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Your ref: SSD-10387

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Dear Mr Canon

EIS Exhibition – Daroobalgie Solar Farm (SSD – 10387)

Thank you for your email dated 17 March 2022 to the Biodiversity, Conservation and Science Directorate (BCS) of the Department of Planning and Environment (DPE) inviting comments on the Environmental Impact Statement (EIS) for the Daroobalgie Solar Farm.

BCS has reviewed the Biodiversity Development Assessment Report (BDAR) submitted for this project.

BCS's biodiversity recommendations are provided in **Attachment A** and detailed comments are provided in **Attachment B**. The BDAR requires revision to ensure it adequately meets the requirements of the Biodiversity Assessment Method and appropriately calculates the biodiversity credit liability for the project.

If you require any further information regarding this matter, please contact Erica Baigent, Senior Conservation Planning Officer, via erica.baigent@environment.nsw.gov.au or (02) 6883 5311.

Yours sincerely



Ben Ellis
A/Senior Team Leader Planning North West
Biodiversity, Conservation and Science Directorate

14 April 2022

Attachment A – BCS's Recommendations

Attachment B – BCS's Detailed Comments

Attachment C – Summary of Category 2 – Regulated Land criteria

BCS's recommendations

Daroobalgie Solar Farm – Environmental Impact Statement

1.1 The scattered trees within the solar farm footprint should be considered category 2 – regulated land unless the assessor can provide sufficient evidence to demonstrate the absence of those trees at 1 January 1990.

1.2 Ensure all land within the development footprint assumed as category 2 - regulated is appropriately assessed in accordance with the Biodiversity Assessment Method (BAM).

Where it cannot be demonstrated that the development footprint contains no native vegetation in accordance with BAM s 4.1.2(2), the development footprint must be represented in the Biodiversity Development Assessment Report (BDAR) and BAM calculator (BAM-C) via a vegetation zone.

Alternatively, the assessor may choose to undertake a land categorisation assessment on rural zoned land to determine whether any parts of the electricity transmission line (ETL) corridor can be demonstrated to meet category 1 – exempt land criteria.

1.3 Support any category 1–exempt land designations via multiple pieces of evidence. This evidence might include:

a) publicly available data sets on the SEED Portal such as:

- *NSW Landuse 2017*
- *NSW Native Vegetation Extent 5m Raster v1.2* (2018 woody extent layer)
- *State-wide Landcover and Tree Survey (SLATS) woody clearing for NSW* – used to identify detectable clearing events since January 1990.

The published '*Native Vegetation Regulatory Map: Method Statement*' should be reviewed to determine how these datasets can be best interrogated to support any identification of Category 1 – Exempt land.

b) category 2 - sensitive and category 2 - vulnerable land from the transitional native vegetation regulatory map.

c) aerial photography and landholder records of land use (e.g. diaries, photos that show clearing or cropping activities).

1.4 Explain (e.g. via a simple decision matrix/rule set) how different spatial datasets and other data sources were combined to form the land categorisation map, including explanation of how any conflicting spatial data were assigned precedence allocate a map category. Results should be linked to the specific components of the land category definitions in the *Local Land Services Act 2013* and *Local land Services Regulation 2014*.

1.5 A precautionary approach should be adopted - where information regarding land use or the presence of native vegetation is conflicting or uncertain, category 2 should be assigned.

1.6 To streamline BCS review of land categorisation assessments, BCS encourages referencing of the evidence supporting the classification of each polygon to be included in the attribute table of the shapefile.

2.1 Clearly define, quantify and map all direct impacts associated with the construction and ongoing maintenance of the ETL. This should include:

a) details of the impacts associated with construction, including justification of the extent of impact areas for the purposes of defining the direct footprint

- b) the number of ETL poles to be placed within each zone and the area of impact associated with each
 - c) details of the future management of the ETL corridor, including any direct impacts associated with access for ETL maintenance
 - d) A GIS shapefile of the development footprint on which credit calculations are based.
 - 2.2 Clarify the indirect impacts associated with the proposal and ensure all requirements of BAM s. 8.2 are met.
 - 3.1 The future vegetation integrity (VI) score for all native vegetation subject to direct impacts should be set as zero in the BAM-C.
 - 4.1 Following adequate definition of the development footprint (recommendation 2.1) enter all mapped vegetation zones within the development footprint into the BAM-C. Varying degrees of impact may then be reflected via individual management zones where adequately justified (for example complete clearing associated with construction versus selective clearing for transmission line clearances).
 - 4.2 Provide justification and evidence that only a partial loss in VI will occur for ETL management zones. If adequate justification and evidence cannot be provided to support this assumption, beyond reasonable doubt, assume a total loss in VI for these zones.
 - 5.1 Provide adequate justification for the exclusion of the eastern pygmy possum and masked owl from consideration across the entirety of the development site (in accordance with BAM subsection 5.2.3 (step 3) and the guidance provided in the BAM 2020 Operational Manual – Stage 1).
- Otherwise, exclusion of these species may only be via survey results or an expert report.
- 6.1 For all targeted surveys:
 - a) Ensure that BDAR adequately describes the survey timing, methods and effort employed.
 - b) Specifically identify the survey method and effort for each candidate species credit species.
 - c) Map the locations targeted via each survey method (including the route of traverses) and specify the date of the survey undertaken at each location. As per table 24 of the BAM this should be supplemented by:
 - provision of the field data sheets detailing the surveys including prevailing conditions, date, time, equipment used etc.
 - digital shapefiles of the survey locations, mapped traverses and suitable habitat identified for survey for each candidate species credit species.
 - d) Provide adequate justification of survey method and effort if the approach differs from the Department's taxa-specific survey guides/ Threatened Biodiversity Data Collection (TBDC) or where no relevant guideline has been published (e.g. citation of peer-reviewed literature).
 - e) Where survey was undertaken outside the survey months in the TBDC or the Department's taxa-specific survey guides, provide justification for the timing of the surveys using appropriate published or peer-reviewed references and/or suitable data from reference sites for those species. Otherwise the assessor must either assume presence or obtain an expert report for those species.
 - 7.1 Provide all GIS data as required by table 24 of the BAM.

BCS's detailed comments

Daroobalgie Solar Farm – Environmental Impact Statement

BAM	Biodiversity Assessment Method
BAM-C	Biodiversity Assessment Method Calculator
BC Act	<i>Biodiversity Conservation Act 2016</i>
BC Regulation	Biodiversity Conservation Regulation 2017
BDAR	Biodiversity Development Assessment Report
EEC	Endangered Ecological Community
EPBC Act	<i>Environmental Protection and Biodiversity Conservation Act 1999</i>
ETL	Electricity Transmission Line
LLS Act	Local Land Services Act 2013
LLS Reg	<i>Local Land Services Regulation 2014</i>
NVR Map	Native Vegetation Regulatory Map
PCT	Plant Community Type
TBDC	Threatened Biodiversity Data Collection
VI score	Vegetation Integrity Score

1. Portions of the development footprint have been omitted from the BAM assessment without adequate justification of category 1- exempt land.

Clearing of native vegetation on rural land that meets the definition of 'category 1 – exempt' land (as defined under the *Local Land Services Act 2013* (LLS Act)) does not require assessment or offsetting under the *Biodiversity Conservation Act 2016* (BC Act), apart from consideration of prescribed impacts as per Chapter 6 of the Biodiversity Assessment Method (BAM).

Section 60F of the LLS Act provides the transitional arrangements that are in place until a comprehensive native vegetation regulatory (NVR) map with all the land categories is published. During the 'transitional period' assessors can make a reasonable approximation of land categorisation for unpublished layers, in consultation with the landholder.

The BDAR does not demonstrate consideration of all relevant land category criteria. The categorisation of the plantings on the solar farm site only is discussed, with the Biodiversity Development Assessment Report (BDAR) silent on the categorisation of the remainder of the solar farm and electricity transmission line (ETL) footprint.

Land categorisation advice

Where a reasonable approximation of land category is required, it is recommended that assessors first identify whether land meets criteria for 'category 2 – regulated' land, prior to 'category 1 – exempt' land:

- In some circumstances, land may meet multiple map criteria i.e. criteria for category 2 - regulated and, and category 1 - exempt Land.
- In most circumstances category 2 - regulated land criteria will determine the categorisation of the land, rather than Category 1 - exempt land criteria.

Section 60I of the LLS Act and cl.113 of the *Local Land Services Regulation 2014* (LLS Reg) define the criteria for designation of land as category 2- regulated (summarised in **Attachment C**).

Where an assessor identifies land as category 1 – exempt land it must be adequately demonstrated that the identified land meets the criteria as set out in section 60H of the LLS Act, via multiple pieces of evidence. This might include:

- Publicly available landuse mapping, woody native vegetation extent and clearing event datasets available on the NSW Government SEED data portal¹ as referenced in the *Native Vegetation Regulatory Map: method statement*².
- Published information on the transitional NVR Map, including Category 2-sensitive regulated, Category 2-vulnerable regulated, and excluded land.
- Site-based information and records, including current and historical high-resolution aerial photography and on-site photographs, land management records held by the landholder, and suitable floristic data.

Land category assessments are expected to present the method applied to designate a land category, including which datasets were given precedence.

Where there is uncertainty or datasets/information are conflicting, a precautionary approach should be applied and the land should be categorised as category 2 – regulated land.

Solar farm development footprint

The BDAR concludes that the majority of the planted native vegetation within the solar farm footprint is category 1 – exempt land. No land categorisation method is presented beyond references to certain plantings being absent in imagery from 2006.

As noted in **Attachment C**, post-January 1990 native plantings or regrowth are classified as category 2- regulated land in certain circumstances (e.g. where they were grown or preserved with the assistance of public funds). The BDAR has not addressed all relevant land category criteria in relation to these plantings.

The BDAR is also silent on the categorisation of the scattered trees present within the cropped areas of the solar farm footprint, outside of the native plantings. The BDAR describes 11 of these trees as hollow-bearing and notes that they will be removed, however no biodiversity credits have been calculated.

Electricity transmission line footprint

The BDAR is silent on whether any land categorisation has been undertaken for the ETL footprint. Melissa Cotterill (phone conversation with Erica Baigent of BCS on 5 April 2022) has informed BCS that the entirety of the ETL corridor has been assumed to be category 2 – regulated land.

This is an acceptable approach, however it is important to note that the BAM must be applied to all category 2 - regulated land. This means that if no land within the ETL footprint has been designated (based on appropriate evidence) as category 1 – exempt land, the BAM must be applied across the entire ETL footprint.

The BDAR has currently omitted areas within the ETL footprint mapped collectively as ‘*crop, introduced or modified*’ from assessment without supplying supporting data. Justification is required within the BDAR to support the conclusion that those polygons do not contain any native vegetation (BAM section 4.1.2 (2)). Where it cannot be demonstrated that a polygon does not contain any native vegetation, that polygon must be included as a vegetation zone within the BAM-C.

¹ www.seed.nsw.gov.au

² State of NSW (2017) *Native vegetation regulatory map: method statement*. Made under the Local Land Services Act 2013. Transitional period version dated August 2017, published by Office of Environment and Heritage.

Alternatively, the assessor may choose to undertake a land categorisation assessment for the portions of the ETL footprint located on rural zoned land to determine the extent of the areas mapped as '*crop, introduced or modified*' that can be demonstrated to be category 1 – exempt land.

Recommendations

- 1.1 The scattered trees within the solar farm footprint should be considered category 2 – regulated land unless the assessor can provide sufficient evidence to demonstrate the absence of those trees at 1 January 1990.
- 1.2 Ensure all land within the development footprint assumed as Category 2 - Regulated is appropriately assessed in accordance with the BAM.

Where it cannot be demonstrated that the development footprint contains any native vegetation in accordance with BAM s 4.1.2(2), the development footprint must be represented in the BDAR and BAM calculator (BAM-C) via a vegetation zone.

Alternatively, the assessor may choose to undertake a land categorisation assessment on rural zoned land to determine whether any parts of the ETL corridor can be demonstrated to meet category 1 – exempt land criteria.

- 1.3 Support any category 1–exempt land designations via multiple pieces of evidence. This evidence might include:
 - a) publicly available data sets on the SEED Portal such as:
 - *NSW Landuse 2017*
 - *NSW Native Vegetation Extent 5m Raster v1.2* (2018 woody extent layer)
 - *State-wide Landcover and Tree Survey (SLATS) woody clearing for NSW* – used to identify detectable clearing events since January 1990.
 - The published '*Native Vegetation Regulatory Map: Method Statement*' should be reviewed to determine how these datasets can be best interrogated to support any identification of Category 1 – Exempt land.
 - b) category 2 – sensitive and category 2 – vulnerable land from the transitional NVR Map
 - c) aerial photography and landholder records of land use (e.g. diaries, photos that show clearing or cropping activities).

- 1.4 Explain (e.g. via a simple decision matrix/rule set) how different spatial datasets and other data sources were combined to form the land categorisation map, including explanation of how any conflicting spatial data were assigned precedence and allocated a map category. Results should be linked to the specific components of the land category definitions in the LLS Act and LLS Reg.
- 1.5 A precautionary approach should be adopted - where information regarding land use or the presence of native vegetation is conflicting or uncertain, Category 2 should be assigned.
- 1.6 To streamline BCS review of land categorisation assessments, BCS encourages referencing of the evidence supporting the classification of each polygon to be included in the attribute table of shapefile.

2. The extent of the development footprint and nature of impacts assessed is unclear

Direct impacts assessed by the BAM are those that result from clearing of vegetation for a development. In describing the direct impacts on native vegetation the BDAR refers to:

- removal of all native vegetation within the solar farm footprint
- removal of all flora species within the ETL footprint that grow to 6.5 metres or greater in height (the BDAR suggests that no shrub species within the corridor grow to this height)
- removal of 'small areas' of groundcover vegetation (grass and forb species) and soil excavation within the immediate footprints of infrastructure (including ETL poles and underground cabling) (page 87)
- direct impacts to ground cover vegetation within the ETL footprint being limited to pole placement, with the 'majority' remaining 'relatively undisturbed' or subject to 'temporary' impacts and allowed to regenerate to a 'condition similar to its existing state' (page 99).

The BDAR has mapped vegetation along the entire ETL route, with vegetation zones mapped by plant community type (PCT) and general condition. Figures 10.1a to 10.1e of the BDAR depict the vegetation zones identified within the ETL footprint, however only a subset of zones are identified as being impacted (hatched areas marked 'remove'). These are generally, but not consistently, limited to the mapped vegetation zones which contain woody vegetation.

In the shapefile '2316511_DAR_PCTs_TL_updated_17112021' the vegetation zones marked as 'remove' in the attribute table add up to seven hectares in total, however only 3.9 hectares of impact is assessed within the BDAR and BAM-C. This reduced area is not specifically mapped in the BDAR or indicated in the shapefiles.

Calculation of the impact area entered into the BAM-C for the ETL and why this differs from the impact area mapped in the BDAR and shapefiles is not clearly articulated. Based on a phone conversation with Melissa Cotterill of GHD (5 April 2022) BCS understands that:

- where woody vegetation is not present in a vegetation zone, the impact area calculation was based on individual poles only. The BDAR refers to an impact area of 4m² per pole, with no justification provided for this area. The number of poles within each zone is not specified.
- in locations where woody vegetation is present within a zone, the impact area in the BAM-C was calculated based on the full width of the mapped ETL corridor. These impact areas may be smaller than the corresponding mapped vegetation zone depending on the location of the woody vegetation.

Outside of the clearing of flora species growing to 6.5 metres or more, the impacts associated with construction, access and maintenance of the ETL are not well described in the BDAR and do not appear to have been taken in to account in the calculation of biodiversity credits in the BAM-C (discussed further under Issue 3 below).

Table 8-2 suggests that impacts from vehicle movement, lay down areas and general construction activity have been assessed as indirect impacts only as they are considered 'temporary'. These impacts are not further described.

Impact areas less than 0.005 hectares in the BAM-C

The BDAR reports that for three zones, the impact area was so small that the BAM-C defaulted the impact area to zero hectares and a future vegetation integrity score (VI score) could not be calculated. The assessor then removed these from the assessment.

The BAM-C impact area will default to zero when values less than 0.005 hectares are entered. Zero hectare impact areas entered in the BAM-C halt progression through the calculator tabs and the assessment cannot be completed.

- **Zone 4 – PCT 76 ‘derived’** - impact area= 0.0098 hectares (table 5-2)

For this zone the impact area in BAM-C automatically defaults to 0.01 rather than zero hectares. Whilst the current vegetation integrity (VI) score was not high enough to generate biodiversity credits, this zone should have been retained in the calculator to allow easy demonstration of the VI score.

- **Zone 6 – PCT 80 ‘derived’** - impact area =0.00025 hectares (table 5-2)

BCS notes that the current VI score for this zone was not high enough to require biodiversity credits.

- **Zone 9 - PCT 360** - impact area = 0.004 hectares (table 3-2 and 5-2) or 0.0012 hectares (s.10.1.2, page 100)

The VI score for this zone was 59.3. This is the only vegetation zone for PCT 360 – rather than omitting this impact from the assessment it is more appropriate for the assessor to enter an area of 0.01 hectares into the BAM-C for the zone.

With an impact area of 4m² per ETL pole being assessed currently, it is not clear from the information presented how impact areas of less than 0.0004 hectares were derived.

Recommendations

- 2.1 Clearly define, quantify and map all direct impacts associated with the construction and ongoing maintenance of the ETL. This should include:
 - a) details of the impacts associated with construction, including justification of the extent of impact areas for the purposes of defining the direct footprint
 - b) the number of ETL poles to be placed within each zone and the area of impact associated with each
 - c) details of the future management of the ETL corridor, including any direct impacts associated with access for ETL maintenance
 - d) A GIS shapefile of the development footprint on which credit calculations are based.
- 2.2 Clarify the indirect impacts associated with the proposal and ensure all requirements of BAM s.8.2 are met.

3. No loss of shrubs or groundcover has been assessed for construction impacts

In order to establish the proposed infrastructure, the BDAR acknowledges (e.g. pages 87 and 99) that certain areas of native vegetation will be reduced to zero before being allowed to regenerate (see Issue 2 above).

However, for the entire direct impact area (as currently entered in the BAM-C), the future VI score has been calculated on the assumption that the ETL will only impact structural layers growing to a height of 6.5 metres or more. Individual scores relating to shrubs and ground cover have been assumed to remain identical before and after impact across the development footprint.

Ground disturbance associated with the installation of infrastructure (e.g. removal of vegetation for pole installation and groundcover impacts associated with works such as laydown areas, access tracks and machinery movement) is not represented in the BAM-C data.

The assessor has provided no evidence to demonstrate the assumption that ground cover vegetation will regrow to the same species richness, composition, cover or structure post-impact to that identified within the BAM-C. All areas of native vegetation (assumed to be category 2 –

regulated land) directly impacted by the construction of the solar farm and ETL should be assessed as complete loss in the BAM-C.

Recommendation

- 3.1 The future vegetation integrity score for all native vegetation subject to direct impacts should be set as zero in the BAM-C.

4. Strong justification is required for BCS to accept calculation of credits on the basis of 'partial loss' only

The BDAR has presented insufficient justification to support partial loss.

In circumstances where partial clearing of vegetation (selective removal of certain structural attributes) is proposed and remaining vegetation within the footprint will be maintained (i.e. not degraded further over time) the assessor may determine that the future value of the remaining attributes are greater than zero (BAM s.8.1.1). The BAM requires that an assessor must map these areas of the vegetation zone as a separate management zone and refer to these areas in the BDAR.

The assessor must provide a clear outline of the ongoing management to be undertaken to maintain the expected future value where only partial clearing of native vegetation is proposed. If it is likely that the remaining attributes will continue to degrade, full loss should be assumed. Guidance can be found in the BAM Operational Manual – Stage 2 (2019).

In justifying that certain structural attributes will be unaffected within the footprint, it is important to consider the likely impact on native groundcover resulting from the selective removal of key structural layers (in this case trees) and functional aspects to be removed in certain zones.

Further evidence-based justification is required to support the assumption, beyond reasonable doubt, that only a partial loss of vegetation integrity will occur within ETL footprint. If adequate justification and evidence cannot be provided to support this assumption, beyond reasonable doubt, a total loss in VI for these zones should be assumed.

Recommendations

- 4.1 Following adequate definition of the development footprint (recommendation 2.1) enter all mapped vegetation zones within the development footprint into the BAM-C. Varying degrees of impact may then be reflected via individual management zones where adequately justified (for example complete clearing associated with construction versus selective clearing for transmission line clearances).
- 4.2 Provide justification and evidence that only a partial loss in VI will occur for ETL management zones. If adequate justification and evidence cannot be provided to support this assumption, beyond reasonable doubt, assume a total loss in VI for these zones.

5. Candidate species credit species selection for the ETL assessment requires further justification for two fauna species.

Justification for excluding the eastern pygmy possum (*Cercartetus nanus*) and masked owl (breeding) (*Tyto novaehollandiae*) from further assessment for the ETL footprint is currently inadequate.

The reason given in the BDAR for excluding both of these species from further consideration is '*Proposal site is outside of the known range for the species as mapped in the BioNet Atlas*'. However, no geographic constraints for either species are listed in the Threatened Biodiversity Data Collection (TBDC) and the site is within the predicted range (and on the edge of the known range) for both.

Where recognised geographic constraints do not apply, BAM subsection 5.2.3 (Step 3) stipulates that the BDAR must include:

- a description of microhabitats required by the species, supported by evidence such as published literature.
- details of the field assessment conducted to determine if habitat constraints or known microhabitat(s) are absent, or if present, whether it is degraded to the point that the species is unlikely to use the subject area.

As no habitat constraints are listed by the TBDC for the eastern pygmy possum, this species may only be excluded from further consideration on the basis of absence or degradation of microhabitats. No justification for removing this species from further consideration on the basis of microhabitats is provided.

The BAM-C case notes the presence of habitat constraints for the masked owl (hollow bearing trees and living or dead trees with hollows greater than 20 centimetres diameter). The BAM-C case does not indicate that these habitat constraints or known microhabitats present are degraded to the point that the species is unlikely to use the subject site. These are not acknowledged or discussed in the BDAR.

Recommendation

5.1 Provide adequate justification for the exclusion of the eastern pygmy possum and masked owl from consideration across the entirety of the development site (in accordance with BAM subsection 5.2.3 (step 3) and the guidance provided in the BAM Operational Manual – Stage 1). Otherwise, exclusion of these species may only be via survey results or an expert report.

6. The BDAR presents insufficient information to demonstrate that the BAM requirements for candidate species credit species surveys have been met.

The BAM (s.5.3) requires assessors to perform targeted species survey for all candidate species credit species carried forward for further assessment. The BAM specifies that the assessor must:

- only survey during the time specified for that species in the TBDC, unless there is clear justification to vary the timing and the reasoning is documented in the BDAR
- comply with the Department's published threatened species survey guides
- use best-practice methods that can be replicated for repeat surveys, if the Department has not published any relevant guides (the TBCDC may also provide information on appropriate survey methods and effort).

The BDAR is required to adequately describe the timing, weather conditions, methods and survey effort.

Threatened fauna

The survey methods are not clear for all candidate species credit species carried forward for further assessment.

Across table 3.1 '*Survey techniques and timing*', table 3.5 '*Targeted fauna survey techniques*' and BDAR text, the following fauna survey methods are listed.

- habitat assessment
- daytime traverses/opportunistic fauna surveys in conjunction with plot/transects and flora searches (over a total 11 days spread over September 2018, December 2018, August 2019, September 2020, August 2020 and December 2020).

- active searches for reptiles/amphibians, scats and signs
- spotlighting transects (August 2019 and August 2020)
- call playback (targeting Sloane's froglet, August 2019 and August 2020)
- anabat recordings (December 2020)
- diurnal bird surveys (over 7 days in September, August, December, year not specified nor number of days within each month. No specific survey techniques referenced)
- dawn and dusk observations of hollows.

Table 6.3 '*Confirmed candidate species credit species for which surveys were conducted*' states that targeted surveys were undertaken for nine species credit fauna species. However, Table 3-4 '*Candidate fauna species credit entities targeted during surveys*' only lists three species credit fauna species targeted in surveys:

- Sloane's froglet (call playback and spotlighting)
- southern myotis (Anabat) (not identified as a candidate species for this proposal)
- superb parrot (diurnal bird surveys and searches for candidate nest trees)

Survey effort mapped on Figure 3.2 only depicts 'active search', anabat, 'bird survey', call playback and plot locations. Spotlighting transects are not mapped.

Insufficient information is presented to demonstrate how all survey techniques and effort have conformed to the Department's survey guidelines, any species-specific survey notes in the TBDC or are accepted best practice for each target species.

Threatened flora

Section 3.2.2 of the BDAR indicates that threatened flora surveys consisted of '*meandering traverses within all areas of potential habitat within the proposal site*' (largely limited to the ETL footprint and alternative corridors considered). Areas of adjacent remnant vegetation and the plantings within the solar farm site were also searched. No map or shapefile of the traverses has been supplied as required by the Department's guide for surveying threatened plants³.

Species surveys must be conducted at the optimum time for detection as indicated in the TBDC. The *BAM 2020 Operational Manual – Stage 1* and the Department's guide for surveying threatened plants permit the assessor to adjust survey months from those listed in the TBDC and BAM-C to accommodate a species' response to local environmental conditions, where this can be adequately justified. Examples as to when this might be appropriate are provided on page 5 of the Department's guide for surveying threatened plants.

Justification for survey times outside those identified in the TBDC is expected to include appropriate published or peer-reviewed references and/or plot data (including reference sites if applicable).

Three candidate species credit flora species (table 1 below) were surveyed for outside of the survey window specified in the TBDC and BAM-C. The assessor has not provided adequate justification that the surveys were undertaken at the optimum time for detection of these species. Justification within the BDAR for the survey timing being suitable for these three species is limited to:

- there was substantial rainfall prior to surveys
- other species from the same genus were flowering at the time of the surveys.

³ DPIE (2020) *Surveying threatened plants and their habitats – NSW survey guide for the Biodiversity Assessment Method*. Environment, Energy and Science, Parramatta

Table 1 Species credit species surveys outside of TBDC/BAM-C survey window

Species	BCS comments
<p><i>Austrostipa metatoris</i> (a spear grass)</p> <p>TBDC specifies October- November survey period.</p> <p>BDAR Table 6.3 states surveys undertaken after 'substantial rainfall' in September and December (Table 3.1 indicates September 2018 and December 2020)</p>	<p>Based on known records for <i>A. metatornis</i> the BCS accountable officer for this species has advised that survey in November following rain would be considered optimal and reference to October should be removed from the TBDC. No records are available to BCS to support the suitability of September and December surveys for this species.</p> <p>The BDAR also indicates that flora surveys timed in September were from 2018 – site specific rainfall records are not available to BCS but there are no records of substantial rainfall from the Forbes Airport weather station preceding this specific survey period. The area was drought declared at that time.</p>
<p><i>Diuris callitrophilla</i> (Oaklands Diuris)</p> <p>TBDC specifies November survey period.</p> <p>BDAR Table 6.3 states surveys undertaken in December (Table 3.1 indicates December 2020)</p>	<p>Whilst the Scientific Committee determination for <i>D. callitrophilla</i> indicates flowering of this species in November-December, based on current information available to the BCS accountable officer they advise that there is no evidence that December is a suitable time of year to survey for <i>D. callitrophilla</i>, regardless of seasonal conditions.</p>
<p><i>Eleocharis obicis</i> (spike-rush)</p> <p>TBDC specifies October-November survey period.</p> <p>BDAR Table 6.3 states surveys undertaken after 'substantial rainfall' in September and December (Table 3.1 indicates September 2018 and December 2020)</p>	<p>The BCS accountable officer for this species has advised that <i>E. obicis</i> records suggest October and November are the optimal survey periods for this species. December may possibly be suitable under the right conditions, however this remains uncertain. No information is available to indicate that September surveys would be suitable.</p> <p>(also see comments above regarding rainfall records from the Forbes Airport weather station for the period preceding the September 2018 flora surveys).</p>

Recommendations

6.1 For all targeted surveys:

- Ensure that BDAR adequately describes the survey timing, methods and effort employed.
- Specifically identify the survey method and effort for each candidate species credit species.
- Map the locations targeted via each survey method (including the route of traverses) and specify the date of the survey undertaken at each location. As per table 24 of the BAM this should be supplemented by:
 - provision of the field data sheets detailing the surveys including prevailing conditions, date, time, equipment used etc
 - digital shapefiles of the survey locations, mapped traverses and suitable habitat identified for survey for each candidate species credit species.
- Provide adequate justification of survey method and effort if the approach differs from the Department's taxa-specific survey guides/ TBDC or where no relevant guideline has been published (e.g. citation of peer-reviewed literature).

- e) Where survey was undertaken outside the survey months in the TBDC or the Department's taxa-specific survey guides, provide justification for the timing of the surveys using appropriate published or peer-reviewed references and/or suitable data from reference sites for those species. Otherwise the assessor must either assume presence or obtain an expert report for those species.

7. All required GIS data must be supplied.

As discussed with Melissa Cotterill of GHD on 5 April 2022, assessor has not submitted all GIS data required in Table 24 of the BAM. Only shapefiles defining the development site, vegetation zones/PCTs, plot locations and some survey locations have been provided.

Recommendations

- 7.1 Provide all GIS data as required by table 24 of the BAM.

Summary of Category 2 – Regulated land criteria

Section 60I of the *Local Land Services Act 2013* (LLS Act) and cl.113 of the *Local Land Services Regulation 2014* (LLS Reg) define the criteria for designation of land as category 2- regulated, including land which:

- was not cleared of native vegetation as at 1 January 1990;
- was unlawfully cleared of native vegetation after 1 January 1990;
- contains native vegetation that was grown or preserved with the assistance of public funds (other than funds for forestry purposes);
- contains grasslands that are not low conservation grasslands (or low conservation value grassland beneath the canopy or drip line of woody vegetation satisfying the criteria for Category 2);
- is (or was previously) subject to a private native forestry plan approved under Part 5B of the LLS Act
- is subject to a private land conservation agreement;
- is a 'set aside' under a Land Management (Native Vegetation) Code;
- is an offset under a property vegetation plan or a set aside under the former native vegetation laws;
- is subject to an approved conservation measure that was the basis for other land being biocertified;
- is required to be set aside for nature conservation, revegetation or as an offset under an EP&A Act consent or approval
- is identified as coastal wetlands or littoral rainforest;
- is identified as koala habitat;
- is a declared Ramsar wetland; or
- is mapped as containing critically endangered species of plants or a critically endangered ecological community
- is a Travelling Stock Route (outside of the Western Division)
- is eligible for designation as category 2 -vulnerable regulated land (steep or highly erodible, protected riparian or special category land).