

NARRABRI SOLAR FARM

Statement of Environmental Effects

Prepared for:

Providence Asset Group
704/99 Bathurst Street
SYDNEY NSW 2000

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BASIS OF REPORT

This report has been prepared by SLR Consulting Australia Pty Ltd (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Providence Asset Group (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

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DOCUMENT CONTROL

Reference	Date	Prepared	Checked	Authorised
631.20524-R01-v0.4	22 February 2021	Megan Crowhurst	Clare Brennock	Patrick Quinlan

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1 Introduction

This Statement of Environmental Effects (SEE) is submitted to Narrabri Shire Council (Council) in support of a Development Application (DA) for a solar photovoltaic (PV) power generation plant at 115 Airport Road, Narrabri NSW 2390 (the site).

Specifically, the proposed development includes:

- Establishment of a grid-connected solar photovoltaic (PV) plant including associated electrical generation, supplying no greater than 5 megawatts (MW);
- New 4m to 5m wide access road at the eastern boundary of the site;
- High chain link security fencing 2.3m high; and
- Other associated site improvements as shown on the Plans included as **Appendix A**.

This SEE has been prepared by SLR Consulting (SLR) on behalf of Providence Asset Group (PAG). It describes the site, its environs, the proposed development and provides an assessment of the proposal in terms of the matters for consideration under Section 4.15 (1) of the *Environmental Planning and Assessment Act 1979* (EP&A Act). It should be read in conjunction with the supporting information and Plans prepared by Balance Power and Energy Pty Ltd appended to this report (**Appendix A**).

1.1 Providence Asset Group

Providence Asset Group (PAG) is an Australian innovation led investment and asset management firm focusing on ethical investment within an environmental, social and corporate governance framework. Through collaborative partnerships, PAG supports and invests in projects aligned to new forms of renewable and clean energy.

PAG have now secured over 30 solar farm sites in regional NSW and Victoria, including a partnership with Manilla Community Renewable Energy Inc. to develop Australia's first community owned solar farm. Once constructed the 5MW Manilla project will be able to power the community of Manilla during daylight hours. The project is also a recipient of an NSW Government grant to develop PAG's a world first energy storage technology which will enable PAG's solar projects to provide stable energy well into the early morning and evening peak electricity consumption periods.

1.2 Consultation with Council

Pre-development advice was provided by Narrabri Shire Council representative Erika Dawson via email on 21 December 2020. Overall, the feedback was positive. **Table 1** summarises the matters raised by Council within the pre-lodgement email advice and provides comments on each of the matters raised.

Table 1 Consultation with Narrabri

Matters Raised	Comments
<p>Land Affected by the DA</p> <ul style="list-style-type: none"> All land affected by the proposed development is to be included in the DA. This includes any land required for access (excluding public roads). Provide landowners consent for all land affected by the development. The impact assessment provided should consider the impacts of the development on all land affected by the development. 	<p>This Statement of Environmental Effects provides considers all land affected by the proposed development and the impact the development may have on all affected land.</p> <p>Land owners' consent has also been provided at DA lodgement stage.</p>
<p>DA Plans</p> <p>The following plans are to be submitted with the DA:</p> <ul style="list-style-type: none"> An existing site plan of all the land to which the DA relates, which is to include the following: <ul style="list-style-type: none"> Drawn to scale; The location, boundary dimensions, site area and north point of the land; Existing vegetation and trees on the land; The location and uses of existing buildings on the land; Existing levels of the land in relation to buildings and roads; and The location and uses of buildings on sites adjoining the land. A proposed site plan of all the land to which the DA relates, which is to include the following: <ul style="list-style-type: none"> Drawn to scale; The location, boundary dimensions, site area and north point of the land; 	<p>The appropriate plans have been included with this report, see Appendix A.</p> <p>Parking arrangements required to be shown on Development Plans, refer to Section 5.2 below.</p>

Matters Raised	Comments
<ul style="list-style-type: none"> Any vegetation and trees on the land to be removed; The location and uses of all proposed buildings/structures on the land; Showing proposed access and parking arrangements, entry and exit points for vehicles from the road, driveway location and extent, and provision for movement of vehicles (manoeuvring areas) within the site (including dimensions) and be in compliance with AS2890.1 and AS2890.6 (where applicable); Showing the location of any new landscaping; Proposed levels of the land in relation to proposed buildings and roads. 	
<ul style="list-style-type: none"> A floor plan (of any buildings and structures): <ul style="list-style-type: none"> Drawn to scale; Showing proposed internal layouts; Showing all proposed openings (windows/doors). Elevation Plans (of any buildings and structures): <ul style="list-style-type: none"> Drawn to scale; Showing all elevations of the building, including any proposed openings (windows and doors); Showing natural ground levels and proposed ground levels; Showing both eave and ridge heights of the building. 	<p>The appropriate plans have been included with this report, see Appendix A.</p>
<p>Statement of Environmental Effects</p> <ul style="list-style-type: none"> Provides a clear and detailed description of the entire development proposed, and is to include: Details of all construction related works employee numbers, traffic generated, water requirements; 	<p>This Statement of Environmental Effects provides a detailed description of the proposal during both the construction and operational stages. All required legislation is identified within this report. All identified environmental impacts have been addressed.</p>

Matters Raised	Comments
<ul style="list-style-type: none"> • Details of all operations, including details on maintenance requirements, vegetation management, employee numbers, traffic generated, water requirements; • Any road or other infrastructure upgrade requirements; • Details of remediation of the site post use as a solar farm. • An outline of whether or not the grid connection is part of the development to which the DA applies or not • Consideration of the applicable Environmental Planning Instruments (SEPPs, LEP), DCPs and other applicable legislation. In partial: <ul style="list-style-type: none"> • SEPP 55 and associated guidelines; • Koala Habitat Protection SEPP; • Infrastructure SEPP; • Narrabri LEP, including Earthworks (Clause 6.1), Flood Planning Area (Clause 6.2), Airspace Operations (Clause 6.3) and Essential Services (Clause 6.5) 	
<ul style="list-style-type: none"> • Identification of the environmental impacts of the development and how the environmental impacts of the development have been identified • Details the measures taken to protect the environment or to lessen the expected harm to the environment. 	<p>This Statement of Environmental Effects provides a detailed description of the proposal during both the construction and operational stages. All required legislation is identified within this report. All identified environmental impacts have been addressed.</p>
<p>Traffic</p> <p>A Traffic Impact Assessment (TIA) prepared by a suitably qualified consultant in accordance with Austroads Guide to Traffic Management Part 12 Integrated Transport Assessments for Developments. The TIA is to:</p>	<p>A Traffic Impact Assessment (TIA) has been prepared for the proposal and is provided at Appendix B. Within the TIA is an assessment of pre-existing conditions of the roads, traffic generation, vehicle access points, manoeuvring and identification of any road upgrade work required.</p>

Matters Raised	Comments
<ul style="list-style-type: none"> • Provide an assessment of the existing conditions of the local traffic network to be affected by both construction and operation of the development. This is to include existing traffic volumes (vpd and vph), existing road construction/geometry standards, and safety; • Outline the traffic generated by the development, including for both construction and operation, including: <ul style="list-style-type: none"> • Identification of transport routes for deliveries, • Daily traffic generated and peak hour traffic generated, • The size of vehicles required to access the site, including identification of any oversized vehicles required to access the site. • Consideration of transport impacts of the development including: <ul style="list-style-type: none"> • Impact of development traffic on capacity of local road network and functioning of utilised intersections during the peak hour. • Demonstration, via provision of swept paths, that the largest vehicle required to access the site can manoeuvre through all intersections in the local road network and the property access driveway. • Identification of any road upgrade works required to facilitate the development from both a geometry perspective and in accordance with Austroads intersection warrants. 	
<p>Ecology</p> <p>Advice is to be provided by a suitably qualified ecologist to demonstrate:</p> <ul style="list-style-type: none"> • Whether the development is likely to significantly affect threatened species or ecological communities, or their habitats, according to the test in section 7.3 of the <i>Biodiversity Conservation Act 2016</i> (BC Act); 	<p>A Flora and Fauna Assessment Report has been prepared by Kleinfelder and provided at Appendix C.</p>

Matters Raised	Comments
<ul style="list-style-type: none"> • Whether the development exceeds the biodiversity offsets scheme threshold if the biodiversity offsets scheme applies to the impacts of the development on biodiversity values; and • Whether the development is to be carried out in a declared area of outstanding biodiversity value. • If the response to any of the items in (i) to (iii) above is in the affirmative, a Biodiversity Development Assessment Report (BDAR) is to be provided in accordance with the requirements of the BC Act. <p>Advice is to be provided by a suitably qualified ecologist in relation to State Environmental Planning Policy (Koala Habitat Protection) 2019:</p> <ul style="list-style-type: none"> • information, prepared by a suitably qualified and experienced person in accordance with the Guideline, to demonstrate that the land subject of the development application— • does not include any trees belonging to the koala use tree species listed in Schedule 2 for the relevant koala management area, or • is not core koala habitat, or • information, prepared in accordance with the Guideline, to demonstrate that the land subject of the development application— • does not include any trees with a diameter at breast height over bark of more than 10 centimetres, or • includes only horticultural or agricultural plantations. 	
<p>Glare</p> <p>A Glare Analysis prepared by a suitably experienced consultant to consider potential glare impacts from the development on operation of the airport, residential receptors, road users, rail users, and any airstrips. Noting the DA will be referred to CASA.</p>	<p>A Reflectivity Glare Assessment has also been conducted for the application and is located at Appendix D.</p>

Matters Raised	Comments
<p>Visual Impact</p> <p>A Visual Impact Assessment prepared by a suitably experienced consultant to consider potential visual impacts from the development on residential receptors and other potentially affected receptors.</p>	<p>A Visual Analysis and Landscape Concept has been prepared for the proposal and is provided at Appendix E.</p>
<p>Agricultural Land Impacts</p> <p>An assessment on the impact of the development on productive agricultural land.</p>	<p>Refer to Section 2.2, the proposal will not have any impact on the productivity of surrounding agricultural lands.</p>
<p>Flood Impact</p> <p>The site is mapped as being within a flood planning area on the LEP. An assessment of flood impact is to be provided, at a minimum, addressing the considerations of clause 6.2 of the LEP.</p>	<p>A Flood Impact Assessment has been prepared for the proposal and is provided at Appendix F.</p>
<p>Watercourse Interactions</p> <p>The site contains a watercourses. These are to be clearly shown on the DA site plans. Any works within 40m of the top of the bank of the watercourse (i.e. waterfront land) will require a referral to the Natural Resources Access Regulator (NRAR), as Integrated Development. Full details of any works within waterfront land will be required as part of the DA. It is recommended that consultation be undertaken with NRAR prior to lodgement of the DA to ensure the development is consistent with NRAR requirements.</p>	<p>The appropriate plans have been included with this report, see Appendix A. These plans show that works proposed are not within 40m of the top of the bank of any nearby watercourses.</p>
<p>Staff Amenities</p> <p>If any staff amenities are proposed as part of the development, a waste water treatment report will be required to be submitted with the DA, along with details on the site plan of the location of the effluent management system and land application area.</p>	<p>Temporary construction staff amenities will be provided on site. No permanent staff amenities are proposed given the nature of the ongoing operation.</p>
<p>Narrabri Airport</p> <p>Narrabri Airport is subject to a strategic masterplan for future growth and expansion. http://www.narrabri.nsw.gov.au/index.cfm?page_id=1157</p>	<p>The site is not located within the airport's future development area, nor does the proposed development hinder the future development or operation of the airport.</p>

Matters Raised	Comments
Any DA will need to demonstrate that it is not inconsistent with the masterplan and will not hinder attainment of future development in the airport precinct.	

2 The Site and Surrounds

2.1 Site Description

The land is legally known as Lot 489 DP 754944 and is generally referred to as 115 Airport Road, Narrabri, NSW 2390 (refer to **Figure 1** and **Figure 2**). The land is currently used for agricultural purposes including livestock grazing with historical improved pastures. In terms of topography, the site is relatively flat with a gradual slope from the southeast to the northwest at slopes of approximately 0.3%.

The proposed development site is a 5-sided polygon shape which is generally flat and comprises approximately 15 hectares. The development site is located in the south eastern corner of Lot 489 DP754944, with a frontage of approximately 385 metres to Airport Road to the east. Access to the site is via Airport Road, which is a sealed road, two-way road, that connects the site to Kaputar Road to the south. Kaputar Road connects to the north west of the Narrabri township via Old Gunnedah Road. A watercourse runs east to west across the lot, directly above the northern boundary of the proposed development area.

A 'Dial Before You Dig' search showed that there are no underground power lines running or underground gas infrastructure traverse the development area in Lot 489 DP754944. There are electricity poles running through the middle of the lot, along the northern boundary of the development area. Within the wider investigation area there are underground earth or wires located to the south-east of the development area bordering to the east of Lot 21 DP 869574.

As noted within the Certificate of Title for Lot 151 DP755475, a number of easements and restriction are applicable to the site including:

- *Easement for Transmission Line Affecting The Part of The Land above described shown so burdened in the Title Diagram vide notif. in gov. gaz. Dated 23.12.1976, Folio 5757 2031924 Easement vested in New South Wales Electricity Transmission Authority*

An investigation of the obtained Crown Plan 2210.1774 shows an easement running diagonally across the south western corner of the proposed development area. The easement is for the transmission lines which are identified in the title certificate. Based on the above, the location of the solar PV farm is clear of the registered easements, as outlined in the plans provided at **Appendix A**.

Figure 1 Locality Plan (Source: Six Maps)

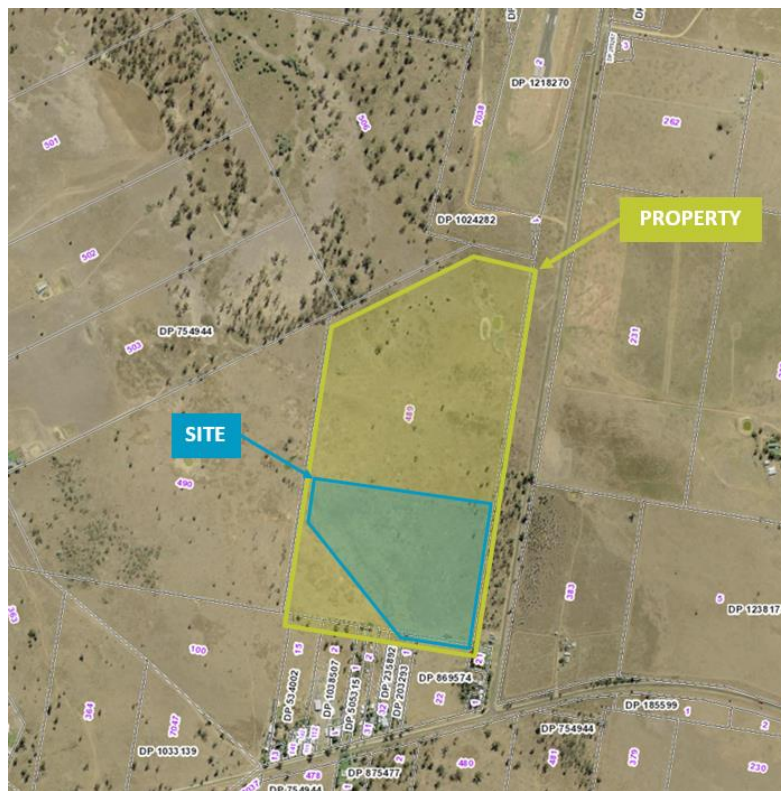


Figure 2 Cadastral Plan (Source: Six Maps)



2.2 Site Location and Context

The site is located approximately 3.6km east of the Narrabri town centre and approximately 3.15km south-east of the Narrabri Shire Council's office, within the Narrabri Shire Council Local Government Area (LGA). Airport Road is a two-lane two-way, sealed road with no kerb or guttering on either side. Entry to the Narrabri Airport is approximately 2km north of the site travelling along Airport Road. The Narrabri Airport runway at its most southern location is approximately 1.1km from the development area.

Surrounding lands are similar to the investigation area consisting of agricultural land with rural dwellings, sheds, dams, and scattered remnant vegetation. There is an unnamed watercourse running through the site east to west, immediately north of the development area. A setback of approximately 100m from the watercourse has been applied to the development plans in **Appendix A**. While the closest residential dwelling to the proposed development site is immediately to the south of the site on Lot 21 DP869574, there is a cluster of rural residential dwellings whose properties share a boundary with the site.

The solar array is designed to minimise impacts on existing farming activities adjacent to the development area. The site has also been located on the extremity of the landholdings whilst providing continued access to the remainder of the lot for agricultural activities. Opportunities for livestock grazing (sheep) is currently being explored with the landowner, which can be easily accommodated through the design proposed.

3 Project Description

The Narrabri Solar Farm project is one of PAG's solar initiatives to be rolled out across regional Australia, with multiple benefits for rural and regional communities.

The proposal includes a no larger than 5MW grid-connected solar PV installation. The solar farm will be connected to the existing Narrabri Substation at 48 Stoney Creek Road, which is approximately 3km north-west of the proposed development site via the current overhead electricity power lines within proximity to the site.

The proposed development aims to erect an estimated 11,592 solar PV panels with a nameplate rating of 540W. Other electrical generation infrastructure is proposed on the site including a skid-mounted MV Power Station consisting of inverters, transformer and switchgear. Due to the capacity of the inverter system, the proposed development will produce less than 5MW. Most of the infrastructure will be pre-fabricated off-site, delivered and assembled on-site.

The PV arrangement will consist of 142 ground mounted single axis trackers. The PV arrays will have a clearance above the existing ground surface and extend to approximately 2.6m at maximum tilt. The PV mounting structure will comprise of steel posts driven to approximately 1.5m below ground using a small pile driver. Additional support structures will be attached to the piles, which will then support the PV panels.

The proposal will require the removal of native vegetation within the development area, including six trees (White Cypress Pine) and three dead stags, two of which contain hollows. A negligible amount of groundcover vegetation is required to be removed. The proposal will not involve clearing of native vegetation that exceeds the Biodiversity Offset Scheme (BOS) threshold for the site.

A 5m wide access road is proposed connecting the solar farm to Airport Road at the south eastern corner of the lot. The solar farm will be fully fenced with a 2.3m security fencing including barbed wire at the top. Gate access is provided on the eastern border of the site. A loading area and temporary construction office are indicatively shown on the General Arrangement Plan (refer to **Figure 3** and **Appendix A**). Motion activated security lighting may be installed at the site.

A stormwater management system is proposed including an onsite detention basin holding a total volume of 142m³ supported with a low flow outlet. Refer to the Stormwater Management Plans at **Appendix G**. Earthworks for the project are generally limited to the establishment of the access road, drainage swales and batters, laydown area, and detention basin.

During the construction period there is estimated to be up to 30 personnel on site for up to 6 months.

The solar PV farm will operate 24 hours a day, 7 days a week, with no permanent staff on site. Maintenance inspections will be undertaken daily or on an as needs basis.

After operation, the site will be re-established as grasslands.

GENERAL NOTES

- THIS DRAWING IS INTENDED TO BE PRINTED IN COLOUR.
- BACKGROUND SATELLITE IMAGERY IS INDICATIVE ONLY.
- WATERCOURSE, WATERBODY DETAIL SHOWN IS OBTAINED FROM SIXMAPS, PROJECTION MGA ZONE 55.
- SOLAR FARM DETAIL SHOWN IS PRELIMINARY, MAY CHANGE IN DETAILED DESIGN.

LEGEND

- TREE (EXISTING)
- TREE (FOR REMOVAL)
- LOT BOUNDARY
- 400 MAJOR CONTOUR
- MINOR CONTOUR
- SECURITY FENCE
- LEASE BOUNDARY (PROPOSED)
- FENCE (EXISTING)
- ACCESS ROAD
- O/H 11kV POWERLINE
- O/H 22kV POWERLINE
- O/H 66/132kV POWERLINE
- WATERCOURSE

SCALE (m)

0 50 200
10 100

N

PROVIDENCE ASSET GROUP

BPE

REV. DATE DESCRIPTION

REV.	DATE	DESCRIPTION	DRWN.	DESIGNED	CHKD.	APPR.
C	2021.02.04	CIVIL DETAIL ADDED	JM	JM	SS	JM
B	2021.01.14	MINOR REVISIONS	JM	JM	SS	JM
A	2021.01.14	FIRST ISSUE	JM	JM	SS	JM

TITLE

PROVIDENCE ASSET GROUP
NARRABRI SOLAR FARM
GENERAL ARRANGEMENT
OVERVIEW

DWG No. 10100-G-GAD-02-1

SCALE 1:7,500

REVISION C

PAPER SIZE A3

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4 Relevant Legislation and Planning Controls

The following Environmental Planning Instruments (EPIs) and Development Control Plans (DCPs) are relevant to the proposed development as explored within this Section of the report:

- *Environment Protection and Biodiversity Conservation Act 1999*;
- *Environmental Planning and Assessment Act 1979*;
- *Water Management Act 2000*;
- *National Parks and Wildlife Act 1974*;
- *Biodiversity Conservation Act 2016*;
- *Local Land Services Act 2013*;
- State Environmental Planning Policy (Infrastructure) 2007;
- State Environmental Planning Policy (Koala Habitat Protection) 2019;
- State Environmental Planning Policy (State and Regional Development) 2011;
- State Environmental Planning Policy 55 – Remediation of Land;
- Narrabri Local Environmental Plan 2012;
- Narrabri Development Control Plan 1993;
- New England North West Regional Plan 2036; and
- New England North West Strategic Land Use Plan 2012.

4.1 Environment Protection and Biodiversity Conservation Act 1999

Consideration of the EPBC Act 1999 revealed that impacts on Matters of National Environmental Significance (MNES) are unlikely to occur. No EPBC listed species, ecological communities, migratory species or important habitat for such entities was identified within the subject site. The assessment determined that impacts to Matters of National Environmental Significance (MNES) are unlikely; therefore, an EPBC referral to the Commonwealth Minister for the Environment is not recommended.

Full details are included in the Flora and Fauna Assessment Report at **Appendix C**.

4.2 Environmental Planning and Assessment Act 1979

The proposal, as with all development applications, is subject to the provisions of the *Environmental Planning and Assessment Act 1979* (EP&A Act). Section 4.15(1) of the EP&A Act, 1979 provides criteria which a consent authority is to take into consideration, where relevant, when considering a DA. An assessment of the subject DA, in accordance with the relevant matters prescribed under Section 4.15(1), is provided within this SEE.

Clause 4.46 Integrated Development

Development is deemed to be integrated if approvals from other public authorities are required before consent for the development can be granted. This will require Council to refer the application to the relevant authority for their requirements.

As part of the concurrence process, the relevant authority will undertake their respective assessment process providing their consent and required conditions (if in support) to Council at completion. Timeframes for the concurrence process is either 40 days or 21 days in addition to any public notification period, however agencies commonly exceed the timeframes. The proposal is not considered to be integrated development.

4.3 Water Management Act 2000

Under the *Water Management Act 2000*, waterfront land includes the bed and bank of any river, lake or estuary and all land within 40m of the highest bank of the river, lake or estuary (NRAR, 2018). An unnamed watercourse is located in the middle of the Lot, to the north of the development area. The proposed development does not include any works within 40m of the waterway and therefore an activity approval under the *Water Management Act 2000* from the NSW Department of Planning, Industry and Environment Water Division is not required, therefore also not triggering the development as integrated development under clause 4.46 of the EP&A Act.

4.4 National Parks and Wildlife Act 1974

The *National Parks and Wildlife Act 1974* includes provisions for the protection and recording of Aboriginal objects in NSW.

An Aboriginal site investigation has been undertaken in accordance with the provisions of the *National Parks and Wildlife Regulations 2009* and the accompanying Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW (OEH 2010). Refer to **Appendix H** for the Due Diligence Archaeological Assessment prepared by Virtus Heritage. The assessment concludes that no Aboriginal objects were identified during the site visit and no areas of archaeological potential are identified within the project area. There are also no Aboriginal places registered within the project area.

4.5 Biodiversity Conservation Act 2016

The *Biodiversity Conservation Act 2016* (BC Act) aims to maintain a healthy, productive and resilient environment for the greatest well-being of the community, now and into the future, consistent with the principles of ecologically sustainable development. To achieve its goals, the BC Act governs endangered species and communities and provides a framework for a Biodiversity Offset Scheme (BOS).

An assessment was undertaken by Kleinfelder in accordance with Section 7.3 of the BC Act to determine the significance of potential impacts of the proposed development on any threatened species or communities which are listed within the Act.

No threatened ecological communities or any listed flora or fauna were identified on site with the proposed development unlikely to cause any significant impact to any threatened species, populations or communities listed within the BC Act.

Entry into the NSW BOS is not triggered by the proposed development. Further details are provided in Section 5.4 of this Report.

4.6 Local Land Services Act 2013

60H Category 1 – Exempt Land Mapping

(1) Land is to be designated as category 1-exempt land if the Environment Agency Head reasonably believes that—

(a) the land was cleared of native vegetation as at 1 January 1990, or

(b) the land was lawfully cleared of native vegetation between 1 January 1990 and the commencement of this Part.

(2) Land is to be designated as category 1-exempt land if the Environment Agency Head reasonably believes that—

(a) the land contains low conservation value grasslands, or

(b) the land contains native vegetation that was identified as regrowth in a property vegetation plan referred to in section 9 (2) (b) of the Native Vegetation Act 2003, or

(c) the land is of a kind prescribed by the regulations as category 1-exempt land.

(3) Land is to be designated as category 1-exempt land if the land is biodiversity certified under Part 8 of the Biodiversity Conservation Act 2016 or under any Act repealed by that Act.

(4) However —

(a) land described in subsection (1) or (2) is not to be designated as category 1-exempt land if section 60I (2) requires the land to be designated as category 2-regulated land, and

(b) land described in subsection (1) (a) is not to be designated as category 1-exempt land if the land was unlawfully cleared of native vegetation after 1 January 1990, and

(c) land described in subsection (2) (a) is not to be designated as category 1-exempt land if the land was unlawfully cleared of native vegetation after 1 January 1990.

(5) The regulations may make provision for the purposes of determining whether grasslands are low conservation value grasslands for the purposes of this Division.

The proposed development area in the subject site of Lot 489 DP 754944 has been under regular cropping, grazing and pasture improvement since prior to 1990. Therefore, in accordance with the *Local Land Services Act 2013*, the full project development area can be considered as category 1 - exempt land.

4.7 State Environmental Planning Policy (State and Regional Development) 2011

Regional development classification applies to both local and designated development applications exceeding certain criteria defined by Schedule 7 of the 4.6 State Environmental Planning Policy (State and Regional Development) 2011 (SEPP SRD).

5 Private infrastructure and community facilities over \$5 million

Development that has a capital investment value of more than \$5 million for any of the following purposes:

(a) air transport facilities, **electricity generating works**, port facilities, rail infrastructure facilities, road infrastructure facilities, sewerage systems, telecommunications facilities, waste or resource management facilities, water supply systems, or wharf or boating facilities,

(b) affordable housing, child care centres, community facilities, correctional centres, educational establishments, group homes, health services facilities or places of public worship.

The proposed electricity generating works is considered to be private infrastructure with a capital investment value (CIV) greater than \$5 million and as a result the development is deemed to be regionally significant development and the application will be referred to the Regional Planning Panel (RPP) for determination.

4.8 State Environmental Planning Policy (Infrastructure) 2007

Division 4 Electricity generating works or solar energy systems

One of the aims of SEPP (Infrastructure) 2007 is to provide greater flexibility in the location of infrastructure and service facilities. This SEPP identifies certain electricity generating works that are permitted with consent, without consent, as exempt development, as complying development and works that are prohibited.

In this division –

electricity generating works has the same meaning as it has in the Standard Instrument.

Note—

The term **electricity generating works** is defined by the Standard Instrument as follows—

electricity generating works means a building or place used for the purpose of—

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

Clause 34 Development permitted with consent

(1) Development for the purpose of **electricity generating works** may be carried out by any person with consent on the following land—

- (a) in the case of electricity generating works comprising a building or place used for the purpose of making or generating electricity using waves, tides or aquatic thermal as the relevant fuel source—on any land,
- (b) in any other case—any land in a prescribed rural, industrial or special use zone.

Definition:

prescribed rural, industrial or special use zone means any of the following land use zones or a land use zone that is equivalent to any of those zones—

(a) RU1 Primary Production,

(b) RU2 Rural Landscape,

(c) RU3 Forestry,

(d) RU4 Primary Production Small Lots,

(e) IN1 General Industrial,

(f) IN2 Light Industrial,

(g) IN3 Heavy Industrial,

(h) IN4 Working Waterfront,

(i) SP1 Special Activities,

(j) SP2 Infrastructure.

The development area is zoned RU1 Primary Production, therefore the proposed solar PV project is permitted with consent under Clause 34 of SEPP (Infrastructure) 2007.

Clause 45 Determination of development applications - other development

The proposed development will require works to connect to the overhead electricity power lines and as a result constitutes works within 5m of powerlines. Due to the location and nature of the proposed development referral to the electricity supply authority, Essential Energy, will be required during the assessment period.

Clause 104 Traffic-generating development

The proposed development will not generate greater than 50 vehicle movements per hour and therefore does not trigger traffic generating development under the SEPP. Referral under this clause to Transport for NSW is not required.

4.9 State Environmental Planning Policy 55 – Remediation of Land

This SEPP requires the consent authority to consider the potential contamination status of the land prior to approving a development.

A search of the NSW EPA's 'List of NSW contaminated sites notified to the EPA' and 'POEO Public Register' has been undertaken which revealed no contaminated sites listed on or in the vicinity of the site. A total of 14 licences have been issued under the *Protection of the Environment Operations Act* in Narrabri, however, none are noted within proximity to the site. Environmental protection licences issued within Narrabri include:

- Licence 6957 – Auscott Marketing Pty Ltd – 21154 Kilaroi Highway, Narrabri – Operational;

- Licence 3778 – Boral Resources (Country) Pty Limited – Wave Hill Road, Narrabri – Operational;
- License 902 – Cargill Processing Limited – Baranbar Street, Narrabri West – Operational;
- Licence 1477 – CSR Limited – Colgoora Road, Narrabri – Surrendered;
- Licence 20236 – G & S Lein Earthmoving Pty Ltd - Sandy Creek Lane, Narrabri – Revoked;
- License 7196 – Hunter and New England Area Health Service – 11 Cameron Street, Narrabri – No Longer in Force;
- License 20139 – Johnstone Concrete and Landscape Supplies Pty Ltd – Wavehill Road, Narrabri – Operational
- License 11572 – Malcolm Francis Gett – Culgoora Road, Narrabri – Surrendered.
- License 200 – Narrabri Shire Council – Newell Highway, Narrabri – Operational;
- License 10697 – Narrabri Shire Council – Namoi Street, Narrabri – Operational;
- License 11760 – Narrabri Shire Council – Wave Hill Road, Narrabri - Highway, Narrabri – Surrendered;
- License 12193 – Narrabri Shire Council – Yarrie Lake Road, Narrabri – Operational;
- License 20350 – Santos NSW (Eastern) Pty Ltd – X Line Road, Narrabri – Operational; and
- License 20378 – Santos NSW (Eastern) Pty Ltd – 300 Yarrie Lake Road, Narrabri – Operational.

The proposed development is not considered to be sensitive in nature and as a result is considered to be appropriate for the site in its current state in accordance with SEPP 55.

4.10 State Environmental Planning Policy (Koala Habitat Protection) 2019

The State Environmental Planning Policy (Koala Habitat Protection) 2019 (Koala SEPP) aims to encourage the conservation and management of areas of natural vegetation that provide habitat to koalas to support a permanent free-living population over their present range and reverse the current trend of koala population decline.

The Flora and Fauna Assessment (**Appendix C**) provides an assessment of Koala habitat within the subject site determined that no *Highly Suitable Koala Habitat*, or *Core Koala Habitat* is present.

4.11 Narrabri Local Environmental Plan 2012

The development area is zoned RU1 Primary Production under the Narrabri Local Environmental Plan 2012 (LEP 2012), see **Figure 4**.

Figure 4 Land Zone Map Extract, Narrabri LEP 2012 (LZN_004K)



Zone RU1 Primary Production

1 Objectives of zone

- To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.
- To encourage diversity in primary industry enterprises and systems appropriate for the area.
- To minimise the fragmentation and alienation of resource lands.
- To minimise conflict between land uses within this zone and land uses within adjoining zones.
- To allow for non-agricultural land uses that will not restrict the use of other land for agricultural purposes.

2 Permitted without consent

Building identification signs; Environmental protection works; Extensive agriculture; Farm buildings; Forestry; Home occupations; Intensive plant agriculture; Roads

3 Permitted with consent

Air transport facilities; Airstrips; Animal boarding or training establishments; Aquaculture; Bed and breakfast accommodation; Boat launching ramps; Boat sheds; Camping grounds; Cellar door premises; Cemeteries;

Community facilities; Depots; Dual occupancies; Dwelling houses; Environmental facilities; Extractive industries; Farm stay accommodation; Flood mitigation works; Freight transport facilities; Helipads; Home businesses; Home industries; Information and education facilities; Intensive livestock agriculture; Landscaping material supplies; Open cut mining; Plant nurseries; Recreation areas; Recreation facilities (major); Recreation facilities (outdoor); Research stations; Roadside stalls; Rural industries; Rural workers' dwellings; Signage; Turf farming; Water recreation structures; Water supply systems

4 Prohibited

Any development not specified in item 2 or 3

The proposed land use, defined as *electricity generating works* (see below), is prohibited under the Narrabri LEP 2012 within the RU1 zone as *any other development not specified in item 2 or 3*. Notwithstanding, the proposal is permissible under Clause 34 of SEPP (Infrastructure) as discussed in Section 4.7.

LEP 2012 Definition:

electricity generating works means a building or place used for the purpose of—

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

While the proposal is not a permitted use under the NLEP, it is within a prescribed zone under the ISEPP and permissible with consent, as outlined in the Sections above.

The proposed development is consistent with the relevant objectives of the RU1 zone, including that it will provide a sustainable rural land use whilst maintaining and enhancing the existing natural resource base.

Clause 4.1 Minimum Subdivision Lot Size

The minimum lot size for subdivision on the property is 100 hectares. No subdivision is proposed as part of this application.

Clause 4.3 Height of Buildings

This clause has not been adopted under the LEP.

Clause 4.4 Floor Space Ratio

This clause has not been adopted under the LEP.

Clause 5.10 Heritage Conservation

The site does not contain a listed heritage item nor are any listed heritage items located in proximity to the area. The area is not mapped as a heritage conservation area under the LEP 2012.

Clause 6.1 Earthworks

The objectives of this clause are:

(1) The objective of this clause is to ensure that earthworks for which development consent is required will not have a detrimental impact on environmental functions and processes, neighbouring uses, cultural or heritage items or features of the surrounding land.

The solar panels themselves retain the natural landform and only minor earthworks are required for the underground cabling and supporting infrastructure (access roads, stormwater management etc). The earthworks proposed will have minimal impact on surrounding lands and will be supported with appropriate sediment and erosion controls.

Clause 6.2 Flood Planning

The site is mapped within a flood prone land area under the LEP 2012 (refer **Figure 5**). The Planning Certificate for the site confirms the site is flood prone and therefore a Flood Impact Assessment has been prepared by Torrent Consulting and included at **Appendix F**.

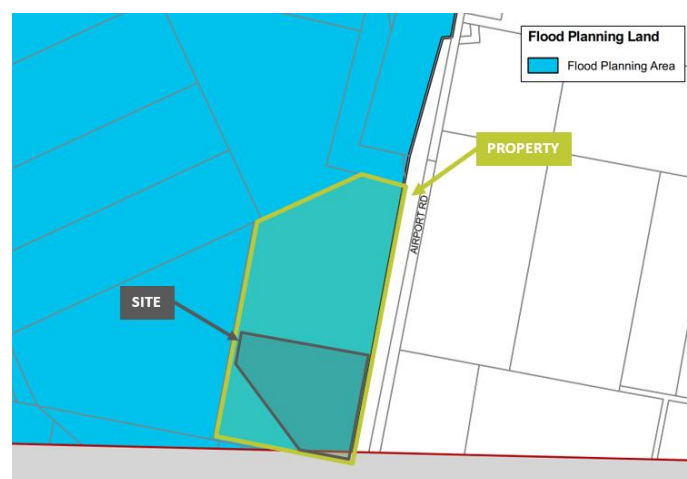
The Flood Impact Assessment has included modelling for the local catchment runoff and has simulated design flood conditions in accordance with the ARR 2019 guidelines, specifically the ensemble method for design flood hydrology. The main river flood conditions of the Namoi River have also been reproduced, using information contained in the Narrabri Floodplain Risk Management Study and Plan.

Flood hazard mapping has been produced that shows that the site is of a low flood risk and is suitable for the proposed solar farm.

The flood modelling results show that at the 1% AEP event (and the 0.5% AEP event) the proposed solar farm infrastructure is unaffected by flooding, with the solar farm area being flood-free. Ample flood-free refuge is available on-site if people are present during a local catchment flood event and all but an extreme flood event of the Namoi River, during which the entire site would be inundated. It is advised that the solar farm be closed to site visitors in the event of a major flood warning being issued by the BoM for the Namoi River to manage this minimal risk. This course of action is advisable regardless of risk to the site, as local and regional roads could be flood-affected, preventing site access.

The Flood Impact Assessment concludes that as the proposed solar farm is only inundated in an extreme flood event, the potential for adverse off-site flood impacts is negligible and therefore further consideration of flood impacts is not required.

Figure 5 Flood Planning Map Extract, Narrabri LEP 2012 (LZN_004G)



Clause 6.3 Airspace Operation

The objective of this clause is to provide for the effective and ongoing operation of the Narrabri Airport and to protect the community for undue risk from that operation. Narrabri Airport is approximately 1.1km north of the proposed site. The Planning Certificate confirms that the site has been identified as being within the Narrabri Airport Obstacle Limitation Surfaces. The maximum height limit for the investigation area is 250m AHD. A Reflective Glare Assessment (RGA) has been undertaken by SLR Consulting and included as **Appendix D**.

Quantitative analysis using the FAA-SGHAT software tool has shown that there will be nil glare from the project at Narrabri Airport with the solar array in normal tracking mode, i.e. panels tilting $\pm 60^\circ$. The SGHAT results show potential for glare involving the panels being left at a fixed tilt angle of between 30° (westwards) to 40° (eastwards). Accordingly, such a situation should be avoided, e.g. during construction, during maintenance periods, etc.

Clause 6.5 Essential Services

Provision of services, including stormwater drainage, and vehicular access suitable for the proposed development will be satisfactory provided for the site.

In summary, the proposal is compliant with the relevant clauses and controls contained within LEP 2012 with the exception of permissibility, which is overridden by SEPP Infrastructure.

4.12 Narrabri Development Control Plan 1993

The Narrabri Development Control Plan (DCP) 1993 applies to all land within the Narrabri Local Government Area (LGA), including the subject site. The project has been assessed against the Industrial Development Code and the Parking Code of the DCP 1993.

A full assessment against the relevant components of the DCP is included in table format at **Appendix I**.

4.13 New England North West Regional Plan 2036

The New England North West Regional Plan 2036 (the Regional Plan) provides an overall strategic plan to manage development in the New England region.

The Regional Plan distinctly highlights the role of renewable energy in the growth of the New England region with the plan's visions outlining the need for the area to harness the solar and wind potential. Goal 1 – A strong and dynamic regional economy identifies renewable energy as a priority growth sector. Direction 5 of the Plan further calls for the promotion and growth of the renewable energy sector, specifically the solar sector through supporting and facilitating smaller-scale renewable solar projects.

Furthermore, the Plan outlines the future economic narrative for Narrabri Shire LGA. The Plan states that a priority for the Narrabri LGA is to improve electricity infrastructure to cater for the forecasted population growth. Direction 2.3 of the Regional Plan seeks to increase opportunities for renewable energy generations such as solar, with the Plan identifying 2 solar farms (120MW & 300MW) that were already being developed in Narrabri.

The proposed development on the subject site will align with the goals of the Regional Plan as it will provide an appropriately sized renewable energy project in a location with ready access to the electrical network which will support the regional development of the township of Narrabri and the larger Narrabri LGA and New England Region.

4.14 New England North West Strategic Land Use Plan 2012

The New England North West Land Use Strategy aims to guide future development and land use within the New England region for the next 20 years. The preparation of the strategy provides the basis for future planning decisions and provide certainty to the community whilst encouraging favourable development and the protection of the environment.

The New England region has been identified as one of six renewable energy precincts across NSW. Additionally, the Narrabri LGA has been marked to have excellent conditions for solar power farms due to high solar irradiation levels and a suitable average temperature range for photovoltaic systems.

5 Assessment of Planning Issues

The following is an assessment of the environmental effects of the proposed development as described in the preceding sections of this SEE. The assessment considers only those matters under Section 4.15(1) of the EP&A Act that are relevant to the proposal.

5.1 Compliance with Planning Instruments and Controls

Unless otherwise stated, the proposed development either complies with or is consistent with all relevant planning instruments and controls set out in Section 4 of this SEE, in that:

- The proposed development is permissible under SEPP Infrastructure in the RU1 Primary Production zone;
- The proposed Solar PV Farm is consistent with the relevant objectives of the RU1 zone, including that it will provide a sustainable rural land use whilst maintaining and enhancing the existing natural resource base;
- The proposed solar farm will have minimal impact on any potential listed flora or fauna under the BC Act;
- The development is classified as Regional Development under SEPP State and Regional Development and will therefore be determined by the RPP;
- The proposal complies with the requirements of SEPP Infrastructure and referral to the road authority will not be required as the proposal is not classified as traffic generating development; and
- The proposal is generally consistent with the objectives and relevant controls within Narrabri DCP 1993. A detailed assessment of the proposed development against the relevant provisions of the DCP is provided in the table at **Appendix I**.

5.2 Traffic, Access, and Parking

Traffic

A Traffic Impact Assessment (TIA) has been undertaken by Intersect Traffic and is attached at **Appendix B**. The anticipated rates of traffic likely to be generated from the proposed development (both during construction and once operational) are discussed in the TIA.

The majority of traffic movements associated with the development will occur during the construction of the solar farm (approximate 6-month period) with the delivery of panels and prefabricated structural supports. Deliveries during construction works would be expected to be within rigid and articulated vehicles and the access road has been designed to safely accommodate these vehicles.

Traffic movements generated during operation will include a single staff light vehicle associated with maintenance inspections and specific maintenance work (on an as needs basis) which would be short term and infrequent.

During construction the development will generate up to a predicted peak of 18 vehicle movements (per hour) to and from the site during the weekday AM and PM peak periods consisting of 10 light vehicle movements, 6 roadwork and other plant vehicle movements, and 2 delivery vehicle movements. Based on the data collected from traffic surveys, the surrounding road network has sufficient capacity to cater to the projected construction traffic with capacity to spare for future development in the area. Construction traffic is temporary in nature and will be managed through a future Construction Traffic Management Plan, provided post development approval.

The TIA notes the existing condition of the surrounding roads, including Kamilaroi Highway, Old Gunnedah Road, Kaputar Road and Airport Road. At the time of assessment, all four roads were considered to be in good condition. It is considered the local and state road network would be suitable to cater for the expected construction traffic associated with the development.

The TIA found both Kamilaroi Highway and Old Gunnedah Road are suitable for the heavy vehicle traffic during construction, however Kaputar Road and Airport Road are not a designated B-Double route.

In summary, the additional traffic anticipated from the proposal has been assigned to the road network where it was found that the surrounding road network is capable of accommodating the expected additional traffic from the proposal. Given the construction will be completed within a 6 month period and the peak operational traffic volume from the site is only 2 vehicle trips per hour (vtpH) there is no need to do a 2030 (10 year horizon period) assessment of this development.

Access and Internal Circulation

During the construction phase of the development there will be a construction access point off Airport Road at the south eastern corner of the site. Access to the site will be via a new access road which runs inside the eastern boundary of the site. The proposed width at the combined entry/exit access is 3-5.5m wide, however the proposed turning apron off Airport road will be a minimum of 12.5m wide. The proposed driveway will provide for the turning movements of cars and service vehicles, in accordance with Council controls and the Australian Standard for Parking Facilities (Part 1: Off-street car parking and Part 2: Off-street commercial vehicle facilities), AS 2890.1:2004 and AS 2890.2 –2002. Furthermore, sight distance at the proposed access point was observed to be in excess of 250 metres in each direction and therefore complies with the relevant Australian Standards.

Parking

The Narrabri Shire DCP 1993 sets out the relevant on-site car parking rates for land uses within the Narrabri area. No gross floor area is proposed as part of the development.

As no DCP rate is provided specifically for a solar farm, adopting the 'factories' rates for this project, the relevant on-site car parking provision during the operation is 1.3 spaces per 100m² GFA.

As no buildings are proposed on site on the site and only 1 employee engaged in the day to day operation of the solar farm, the development is not required to provide any on-site parking space under the DCP calculations. However, with a single maintenance vehicle visiting the site between 1 to 5 times per fortnight, at least one vehicle car park within the development is considered to be satisfactory.

Consideration of construction parking demand has also been considered with potential for up to 30 employees projected. A total of 10 car parks are proposed with additional space afforded for potential onsite overflow if required. The car parking area is to comply with the requirements of Australian Standard AS2890.1-2004 Parking Facilities – Part 1 Off-street car parking with parking bay sizes 2.4 m x 5.4 m and aisle widths of 5.8 metres. Therefore, the on-site car parking is considered suitable for the construction phase of the development ensuring all vehicle movements to and from the site will be undertaken in a forward direction.

5.3 Stormwater, Soil and Erosion Control

The proposed stormwater management system has been designed to reduce post-development flows to align with the pre-development conditions on the site. To achieve this, a detention basin is proposed at the north-eastern corner of the development area. This basin provides a holding volume of 142m³ and is supported with a low flow pipe and overflow weir. The stormwater management system proposed has been designed in accordance with Council requirements and with the proposed mitigation measures achieves compliance with the pre-development stormwater flows.

The stormwater drainage strategy for the development can be summarised as:

- (i) All impervious runoff from the proposed photovoltaic arrays will discharge to the existing ground surface where the natural flow regime will be maintained.*
- (ii) Runoff from the proposed gravel/hardstand area catchment will be conveyed via sheet flow to the proposed above ground onsite stormwater detention basin.*
- (iii) Discharge from the above ground onsite stormwater detention basing will be limited to the pre-development flow rates*

In accordance with the stormwater drainage philosophy proposed for the site, the Narrabri Solar Farm will limit the Post-Development peak flows to Pre-Development flow rates for the 1 EY, 10% AEP and 1% AEP events.

Detailed Stormwater Plans and Report including DRAINS modelling have been prepared DRB Consulting Engineers provided at **Appendix G**.

5.4 Flora and Fauna

Kleinfelder have undertaken a Flora and Fauna Assessment of the proposed development (refer **Appendix C**). This assessment has been undertaken with reference to the EP&A Act 1979 as well as the BC Act 2016 and the EPBC Act 1999.

As noted within the Flora and Fauna Assessment Report, the proposed development will require the removal of native vegetation within the development area, including six trees (White Cypress Pine) and three dead stags, two of which contain hallows. A negligible amount of native groundcover vegetation is required to be removed due to the predominance of exotic grasslands. The proposed site is not within or in close proximity to any mapped Areas of Outstanding Biodiversity Value. Impacts on biodiversity values have been addressed through an iterative design process to avoid areas of higher biodiversity value within the site.

Field surveys undertaken by qualified ecologist(s) recorded no threatened flora or fauna species on the site with the proposed development unlikely to cause a significant impact to any threatened species, populations or ecological communities listed under the NSW BC Act. Entry into the NSW BOS is not triggered by the proposed development.

No EPBC listed species, ecological communities, migratory species or important habitat for such entities were identified within the Development Area. The Flora and Fauna Assessment determined that impacts to Matters of National Environmental Significance are unlikely; therefore, an EPBC referral to the Commonwealth Minister for the Environment is not recommended.

Inclusion of the avoidance and mitigation measures made within the Flora and Fauna Report in relation to vegetation clearing, erosion control, dust control, chemical spills and weed management, will be followed to reduce potential impacts to biodiversity values within the subject site and the environment.

5.5 Noise

A Noise Assessment (NA) undertaken by Muller Acoustic Consultants measured and modelled the potential noise generation for the operation (both during construction and once operational) including sleep disturbance noise emissions (refer to **Appendix J**). The NA concludes the following in relation to construction and operational noise.

Construction Noise

Modelled noise emissions from all project construction activities identify that relevant noise management levels are expected to exceed the NMLs at 15 receivers when works are at their nearest proximity during standard construction hours. Exceedances at this receiver are expected from all construction activities (piling, trenching & assembly), however, would be of a temporary nature and of short duration. Noise management measures as provided in the enclosed Noise Assessment (refer to **Appendix J**) are to be implemented to reduce potential impacts on surrounding receivers during construction activities. Road noise emissions are predicted to satisfy the relevant Road Noise Policy (RNP) criteria at all receivers along the proposed transportation route. Vibration impacts from the proposed works are considered to be negligible.

Construction noise mitigation measures to be implemented include:

- *A construction noise management protocol to minimise noise emissions, manage out of hours (minor) works to be inaudible, and to respond to potential concerns from the community;*
- *Where possible use localised mobile screens or construction hoarding around piling rig/plant to act as barriers between construction works and receivers, particularly where equipment is near the site boundary and/or a residential receiver including areas in constant or regular use (e.g. unloading and laydown areas);*
- *Operating plant in a conservative manner (no over-revving), shutdown when not in use, and be parked/started at farthest point from relevant assessment locations;*
- *Selection of the quietest suitable machinery available for each activity;*
- *Minimise noisy plant/machinery working simultaneously where practicable;*
- *Minimise impact noise wherever possible;*
- *Utilise a broadband reverse alarm in lieu of the traditional high frequency type reverse alarm;*
- *Provide toolbox meetings, training and education to drivers and contractors visiting the site during construction so they are aware of the location of noise sensitive receivers and to be cognisant of any noise generating activities;*

- *Signage is to be placed at the front entrance advising truck drivers of their requirement to minimise noise both on and off-site; and*
- *Utilise project related community consultation forums to notify residences within proximity of the site with project progress, proposed/upcoming potentially noise generating works, its duration and nature and complaint procedure.*

Operational Noise

The results of the NA demonstrate that emissions from the project is able to satisfy the relevant Project Noise Trigger Levels (PNTL) at all assessed receivers for all assessment periods once the noise controls are implemented. Furthermore, sleep disturbance is not anticipated, as emissions from impact noise are predicted to remain below the EPA screening criterion for sleep disturbance and awakenings.

Notwithstanding, it is recommended that the proponent actively minimise potential noise emissions from the project. To assist in noise management for the project it is recommended that a one-off noise validation monitoring assessment be completed to quantify operational noise emissions from site and to confirm emissions meet relevant criteria. The monitoring assessment would consist of operator attended noise measurements during normal operation to determine the noise contribution from the project.

5.6 Landscape and Visual Impact

It is relevant to consider the visual impact of the proposal given the existing rural landscape character of the area and location of a number of neighbouring properties within 1km radius of the site. SLR Consulting has undertaken a Visual Analysis and Landscape Concept to assess the potential visual amenity changes which may occur as a result of the proposed development, see **Appendix E**.

Based on the appraisal and findings of the Visual Analysis and Landscape Concept, it can be considered the proposed solar farm would have a 'minor' visual impact rating on the existing landscape character and values of the site and its local context. Although the subject site is a relatively short distance from Narrabri, views of the existing site from public viewpoints are very limited due to the presence of obstructions such as topographic features, vegetation and built elements.

The views of the site from public viewpoints were from Airport Road and Kaputar Road. This is due to the low flat areas adjoining the site and obstructions between the viewpoints and the site such as residential structures and vegetation along verges and property boundaries. Although the site is visible from adjoining roads, from certain locations it's distance from viewpoints along the roads combined with the presence of existing vegetation reduces its overall visibility within the landscape.

The height and visual permeability of the array will mean that the relative visual impacts of the Solar Farm are generally low, especially given the distance from the most notable public vantage points.

Given the relatively low height of the Solar Farm, the informal planting of native shrubs to complement the existing rural landscape character along the southern and south eastern side of the lease area, outside of the fence line would assist in minimising visual impacts of the development on the surrounding rural landscapes and the adjoining residential properties.

The planting of trees directly adjoining the solar farm would not be encouraged due to the potential for shadows to be cast over the array during certain times of the day.

5.7 Glare Analysis

A Reflective Glare Assessment (RGA) has been undertaken by SLR Consulting to assess the potential for reflected light induced impacts on aviation, road operations, rail operations, industrial and heavy machinery operations, and residential amenity (refer **Appendix D**).

The proposed solar PV panels include solar trackers which results in minimal potential for horizontal reflectivity to occur as light is generally reflected upwards. The RGA found no impact would be made in regard to Motorist 'Traffic Disability' Glare or Rail Traffic 'Disability' Glare. Reflections from the proposed solar farm may be visible from surrounding residences, although the impacts are calculated are minimal. It is recommended that if modules are required to be near horizontal for extended periods, then they should be positioned at a slightly eastwards tilt angle of at least 10°.

Quantitative analysis using the FAA-SGHAT software tool has shown that there will be nil glare from the project at Narrabri Airport with the solar array in normal tracking mode, i.e. panels tilting $\pm 60^\circ$. The SGHAT results show potential for glare involving the panels being left at a fixed tilt angle of between 30° (westwards) to 40° (eastwards). Accordingly, such a situation should be avoided, e.g. during construction, during maintenance periods, etc.

Glare resulting from onsite lighting will be mitigated in accordance with AS4282-1997 Control of the Obtrusive Effect of Outdoor Lighting effectively controlling potential for light spill and glare generated by the proposed development.

Due to the use of high-quality solar tracking systems and site buffer distances to surrounding receivers and transport networks, potential for glare impacts on the surrounding area is considered to be negligible. For further detail and discussion see **Appendix D**.

5.8 Heritage

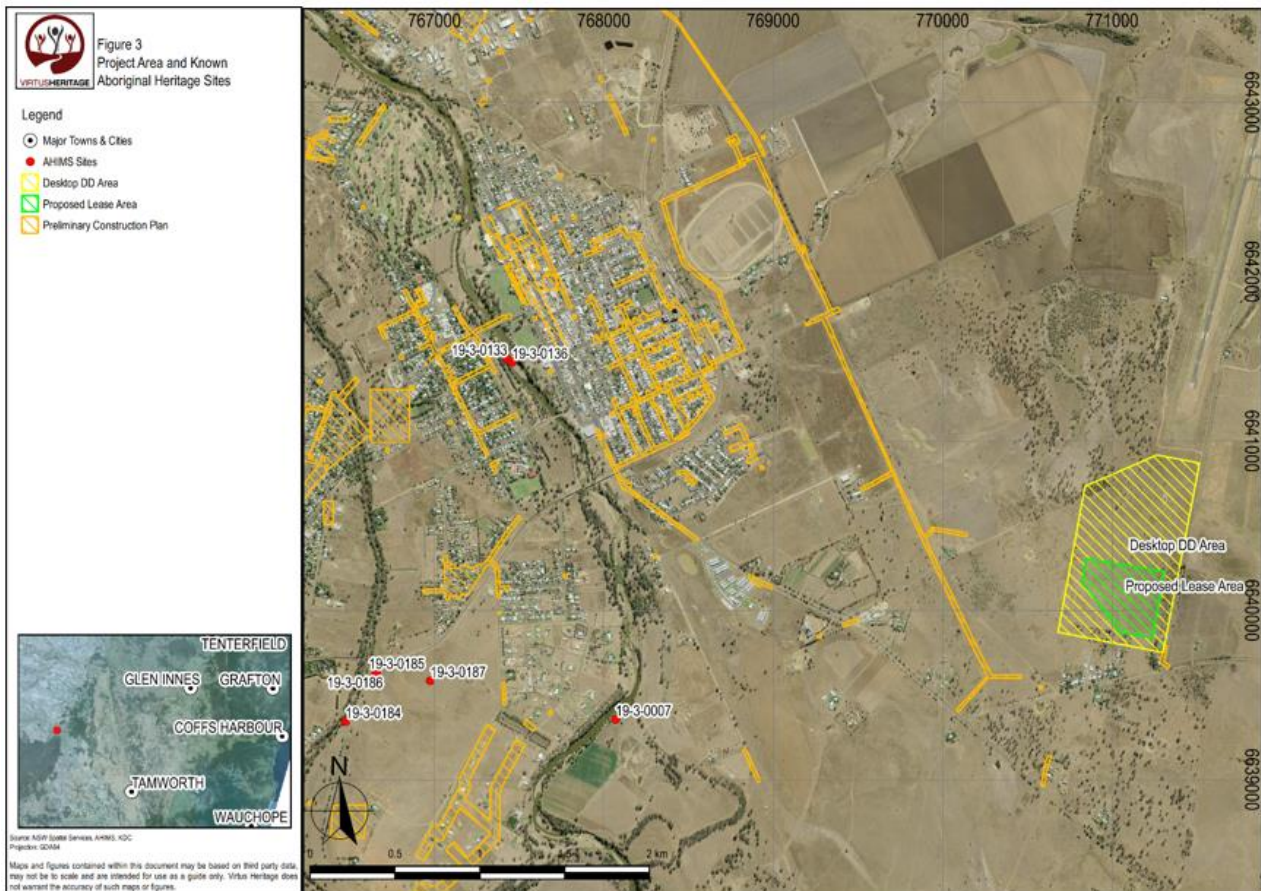
5.8.1 Aboriginal Heritage

Virtus Heritage undertook preliminary Aboriginal archaeological advice (**Appendix H**) for the proposed development area in accordance with the Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW (2010) and where applicable, the requirements of the Code of Practice for Archaeological Investigation of Aboriginal Objects, NSW (2010). See **Appendix H** for further discussion and **Figure 6** below.

A site inspection was undertaken on 13 January 2021 within the Narrabri Local Aboriginal Lands Council (LALC) area. The site inspection was undertaken by Elaine Lin, Senior Archaeologist (Virtus Heritage) and two site officers from Narrabri LALC, Kristie Toomey and Kenneth Mason.

There are no previously recorded sites within the project area based on heritage searches and background research of previous archaeological investigations to date. No Aboriginal objects or sites were observed in the project area and given the disturbance and lack of any undisturbed soils or sensitive landforms identified during survey, the project area is deemed to have a very low potential for archaeological deposits. Comments from Narrabri LALC Site Officers, Kristie Toomey and Kenneth Mason supported the assessment of low archaeological potential on site during fieldwork. No other comments were received from Narrabri LALC to date. Should further comment be received from the Narrabri LALC, it shall be considered where possible in the future by PAG.

Figure 6 Indigenous Heritage Map (Source: Virtus Heritage)



The following recommendations have been made by Virtus Heritage:

- *No Aboriginal objects were identified during the site inspection. No Aboriginal places are registered within the project area. No areas of archaeological potential are identified within the project area requiring archaeological testing, salvage or mitigation.*
- *All site workers and personnel involved in site impact works associated with the proposal should be inducted and briefed on the possible identification of Aboriginal sites and objects during construction and their responsibilities according to the provisions of the NPW Act 1974, in case any additional unknown objects or items are uncovered during proposed works.*
- *As part of this induction, the contact phone numbers of the Heritage NSW regional archaeologist and EnviroLine 131 555, the relevant Environmental Officer responsible for this project should also be given to all site workers and personnel, in case unknown objects or items are uncovered during excavation.*
- *Site workers should be made aware of the location of any Aboriginal sites that may at any stage occur within the proposal site and their scientific significance and their legal obligations in relation to the protection and management of these Aboriginal sites under the NPW Act 1974, and 2010 ancillary provisions and amendments.*

- *As part of this induction, workers should be made aware that in the event that any unexpected human remains are uncovered on site, the area of the suspected remains must be secured and cordoned off and the NSW Police notified. No further works can be undertaken until the NSW Police provide written advice. If these remains are deemed to require archaeological investigation by the NSW Police or NSW Coroner, then Heritage NSW and the relevant Aboriginal parties must be notified. A plan of management for the preservation of any identified Aboriginal human remains or for their salvage must be put in place or conducted under an AHIP methodology and variation developed in consultation with all relevant Aboriginal parties and the Heritage NSW.*
- *Providence Asset Group or delegated authority may wish to consider the input and engagement of interested Aboriginal stakeholder groups and Narrabri LALC in the development of inductions and toolbox talks for this project.*

5.8.2 European Heritage

The site does not contain any listed heritage items under Schedule 5 of LEP 2010, nor is it located within a heritage conservation area. No other heritage items are located in proximity to the site.

5.9 Social and Economic Impacts

The proposed establishment of a solar farm on the site is anticipated to have an ongoing positive social and economic impact on the local Narrabri area and the broader community.

A review of existing renewable projects along with NSW State Government research reveals support for renewable energy projects is generally favourable within the North West Region (including the broader Narrabri region). This research revealed:

- 94 per cent of respondents supported using renewables to generate electricity in NSW;
- 81 per cent believed NSW should increase the use of renewables over the next five years; and
- 95 per cent supported the use of solar farms in NSW, 92 per cent in their local region, and 84 per cent within 1–2 kilometres of where they lived.

The most common perceived advantages of renewables included environmental benefits and lower cost of electricity. The most common perceived disadvantages included higher cost and concerns about efficiency and reliability. In the North West, 74 per cent were prepared to use renewables ‘provided I don’t have to pay more for my electricity’ and 22 per cent were prepared to pay more to support them.

The proposed solar farm is predicted to improve intergenerational equity through its beneficial contribution to Australia’s Climate Change and greenhouse gas minimisation efforts, specifically:

- Directly contribute to helping Australia in meeting the Renewable Energy Target;
- Reduce greenhouse gas emissions required to meet Australia’s international climate conditions; and
- Assist in the transition towards cleaner electricity generation.

This is achieved by the potential to generate up to 5MW of electricity potentially powering 2,000 homes during daylight hours whilst reducing CO₂ emissions by around 200,000 tonnes over the lifespan of the project.

Ongoing communication with the community has been highlighted as an imperative to maximise social benefits of the proposed development. Further recommendations include the following:

- Liaison with local industry representatives to maximise the use of local contractors, manufacturing facilities, materials;
- Establish visual screening early to minimise the visual impact on the solar farm. Visual screening should be done in consultation with closest property holders in accordance with Visual Analysis and Landscape Concept;
- Establish good relations with people living in the vicinity of the proposal site at the beginning of the proposal and maintain; and
- Implement a community consultation plan to manage impacts to community stakeholders, including but not limited to:
 - mitigation measures to reduce potential construction impacts
 - protocols to keep the community updated about the progress of the Proposal and proposal benefits
 - protocols to inform relevant stakeholders of potential impacts (haulage, noise, air quality etc.)
 - protocols to respond to any complaints received
 - information on how potential customers can access the renewable energy source
 - a process to monitor the predicted social impacts and amend mitigation and management measures as required.

In summary, the proposed establishment of a Solar PV Farm on the site is anticipated to have an ongoing positive social and economic impact on the local area and the broader Narrabri community. Overall, it is considered that the development:

- Is consistent with the regulatory and business development framework, including state government legislation and the Narrabri Shire Council strategic plans;
- Will have positive impacts intergenerational equity, with the provision of cleaner energy in the future;
- Supports Commonwealth and NSW climate change commitments;
- Will generate enough clean, renewable energy for about 2,000 homes;
- Is an appropriate development in relation to the projected changes to population and demographics in the region;
- Is unlikely to have significant negative social impacts to the locality and region; and
- Would be a benefit contributing to the overall community sustainability of the Narrabri community.

6 Conclusion

The proposed solar PV electrical generation operation located at 115 Airport Road, Narrabri will provide electrical power to support the needs of Narrabri and the surrounding agricultural operations, along with rural towns and villages.

With the growth in demand for renewable energy source in both the Narrabri area and New England regional as a whole, the new electrical generator proposed under this DA will greatly assist in meeting the growing electrical demands.

The site has been chosen for its suitability in terms of land use zoning, relatively flat topography, limited trees and vegetation and access to high capacity transmission lines.

The proposed solar PV electrical generation plant is consistent with the objectives of the RU1 Primary Production zone as it will provide a compatible land use which minimises land use conflict in the area whilst contributing to the land use diversity of the area. The proposal will not increase demand for public services or facilities and will have minimal impact on native vegetation and wildlife corridors or on waterways, wetlands or riparian zones. The development is compliant with the relevant LEP clauses, presenting no variations to any development standard. The proposal is generally compliant with the requirements of Narrabri DCP 1993.

The design of the development incorporates appropriate stormwater management, respects the natural environment, and minimises potential amenity impacts on neighbouring properties.

Due to the use of high-quality solar tracking systems and site buffer distances to surrounding receivers and transport networks, potential for glare impacts on the surrounding area is considered to be negligible.

This SEE has addressed the potential impacts arising from the proposal on surrounding properties including traffic, access and parking, noise, visual amenity, ecological, and waste and water management. Where necessary, mitigation measures are proposed to minimise these potential impacts and reduce potential risk associated with the development.

Given the merit of the design and the absence of any significant adverse environmental impacts or planning issues, the DA is considered to be in the public's interest and worthy of Council's support.

APPENDIX A

Development Plans

Balance Power and Energy Pty Ltd

APPENDIX B

Traffic Impact Assessment

Intersect Traffic Pty Ltd

APPENDIX C

Flora and Fauna Assessment Report

Kleinfelder

APPENDIX D

Reflectivity Glare Assessment

SLR Consulting Pty Ltd

APPENDIX E

Visual Analysis and Landscape Concept

SLR Consulting Pty Ltd

APPENDIX F

Flood Impact Assessment

Torrent Consulting

APPENDIX G

Stormwater Management Plan

DRB Consulting Engineers Pty Ltd

APPENDIX H

Due Diligence Aboriginal Archaeological Assessment

Virtus Heritage

APPENDIX I

Compliance Tables

Table 1 Narrabri DCP 1993 – Industrial Development

CONTROL	REQUIREMENT	COMMENT	COMPLIANCE
INDUSTRIAL DEVELOPMENT CODE			
4.3 OPEN STORAGE AND WORK AREAS	<i>(a) Where any work or storage of materials is proposed to be undertaken outside the confines of a building, full details of hose parts of the site to be used, and of the materials to be stored, are to be provided with the application.</i>	No open work or storage areas are proposed.	N/A
	<i>(b) Approved open work and storage areas are to be located at the rear of industrial developments and screened from view by the use of landscaping and screen fencing. Such fencing is to be constructed of masonry materials or pre-coloured metal cladding, having a minimum height of 2.0 metres.</i>	No open work or storage areas are proposed.	N/A
4.4 SECURITY FENCING	<i>Security fencing should be visually unobtrusive and, wherever practicable, should be located behind the landscape setback area.</i>	A 2.3m high security fence will be located around the site area. It will be visually unobtrusive in design.	Y
4.6.1 SETBACKS	<i>A front building setback of eight (8) metres from the property boundary should be provided. This eight (8) metre front setback is to be intensively landscaped.</i>	A 10m front setback area is proposed from the existing fence onsite to the proposed security fence.	Y
	<i>Side and rear setbacks will be determined by the requirements of Ordinance 70 under the Local Government Act, 1919.</i>	A 10m rear setback is proposed and appropriate side setbacks are proposed, with no development in proximity to the sides of the site.	Y
4.7 LANDSCAPED TREATMENT	<i>(a) To improve the visual quality and amenity of industrial development though the effective landscape treatment of industrial sites;</i>	Informal planting of native shrubs along the southern and south eastern side of the lease area, outside of the fence line is proposed to complement the existing rural landscape character , refer to Appendix E..	Y
	<i>(b) To provide a natural buffer between industrial development and adjoining or adjacent non-industrial land uses whilst enhancing the general streetscape and amenity of Narrabri's industrial areas.</i>		Y
4.7.1 AREAS	<i>(a) The front building setback;</i>		Y

REQUIRED TO BE LANDSCAPED	<i>(b) Side and rear setbacks where visible from a public place or an adjoining residential area;</i>	Informal planting of native shrubs along the southern and south eastern side of the lease area, outside of the fence line is proposed to complement the existing rural landscape character, refer to Appendix E.	
	<i>(c) Areas adjacent to building entrances and pedestrian access points;</i>		
	<i>(d) The perimeter of all approved open storage areas and staff/visitor parking areas. (See also Section 4.3 of this Code). Large car parking areas should be interspersed with internal planting bays to reduce the visual impact of large areas of paved surfaces.</i>		
4.7.2 LANDSCAPE GUIDELINES	<i>(a) Landscaped areas are to be an integral part of the site, and may, due to the size and scale of development proposed, require the incorporation of mounding to add visual relief to the development.</i>	Refer to Appendix E for details.	Y
	<i>(b) Landscaped areas should be planted and maintained with suitable trees, shrubs and ground cover in accordance with a landscape plan, which must be submitted for approval prior to the release of building plans.</i>	Informal planting of native shrubs along the southern and south eastern side of the lease area, outside of the fence line is proposed to complement the existing rural landscape character, refer to Appendix E.	Y
	<i>(c) Landscaping should be completed in accordance with the approved landscape plan prior to the occupation of the development and shall be suitably maintained throughout the life of the development.</i>	Informal planting of native shrubs along the southern and south eastern side of the lease area, outside of the fence line is proposed to complement the existing rural landscape character, refer to Appendix E. All landscaping will be completed in accordance with the Visual Analysis and Landscape Concept.	Y
	<i>(d) Every effort should be made to preserve existing trees on proposed development sites. All existing trees should be shown on the plan submitted with the application, and those which are required to be removed should be clearly highlighted.</i>	The proposed development will require the removal of native vegetation within the development area, including six trees (White Cypress Pine) and three dead stags, two of which contain hollows. A negligible amount of native groundcover vegetation is required to be removed due to the	N-Justified

		predominance of exotic grasslands.	
	<i>(e) Trees shall be planted on the Council footpath, 900mm in from the kerb, along the entire frontage of the property, at intervals of approximately 10 metres (making allowance for the location of the driveways). The tree types that can be used are included in Annexure 1 and shall be approved by the Shire Engineer.</i>	No tree planting on Council footpath is required.	N/A
F.4.8.1 ACCESS, PARKING AND OFF - STREET LOADING/ UNLOADING FACILITIES – GENERAL REQUIREMENTS	<i>(a) The design, layout and construction of access, parking and service areas for all industrial development shall be in accordance with the requirements of the Narrabri Shire Parking Code.</i>	Due to the nature of the development, no prescribed parking rate is applicable. However, the DCP allows for merit-based assessment of parking needs. A Traffic Impact Assessment is provided at Appendix B detailing site access.	Y
	<i>(b) Council is required to consult the NSW Traffic Authority to obtain advice on traffic and safety aspects for major traffic generating developments. This consultation is a statutory requirement prescribed by State Environmental Planning Policy No. 11. Additional information about the consultation procedure can be obtained by contacting Council's Environmental Services Section.</i>	The proposed development is not considered a traffic generating development.	Y
	<i>c) Industrial development should be designed to ensure that all vehicles can enter and leave the site in a forward direction. Details of vehicle size and manoeuvring areas should be submitted with the development application to enable an adequate assessment of these aspects.</i>	The proposed access and turning circle proposed for the site will allow all vehicles to enter and exit the site in a forward direction.	Y
	<i>(d) Individual parking bays should be clearly delineated and have minimum dimensions of 2.6 metres x 5.5 metres, except where it is adjacent to a solid obstruction when a 3.0 metre width should be provided.</i>	The proposed parking bay for the site will be constructed according to parking requirements.	Y

4.8.2 ACCESS AND ROAD CONSTRUCTION REQUIREMENTS	<p><i>(a) The following road works are generally required in conjunction with industrial development:</i></p> <ul style="list-style-type: none"> - Industrial type vehicular gutter crossings; - Construction of kerb, gutter and road shoulder between the lip of the gutter and the edge of the existing bitumen seal, footway formation and paving and associated road drainage for the fill frontage of the site. 	<p>Required road works are proposed with this development, including a vehicle access road via Airport Road which is suitable for B-Double access and a turnaround.</p> <p>The proposed access driveway width at the combined entry/exit gate is proposed to be 5 metres wide. It is considered this is an adequate width for the proposed development type.</p> <p>The proposed development is not considered as 'traffic generating development.' A new access road is proposed off Airport Road</p> <p>No access driveway proposed across a footpath.</p>	N-Justified
	<p><i>(b) Access drives to have a minimum width of six (6) metres; Note – major traffic generating developments may require a greater access width divided at the property line.</i></p>		N-Justified
	<p><i>(c) The location of access driveways at intersections shall be in accordance with the Traffic Authority of NSW 'Policy, Guidelines and Procedures for Traffic Generating Developments', however the minimum distance shall be 6.0 metres from the intersecting boundaries;</i></p>		Y
	<p><i>(d) Access driveways across the footpath should hard sealed, consisting of either concrete, two coat bitumen seal, asphaltic concrete, paving blocks or other approved material.</i></p>		Y
	<p><i>(e) All driveways, parking areas, loading bays and vehicular turning areas are to be constructed with a base course of adequate depth to suite design traffic, and are to be sealed with either bitumen asphaltic concrete, concrete or interlocking pavers. Full details should be indicated on the plans submitted with the Development Application.</i></p>		Y
4.8.3 PARKING REQUIREMENTS	<p><i>On-site car parking should be provided in accordance with Council's adopted Car Parking Code, copies of which are available from Council.</i></p>	<p>As above, due to the nature of the development, no prescribed parking rate is applicable. However, the DCP allows for merit-based assessment of parking needs.</p>	Y
4.10 SERVICES AND DRAINAGE	<p><i>(a) To ensure that services provided are adequate for the scale of the development proposed.</i></p>	<p>A Stormwater Management Plan has been provided at Appendix G detailing the</p>	Y

	<p><i>(b) To ensure adequate drainage facilities are provided within the site to collect and carry stormwater to external drainage systems.</i></p> <p><i>(c) To reduce the hazard of flooding and the diversion or concentration of water onto adjoining properties.</i></p>	stormwater drainage strategy during both pre-development and post-development.	
4.10.3 TRADE WASTE	<i>A Trade Waste Application will be required where liquid wastes other than sewerage are to be discharged to Council's sewerage system. Council levies a charge for the disposal of the Trade Waste to the sewer based on the volume and strength of the discharge.</i>	No liquid waste is expected to be produced.	N/A
4.10.4 DRAINAGE	<p><i>(a) Stormwater runoff from roofs and paved areas is to be collected and disposed of to the street drainage or direct to Council's underground system.</i></p> <p><i>(b) The Council will not permit the erection of buildings over drainage easements under its control.</i></p> <p><i>(c) A contribution towards Downstream Drainage may be required based on the increased run-off generated by the development.</i></p>	A Stormwater Management Plan has been provided at Appendix G detailing the stormwater drainage strategy during both pre-development and post-development.	Y
PARKING CODE NO.1 1993			
CONSTRUCTION	<p><i>1. All parking areas are to be paved, and the manoeuvring and parking spaces are to be clearly delineated. The parking area is to be drained to Council's stormwater network.</i></p> <p><i>2. Upon an application being lodged, the paving required may be waived, if the applicant can demonstrate that the parking turnover will not adversely effect the proposed pavement.</i></p>	The provided parking and manoeuvring area will be paved. Further details are provided in the Traffic Impact assessment located at Appendix B.	Y
LANDSCAPING	<i>It is suggested that carparking areas be landscaped, especially with shade trees.</i>	Due to the nature of the development, and the lack of requirement for car parking spaces, the proposed car parking landscaping control is not considered necessary.	N-Justified
PARKING REQUIREMENTS	<p><i>Parking Rates:</i></p> <p><i>Factories:</i></p> <p><i>- 1.3 spaces per 100m² GFA</i></p>	As above, due to the nature of the development, no prescribed parking rate is applicable. However, the DCP allows for merit-based assessment of parking needs.	Y

		As there is no building proposed for the development, no on-site parking is required to be provided under DCP requirements. However, as indicated in the Traffic Impact Assessment located at Appendix B, sufficient on-site parking will be provided for construction staff during construction, and the one maintenance vehicle during operation.	
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APPENDIX J

Noise Assessment

Muller Acoustic Consulting

APPENDIX K

Waste Management Plan

SLR Consulting Pty Ltd

APPENDIX L

Capital Investment Value & Detailed Cost Report

RPS Australia East Pty Ltd

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