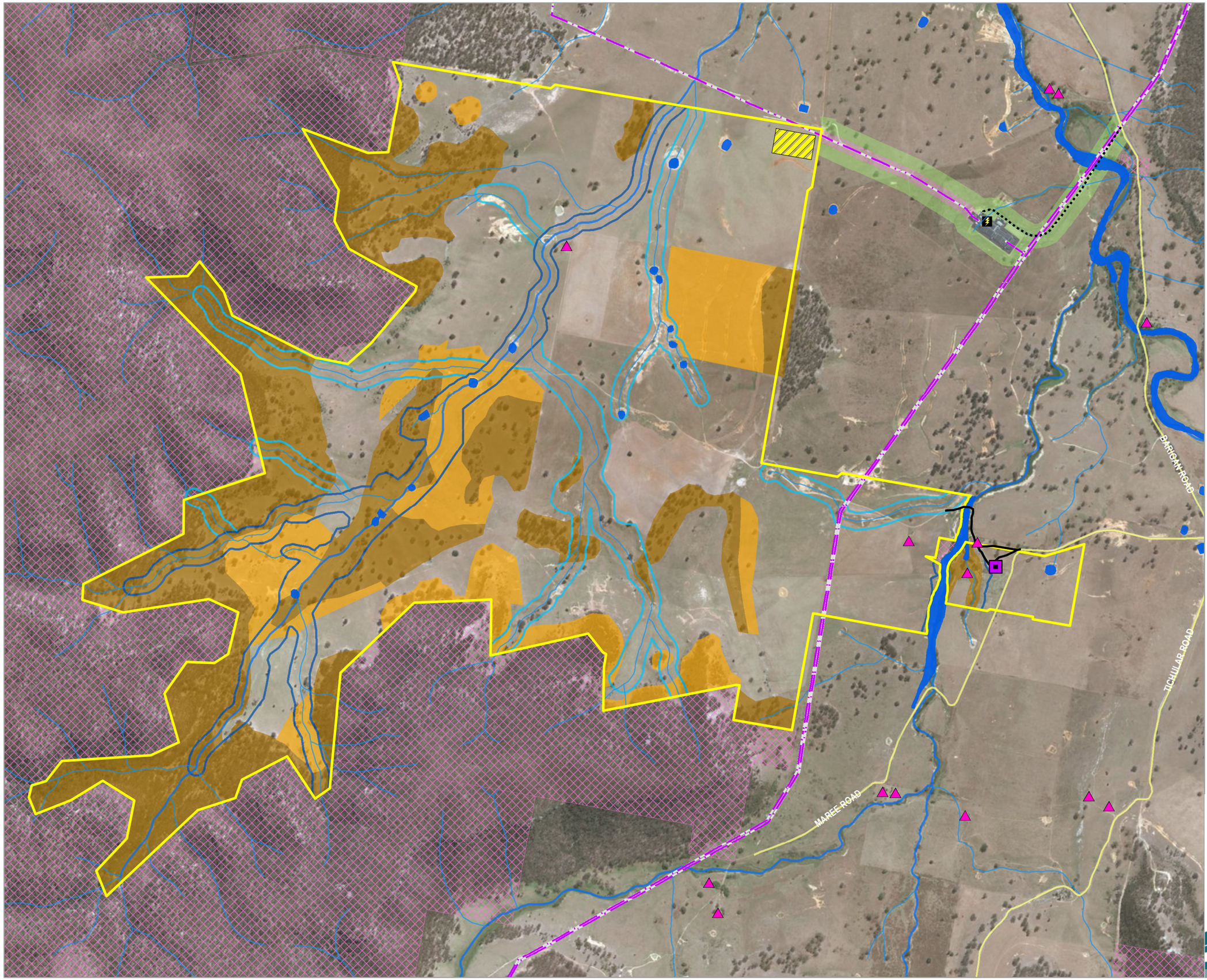
APPENDIX B PRELIMINARY CONSTRAINTS MAPPING



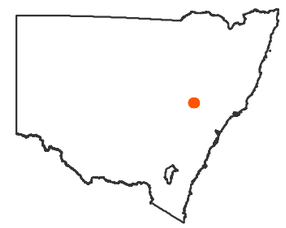
CONSTRAINTS

Wollar Solar Farm

- Study area (vegetation extrapolated from site validation data)
- Habitable dwelling
- Shed or other structure
- Existing transmission lines
- Proposed Maree 330 kV substation
- Existing access track
- Existing TransGrid access road
- Local road
- Minor drainage feature
- Drainage line
- Farm dam / other water body
- Existing TransGrid easement (60m)
- Study area for possible access road (120m)
- Existing TransGrid Wollar 500/330 kV substation

Constraints

- Waterway buffer (high)
- Waterway buffer (moderate)
- Vegetation (high)
- Vegetation (moderate)
- Crown land (moderate)



Notes:
- Base map © Esri and its data suppliers.
- Base layers from LPI and Geoscience Aust, 2018

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Author: SP Date: 5/04/2018

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APPENDIX C COMMUNITY CONSULTATION PLAN