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Senders ref: SSD 9550

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Via email: rob.beckett@planning.nsw.gov.au

19 November 2020

Dear Mr Beckett

Subject: **Glenellen Solar Farm** (**SSD 9950) - Review of Environmental Impact Statement**

Thank you for your email dated 26 October 2020 seeking comments from the Biodiversity and Conservation Division (BCD) of the Department of Planning, Industry and Environment (the Department) on the Environmental Impact Statement (EIS) for relating to the Glenellen Solar Farm (SSD 9950).

We have reviewed the exhibited EIS against the Secretary's Environmental Assessment Requirements (SEARs) provided by the Department to the proponent on 31 August 2018.

The BCD considers that the EIS **does** meet the Secretary's requirements for flooding, contingent on the applicant addressing issue 1 identified in **Attachment A**.

The BCD considers that the EIS, including the BDAR at Appendix C, **does** meet the Secretary's requirements for biodiversity, contingent on the applicant addressing issues 2, 3 and 4 identified in **Attachment A**.

A summary of our assessment, advice and recommended conditions of approval is provided in **Attachment A.** Detailed comments are in **Attachment B**.

All plans required as a Condition of Approval that relate to flooding or biodiversity should be developed in consultation and to the satisfaction of BCD to ensure that issues identified in this submission are adequately addressed.

If you have any questions about this advice, please contact Marcus Wright, Senior Conservation Planning Officer, via rog.southwest@environment.nsw.gov.au or 02 6983 4917.

Yours sincerely

Andrew Fisher
Senior Team Leader Planning
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Biodiversity and Conservation Division
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ATTACHMENT A – BCD Assessment Summary for Glenellen Solar Farm Environmental Impact Statement (SSD 9550)
ATTACHMENT B – Detailed comments for Glenellen Solar Farm Environmental Impact Statement (SSD 9550)

ATTACHMENT A BCD Assessment Summary for Glenellen Solar Farm Environmental Impact Statement (SSD 9550)

Key Issues

1.	*Issue*	Mapping of the flood hazards and hydraulic categories across the development site has not been completed as required in the flooding SEARs. This additional information is needed for the appropriate location of infrastructure, in particular to avoid areas of high hazard floodways. **Recommended action:** Require the applicant to complete additional flood modelling in the detailed design phase to define the flood hazards and hydraulic categories across the development site prior to finalising the location of critical infrastructure.
	Extent and Timing	Pre-construction
	Recommended Condition of Approval	Additional flood modelling to be completed in the detailed design phase to define the flood hazards and hydraulic categories across the development site for the appropriate locating of infrastructure that is commensurate with the flood risks.

2.	*Issue*	There is no evidence to support the definition of category 1 land on the development site. Evidence should include historic imagery showing lack of native vegetation since 1 January 1990 and field data to demonstrate that persisting groundcover is of low conservation value according to the definition at s.60H of the LLS Act 2013. Category 1 land defined in this way can be treated as one homogenous vegetation zone in the BAM and disregarded from further assessment of direct impacts. **Recommended action:** Require the applicant to provide evidence that Category 1 land consistent with the definitions established at s.60H of the LLS Act.
	Extent and Timing	Pre-determination

3.	*Issue*	Clearing the vegetation within the development footprint along Ortlipp Road between the substation and Lindner Road has not been adequately assessed against the impacts prescribed in the *Biodiversity Conservation Regulation 2017*. **Recommended action:** Require the applicant to avoid clearing the vegetation along Ortlipp Road between the substation and Lindner Road. This will minimise the serious and irreversible impacts on the Box Gum Woodland Critically Endangered Ecological Community at this site.
	Extent and Timing	Pre-determination

4.	*Issue*	The BDAR and EIS should include additional mitigation measures relevant to a solar farm in this location. There should be a commitment to preparing a Biodiversity Management Plan to develop, implement, monitor and report on the mitigation measures to be used. **Recommended actions:** • Avoid the use of barbed wire on the top of security fencing • Screening vegetation buffers should include endemic species associated with PCT 9 and PCT 277.
	Extent and Timing	Pre-determination
	Recommended Condition of Approval	A Biodiversity Management Plan is to be completed prior to the commencement of construction.

ATTACHMENT B Detailed comments for Glenellen Solar Farm Environmental Impact Statement (SSD 9550)

Flooding

BCD has reviewed the flooding component in Section 8.9 of the EIS (and Appendix I).

The EIS does meet the Secretary's requirements for flooding, contingent on the applicant addressing issue 1 below.

Specific comments on Section 8.9 of the EIS (and Appendix I) are as follows:

Flood modelling was undertaken to assess the impacts of the Proposed Development using rain-on-grid water level modelling in HEC-RAS modelling software using flood modelling parameters that were based on regionalised information (including regional rainfall intensity, frequency and duration information, storm initial and continuing losses) without any local calibration using historical rainfall and flow information. As such BCD consider flow volumes and water depths determined by the models to be approximations only.

Existing conditions inundation extent maps were generated for 10% Annual Exceedance Probability (AEP), 1% AEP, 0.5 AEP%, 0.2% AEP and 0.1% AEP (1 in ~10-year, 100-year, 200-year, 500-year and 1000-year Annual Recurrence Interval (ARI), respectively).

The flood mapping shows significant flow paths crossing the site that develop during local intense rainfall events in all design events.

No flood mapping has been developed that show the flood hazards or hydraulic categories (floodways, flood storage and flood fringe areas) across the site. This is needed for the appropriate locating of infrastructure.

To determine the impact of the proposed development on flooding, indicative temporary construction pads, substation and battery storage areas were added to the rain-on-grid model as raised terrain to assess potential changes in flood hydrology. These have been placed in arbitrarily chosen locations for modelling purposes and may not be constructed in those locations (subject to detailed design). The effect of the installation of the solar arrays and security fencing around the site was not modelled as they were considered likely to only be of a minor impact.

For larger events (1 in 100-year ARI, or 1% AEP), in the immediate vicinity of the pads, it was found that water surface elevations are likely to increase by up to 200 mm. Also in some areas around the temporary construction pads, the flow path is likely to be constricted, and the increased flow velocities may require the use of armour rock to prevent local scour.

Due to the proposed design of the solar farm consisting of the solar panel arrays being elevated on piles above ground level, and as long as other major flood sensitive infrastructure such as the substation and energy storage facility are located outside major flow paths (high hazard floodways) and above/protected from major flood levels, the risks due to flooding could be considered minor.

Areas of deeper and more hazardous flooding (high hazard floodways) would need particular attention in the detailed design phase to ensure that proposed infrastructure is commensurate with the flood risks.

Security fencing is to also to be designed appropriately given the potential for blockage occurring during future flood events particularly in the areas of higher flood hazard.

Recommended action:

1. The proponent must be required to complete additional flood modelling in the detailed design phase to define the flood hazards and hydraulic categories across the development site prior to finalising the location of critical infrastructure.

Biodiversity

BCD has reviewed the Biodiversity Development Assessment Report (BDAR) at Appendix C.

The BDAR does meet the Secretary's requirements for biodiversity, contingent on the applicant addressing issues 2 - 4 below.

Mitigation measures

Mitigation measures described in the BDAR are generally consistent with those listed in the EIS.

We note that mitigation measures for impacts to threatened birds and bats do not include avoiding the use of barbed wire on the top of security fencing and recommend that this be added.

We recommend that should a screening buffer of vegetation be planted it should include species endemic to the area including species associated with PCT 9 and PCT 277. Any Landscaping Plan must reflect the establishment and monitoring of revegetation work.

We recommend that a Biodiversity Management Plan (BMP) be prepared by the applicant to develop, implement, monitor and report on the mitigation measures to be undertaken at the site. The BMP should include the management of weeds, retained and replanted vegetation, how and when clearing is done including the salvage of vegetative resources to be used on the site, and the management and monitoring of threatened species in and around the development site over the life of the project.

Vegetation Zone 4 has the potential to function as a storm water detention site and wetland. That benefit is increased if the vegetation associated with the site (being PCT 9; River Red Gum - wallaby grass tall woodland wetland) is retained. We recommend the applicant align flood modelling with the avoidance of clearing in Zone 4 to optimise the potential for creating wetland habitat at that location. Management of the wetland should be detailed in the BMP.

White Box - Yellow Box - Blakely's Red Gum Woodland CEEC

The EIS and BDAR should refer consistently to the White Box Yellow Box Blakely's Red Gum Woodland as a Critically Endangered Ecological Community (CEEC). Throughout both documents it is regularly incorrectly referred to as an Endangered Ecological Community.

Category 1 land

There is no reference in the BDAR to the mapping of category 1 land and the use of it in the assessment.

There is no evidence to support the definition of category 1 land on the development site. s.6.8(3) of the *Biodiversity Conservation Act 2016* (BC Act) establishes that the BAM is to exclude the assessment of clearing native vegetation and habitat loss on category 1 land. While it is likely that some of the development site is category 1 land being consistent with the definitions established at s.60H of the *Local Land Services Act 2013* (LLS Act), the applicant must provide evidence that the land is category 1 land. Although the identification of scattered paddock trees relies on the assumption that they are surrounded by category 1 land, no attempt is made to demonstrate that the land is category 1 land. Evidence should include historic imagery showing lack of native vegetation since 1 January 1990 and field data to demonstrate that persisting groundcover is of low conservation value according to the definition at s.60H of the LLS Act. Category 1 land defined in this way can be treated as one homogenous vegetation zone in the BAM and disregarded from further assessment of direct impacts. The assessor must have regard for the impacts prescribed by s 6.1 of the *Biodiversity Conservation Regulation 2017* (BC Regulation) across the development site

including category 1 land, and for the potential for serious and irreversible impacts (SAII) consistent with section 10.2 of the BAM.

Connectivity of vegetation along Ortlipp Road

BCD recommend that the applicant avoids clearing the vegetation along Ortlipp Road between the substation and Lindner Road (Zone 3 in BDAR Figure 10). Despite the assertion that the development footprint "does not contain any connectivity features" (BDAR, s 1.3.5, p 6), and the statement that "all existing corridors are off-site" (s 2.1.2, Table 14, p 33), Figure 10 shows that this is not the case. The BAM (s 4.2.1.9) requires the identification of "the connectivity of different areas of habitat that may facilitate the movement of threatened species across their range".

The BDAR acknowledges that connectivity features occur along vegetated roadsides, including "to the south, west and east" (BDAR p 37). The 1.02 ha vegetation along Ortlipp Road between the substation and Lindner Road has the potential to provide connectivity to different areas of habitat of threatened species that facilitates the movement of those species across their range, and may impact on movement of threatened species that maintains their life cycle (s 8.2.1.2(b) and (c) of the BAM). Until demonstrated otherwise, we assume that the vegetation along Ortlipp Road provides connection consistent with the impact prescribed at s.6.1(1)(b and (cc) of the BC Regulation. The relative benefit of retaining this vegetation must be considered given that it forms part of the listed CEEC. Retaining the vegetation along Ortlipp Road between the substation and Lindner Road will reduce the potential for serious and irreversible impacts on the CEEC, increase the habitat function of any future screen or buffer planting, and reduce the proponent's BOS offset obligation.

SAII candidates

Regarding SAII candidates, the determining authority shall establish whether the clearing associated with the Glenellen Solar Farm will cause serious and irreversible impacts to the two listed candidates on the development site, Austral Pillwort (*Pilularis novae-hollandiae)* and Box Gum Woodland CEEC) (PCT 277). The opinion of the applicant (e.g. BDAR p iv) is irrelevant in making that determination.

The determining authority must consider the principles for which the candidates are listed. Regarding the Box Gum Woodland (PCT 277), we consider that the proposed development will increase the rate of decline already observed for this SAII candidate (SAII Principle One). We also consider that the proposed development will make the SAII candidate CEEC more fragmented and isolated at a range of spatial scales, causing it to degrade further (SAII Principle Two). We consider these effects to be exacerbated by other solar farms proposed in the Greater Hume Local Government Area (LGA) which have a similar effect on the SAII candidate CEEC. The 'Guidance to assist a decision-maker to determine a serious and irreversible impact' (DPIE 2019) requires the decision-maker to (a) take likely SAII into consideration, and (b) determine if there are any additional and appropriate measures that will minimise the impact if consent or approval is granted.

Considerations should include the direct and indirect impacts of the proposal including the cumulative loss of hollows in scattered paddock trees, and the increased isolation and fragmentation of remnants of PCT 277 at the various spatial scales listed in the BAM at s.10.2.2.1(d), (e) and (f). We recommend the consent authority also consider the cumulative impact of the Glenellen Solar Farm on the CEEC together with other solar farms (Walla Walla, Culcairn, Jindera) proposed in the Greater Hume LGA.

Table 1 is provided as an example of how the applicant should demonstrate the direct and indirect impacts on the CEEC.

Table 1. Example to show areas of CEEC (PCT 277) at risk of serious and irreversible impact

Patch	Direct Impact	Indirect Impact (retained)
Zone 1	7.28 ha	

Patch	Direct Impact	Indirect Impact (retained)
Zone 2	0.64 ha	
Zone 3	2.46 ha	
Scattered Paddock Trees	81 trees (52 with hollows)	Any scattered paddock trees associated with PCT 277 that are retained on the development site

The most efficient way of not causing serious and irreversible harm to the Box Gum Woodland CEEC as a result of this development is to avoid clearing the vegetation along Ortlipp Road between the substation and Lindner Road, as outlined above.

Regarding the Austral Pillwort, which is also an SAII candidate, we note that presence has been assumed (BDAR p iii). The considerations include the very limited geographic distribution of that species (SAII Principle Three). We note that enhanced flood modelling may indicate that storm water could be managed via a basin in the location of Vegetation Zone 4 (PCT 9; River Red Gum - wallaby grass tall woodland wetland). This would mean that clearing the SAII candidate Austral Pillwort can be avoided and the resultant credit liability reduced. We note that enhanced flood modelling is anticipated during the design phase and recommend that the applicant consider this combined benefit.

EPBC considerations

Regarding Matters of National Environmental Significance, the overall impact of the development on the EPBC-listed CEEC, both direct and indirect, is poorly understood. Although the BDAR (p ii) states that the CEEC present did not meet the minimum condition thresholds under the EPBC Act, the cumulative loss of hollows, the impacts on connectivity and movement of species have not been considered in this regard. The precautionary approach is to refer it to the Department of Environment, particularly given the cumulative impact of this when considered with the three other solar farms proposed in the Greater Hume LGA.

Recommended actions:

2. The applicant must provide evidence that the land is category 1 land consistent with the definitions established at s.60H of the LLS Act.
3. The applicant should avoid clearing the 1.02 ha of CEEC box-gum woodland vegetation along Ortlipp Road between the substation and Lindner Road.
4. Mitigation measures should include:
    - avoiding the use of barbed wire on the top of security fencing
    - screening vegetation buffers should include endemic species associated with PCT 9 and PCT 277.

    A Biodiversity Management Plan should be prepared by the applicant to develop, implement, monitor and report on the mitigation measures.