



Office of
Environment
& Heritage

Your reference: SSD 8392
Our reference: DOC18/313877
Contact: Miranda Kerr
Ph 02 6022 0607
Date: 15 June 2018

Ellen Jones
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Resource and Energy Assessments, Planning Services
Department of Planning & Environment
GPO Box 39
SYDNEY NSW 2001

Via email: ellen.jones@planning.nsw.gov.au

Dear Ms Jones

RE: Darlington Point Solar Farm (SSD 8392) – Exhibition of Environmental Impact Statement

I refer to your email dated 17 May 2018 seeking comment from the Office of Environment and Heritage (OEH) about the Environmental Impact Statement (EIS) for the Darlington Point Solar Farm located approximately 10 km south of Darlington Point, in the Murrumbidgee Local Government Area.

We have reviewed the exhibited EIS against the Secretary's Environmental Assessment Requirements (SEARs) issued by the Department of Planning and Environment (DPE) on 9 May 2017.

OEH considers that the EIS **does not** meet the Secretary's requirements for biodiversity and Aboriginal cultural heritage assessment (ACH). **Attachment A** summarises the key issues requiring further consideration.

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

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, biodiversity or ACH should be developed in consultation and to the satisfaction of OEH, to ensure that issues identified in this submission are adequately addressed.

If you have any questions regarding this matter, please contact Miranda Kerr on (02) 6022 0607 or email miranda.kerr@environment.nsw.gov.au.

Yours sincerely

ANDREW FISHER
Senior Team Leader Planning
South West Branch
Regional Operations
Office of Environment & Heritage

ATTACHMENT A – OEH Assessment Summary for Darlington Point Solar Farm Environmental Impact Statement (SSD 8392)

ATTACHMENT B – Detailed comments for Darlington Point Solar Farm Environmental Impact Statement (SSD 8392)

**ATTACHMENT A OEH Assessment Summary for Darlington Point Solar Farm
Environmental Impact Statement (SSD 8392)**

Key Issues

1	<i>Issue</i>	<p>The EIS and Aboriginal Cultural Heritage Assessment Report (ACHAR) contain the following issues that must be completed prior to project approval to meet requirements of the SEARs:</p> <ol style="list-style-type: none"> 1. The AHIMS search is greater than 12 months currency. An updated AHIMS search is to be conducted and results presented in the EIS and ACHAR. Any Aboriginal sites not previously identified will require assessment and management in accordance with SEARs. 2. Update EIS Tables 37, 39 and 41 and Figure 20 with AHIMS site numbers for the newly identified sites from the current field assessment. 3. Update Table 40 in the EIS consistent with the significance assessment in the ACHAR and in accordance with any further assessment or comments received from Aboriginal stakeholders. 4. The OEH must be notified on the discovery of Aboriginal objects under Section 89A of the NPW Act. This includes provision of: <ul style="list-style-type: none"> • Aboriginal site recording forms submitted to AHIMS for any newly identified Aboriginal object(s) through the course of the project. • Aboriginal Site Impact Recording Forms submitted to AHIMS for each site impacted. • Reporting to the OEH on the discovery of human remains. <p>We recommend the following protocol be included to ensure compliance with legislation in place to protect ACH in NSW and to ensure no additional harm is caused if Aboriginal sites and objects are encountered during proposed works:</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> <ul style="list-style-type: none"> • <i>Not further harm the object</i> • <i>Immediately cease all work at the particular location</i> • <i>Secure the area to avoid further harm to the Aboriginal object</i> • <i>Notify OEH as soon as practical on 131555, providing any details of the Aboriginal object and its location</i> • <i>Not recommence any work at the particular location unless authorised in writing by OEH.</i> <p><i>If skeletal remains are unexpectedly encountered during the activity, work must stop immediately, the area secured to prevent unauthorised access and NSW Police and OEH contacted.</i></p> <p>Recommended action:</p> <ul style="list-style-type: none"> • <i>The EIS and ACHAR be revised to provide a current AHIMS search, AHIMS numbers for newly identified Aboriginal sites, consistency in significance assessments and address OEH mandatory reporting requirements</i>
	<i>Extent and Timing</i>	Pre-determination

2	<i>Issue</i>	<p>The Framework for Biodiversity Assessment (FBA) has not been properly applied and the impact of this development has not been adequately assessed.</p> <p>6 Avoid and minimise impacts</p> <p>The direct and indirect impacts of the proposal have not been clearly identified. Mitigation measures can therefore not be directly related to a specific impact. The BAR should follow the guidelines for avoiding and minimising impacts set out in 8.3.2 of the FBA.</p> <p>8 Application of Credit Discount to Ecosystem Credits</p> <p>OEH are obliged to assess the credit obligation through the FBA. The method for discounting ecosystem credits provided in section 8.6 of the BAR is not consistent with Section 10 of the FBA.</p> <p>Installation of the solar array and associated infrastructure is likely to result in total sterilisation of the development footprint as foraging habitat for the Australian bustard</p> <p>Recommended actions:</p> <ul style="list-style-type: none"> • <i>Adequate consideration and minimum information requirements for Chapter 8 of the FBA must be provided (refer to Table 21 of the FBA).</i> • <i>Section 10 of the FBA is correctly applied provide a reasonable offset for the probable complete loss of Australian bustard habitat within the development footprint.</i>
	<i>Extent and Timing</i>	Pre-determination

3	<i>Issue</i>	<p>3.5.3 Targeted flora surveys</p> <p>Section 1.3 (page 25) lists the project-specific SEARs identified by OEH. It is not clear whether species credit threatened flora species requiring further consideration were specifically targeted during field survey.</p> <p>Recommended action:</p> <ul style="list-style-type: none"> • <i>OEH require confirmation that species credit flora species listed in Section 1.3 were specifically surveyed during the targeted flora survey, surveyed during the correct period and included in the BioBanking assessment.</i>
	<i>Extent and Timing</i>	Pre-construction

4	<i>Issue</i>	<p>3.8 Field survey limitations</p> <p>This section states that flora and fauna required under the BioBanking calculations have been surveyed during the appropriate survey period</p> <p>Recommended action:</p> <ul style="list-style-type: none"> • <i>OEH require evidence that all the species credit species that require assessment, including those listed on the SEARs as species for further consideration, were surveyed during the correct period. BioBanking Credit Calculator entries are to be updated and/or expert reports provided to fulfil all FBA survey requirements.</i>
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	<i>Extent and Timing</i>	Pre-determination
4	<i>Issue</i>	<p>Use of expert reports (Section 7.2 Vegetation Impacts)</p> <p>The FBA allows the use of expert reports for determining species presence or absence on a site. To use an expert, the proponent must submit a request to OEH for approval by the OEH Chief Executive. An expert report is not considered unless this approval is given.</p> <p>The proponent has not applied for, and the OEH Chief Executive has not granted, approval for the Charles Sturt University Graham Centre for Agricultural Innovation to provide expert advice for this project.</p> <ul style="list-style-type: none"> • <i>Experts providing reports for use in place of survey information in the BAR must be approved by the OEH Chief Executive</i>
	<i>Extent and Timing</i>	Pre-determination

OEH Advice**1.1 Is the 'baseline' for impact assessment reasonable? Yes/No**

Yes for flooding and Aboriginal cultural heritage. More information is required to be sure the biodiversity assessment 'baseline' has been completed according to requirements

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

Yes for flooding and Aboriginal cultural heritage
Impacts to biodiversity have not been adequately assessed.

1.3 Has the assessment considered how to avoid and minimise impacts? Yes/No

Yes for flooding and Aboriginal cultural heritage
'Avoid and minimise' impacts to biodiversity requires further work

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

Further identification of impacts to biodiversity is required to identify reasonable mitigation options.

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

The biodiversity assessment is not acceptable under the NSW Biodiversity Offsets Policy for Major Projects

3. Confirmation of statements of fact

Facts regarding flooding and ACH are generally correct.
Sound ecological advice is needed to fully consider impacts of the proposal

4. Elements of the project design that could be improved

Adequate consideration of biodiversity constraints

ATTACHMENT B Detailed comments for Darlington Point Solar Farm Environmental Impact Statement (SSD 8392)

Flooding

The EIS meets the Secretary's requirements for flooding.

OEH are satisfied that the flooding assessment in Section 7.3 (page 111) of the EIS has effectively addressed flooding-related impacts of this development and will provide a basis for the appropriate design of the proposal to minimise flood risks.

In summary:

- The simple desktop hydraulic analysis complies with the OEH recommended approach and effectively identifies flow paths that cross the site in major flood events, i.e. 90-year ARI (average recurrence interval).
- This level of assessment is fit for purpose given the rural nature of the area and limited flood risk exposure.
- Flooding depths during the 90-year ARI event are expected to be less than 0.25 m over a majority of the site with isolated areas of up to 0.75 m. Flood waters would be slow-moving and originate from overflows of the Murrumbidgee River upstream of the site boundary during major events.
- The assessment has identified that the proposed location of major infrastructure, including the electricity substation and the operations and maintenance facility (but excluding the solar panel arrays that are on posts above the flood level), are not expected to be flood prone in the 90-year ARI flood event.
- OEH support the finding that the impact on surrounding land owners is expected to be negligible.

Aboriginal cultural heritage

The Aboriginal Cultural Heritage Assessment Report (ACHAR) requires more work to meet the Secretary's requirements.

OEH has reviewed the EIS and Appendix G Aboriginal Cultural Heritage Assessment report (ACHAR).

1. AHIMS search currency

We note in the EIS and ACHAR the AHIMS search was conducted on 20 April 2017. This is greater than 12 months currency at the time of public exhibition of the EIS.

- *An updated AHIMS search should be conducted and results presented in the ACHAR and EIS.*
- *Any Aboriginal sites not previously identified in the EIS within the project area will require assessment, consultation with Aboriginal parties regarding significance, assessment of the impacts from development, a demonstration of avoidance where achievable; and management in accordance with the SEARs.*

2. AHIMS numbers of newly identified Aboriginal sites

- *Update EIS Tables 37, 39 and 41 and Figure 20 with AHIMS site numbers for the newly identified sites from the current field assessment.*

3. Significance assessment in EIS

The ACHAR contains assessment results that have not been updated in the EIS. Specifically, Table 40 in the EIS is missing aesthetic and historic values that are provided in the ACHAR. Likewise, social values are not identified in the EIS with a note to be updated once the draft ACHA public consultation period is complete. Table 41 states that sites have high cultural value.

- *Update Table 40 in the EIS to be consistent with the significance assessment in the ACHAR and in accordance with any further assessment or comments received from Aboriginal stakeholders.*

4. Mandatory reporting requirements to OEH

Section 7.4.4 of the EIS and section 12 of the ACHAR require updating to be consistent with mandatory reporting requirements to OEH.

Under Section 89A of the *National Parks and Wildlife Act 1975*, OEH must be notified on the discovery of Aboriginal objects. This includes:

- Aboriginal site recording forms submitted to AHIMS for any newly identified Aboriginal object(s) through the course of the project;
- Aboriginal Site Impact Recording Forms (ASIRFs) submitted to AHIMS for each site impacted. We note that one site (Tubbo AFT 01 / AHIMS 49-5-0152) is proposed to be impacted by the Solar Farm development and collection of surface artefacts has been recommended by Griffith Local Aboriginal Land Council as a mitigation measure (KNC, 2018:35). Following collection of the stone artefacts and harm, an ASIRF must be completed and submitted to AHIMS. The ASIRF provides for an option for a SSD approved project under site impact authorisation on page one of the form.
- Reporting to the OEH on the discovery of human remains.

We recommend the following protocol be included in the ACHAR to ensure compliance with legislation in place to protect ACH in NSW and to ensure no additional harm is caused if Aboriginal sites and objects are encountered during proposed works:

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

- *Not further harm the object*
- *Immediately cease all work at the particular location*
- *Secure the area to avoid further harm to the Aboriginal object*
- *Notify OEH as soon as practical on 131555, providing any details of the Aboriginal object and its location*
- *Not recommence any work at the particular location unless authorised in writing by OEH.*

If skeletal remains are unexpectedly encountered during the activity, work must stop immediately, the area secured to prevent unauthorised access and NSW Police and OEH contacted.

Historic Heritage

We are unable to comment on the Historic Heritage Assessment provided within the EIS. OEH's Heritage Division are the appropriate contact for historic cultural heritage. Please forward the relevant sections to heritage@heritage.nsw.gov.au, if a copy of the assessment has not already been provided.

Biodiversity

The Biodiversity Assessment Report (BAR) at Appendix C does not meet the Secretary's requirements for biodiversity.

The Framework for Biodiversity Assessment (FBA) has not been properly applied and the impact of this development has not been adequately assessed.

The BAR fails to provide an ecologically sound basis for justifying a reduction in ecosystem credits, and the discount has not been determined or assessed using the FBA.

OEH would not support a proposed discounted offset for PCT 45 'Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion' because the proposal does not adequately offset the loss of threatened species habitat.

Biodiversity Development Assessment Report

1.1.2 Construction methodology

OEH appreciate the provision of detailed information about construction and operation methods for the proposal. However, statements about regrowth following construction and photographic evidence of regenerating non-specific grasses in other locations (page 18, 20) are not relevant to the loss of condition of native species diversity and cover in areas mapped as moderate condition native grassland (PCT 45).

Figure 1-2 Proposed development footprint (page 17)

The site map does not show areas of complete biodiversity loss, such as hardstand areas and tracks. Figure 4 in the EIS (page 12) gives a better picture of the proposed development, however the location of roads or tracks are still not shown.

Section 7.6 (page 106) mentions that a 'fire buffer' of 20 m will be incorporated around the "retained woodland and grassland habitat". This area must be included in the development footprint.

1.4 Definitions (page 26)

Terms and definitions used in the BAR should follow the FBA.

1.7 Australian Project Grassland Experience (page 29)

The photographs of non-specific grass growth under solar panels do not provide evidence of the potential impact of the solar panel array on PCT 45 and the ecosystem species that rely on this vegetation for habitat. Statements about the likely response of native grasslands in the Riverina following disturbance from construction are not supported by evidence from peer-reviewed ecological studies.

3.5 Flora survey methods (page 38)

It is important to mention in Section 3.5.1 that floristic surveys for the BioBanking plots were undertaken in April. Even in a wet autumn, most herbaceous species in the Riverina will be infertile and difficult to identify or not apparent above the ground. Diversity in native grasslands is best captured in spring when most non-grass species are above ground, flowering and identifiable.

3.5.3 Targeted flora surveys (page 42)

Section 1.3 (page 25) lists the project-specific SEARs identified by OEH. It is not clear whether species credit threatened flora species requiring further consideration were specifically targeted during field survey.

Habitat preferences, likelihood of occurrence and potential impacts on threatened flora appear to be provided in Appendix 4. Riverina grassland is the only known habitat for *Sclerolaena napiformis*, which is endangered under State and Federal legislation, so should have been specifically targeted in the development footprint. This species is identified from other *Sclerolaena* by seed and vegetative characteristics, rather than its minute flowers.

One of the few collections of *Convolvulus tedmoorei* in NSW was made near Darlington Point. We note that *Convolvulus erubescens* was recorded in the BioBanking plots, however following a revision of the genus in 2001 (Johnson 2001), *C. erubescens* is highly unlikely to occur in the area. Seeds are important for identification, so survey a month or so after flowering is ideal.

Habitat preferences for *Lepidium monoplacoides* should include grassland and this species also should have been targeted during searches of PCT 45.

Recommended actions:

- *OEH require confirmation that species credit flora species listed in Section 1.3 were specifically surveyed during the targeted flora survey, surveyed during the correct period and included in the BioBanking assessment.*

Table 3-2 PCTs, Zones and BioBanking Plots (page 40)

The justification that Zone 6 (PCT 28 White Cypress Pine open woodland) will not be impacted by the proposal is not adequate for reducing the number of BioBanking plots completed in Zone 6.

This vegetation zone may be part of the *Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregion* endangered ecological community listed on the *Biodiversity Conservation Act 2016*.

The FBA requires assessment of biodiversity values over the whole development site (FBA 3.3, page 5), which is defined as the entire site not just the proposed development footprint. The detailed site design has not been completed. Assessment of biodiversity values on the entire site is required if other constraints necessitate extra vegetation clearing in the future, or accidental clearing or disturbance occurs outside the proposed development footprint and the proponent requires additional offsets.

There is no explanation about why a rectangular area in the centre of the northern boundary that appears to be inside the development site is not included in any of the surveys.

3.6.3 Fauna habitat assessment

The assessment of hollows in paddock trees mentioned in Table 3-5 should be fully described in this section.

3.6.4 Bird species with a high likelihood of occurrence (page 47)

This section should refer to Section 3.7 and Appendix 4 where habitat suitability and likelihood are presented.

Plains-wanderer targeted surveys (page 51)

OEH require targeted surveys for Plains-wanderer (*Pedionomus torquatus*) to be 50 m apart. However, the site visit undertaken by OEH on 24 July 2017 confirmed that the site was not core or primary habitat for plains-wanderer so further assessment is not required.

3.8 Field survey limitations (page 54)

This section states that flora and fauna required under the BioBanking calculations have been surveyed during the appropriate survey period.

Recommended action:

- *OEH require evidence that all the species credit species that require assessment, including those listed on the SEARs as species for further consideration, were surveyed during the correct period. BioBanking Credit Calculator entries are to be updated and/or expert reports provided to fulfil all FBA survey requirements.*

4.2 Landscape value assessment

The IBRA subregion in the BioBanking Credit Calculator is LA-Murrumbidgee. Is that the correct region? If not, are there implications for the calculator results?

4.3.2 Plant community types (page 60)

The map of PCTs and Biobanking plots should also include reference to the vegetation zones used for the BioBanking assessment.

4.4 Flora species recorded (page 73)

This section should acknowledge limitations of the floristic survey being undertaken in April. Fewer of the characteristic herbaceous species that may be present on the site would have been present or identifiable than if survey had been undertaken in spring.

5 Threatened biodiversity (page 78)

Please confirm whether the assessed paddock trees provided potential habitat or were observed to be habitat for threatened species.

5.2. Species credits (page 81)

It is assumed that the title for this section should include Lanky Buttons, rather than Winged Peppergrass, which is the common name for *Lepidium monoplocoides*.

5.3.1 Fauna species

This section includes the first mention that six hollow-bearing paddock trees are likely to be removed as part of the project.

6 Avoid and minimise impacts

The FBA requires the proponent to demonstrate that reasonable measures have been taken to avoid and minimise the direct and indirect impacts of the proposal on biodiversity values.

The direct and indirect impacts of the proposal have not been clearly identified. Mitigation measures can therefore not be directly related to a specific impact. The BAR should follow the guidelines for avoiding and minimising impacts set out in 8.3.2 of the FBA.

Impacts should include at least consideration of shading and species diversity, concentration of rainfall and rain shadows beneath the panels, soil erosion potential in storm events, temperature changes beneath the panels, and changes to specific habitat requirements for threatened species.

There is discussion on page 97 and 98 about mitigating impacts of the solar array on grassland diversity, habitat value and fire risk. Fuel load has not been identified as an impact to threatened species or their habitats.

Buffers

Section 7.6 (page 106) mentions that a 'fire buffer' of 20 m will be incorporated around the "retained woodland and grassland habitat" that would "require removal of some of the woodland habitat". The buffer is included in this section as an impact mitigation.

OEH consider that installing firebreaks within woodland does not demonstrate avoidance of impacts, and that temporary fencing around woodland and threatened ecological communities in which no disturbance or clearing is to occur is a more appropriate mitigation measure.

Impacts to Plains Grass Grassland (PCT 45)

Section 1.6 (pages 28-29) states that there is a depth of agricultural knowledge to understand grassland growth and management. However, the BAR does not demonstrate an understanding of current scientific knowledge about the ecological functioning of *Austrostipa aristiglumis*-dominated grasslands or provide evidence about how their component species respond to the likely microclimatic impacts, their ability to be rehabilitated or predicted changes in species composition and how that impacts threatened species habitat.

Recommended action:

- *Adequate consideration and minimum information requirements for Chapter 8 of the FBA must be provided (refer to Table 21 of the FBA).*
- *Require all fire breaks to be within previously disturbed or cleared area, and not within a buffer around retained vegetation. A protection buffer from all disturbance and clearing should be placed around mapped woodland to minimise edge effects from construction and operation of the proposal.*

7.2 Vegetation Impacts (page 102)

This section fails to identify specific impacts to habitat values due to construction and operation of the solar array. The potential loss of diversity due to microclimatic changes to soil, water availability and sunlight has not been addressed.

While the site is not 'pristine' and has a long history of grazing, most of the grassland floristic plots met the benchmark for floristic species diversity when sampled during autumn, and the vegetation description for PCT 45 in the BAR states that there is high native diversity. This evidence shows that the proposal site has been subject to a more conservative grazing regime than other remnants of native grassland on private land.

Consideration of the CSU Report

OEH have provided consistent advice, including at the site visit on 24 July 2017, email on 30 October, by phone on 10 November 2017 and on 19 March 2018 in response to the draft BAR, that the key issue for this site is the impact of the solar farm on biodiversity – the vegetation community, not just the dominant grasses, and that the assessment must address the impact of the solar farm on ecological functioning of the site's native vegetation.

The FBA allows the use of expert reports for determining species presence or absence on a site. To use an expert, the proponent must submit a request to OEH for approval by the OEH Chief Executive. An expert report is not considered unless this approval is given.

While the authors of the report have recognised expertise in agronomy, we have strongly recommended that the proponent consult expert grassland ecologists for advice on potential impacts and mitigation measures.

The proponent has not applied for, and the OEH Chief Executive has not granted, approval for the Charles Sturt University Graham Centre for Agricultural Innovation to provide expert advice for this project.

We have identified limitations of the study that would indicate that an agronomy-based approach is not appropriate for informing the project.

- The CSU report identified very few of the forbs that are listed in the Biobanking plots, which were sampled at a suboptimal time for species detection, and concentrated their assessment on native grasses. The impact of the proposal on overall species composition would then have been difficult to assess, and it seems that a general assumption has been made that if biomass is reduced through grazing and mowing, the native forb component is 'unlikely to be affected greatly'.
- The lower number of species reported by the CSU report indicates that the survey design for the CSU report may not be suitable for sampling the range of life forms present.
- The approach used for assessing credit discounts is based on the area in which the height of the dominant grass will be reduced by shading from the panels, which was calculated as 33% in the CSU report. That value was reduced to 20% through a suggestion, rather than evidence that the response of the grass would be curvilinear rather than linear. There is no basis in the CSU report for using growth reduction as a measure of impact, compared with other measures such as a reduction in species richness or change in cover of component species.

Issue:

- *Experts providing reports for use in place of survey information in the BAR must be approved by the OEH Chief Executive.*

8 FBA Assessment

8.5 Biodiversity Credit Requirement Calculations (page 114)

Ecosystem credits are used to measure the loss of biodiversity values. The offset requirement for PCT 45 on the proposal site is to compensate for the loss of habitat for ecosystem credit threatened species.

In the BioBanking credit calculation for the proposal, the ecosystem species with the highest Tg value for Zone 1 PCT 45 is Australian Bustard (*Ardeotis australis*). **That means that 25,061 ecosystem credits are required to compensate for loss of foraging habitat for the Australian bustard.**

The Australian Bustard very large, heavy-bodied, ground-dwelling bird up to one m tall. The larger male has a wingspan of up to 2.3 m. It mainly inhabits tussock and hummock grasslands where it forages and sometimes roosts and is occasionally observed in pastoral and cropping country. Specific threats are alteration to tussock grasslands through overgrazing, and loss, fragmentation and degradation of semi-arid open grassy woodlands (OEH 2018).

8.6 Application of Credit Discount to Ecosystem Credits

Application of the FBA

When applying the FBA, assessors have the option to record partial clearing or partial impacts in a vegetation zone to allow for variation in impact. This is based on consideration of the starting values for each of the ten condition attributes and expected future value. In this case, the impacts of any clearing as well as the direct and indirect impacts of shading due to the solar array would be considered separately.

Section 10.3.1.3 of the FBA allows for the calculation of a different 'future site values' score for these separate parts of a vegetation zone. To use this method, the assessor must separately map these areas of the vegetation zone and include the map in the BAR. The calculator would then determine the loss in condition which contributes to determining the final credit obligation.

This approach was not used by the proponent.

The FBA does not provide the opportunity to discount the credits after the calculator has produced the Biodiversity Credit Report.

OEH are obliged to assess the credit obligation through the FBA. The method for discounting ecosystem credits provided in section 8.6 of the BAR is not consistent with Section 10 of the FBA.

OEH South West Branch have recently become aware of the Capital Solar Farm in Palerang LGA, where the area under the array is to be maintained as native pasture. The project was approved in 2010 and included a proposal to reduce offset requirements for solar array construction and operation in a native pasture environment.

We have included reference to the Capital Solar Farm as an example of how the calculation of future site value has been informed by an appropriate technical study.

By providing this information, we are not endorsing its application for the Darlington Point Solar Farm assessment. OEH do not consider that the proponent has presented an ecologically sound basis for justifying a reduction in ecosystem credits, and consider that the full credit requirement is an appropriate offset for the proposal.

Compensation for impacts to biodiversity

Installation of the solar array and associated infrastructure is likely to result in total sterilisation of the development footprint as foraging habitat for the Australian Bustard. A large bird such as this is unlikely to take off and land between and around individual panels in the solar array.

A reduction in ecosystem credits does not provide a reasonable offset for the probable complete loss of Australian Bustard habitat within the development footprint.

In addition to the consideration of threatened fauna habitat, the assessment presented in the BAR shows that the grassland is a native vegetation community in relatively good condition. Any reduction in condition needs to be adequately offset to compensate for the range of threatened species habitat provided by the proposal site.

The Offset Plan developed for Capital Solar Farm mentioned above used the Biobanking Calculator (V2) to determine offsets for partial impact. The environmental assessment recognised that apart from changes to specific habitat for threatened species, the ground vegetation would be affected by various altered microclimate and soil conditions (NGH 2010). The change in site condition was estimated using a more comprehensive assessment of impacts. The proponent commissioned a technical analysis that quantified the reduction in irradiation and these results were used to inform the future site values in mapped zones of partial impact.

It is important to note that vegetation under the array at the Capital Solar Farm was less intact than at the Darlington Point proposal site. The offset strategy requires compensation if a comprehensive ecological program of monitoring floristic diversity and vegetation condition monitoring shows that loss to biodiversity values exceeds the credits provided by the offset package.

Recommended actions:

- *Section 10 of the FBA is correctly applied to provide a reasonable offset for the probable complete loss of Australian Bustard habitat within the development footprint.*

Appendix 2 Flora species list

Tables provided in Appendix 2 are difficult to interpret. Table headings need to be repeated on each page.

References

Johnson RW (2001). A taxonomic revision of *Convolvulus* L. (Convolvulaceae) in Australia. *Austrobaileya* 6:1-39.

NGH (2010) *Capital Solar Farm Environmental Assessment - Appendix E Biodiversity Assessment*. NGH Environmental, Bega.

NGH (2013). *Capital Solar Farm Offset Plan V3*. NGH Environmental, Bega.

OEH (2018) Australian Bustard – profile, Office of Environment and Heritage Threatened Species website, url: <http://www.environment.nsw.gov.au/threatenedSpeciesApp/profile.aspx?id=10063>.

