



Our ref: DOC19-888026  
Senders ref: SSD-9549

Elisha Dunn  
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Energy and Resources  
Department of Planning, Industry & Environment  
Level 30, 320 Pitt Street  
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Via email: [elisha.dunn@planning.nsw.gov.au](mailto:elisha.dunn@planning.nsw.gov.au)

Dear Ms Dunn

**Subject: Jindera Solar Farm (SSD 9549) - Review of Environmental Impact Statement**

Thank you for your email dated 10 October 2019 regarding the Jindera Solar Farm in the Greater Hume Local Government Area, seeking comments from the Biodiversity and Conservation Division of the Department of Planning, Industry and Environment (the Department).

The Biodiversity and Conservation Division (BCD) has statutory responsibilities relating to biodiversity (including threatened species, populations, ecological communities, or their habitats), Aboriginal cultural heritage and flooding. For matters relating to national parks estate matters please refer these to the National Parks and Wildlife Service.

We have reviewed the exhibited EIS against the Secretary's Environmental Assessment Requirements (SEARs) provided by the then Department of Planning and Environment to the proponent on 3 September 2018.

The BCD considers that the EIS **does** meet the Secretary's requirements for flooding.

The BCD considers that the EIS **does not** meet the Secretary's requirements for Aboriginal cultural heritage assessment (ACH). The applicant must address issues 1 and 2 identified in **Attachment A**. Issues 3 and 4 may be completed post-determination but pre-construction.

The BCD considers that the EIS, including the BDAR at Appendix D, **does not** meet the Secretary's requirements for biodiversity. The applicant must address issues 5 and 6 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, ACH 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](mailto:rog.southwest@environment.nsw.gov.au) or 02 6983 4917.

Yours sincerely



Andrew Fisher

**Senior Team Leader Planning**

**South West Branch**

**Biodiversity and Conservation Division**

**Department of Planning, Industry and Environment**

ATTACHMENT A – BCD assessment summary for Jindera Solar Farm Environmental Impact Statement (SSD 9549)

ATTACHMENT B – Detailed comments for Jindera Solar Farm Environmental Impact Statement (SSD 9549)

**ATTACHMENT A BCD assessment summary for Jindera Solar Farm Environmental Impact Statement (SSD 9549)**

**Key Issues**

1.	<i>Issue</i>	<p>The Aboriginal Cultural Heritage assessment for works within the Jindera substation lot has not been completed</p> <p><b>Recommended action:</b></p> <ul style="list-style-type: none"> <li><i>The results of the assessment including the proposed management of any ACH identified in accordance with the SEARs is to be provided to the BCD for comment.</i></li> </ul>
	<i>Extent and Timing</i>	Pre-determination

2.	<i>Issue</i>	<p>The location of artefact site Jindera 488942 (site 55-6-0117) is recorded incorrectly in AHIMS</p> <p><b>Recommended action:</b></p> <ul style="list-style-type: none"> <li><i>Maps in the Aboriginal Cultural Heritage Assessment Report show this site is within the project area. The coordinates on AHIMS place the site several kilometres to the north of the project area. The proponent is required to notify AHIMS to update the site coordinates in line with the results of the field assessment.</i></li> </ul>
	<i>Extent and Timing</i>	Pre-determination

3.	<i>Issue</i>	<p>Possible retention of stone artefact under a Care Agreement</p> <p><b>Recommended action:</b></p> <ul style="list-style-type: none"> <li><i>Albury and District Local Aboriginal Land Council have sought retention of an edge-ground axe fragment from site 55-6-0117 should it be salvaged from an area of proposed construction works. If this is to occur, a care agreement for the transfer of Aboriginal objects would be sought under Section 85A of the National Parks and Wildlife Act 1974.</i></li> </ul>
	<i>Extent and Timing</i>	Pre-construction

4.	<i>Issue</i>	<p>Unexpected finds protocol</p> <p><b>Recommended action:</b></p> <p>An unexpected finds protocol for Aboriginal cultural heritage, including human remains, must be developed and implemented before construction begins.</p>
	<i>Extent and Timing</i>	Pre-construction
	<i>Recommended Conditions of Approval</i>	<p>1. <i>An appropriate unexpected finds protocol is developed prior to the commencement of construction, and to the satisfaction of the Department of Planning, Industry and Environment, that includes the following:</i></p>

		<p><i>If any Aboriginal object is discovered and/or harmed in, or under the land, while undertaking the proposed development activities, the proponent must:</i></p> <ol style="list-style-type: none"> <li><i>1. Not further harm the object</i></li> <li><i>2. Immediately cease all work at the particular location</i></li> <li><i>3. Secure the area to avoid further harm to the Aboriginal object</i></li> <li><i>4. Notify the Department of Planning, Industry and Environment as soon as practical on 131555, providing any details of the Aboriginal object and its location</i></li> <li><i>5. Not recommence any work at the particular location unless authorised in writing by the Department of Planning, Industry and Environment,</i></li> </ol> <p><i>If human skeletal remains are unexpectedly encountered during the activity, work must stop immediately, the area secured to prevent unauthorised access and contact made with NSW Police and the Department of Planning, Industry and Environment.</i></p>
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5.	<i>Issue</i>	<p><u>The BAM (Section 6) has not been applied correctly</u></p> <p>The assessment for Section 6 of the BAM under-represents habitat suitability and the offset requirement. Specifically:</p> <ul style="list-style-type: none"> <li>• The disregarding of Zone 10 needs to be justified as either category 1 (exempt) regulated land, or that the finding of non-native vegetation and poor habitat suitability is based on a sampling effort greater than one plot, and that the scattered paddock trees associated with Zone 10 have been considered as part of a general assessment of prescribed impacts (connectivity and movement across the development site).</li> <li>• If the survey timing requirements for predicted threatened species in the BAM Credit Calculator do not coincide with the field survey period, the assessor must either provide an expert report or assume the species is present</li> <li>• Not all zones in the development area, including PCT 360, have been entered into the BAM calculator. This under-represents the habitat suitability, credit obligations of habitat loss in subsequent parts of the BAM.</li> </ul> <p>Section 6 of the BAM must take into account all zones and PCTs on the development site. The threatened species listings and wider assessment in the EIS should reflect the output of the updated Section 6.</p> <p>The adjustment to the BAM calculator be completed before impacts are identified and assessed in Sections 7 to 11 of the BAM as the offset requirement is likely to be underestimated as a result of the underpopulated BAM calculator.</p> <p><b>Recommended actions:</b></p> <p><i>Revise the BAM calculator and BDAR to ensure that the assessment of biodiversity impacts and offset obligation include all zones on the development site, as per Section 6 of the BAM</i></p>
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		<i>Update the EIS to reflect the results of the revised BDAR.</i>
	<i>Extent and Timing</i>	Pre -determination

6	<i>Issue</i>	<p><u>Impact Assessments do not provide sufficient evidence to support the findings related to prescribed impacts, risk of SAIL on the candidate TEC, or EPBC matters</u></p> <p>The EIS and appendices describe construction and operation actions that either potentially impact or mitigate impacts to native vegetation or habitat. These have not adequately informed the assessment undertaken in the BDAR.</p> <p>The BDAR assessment of direct and indirect impacts, prescribed impacts, Matters of National Environmental Significance and the risk of serious and irreversible impacts on the candidate threatened ecological community (Box-Gum Woodland) is generally not informed by the EIS.</p> <p><b>Recommended actions:</b></p> <ul style="list-style-type: none"> <li>• <i>Revise the BDAR to consider all the potential direct and indirect impacts of site management actions detailed in the EIS, including the range of assessments (SAIL, direct and indirect impacts, prescribed impacts, and EPBC Matters)</i></li> </ul>
	<i>Extent and Timing</i>	Pre-determination

## **Biodiversity and Conservation Division Advice**

**1.1 Is the 'baseline' for impact assessment reasonable? No**

The Aboriginal cultural heritage (ACH) assessment was undertaken in accordance with standard guides and codes listed in the SEARs. The works within the Jindera substation lot have not been assessed.

The biodiversity assessment largely follows the BAM, however some aspects require further work. The assessment of flooding impacts is reasonable.

**1.2 Are predictions of impact robust (and conservative) with suitable sensitivity testing? /No**

ACH assessment included field survey and test excavation in accordance with the SEARs issued. The biodiversity assessment needs to more fully consider SAIL, direct and indirect impacts, prescribed impacts, and EPBC Matters.

The assessment of flooding impacts is appropriate.

**1.3 Has the assessment considered how to avoid and minimise impacts? Yes**

Four ACH sites will be avoided by the proposed works through the use of fencing.

While areas of remnant vegetation will be avoided, clearing of native vegetation is still proposed, including the loss of paddock trees.

Flooding impacts will be considered in the detailed design phase.

**1.4 Does the proposal include all reasonably feasible mitigation options? No**

Mitigation proposed for ACH includes surface salvage of artefact sites. Salvage excavation would be a possible option, however the EIS Appendix E states it is not warranted based on the generally low density of subsurface material identified during the testing program and negligible potential for intact subsurface deposits with high densities in the project area (NGH, 2019b:73).

While some mitigation of impacts on biodiversity has been presented, further detailed consideration is required.

**2. Is the assessed impact acceptable within BCD's policy context? No**

Mitigation measures proposed and issues raised by Registered Aboriginal Parties (RAPs) have been addressed in the EIS.

The potential for serious and irreversible impacts on the Box-Gum Woodland Threatened Ecological Community has not been adequately assessed.

The recommendations made in the Surface Water Management Investigation are appropriate, but more hydraulic modelling to define the flood risks will be required in the detailed design phase.

**3. Confirmation of statements of fact**

The EIS and accompanying reports are considered factual.

**4. Elements of the project design that could be improved**

Avoidance of all native vegetation, in particular the Box-Gum Woodland Threatened Ecological Community, would reduce the impact of this project on biodiversity.

## **ATTACHMENT B Detailed comments for Jindera Solar Farm Environmental Impact Statement (SSD 9549)**

### **Flooding**

#### **The EIS does address the Secretary's requirements for flooding**

A simple hydrologic investigation has been completed utilising standard industry software that was used to assess the flow impacts before and after development. Ideally the investigation would include some designed flood event mapping in the Surface Water Management Investigation, and the hydrological results modelled. This would provide information on the extent of the major flow paths that activate during local intense rainfall events and the depths and velocities expected across the development site in such events. This would aid in appropriately locating critical and sensitive infrastructure across the site to avoid flood risk areas. We assume this would be undertaken in the detailed design phase of the project.

The hydrologic analysis demonstrates that there are minimal increases in flows across the site as a result of the development, with only nominal changes to the impervious areas proposed. Changes in depth and velocity would be a more useful indicator than differences in percentage flow. However, due to the relatively flat topography across the site, we assume increases in depth and velocity to be minimal based on the flood assessment that has been undertaken so far.

The conclusion that the stormwater volumes are expected to increase only marginally as a result of the development is therefore supported.

We support the recommendations made in the Surface Water Management Investigation relating to not placing infrastructure in flow paths, but this will require more hydraulic modelling of the site to define the flood risks in the detailed design phase.

#### **Recommended actions:**

- *The detailed design phase will include the hydraulic modelling of a design flood event to demonstrate the extent of major flow paths that activate during intense local rainfall events, including the depth and velocity expected during such an event. The model will inform the detailed design.*

### **Aboriginal cultural heritage**

#### **The Aboriginal Cultural Heritage Assessment Report (ACHAR) does not meet the Secretary's requirements, as identified in Issues 1 and 2 in Attachment A.**

The ACHAR is consistent with requirements identified by the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales* (DECCW 2010) ("the Code"), however the assessment has not been completed for Jindera substation lot (issue 1 Attachment A).

Issues 3 and 4 may be completed post-determination but pre-construction.

#### **General reporting comments on the EIS (NGH, 2019)**

- Section 4.2.17 of the EIS states "It is noted that under section 89J(d) of the EP&A Act, an Aboriginal Heritage Impact Permit (AHIP) under section 90 of the NPW Act is not required for SSD" (NGH 2019:54). The EP&A Act has since been amended. The updated section of the Act is now section 4.41 (1)(d) which refers that an AHIP is not required for SSD that is authorised by development consent.
- Table 6-18 and repeated in Section 8.2, under AH5 – Aboriginal Site Impact Recording Forms must be prepared and submitted to the AHIMS register for each site salvaged for harmed during works.

## General reporting comments on the ACHAR (NGH, 2019b)

- Section 1.1 error or typo. SEARs were issued on 14 September 2018 not in 2019 (NGH, 2019b:17).
- Aboriginal consultation was generally undertaken in accordance with that set out in the Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW 2010) and the NPW Regulation. One exception was that NGH on behalf of the proponent notified the then OEH with a list of RAPs, however the notification was received on 2 November 2018, greater than the 28 days outlined in the consultation requirements (NGH, 2019b:98).
- Recommendation 8 states “subject to Transgrid defining the scope of any works within the Jindera Substation lot, further assessment of this area will be required” (NGH, 2019b:12, 91). We request that the results of the assessment including the proposed management of any ACH in accordance with the SEARs be provided to the BCD for comment prior to project determination (issue 1).
- Maps in the ACHAR show artefact site 55-6-0117 is within the project area. The coordinates on AHIMS place the site several kilometres to the north of the project area. The proponent is requested to notify AHIMS to update the site coordinates in line with the results of the field assessment (issue 2).
- Albury and District Local Aboriginal Land Council have sought retention of an edge-ground axe fragment from site 55-6-0117 should be it salvaged from an area of proposed construction works (NGH, 2019b:89). If this is to occur, a care agreement for the transfer of Aboriginal objects would be sought under Section 85A of the *National Parks and Wildlife Act 1974* (issue 3).

## Site impact forms

An Aboriginal Site Impact Recording Form must be completed and submitted to the AHIMS Registrar for all sites/objects subject to salvage, in accordance with Requirement 26 of the Code.

We advise the proponent to complete an [Aboriginal Site Impact Recording Form](http://www.environment.nsw.gov.au/resources/cultureheritage/120558asirf.pdf) and submit to the AHIMS Registrar <http://www.environment.nsw.gov.au/resources/cultureheritage/120558asirf.pdf>.

All site impact forms are uploaded onto AHIMS as addenda to the original AHIMS site recording forms. This helps ensure that current information about the status of AHIMS sites is maintained and an accurate picture of the condition of all registered Aboriginal sites across NSW is always available. The site impact form is intended to complement (not replace) an AHMS site recording form and **must** be completed following impacts to AHIMS sites that are:

- Result of test excavation in accordance with Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW
- Authorised by an AHIP
- Undertaken for purposes of complying with SEARs issued by DPE for state significant developments and state significant infrastructure and Major Projects (part 3a now repealed)
- Authorised by a SSD/SSI consent/approval

## Unexpected finds procedure (Issue 4)

The ‘unexpected finds procedure’ for construction activity must include an appropriate protocol for encountering skeletal remains.

BCD advise against notifying registered Aboriginal parties (RAPs) of the discovery of skeletal remains until the Police have confirmed that the remains date from before European settlement and are Aboriginal in origin.

## We recommend the following conditions of development consent:

- *A Cultural Heritage Management Plan CHMP or Unexpected Finds Protocol is developed prior to the commencement of construction, and to the satisfaction of the Department, that clearly details the following:*

- clear marking and protection of any ACH constraints, within or near to, proposed activities
- an appropriate unexpected finds protocol, including the following:

*If any Aboriginal object is discovered and/or harmed in, or under the land, while undertaking the proposed development activities, the proponent must:*

1. *Not further harm the object*
2. *Immediately cease all work at the particular location*
3. *Secure the area to avoid further harm to the Aboriginal object*
4. *Notify the Department of Planning, Industry and Environment as soon as practical on 131555, providing any details of the Aboriginal object and its location*
5. *Not recommence any work at the particular location unless authorised in writing by the Department of Planning, Industry and Environment.*

*If skeletal remains are unexpectedly encountered during the activity, work must stop immediately, the area secured to prevent unauthorised access, and contact made with NSW Police and the Department of Planning, Industry and Environment.*

## **Biodiversity**

**The EIS, relying on the Biodiversity Development Assessment Report (BDAR), does not meet the Secretary's requirements for biodiversity.**

Specific comments on the BDAR and related sections in the EIS are as follows:

### ***Biodiversity Development Assessment Report***

1. In the OEH SEARs response dated 3 September 2018, Appendix A table item 4 should read 'as per Appendix 10', not Appendix 11 as stated. We note the emailed request from BCD on 11 October 2019 for the spatial data was consistent with Appendix 10. The data provided is consistent with Appendix 10 (Table 25 and Table 26). No action required.

2. The section numbering in the BDAR is not consistent, especially Section 2 Landscape Features. This has made referencing the comments difficult and creates an opportunity for misinterpretation.

**Recommended Action:**

*The BDAR section numbering be amended.*

3. The determination of PCT 360 (Zone 8) is appropriate and confirmed by the field data sheets. However, the description provided in Table 3.3 suggests the most appropriate PCT is PCT 9. This is assumed to be an error. Zone 8 is BCT 360.

**Recommended Action:**

*Table 3.3 be amended.*

4. The area of Zone 6 is 2.2ha in Table 3.4, and 1.57ha in the BAM calculator. If Zone 6 was greater than 2ha, two plots are prescribed according to Table 4 of the BAM (ss.5.3.4.1).

**Recommended Action:**

*The BDAR and the BAM calculator must include the same information, or Zone 6 requires an enhanced survey effort if it is greater than 2ha.*

5. Zone 10 is the area mostly associated with the construction of the solar farm infrastructure. The SEARs stipulated that because of the mosaic nature of the site, the EIS needed to clearly explain the method used to explain why scattered paddock trees were not part of a PCT, and the value of scattered paddock trees as habitat. In regions where grasslands occur naturally,

such as the Riverina, assessment needs to be undertaken in pasture areas to demonstrate whether they meet the definition of native vegetation or not. If sufficient native species richness and cover are present, the pasture is then assigned to a PCT and assessed according to the BAM. Photographic evidence is to be provided, including aerial imagery and site photos. Before Zone 10 can be disregarded, a more thorough assessment of the vegetation of Zone 10, and of the prescribed impacts across the development site, including Zone 10, is required.

**Recommended Action:**

*The BDAR should provide the following;*

- *evidence of those parts of Zone 10 that are category 1 (exempt) land and may therefore be disregarded by the BAM consistent with ss.6.8(3) of the Biodiversity Conservation Act 2016, but not excluding an assessment of the prescribed impacts associated with Zone 10*
- *a more complete assessment of ss.4.2.1.9-11 inclusive, including s.9.2.1.6 of the BAM to demonstrate that infrastructure on Zone 10 will not hinder the local and wider movement of threatened species between populations*
- *evidence that Zone 10 does not provide suitable habitat for threatened species according to s.6.4*
- *an enhanced survey effort on Zone 10 to identify the presence and threat of invasive exotic species, the presence of threatened flora, and to support the assessment of prescribed impacts across the development site holistically.*

6. All zones within the development site must be entered in the BAM calculator, even if clearing of a zone has been avoided. Avoidance is treated by the BAM calculator as the net difference in vegetation integrity before and after the development, where current and future integrity is the same in zones where clearing has been avoided. Not entering the zones into the calculator underestimates impacts, habitat suitability, and the offset requirement. Notwithstanding the outcome of the recommended actions for Zone 10, the BAM calculator for the proposed development should include at least nine and potentially ten zones.

**Recommended Action:**

*The BAM calculator is to be populated with all vegetation zones associated with the development site, notwithstanding that part of Zone 10 that is determined to be category 1 (exempt) regulated land, or where the vegetation is found to be non-native and consistent with 5.1.1.5 of the BAM.*

7. It is likely that by not entering all the development site zones into the BAM calculator, the habitat suitability of the development site has been underestimated when applying Chapter 6 of the BAM. For example, PCT 360 is only associated with Zone 8, and by excluding it from the BAM calculator any threatened species associated with that PCT will not be assessed. By not entering zones where clearing has been avoided (Zones 4, 5 and 8) the benefit of maintaining the integrity of that vegetation into the future is not quantified in the BAM calculator, nor is the habitat suitability identified or assessed in subsequent parts of the BAM. Because the BAM calculator does not include all the PCTs present on the development site, Chapter 4 of the BDAR, Threatened Species is assumed to under represent both ecosystem credit and species credit species impacted by the development. The EIS also relies on the list of threatened species generated by the BAM calculator, and is assumed to under represent the species that may be present on the development site.

**Recommended Action:**

*The BAM calculator is to be populated with all zones associated with the development site, notwithstanding that part of Zone 10 that is determined to be category 1 (exempt) regulated land, or where the vegetation is found to be non-native consistent with 5.1.1.5 of the BAM.*

*The revised habitat suitability and threatened species list should be reflected in a revised EIS.*

8. The assessment of prescribed impacts and indirect impacts across the development site is not adequate.

Although the clearing of remnants has been avoided and minimised to maintain connectivity, core habitats remain isolated in the middle of a large solar farm. The extent to which populations of threatened species associated with remnants will be connected to each other is assumed, not assessed. For example, the population of Squirrel Glider (*Petaurus norfolcensis*) in the centre of the western portion of the development is likely to become increasingly isolated as a result of the development, and the impact of that isolation is poorly understood. The utility of gliding poles to the north is assumed to improve connectivity. There remain opportunities to further avoid and enhance functional corridors likely to improve connection and movement of otherwise isolated populations.

Impacts on water quality and the hydrology of wetlands in the development site is poorly understood.

There is little attempt to assess the impacts of vehicle strikes and increased traffic on threatened fauna in and around the development site.

The Vegetation Management Plan proposed in the EIS has the potential to improve the way habitat in and around the development is managed, yet has not been considered in the assessment of indirect and prescribed impacts in the BDAR.

**Recommended Action:**

*A holistic assessment of indirect impacts is required, including the impacts prescribed by cl.6.1 of the Biodiversity Conservation Regulation 2017, especially 6.1.1(b), (c) and (f) and including the loss of hollows across the development site.*

9. Matters of National Environmental Significance.

Chapter 7.4 of the BDAR suggests that 0.4ha of PCT 277 is considered to form part of the EPBC-listed Endangered Ecological Community, and we assume that to be associated with Zone 9 alone. The assessment requirements of the *Environment Protection and Biodiversity Conservation Act 1999* are limited to that provided in the BDAR, and no attempt is made in the wider EIS to address the EPBC Matters of Environmental Significance. We do not consider that the BDAR provides sufficient evidence that the total impact of the development should not be referred to the Australian Government Department of Environment. The vegetation integrity of the total area of PCT 277 to be cleared suggests that it has the potential to form part of the EPBC listing. That area has the potential to be greater than 0.4ha. Secondly, the overall impact of the development on the EPBC-listed EEC, both direct and indirect, is poorly understood. The cumulative loss of hollows, the impacts on connectivity and movement of species are examples. The precautionary approach is to refer it to the Department of Environment.

**Recommended Action:**

*As the EIS relies on the BDAR to assess Matters of National Environmental Significance, and because the BDAR does not fully address the Matters of National Environmental Significance, we recommend that the applicant refer the proposal to the Australian Government Department of Environment for its consideration.*

10. The potential for serious and irreversible impacts (SAIL) on the Box-Gum Woodland Threatened Ecological Community (TEC) (PCT 277).

We do not consider that the evidence provided in the BDAR justifies the assertion that the impact on the candidate TEC is not serious or that it is not irreversible with regard to the two principles for which the TEC is considered a candidate.

- The proposed clearing represents a loss of ~7.5% of the TEC at the 1,000ha scale. (approximately 15 of 200ha)
- The proposed clearing represents a loss of ~1% of the TEC at the 10,000ha scale. (approximately 15 of 1500ha)
- The proposed clearing represents a loss of ~0.05% of the TEC across the IBRA subregion.
- The proposed clearing represents a loss equal to roughly 3% of the TEC that is in reserves in the Lower Slopes IBRA subregion.

The determining authority shall establish whether the clearing associated with the Jindera Solar Farm will cause serious and irreversible impacts (SAIL) to the Box Gum Woodland Threatened Ecological Community (TEC) (PCT 277) including direct and indirect impacts across the whole development site. The opinion of the applicant is irrelevant in making that determination.

The Table at Chapter 9.2.1(b) lists the area (ha) and condition (vegetation integrity score) of the SAIL candidate TEC. Section 10.2.2.1(b) of the BAM requires that information relating to both direct and indirect impacts on the SAIL are provided to the decision maker. In this way, the Table at 9.2.1(b) should include areas that are directly impacted by clearing (all of Zones 2 and 9, and that part of Zones 1 and 3 to be cleared), and any remaining areas of the SAIL candidate TEC within the development area that are indirectly impacted (all of Zone 4, the other half of Zone 1, and the majority of Zone 3, 9.31ha).

Similarly, the table should provide information relating to all scattered paddock trees that may be associated with the SAIL candidate TEC as that loss may have direct or indirect impacts on the TEC. We highlight the loss of hollows, and that 42 of the 44 scattered paddock trees listed in Appendix C are typically associated with the SAIL candidate TEC in the Lower Slopes IBRA subregion. The judgement of the decision maker regarding the risk of serious and irreversible impact must be informed by the direct and indirect impact of the net loss of the SAIL candidate TEC across the development site.

No threshold has yet been published by the Department of Planning, Industry and Environment for this TEC. Where they are defined, thresholds become the definitive indicator of impact that can be sustained by the candidate TEC, beyond which the risk of extinction increases significantly. However, thresholds are only part of the determination, and the onus is on the applicant to demonstrate the extent to which the proposed clearing is likely to have a serious and irreversible impact on the candidate TEC or not, regardless of whether an SAIL threshold has been defined. The decision maker has a duty to apply the precautionary principle in lieu of such evidence and shall only rely on the information provided in the BDAR.

Evidence regarding the development's potential impact on abiotic factors critical to the long-term survival of the SAIL candidate TEC is limited. It should include an estimation of whether the solar arrays will impact on photo-sensitivity of the TEC including associated fauna. Other abiotic factors that may prove to be critical to the long-term survival of the SAIL candidate TEC include the effects of electromagnetic radiation, various impacts associated with conduction and storage of electricity. Evidence to support the assumption that these and other abiotic factors will have no impact on the SAIL candidate TEC is lacking. The EIS describes a range of abiotic factors that have the potential to impact the SAIL candidate TEC which have not been fully considered.

That the condition of the remnant SAIL candidate TEC will be maintained is assumed and not supported by evidence. The potential for other threats and indirect impacts is not sufficiently assessed.

We consider that the proposed development makes the remnant SAIL candidate TEC more fragmented and isolated at a range of spatial scales and do not agree with assertions to the contrary. There is no evidence to support the assertion that the SAIL candidate TEC does not become more fragmented and isolated as a result of the development.

Offsetting the credit obligation in the BOS is the only mechanism proposed to contribute to the recovery of the box-gum woodland TEC in the IBRA subregion, despite some avoidance and minimisation of clearing having been achieved. Some mitigation measures are intended to contribute to the recovery of the SAI candidate TEC across the IBRA subregion such as gliding poles to the north.

The likelihood that the impact of the proposed development on the box-gum woodland TEC is serious and irreversible is to be determined by the consent authority after considering the evidence presented in the BDAR. We consider that insufficient evidence has been provided to make that determination.

**Recommended Action:**

*The likelihood of SAI on Box-Gum Woodland Threatened Ecological Community (PCT 277) should be assessed in further detail, including a more holistic assessment of indirect and prescribed impacts across the development site (including Zone 10 and inclusive of the 42 scattered paddock trees to be cleared)*