

Engineering Referral

#A2019/11985

DA No.	10.2019.169.1
Proposal:	Electricity Generating Station - 5 Megawatt Solar Farm
Property description:	LOT: 11 DP: 1066623 19 Grays Lane TYAGARAH
Parcel No/s:	239157
Applicant:	Dr Greg Wilding Coolamon Energy Pty Ltd
Owner:	Mr D Horstmann
Zoning:	Zone No. RU2 Rural Landscape / PART DM Deferred Matter
Planning Officer:	Mr I C Holland
Referral Date:	16 April 2019

CONCURRENT SECTION 68 AND 138 APPLICATIONS: Not applicable

This engineering assessment is based on the following documents:

Date	Description	TRIM Doc. No.
15/4/19	Application & supporting documentations	E2019/27621
22/5/19	RMS Response	E2019/36877
16/10/19	Addendum to Application	E2019/76251
21/10/19	Advise to proceed as Concept DA	E2019/77243

RECOMMENDATION

No engineering objections, subject to the conditions recommended at the end of this report

[Click here to enter any comments.](#)

Renan Solatan

14 November 2019

Administration use only

- ☐ Check if Engineer has granted Roads Act approval, please create 51 register and determine it, need to also place payments on the DA – Fee Codes RAA \$105 and RAI \$310
- ☐ Lock Assessment Report
- ☐ Print full Assessment Report for file with sign off included by engineer.

** Administration Instructions**

- ☐ Update tracking item outcome as 'COMP'
- ☐ Lock document.
- ☐ Place referral and documents with Stamped plans on trolley for delivery to Planner

PLEASE RETURN REFERRAL TO ADMIN TRAY

ASSESSMENT

Initial Review				Additional Info Req.
LEP	☒ 2014	☐ 1988		☐
DCP	☒ 2014	☐ 2010	☐ 2002	☐
DP & S88B	☐ Easements	☐ Restrictions	☐ Covenants	☐
Road Frontage	☐ Private	☐ Local	☐ Classified	☐
Subdivision	☐ Land	☐ Strata	☐ Community	☐
Strata Development Contract	☐ Yes	☐ No		☐
Traffic & Parking Considered	☒ Yes	☐ No		☐
Traffic Committee Referral	☒ No	☐ Local	☐ Regional	☐
Flood Affected Land	☒ Yes	☐ No		☐
Coastal Erosion	☐ Yes	☒ No		☐
Slip/Subsidence	☐ Yes	☒ No		☐
Controlled Activity Approval	☒ Yes	☐ No		☐
Stormwater Considered	☒ Yes	☐ No		☐
Previous DA	☐ Yes	☒ No		☐
DAP Advice	☐ Yes	☒ No		☐

LEP 2014 / DCP 2014 Delete this section if it is not relevant

14/11/19

Addendum to the original DA amending the proposal to be considered as Concept DA was submitted pursuant to s4.22 of the EP&A Act.

Concept DA is a development application that sets out concept proposals for the development of a site, and for which detailed proposals for the site or for separate parts of the site are to be the subject of a subsequent development application or applications. Consideration of the likely impact of the concept proposals and does not need to consider the likely impact of the carrying out of development that may be the subject of subsequent development applications.



Simpson Creek & Tributaries (Stream Order 3 & 4)

Earthworks

Development consent must not be granted within flood liable land until the earthworks has demonstrated compliance to the following:-

1. No import or export of fill;
2. Earthworks must not encroach within 40m from existing waterway; and

3. Controlled Activity Approval.

Access and Traffic

Submission of a traffic assessment prepared in accordance with the requirements of section B4.2.1 of Chapter B4 of DCP 2014. Traffic assessments shall consider both construction and operational phases.

Traffic management measures will also be considered to allow safe access to the site. This will include consideration of heavy goods vehicles, potential for impacts on local roads and maintenance, repair regimes and number of truck deliveries required to deliver the neutralising agent.

The assessment must also include details of existing and proposed access arrangements, swept paths for the largest vehicle at key intersections and the access. And details of internal access and parking to the transformer pad/building or other maintenance buildings.

Stormwater

Submission of a Stormwater Management Plan, prepared in accordance with section 3.4 of Council's Comprehensive Guidelines for Stormwater Management, demonstrating compliance with section B3.2.3 of Chapter B3 of DCP 2014.

Submission of Soil and Water Management Plan (SWMP) to provide a strategy to control soil and water related impacts during the construction phase and operational phase and to avoid degradation of the environment. The following standards and policies are applicable but not limited to:-

- Council's Northern Rivers Development & Construction Guidelines and other Council relevant Policies;
- NSW State Groundwater Quality Protection Policy (Department of Land & Water Conservation 1998)
- Bunding and Spoil Management (EPA 1997)
- ANZECC (2000) Australian and New Zealand Guidelines for Water Quality Monitoring and Reporting (collectively known as the "ANZECC Guidelines").

The objectives of the SWMP must include the management of Surface Water, Groundwater and Soils to mitigate environmental impact caused by the development during construction and operational phases.

Flood Modelling

Development consent must not be granted to any proposed development (including internal roadworks and earthworks) within flood liable land until the flood modelling demonstrated to Council's satisfaction that the proposed development and flood modelling takes into account the statutory provisions, Council policy and climate change parameters with respect to flooding that are applicable at the time of future development applications.

5/6/19

Phase 1

All civil works trucks and excavation machinery will carry out works within the boundaries of the property:

- Parking of machinery will be onsite and within the bounds of the property
- There is no earthmoving input to the project in terms of INCOMING FILL
- The excavation/fill component is restricted to the onsite borrow pit

1.2. Summary of Works

Construction is proposed for a 5MW solar array on the subject site. In order to facilitate this construction, levelling and contouring of the site is required.

It has been proposed to use an excavate a borrow pit or dam on the lower portion of the site to win the required construction material. The maximum depth of the borrow pit shall be 1.9mbgl.

At this depth the pit will have cover an area of 1.9Ha. This ASSMP has been prepared to provide management guidelines and mitigation practices that are to be incorporated as a part of the proposed works.

Area = 19,000m² & Height = 1.9m

Volume = 19,000m² × 1.9m ÷ 3
= 12,033m³

The borrow pit volume calculation does not have sufficient material.

Based on ASS Report

Treating of borrow material - 19kg AG Lime per tonne and 34.2 kg AG/m³

Volume of borrow material required - 36,000m³

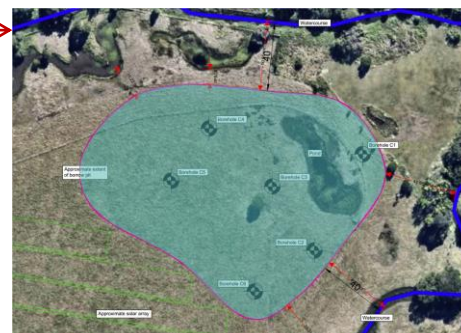
Area of borrow pit - 16,340m²

Calculated Depth - 6.61m

Weight of Lime = 36,000m³ x 34.2 kg AG Lime/m³
 = 1,231,200m³
 = 1,231.2tonnes

Assuming 20tonne delivery truck

Total number of truck movement = 1,231.2tonnes ÷ 20tonnes/truck
 = 61.6 truck movements or 62 truck movements



Phase 2

Phase 2: Solar Farm Construction.

There are 5 delivery days over the 12 week build cycle: 4 days for the solar panels and pegs; 1 day for the inverter and other equipment:

- There are 35 containers to be delivered
- Only single trailer trucks are used for the delivery, i.e., each truck carries 1 forty foot container
- All trucks come from Brisbane port and are staggered in time intervals of 1 hr
- Off street parking of trucks is available on site.

Truck delivery sequence

- There are two main deliveries.
- The main deliveries are both over 2 days separated by several weeks of construction.
- The initial delivery is over 2 days: 8 trucks each day staggered 1 hour apart; 16 trucks in all.
- Then, 2-3 weeks later, another 2 days and 16 trucks/40 ft containers
- Then, at the end of the build, one day to deliver the inverter, which is a 20 ft container.
- There will, of course, also be a crane truck to install the inverter container.

BUILDING & OTHER DEVELOPMENT **Delete sections that are not relevant**

1. External Access				
Reference	Comments	S	U	N A
<u>Section 79 C</u> of Environmental Planning and Assessment Act 1979 Section 79C (1) (a) (i) the provision of any environmental planning instrument Section 79C (1) (a) (iii) the provision of any development control plan Section 79C (1) (b) the likely impacts of that development				
LEP 2014				
Cl. 6.6(e)	Suitable vehicular access is available – refer DCP comments below.	☐	☐	☐
DCP 2014				
B3.2.1.6	Road Access – General	☐	☐	☐

Reference	Comments	S	U	N A
<u>Section 79 C</u> of Environmental Planning and Assessment Act 1979 <i>Section 79C (1) (a) (i) the provision of any environmental planning instrument</i> <i>Section 79C (1) (a) (iii) the provision of any development control plan</i> <i>Section 79C (1) (b) the likely impacts of that development</i>				
Phase 2: Solar Farm Construction. There are 5 delivery days over the 12 week build cycle: 4 days for the solar panels and pegs; 1 day for the inverter and other equipment: • There are 35 containers to be delivered • Only single trailer trucks are used for the delivery, i.e., each truck carries 1 forty foot container • All trucks come from Brisbane port and are staggered in time intervals of 1 hr • Off street parking of trucks is available on site. Truck delivery sequence • There are two main deliveries. • The main deliveries are both over 2 days separated by several weeks of construction. • The initial delivery is over 2 days: 8 trucks each day staggered 1 hour apart; 16 trucks in all. • Then, 2-3 weeks later, another 2 days and 16 trucks/40 ft containers • Then, at the end of the build, one day to deliver the inverter, which is a 20 ft container. • There will, of course, also be a crane truck to install the inverter container. Construction Consideration • Site Establishment • Site preparation • Materials deliveries • Construction • Transmission Infrastructures • Grid Connection & commissioning Operational Consideration • System and operational monitoring • Site management and maintenance responsibilities • Bio security, pest control and weed management • Complaint handling procedure • Emergency response plan • Waste management plan Additional Information • Details of Existing and proposed access arrangements • Swept paths for the largest vehicle at key intersections and the access. • Internal access and parking to the transformer pad/building or other maintenance buildings				
B3.2.1.7	Road Access – Council Controlled Roads	☒	☐	☐
This application will involve the use of the existing access driveway within the "Old Brunswick Road" reserve, at the western end of Grays Lane, and the construction of the 5 MW Solar Panel banks, over existing cleared old grazing land.				
B3.2.1.8	Road Access – Crown Roads	☐	☐	☐

Site Inspection to determine adequacy of the existing access.

Site Inspection to determine adequacy of the existing access.

2. Traffic			
Section 79 C of Environmental Planning and Assessment Act 1979 Section 79C (1) (a) (i) the provision of any environmental planning instrument Section 79C (1) (a) (iii) the provision of any development control plan Section 79C (1) (b) the likely impacts of that development			
DCP 2014			
B4.2.1	Traffic Impact	☐	☐
Traffic assessments that consider both construction and operational volumes. Traffic management measures will also be considered to allow safe access to the site. This will include consideration of heavy goods vehicles, potential for impacts on local roads and maintenance, repair regimes and truck deliveries required to deliver the neutralising agent.			
SEPP (Infrastructure) 2007			
Cl. 101	Development with frontage to classified road	☐	☐
Cl. 104	Traffic-generating development (Schedule 3)	☐	☐

3. Stormwater management			
Section 79 C of Environmental Planning and Assessment Act 1979 Section 79C (1) (a) (i) the provision of any environmental planning instrument Section 79C (1) (a) (iii) the provision of any development control plan Section 79C (1) (b) the likely impacts of that development			
LEP 2014			
Cl. 6.6(d)	Stormwater drainage – refer DCP comments below.	☐	☐
DCP 2014			
B3.2.3.1	Development Application	☐	☐
B3.2.3.2	Properties adjacent to or containing waterways The site contains	☐	☒

2018 Hydroline spatial data 1.0



5/27/2019, 3:36:44 PM

1:4,514
 0 0.03 0.07 0.13 mi
 0 0.05 0.1 0.2 km

B3.2.3.3	<i>Site Drainage</i> No Soil and Water Management Plan provided with the DA. The applicant is required to submit a Soil and Water Management Plan (SWMP) is to provide a strategy to control soil and water related impacts during the construction phase and operational phase and to avoid degradation of the environment. The following standards and policies are applicable but not limited to:- • Council's Norther Rivers Development & Construction Guidelines and other Council relevant Policies; • NSW State Groundwater Quality Protection Policy (Department of Land & Water Conservation 1998) • Bunding and Spoil Management (EPA 1997) • ANZECC (2000) Australian and New Zealand Guidelines for Water Quality Monitoring and Reporting (collectively known as the "ANZECC Guidelines"). The objectives of the SWMP must include the management of Surface Water, Groundwater and Soils to mitigate environmental impact cause by the development during construction and operational phase.	☐	☒	☐
B3.2.3.4	<i>Lawful Point of Discharge</i>	☐	☐	☐
B3.2.3.5	<i>Easements</i>	☐	☐	☐
B3.2.3.6	<i>On-site Stormwater Detention (OSD)</i>	☐	☐	☐
B3.2.3.7	<i>Stormwater Quality and Treatment</i>	☐	☐	☐
B3.2.4	<i>Sedimentation and Erosion Control Measures</i> Solar panels are impervious. They are generally installed in a manner that	☐	☒	☐

	allows stormwater to fall directly to the ground. In order to encourage infiltration and discourage erosion, the site is graded to encourage sheet flow of runoff across the site, including under the panels. Maximum slope of 5% must be adopted and the ideal average slope to be 2.5%. Vegetal cover to 90% or better uniform coverage of the disturbed area. The applicant must prepare an Erosion and Sediment Control plan during the construction phase and a permanent Erosion and Sediment Control plan in accordance with Managing Urban Stormwater: Soils and Construction, Volume 1, 4th Edition (Landcom 2004) (Blue Book) and the Department of Environment and Climate Change NSW, 2008, Managing Urban Stormwater: Soils and Construction - Volume 2A Installation of Services. The plan must also show the location of the stockpiles of materials and ESC measures to prevent soil transportation due to wind and surface water.			
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4. Flood Planning				
Reference	Comments	S	U	N A
<u>Section 79 C</u> of Environmental Planning and Assessment Act 1979 Section 79C (1) (a) (i) the provision of any environmental planning instrument Section 79C (1) (a) (iii) the provision of any development control plan Section 79C (1) (b) the likely impacts of that development				
LEP 2014				
Cl. 6.3	Flood planning	☐	☐	☐
Cl. 6.4	Floodplain risk management.	☐	☐	☐
DCP 2014				
C2.3.1	Applicable Flood Study	☐	☐	☐
C2.3.2	Minimum floor levels	☐	☐	☐
C2.3.3	Flood Planning Matrix	☐	☐	☐
C2.3.4	Flood Proofing	☐	☐	☐
C2.3.5	Special Provisions Byron Eco Park Flood Modelling (E2019/27621 pp125-141) Flood Impact Assessment prepared by BMT WBM concluded there is no flood impact as a result to the filling the site to around 400mm. The location of the solar farm was selected to provide the least amount of flood impact in the surrounding environment.	☒	☐	☐
As mentioned above, design iterations were required to produce acceptable flood impacts. The initial fill design assessed was located closer to Grays Lane and was of greater depth that produced off-site afflux impacts. Moving the fill pad to the north west and reducing the fill depth provided acceptable impacts. Additionally the easement was included in the mitigation assessments and it is expected that this easement also assists in mitigating afflux impacts as its alignment and fall are conducive to flow conveyance during major events.				

5. Geotechnical Hazard

Reference	Comments	S	U	N A
<u>Section 79 C</u> of Environmental Planning and Assessment Act 1979 Section 79C (1) (a) (iii) the provision of any development control plan Section 79C (1) (b) the likely impacts of that development				
General				
N/A	Geotechnical Hazards, soil instability - subsidence, slip, etc.	☐	☐	☐
DCP 2014				
<u>B14.2</u>	Excavation and Fill in all Zones	☐	☒	☐
The development area in the south west of the site has an average ground level of 2.5m AHD, with the majority at 3m AHD. It is proposed to fill this area to 2.9m AHD, and then place all panels and electrics above the 3.8m AHD Flood Level. Final pad height will be AHD 2.9 m., the average existing height is 2.5m. Therefore the average fill of 400mm is proposed to even the site. There is no supporting earthworks plan provided with the application. It is paramount to prepare a preliminary earthworks plan to verify the amount of fill and cut proposed in the development. The finish surface level must have sufficient grade to ensure the land will naturally drain. The earthworks plan must show the existing levels, proposed level and cross section @50m chainage north south and west east direction of the pad. Maximum of 5% slope with an ideal average slope of 2.5%. Furthermore, borrow pit details must be provided such as the cross section, depth, surface area, buffer distance from the waterway (measured from the top of the bank) to demonstrate compliance to NRAR requirements..				
2.4.1 Earthworks Issues The ASSMAC Assessment Guidelines (Stone et al, 1998) provide considerations relevant to the earthworks proposed as they affect ASS at the site. Table 2.3 provides responses and commentary to the earthworks issues. The earthworks at the site are expected to be relatively shallow, with maximum excavation of approximately 1.5m however the spatial extents of disturbance are substantial between 1-2 hectares with a total disturbance of soil is estimated to be approximately 36,000m³. An ASS Management Plan will be prepared by the client and the earthworks contractor based on the results of this assessment. Due to the significance of the soil disturbance and reuse of PASS/ASS for an above ground use (i.e. high potential for PASS to oxidise to ASS), the ASSMP needs to be of sufficient detail to adequately define the level of potential impact and measure taken to avoid, minimize, mitigate and/or remediate any known or perceived issues.				

6. Other Matters				
Item No.	Comments	S	U	N A
1	A decommissioning plan specifying how decommissioning will be undertaken after the operational life of the development is complete.	☐	☒	☐
2		☐	☐	☐

REQUEST FOR FURTHER INFORMATION (STC) CHECKLIST

Prior to further consideration from an engineering viewpoint, the following matters must be addressed:

☒	Submission of a traffic assessment prepared in accordance with the requirements of section B4.2.1 of Chapter B4 of DCP 2014. Traffic assessments shall consider both construction and operational phases. Traffic management measures will also be considered to allow safe access to the site. This will include consideration of heavy goods vehicles, potential for impacts on local roads and maintenance, repair regimes and number of truck deliveries required to deliver the neutralising agent. The assessment must also include details of existing and proposed access arrangements, swept paths for the largest vehicle at key intersections and the access. And details of internal access and parking to the transformer pad/building or other maintenance buildings.
☒	Submission of a Stormwater Concept Plan, prepared in accordance with section 3.4 of Council's Comprehensive Guidelines for Stormwater Management, demonstrating compliance with section B3.2.3 of Chapter B3 of DCP 2014. Submission of Soil and Water Management Plan (SWMP) to provide a strategy to control soil and water related impacts during the construction phase and operational phase and to avoid degradation of the environment. The following standards and policies are applicable but not limited to:- • Council's Norther Rivers Development & Construction Guidelines and other Council relevant Policies; • NSW State Groundwater Quality Protection Policy (Department of Land & Water Conservation 1998) • Bunding and Spoil Management (EPA 1997) • ANZECC (2000) Australian and New Zealand Guidelines for Water Quality Monitoring and Reporting (collectively known as the "ANZECC Guidelines"). The objectives of the SWMP must include the management of Surface Water, Groundwater and Soils to mitigate environmental impact caused by the development during construction and operational phases.
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☒	Submission of an earthworks plan to include the existing levels, proposed level and cross section @50m chainage north south and west east direction of the pad. Maximum of 5% slope with an ideal average slope of 2.5%. Furthermore, borrow pit details must be provided such as the cross section, depth, surface area, buffer distance from the waterway (measured from the top of the bank) to demonstrate compliance to NRAR requirements.
☐	
☐	

Recommended Conditions

Parameters of the Concept DA

Earthworks

Development consent must not be granted within flood liable land until the earthworks has demonstrated compliance to the following:-

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- Earthworks must not encroach within 40m from existing waterway; and
- Controlled Activity Approval.

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Notes
