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

20 February 2020

Dear Mr Beckett

Subject: Culcairn Solar Farm (SSD 10288) - Review of Environmental Impact Statement

Thank you for your email dated 24 January 2020 regarding the Culcairn Solar Farm (SSD 10288) 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.

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 2 May 2019.

The BCD considers that while the EIS **does** meet the Secretary's requirements for flooding, further modelling is required as the design of the development is refined.

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

The BCD considers that the EIS, including the Biodiversity Development Assessment Report at Appendix D, **does not** meet the Secretary's requirements for biodiversity. The applicant must address issues 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, 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 or 02 6983 4917.

Yours sincerely



Andrew Fisher
Senior Team Leader Planning
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ATTACHMENT A – BCD assessment summary for Culcairn Solar Farm Environmental Impact Statement (SSD 10288)

ATTACHMENT B – Detailed comments for Culcairn Solar Farm Environmental Impact Statement (SSD 10288)

ATTACHMENT A BCD assessment summary for Culcairn Solar Farm Environmental Impact Statement (SSD 10288)

Key Issues

1.	<i>Issue</i>	<p>Clarification on the proposed management of isolated artefact site Culcairn Solar IF7 (55-6-0207). Tables 6.2 and 6.3 in the Aboriginal cultural heritage assessment report state this site will be avoided as it is outside of the development footprint. This conflicts with Figure 6-3 which shows this site is in the middle of the development footprint. Please confirm if this site is to be avoided, or if in fact the site to be avoided is another isolated artefact site (such as Culcairn Solar IF1 (55-6-0239) which is shown mapped in Figure 6-2 outside of the development footprint).</p> <p>Recommended action:</p> <ul style="list-style-type: none"> • <i>Confirm proposed management of site Culcairn Solar IF7 (55-6-0207) and amend report as necessary.</i>
	<i>Extent and Timing</i>	Pre-determination

2.	<i>Issue</i>	<p>Unexpected finds protocol</p> <p>Recommended action:</p> <ul style="list-style-type: none"> • <i>An unexpected finds protocol for Aboriginal cultural heritage, including human remains, must be developed and implemented prior to the commencement of construction.</i>
	<i>Extent and Timing</i>	Pre-construction
	<i>Recommended Conditions of Approval</i>	<p><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"> <i>1. Not further harm the object</i> <i>2. Immediately cease all work at the particular location</i> <i>3. Secure the area to avoid further harm to the Aboriginal object</i> <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> <i>5. Not recommence any work at the particular location unless authorised in writing by the Department of Planning, Industry and Environment,</i> <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>

3	<i>Issue</i>	<p>The number of plots sampled for the BAM is under-representative.</p> <p>The number of plots in the certain zones does not meet the minimum required by the BAM. This may have reduced the integrity of the BAM assessment.</p> <p>Recommended Action:</p> <p><i>Various zones require an enhanced survey effort to ensure the vegetation integrity scores are representative of each zone.</i></p>
	<i>Extent and Timing</i>	Pre -determination

4	<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>Recommended actions:</p> <ul style="list-style-type: none"> • <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>
	<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 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**

Three modified trees, five cultural trees, four artefact scatters and one isolated artefact identified during field assessment for this project will be avoided by the proposed works. Of these the modified and cultural trees, one artefact scatter and two potential archaeological deposits have been avoided through design changes to the original layout of the solar farm.

While areas of remnant vegetation will be avoided, clearing of native vegetation is still proposed, including the loss of paddock trees with hollows that are associated with a threatened ecological community.

Flooding impacts will be considered in the detailed design phase.

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

Mitigation for ACH sites proposed to be harmed is surface collection of stone artefacts and relocation to a place that will not be disturbed in accordance with the relevant code.

Salvage excavation is a mitigation that is sometimes used for ACH, however it was deemed to be not warranted in this instance due to the low density of the subsurface material recovered from the test excavation program (NGH, 2020b:65).

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 prescribed impacts on 27.93ha of Box-Gum Woodland Threatened Ecological Community (PCT 277) 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 (PCT 277), would reduce the impact of this project on biodiversity.

ATTACHMENT B Detailed comments for Culcairn Solar Farm Environmental Impact Statement (SSD 10288)

Flooding

While the EIS does address the Secretary's requirements for flooding, further work is required

A 2D XP-SWMM hydrologic and hydraulic model has been developed for the local catchment and regional flood modelling and is fit-for-purpose for use in this environmental impact assessment.

The 5%, 1%, 0.2%, 0.5% Annual Exceedence Probability and Probable Maximum Flood events have been modelled for both cases but in isolation. An enveloped approach to modelling has not been utilised, rather each flood extent (regional and local catchment) has been modelled in isolation. This is not the preferred approach as it ignores the probability of coincident flooding events. The Culcairn Flood Study (2013) used this approach as it was demonstrated in both the 2010 and 2012 flood events.

The regional flood model has also not been used to simulate the developed scenario. The report recommends that further hydraulic modelling be undertaken in the detailed design phase. As such it is also recommended that this modelling comprise an enveloping technique that considers both (regional and local catchment) sources of flooding.

The assessment makes the conclusion that the development would lead to small reductions in peak discharge at most site discharge locations, both with increased flood depths across the site and into adjacent properties. While we acknowledge that these external impacts are likely to be of a minor nature, impacts on the adjacent properties, particularly to residences and major infrastructure, remain a prime concern. It is not clear in the report if residences are impacted in this way.

Recommended actions:

- We concur with the recommendation made in the Report that further hydraulic modelling during the detailed design phase is needed, but further stipulate that it take an enveloped approach.
- Once the remodelling is completed and new design flood and hazard mapping is produced, we recommend that infrastructure be designed and located to be compatible with the flood risks and to minimise adverse impacts to surrounding properties.

Aboriginal cultural heritage

The Aboriginal Cultural Heritage Assessment Report (ACHAR) does not meet the Secretary's requirements.

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"). Confirmation on the proposed management of one artefact site Culcairn Solar IF7 is required (Issue 1 in Attachment A).

Issue 2 in Attachment A may be completed post-determination but pre-construction.

General reporting comments on the EIS (NGH, 2020)

- In section 4.2.17 of the EIS it refers to Section 89J of the *Environmental Planning and Assessment Act 1979* (NSW) [EPA Act]. The EPA Act has been amended and the section of the Act is now '4.41 Approvals etc legislation that does not apply'. This section of the Act states an AHIP is not required for SSD authorised by a development consent.
- In Table 6-72 of the EIS, Safeguards and mitigation measures for ACH, for AH-3 it should be noted that surface salvage of stone artefacts may only occur after project approval, in addition to prior to the proposed construction.

Comments on the ACHAR (NGH, 2020b)

- We seek clarification on the proposed management of isolated artefact site Culcairn Solar IF7 (55-6-0207). Tables 6.2 and 6.3 state this site will be avoided as it is outside of the development footprint. Conflicting with this Figure 6-3 shows this site is in the middle of the development footprint. Please confirm if this site is to be avoided, or if in fact the site to be avoided is another isolated artefact site. For example, Culcairn Solar IF1 (55-6-0239) which is shown mapped in Figure 6-2 outside of the development footprint.
- In section 8 legislative context, it mentions as part of the process an AHIP is not required to impact Aboriginal objects (NGH 2020b:66). It should be noted that this is only true where development consent for SSD has been issued.

We recommend the following condition of development consent:

- An Unexpected Finds Protocol (UFP) or a Cultural Heritage Management Plan (CHMP) incorporating an UFP is to be developed prior to the commencement of construction, and to the satisfaction of the Department, that clearly details the following:
 - protection of Aboriginal heritage sites that will be avoided by the works, within or near to, proposed activities
 - an appropriate unexpected finds protocol, that includes 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. Culcairn is northeast of the development site, not northwest.
2. The Barmah Forest and NSW Central Murray State Forests are downstream within the Murray Catchment, not upstream.
3. In the BCD SEARs response dated 2 May 2019, Attachment A table item 4 should read 'as per Appendix 10', not Appendix 11 as stated. We note the emailed request from BCD on 28 January 2020 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.

4. The section numbering in the BDAR is not consistent, especially Section 3 Native Vegetation. This has made referencing the comments difficult and makes misinterpretation more likely.

Recommended Action:

The BDAR section numbering be amended.

5. The number of vegetation integrity plots is under-representative.

Estimations of vegetation integrity, such as the designation of Zone 74_Low_Condition as low, cannot be made without sampling the required number of plots.

Table 3-6 of the BDAR lists the number of plots per vegetation zone. The number of plots meets the minimum required by ss.5.3.4.8 of the BAM for five of the 13 vegetation zones: Zone 76 Exotic Understory, 76 Native Understory, 277 Exotic Understory, 277 Native Understory, and 277 Regeneration only.

The number of plots in the following zones does not meet the minimum required:

Vegetation Zone ID	Number of additional plots required for adequacy
5_Native_Understory	1
5_Derived Grassland	1
74_Low_Condition	3
74_Mod_Condition	2
76_Derived_Grassland	1
249_Native_Understory	1
277_Derived_Grassland	1
277_Planted	2

The result is that the sample is too small to be representative of site variability and may have underestimated the vegetation integrity and habitat suitability of the zones. This may have reduced the integrity of assessments later in the BAM.

Recommended Action:

Eight vegetation zones require an enhanced survey effort to ensure the vegetation integrity scores are representative of each zone.

6. Referencing the BDAR Appendices is incorrect and inconsistent.

Recommended Action:

Referencing to the BDAR Appendices be amended.

7. The assessment of prescribed impacts and indirect impacts on scattered paddock trees is not adequate.

Although the clearing of remnants has been avoided to maintain connectivity and minimised to maintain habitat where possible, the BAM requires the assessor to take a holistic approach when assessing indirect impacts, including prescribed impacts, on the loss of 99 scattered paddock trees including the loss of hollows across the development site.

For example, screening and the Landscaping Plan proposed in the EIS have 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 comprehensive 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), specifically assessing the impact of loss of scattered paddock trees and hollows across the development site.

8. The potential for serious and irreversible impacts (SAIL) on the Box-Gum Woodland Threatened Ecological Community (TEC) (PCT 277) is not clear.

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.

The determining authority shall establish whether the clearing associated with the Culcairn 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.

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 including the 79 scattered paddock trees associated with the SAIL candidate TEC. That loss may have direct or indirect impacts on the TEC.

We highlight the loss of 71 hollow bearing paddock trees including 58 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, including scattered paddock trees associated with the TEC, especially where they provide hollows.

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 not the only tool to assess the impact on populations and communities. Regardless of whether the threshold has been determined, the onus remains on the applicant to demonstrate that the proposal does not put the candidate entity at risk of extinction. For Threatened Ecological Communities, this should be expressed according to the three principles of serious and irreversible impact outlined in section 3.2.2 of the *Guidance to assist a Decision Maker to Determine a Serious and Irreversible Impact* (DPIE 2019) (four principles for species candidate entities).

Regarding the Culcairn Solar Farm, the applicant has not evaluated the extinction risk to the TEC entity (PCT 277) according to the three principles outlined in section 3.2.2 of the *Guidance to assist a Decision Maker to Determine a Serious and Irreversible Impact* (DPIE 2019).

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 when making its determination.

Evidence regarding the development's potential impact on abiotic factors critical to the long-term survival of the SAIL candidate TEC is limited. Abiotic factors that may prove to be critical to the long-term survival of the SAIL candidate TEC include photo-sensitivity effects on

associated fauna, the effects of electromagnetic radiation, and 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 SAI candidate TEC is lacking. The EIS describes a range of abiotic factors that have the potential to impact the SAI candidate TEC which have not been fully considered in the BDAR.

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

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 79 scattered paddock trees associated with the TEC and especially the 58 trees with hollows.

9. Matters of National Environmental Significance.

The assessment requirements of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) are limited to that provided in the BDAR, but the EIS does not address the EPBC Matters of Environmental Significance. We concur that the BDAR provides sufficient evidence that the vegetation integrity of the total area of PCT 277 to be cleared may not form part of the EPBC listing, but note that a paucity of integrity plots is not a good basis for this conclusion.

The overall impact of the development on the EPBC-listed TEC, both direct and indirect, is poorly understood. The cumulative loss of hollows, and the impacts on connectivity and movement of species across the broader landscape are examples. The precautionary approach is to refer the matter 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.